→ P.5/9

Check Sheet

Company Name: Fl. Mining & Materials
Permit Number: AC27-138850
PSD Number: PSD FL-124
County:
Permit Engineer:
Others involved:

Application:
- [x] Initial Application
- [x] Incompleteness Letters
- [x] Responses
- [ ] Final Application (if applicable)
- [ ] Waiver of Department Action
- [ ] Department Response
- [ ] Other

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

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

Post Permit Correspondence:
- [x] Extensions
- [x] Amendments/Modifications
- [ ] Response from EPA
- [ ] Response from County
- [ ] Response from Park Services
- [ ] Other

P 274 007 499

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

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

Sent to Mr. C. M. Coleman, FM&M	
Street and No. P.O. Box 6	
P.O., State and ZIP Code Brooksville, FL 33512	
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: 11-10-88 Permit: AC 27-138850 PSD-FL-124	

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. C. M. Coleman
Florida Mining & Materials
Post Office Box 6
Brooksville, FL 33512

4. Article Number
P 274 007 499

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

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X Betty J. Ellis

6. Signature – Agent
X

7. Date of Delivery

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

BROOKSVILLE, FL DOWNTOWN STA. NOV 14 1988

PS Form **3811**, Mar. 1987 * U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

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

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION
NOTICE OF PERMIT

Mr. C. M. Coleman
Florida Mining and Materials
Post Office Box 6
Brooksville, Florida 33512

November 7, 1988

Enclosed is permit No. AC 27-138850 (PSD-FL-124) for Florida Mining and Materials to increase the allowable emission rates of sulfur dioxide and nitrogen oxides from the existing No. 2 cement kiln at their plant in Brooksville, Hernando County, Florida. This permit is issued pursuant to Section 403, Florida Statutes.

Any party to this permit has the right to seek judicial review of the permit pursuant to Section 120.68, Florida Statutes, by the filing of a Notice of Appeal pursuant to Rule 9.110, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this permit are filed with the Clerk of the Department.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copy furnished to:

W. Thomas, SW District
W. Aronson, EPA
M. Flores, NPS
Cross/Tessitore & Assoc.

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF PERMIT and all copies were mailed before the close of business on 11/10/88.

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to §120.52(9), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Judy Rogers
Clerk

11/10/88
Date

Final Determination

Florida Mining and Materials
Hernando County, Florida

No. 2 Cement Kiln
Permit No. AC 27-138850
PSD-FL-124

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting

November 4, 1988

Final Determination

The application by Florida Mining and Materials for a construction permit to increase the allowable emissions of sulfur dioxide and nitrogen oxides from the existing No. 2 cement kiln in Brooksville, Hernando County, Florida, has been reviewed by the Bureau of Air Quality Management. Public Notice of the Department's Intent to Issue the permit was published in the Sun Journal on September 14, 1988.

Comments in response to the Public Notice are addressed below:

I. A comment was received from Jim McDonald, of DER's Southwest District office, to include a specific condition in the permit to disallow the No. 2 cement kiln from operating when the raw mill is inoperative or being by-passed. Specific Condition No. 13 will be added to the permit to reflect this.

II. Comments were received from Bud Knuckey about particulate matter emissions from the cement plant and his objection to the project from the beginning.

The Department is not allowing any increase in the emissions of particulate matter as part of the current permitting action. The original construction permit PSD-FL-063 was issued by EPA in accordance with all environmental regulations in effect at that time.

III. Comments received from Paul Furman are attached and are addressed below:

1. The applicant applied for an increase in the allowable emissions of sulfur dioxide (SO_2) and nitrogen oxides (NOx) because the plant was unable to consistently comply with permitted restrictions.

2. The current permitting action does not in any way address or endorse the burning of hazardous wastes in the kiln. No such request was made in the application.

3. The increased allowable emissions have been reviewed in accordance with all applicable state and federal health, safety, and environmental regulations. The increases in ambient impacts, reflected in Table 1 are well below the de minimus impact levels established by the Department and as such are not expected to have any significant impact on residents downwind.

The following table is based on 20 lbs/hr of SO_2 and 330 lbs/hr of NOx, whereas the proposed permit allows only 12 lbs/hr of SO_2 and 250 lbs/hr of NOx.

Table 1

Maximum Predicted Increased Concentrations - No. 2 kiln

Pollutant	Avg. Time	Maximum Class I Area Impact ug/m^3	Maximum Class II Area Impact ug/m^3	Signi. Impact ug/m^3
SO_2	Annual	0.03	<1	1.0
	24-hr	0.23	1	5.0
	3-hr	0.97	3	25.0
NOx	Annual	0.26	1	1.0

4. The increased allowable emissions of SO_2 and NOx may contribute to acid rain, but not in any detectable quantities.

The final action of the Department will be to issue the permit as proposed in the Preliminary Determination with the addition of Specific Condition No. 13.

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

PERMITTEE:
Florida Mining and Materials
P. O. Box 6
Brooksville, Florida 33512

Permit Number: AC 27-138850
PSD-FL-124
Expiration Date: June 1, 1989
County: Hernando
Latitude/Longitude: 28° 38' 34"
82° 28' 25"
Project: No. 2 Cement Kiln

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the permitting of the No. 2 kiln with a maximum design kiln feed rate of 120 tons per hour (TPH) (wet basis), a clinker production rate of 71 TPH (dry basis), and a heat input rate of 213.6 MMBtu/hr of 1% sulfur content coal (10.5 TPH coal input). The No. 2 cement kiln is located in Brooksville, Hernando County, Florida. The UTM coordinates are Zone 17, 356.0 km East and 3169.9 km North.

The source's construction and operation shall be in accordance with the permit application and plans, documents, and reference material submitted unless otherwise stated in the General and Specific Conditions herein.

Attachments:

1. Florida Mining & Material (FM&M) application package, by CTA dated August 28, 1987.
2. DER's incompleteness letter dated September 29, 1987.
3. Fish & Wildlife Service letter received November 16, 1987.
4. FM&M's response received December 3, 1987.
5. DER's letter requesting additional information dated December 31, 1987.
6. U.S. EPA's letter received January 15, 1988.
7. FM&M's downwash analysis received January 27, 1988.
8. DER's letter dated February 5, 1988.
9. FM&M's response received May 2, 1988.
10. U.S. EPA's letter received June 3, 1988.
11. FM&M's letter received June 23, 1988.
12. Final Determination dated November 4, 1988.

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

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

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

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

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

GENERAL CONDITIONS:

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

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the Department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

GENERAL CONDITIONS:

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

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the Department, may be used by the Department as evidence in any enforcement case arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

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

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

(X) Determination of Best Available Control Technology (BACT)
(X) Determination of Prevention of Significant Deterioration (PSD)
(X) Compliance with New Source Performance Standards.

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the Department, during the course of any unresolved enforcement action.

GENERAL CONDITIONS:

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

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

SPECIFIC CONDITIONS:

1. The maximum annual hours of operation shall not exceed 7896.

2. The maximum kiln feed rate shall not exceed 120 tons per hour (wet basis). The expected maximum clinker production rate is 71 tons per hour (dry basis).

3. The maximum kiln fuel input rate shall not exceed 213.6 MMBTU per hour (coal of 12,000 Btu/lbs heating value). The sulfur content of the coal shall not exceed 1 percent by weight. Coals of lower heating values than 12,000 BTUs per pound shall be fired only if the sulfur content to heat value ratio of the coal does not exceed 0.83 pounds of sulfur per MMBTU of heat input. In no instance shall the quantity of coal fired in the kiln exceed 10.5 tons per hour.

SPECIFIC CONDITIONS:

4. The maximum emissions from the No. 2 kiln shall not exceed the following:

Pollutant	Maximum Allowable Emissions lbs/hr	tons per year
a. PM	21.6	85.3
b. SO_2	12.0	47.4
c. NOx	250.0	987.0
d. VOC	2.7	10.7
e. CO	8.9	35.1

Visible emissions (VE) shall not exceed 10% opacity.

5. Compliance shall be demonstrated, in accordance with F.A.C. Rule 17-2.700 and 40 CFR 60 Appendix A (1987), using the following test methods:

a. EPA Method 5 for PM
b. EPA Method 6 for SO_2
c. EPA Method 7 for NOx
d. EPA Method 9 for VE
e. EPA Method 10 for CO

Compliance with the VOC allowable emissions rate will be assumed provided the CO allowable emissions rate is achieved Specific VOC compliance testing is not required.

6. The kiln feed rate and clinker production rate shall be monitored and recorded daily in accordance with 40 CFR 60.63. The coal feed rate to the kiln and the average coal sulfur content and heating value (BTU/lb) of each coal shipment shall be determined and recorded. If coal a of sulfur content exceeding 1.0 percent by weight is fired in the kiln (due to variability in the sulfur content of coal within a shipment) samples will be taken of coal entering the kiln at a minimum frequency of once per hour and analyzed for sulfur content. The average sulfur content of samples taken within each 3-hour period shall not exceed 1.0 percent by weight.

7. Actual emissions of NOx will be minimized through the use of low excess air firing. A continuous kiln exhaust gas oxygen monitor/recorder shall be installed, calibrated, operated and maintained in proper working order.

SPECIFIC CONDITONS:

8. The applicant shall apply reasonable work practices to minimize fugitive PM emissions, including the following:

a. All permanent haul roads shall be paved.

b. Temporary haul roads shall be watered or treated with chemical dust suppressants at regular intervals.

c. Dry raw materials (moisture content $\leq$ 14%) shall be stored in silos or enclosed structures.

d. The coal storage pile shall be compacted, turned and/or watered as necessary to maintain a minimum 8 percent moisture content in the surface layer and aligned with the predominant wind direction to minimize wind erosion.

e. Abandoned haul roads and other disturbed areas shall be revegetated within 60 days of the date active service ends.

f. All cement products shall be transferred to transport trucks with a sealed pnuematic conveying system which is either a closed system or exhausted through a bag filter.

9. The applicant shall comply with all the applicable provisions and requirements of F.A.C. Rules 17-2, 17-4, and 40 CFR 60 Subpart F.

10. DER's Southwest District Office shall be notified a minimum of 15 days prior to compliance testing. Test reports shall be submitted to DER's Southwest District office within 30 days of compliance test completion.

11. The permittee may request that this construction permit be extended. Such a request shall be submitted to the BAQM prior to sixty days before the expiration of the permit (F.A.C. 17-4.090).

12. An application for an operation permit must be submitted the Department's Southwest District office at least 90 days prior to the expiration date of this construction permit. To properly apply for an operation permit, the applicant shall submit an application, the appropriate fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test results as required by this permit (F.A.C. 17-4.220).

PERMITTEE:
Fla. Mining & Materials

Permit Number: AC 27-138850
Expiration Date: June 1, 1989

SPECIFIC CONDITIONS:

13. Any change in the method of operation, fuels, equipment, or operating hours shall be submitted for approval to DER's Southwest District office.

14. The No. 2 cement kiln shall not be operated if the raw mill is inoperative or being bypassed, since the raw mill is necessary for air pollution control.

Issued this 3 day of [illegible], 1988

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

Dale Twachtmann, Secretary

P 938 762 752

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL

(See Reverse)

Sent to Mr. C. M. Coleman, Jr.	
Street and No. P.O. Box 6 FM&M	
P.O., State and ZIP Code Brooksville, FL 34605-0006	
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 Permit: AC 27-138850 PSD-FL-124 Mailed: 11-17-89	

PS Form 3800, June 1985

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. C. M. Coleman, Jr.
Vice President & General Mgr.
Florida Mining and Materials
P. O. Box 6
Brooksville, FL 34605-0006

4. Article Number
P 938 762 752

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 — Address
X

6. Signature — Agent
X

7. Date of Delivery
11/20/89

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

PS Form **3811**, Mar. 1988 * U.S.G.P.O. 1988-212-865 **DOMESTIC RETURN RECEIPT**

P 274 007 539

RECEIPT FOR CERTIFIED MAIL

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

Sent to Mr. C. M. Coleman, FL Mining & Materials	
Street and No. P.O. Box 6	
P.O., State and ZIP Code Brooksville, FL 33512	
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 Permit: AC 27-138850 PSD-FL-124 Mailed: 12-22-88	

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

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. C. M. Coleman
Florida Mining and Materials
P. O. Box 6
Brooksville, FL 33512

4. Article Number
P 274 007 539

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 – Address
X B. Matthews

6. Signature – Agent
X

7. Date of Delivery
12-27-88

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

PS Form **3811**, Mar. 1988 ★ U.S.G.P.O. 1988-212-865 **DOMESTIC RETURN RECEIPT**

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

December 22, 1988

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. M. Coleman
Florida Mining and Materials
Post Ofice Box 6
Brooksville, Florida 33512

Dear Mr. Coleman:

Re: Amendment to Permit No. AC 27-138850 (PSD-FL-124), for No. 2 Cement Kiln

The Department has discussed with EPA and Florida Mining and Materials (FM&M) the Final Determination of the above referenced permit.

As a result of the discussion, the Department will amend Specific Condition No. 3 of the above referenced permit to include the test method being currently used by FM&M to determine the sulfur content of coal.

Specific Condition No. 3 Change:

From:

The maximum kiln fuel input rate shall not exceed 213.6 MMBtu/hour (coal of 12,000 Btu/lb heating value). The sulfur content of the coal shall not exceed 1 percent by weight. Coals of lower heating values than 12,000 BTUs per pound shall be fired only if the sulfur content to heat value ratio of the coal does not exceed 0.83 pounds of sulfur per MMBTU of heat input. In no instance shall the quantity of coal fired in the kiln exceed 10.5 tons per hour.

To:

The maximum kiln fuel input rate shall not exceed 213.6 MMBtu/hour (coal of 12,000 Btu/lb heating value). The sulfur content of the coal shall not exceed 1 percent by weight, using ASTM D 3177-84. Coals of lower heating values than 12,000 BTUs per pound shall be fired only if the sulfur content to heat value ratio of the coal does not exceed 0.83 pounds of sulfur per MMBTU of heat input. In no instance shall the quantity of coal fired in the kiln exceed 10.5 tons per hour.

Attachment to be Incorporated:

13. EPA's letter received December 9, 1988.

This letter must be attached to your construction permit No. AC 27-138850 (PSD-FL-124), and shall become a part of the permit.

Sincerely,

Dale Twachtmann
Secretary

DT/ks

cc: W. Thomas, SW District
W. Aronson, EPA
M. Flores, NPS
Cross/Tessitore & Assoc.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Dale Twachtmann

FROM: Steve Smallwood

SUBJ: Florida Mining and Materials
Amendment of Construction Permit No. AC 27-138850
PSD-FL-124

DATE: December 19, 1988.

Attached for your approval and signature is a permit amendment prepared by Central Air Permitting for Florida Mining and Materials. A specific test method for evaluating the sulfur content in coal will be incorporated into the above referenced permit for the No. 2 cement kiln at their plant in Brooksville, Hernando County, Florida.

I recommend your approval and signature.

SS/PR/s
attachments

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Dale Twachtmann

FROM: Steve Smallwood

SUBJ: Florida Mining and Materials
Amendment of Construction Permit No. AC 27-138856
PSD-FL-124

DATE: December 19, 1988.

RECEIVED
DEC 21 1988
DER BAQM

Attached for your approval and signature is a permit amendment prepared by Central Air Permitting for Florida Mining and Materials. A specific test method for evaluating the sulfur content in coal will be incorporated into the above referenced permit for the No. 2 cement kiln at their plant in Brooksville, Hernando County, Florida.

I recommend your approval and signature.

SS/PR/s

attachments

RECEIVED
DEC 20 1988
Office of the Secretary

Best Available Control Technology (BACT) Determination
Florida Mining and Materials
Hernando County

The applicant has installed a cement kiln (No. 2) at their facility near Brooksville, Florida. The kiln has been in operation since August 15, 1983, under permit AO 27-6507.

According to permit No. AO 27-6507, the kiln's emission limitations for sulfur dioxide and nitrogen oxides were established at 3.0 and 195.3 pounds per hour, respectively. As the result of compliance testing, it has been determined that these emission limitations cannot be acheived on a consistent basis. Testing has indicated that SO_2 emissions have ranged from 2.40 lbs/hr to 11.99 lbs/hr and have exceeded the permit limit of 3.0 lbs/hr on five (5) occasions. In addition, NOx emissions have also varied from 141.2 to 403.0 lbs/hr.

For permitting purposes, the applicant has proposed that the SO_2 and NOx emission limits for the No. 2 cement kiln be set at 20 lbs/hr and 330 lbs/hr, respectively. Based on the applicant's operating schedule of 7560 hrs/yr, these requested increases in hourly emission limitations would result in annual emission increases of 64.3 and 509.2 tons/yr, respectively. These annual increases each exceed the 40 tons per year significant emission increase defined in 17-2.500(2)(3)2, F.A.C. thus requiring a PSD review and hence a BACT determination for the requested action.

Date of Receipt of a BACT Application

June 22, 1988

Review Group Members

This determination was based upon comments received from the applicant, EPA Region IV, and the Stationary Source Control Section.

BACT Determination Procedure:

In accordance with Florida Administrative Code Chapter 17-2, Air Pollution, this BACT determination will be based on the maximum degree of reduction of each pollutant emitted which the Department (DER), 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 and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

(a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Source) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).

(b) All scientific, engineering, and technical material and other information available to the Department.

(c) The emission limiting standards or BACT determinations of any other state.

(d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

BACT Determined by DER:

Pollutant	Emission Limit
Sulfur Dioxide	12.0 lbs/hr
Nitrogen Oxides	250.0 lbs/hr

BACT Determination Rationale

In accordance with the procedure outlined for the BACT analysis, the Department based its final limitations upon the following review criteria:

1) The employment of "top-down" BACT

The Department identified ways in which the proposed emissions could be further reduced by the addition of control equipment/techniques. In the case of sulfur dioxide, additional control would be acheived by installing a liquid alkaline scrubbing system. For nitrogen oxides, additional

control would be possible by obtaining flyash which did not contain ammonia. The cost of these measures was then compared against the benefit in terms of emissions reductions to determine whether or not it was justified.

2) The reasonableness of the proposed emission increases

The applicant has based their request to increase sulfur dioxide and nitrogen oxides emission limitations in accordance with testing that has been conducted over a period of several years. The range and median of these previous results can be compared against the emissions levels proposed by the applicant to warrant justification. In addition, permit levels for facilities of similar size can also be compared to the proposed levels to assist in the decision making process.

In order to justify the cost effectiveness of any technique/ equipment to control air emissions, the EPA has developed costing guidelines to obtain the highest reduction of emissions per dollar invested. Achievement of maximum emission reductions for capital invested is a major consideration when New Source Performance Standards (NSPS) are developed by the EPA. For sulfur dioxide emissions, EPA has determined that a cost of up to $2,000 per ton of emissions controlled is reasonable for NSPS.

The applicant has indicated that an alkaline scrubbing system would be $29.4 and $5.3 million for capital and operating costs, respectively. Taking into consideration the expected SO_2 reduction (SO_2 emissions would decrease from 20 to 3 pounds per hour), the cost per ton of SO_2 controlled using the alkaline scrubbing system would be appoximately $117,000. This cost is well above the $2,000 per ton guideline and is thereby not warranted as BACT.

A review of the compliance testing results for kiln No. 2 indicates that the applicant's request to raise the SO_2 emissions level may be unjustifiably high. The compliance testing results for a four year period beginning April 1983 indicate that the SO_2 emissions ranged from a low of 2.4 lbs/hour to a high of 11.99 lbs/hour with the highest measurement occuring back in April of 1983. Based on this finding, it appears that the requested level of 20 lbs/hr is much higher than would be expected from the facility. An emission limit of 12.0 pounds per hour appears to be more reasonable for the facility and is thereby judged to be BACT.

With regard to nitrogen oxides emissions, the applicant has addressed the following measures which could be implemented to satisfy the "top-down" BACT procedure:

1) Utilizing flyash that is not high in ammonia

2) The addition of a NOx catalytic reduction system

The applicant has stated that the closest available flyash supply that does not contain ammonia is the St. John's River Power Plant at Blount Island in Duval County. Assuming the fly ash could be obtained free, the additional cost of transportation from this source would be $9.50 per ton. This would result in an annualized cost of approximately 1 million dollars for the 107,000 tons of flyash needed.

Previous testing has indicated that the ammonia present in the flyash has accounted for approximately 134.7 lbs/hr. Taking the reduction that could be achieved into consideration with the cost of obtaining ammonia free fly ash, the cost per ton of controlling NOx would be approximately $1,695. This cost is above the $1,000 per ton guideline that EPA has determined is reasonable for NSPS, and again is not justified as BACT. It should be noted that the cost of switching to this source of fly ash would be further increased due to costs of revoking the fly ash contract with the present supplier.

A similar analysis indicates the cost of utilizing a NOx catalytic reductive system would also be cost prohibitive. According to the applicant, the capital and operating cost of installing such a system would be $9.0 million and $1.0 million, respectively. Taking this into consideration with the nitrogen oxides reduction expected (330 to 190 pounds per hour), the cost per ton of NOx controlled would be approximately $3,355.

A review of the compliance testing results for kiln No. 2 indicates that the applicant's request to raise the NOx emission level may also be unjustifiably high. The compliance testing results for the four year period referred to previously indicate that the NOx emissions ranged from a low of 111.9 lbs/hour to a high of 403.0 lbs/hour. Of the six measurements completed, the highest reading of 403.0 lbs/hour was well above the other measurements which averaged 159.6 lbs/hour. Based on the test data available, an emission limit of 250.0 lbs/hour appears to be more realistic for the facility and is thereby judged to be BACT. This level would have been obtained by each of the tests completed except for the 403.0 lbs/hour reading which was well

above the other measurements taken and is judged to not be representative of the multi year operation of the facility. In addition, a review of the BACT/LAER Clearinghouse suggest that this NOx emission level is quite typical as BACT for other cement kilns of similar size.

Dispersion modeling indicates that the maximum predicted impacts from the boilers with the level of emissions proposed by the applicant will be well below the Ambient Air Quality Standards for all of the averaging periods. In addition, the control level determined by the Department to be BACT is judged to limit the emissions of unregulated pollutants to a level which is deemed to be acceptable. As is the case, the impacts associated with this modification as proposed are not perceived to be a threat to air quality.

Details of the Analysis May be Obtained by Contacting:

Barry Andrews, P.E., BACT Coordinator
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

C. H. Fancy, P.E.
Deputy Bureau Chief, BAQM

NOV 3 1988
Date

Approved by:

Dale Twachtmann, Secretary

3 Nov 1988
Date

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

November 7, 1989

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. M. Coleman, Jr.
Vice President and General Manager
Florida Mining and Materials
P. O. Box 6
Brooksville, Florida 34605-0006

Dear Mr. Coleman:

Re: Extension of Expiration Date
Permit No. AC 27-138850 - PSD-FL-124

The above permit is amended as stated below to extend the expiration date as requested in Mr. Tessitore's letter dated October 17, 1989:

Present Expiration Date: January 1, 1990
New Expiration Date: April 1, 1990

This amendment letter shall become attachment No. 14 to your construction permit AC 27-138850.

Sincerely,

Dale Twachtmann

Dale Twachtmann
Secretary

DT/kt

cc: B. Thomas, SW District
J. Tessitore, P.E.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Dale Twachtmann

FROM: Steve Smallwood

DATE: November 6, 1989

SUBJ: Extension of Permit No. AC 27-138850, PSD-FL-124
Florida Mining and Materials

Attached for your approval and signature is a letter extending the expiration date of Florida Mining and Materials' permit for their No. 2 Cement Kiln.

I recommend your approval and signature.

SS/JR/t

attachment

Hand Delivered
10-20-89

file copy

CROSS/TESSITORE & ASSOCIATES, P.A.

4763 S. CONWAY ROAD, SUITE F
ORLANDO, FLORIDA 32812
407/851-1484

October 17, 1989

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

Subject: Florida Mining and Materials No. 2 Cement Kiln
AC27-138850, PSD-FL-124
C/TA # : F03.175

Dear Mr. Fancy:

The above subject Construction Permit is scheduled to expire on January 1, 1990. Currently, the permit contains Specific Condition No. 14 which prohibits the operation of the cement kiln when the raw mill is inoperative or being bypassed. Florida Mining and Materials (FM&M) desires to remove this restriction.

In order to verify compliance with SO_2 and NO_x permit limitations while the raw mill is inoperative or bypassed, FM&M proposed testing of the subject source during the week of October 16, 1989. The permission to conduct this testing was received from the FDER Southwest District Office and testing is currently in progress.

Assuming that the test results would not be available for thirty (30) days and that an additional thirty (30) days to forty five (45) days will be required to summarize and analyze the results, FM&M would be unable to submit an Operational Permit application prior to 1 January 1990.

Since the permit conditions require the submission of an Operational Permit application 90 days before expiration of the Construction Permit, it is requested that the expiration date for Permit AC 27-138850 be extended to Apri1 1, 1990.

Your cooperation is appreciated, and if you have any question, please do not hesitate to call upon me.

Sincerely,

Joseph L. Tessitore, P.E.
Vice President

JLT/dlk
C3016.DOC
copied: J. Reynolds
B. Thomas, SW District

PERMITTEE:
Fla. Mining & Materials

Permit Number: AC 27-138850
Expiration Date: June 1, 1989

SPECIFIC CONDITIONS:

terms of the construction permit until its expiration date. Operation beyond the construction permit expiration date requires a valid permit to operate. (Rules 17-2 and 17-4, FAC).

If the construction permit expires prior to the permittee requesting an extension or obtaining a permit to operate, then all activities at the project must cease and the permittee must apply for a new permit to construct which can take up to 90 days to process a complete application. (Rule 17-4, FAC)

12. Any change in the method of operation, fuels, equipment, or operating hours shall be submitted for approval to DER's district office.

Issued this_____day of_____, 1988

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL REGULATION

_____
Dale Twachtmann, Secretary

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee	
To:	Location:
To:	Location:
To:	Location:
From:	Date:

Interoffice Memorandum

TO: Mike Harley

FROM: W.C. Thomas

DATE: June 16, 1989

SUBJECT: Florida Mining & Materials
Hazardous Waste Storage Construction Permit
Application

Attached is a letter to Mr. & Mrs. Joseph McKnight of Brooksville, Florida regarding the above referenced subject. Please place the McKnights on a list to receive public notice, intents, etc. for that facility.

WCT/js

Attachment

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION) Mike Harley	Initial	
	Date	
2. DARM	Initial	
	Date	
3. TT	Initial	
	Date	
4.	Initial	
	Date	

REMARKS:

RECEIVED

JUN 19 1989

DER - BAQM

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: Bill Thomas

DATE 6-16-89

PHONE

Florida Department of Environmental Regulation

Southwest District • 4520 Oak Fair Boulevard • Tampa, Florida 33610-7347 • 813-623-5561

Bob Martinez, Governor Dale Twachtmann, Secretary John Shearer, Assistant Secretary
Dr. Richard Garrity, Deputy Assistant Secretary

6/14
Dee Thomas
are you aware of this?
PG
A, 1-6

May 22, 1989

Mr. & Mrs. Joseph McKnight
18355 Retriever Road
Brooksville, Florida 34614

Re: Florida Mining & Materials
Hazardous Waste Storage Construction Permit Application

Dear Mr. & Mrs. McKnight:

The Florida Department of Environmental Regulation (FDER) has received an application from Florida Mining and Materials (FM&M) to construct a hazardous waste storage facility on their property in Brooksville, Florida. This facility, if constructed and permitted, would be used to store materials that are defined by the federal Environmental Protection Agency (EPA) as hazardous waste fuels, Code of Federal Regulation - 40 CFR 266.30. The storage of this material is fully regulated by the federal and state governments by 40 CFR 264 Subpart A through J.

FM&M plans to use the waste fuels to supplement their current source of energy for their cement kiln. Emissions from the cement kiln are currently regulated by the FDER Division of Air Quality Control. Prior to the use of waste fuels in the cement kiln, FM&M must apply for and receive a modification to their air construction and operating permits.

The current state regulations for the permitting of hazardous waste facilities are described in Florida Administrative Code (FAC) 17-30.220. This process involves a technical review of the application to determine if it meets the existing state and federal regulations; a period of time for the applicant to revise the application to address any areas of technical concern; drafting a proposed permit; a period of time for public comments on the technical aspects of the application or permit; and the issuance/ denial of the permit. This entire review process is conducted by officials representing the state regulatory office (FDER) and by officials representing the federal government (USEPA). A review of the draft permit is conducted simultaneously between both agencies and issuance of a permit is dependent upon both agencies satisfaction that all regulatory concerns have been addressed.

As you can see, the permitting process for a hazardous waste permit is focused on the technical and regulatory requirements of the state and federal governments. More specific concerns of a local nature are better addressed during local government meetings/hearings for zoning or construction. I hope that I have answered your questions, however, please contact me should additional concerns remain.

Sincerely,

William C. Crawford
Permitting Engineer
Hazardous Waste Section
Division of Waste Management

WCC/ab

P 938 762 576

RECEIPT FOR CERTIFIED MAIL

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

Sent to Mr. C. M. Coleman, FM&M	
Street and No. P.O. Box 6	
P.O., State and ZIP Code Brooksville, FL 33512	
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: 5-24-89 Permit: AC 27-138850	

PS Form 3800, June 1985

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. C. M. Coleman
Florida Mining and Materials
P. O. Box 6
Brooksville, FL 33512

4. Article Number
P 938 762 576

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 — Address
X

6. Signature — Agent
X

7. Date of Delivery

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

BROOKSVILLE FLORIDA U.S.A. MAY 26 1989 USPS

PS Form **3811**, Mar. 1988 * U.S.G.P.O. 1988-212-865 **DOMESTIC RETURN RECEIPT**

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

May 19, 1989

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. M. Coleman
Florida Mining and Materials
Post Office Box 6
Brooksville, Florida 33512

Dear Mr. Coleman:

Re: Extension of Expiration Date for No. 2 Cement Kiln Permit No. AC 27-138850 and PSD-FL-124

The Department has received and reviewed your request dated March 15, 1989, for an extension of the expiration date of the above referenced permit.

The Department is in agreement with your request. The following shall be changed and added to the permit:

Expiration Date Change:

From: June 1, 1989
To: January 1, 1990

Attachment to be Added:

13. Cross/Tessitore letter dated March 15, 1989.

This letter must be attached to your construction permit, AC 27-138850, and shall become a part of the permit.

Sincerely,

Dale Twachtmann
Secretary

DT/PR/plm

cc: W. Thomas, SW District
W. Aronson, EPA
C. Shaver, NPS
Cross/Tessitore & Assoc.

State of Florida
DEPARTMENT OF ENVIRONMENTAL REGULATION

For Routing To Other Than The Addressee

To: _____ Location: _____
To: _____ Location: _____
To: _____ Location: _____
From: _____ Date: _____

Interoffice Memorandum

TO: Dale Twachtmann

FROM: Steve Smallwood

SUBJ: Approval of Permit Extension for Florida Mining and Materials, No. 2 Cement Kiln, AC 27-138850 and PSD-FL-124

DATE: May 17, 1989

Attached for your approval and signature is a permit extension prepared by Central Air Permitting for the above mentioned company to allow for testing of the cement kiln after maintenance work is completed on the baghouse.

I recommend your approval and signature.

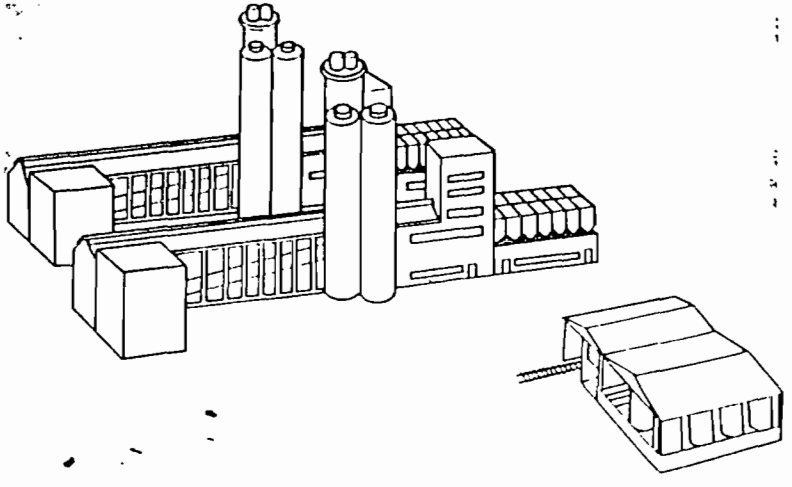
SS/PR/s

Attachments

Florida
Mining &
Materials

Resource Recovery Program

Hernando County Facility



ABOUT FLORIDA MINING AND MATERIALS

Florida Mining and Materials has operated its Portland Cement Plant near Brooksville since 1975. The plant can produce 1.3 million tons of cement annually, and is one of the largest plants in the United States. Approximately 155 jobs are provided by cement plant and mining operations, making Florida Mining and Materials an essential economic factor in Hernando County's financial stability.

A CEMENT INDUSTRY REFRESHER...

The cement making process begins with the mining of raw materials, including limestone and sand or clay. A mixture of stone, sand and flyash is heated to temperatures above 2,760°F in a rotary kiln, to form cement clinker. Florida Mining and Materials burns approximately 150,000 tons of coal per year to effect this step of the process. Once the clinker has cooled, it is mixed with gypsum and ground into a fine powder known as Portland Cement. Air emissions are minimal due to the long retention time (approximately 20 seconds) of exhaust gases in the kiln and efficient dust collection equipment. In addition, ash residue from the coal burning process is recovered and becomes part of the final cement product. Florida Mining's cement plant therefore does not generate any waste products.

DEALING WITH TODAY'S ISSUES...

Today, industries, municipalities, and small businesses in Florida are facing a problem with increasing economic and environmental concerns. Quite simply, they are running out of places to dump their wastes. Landfills are filling up, underground injection is viewed by many as unsafe, and ocean dumping has been outlawed in most areas. The best alternative is to burn or "incinerate" it, but in order to minimize the effects on the environment, industrial wastes must be incinerated at temperatures above 2,000°F, with an exhaust gas retention time of at least 2 seconds.

These requirements make good incineration very expensive. High disposal costs to the industry generating the waste are usually passed on to the consumer.

The challenge then, is to find an affordable means of safe disposal of industrial wastes. The solution? The Florida Mining and Materials Resource Recovery Program.

A WASTE-TO-ENERGY SYSTEM

The Florida Mining and Materials Resource Recovery Program concept is simple. Much industrial waste is composed of hydrocarbons, such as spent cleaning solvents, paint thinners and used oil. These substances have considerable value as a fuel resource and may be used by Florida Mining and Materials to replace a portion of the coal burned in its cement kilns. In addition, the cement kiln offers operating conditions far exceeding the requirements for safe incineration. So the Resource Recovery Program turns the Florida Mining and Materials cement kilns into an effective waste-to-energy system, and at the same time, safely disposes of industrial wastes.

In order to put the waste-to-energy system to work, a storage facility must be built at the cement plant to accommodate waste fuels. This facility is shown along with existing plant structures in *Figure 1*. Since waste fuels are flammable and therefore, classified as "hazardous", permits must be obtained in accordance with the Resource Conservation and Recovery Act to construct and operate the facility.

PHASE 1

Construction of the fuels storage facility will actually be completed in two phases. Phase I, the unloading dock, will consist of a railspur, roadway and pumping station, shown in *Figure 2*. Railcars and/or tank trucks stationed at the dock will unload fuel directly to the cement kilns. This will allow Florida Mining and Materials to use waste fuels on an interim basis, while adjustments are made throughout the plant to ensure compliance with

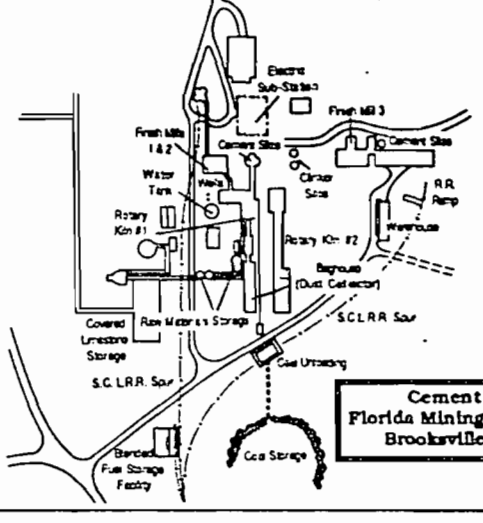


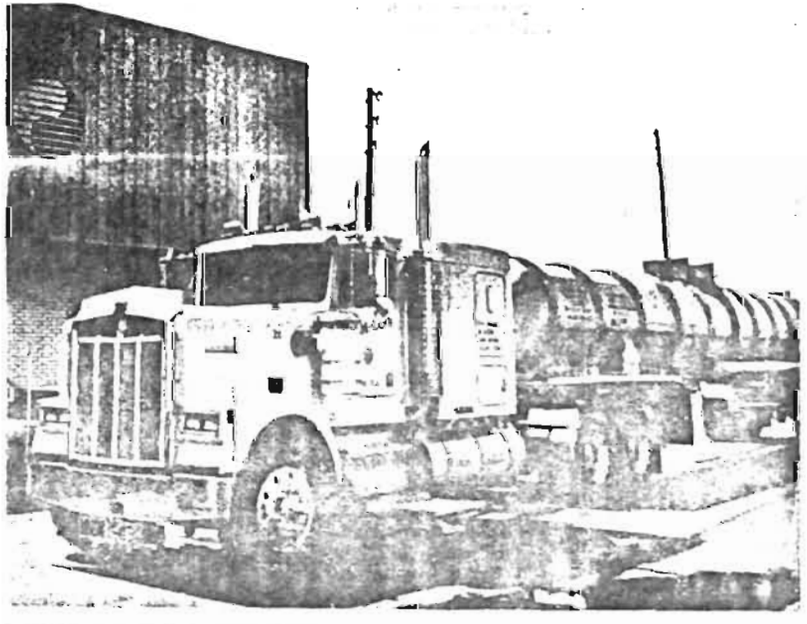
Figure One

possible contamination of the Floridan Aquifer and other Florida Water Bodies.

Who will supply the waste fuels to Florida Mining and Materials?
Waste fuels will come from large and small quantity generators of waste throughout Florida. However, all waste fuels will be blended, transported and delivered to the plant by Chemical Conservation Corporation, a company that specializes in waste recycling, and the shipment of blended fuels. does not own plant

What precautions will be taken to prevent spills in the plant and on the highways?
All fuel truck drivers are employed by Chemical Conservation Corporation and are thoroughly trained in spill prevention and response techniques. All valves on tank trucks will be sealed during transportation, and the truck route specified in *Figure 4* has been designed for minimum travel through populated areas. In the plant, primary and secondary containment are provided for all structures storing waste fuels, and a leak-detection system will be used to monitor equipment conditions at all times.

How will traffic in Brooksville be affected?
The travel route for trucks carrying blended fuels is shown in *Figure 4* and has been designed to approach the Florida Mining and Materials plant from the north, thereby avoiding travel through the city of Brooksville.



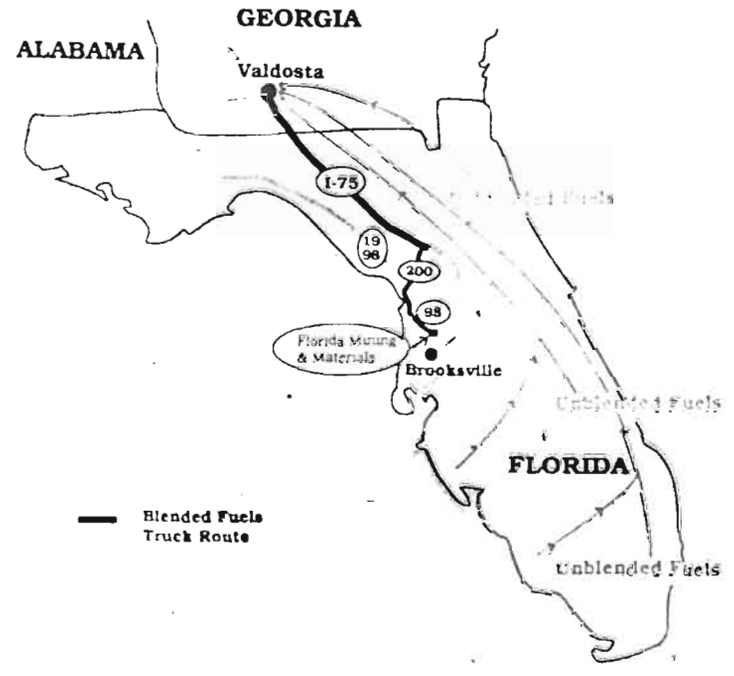


Figure Four

Who else is burning waste fuels in the cement industry?
Within Florida Mining and Materials' parent company, Southwestern Portland Cement, the Fairborn, Ohio plant is currently burning waste fuels and the Knoxville, Tennessee plant has filed a permit application to burn this type of fuel. In total, there are approximately 10 cement plants burning waste fuels throughout the United States.

AN ADDED BENEFIT FOR HERNANDO COUNTY
As part of the Resource Recovery Program, Florida Mining and Materials and Chemical Conservation Corporation will sponsor an amnesty day, subject to approval by the Hernando County Commission, for the citizens of Hernando County on a semi annual basis. On these days, county residents will have the opportunity, at no charge, to deliver common household waste fuel products to a designated collection point.

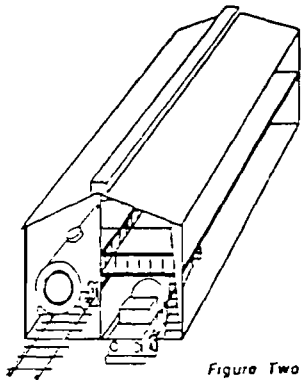


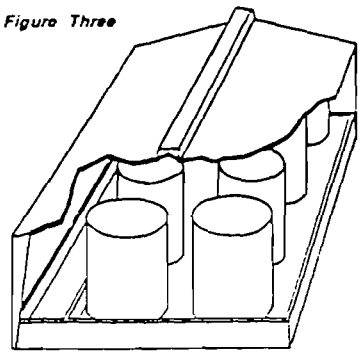
Figure Two

enviornmental regulations and to maintain product quality.

PHASE II

Once necessary adjustments have been made, construction of Phase II will begin. Shown in *Figure 3*, this will include 8 storage tanks, each approximately 21 feet high and 18 feet in diameter. A containment wall will surround the tank farm, and the entire structure will be

Figure Three



roofed. Fuels will be pumped from railcars or tank trucks stationed at the unloading area, to storage tanks located in the adjacent tank farm.

Once in the tanks, fuels would be pumped to the cement kilns as needed. Construction of Phase II will complete the storage facility.

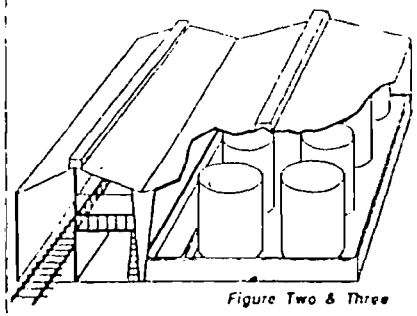


Figure Two & Three

WHY A RESOURCE RECOVERY PROGRAM?

1. An affordable means of safe disposal will be provided for generators of industrial waste throughout Florida and the Hernando County Area
2. Illegal dumping of wastes into our rivers and lakes may be prevented since the public would be aware of an approved incinerator nearby.
3. Consumption of coal, a fossil fuel, will be reduced, aiding in the national energy conservation effort.
4. Florida Mining and Materials will realize a measurable fuel cost savings, which will help them to contend with foreign competition. Over 50% of all cement used in Florida today is produced in a foreign country, which contributes to our country's negative trade balance.

PROGRAM SCHEDULE

Late 1988:
Construction permits issued by Florida Department of Environmental Regulation (FDER) for Phase I.

Early 1989:
Construction of Phase I.

Late 1989:
Operating permits issued by FDER for Phase I.

Early 1990:
Operation of Phase I.

1990:
6-12 Months: Testing Period of 6-12 months

1991
Construction permits revised to include Phase II.

1992
Construction of Phase II.

1992
Operating permits revised to include Phase II.

1993
Operation of Phase II.

WHAT ARE WASTE FUELS?

Waste fuels are spent materials used in various industrial processes, such as dry cleaning, petroleum refining, and manufacturing of paints and inks. Also included are solvents and degreasers used to clean equipment. Because of their flammability, these wastes are classified as "hazardous", but their chemical ingredients are found in many household products. Listed below are a few you might find in your home.

COMMON SUBSTANCE	TYPE OF CHEMICAL
Paint Stripper	Methylene Chloride
Spot Remover	Perchloroethylene
Scotch Guard	1,1,1 Trichloroethane
Antifreeze	Ethylene Glycol
Spray Enamel Paint	Xylene, Toluene
Household Adhesive/ Glue	Acetone

TO ANSWER YOUR CONCERNS

How will burning waste fuels affect air quality in the Hernando County Area?

Although they appear very different, waste fuels and coal are actually just two different forms of hydrocarbons. Since the fuel sources are basically the same, air emissions will essentially remain the same.

How will the Resource Recovery Program affect groundwater in the Hernando County Area?

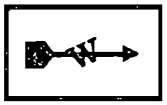
Since an affordable means of waste disposal will be available, waste dumping in our lakes and rivers may be avoided, thereby preventing

FOR FURTHER INFORMATION ON WASTE FUELS OR THE RESOURCE RECOVERY PROGRAM, CONTACT:

Ralph Shepard
Florida Mining and Materials
(904) 796-7241

Consultants

Frank Cross
Cross/Tessitore & Associates, P.A. Environmental Engineers
(407) 851-1484



E.C. "Ted" Weatherhead
Weatherhead Associates
Fuel Consultants
(513) 878-8651

file copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

DEC 0 6 1988

4APT-APB

RECEIVED
DEC 9 1988
DER-BAQM

Mr. Steve Smallwood, P.E., Director
Division of Air Resources Management
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Florida Mining and Materials Company (PSD-FL-124)

Dear Mr. Fancy:

We have reviewed the final determination and permit for the modification of the Florida Mining and Materials (FM&M) Company and must nonconcur with the final permit.

In our opinion, the permit is deficient because it does not specify a test protocol or federally enforceable test method for an operational restriction. Specifically, the permit does not contain a test method for determining compliance with the sulfur content limitation for the coal fuel in the No. 2 cement kiln.

This issue was raised during a telephone conversation on September 30, 1988, between Pradeep Ravel of your staff and Karrie-Jo Shell of my staff, and in our October 26, 1988, letter to Clair Fancy regarding the preliminary determination and permit for FM&M. Although our written comments were submitted after the public comment period ended, we hoped they would have been given full consideration. Especially since the issue of including federally enforceable test methods was addressed in our May 13, 1988, letter to you and is one of the FY 1989 grant activities you have committed to.

We would appreciate you modifying the above referenced permit to correct these deficiencies. If you have any questions, please feel free to contact me or Mr. Wayne J. Aronson 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: Environmental Coordinator
Florida Mining and Materials
Company
P.O. Box 6
Brooksville, Florida 33512

cc: Pradeep Ravel
CHF/BT

file copy

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

OCT 26 1988

RECEIVED
NOV 2 1988
DER - BAQM

NOV 1 1988
Bureau of
Waste Management
Stationary Tanks

4APB/APT-aes

C. H. Fancy, Deputy Chief
Florida Department of Environmental
Regulation
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Florida Mining and Materials Company (PSD-FL-124)

Dear Mr. Fancy:

We have reviewed the technical evaluation, preliminary determination, and draft permit for the proposed modification of the Florida Mining and Materials (FM&M) Company. This permit was reviewed under the Region IV Overview of State Programs policy. We offer the following comments, which were discussed during a telephone conversation between Pradeep Raval of your staff and Karrie Shell of my staff on September 30, 1988.

Preliminary Determination

1. Although the ambient air quality section of the preliminary determination referenced Table I, which contains stack data, and Table II, which contains Class I area concentration data, neither was included. Please forward these tables to us.

2. After reviewing your arguments for not choosing to use ammonia-free ash or a Catalytic Reduction System (CRS) to control NO_x emissions, we are not convinced that implementing either control would pose a financial hardship on FM&M. The cost to use ammonia-free ash and the cost to install a CRS, $1650 and $3355 per ton of NO_x removed, respectively, appear reasonable. In order to reject these controls on this basis, FM&M must clearly demonstrate that the installation of these controls would cause unreasonable, unique economic hardship, specific to this facility. In our opinion, the CRS appears to be the best technology available for controlling NO_x; therefore, we feel use of this control constitutes BACT for this source, if technically feasible.

Draft Permit

1. To be more sufficient, the permit must include specific information concerning compliance testing. In your discussion of the test method for each pollutant, include which version of 40 CFR Part 60 will be

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION) C. H. Dancy 306 F TT	Initial	
	Date	
2.	Initial	
	Date	
3.	Initial	
	Date	
4.	Initial	
	Date	

REMARKS:

RECEIVED

NOV 2 1988

DER - BAQM

Thanks

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:

DATE 11/01/88

PHONE

used. Also, for pollutants not subject to testing provisions contained in 40 CFR Parts, 60 or 61, include a testing protocol specifying each pollutant's sample volume, sample time, and the number of test runs for each test method specified.

2. The permit states that the average sulfur content of coal samples will not exceed 1.0 percent by weight; however, no test method is referenced. We recommend specifying ASTM D3177-75, Standard Test Methods for Total Sulfur in the Analysis Sample of Coal and Coke.

Thank you for the opportunity for providing our input. If you have any questions concerning our review, please contact me or Karrie-Jo Shell 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: Florida Mining and Materials Co.
P.O. Box 6
Brooksville, Florida 33512

copied: Phadeep Karval
Barry Andrews
Tom Rogers
Bill Thomas, SWD Tech.
CIF/BT

CROSS/TESSITORE & ASSOCIATES, P.A.
4763 S. CONWAY ROAD, SUITE F
ORLANDO, FLORIDA 32812
407/851-1484

October 10, 1988

Mr. Pardeep Ravel
Bureau of Air Quality Management
Florida Department of Environmental Regulations
Twin Tower Office Bldg.
2600 Blair Stone Road
Tallahassee, Florida 32499-2400

Subject: Intent to Issue FDER FIle AC27-138850
FM&M Kiln 2 (PSD-FL-124)
C/TA #F03.178

Dear Pardeep,

Attached is a copy of the Affidavit of Legal Publication for the subject permit. The Notice of Intent was published on September 14, 1988.

If you have any questions and require any additional information, please do not hesitate to call upon me.

Sincerely,

Joseph L. Tessitore

Joseph L. Tessitore, P.E.
Vice President

JLT:kbw
Enc:a/s
cc: Ralph Shepard, FM&M
C0343

Copied: Pardeep Ravel
Bill Thomas, SWDist,

AFFIDAVIT OF LEGAL PUBLICATION

The Sun-Journal
Published Tuesday thru Saturday
Brooksville, Hernando, Florida
STATE OF FLORIDA
COUNTY OF HERNANDO

Before the undersigned authority personally appeared Arnold C. Summers, who on oath says he is General Manager of the Sun-Journal, a daily newspaper published at 703 Lamar Ave., Brooksville in Hernando County, Florida; that the attached copy of advertisement, being a legal advertisement in

the matter of Notice of Intent

in the _____ Court

was published in said newspaper in the issues of _____

9-14

Affiant says that the said Sun-Journal is a newspaper published at 703 Lamar Ave., Brooksville, in said Hernando County, Florida, and that said newspaper has heretofore been continuously published in said Hernando County, Florida, each Tuesday thru Saturday and has been entered as second-class mail matter at the post office in Brooksville, in said Hernando County, Florida, for a period of 1 year next preceding the first publication of the attached copy of advertisement; and further says that he has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Arnold C. Summers, General Manager, The Sun-Journal and Spring Hill Sun.

Sworn to and subscribed before me this .....14th.... day of .....September..... 1988 A.D.

My Commission Expires Mar. 2, 1992

BY: _____
Notary Public

Filed..19.., at..O'clock..M. and Recorded in..Book No..,

Page .....

Record Verified.....

Clerk,..... Court, Hernando County, Fla.

By ..... D.C.

Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Florida Mining & Materials to increase the allowable emission rates of sulfur dioxide and nitrogen oxides for the No. 2 cement kiln, at their existing facility near Brooksville, Hernando County, Florida. The Department is issuing this intent to issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

Persons whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dept. of Environmental Regulation
Southwest District Office
4520 Oak Fair Blvd.
Tampa, Florida 33610

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the Department's final determination.

PUBLISH: Sept. 14, 1988

13424 Brooksville Rock Road
Brooksville, Florida 34614
September 26, 1988

Mr. Bill Thomas
Florida Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RE: Florida Mining and Materials - Hernando County
Intent to issue permit

Dear Mr. Thomas:

I recently noticed the Department's legal advertizement in the Brooksvile Sun Journal regarding the intent to issue a permit to increase the allowable emission rates of sulfur dioxide and nitrogen oxides for the No. 2 cement kiln at Florida Mining and Materials. This is the first I have heard of this issue and I would like to know more about it. My residence is approximately two miles southeast of the cement plant.

Please explain the justification for the issuance of this permit and provide answers to the following questions:

1.) Has this kiln already been exceeding the allowable emissions standards?
2.) Is this permit in any way related to the proposal by FM&M to burn hazardous wastes in the kilns?
3.) How might the increased emissions affect the health of residents downwind of the source?
4.) Will the increased emissions contribute to an "acid rain" effect?

Please answer each of these questions thoroughly.

Thank you for your consideration.

Sincerely,

Paul Furman

Paul J. Furman

P 274 007 441

RECEIPT FOR CERTIFIED MAIL

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

Sent to Mr. C. M. Coleman, FL Mining & Materials	
Street and No. P. O. Box 6	
P.O., State and ZIP Code Brooksville, FL 33512	
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: 8-26-88 Permit: AC 27-138850	

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

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. C. M. Coleman
Florida Mining and Materials
Post Office Box 6
Brooksville, FL 33512

4. Article Number
P274 007441

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

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature — Addressee
X C. M. Coleman

6. Signature — Agent
X

7. Date of Delivery

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

BROOKSVILLE, FL DOWN TOWN STA. AUG 29 1988 USPS

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

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

August 26, 1988

CERTIFIED MAIL-RETURN RECEIPT REQUESTED

Mr. C. M. Coleman
Florida Mining and Materials
Post Office Box 6
Brooksville, Florida 33512

Dear Mr. Coleman:

Attached is one copy of the Technical Evaluation and Preliminary Determination and proposed permit for Florida Mining and Materials to increase the allowable emission rates of sulfur dioxide and nitrogen oxides for the No. 2 cement kiln at their existing facility near Brooksville, Hernando County, Florida.

Please submit, in writing, any comments which you wish to have considered concerning the Department's proposed action to Mr. Bill Thomas of the Bureau of Air Quality Management.

Sincerely,

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

CHF/pr

Attachments

cc: W. Thomas, SW District
W. Aronson, U.S. EPA
M. Flores, NPS
Cross/Tessitore & Assoc.

BEFORE THE STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL REGULATION

In the Matter of
Application for Permit by:

Florida Mining & Materials
Post Office Box 6
Brooksville, Florida 33512

DER File No. AC 27-138850
PSD-FL-124

INTENT TO ISSUE

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit (copy attached) for the proposed project as detailed in the application specified above. The Department is issuing this Intent to Issue for the reasons stated in the attached Technical Evaluation and Preliminary Determination.

The applicant, Florida Mining & Materials applied on August 31, 1987, to the Department of Environmental Regulation for a permit to increase the allowable emission rates of sulfur dioxide and nitrogen oxides for the No. 2 cement kiln, at their existing facility near Brooksville, Hernando County, Florida.

The Department has permitting jurisdiction under Chapter 403, Florida Statutes, and Florida Administrative Code Rules 17-2 and 17-4. The project is not exempt from permitting procedures. The Department has determined that an air construction permit was needed for the proposed work.

Pursuant to Section 403.815, F.S. and DER Rule 17-103.150, FAC, you (the applicant) are required to publish at your own expense the enclosed Notice of Proposed Agency Action on permit applications. The notice must be published one time only in a section of a major local newspaper of general circulation in the county in which the project is located and within thirty (30) days from receipt of this intent. Proof of publication must be provided to the Department within seven days of publication of the notice. Failure to publish the notice and provide proof of publication within the allotted time may result in the denial of the permit.

The Department will issue the permit with the attached conditions unless a petition for an administrative proceeding (hearing) is filed pursuant to the provisions of Section 120.57, F.S. A person whose substantial interests are affected by the

Department's proposed permitting decision may petition for an administrative proceeding (hearing) in accordance with Section 120.57, Florida Statutes. Petitions must comply with the requirements of Florida Administrative Code Rules 17-103.155 and 28-5.201 (copy enclosed) and be filed with (received by) the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant must be filed within fourteen (14) days of receipt of this intent. Petitions filed by other persons must be filed within fourteen (14) days of publication of the public notice or within fourteen (14) days of receipt of this intent, whichever first occurs. Failure to file a petition within this time period shall constitute a waiver of any right such person may have to request an administrative determination (hearing) under Section 120.57, Florida Statutes, concerning the subject permit application. Petitions which are not filed in accordance with the above provisions will be dismissed.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL REGULATION

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

Copies furnished to:

W. Thomas, SW District
W. Aronson, U.S. EPA
M. Flores
Cross/Tessitore & Assoc.

RULES OF THE ADMINISTRATIVE COMMISSION
MODEL RULES OF PROCEDURE
CHAPTER 28-5
DECISIONS DETERMINING SUBSTANTIAL INTERESTS

28-5.15 Requests for Formal and Informal Proceedings

(1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed, typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.

(2) All petitions filed under these rules should contain:

(a) The name and address of each agency affected and each agency's file or identification number, if known;

(b) The name and address of the petitioner or petitioners;

(c) All disputed issues of material fact. If there are none, the petition must so indicate;

(d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;

(e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;

(f) A demand for the relief to which the petitioner deems himself entitled; and

(g) Such other information which the petitioner contends is material.

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this NOTICE OF INTENT TO ISSUE and all copies were mailed before the close of business on August 26, 1988.

FILING AND ACKNOWLEDGEMENT
FILED, on this date, pursuant to §120.52(9), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Martha J. Wise
Clerk

August 26, 1988
Date

State of Florida
Department of Environmental Regulation
Notice of Intent

The Department of Environmental Regulation hereby gives notice of its intent to issue a permit to Florida Mining & Materials to increase the allowable emission rates of sulfur dioxide and nitrogen oxides for the No. 2 cement kiln, at their existing facility near Brooksville, Hernando County, Florida. The Department is issuing this Intent to Issue for the reasons stated in the Technical Evaluation and Preliminary Determination.

Persons whose substantial interests are affected by the Department's proposed permitting decision may petition for an administrative determination (hearing) in accordance with Section 120.57, Florida Statutes. The petition must conform to the requirements of Chapters 17-103 and 28-5, Florida Administrative Code, and must be filed (received) in the Department's Office of General Counsel, 2600 Blair Stone Road, Twin Towers Office Building, Tallahassee, Florida 32399-2400, within fourteen (14) days of publication of this notice. Failure to file a petition within this time period constitutes a waiver of any right such person has to request an administrative determination (hearing) under Section 120.57, Florida Statutes.

If a petition is filed, the administrative hearing process is designed to formulate agency action. Accordingly, the Department's final action may be different from the proposed agency action. Therefore, persons who may not wish to file a petition may wish to intervene in the proceeding. A petition for intervention must be filed pursuant to Rule 28-5.207, Florida Administrative Code, at least five (5) days before the final hearing and be filed with the hearing officer if one has been assigned at the Division of Administrative Hearings, Department of Administration, 2009 Apalachee Parkway, Tallahassee, Florida 32301. If no hearing officer has been assigned, the petition is to be filed with the Department's Office of General Counsel, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Failure to petition to intervene within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, Florida Statutes.

The application is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dept. of Environmental Regulation
Southwest District Office
4520 Oak Fair Blvd.
Tampa, Florida 33610

Any person may send written comments on the proposed action to Mr. Bill Thomas at the Department's Tallahassee address. All comments mailed within 30 days of the publication of this notice will be considered in the Department's final determination.

Technical Evaluation
and
Preliminary Determination

Florida Mining and Materials
Hernando County, Florida

No. 2 Cement Kiln
Permit No. AC 27-138850
PSD-FL-124

Florida Department of Environmental Regulation
Bureau of Air Quality Management
Central Air Permitting

August 26, 1988

I. Application

A. Applicant

Florida Mining and Materials
Post Office Box 6
Brooksville, Florida 33512

B. Project and Location

The applicant requests an increase in the allowable emission rates of sulfur dioxide (SO_2) and nitrogen oxides (NOx) for their existing No. 2 cement kiln to make continuous compliance with emission limitations possible. The existing facility is located northwest of Brooksville, Hernando County, Florida.

The UTM coordinates of this facility are Zone 17, 356.0 km East and 3169.9 km North.

C. Facility Category

The existing No. 2 cement kiln is classified in the Standard Industrial Classification (SIC) Code as Group No. 35, Industrial Machinery; Industry No. 3559, Special Industrial Machinery-Kiln. The Source Classification Code (SCC) is 3-05-007-06, Cement Manufacturing, Wet Process-Kiln

The application was received on August 31, 1987, and was considered complete on June 23, 1988.

II. Project Description

A. Project Background

The original contruction permits issued for this source were AC 27-30450 and PSD-FL-063. The existing No. 2 cement kiln has been in operation since August 15, 1983, under permit No. AO 27-65207. The results of the compliance testing on this source shows variation in emissions of sulfur dioxide (SO_2) from 2.40 lbs/hr to 11.99 lbs/hr, exceeding the permit limit of 3.0 lbs/hr on several occasions. Particulate matter (PM) emissions have ranged from 3.83 lbs/hr to 13.47 lbs/hr, staying within the permit limit of 24 lbs/hr. Nitrogen oxides (NOx) emissions have ranged from 141.2 lbs/hr to 403.0 lbs/hr, not exceeding the permit limit of 195.3 lbs/hr until April 4, 1986.

In order to be consistently in compliance, the applicant is requesting an increase in the allowable emissions from 3 lbs/hr to 20 lbs/hr for SO_2 (74.5 TPY increase), and from 195.3 lbs/hr to 330 lbs/hr for NOx (590 TPY increase). The original emission limits were based on emission tests of the previously installed No. 1 cement kiln. Subsequent testing of the No. 2 kiln

indicates that compliance cannot be consistently achieved. The No. 1 kiln has been able to comply with the emission limits when emitting as much as the No. 2 kiln because it was permitted with less stringent allowable emissions.

The attached Best Available Control Technology (BACT) determination includes an evaluation of the emission increases which could be justified.

III. Rule Applicability

The permit modification request involves an increase in the allowable emissions of SO_2 and NOx and is therefore subject to a review in accordance with Chapter 17-2 and 17-4 of the Florida Administrative Code (FAC) and Chapter 403 of the Florida Statutes.

The facility is located in Hernando County, an area classified as attainment for all criteria pollutants in accordance with FAC Rule 17-2.420. The project is within 100 km of the Chassahowitzka National Wilderness Area, a Class I area in accordance with FAC Rule 17-2.440.

The project is subject to the provisions of 40 CFR 60, Subpart F, Standards of Performance for Portland Cement Plants.

The proposed project will be subject to Prevention of Significant Deterioration (PSD) review requirements since there will be net significant increase in SO_2 and NOx emissions (as listed in FAC Table 17-2.500-2), in accordance with FAC Rule 17-2.500.

Emission limitations will be determined by a BACT analysis, in accordance with FAC Rule 17-2.630.

Compliance testing and reporting will be conducted in accordance with FAC Rule 17-2.700, and 40 CFR 60, Appendix A. EPA Methods 5, 6, 7, and 10 shall be used for compliance testing for PM, SO_2, NOx, and CO, respectively.

IV. Source Impact Analysis

A. Emission Limitations

The applicant has indicated that the annual hours of operation of 7560 as indicated in the application should be changed to reflect the currently permitted 7896.

As determined by the attached BACT analysis, the emission limit for SO_2 will be 12 lbs/hr, 47.4 TPY, and for NOx will be 250 lbs/hr, 987 TPY. The emission limits for the other criteria

pollutants emitted are: 21.6 lbs/hr, 85.3 TPY for PM; 8.9 lbs/hr, 35.1 TPY for CO; and 2.7 lbs/hr, 10.7 TPY for VOCs.

Visible emissions will not exceed 10% opacity.

B. Ambient Air Quality Analysis

1. Introduction

Florida Mining and Materials, located northwest of Brooksville in Hernando County, is proposing to increase their permitted emission limitations for SO_2 and NOx from the No. 2 cement kiln. The SO_2 emission rate would increase from 3 lbs/hr to 20 lbs/hr, or 74 tons/year and the NOx emission rate would increase from 195.3 lbs/hr to 330 lbs/hr, or 590 tons per year. These increases exceed the PSD-significant thresholds, thus, an air quality impact analysis is required for these pollutants. This analysis includes:

- An analysis of existing air quality;
- A PSD increment analysis (for SO_2 and PM only);
- An Ambient Air Quality Standards (AAQS) analysis;
- An analysis of impacts on soils, vegetation, and visibility, and growth-related air quality impacts; and
- A "Good Engineering Practice" (GEP) stack height determination.

The analysis of existing air quality generally relies on preconstruction monitoring data collected in accordance with EPA-approved methods. The PSD increment and AAQS analysis depends on air quality dispersion modeling carried out in accordance with EPA guidelines.

Based on these required analyses, the Department has reasonable assurance that the proposed emission increases, as described in this permit and subject to the conditions of approval proposed herein, will not cause or contribute to a violation of any PSD increment or ambient air quality standard.

2. Modeling Methodology

The EPA-approved Industrial Source Complex Short-Term (ISCST) atmospheric dispersion model (version 6) was used to predict the impact of the proposed emission increase on the surrounding ambient air. This model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, area, or volume-type sources. It incorporates elements for plume rise, transport by the mean wind, and Gaussian dispersion. In addition, the model allows for the separation of sources, building wake downwash, adjustment for calm conditions, and various other input and output options.

Five years of sequential hourly meteorological data were used to complete the modeling. Both the surface and the upper-air data were National Weather Service (NWS) data collected in Tampa during the period 1970-1974. Since five years of data were used, the highest, second-high short-term predicted concentrations are compared with appropriate ambient standards or PSD increments. For the annual averages the highest predicted yearly average was compared to the standards. The stack and emission rate data for the No. 2 kiln are summarized in Table 1. Since the stack height of the No. 2 kiln is less than the calculated GEP height, building wake downwash was considered in the modeling.

The applicant first determined the general area surrounding the facility where the highest predicted concentrations would be expected. The ISCST model was run, considering only the No. 2 kiln, using a coarse mesh receptor grid (1000 meters resolution) covering the entire area surrounding the FMM facility. The east side of the facility was determined to be the highest impacted area. The applicant then modeled this area, again with the full five years of meteorological data, using a fine mesh receptor grid (100 meter resolution). Receptors were also placed along the boundary of the nearby Chassahowitzka National Wildlife Refuge Class I area to quantify the impact there.

The results of the modeling, considering only the emissions increase at the No. 2 kiln, are summarized in Table II. For both SO_2 and NOx the maximum increases in ambient concentration are less than the significant impact levels defined in Section 17-2.100, FAC. As such, no further analysis for interaction with other existing sources is required. Recent permit applications which have considered all sources in the area (such as Florida Crushed Stone, PSD-FL-090,091) confirm that the small emission increases of SO_2 and NOx at the FMM facility will not cause or contribute to exceedances of standards or increments.

The maximum predicted concentrations at the Class I area are also listed on Table II. There are no significant impact levels defined for Class I areas; any impact is considered potentially significant. The Department is reasonably assured, however, that for the small concentration increase predicted no adverse effect will occur on this area.

A more detailed description of the modeling analysis, along with the model output, is contained in the FMM application on file with the Department.

3. Analysis of Existing Air Quality

Preconstruction ambient air quality monitoring may be required for all pollutants subject to PSD review. In general, one year of quality assured data using an EPA reference, or the

equivalent, monitor must be submitted. Sometimes less than one year of data, but not less than four months, may be accepted when Department approval is given.

An exemption to the monitoring requirement can be obtained if the maximum air quality impact, as determined through air quality modeling, is less than a pollutant-specific de minimus concentration. In addition, if current monitoring data already exist and these data are representative of the proposed source area, then at the discretion of the Department these data may be used.

The predicted maximum air quality impacts of the proposed facility for those pollutants subject to PSD review are given in Table II. The monitoring de minimus level for SO_2 is 13 ug/m^3, 24-hour average and for NO_2 is 14 ug/m^3, annual average. Neither of these pollutants are predicted to increase concentrations by greater than their defined de minimus level. Therefore, specific preconstruction monitoring is not required for either pollutant. The applicant has, however, reviewed existing monitoring data for SO_2 and NO_2 reflective of the area in which FMM is located. These data show that SO_2 and NO_2 levels are very low in this rural, agricultural area and are not threatening any air quality standards.

4. PSD Increment Analysis

The PSD increments are the amounts that new sources may increase the ambient ground-level concentrations of SO_2 and particulate matter. The purpose of these increment limitations is to prevent less polluted areas from degrading all the way to the level of the ambient air quality standards. Three types of areas are distinguished according to the amount of additional air pollution that is to be allowed. Class I areas allow the least amount of degradation, Class II a moderate amount, and Class III allows the greatest amount of air degradation, although in no case can increased emissons cause or contribute to exceedance of an air quality standard. Four Class I areas have been designated in the state: Everglades National Park, Chassahowitzka National Wildlife Refuge, St. Marks National Wilderness Area, and Bradwell Bay National Wilderness Area. All other parts of the state are designated as Class II areas; there are no Class III areas.

The FMM facility is located in a Class II area and must meet the increments defined for this class. The facility is also approximately 14 kilometers from the Chassahowitzka Class I area and must meet the more restrictive increments in that area.

In general, all SO_2 emission increases occurring after the baseline date (December 27, 1977) will consume PSD increment. In addition, all SO_2 emission increases associated with construction

or modification at major facilities which occurred after January 6, 1975, will also consume increment.

The net emissions increase for SO_2 at the FMM facility results in a less than significant increase in ambient ground-level concentrations. As such, no further analysis on the Class II increments was completed. The maximum concentration increases on the nearby Class I area have been quantified and are summarized in Table II. Based on this analysis the Department has reasonable assurance that no exceedance of a PSD increment will occur as a result of the increased emissions proposed by FMM.

5. Ambient Air Quality Standards (AAQS) Analysis

Both SO_2 and NO_2 have ambient air quality standards which are not to be exceeded. In general, the total ambient air quality impacts are determined by adding the predicted modeled concentrations to an estimated background concentration for each pollutant. In the case of the FMM facility, the predicted maximum concentration increases are less than the significant impact levels defined for both SO_2 and NO_2. As such, no further modeling of other sources is required.

Given the existing air quality for SO_2 and NO_2 in the rural area of the FMM facility, the increased emissions are not expected to cause or contribute to a violation of an AAQS.

6. Additional Impacts Analysis

a) Impacts on Soils and Vegetation

The total ground-level concentrations of the criteria polluants, SO_2 and NO_2, are predicted to be well below all applicable AAQS, including the national secondary standards designed to protect public welfare-related values. As such, these pollutants are not expected to have a harmful effect on soils and vegetation.

b) Impact on Visibility in the Class I Area

A level-1 visibility screening analysis was performed by the applicant for impact on the Chassahowitzka National Wildlife Refuge. The results indicate that no impact on visibility is expected to this area as a result of the increased emissions at the FMM facility.

c) Growth-Related Air Quality Impacts

The proposed modification to the FMM permit limitations will not affect employment at the facility. Secondary air quality

Table I

Florida Mining and Materials
Stack and Emission Rate Data

Source	UTM-E (km)	UTM-N (km)	Stack Height (m)	Exit Temp. (K)	Exit Velocity (m/s)	Stack Diam. (m)	Bldg. Height (m)	Bldg. Length (m)	Bldg. Width (m)
No. 2 kiln	356.2	3169.9	27.43	470.	7.60	4.90	25.60	24.04	24.04

	SO2 Current		SO2 Proposed		NOx Current		NOx Proposed	
Source	(g/s)	(TPY)	(g/s)	(TPY)	(g/s)	(TPY)	(g/s)	(TPY)
No. 2 kiln	0.38	13	2.52	88	24.6	855	41.6	1445

Table II

Florida Mining and Materials
Maximum Predicted Increased Concentrations -- No. 2 Kiln

Pollutant	Averaging Time	Maximum Class II (ug/m3)	Maximum Class I (ug/m3)	Significant Impact (ug/m3)	Deminimus Impact (ug/m3)
SO2 (1)	Annual	<1	0.03	1.0	N/A
	24-hour	1	0.23	5.0	13
	3-hour	3	0.97	25.0	N/A
NO2 (2)	Annual	1	0.26	1.0	14

(1) SO2 emissions increase from 3 lb/hr to 20 lb/hr.
(2) NOx emissions increase from 195.3 lb/hr to 330 lb/hr.

impacts due to additional population, thus, is not expected to occur.

d) GEP Stack Height Determination

Good Engineering Practice (GEP) stack height is defined as the greater of: (1) 65 meters or (2) the maximum nearby building height plus 1.5 times the building height or projected width, whichever is less. The stack height associated with the No. 2 kiln is less than 65 meters. The stack height is also less than the calculated GEP height considering the building dimensions. Therefore, the potential for building wake downwash was included in the modeling.

V. Conclusion

Based on the information submitted by FMM, the Department has reasonable assurance that the change in allowable emission rates of SO_2 and NOx from the No. 2 cement kiln, as described in this evaluation, and subject to the conditions proposed herein, will not cause or contribute to a violation of an ambient air quality standard or PSD increment, or any other provision of Chapter 17-2, FAC.

Best Available Control Technology (BACT) Determination
Florida Mining and Materials
Hernando County

The applicant has installed a cement kiln (No. 2) at their facility near Brooksville, Florida. The kiln has been in operation since August 15, 1983, under permit AO 27-6507.

According to permit No. AO 27-6507, the kiln's emission limitations for sulfur dioxide and nitrogen oxides were established at 3.0 and 195.3 pounds per hour, respectively. As the result of compliance testing, it has been determined that these emission limitations cannot be acheived on an consistent basis. Testing has indicated that SO_2 emissions have ranged from 2.40 lbs/hr to 11.99 lbs/hr and have exceeded the permit limit of 3.0 lbs/hr on five (5) occasions. In addition, NOx emissions have also varied from 141.2 to 403.0 lbs/hr.

For permitting purposes, the applicant has proposed that the SO_2 and NOx emission limits for the No. 2 cement kiln be set at 20 lbs/hr and 330 lbs/hr, respectively. Based on the applicant's operating schedule of 7560 hrs/yr, these requested increases in hourly emission limitations would result in annual emission increases of 64.3 and 509.2 tons/yr, respectively. These annual increases each exceed the 40 tons per year significant emission increase defined in 17-2.500(2)(3)2, FAC; thus requiring a PSD review and hence a BACT determination for the requested action.

Date of Receipt of a BACT Application

June 22, 1988

Review Group Members

This determination was based upon comments received from the applicant, EPA Region IV, and the Stationary Source Control Section.

BACT Determination Procedure:

In accordance with Florida Administrative Code Chapter 17-2, Air Pollution, this BACT determination will be based on the maximum degree of reduction of each pollutant emitted which the Department (DER), 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 and available methods, systems, and techniques. In addition, the regulations state that in making the BACT determination the Department shall give consideration to:

(a) Any Environmental Protection Agency determination of Best Available Control Technology pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Source) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).

(b) All scientific, engineering, and technical material and other information available to the Department.

(c) The emission limiting standards or BACT determinations of any other state.

(d) The social and economic impact of the application of such technology.

The EPA currently stresses that BACT should be determined using the "top-down" approach. The first step in this approach is to determine for the emission source in question the most stringent control available for a similar or identical source or source category. If it is shown that this level of control is technically or economically infeasible for the source in question, then the next most stringent level of control is determined and similarly evaluated. This process continues until the BACT level under consideration cannot be eliminated by any substantial or unique technical, environmental, or economic objections.

BACT Determined by DER:

Pollutant	Emission Limit
Sulfur Dioxide	12.0 lbs/hr
Nitrogen Oxides	250.0 lbs/hr

BACT Determination Rationale

In accordance with the procedure outlined for the BACT analysis, the Department based its final limitations upon the following review criteria:

1) The employment of "top-down" BACT

The Department identified ways in which the proposed emissions could be further reduced by the addition of control equipment/techniques. In the case of sulfur dioxide, additional control would be acheived by installing a liquid alkaline scrubbing system. For nitrogen oxides, additional

control would be possible by obtaining flyash which did not contain ammonia. The cost of these measures was then compared against the benefit in terms of emissions reductions to determine whether or not it was justified.

2) The reasonableness of the proposed emission increases

The applicant has based their request to increase sulfur dioxide and nitrogen oxides emission limitations in accordance with testing that has been conducted over a period of several years. The range and median of these previous results can be compared against the emissions levels proposed by the applicant to warrant justification. In addition, permit levels for facilities of similar size can also be compared to the proposed levels to assist in the decision making process.

In order to justify the cost effectiveness of any technique/ equipment to control air emissions, the EPA has developed costing guidelines to obtain the highest reduction of emissions per dollar invested. Achievement of maximum emission reductions for capital invested is a major consideration when New Source Performance Standards (NSPS) are developed by the EPA. For sulfur dioxide emissions, EPA has determined that a cost of up to $2,000 per ton of emissions controlled is reasonable for NSPS.

The applicant has indicated that an alkaline scrubbing system would be $29.4 and $5.3 million for capital and operating costs, respectively. Taking into consideration the expected SO_2 reduction (SO_2 emissions would decrease from 20 to 3 pounds per hour), the cost per ton of SO_2 controlled using the alkaline scrubbing system would be appoximately $117,000. This cost is well above the $2,000 per ton guideline and is thereby not warranted as BACT.

A review of the compliance testing results for kiln No. 2 indicates that the applicant's request to raise the SO_2 emissions level may be unjustifiably high. The compliance testing results for a four year period beginning April 1983 indicate that the SO_2 emissions ranged from a low of 2.4 lbs/hour to a high of 11.99 lbs/hour with the highest measurement occuring back in April of 1983. Based on this finding, it appears that the requested level of 20 lbs/hr is much higher than would be expected from the facility. An emission limit of 12.0 pounds per hour appears to be more reasonable for the facility and is thereby judged to be BACT.

With regard to nitrogen oxides emissions, the applicant has addressed the following measures which could be implemented to satisfy the "top-down" BACT procedure:

1) Utilizing flyash that is not high in ammonia

2) The addition of a NOx catalytic reduction system

The applicant has stated that the closest available flyash supply that does not contain ammonia is the St. John's River Power Plant at Blount Island in Duval County. Assuming the fly ash could be obtained free, the additional cost of transportation from this source would be $9.50 per ton. This would result in an annualized cost of approximately 1 million dollars for the 107,000 tons of flyash needed.

Previous testing has indicated that the ammonia present in the flyash has accounted for approximately 134.7 lbs/hr. Taking the reduction that could be achieved into consideration with the cost of obtaining ammonia free fly ash, the cost per ton of controlling NOx would be approximately $1,695. This cost is well above the $1,000 per ton guideline that EPA has determined is reasonable for NSPS, and again is not justified as BACT. It should be noted that the cost of switching to this source of fly ash would be further increased due to costs of revoking the fly ash contract with the present supplier.

A similar analysis indicates the cost of utilizing a NOx catalytic reductive system would also be cost prohibitive. According to the applicant, the capital and operating cost of installing such a system would be $9.0 million and $1.0 million, respectively. Taking this into consideration with the nitrogen oxides reduction expected (330 to 190 pounds per hour), the cost per ton of NOx controlled would be approximately $3,355.

A review of the compliance testing results for kiln No. 2 indicates that the applicant's request to raise the NOx emission level may also be unjustifiably high. The compliance testing results for the four year period referred to previously indicate that the NOx emissions ranged from a low of 111.9 lbs/hour to a high of 403.0 lbs/hour. Of the six measurements completed, the highest reading of 403.0 lbs/hour was well above the other measurements which averaged 159.6 lbs/hour. Based on the test data available, an emission limit of 250.0 lbs/hour appears to be more realistic for the facility and is thereby judged to be BACT. This level would have been obtained by each of the test completed except for the 403.0 lbs/hour reading which was well above the

other measurements taken and is judged to not be representative of the multi year operation of the facility. In addition, a review of the BACT/LAER Clearinghouse suggest that this NOx emission level is quite typical as BACT for other cement kilns of similar size.

Dispersion modeling indicates that the maximum predicted impacts from the boilers with the level of emissions proposed by the applicant will be well below the Ambient Air Quality Standards for all of the averaging periods. In addition, the control level determined by the Department to be BACT is judged to limit the emissions of unregulated pollutants to a level which is deemed to be acceptable. As is the case, the impacts associated with this modification as proposed are not perceived to be a threat to air quality.

Details of the Analysis May be Obtained by Contacting:

Barry Andrews, P.E., BACT Coordinator
Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended by:

_____
C. H. Fancy, P.E.
Deputy Bureau Chief, BAQM

_____1988
Date

Approved by:

_____
Dale Twachtmann, Secretary

_____1988
Date

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

PERMITTEE:
Florida Mining and Materials
P. O. Box 6
Brooksville, Florida 33512

Permit Number: AC 27-138850
PSD-FL-124
Expiration Date: June 1, 1989
County: Hernando
Latitude/Longitude: 28° 38' 34"
82° 28' 25"
Project: No. 2 Cement Kiln

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Rule(s) 17-2 and 17-4. The above named permittee is hereby authorized to perform the work or operate the facility shown on the application and approved drawings, plans, and other documents attached hereto or on file with the Department and made a part hereof and specifically described as follows:

For the permitting of the No. 2 kiln with a maximum design kiln feed rate of 120 tons per hour (TPH) (wet basis), a clinker production rate of 71 TPH (dry basis), and a heat input rate of 213.6 MMBtu/hr of 1% sulfur content coal (10.5 TPH coal input). The No. 2 cement kiln is located in Brooksville, Hernando County, Florida. The UTM coordinates are Zone 17, 356.0 km East and 3169.9 km North.

The source's construction and operation shall be in accordance with the permit application and plans, documents, and reference material submitted unless otherwise stated in the General and Specific Conditions herein.

Attachments:

1. Florida Mining & Material (FM&M) application package, by CTA dated August 28, 1987.
2. DER's incompleteness letter dated September 29, 1987.
3. Fish & Wildlife Service letter received November 16, 1987.
4. FM&M's response received December 3, 1987.
5. DER's letter requesting additional information dated December 31, 1987.
6. U.S. EPA's letter received January 15, 1988.
7. FM&M's downwash analysis received January 27, 1988.
8. DER's letter dated February 5, 1988.
9. FM&M's response received May 2, 1988.
10. U.S. EPA's letter received June 3, 1988.
11. FM&M's letter received June 23, 1988.

PERMITTEE:
Fla. Mining & Materials

Permit Number: AC 27-138850
Expiration Date: June 1, 1989

GENERAL CONDITIONS:

1. The terms, conditions, requirements, limitations, and restrictions set forth herein are "Permit Conditions" and as such are binding upon the permittee and enforceable pursuant to the authority of Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is hereby placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of the "Permit Conditions" by the permittee, its agents, employees, servants or representatives.

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

3. As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey any vested rights or any exclusive privileges. Nor does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit does not constitute a waiver of or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

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

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

GENERAL CONDITIONS:

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

7. The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law, access to the premises, at reasonable times, where the permitted activity is located or conducted for the purpose of:

a. Having access to and copying any records that must be kept under the conditions of the permit;

b. Inspecting the facility, equipment, practices, or operations regulated or required under this permit; and

c. Sampling or monitoring any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

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

8. If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately notify and provide the Department with the following information:

a. a description of and cause of non-compliance; and

b. the period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the noncompliance.

GENERAL CONDITIONS:

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

9. In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source, which are submitted to the Department, may be used by the Department as evidence in any enforcement case arising under the Florida Statutes or Department rules, except where such use is proscribed by Sections 403.73 and 403.111, Florida Statutes.

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

11. This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 17-4.12 and 17-30.30, as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

12. This permit is required to be kept at the work site of the permitted activity during the entire period of construction or operation.

13. This permit also constitutes:

(X) Determination of Best Available Control Technology (BACT)
(X) Determination of Prevention of Significant Deterioration (PSD)
(X) Compliance with New Source Performance Standards.

14. The permittee shall comply with the following monitoring and record keeping requirements:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. The retention period for all records will be extended automatically, unless otherwise stipulated by the Department, during the course of any unresolved enforcement action.

GENERAL CONDITIONS:

b. The permittee shall retain at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation), copies of all reports required by this permit, and records of all data used to complete the application for this permit. The time period of retention shall be at least three years from the date of the sample, measurement, report or application unless otherwise specified by Department rule.

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the date(s) analyses were performed;
- the person responsible for performing the analyses;
- the analytical techniques or methods used; and
- the results of such analyses.

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

SPECIFIC CONDITIONS:

1. The maximum annual hours of operation shall not exceed 7896.

2. The maximum kiln feed rate shall not exceed 120 tons per hour (wet basis). The expected maximum clinker production rate is 71 tons per hour (dry basis).

3. The maximum kiln fuel input rate shall not exceed 213.6 MMBTU per hour (coal of 12,000 Btu/lbs heating value). The sulfur content of the coal shall not exceed 1 percent by weight. Coals of lower heating values than 12,000 BTUs per pound shall be fired only if the sulfur content to heat value ratio of the coal does not exceed 0.83 pounds of sulfur per MMBTU of heat input. In no instance shall the quantity of coal fired in the kiln exceed 10.5 tons per hour.

SPECIFIC CONDITIONS:

4. The maximum emissions from the No. 2 kiln shall not exceed the following:

Pollutant	Maximum Allowable Emissions lb/hr	tons per year
a. PM	21.6	85.3
b. SO_2	12.0	47.4
c. NOx	250.0	987.0
d. VOC	2.7	10.7
e. CO	8.9	35.1

Visible emissions shall not exceed 10% opacity.

5. Compliance shall be demonstrated, in accordance with FAC Rule 17-2.700 and 40 CFR 60 Appendix A, using EPA Method:

a. 5 for PM
b. 6 for SO_2
c. 7 for NOx
d. 9 for opacity
e. 10 for CO

Compliance with the VOC allowable emissions rate will be assumed provided the CO allowable emissions rate is achieved; specific VOC compliance testing is not required.

6. The kiln feed rate and clinker production rate shall be monitored and recorded daily in accordance with 40 CFR 60.63. Also, the coal feed rate to the kiln and the average coal sulfur content and heating value (BTU/lb) of each coal shipment will be determined and recorded. If coal of sulfur content exceeding 1.0 percent by weight is fired in the kiln (due to variability in the sulfur content of coal within a shipment) samples will be taken of coal entering the kiln at a minimum frequency of once per hour and analyzed for sulfur content. The average sulfur content of samples taken within each 3-hour period shall not exceed 1.0 percent by weight.

7. Actual emissions of NOx will be minimized through the use of low excess air firing. A continuous kiln exhaust gas oxygen monitor/recorder will be installed, calibrated, operated and maintained in proper working condition.

SPECIFIC CONDITONS:

8. The applicant shall apply reasonable work practices to minimize fugitive PM emissions, including the following:

a. All permanent haul roads shall be paved.

b. Temporary haul roads shall be watered or treated with chemical dust suppressants at regular intervals.

c. Dry raw materials (moisture content $\leq$ 14%) shall be stored in silos or enclosed structures.

d. The coal storage pile shall be compacted, turned and/or watered as necessary to maintain a minimum 8 percent moisture content in the surface layer and aligned with the predominant wind direction to minimize wind erosion.

e. Abandoned haul roads and other disturbed areas shall be revegetated within 60 days of the date active service ends.

f. All cement products shall be transferred to transport trucks with a sealed pnuematic conveying system which is either a closed system or exhausted through a bag filter.

9. The applicant shall comply with all the applicable provisions and requirements of FAC Rules 17-2, 17-4, and 40 CFR 60 Subpart F.

10. DER's Southwest District Office shall be notified a minimum of 15 days prior to compliance testing. Test reports shall be submitted to DER's district office within 30 days of compliance test completion.

11. The source shall reasonably conform to the plans and schedule submitted in the application. If the project is not on schedule, the Department must be notified in writing a minimum of 60 days prior to the expiration of the construction permit and submit a new schedule and request for an extension of the construction permit, (Rule 17-2, FAC).

To obtain a permit to operate, the permittee must demonstrate compliance with the conditions of the construction permit and submit a complete application for an operating permit, including the application fee, along with compliance test results and Certificate of Completion, to DER's district office a minimum of 90 days prior to the expiration date of the construction permit. The permittee may continue to operate in compliance with all

CROSS/TESSITORE & ASSOCIATES, P.A.
4763 S. CONWAY ROAD, SUITE F
ORLANDO, FLORIDA 32812
305/851-1484

June 13, 1988

Mr. Barry Andrews
Bureau of Air Quality Management
2562 Executive Center Circle, East
Koger Center, Montgomery Bldg.
Tallahassee, FL 32301

Subject: Florida Mining & Materials Corp.
Application for Modification of No. 2 Cement Kiln
Permit No. AC27-138850, PSD-FL-124 C/TA #F03.175

Dear Barry:

In response to our recent telephone conversation on additional data with respect to NO_x control on the subject application, the following information is submitted:

1) Currently, Florida Mining & Materials Corp. (FM&M) has a "take or pay" contract with Tampa Electric for all the fly ash that they produce. (See attached letter from FM&M, dated May 20, 1988.) The minimum cost for revoking this contract would be $9.0 million with an additional $9.0 million possible due to breach of contract.

   Additionally, the closest available ash supply is the new St. John's River Power Plant at Blount Island in Duval County. Assuming the fly ash could be obtained free, the cost of transportation would be $14.00 per ton. This compares with an existing transportation cost of $4.50 per ton. This would result in an annual cost increase of $1,016,500.00 for 107,000 tons of ash per year. Furthermore, this cost to FM&M can be projected to approximately $40.0 million over the life of Kiln No. 2.

2) With respect to the EPA "Top Down" BACT approach, C/TA has conducted a cost analysis for the addition of an NO_x catalytic reduction system to the existing Kiln No. 2 baghouse. The NO_x reduction system would consist of a Mitsubishi Low Temperature Catalyst which would reduce the NO_x emissions from 330 lbs per hour to 190 lbs per hour.

   The capital cost for this system would be approximately $9.0 million with an annual operating cost of approximately $1.0 million, (see Attachment 2).

These data should satisfy your requirements. If you have any more questions, please do not hesitate to call upon me.

Sincerely,

Joseph L. Tessitore, P.E.
Vice President

JLT/kp
Encl: a/s
cc: Ralph Shepard - FM&M

C5128

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

MAY 3 1 1988

RECEIVED
JUN 3 1988
DER - BAQM

4APT/APB-aes

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

Re: Florida Mining and Materials (PSD-FL-124)

Dear Mr. Fancy:

This is to acknowledge receipt of your May 3, 1988, transmittal letter for the Florida Mining and Materials' (FM&M) response to our letter of January 12, 1988. In our letter, we requested that FM&M provide a more detailed analysis for BACT and that nonregulated toxic air emissions be considered in that analysis. We have reviewed the additional information submitted by FM&M regarding BACT for SO_2 and NO_x and find that the submittal satisfies our request of January 12, 1988.

Please submit the PSD preliminary determination and draft permits when they are issued.

Sincerely yours,

Bruce P. Miller

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

Copied PR
BA
TR
CHF/BT
6-3-88
MR

ATTACHMENT 1

RECEIVED MAY 24 1988

FLORIDA MINING & MATERIALS CORP.

P.O. BOX 6
BROOKSVILLE, FLORIDA 34298-0006
TELEPHONE: (904) 796-7241

C. M. COLEMAN, JR.
VICE PRESIDENT
CONSTRUCTION MATERIALS

May 20, 1988

Mr. Joe Tessitore
CROSS/TESSITORE & ASSOCIATES, P.A.
4763 S. Conway Road
Box 12, Suite F
Orlando, FL 32812

Dear Joe:

I have given considerable thought to the question of not using the fly ash from Big Bend #4 (with ammonia). To discontinue its use at the Brooksville Cement Plant would pose unrealistic economic problems for Florida Mining.

First, we have a take or pay contract with Tampa Electric for all the fly ash they produce. The contract has at least eleven years remaining. If TECO agreed not to sue Florida Mining for breach of contract (highly unlikely) I estimate a minimum cost to Florida Mining, in 1988 dollars, of $9.0 million. A breach of contract suit could add an additional $9.0 million to our tab.

Florida Mining's cement plant must use fly ash as its source of iron and aluminum. There are no naturally occurring deposits of iron and aluminum in Florida. The next closest, available source of fly ash in the quantity required, is the new St. Johns River Power Park at Blount Island, Duval County. The cost to transport the material to Brooksville is three times the transport cost from Tampa ($14.00/ton versus $4.50/ton). This would impose an additional freight burden of $1,016,500 a year ($14.00 - 4.50 x 107,000 tons/year). Since the cement plant has a life expectancy at least forty more years, the total cost to Florida Mining (in additional freight) would be over $40.0 million in today's dollars. I have no idea what the fly ash would cost at the Blount Island facility, but

anything above our current TECO cost would add to our economic woes.

For your information, the total fly ash production at Crystal River is contracted for, and therefore, not even considered as a potential source for our cement plant.

Certainly, in view of this serious financial burden, the DER can justify an increase in the NO_x limits at the Brooksville plant and allow us to continue using the Big Bend #4 fly ash.

Very truly yours,

C. M. Coleman, Jr.

CMC,Jr:gm

cc: Hank Andre
Ralph Shepard

PM
Not legible

File Copy

CROSS/TESSITORE & ASSOCIATES, P.A.
4763 S. CONWAY ROAD, SUITE F
ORLANDO, FLORIDA 32812
305/851-1484

April 20, 1988

RECEIVED
MAY 0 2 1988
DER - BAQM

Mr. C.H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
2562 Executive Center Circle. East
Koger Center, Montgomery Bldg.
Tallahassee, Fl 32301

Subject: Application for Modification of No. 2 Cement Kiln
Permit No. AC27-138850, PSD-FL-124
C/TA #F03.175

Dear Mr. Fancy:

In response to your letter of February 5, 1988, the following information is submitted:

(1) Dispersion Modeling Output

Attachment 1 shows a summary of locations for maximum ground level concentrations for NO_x and SO_2 for each averaging time considered. These screening results show that the maximum concentrations occurred east of the facility for all cases. Based on this, the detailed modeling results were presented for only receptors east of the facility.

(2) EPA "Improving New Source Review Implementation"

(a) "Top Down" BACT Approach

In response to this approach the following information is presented for each pollutant.

1). SO_2

A review of the data which was previously submitted shows that the existing Kiln 2 system achieves an SO_2 removal of 96.0% to 98.4% (Attachment 2), and the resulting SO_2 emission rate of 0.28 lb/ton of clinker is substantially lower than other existing permitted plants in the United States (Attachment 3). In fact, this resulting emission factor and the SO_2 removal efficiency are substantially better than those achieved

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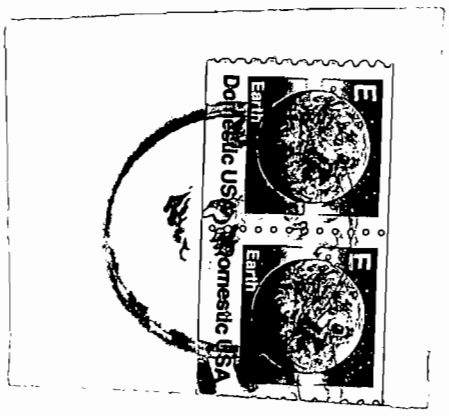
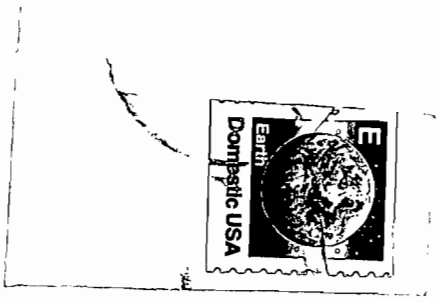
Orlando, Florida 32812
(305) 851-1484

MR. C.H. FANCY, P.E.
DEPUTY CHIEF
BUREAU OF AIR QUALITY MANAGE.
2562 EXECUTIVE CENTER CIRCLE E
KOGER CENTER, MONTGOMERY BLDG.
TALLAHASSEE, FL 32301





5/3/88

~~CHF~~
~~BHF~~ > FYI

(4)

with liquid scrubbers. Currently liquid alkali slurry scrubbers have a achieved emission rates of 1.3 to 2.5 lb/ton of clinker.

The low SO_2 emission rates achieved by Kiln 2 at FM&M are a result of (a) the use of low sulfur coal, (b) the development of a unique material flow process which maximizes the exposure of SO_2 in the gas stream to the limestone feed material, and (c) efficient management of the kiln process.

The details of the material flow process are presented in Attachment 4, and presented schematically in Figure 1. In general, this figure shows that the SO_2 laden combustion gases pass through the kiln, the kiln feed tower, the kiln feed pre-heater, the raw mill, cyclones and the fabric filter before entering the exhaust stack. In each of the above components, the exhaust gases are thoroughly mixed with the alkaline feed material or limestone, thereby providing a significant scrubbing of the exhaust gases with the limestone feed.

The removal of SO_2 in the above processes occurs due to the chemical reaction between limestone, $CaCO_3$ and SO_2 to form $CaSO_4$. In the case of FM&M, the above reaction is enhanced by (a) the high temperatures in the process, (b) the long retention time between the gas flow and the limestone and (c) the large amount of turbulence in the counter-current flow process.

The above process is substantially more efficient and less costly than a liquid alkaline scrubbing system. However, the option of using a liquid scrubber, was evaluated and the design and cost requirements are presented in Attachment 5. This data shows that to reduce the SO_2 emissions from 20 lb/hr to 3 lbs/hr requires a three stage spray tower using Na_2SO_3 and lime. This system would require a capital cost of $\$29.4 \times 10^6$ and an annual operating cost of $\$5.263 \times 10^6$. This additional cost is extremely excessive since air quality modeling for emission rates of 20 lbs/hr shows SO_2 ground level impacts below the significance levels and no predicted environmental impacts.

In summary, it can be concluded that the existing SO_2 control system provides maximum SO_2 removal at minimum operating cost, and results in the lowest SO_2 emission rates for Portland Cement Plants in the United States.

2.) $\underline{NO_x}$

Currently, the only viable alternative to using the ammonia contaminated fly ash in cement production is land disposal. A breakdown of land disposal cost for the ammonia contaminated fly ash is presented in Attachment 6. This data shows that the cost for packaging, neutralization, solidification, transportation and disposal ranges from \$165 to \$210 per drum and a total cost of $\$54 \times 10^6$ to $\$69 \times 10^6$ per year.

This cost can be considered excessive since the use of this ash in cement manufacturing provides a safe and efficient disposal method without significant air quality impacts.

(b) Non-Regulated, Toxic Pollutant Consideration

In response to this item, the control of the following pollutants should be considered: polycyclic organic matter, chromium, fluoride, nickel, hydrogen sulfide, beryllium, cadmium, lead, mercury, zinc, and iron. These pollutants can be categorized as (1) organic compounds, (2) acid gases (fluorides and hydrogen sulfide), and (3) particulates (chromium, nickel, beryllium, fluoride, cadmium, lead, mercury, zinc, and iron).

The removal or control of each category of pollutants requires a different emission control strategy. The control of polycyclic organic matter requires "good" combustion and a high degree of particulate control. The control of acid gases requires a neutralizing scrubber, while the control of particulates and/or fumes requires a high efficiency venturi scrubber or fabric filter.

Fortunately, the FM&M process possesses an ideal combination of control systems for the above pollutant categories. The existing FM&M process achieves this combination of controls in the following manner:

(1) Polycyclic Organic Matter

The thermal destruction of organic compounds including such compounds as PCBs and Dioxins occurs at temperatures of 2000 to 2200°F with retention times of 1 to 2 seconds. The FM&M cement kiln provides a thermal environment with an average temperature of 2300°F with a retention time of greater than 8 seconds. This environment provides a high thermal destruction efficiency and minimizes the existence of organic compounds in the exhaust gases.

(2) Acid Gases

Acid gases can be controlled by dry scrubbing with a neutralizing medium. The FM&M process as discussed previously provides a high degree of scrubbing of the combustion exhaust gases with the limestone feed material. This extensive dry scrubbing combined with an alkali dust coated fabric filter provides a high degree of acid gas control. Therefore, H_2S and HF emissions will be minimized.

(3) Particulates

A high degree of particulate control can be achieved by the FM&M fabric filter system. AP-42 Table 8.6-1 states that fabric filters can achieve 99.8% control efficiency for cement kilns. Current FM&M testing shows particulate control efficiency of 99.9%. This level of control will minimize the emissions of pollutants categorized above.

In summary, the FM&M process provides a combination of high thermal destruction, dry gas scrubbing with an alkali medium, and an efficient fabric filter to minimize the emission of all toxic and/or non-regulated pollutants.

The above information and attachments should satisfy your informational requirements. If you have any additional questions, please do not hesitate to call upon me.

Sincerely,

Joseph L. Tessitore, P.E.
Vice President

JLT:kbw
cc: Ralph Shepard
Hank Andre
C0184
Enc:a/s

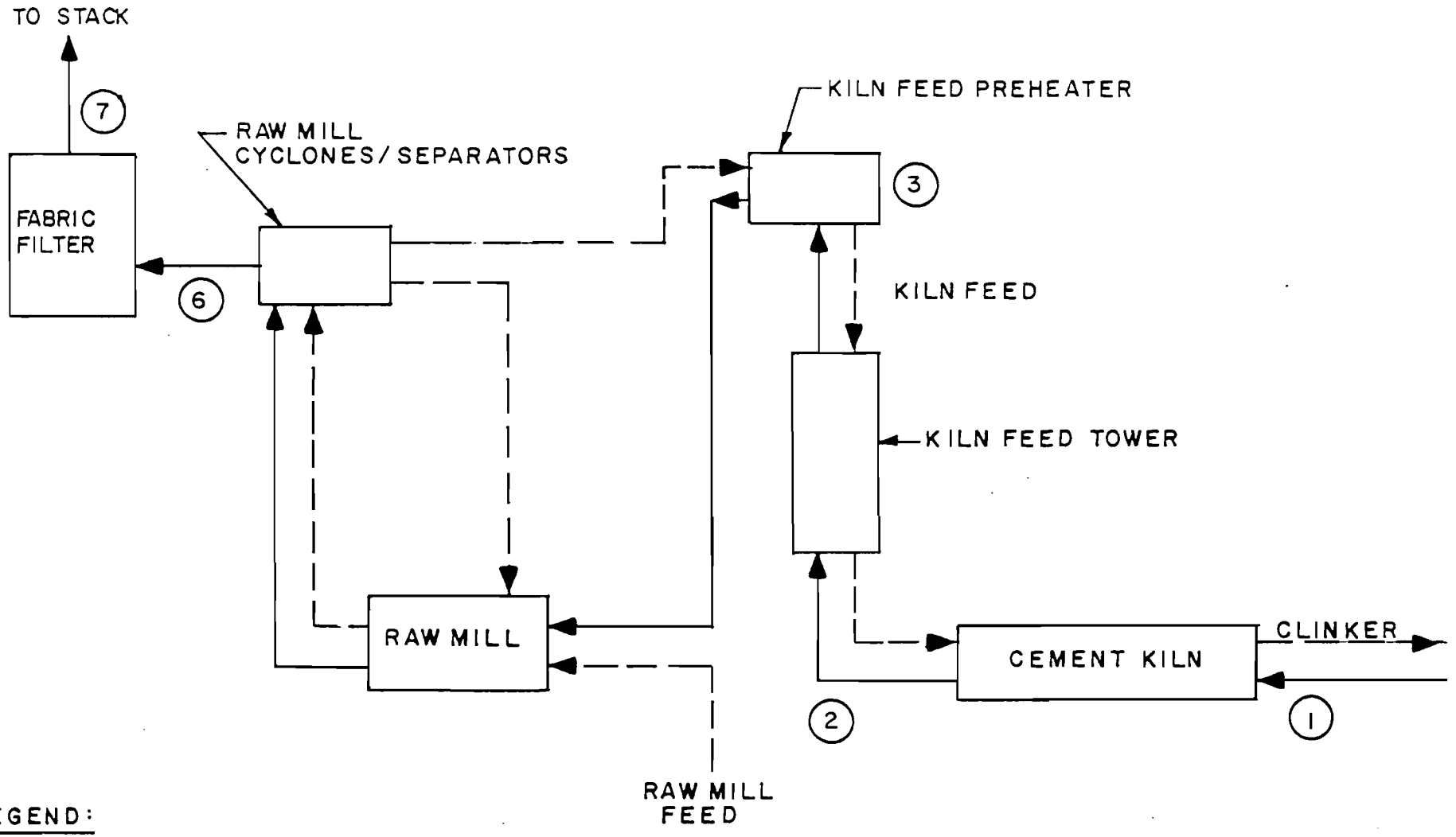
Copied: Pradeep Raval
Tom Rogers
Barry Andrews
CHFIBT
Bill Stewart, SW Dist
Miguel Flores, NPS
Wayne Aronson, EPA

5.3.88 mr

FIGURE 1

BEST AVAILABLE COPY

FM & M KILN 2 - KILN GAS AND MATERIAL FLOW DIAGRAM



CROSS/TESSITORE & ASSOC., P.A

Environmental Engrs. Orlando, Florida

ATTACHMENT 1

SUMMARY OF GROUNDLEVEL CONCENTRATIONS

AND LOCATIONS FOR SO_2 and NO_x

Results of Florida Mining and Materials No. 2 Kiln Air Quality Modeling Screening using Receptor Grid with 1000 m Spacing Encompassing the Entire Area Surrounding the Facility

All Concentrations are in micrograms/cu.m.

No. 2 Kiln
NOx Emissions = 350 lb/hr

Year	Maximum Annual Conc.	UTM Coordinates (meters) X	Y
1970	1.04108	358,200	3,169,900
1971	1.38767	358,200	3,169,900
1972	1.22269	358,200	3,169,900
1973	0.89110	358,200	3,169,900
1974	1.09204	358,200	3,169,900

No. 2 Kiln
SO2 Emissions = 20 lb/hr

Year	Maximum Annual Conc.	UTM Coordinates (meters) X	Y
1970	0.05948	358,200	3,169,900
1971	0.07929	358,200	3,169,900
1972	0.06985	358,200	3,169,900
1973	0.05091	358,200	3,169,900
1974	0.06239	358,200	3,169,900

No. 2 Kiln
SO2 Emissions = 20 lb/hr

Year	Maximum 2nd High 3 Hour Conc.	UTM Coordinates (meters) X	Y
1970	1.91266	358,200	3,169,900
1971	1.95773	358,200	3,169,900
1972	1.95987	358,200	3,169,900
1973	1.95679	358,200	3,169,900
1974	2.04784	358,200	3,169,900

No. 2 Kiln
SO2 Emissions = 20 lb/hr

Year	Maximum 2nd High 24 Hour Conc.	UTM Coordinates (meters) X	Y
1970	0.52631	358,200	3,169,900
1971	0.54393	359,200	3,169,900
1972	0.75477	359,200	3,169,900
1973	0.44542	358,200	3,169,900
1974	0.52120	358,200	3,169,900

Source Location is at UTM Coordinates (356200, 3169900)

All maximum values above are located to the east of the facility.

ATTACHMENT 2

SO_2 REMOVAL EFFICIENCY DATA

COLLECTION EFFICIENCY DOCUMENTATION FOR SO_2

The collection efficiency in the permit application was based on the following:

AP-42 states that uncontrolled SO_2 emissions from a Portland cement kiln (dry process) are:

(1) Mineral Source

10.2 lb SO_2 per ton of cement produced.

(2) Combustion Source

6.85 lb SO_2 per ton of cement produced

where S is the % sulfur in the coal.

For the FM & M case,

Cement Production = 73.5 tons per hour

Therefore,

SO_2 from mineral source

= 73.50 ton/hr x 10.2 lb/ton = 749.70 lb/hr

SO_2 from Coal Combustion

= 73.50 ton/hr x 6.8 (1.0) lb/ton = 499.80 lb/hr

Total Uncontrolled SO_2 = (749.70 + 499.80) = 1,249.50 lb/hr.

Assuming a proposed SO_2 emission rate of 20 lb/hr., the resulting control efficiency would be as follows:

$$\text{Collection Efficiency} = \left[1 - \frac{20}{1249.5}\right] = 0.984$$

If only the fuel source of SO_2 is used, the proposed collection efficiency would be as follows:

$$\text{Collection Efficiency} = \left[1 - \frac{20}{499.80}\right] = 0.960$$

ATTACHMENT 3

BACT ANALYSIS FOR SO_2 and NO_x

BACT ANALYSIS FOR SO_2

A summary of SO_2 emission factors and the associated pollution control systems for Portland Cement Plants are enclosed for permitted Florida facilities and nationwide facilities. This data shows that the SO_2 emission factor ranges from 0.28 lbs. SO_2 per ton of clinker to 12.1 lbs. SO_2 per ton of clinker. The proposed FM&M emission rate of 20 lbs. per hour yields an emission rate of 0.28 lbs. SO_2 per ton of clinker. This emission factor and emission rate is the lowest for existing and proposed Portland Cement Plants in Florida and the United States.

CEMENT KILN SO_2 EMISSIONS AND CONTROL TECHNOLOGY SUMMARY

FLORIDA FACILITIES

FACILITY	KILN THROUGHPUT (ton/hr clinker)	PERMIT LIMIT (lb/hr)	EMISSION FACTOR (lb/ton clinker)	POLLUTION CONTROL SYSTEM	DATE
Lonestar Florida Hialeah,FL		None	5.0	Doubled Chamber E.S.P.	12/84
Kiln 1	25				
Kiln 2	25				
Kiln 3	87.5				
FM&M	71	20*	0.28	Baghouse	12/80
Florida Crushed Stone	75	74	0.98	Baghouse	3/84

*Proposed emission limit

CEMENT KILN SO_2 EMISSIONS AND CONTROL TECHNOLOGY SUMMARY

(NATIONWIDE FACILITIES)

FACILITY	PLANT THROUGHPUT (ton/hr clinker)	PERMIT LIMIT (lb/hr)	EMISSION FACTOR (lb/ton clinker)	POLLUTION CONTROL SYSTEM	PERMIT DATE
California Portland Cement Plant Mojave,CA	79	616	7.8	Baghouse Alkali Dust	1/10/7
Kaiser Cement & Gypsum Corp. (2 kilns) Dermante, CA	145	481	3.3	Baghouse ALkali Dust	12/26/7
Lonestar Industries, Inc. Georgetown, TX	79	960	12.1	Baghouse Alkali Dust	2/19/8
Creole Corp. Imperial County,CA	67	78.3	1.17	Baghouse Alkali Dust	5/20/8
Monolith Portland Cement Co. Monolith, CA	67	300	4.4	Baghouse Alkali Dust	12/21/8
Southeastern Portland cement Co. Odessa, Texas					
Kiln 1	71	208	2.9	None	11/5/81
Kiln 2	62	86	1.4	Liquid Scrubber	
Kiln 3	104	134	1.3	Partial Liquid Scrubber	
Lonestar Industries Concrete, WA	100		2.75	Baghouse Alkali Dust	1/25/82

CEMENT KILN SO_2 EMISSIONS AND CONTROL TECHNOLOGY SUMMARY

(NATIONWIDE FACILITIES)

FACILITY	PLANT THROUGHPUT (ton/hr clinker)	PERMIT LIMIT (lb/hr)	EMISSION FACTOR (lb/ton clinker)	POLLUTION CONTROL SYSTEM	PERMIT DATE
Las Vegas Portland Cement Jean, NV	148	260 (2hr avg.) 150 (30 day avg.)	1.76 1.0	Low Sulfur Coal & Alkali Dust	2/1/82
Lonestar Industries California	100	250	2.5	Alkaline Slurry Injection System	7/29/8

BACT Analysis For NOx

A summary of NOx emission factors and the associated pollution control systems for Portland Cement Plans are enclosed for permitted Florida facilities and nationwide facilities. This data shows that the NOx emission factors range from 2.50 lbs of NOx per ton of clinker to 7.98 lbs. of NOx per ton of clinker. The proposed FM&M emission rate of 320 lbs. per hour is the lowest emission rate for Florida facilities. The proposed FM&M emission factor of 4.65 lbs. of NOx per ton of clinker is in the mid range of values on a nationwide basis.

An important consideration is that the original NOx emission rate of 195 lbs per hour is the lowest in the nation and the resulting emission factor of 2.75 lbs. of NOx per ton of clinker is one of the lowest in the nation. Actual testing of the FM&M facility prior to the addition of ammonia to the flyash shows emission rates between 11.9 to 141.2 lbs. per hour. Unfortunately, the addition of ammonia to the fly ash results in a substantial increase in NOx emissions. These emissions are not directly controlled by combustion refinement but are more a product of high kiln temperatures and the ammonia source of nitrogen.

The alternatives to using ammonia fly ash in the kiln are (1) disposing of the fly ash in a landfill or other containment area (2) the elimination of ammonia from the flyash. The placing of ammonia contaminated flyash in a landfill provides for potential serious groundwater contamination. The elimination of ammonia from the flyash would result in serious H_2SO_4 mist emissions from Tampa Electric Big Bend 3. The use of this flyash in a cement product provides for the best overall solution with a minimal environmental impact. This is especially true when the ground level impact is considered.

CEMENT KILN NO_x EMISSIONS AND CONTROL TECHNOLOGY SUMMARY

(FLORIDA FACILITIES)

FACILITY	PLANT THROUGHPUT (ton/hr clinker)	PERMIT LIMIT (lb/hr)	EMISSION FACTOR (lb/ton clinker)	POLLUTION CONTROL SYSTEM	PERMI DATE
Lonestar Cement Hialeah, FL					
Kiln 1	25			ESP	12/85
Kiln 2	25				
Kiln 3	87.5	582*	4.23		
Florida Mining & Materials	71.0	320**	4.65	Baghouse	12/80
Florida Crushed Stone Brooksville, FL	75.0	359.6	4.8	Design	3/27/8

*Not a permit limit, but stated as "an emission estimate"

**Proposed Emission Limit

CEMENT KILN NO_x EMISSIONS AND CONTROL TECHNOLOGY SUMMARY

(NATIONWIDE FACILITIES)

FACILITY	PLANT THROUGHPUT (ton/hr clinker)	PERMIT LIMIT (lb/hr)	EMISSION FACTOR (lb/ton clinker)	POLLUTION CONTROL SYSTEM	PERMIT DATE
California Cement Mojove, CA Precalciner	79	No Limit	None	Reduced Fuel Usage Low Furnace Temp	1/10/79
Monolith Portland Cement Monolith, CA	67	260	3.88	Coal Fired Wet Process	12/21/81
Creole Corp. Plaster City, CA Kiln	67	213	3.17	Reduced Temp. in Precalcining Furnace High Fuel Efficiency	5/20/80
Lonestar Industries CA	100	250	2.50	O_2 Control on Combustion Air	7/29/86
Kaiser & Gypsum Cement Permeneute, CA	145	1158	7.98	Reduced Fuel Usage and Low Temp	12/26/78
Las Vegas Portland Cement Jean, NV	71	281	3.95	Baghouse	2/1/82
Lonestar Industries Georgetown, TX	79	360	4.50	Reclaimer Process Design	2/17/80
Lonestar, Ind. Concrete, WA	100	300	3.00	Process Design	1/25/82

ATTACHMENT 4

MATERIAL FLOW PROCESS DESCRIPTION

FM&M Kiln 2 Exhaust Gas Flow/Process Description

A simplified exhaust gas and process flow diagram is presented in the attached figure. The exhaust gas is generated in the coal combustion process at location 1. These hot gases (2800°F to 1800°F) flow counter-current to the kiln feed material. During this process, the tumbling action of the kiln causes the alkali feed material to thoroughly scrub the exhaust gases.

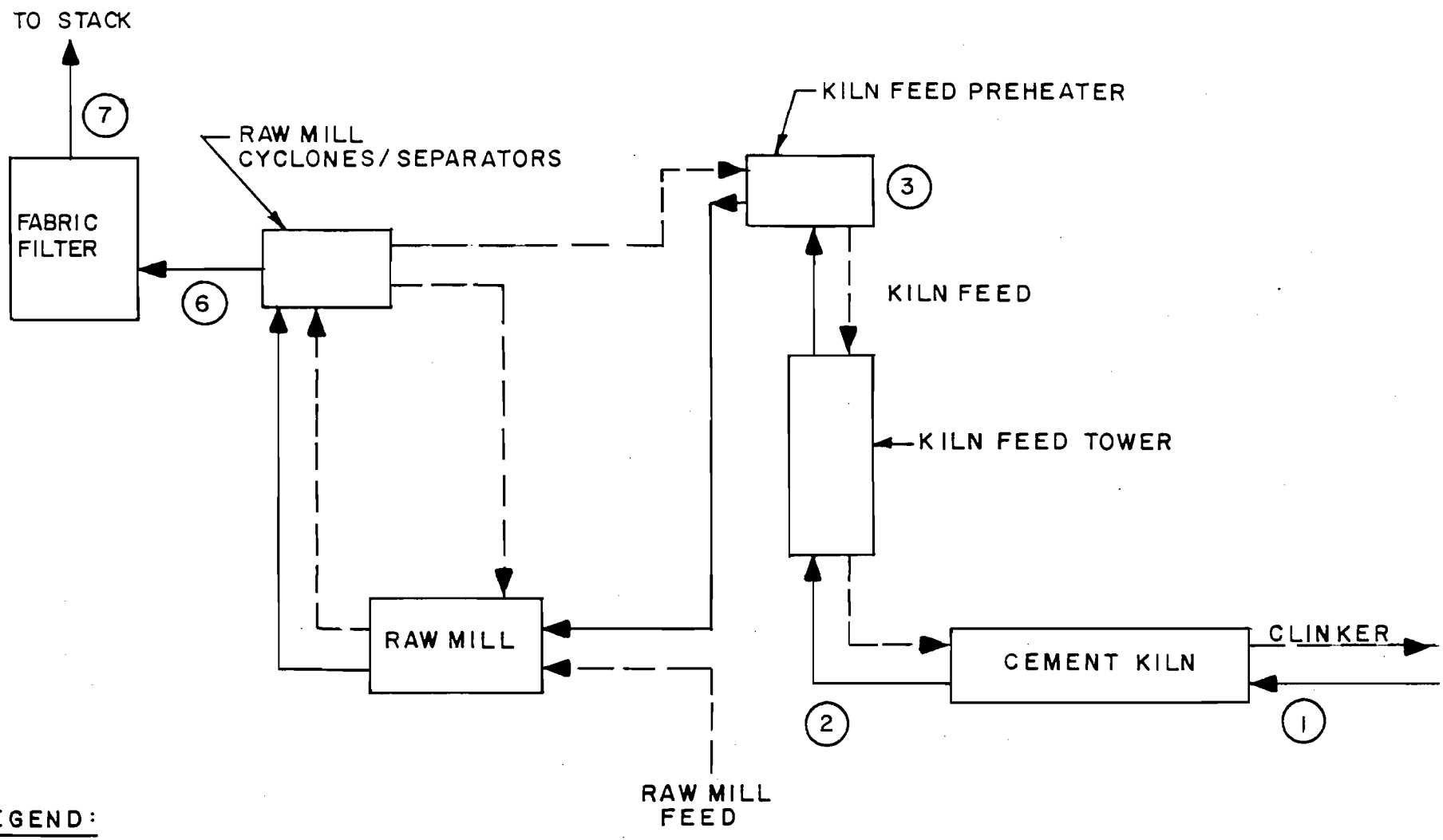
The exhaust gases then exit the kiln and are ducted through the kiln feed tower and kiln feed preheater. During this process, the exhaust gases are again scrubbed by the alkali feed material, which is moving counter-currently to the exhaust gas direction.

After exiting the kiln feed preheater, the exhaust gases are used to carry alkali feed material into the raw feed mill. In this case, the gas flow stream and the material flow are in the same direction. The exhaust gases are used to carry the material feed from the raw mill to a series of cyclones and separators. The separators are used to direct fine material to the kiln feed, while the coarse material is returned to the raw mill. Meanwhile, the cyclones separate fine material from the gas stream prior to the fabric filter.

The fabric filter, which is coated with alkali material, provides a final scrubbing of the exhaust gases with alkali material. AP-42 has stated that this final scrubbing can remove as much as 50% of the SO_2 in the gas stream.

FIGURE 1

FM & M KILN 2 - KILN GAS AND MATERIAL FLOW DIAGRAM



CROSS/TESSITORE & ASSOC., P.A.
Environmental Engrs. Orlando, Florida

FM&M KILN 2 GAS FLOW DATA

LOCATION	DESCRIPTION	T° (F)	ACFM
1	Kiln Combustion Air	70	48,880 at 70°F
2	Kiln Exhaust Gases	1500-1800	284,975 at 1500°F
3	Kiln Feed Preheater	800	183,198 at 800°F
4	Raw Mill Entrance	700	359,437 at 700°F
5	Raw Mill Exit	300-400	250,986 at 350°F
6	Baghouse Entrance	250-350	235,493 at 300°F
7	Stack Exit	220-300	220,000 at 250°F

EXHAUST GAS RETENTION TIME SUMMARY

LOCATION	GAS FLOW (ACFM)	AREA (FT^2)	VELOCITY (FT/SEC)	LENGTH (FT)	TIME (SEC)
Cement Kiln	284,975	177	26.83	240	8.94
Kiln Feed Tower	183,198	452	6.75	180	26.7
Raw Mill	359,437	143	41.89	80	1.91
TOTAL					37.55

ATTACHMENT 5

SO_2 LIQUID SCRUBBER DESIGN AND COST DATA

SO_2 SCRUBBER DESIGN PARAMETERS

SO_2 Removal Efficiency: 85%

System: Dual Alkali/Three Stage Tower

Operating Parameters:

12 ft/sec. superficial gas velocity

Pressure Drop = 10" H_2O

Liquid to Gas Ratio = 80 gal/100 ACF

Make Up Rate = 186 gpm

SO_2 SCRUBBER OPERATING DATA

Operating Hours	= 8000 hrs/yr
Chemicals	= 266 tons/yr
Waste Sludge	= 612 tons/yr
Water Consumption	= 89.3×10^6 gal/yr
Electricity	= 5.928×10^6 KW-hr/yr
Labor and Supervision	= 24,000 hrs/yr

SO_2 SCRUBBER SYSTEM COST

CAPITAL COSTS*		$29,400,000
OPERATING COST ($/YR)		
DIRECT COST		
Chemicals	$	8,160
Waste Disposal		61,200
Operating Labor & Supervision		432,000
Electricity		177,840
Water		8,930
Maintenance, Labor & Materials		882,030
Total		$1,570,160
INDIRECT COST		
Capital Charges		$3,528,120
Overhead		123,750
Administration		43,200
		$3,695,070
Total		$5,623,730/year

*Total installed cost for reactor, scrubber, sludge filtration, controls, instrumentation, fans and auxiliary systems.

ATTACHMENT 6

ANNUAL COST FOR AMMONIA FLY ASH DISPOSAL

ANNUAL COST FOR LAND DISPOSAL OF AMMONIA FLYASH:

Production: 106,000 tons/yr

Density: 1 Dump Truck (21yd^3) = 25 tons

Cost Per Drum: $165-210/Drum

(55 gal) -Packaging
-Transportation
-Solidification
-Neutralization
-Disposal

(106,000 tons/yr)(21 yd^3/25 tons) = 89,040 yd^3/yr

(55 gal/Drum)(ft^3/7.45 gal)(yd^3/27 ft^3) = 0.27 yd^3/Drum

(89,040 yd^3/yr)(Drum/0.277 yd^3) = 329,778 Drums/yr

@ $165/Drum:

(165)(329,778) = $54,413,370.00 per year

@ $210/Drum:

(210)(329,778) = $69,253,380 per year

ANNUAL COST FOR LAND DISPOSAL OF AMMONIA FLYASH:

Production: 106,000 tons/yr

Density: 1 Dump Truck (21yd^3) = 25 tons

Cost Per Drum: $165-210/Drum

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@ $165/Drum:

(165)(329,778) = $54,413,370.00 per year

@ $210/Drum:

(210)(329,778) = $69,253,380 per year

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

February 5, 1988

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. M. Coleman
Florida Mining and Materials
P. O. Box 6
Brooksville, Florida 33512

Dear Mr. Coleman:

Re: Review of Application for Modification of No. 2 Cement Kiln
Permit No. AC 27-138850, PSD-FL-124

The Department has received your downwash analysis dated January 25, 1988. However, the following information will be needed to resume the completeness review:

1. A review of the dispersion modeling output, sent to the Department as part of the November 24th correspondence, shows that receptors were placed only on the east side of the facility. Please explain. In general, a receptor grid should encompass the entire area surrounding the facility. Refined modeling, completed for specific areas, should be completed only after the screening modeling has defined the maximum impact areas for each averaging period.

2. In accordance with two recent EPA memorandums "Improving New Source Review Implementation" and "Implementation of North County Resource Recovery PSD Remand" (copies enclosed), the following permitting procedures need to be employed.

   a) The "Top Down" BACT approach needs to be used in demonstrating that the cost of additional control (i.e., sulfur dioxide scrubber) or operational/work practices (i.e., disposal of ammonia contaminated fly ash) is not warranted. Documentation in the form of an economic/ environmental analysis should be provided.

   b) The analysis should consider the reduction of non-regulated, toxic pollutants which may result as a consequence of additional controls. According to the EPA document "Compiling Air Toxics Emission Inventories," the toxic pollutants which may be emitted from this

facility include: polycyclic organic matter, chromium, fluorides, nickel, hydrogen sulfide, beryllium, cadmium, lead, mercury, zinc, and iron.

If you have any questions please call Pradeep Raval (permitting), Tom Rogers (modeling), or Barry Andrews (BACT coordinator), 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/PR/s

enclosures

cc: W. Thomas, SW District
W. Aronson, U.S. EPA
M. Flores, NPS
Cross/Tessitore & Assoc.

1·13·88
Atlanta, GA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

JAN 12 1988

REGION IV

345 COURTLAND STREET
ATLANTA, GEORGIA 30365

4APT/APB-aes

DER

JAN 15, 1988

BAQM

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

Re: Florida Mining and Materials (PSD-FL-124)
AC 29-138850

Dear Mr. Fancy:

This is in regard to your December 8, 1987, letter of transmittal for the Florida Mining and Materials (FM&M) application addendum dated November 24, 1987. The FM&M submittal contains a BACT analysis for sulfur dioxide and nitrogen oxides.

In our evaluation of the determination, we found your justification of BACT at this facility to be based on the comparison of emission rates from other facilities. However, the "Top Down" BACT approach was not employed in demonstrating that the cost of additional controls (i.e., sulfur dioxide scrubber) or operational/work practice (i.e., disposal of ammonia contaminated fly ash) was not warranted (see guidance memorandum entitled "Improving New Source Review Implementation" from J. Craig Potter, Assistant Administrator for Air and Radiation, dated December 1, 1987, enclosed).

Although the reasoning employed in discounting additional controls and operational/work practice appears to be valid, no documentation in the form of an economic/environmental analysis was provided. This analysis should consider the reduction in non-regulated, toxic pollutants which may result as a consequence of additional controls in accordance with the EPA guidance memorandum entitled "Implementation of North County Resource Recovery PSD Remand" from OAQPS dated Septmeber 22, 1987 (enclosed). The other toxic pollutants which may be emitted from this facility include: polycyclic organic matter, chromium, fluorides, nickle, hydrogen sulfide, beryllium, cadmium, lead, mercury, zinc, and iron. These may be found in the EPA document "Compiling Air Toxics Emission Inventories."

If you have any comments or questions regarding this letter, you may contact me or Michael Brandon of my staff at (404) 347-2864.

Sincerely,

Bruce P. Miller

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

Enclosures

Copied: Pradeep Raval
Tom Rogers
CHF/BT
Barry Andrews
1·21·88

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

December 31, 1987

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. M. Coleman
Florida Mining and Materials
Post Office Box 6
Brooksville, Florida 33512

Dear Mr. Coleman:

Re: Review of Application for Modification of No. 2 Cement Kiln - Permit No. AC 27-138850, PSD-FL-124

The Department received your application package dated November 24, 1987, but is still awaiting the additional information mentioned in your letter. Please provide this information so that the completeness review can be resumed and the status of the application package can, again, be ascertained.

The application review groups anticipate addressing the issues of the above referenced letter along with any additional issues which may arise from the additonal information you plan to submit.

If you have any questions please call Pradeep Raval (permitting), Tom Rogers (modeling) or Barry Andrews (BACT coordinator), 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:PR:jr

cc: W. Thomas, SW District
W. Aronson, U.S. EPA
M. Flores, NPS
Cross/Tessitore & Associates

PM
Jan – 5, 1988
Orlando, FL

File Copy

CROSS/TESSITORE & ASSOCIATES, P.A.
4763 S. CONWAY ROAD
BOX 12, SUITE F
ORLANDO, FLORIDA 32812
305/851-1484

January 25, 1988

DER
JAN 27, 1988
BAQM

Mr. Tom Rogers
DER-Tallahassee
Bureau of Air Quality Management
2562 Executive Center Cir. East
Koger Center, Montg. Bldg.
Tallahassee, Florida 32301

Subject: FDER Application for Modification of No. 2 Cement Kiln, Permit No. AC27-138850, PSD-FL-124. F03.175

Dear Mr. Rogers:

Attached are two copies of the "DOWNWASH ANALYSIS" prepared for Florida Mining and Materials Corporation.

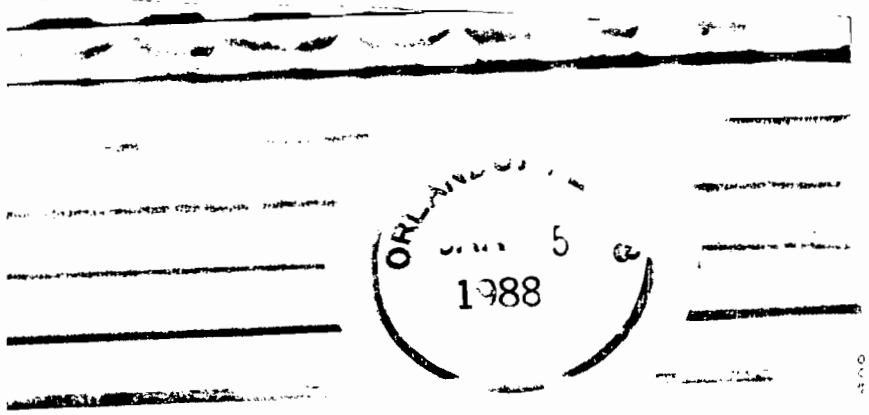
If you have any questions, please do not hesitate to call me.

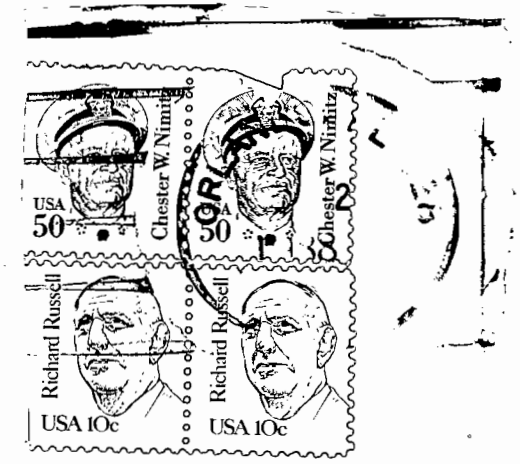
Sincerely,

Joseph L. Tessitore, P.E.
Vice President

JLT:kbw
Encl:a/s

Copied: Tom Rogers
P. Randall Cover Attorney } 1-27-88
CHF/BT " " " }





CROSS / TESSITORE & ASSOCIATES, P.A.
4763 South Conway Road, Box 12
Orlando, Florida 32812
(305) 851-1484

MR. TOM ROGERS
DER-TALLAHASSEE
BUREAU OF AIR QUALITY MANAGEMENT
2562 EXECUTIVE CENTER CIR.EAST
OGER CENTER, MONTG. BLDG.
TALLAHASSEE, FL 32301

1.27.88

~~CHF~~
~~BJT~~ } FYI

AJ

FLORIDA MINING AND MATERIALS
KILN 2, SO_2 and NO_x
"DOWNWASH ANALYSIS"
Permit No. AC27-138850
PSD-FL-124

January 21, 1988

Cross/Tessitore & Associates, P.A.
4763 South Conway Road, Suite F
Orlando, Florida 32812
(305)851-1484
R0056

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TABLES

APPENDICES

1.0 INTRODUCTION

As a result of the analysis required for FM&M Application for Modification of NO. 2 Cement Kiln, Permit No. AC27-138850, PSD-FL-124, it was determined that the Kiln No. 2 stack is less than the GEP requirement of 265 feet and, therefore, a "downwash analysis" was required.

The required "downwash analysis" was conducted using the ISCST Computer Model and the results are presented in the following sections of this report.

2.0 METHODOLOGY

The procedure used in this analysis is as follows:

(a) The physical dimensions of the building which supports the Kiln 2 stack were obtained.

(b) The above dimensions and ISCST Computer Model were used to determine the maximum groundlevel impacts for SO_2 and NO_x using the "downwash" mode.

(c) These results were then compared against the appropriate significance criteria.

A sample output listing (NO_x Worst Case) for the ISCST computer model is presented in Appendix A.

3.0 RESULTS

The results for the above modeling are summarized in Table 1. These results show that:

(a) For the case of SO_2, the maximum groundlevel concentrations for both the total emissions and increase in emissions were below the significance levels in the Class I and Class II areas respectively.

(b) For the case of NO_x, the maximum groundlevel concentrations for the increase in emissions were less than the significance level; however, for the case of total emissions, the maximum groundlevel annual impact of 1.713 ug/m³ exceeded the significance level of 1.0 ug/m³.

Since all SO_2 impacts were less than significance levels, no other SO_2 source impacts were considered. However, since the NO_x impacts for total Kiln 2 emissions exceeded the criteria, NO_x emissions and impacts for all contributing sources in the area

were evaluated. These results are presented in Table 2. The results in this table are extremely conservative, since they assume that all maximum groundlevel impacts occur at the same point. In actuality, an air quality impact analysis presented by FDER in "Attachments for Technical Evaluation and Preliminary Determination, Florida Crushed Stone Company Power Plant/Cement Plant Cogeneration Facility", dated May 24, 1983, shows that the cumulative groundlevel impact of all NO_x sources in Hernando County is approximately 1 ug/m³ rather than the 4.926 ug/m³ as presented in Table 2. The results of the Florida Crushed Stone Company modeling are presented in Appendix C.

Assuming the worst case approach in Table 2, the maximum predicted groundlevel concentration can be determined using existing NO_x background concentrations. These data are summarized in Table 3 and show that using a rural NO_x background of 5 ug/m³, the projected groundlevel concentration is 10 ug/m³ which is substantially below the NAAQS of 100 ug/m³.

4.0 CONCLUSIONS

Based on the above "downwash analysis", it can be considered that the proposed SO_2 emissions will be less than significance values for all cases, and that proposed NO_x emissions will not contribute or cause NAAQS violation in the Hernando County area.

TABLE 1

FLORIDA MINING AND MATERIALS
SUMMARY OF GROUNDLEVEL IMPACTS FOR NO_x AND SO_2
UNDER DOWNWASH CONDITIONS

SULFUR DIOXIDE CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

	NO.2 KILN SO_2 = 20.0 LB/HR		NO. 2 KILN INCREASE IN SO_2 = 17.0 LB/HR				
AVERAGING TIME	CLASS II AREA MAXIMUM	Class I AREA MAXIMUM	CLASS II AREA MAXIMUM	CLASS I AREA MAXIMUM	SIGNIF. IMPACT	CLASS I SIGNIF. IMPACT	DE MINIMUS IMPACT
ANNUAL	0.104	0.038	0.088	0.032	1.0	N/A	N/A
24 HOUR	1.016	00.274	0.864	0.233	5.0	1.0	13.0
3 HOUR	2.948	1.139	2.506	0.968	25.0	N/A	N/A

NITROGEN DIOXIDE CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

	NO.2 KILN NO_x = 330.0 LB/HR		NO. 2 KILN INCREASE IN NO_x = 134.7 LB/HR			
AVERAGING TIME	CLASS II AREA MAXIMUM	Class I AREA MAXIMUM	CLASS II AREA MAXIMUM	CLASS I AREA MAXIMUM	SIGNIF IMPACT	DE MINIMUS IMPACT
ANNUAL	1.713	0.630	0.699	0.257	1.0	14.0

TABLE 2

FLORIDA MINING AND MATERIALS
MAXIMUM NO_x ANNUAL GROUNDLEVEL IMPACT
CLASS II AREA

Emission Pt	Impact (ug/m^3)	Comment
FM&M Kiln 2	1.713	From enclosed air quality modeling
FM&M Kiln 1	1.713	Based on Kiln 2
FM&M Clay Crusher	0.50	Based on SO_2 Modeling
Florida Crushed Stone Kiln	<1.0	Based on Florida Crushed Stone PSD-FL-090
Total	4.926*	

*Maximum annual impact, assuming that all impacts are superimposed.

TABLE 3

FLORIDA MINING AND MATERIALS

SUMMARY OF NO_X ANNUAL IMPACTS FOR SOURCES IN CLASS II AREA

Maximum Impact (ug/m^3)*	Existing Background (ug/m_3)**	Projected Concentration (ug/m^3)	NAAQS (ug/m^3)
4.93	5 ug/m^3	10	100

*Based on maximum from each source being superimposed

**Based on 1986 FDER Air Quality data for NO_x in remote areas. Monitoring data shows that in remote areas of Bay County, Escambia County and Gadsden County annual concentrations of 5 ug/m^3.

APPENDIX A

ISCST OUTPUT LISTING FOR THE NO_x WORST CASE OF FM&M DOWNWASH ANALYSIS

ISCST (DATED 86170)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 1. GUIDELINE MODELS
IN UNAMAP (VERSION 6) JULY 86.
SOURCE: FILE 6 ON UNAMAP MAGNETIC TAPE FROM NTIS.

IBM-PC VERSION (1.20)

SERIAL NUMBER 5070 SOLD TO CROSS, TESSITORE & ASSOCIATES
RUN BEGAN ON 01-08-88 AT 16:42:12

CALCULATE (CONCENTRATION=1,DEPOSITION=2)	ISW(1) = 1
RECEPTOR GRID SYSTEM (RECTANGULAR=1 OR 3, POLAR=2 OR 4)	ISW(2) = 3
DISCRETE RECEPTOR SYSTEM (RECTANGULAR=1,POLAR=2)	ISW(3) = 1
TERRAIN ELEVATIONS ARE READ (YES=1,NO=0)	ISW(4) = 0
CALCULATIONS ARE WRITTEN TO TAPE (YES=1,NO=0)	ISW(5) = 0
LIST ALL INPUT DATA (NO=0,YES=1,MET DATA ALSO=2)	ISW(6) = 1
COMPUTE AVERAGE CONCENTRATION (OR TOTAL DEPOSITION)	
WITH THE FOLLOWING TIME PERIODS:	
HOURLY (YES=1,NO=0)	ISW(7) = 0
2-HOUR (YES=1,NO=0)	ISW(8) = 0
3-HOUR (YES=1,NO=0)	ISW(9) = 0
4-HOUR (YES=1,NO=0)	ISW(10) = 0
6-HOUR (YES=1,NO=0)	ISW(11) = 0
8-HOUR (YES=1,NO=0)	ISW(12) = 0
12-HOUR (YES=1,NO=0)	ISW(13) = 0
24-HOUR (YES=1,NO=0)	ISW(14) = 0
PRINT 'N'-DAY TABLE(S) (YES=1,NO=0)	ISW(15) = 1
PRINT THE FOLLOWING TYPES OF TABLES WHOSE TIME PERIODS ARE	
SPECIFIED BY ISW(7) THROUGH ISW(14):	
DAILY TABLES (YES=1,NO=0)	ISW(16) = 0
HIGHEST & SECOND HIGHEST TABLES (YES=1,NO=0)	ISW(17) = 0
MAXIMUM 50 TABLES (YES=1,NO=0)	ISW(18) = 0
METEOROLOGICAL DATA INPUT METHOD (PRE-PROCESSED=1,CARD=2)	ISW(19) = 1
RURAL-URBAN OPTION (RU.=0,UR. MODE 1=1,UR. MODE 2=2,UR. MODE 3=3)	ISW(20) = 0
WIND PROFILE EXPONENT VALUES (DEFAULTS=1,USER ENTERS=2,3)	ISW(21) = 1
VERTICAL POT. TEMP. GRADIENT VALUES (DEFAULTS=1,USER ENTERS=2,3)	ISW(22) = 1
SCALE EMISSION RATES FOR ALL SOURCES (NO=0,YES)0)	ISW(23) = 0
PROGRAM CALCULATES FINAL PLUME RISE ONLY (YES=1,NO=2)	ISW(24) = 1
PROGRAM ADJUSTS ALL STACK HEIGHTS FOR DOWNWASH (YES=2,NO=1)	ISW(25) = 2
PROGRAM USES BUOYANCY INDUCED DISPERSION (YES=1,NO=2)	ISW(26) = 1
CONCENTRATIONS DURING CALM PERIODS SET = 0 (YES=1,NO=2)	ISW(27) = 1
REG. DEFAULT OPTION CHOSEN (YES=1,NO=2)	ISW(28) = 1
TYPE OF POLLUTANT TO BE MODELLED (1=SO2,2=OTHER)	ISW(29) = 2
DEBUG OPTION CHOSEN (1=YES,2=NO)	ISW(30) = 2
NUMBER OF INPUT SOURCES	NSOURC = 1
NUMBER OF SOURCE GROUPS (=0,ALL SOURCES)	NGROUP = 0
TIME PERIOD INTERVAL TO BE PRINTED (=0,ALL INTERVALS)	IPERD = 0
NUMBER OF X (RANGE) GRID VALUES	NXPNTS = 21
NUMBER OF Y (THETA) GRID VALUES	NYPNTS = 21
NUMBER OF DISCRETE RECEPTORS	NXWYPT = 9
SOURCE EMISSION RATE UNITS CONVERSION FACTOR	TK=.10000E+07
HEIGHT ABOVE GROUND AT WHICH WIND SPEED WAS MEASURED	ZR = 10.00 METERS
LOGICAL UNIT NUMBER OF METEOROLOGICAL DATA	IMET = 9
DECAY COEFFICIENT FOR PHYSICAL OR CHEMICAL DEPLETION	DECAY = .000000E+00
SURFACE STATION NO.	ISS = 12842
YEAR OF SURFACE DATA	ISY = 71
UPPER AIR STATION NO.	IUS = 12842
YEAR OF UPPER AIR DATA	IUY = 71
ALLOCATED DATA STORAGE	LIMIT = 43500 WORDS
REQUIRED DATA STORAGE FOR THIS PROBLEM RUN	MIMIT = 1625 WORDS

*** METEOROLOGICAL DAYS TO BE PROCESSED ***
(IF=1)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
B	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
C	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00
D	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
E	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00
F	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

*** X-COORDINATES OF RECTANGULAR GRID SYSTEM ***
(METERS)

357200.0, 357300.0, 357400.0, 357500.0, 357600.0, 357700.0, 357800.0, 357900.0, 358000.0, 358100.0,
358200.0, 358300.0, 358400.0, 358500.0, 358600.0, 358700.0, 358800.0, 358900.0, 359000.0, 359100.0,
359200.0,

*** Y-COORDINATES OF RECTANGULAR GRID SYSTEM ***
(METERS)

3168900.0, 3169000.0, 3169100.0, 3169200.0, 3169300.0, 3169400.0, 3169500.0, 3169600.0, 3169700.0, 3169800.0,
3169900.0, 3170000.0, 3170100.0, 3170200.0, 3170300.0, 3170400.0, 3170500.0, 3170600.0, 3170700.0, 3170800.0,
3170900.0,

*** X,Y COORDINATES OF DISCRETE RECEPTORS ***
(METERS)

(340300.0,3165700.0), (340300.0,3167700.0), (340300.0,3169800.0), (340700.0,3171900.0), (342700.0,3174000.0),
(343300.0,3176200.0), (343700.0,3178300.0), (342400.0,3180600.0), (341100.0,3183400.0), (

*** SOURCE DATA ***

SOURCE NUMBER	T Y P E	W A K E	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 (GRAMS/SEC) TYPE=2 (GRAMS/SEC) *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
1	0	0	0	.41590E+02	356200.0	3169300.0	.0	27.43	470.00	7.60	4.30	25.60	24.04	24.04

CALM	HOURS	(=1)	FOR	DAY	5	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	6	*	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	8	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
CALM	HOURS	(=1)	FOR	DAY	9	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
CALM	HOURS	(=1)	FOR	DAY	10	*	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	11	*	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
CALM	HOURS	(=1)	FOR	DAY	12	*	1	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	13	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CALM	HOURS	(=1)	FOR	DAY	14	*	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	15	*	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	17	*	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	18	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
CALM	HOURS	(=1)	FOR	DAY	19	*	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	22	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CALM	HOURS	(=1)	FOR	DAY	23	*	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1
CALM	HOURS	(=1)	FOR	DAY	27	*	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	28	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
CALM	HOURS	(=1)	FOR	DAY	29	*	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
CALM	HOURS	(=1)	FOR	DAY	30	*	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	31	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
CALM	HOURS	(=1)	FOR	DAY	32	*	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	37	*	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1
CALM	HOURS	(=1)	FOR	DAY	45	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
CALM	HOURS	(=1)	FOR	DAY	46	*	1	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	50	*	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	51	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
CALM	HOURS	(=1)	FOR	DAY	54	*	0	0	0	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	55	*	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	68	*	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	70	*	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	72	*	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
CALM	HOURS	(=1)	FOR	DAY	73	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	0
CALM	HOURS	(=1)	FOR	DAY	74	*	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	80	*	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CALM	HOURS	(=1)	FOR	DAY	81	*	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	88	*	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	90	*	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	97	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CALM	HOURS	(=1)	FOR	DAY	98	*	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	99	*	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	101	*	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	103	*	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	104	*	0	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	105	*	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	107	*	0	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	108	*	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	109	*	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
CALM	HOURS	(=1)	FOR	DAY	115	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CALM	HOURS	(=1)	FOR	DAY	116	*	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	124	*	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	127	*	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	128	*	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	129	*	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
CALM	HOURS	(=1)	FOR	DAY	130	*	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	134	*	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	137	*	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	141	*	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM	HOURS	(=1)	FOR	DAY	147	*	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

CALM HOURS (=1) FOR DAY 151 * 1 0 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 152 * 0 1 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 153 * 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 155 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1 0
[redacted]M HOURS (=1) FOR DAY 161 * 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 162 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
CALM HOURS (=1) FOR DAY 163 * 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
[redacted]M HOURS (=1) FOR DAY 169 * 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 170 * 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 171 * 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 178 * 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 179 * 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 183 * 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 188 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY 191 * 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
[redacted]M HOURS (=1) FOR DAY 193 * 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 194 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1
[redacted]M HOURS (=1) FOR DAY 195 * 1 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 199 * 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 200 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
[redacted]M HOURS (=1) FOR DAY 201 * 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 204 * 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 214 * 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 216 * 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 219 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
[redacted]M HOURS (=1) FOR DAY 220 * 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 221 * 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 222 * 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 223 * 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 224 * 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 225 * 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 226 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY 228 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 230 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 234 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
[redacted]M HOURS (=1) FOR DAY 235 * 1 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 0
CALM HOURS (=1) FOR DAY 236 * 1 0 1 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 237 * 1 0 1 1 0 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 238 * 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1
[redacted]M HOURS (=1) FOR DAY 239 * 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 240 * 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 241 * 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 243 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 244 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 246 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
CALM HOURS (=1) FOR DAY 251 * 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 255 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 257 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1
[redacted]M HOURS (=1) FOR DAY 258 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 259 * 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
CALM HOURS (=1) FOR DAY 263 * 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 273 * 1 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 274 * 1 1 1 0 1 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1
[redacted]M HOURS (=1) FOR DAY 275 * 1 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 278 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 1 0
[redacted]M HOURS (=1) FOR DAY 279 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1
[redacted]M HOURS (=1) FOR DAY 280 * 1 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
[redacted]M HOURS (=1) FOR DAY 281 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 296 * 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 297 * 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 1
[redacted]M HOURS (=1) FOR DAY 298 * 0 1 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1
[redacted]M HOURS (=1) FOR DAY 299 * 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1
CALM HOURS (=1) FOR DAY 300 * 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 306 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1 0 0
[redacted]M HOURS (=1) FOR DAY 315 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1
[redacted]M HOURS (=1) FOR DAY 316 * 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1
[redacted]M HOURS (=1) FOR DAY 318 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 323 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1
CALM HOURS (=1) FOR DAY 324 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
[redacted]M HOURS (=1) FOR DAY 325 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
[redacted]M HOURS (=1) FOR DAY 331 * 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 333 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 339 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
[redacted]M HOURS (=1) FOR DAY 340 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
[redacted]M HOURS (=1) FOR DAY 344 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 0
[redacted]M HOURS (=1) FOR DAY 346 * 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

[redacted]

[redacted]

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M HOURS (=1) FOR DAY 350 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
M HOURS (=1) FOR DAY 351 *  0  0  0  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  1  0  0  0  1
M [redacted]URS (=1) FOR DAY 352 *  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
M [redacted]URS (=1) FOR DAY 360 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1
M HOURS (=1) FOR DAY 361 *  0  1  0  0  1  1  1  0  0  0  0  0  0  0  0  0  0  1  0  0  0  0  1  0
M HOURS (=1) FOR DAY 365 *  0  0  0  0  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
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*** FM&M KILN #2 - 330 LB/HR NOX - 1971 ***

* 365-DAY AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *

* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 1.71258 AND OCCURRED AT (357700.0, 3169900.0) *

Y AXIS (METERS) /	X-AXIS (METERS) 357200.0	357300.0	357400.0	357500.0	357600.0	357700.0	357800.0	357900.0	358000.0
3170300.0 /	.55737	.60002	.60817	.59543	.58943	.60664	.62330	.61616	.59404
3[illegible]800.0 /	.60183	.60389	.59953	.60731	.63375	.64028	.62203	.60185	.58912
3[illegible]700.0 /	.60352	.60111	.62810	.65330	.64557	.62660	.61502	.60682	.59713
3[illegible]600.0 /	.60244	.64649	.65822	.64411	.63532	.63007	.62260	.61435	.60860
3170500.0 /	.64888	.64708	.64368	.64367	.64077	.63831	.64031	.64720	.65734
3[illegible]2400.0 /	.63052	.63865	.64411	.65299	.66875	.68946	.71179	.73291	.75072
3[illegible]300.0 /	.62175	.65099	.68974	.73172	.77118	.80420	.82893	.84535	.85477
3[illegible]200.0 /	.69302	.76974	.82902	.87455	.90819	.93313	.95220	.96719	.97910
3170100.0 /	.87128	.94330	1.00747	1.06217	1.10794	1.14495	1.17375	1.19514	1.21003
3170000.0 /	1.19392	1.29037	1.36176	1.41575	1.45450	1.48029	1.49528	1.50144	1.50045
3[illegible]900.0 /	1.55434	1.61802	1.66325	1.69241	1.70804	1.71258	1.70822	1.69682	1.67998
3[illegible]800.0 /	1.45187	1.52803	1.58466	1.62409	1.64889	1.66155	1.66432	1.65918	1.64781
3[illegible]700.0 /	1.10848	1.21074	1.29320	1.35696	1.40437	1.43807	1.46045	1.47352	1.47895
3169600.0 /	.78753	.87529	.95916	1.03419	1.09876	1.15261	1.19587	1.22903	1.25301
3[illegible]3500.0 /	.65895	.68880	.73335	.78609	.84025	.89166	.93787	.97794	1.01198
3[illegible]400.0 /	.65934	.65434	.65599	.66645	.68646	.71519	.74821	.78187	.81408
3[illegible]300.0 /	.65218	.65706	.65872	.64875	.64218	.64151	.64648	.65861	.67657
3169200.0 /	.63599	.64925	.64526	.65009	.64806	.63479	.62302	.61504	.61217
3169100.0 /	.61767	.62213	.63926	.63778	.63285	.63675	.63179	.61658	.60168
3[illegible]000.0 /	.59145	.61187	.61018	.62330	.62999	.62050	.61724	.61968	.61267
3[illegible]900.0 /	.58193	.58227	.60413	.60013	.60626	.61720	.61248	.60126	.59380

'N'-DAY
365 DAYS
SGROUP# 1

*** FM&M KILN #2 - 330 LB/HR NOX - 1971 ***

* 365-DAY AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *

* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 1.71258 AND OCCURRED AT (357700.0, 3169900.0) *

AXIS /	X-AXIS (METERS)								
S) /	358100.0	358200.0	358300.0	358400.0	358500.0	358600.0	358700.0	358800.0	358900.0
/0900.0 /	.57431	.56140	.54955	.53757	.52566	.50982	.49915	.49067	.48462
/0800.0 /	.57950	.56892	.55709	.54262	.53295	.52343	.51956	.51780	.51755
.0 /	.58622	.57648	.56975	.56345	.56262	.56392	.56383	.56645	.56881
.0 /	.60694	.60891	.61334	.61902	.62147	.62654	.62666	.62833	.62815
/0500.0 /	.66880	.67997	.68955	.69668	.69738	.69841	.69222	.68777	.68147
/0400.0 /	.76400	.77228	.77578	.77526	.76800	.76212	.75121	.74382	.73650
.0 /	.85902	.85992	.85884	.85671	.85027	.84618	.84273	.83574	.83193
.0 /	.98839	.99533	1.00006	1.00276	1.00361	.99586	.99310	.98577	.98055
.0 /	1.21933	1.22308	1.22445	1.22172	1.21625	1.19889	1.18890	1.17352	1.16083
/0000.0 /	1.49377	1.48262	1.46797	1.45067	1.43138	1.39828	1.37613	1.34833	1.32503
.0 /	1.65901	1.63497	1.60873	1.58096	1.55222	1.50886	1.47902	1.44354	1.41392
.0 /	1.63161	1.61173	1.58912	1.56452	1.53854	1.49717	1.46940	1.43598	1.40793
.0 /	1.47814	1.47227	1.46233	1.44915	1.43345	1.40203	1.38250	1.35706	1.33566
9600.0 /	1.26903	1.27842	1.28239	1.28202	1.27818	1.25930	1.24998	1.23420	1.22165
9500.0 /	1.04043	1.06363	1.08184	1.09531	1.09533	1.09300	1.10029	1.09421	1.09022
.0 /	.84350	.86933	.89160	.91041	.91775	.93028	.93691	.94434	.94952
.0 /	.69734	.71873	.73952	.75894	.76914	.78392	.79367	.80409	.81280
.0 /	.61339	.62030	.63147	.64475	.65248	.66595	.67634	.68805	.69845
9100.0 /	.59060	.58215	.57677	.57067	.57387	.58064	.58690	.59582	.60487
.0 /	.59653	.57993	.56651	.54950	.54050	.53290	.53083	.53236	.53637
.0 /	.60076	.59244	.57127	.55217	.53755	.52324	.51253	.50370	.49782

'N' -DAY
365 DAYS
SGROUP# 1

*** FM&M KILN #2 - 330 LB/HR NOX - 1971 ***

* 365-DAY AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *

* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 1.71258 AND OCCURRED AT (357700.0, 316900.0) *

Y-AXIS (METERS)	X-AXIS (METERS) 359000.0	359100.0	359200.0
170300.0	.48071	.47850	.47754
170800.0	.51826	.51941	.52057
[illegible]00.0	.57047	.57113	.57060
[illegible]00.0	.62606	.62219	.61674
170500.0	.67330	.66561	.65705
170400.0	.72945	.72280	.71657
[illegible]00.0	.82787	.82356	.81896
[illegible]00.0	.97439	.96746	.95985
[illegible]00.0	1.14727	1.13306	1.11835
170000.0	1.30160	1.27821	1.25498
[illegible]00.0	1.38474	1.35611	1.32803
[illegible]00.0	1.38012	1.35268	1.32570
[illegible]00.0	1.31382	1.29176	1.26963
169600.0	1.20801	1.19352	1.17838
169500.0	1.08438	1.07709	1.06864
[illegible]00.0	.95248	.95337	.95240
[illegible]00.0	.82006	.82599	.83066
[illegible]00.0	.70743	.71500	.72134
169100.0	.61371	.62208	.62971
[illegible]00.0	.54177	.54782	.55411
[illegible]00.0	.49531	.49572	.49812

'N'-DAY
365 DAYS
SGROUP# 1

*** FM&M KILN #2 - 330 LB/HR NOX - 1971 ***

* 365-DAY AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *

* FROM ALL SOURCES *
* FOR THE DISCRETE RECEPTOR POINTS *

- Y -	CON.	- X -	- Y -	CON.	- X -	- Y -	CON.
[redacted]0 3165700.0	.33764	340300.0	3167700.0	.34566	340300.0	3169800.0	.47868
[redacted]0 3171900.0	.38241	342700.0	3174000.0	.31201	343300.0	3176200.0	.41810
700.0 3178300.0	.37034	342400.0	3180600.0	.24427	341100.0	3183400.0	.20551

[redacted]DED ON 01-08-88 AT 21:38:35

APPENDIX B

SUMMARY OF ISCST
DOWNWASH ANALYSIS/GROUND LEVEL IMPACT

FLORIDA MINING AND MATERIALS
NO. 2 KILN ONLY
SULFUR DIOXIDE CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

AVERAGING TIME	NO. 2 KILN SO2 = 20.0 LB/HR		NO. 2 KILN INCREASE IN SO2 = 17.0 LB/HR				
	CLASS II AREA MAXIMUM	CLASS I AREA MAXIMUM	CLASS II AREA MAXIMUM	CLASS I AREA MAXIMUM	SIGNIF. IMPACT	CLASS I SIGNIF. IMPACT	DE MINIMUS IMPACT
ANNUAL	0.104	0.038	0.088	0.032	1.0	N/A	N/A
24 HOUR	1.016	0.274	0.864	0.233	5.0	1.0	13.0
3 HOUR	2.948	1.139	2.506	0.968	25.0	N/A	N/A

FLORIDA MINING AND MATERIALS
NO. 2 KILN ONLY
NITROGEN DIOXIDE CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

AVERAGING TIME	NO. 2 KILN NOX = 330.0 LB/HR		NO. 2 KILN INCREASE IN NOX = 134.7 LB/HR			
	CLASS II AREA MAXIMUM	CLASS I AREA MAXIMUM	CLASS II AREA MAXIMUM	CLASS I AREA MAXIMUM	SIGNIF. IMPACT	DE MINIMUS IMPACT
ANNUAL	1.713	0.630	0.699	0.257	1.0	14.0

FLORIDA MINING AND MATERIALS
NO. 2 KILN NOX EMISSIONS [illegible]

MAXIMUM ANNUAL CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

YEAR	MAXIMUM CONCENTRATION (MICROGRAMS/CU.M.)	UTM COORDINATES (METERS) X	Y
1970	1.28054	357,800	3,169,900
1971	[illegible]	357,700	3,169,900
1972	1.53610	357,700	3,169,900
1973	1.11358	357,700	3,169,900
1974	1.37879	357,800	3,169,900

5 YEAR MAXIMUM ANNUAL CONCENTRATION = [illegible] MICROGRAMS/CU.M.

CLASS I AREA RECEPTOR ANNUAL CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

RECEPTOR	UTM COORDINATES (METERS) X	Y	ANNUAL CONCENTRATION (MICROGRAMS/CUBIC METER) 1970	1971	1972	1973	1974	5 YEAR MAXIMUM CONC.
1	340,300	3,165,700	0.38503	0.33764	0.44782	0.36860	0.39811	0.44782
2	340,300	3,167,700	0.38588	0.34566	0.43978	0.36713	0.30519	0.43978
3	340,300	3,169,800	0.58489	0.47868	[illegible]	0.46068	0.47787	[illegible]
4	340,700	3,171,900	0.47861	0.38241	0.44702	0.34282	0.41983	0.47861
5	342,700	3,174,000	0.39727	0.31201	0.34137	0.38155	0.38204	0.39727
6	343,300	3,176,200	0.41911	0.41810	0.33073	0.43954	0.29987	0.43954
7	343,700	3,178,300	0.39831	0.37034	0.28760	0.34901	0.32771	0.39831
8	342,400	3,180,600	0.24848	0.24427	0.20743	0.29976	0.25971	0.29976
9	341,100	3,183,400	0.19130	0.20551	0.17365	0.22456	0.21874	0.22456

5 YEAR MAXIMUM ANNUAL CONCENTRATION IN CLASS I AREA = [illegible] MICROGRAMS/CU.M.

FLORIDA MINING AND MATERIALS
NO. 2 KILN SO2 EMISSIONS, 320 LB/HR

MAXIMUM 2ND HIGHEST 3 HOUR CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

YEAR	MAXIMUM CONCENTRATION (MICROGRAMS/CU.M.)	UTM COORDINATES (METERS) X	Y
1970	2.33797	357,300	3,169,800
1971	2.93499	357,200	3,169,300
1972	2.58282	357,200	3,169,000
1973	2.94785	357,300	3,169,900
1974	2.43754	357,600	3,169,900

5 YEAR MAXIMUM 2ND HIGHEST 3 HOUR CONCENTRATION = 2.94785 MICROGRAMS/CU.M.

CLASS I AREA RECEPTOR 2ND HIGHEST 3 HOUR CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

RECEPTOR	UTM COORDINATES (METERS) X	Y	ANNUAL CONCENTRATION (MICROGRAMS/CUBIC METER) 1970	1971	1972	1973	1974	5 YEAR MAXIMUM CONC.
1	340,300	3,165,700	0.77269	0.77550	0.84587	0.76917	0.82987	0.84587
2	340,300	3,167,700	0.89607	0.77912	0.69705	0.89375	0.71881	0.89607
3	340,300	3,169,800	1.08198	0.98340	0.94740	0.88264	0.95452	1.08198
4	340,700	3,171,900	0.75691	0.91275	0.84661	0.66290	0.65727	0.91275
5	342,700	3,174,000	0.95884	0.78474	0.91045	1.00622	0.93859	1.01689
6	343,300	3,176,200	0.87599	0.89492	0.67890	0.82470	0.80606	0.89492
7	343,700	3,178,300	1.04202	0.96119	0.87805	0.95614	0.83779	1.04202
8	342,400	3,180,600	0.77996	0.66960	0.85675	0.81595	0.79029	0.85675
9	341,100	3,183,400	0.61810	0.61297	0.67121	0.60049	0.64923	0.67121

5 YEAR MAXIMUM 2ND HIGHEST 3 HOUR CONCENTRATION IN CLASS I AREA = 1.01689 MICROGRAMS/CU.M.

FLORIDA MINING AND MATERIALS
NO. 2 KILN SO2 EMISSIONS = 20 LB/HR

MAXIMUM 2ND HIGHEST 24 HOUR CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

YEAR	MAXIMUM CONCENTRATION (MICROGRAMS/CU.M.)	UTM COORDINATES(METERS) X	Y
1970	0.81151	358,100	3,170,000
1971	0.83755	357,300	3,169,900
1972	1.01629	357,900	3,169,900
1973	0.68642	357,200	3,169,900
1974	0.67083	357,700	3,169,700

AR MAXIMUM 2ND HIGHEST 24 HOUR CONCENTRATION = 1.01629 MICROGRAMS/CU.M.

CLASS I AREA RECEPTOR 2ND HIGHEST 24 HOUR CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

TOR	UTM COORDINATES(METERS) X	Y	ANNUAL CONCENTRATION (MICROGRAMS/CUBIC METER) 1970	1971	1972	1973	1974	5 YEAR MAXIMUM CONC.
1	340,300	3,165,700	0.16750	0.20459	0.19070	0.18686	0.15689	0.20459
2	340,300	3,167,700	0.20350	0.17261	0.17858	0.17663	0.15661	0.20350
3	340,300	3,169,800	0.24318	0.22036	0.27445	0.19353	0.19366	0.27445
4	340,700	3,171,900	0.21905	0.17809	0.22432	0.14722	0.19524	0.22432
5	342,700	3,174,000	0.21348	0.18016	0.19668	0.18729	0.19143	0.21348
6	343,300	3,176,200	0.22354	0.18402	0.18887	0.18258	0.17764	0.22354
7	343,700	3,178,300	0.20229	0.18243	0.18495	0.18811	0.18753	0.20229
8	342,400	3,180,600	0.12852	0.14136	0.11921	0.16307	0.12548	0.16307
9	341,100	3,183,400	0.13290	0.16004	0.11844	0.12710	0.14443	0.16004

5 YEAR MAXIMUM 2ND HIGHEST 24 HOUR CONCENTRATION IN CLASS I AREA = 0.27445 MICROGRAMS/CU.M.

FLORIDA MINING AND MATERIALS
NO. 2 KILN SO2 EMISSIONS = 20 LB/HR

MAXIMUM ANNUAL CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

YEAR	MAXIMUM CONCENTRATION (MICROGRAMS/CU.M.)	UTM COORDINATES (METERS) X	Y
1970	0.07759	357,800	3,169,900
1971	0.10377	357,700	3,169,900
1972	0.09307	357,700	3,169,900
1973	0.06747	357,700	3,169,900
1974	0.08354	357,800	3,169,900

5 YEAR MAXIMUM ANNUAL CONCENTRATION = 0.10377 MICROGRAMS/CU.M.

CLASS I AREA RECEPTOR ANNUAL CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

OR	UTM COORDINATES (METERS) X	Y	ANNUAL CONCENTRATION (MICROGRAMS/CUBIC METER) 1970	1971	1972	1973	1974	5 YEAR MAXIMUM CONC.
1	340,300	3,165,700	0.02333	0.02046	0.02713	0.02233	0.02412	0.02713
2	340,300	3,167,700	0.02338	0.02094	0.02665	0.02224	0.01849	0.02665
3	340,300	3,169,800	0.03544	0.02900	0.03820	0.02791	0.02896	0.03820
4	340,700	3,171,900	0.02900	0.02317	0.02709	0.02077	0.02544	0.02900
5	342,700	3,174,000	0.02407	0.01891	0.02068	0.02312	0.02315	0.02407
6	343,300	3,176,200	0.02539	0.02533	0.02004	0.02663	0.01817	0.02663
7	343,700	3,178,300	0.02413	0.02244	0.01743	0.02115	0.01986	0.02413
8	342,400	3,180,600	0.01506	0.01480	0.01257	0.01816	0.01574	0.01816
9	341,100	3,183,400	0.01159	0.01245	0.01052	0.01361	0.01325	0.01361

5 YEAR MAXIMUM ANNUAL CONCENTRATION IN CLASS I AREA = 0.03820 MICROGRAMS/CU.M.

APPENDIX C

FLORIDA CRUSHED STONE
NO_X ANNUAL IMPACT ANALYSIS

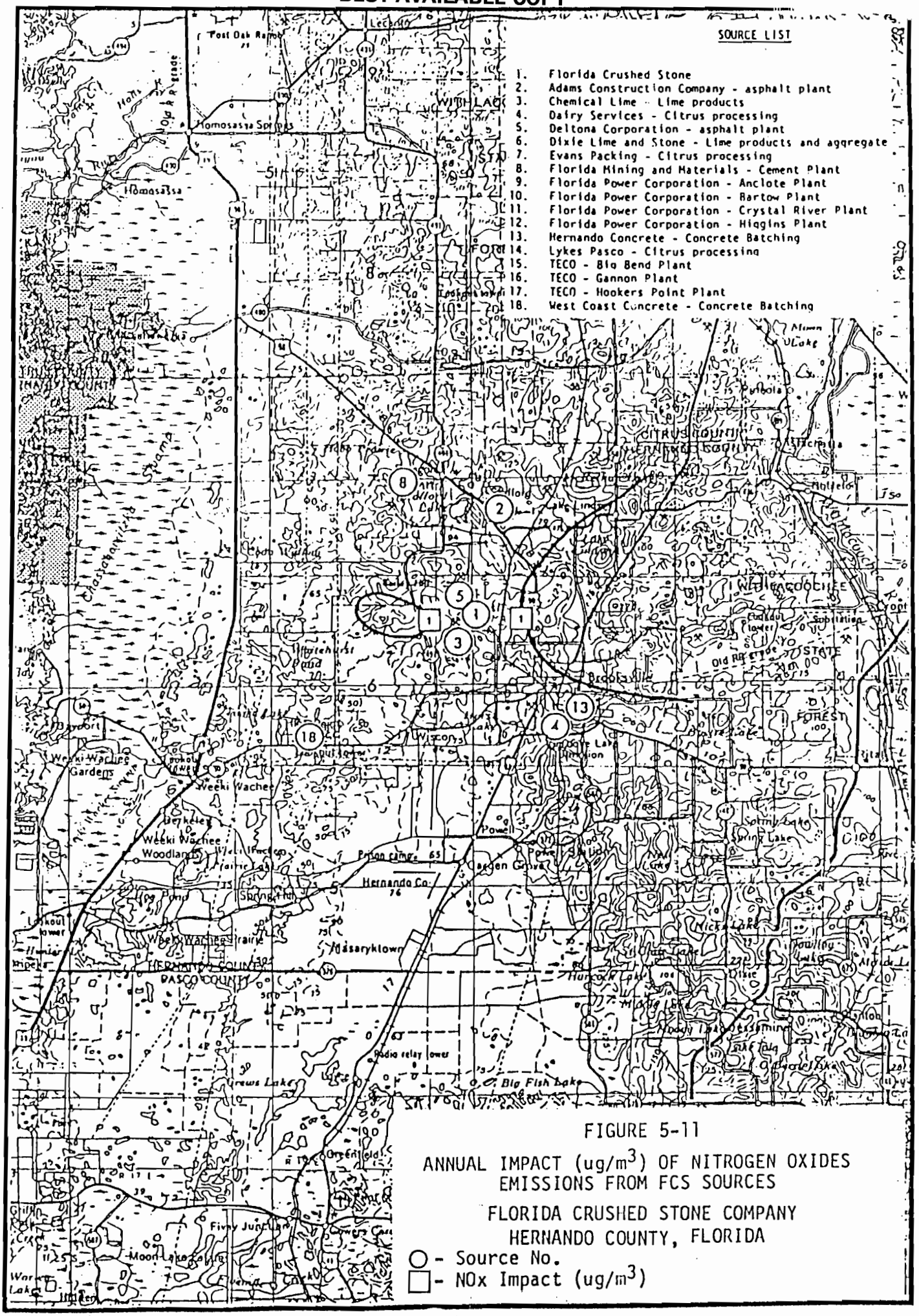

FIGURE 5-11

ANNUAL IMPACT (ug/m^3) OF NITROGEN OXIDES EMISSIONS FROM FCS SOURCES

FLORIDA CRUSHED STONE COMPANY
HERNANDO COUNTY, FLORIDA

○ - Source No.
□ - NOx Impact (ug/m^3)

ATTACHMENT 2

NO_x Control For Kiln No. 2

CONTROL OPTIONS CONSIDERED:

a) Thermal denox in kiln burners

b) Catalytic reduction

c) Ammonia injection

In reviewing the above systems, the following conclusions were reached:

1) Thermal denox would reduce combustion induced NO_x by approximately 25%. This would not be sufficient, since 40% or greater total NO_x (combustion and ammonia) removal is required.

2) Ammonia injection would not be feasible for this case, since high temperatures in the kiln would lead to further NO_x production.

3) The use of catalytic reduction could provide the required NO_x removal efficiency. Therefore, a catalytic reduction system was sized and cost data is presented below:

SYSTEM: Mitsubishi Low Temperature Catalyst (375°F to 535°F)

GAS FLOW RATE: 272,000 ACFM at 375°F

NOx CONCENTRATION: 270 ppm

REMOVAL EFFICIENCY: 42-43%

COST DATA

CAPITAL: $95/KW (JAPCA, Vol. 37, No. 7, July, 1987, "Stationary Combustion NO_x Control" by G.R. Offen, et al.)

($95/KW) (90,905 KW) = $8,636,000

Also, assuming $500,000 for fan update and ducting modifications.

Total Capital Cost = $9.136 million

OPERATING COST: Assume $1,675 per ton of NO_x removed. (Same references as above.)

Annual Cost = $956,800

Denver, CO

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
MAIL STOP 60130

DER
NOV 16 1987
BAQM

NOV 6 1987

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

Dear Ms. Janes:

We appreciate the opportunity to review and comment on Florida Mining and Materials' request to modify their Prevention of Significant Deterioration permit for kiln # 2 at their portland cement plant located near Brooksville, Florida. This facility is located approximately 25 kilometers southeast of Chassahowitzka National Wildlife Refuge, a class I air quality area administered by the U.S. Fish and Wildlife Service. Given the proposed project's distance from Chassahowitzka Refuge and the fact that the proposed permit modification is considered a major modification to an existing facility, we reviewed the information you provided with respect to potential air quality impacts to the refuge. Based on our review, we do not expect emissions from the Florida Mining and Materials facility alone to adversely impact the air quality or air quality related values of Chassahowitzka refuge. However, we have several comments regarding the proposed increase in emissions and the potential cumulative impacts of the Florida Mining and Materials facility and other facilities in the area on the flora and fauna of Chassahowitzka Refuge. These comments are discussed below.

Florida Mining and Materials is proposing to modify their existing air quality permit for kiln # 2 to (1) increase sulfur dioxide emissions from 3 lb/hr (11.4 tons/year) to 20 lb/hr (75.6 tons/year), and (2) to increase nitrogen oxide emissions from 195.3 lb/hr (740.2 tons/year) to 330 lb/hr (1250 tons/year). The original sulfur dioxide emission rates for kiln # 2 were based on testing of Florida Mining and Materials kiln # 1 that showed no sulfur dioxide being detected; therefore, an emission rate of 3.0 lb/hr was requested based on minimum detectable levels for Environmental Protection Agency method 8 being 2.7 lb/hr. Original compliance testing in 1984 and 1985 showed nitrogen oxide emission rates below the permitted levels of 195.3 lb/hr. However, in 1986 this level was exceeded due primarily to the high ammonia concentration in the fly ash which is a constituent of the kiln feed. The proposed emissions increase is based on compliance testing from 1983-1987 that shows a range of 2.40 lb/hr - 11.99 lb/hr for sulfur dioxide emissions and a range of 111.9 lb/hr - 403.0 lb/hr for nitrogen oxide emissions. The

requested sulfur dioxide and nitrogen oxide emission increases appear to be excessively high based on the compliance testing results mentioned above. A more realistic sulfur dioxide emission limitation would be 12 lb/hr (based on compliance test results of 11.99 lb/hr on 4/6/83 which have not been reached since) and a more realistic nitrogen oxide limitation of 250 lb/hr seems to be more appropriate. Also, there was no mention of recent tests for sulfur dioxide emissions from kiln # 1. If kiln # 1 sulfur dioxide emissions are still non-detectable, Florida Mining and Materials should explain why emissions from kiln # 2 have increased while emissions from kiln # 1 have not. In addition, Florida Mining and Materials did not compare the production rates and operating parameters at the time of the various emission tests. If the tests were performed under conditions when the kiln was not operated at the proper combustion temperature, residence time, and excess air, or if allowable production rates were exceeded, the maximum allowable emission rates could also be exceeded. Under these circumstances it would be inappropriate to allow the requested increases in permitted emissions.

A review of Section VII - G (Impacts) indicates that an important omission in the air quality modeling analysis was made. Florida Mining and Materials modeled predictive sulfur dioxide concentration values for the # 2 kiln only. When evaluating the effects of air emissions from a proposed source on a class I area's air quality related values, the Federal Land Manager is not concerned solely with the proposed project's estimated air quality impact, but rather the total pollutant concentration the air quality related values will experience. Therefore, a cumulative air quality modeling analysis of all sources in the area, which incorporates any measured ambient levels in the area, is an important part of any analysis of potential effects on air quality related values and should have been performed. Without such an analysis, the total pollutant level to which the resources are exposed cannot be estimated. Without estimates of total pollutant levels, the Federal Land Manager cannot perform a proper air quality related values analysis.

In conclusion, based on the limited information provided in the Florida Mining and Materials air quality application, we recommend that the sulfur dioxide and nitrogen oxide emissions be limited to 12 lb/hr and 250 lb/hr respectively. However, before the present emission rates are increased we recommend that Florida Mining and Materials submit additional information regarding the emissions from kiln # 1 and the production rates/operating conditions for kiln # 2 at the time of the emission tests. Also, future applications should include a cumulative impact analysis including the contribution from all sources plus ambient background that the air quality related values of class I areas will experience.

If you have any questions please contact Wayne King of our air quality staff in Denver at (303) 969-2806.

Sincerely,

11/10/87 Acting Ralph T. Tarr

Assistant Regional Director
Refuges and Wildlife

Copied: Pradeep Raval
Tom Rogers
CHF IBT
Bill Thomas-SWDist.

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 29, 1987

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. C. M. Coleman
Florida Mining and Materials
P. O. Box 6
Brooksville, Florida 33512

Dear Mr. Coleman:

Re: Review of Application for Modification of No. 2 Cement Kiln - Permit No. AC 27-138850, PSD-FL-124

The Department has received your application package dated August 28, 1987, and has deemed it incomplete. To further process your application, please submit the following, including all calculations, assumptions and reference materials:

1. Please submit an additional $500 processing fee in accordance with Rule 17-4.05(4)(a) of the Florida Administrative Code.

2. Please submit documentation to support the projected 98.4% sulfur dioxide (SO_2) collection efficiency.

3. Provide a Best Available Control Technology (BACT) analysis, addressing control technology alternatives which are available, to support your BACT determination for SO_2 and nitrogen oxides (NOx).

4. Submit coal and fly ash analyses (over a period of time) to document the variability in sulfur and moisture content of the coal, and ammonia content of the ash.

5. Were any emission exceedances a result of a higher production rate than normal? Please provide data to support your answer.

6. State any changes in equipment, materials, operations or emissions at your facility for the five-year contemporaneous period (esp. sources permitted under PSD-FL-063).

7. Please submit a copy of the ambient air modeling output for the full five years completed. Include the modeling output completed for the Class I area and the annual averages.

8. Provide a good engineering practice (GEP) stack height calculation.

9. Provide the most recent and proximate monitoring data to establish the current air quality in the area near the FM&M facility (SO_2 and NOx).

10. Provide the elevation at the base of the stack.

11. Provide a list of the increment consuming (or expanding) sources at the FM&M facility. Include the permit numbers, dates of construction (or shut-down), emission increases (or decreases), and the stack parameters.

If you have any questions please call Pradeep Raval (permitting), Tom Rogers (modeling) or Barry Andrews (BACT coordinator), 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/PR/s

cc: W. Thomas, SW District
W. Aronson, U.S. EPA
M. Flores, NPS
Cross/Tessitore & Associates

B. Andrews
T. Rogers
P. Raval

24 Nov 1987
Orlando. FL

CROSS/TESSITORE & ASSOCIATES, P.A.
4763 S. CONWAY ROAD
BOX 12, SUITE F
ORLANDO, FLORIDA 32812
305/851-1484

November 24, 1987

DER
DEC 3 1987
BAQM

Mr. C. H. Fancy, P.E.
Deputy Chief
Bureau of Air Quality Management
2562 Executive Center Cir. East
Koger Center, Montgomery Bldg.
Tallahassee, FL 32301

Subject: FM&M Application for Modification of No. 2 Cement Kiln, Permit No. AC27-138850, PSD-FL-124
F03.175

Dear Mr. Fancy:

In response to your letter of incompleteness of September 29, 1987, concerning the subject application, the following information is submitted:

(1) An additional $500 processing fee is attached as required.

(2) The documentation to support the projected SO_2 collection efficiency is presented in Attachment 1.

(3) A BACT analysis for SO_2 and NO_x is presented in Attachment 2.

(4) The variation in coal sulfur and moisture content is presented in Attachment 3. This data shows that from September, 1985 through August 1987, coal sulfur content has ranged from 0.42% to 1.66% with the monthly average ranging from 0.61% to 1.11%. This data also shows that the coal moisture content varies from 3.09% to 9.57%.

The above variations in coal sulfur and coal moisture may cause significant changes in kiln SO_2 emissions when referenced to permit limitations of 3.0 lbs/hr. Also, the ammonia content of the ash is presented in Attachment 4. Attachment 4 includes flyash ammonia concentrations from the Tampa Electric Plant, Big Bend 3, for the time period from September 1986 to July 1987.

(5) None of the emission exceedances were as a result

DEPARTMENT OF ENVIRONMENTAL REGULATION

ROUTING AND TRANSMITTAL SLIP

ACTION NO

ACTION DUE DATE

1. TO: (NAME, OFFICE, LOCATION)	Initial / Date
BILL THOMAS	
2. DER - TALLASSEE	Initial / Date
3. BAQM	Initial / Date
4.	Initial / Date

REMARKS:

For processing

Modification - Major source

DER

SEP 14 1987

BAQM

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: Jim McDonald

DATE 9-10-87

PHONE

of a higher production rate. This conclusion is substantiated in Attachment 5 which shows that Kiln 2 feed rates ranged form 103 to 129 tons per hour, with no apparent correlation with SO_2 or NO_x emission rates. The permitted kiln feed rate is 120 tons per hour.

(6) There have been no changes in equipment, materials, operations or emissions at the facility during the five-year period of PSD-Fl-063 with the exception of the increase in flyash ammonia concentration as discussed in the original permit application.

(7) A copy of the ambient air modeling output for the five years completed is presented in Attachment 6.

(8) A good engineering practice (GEP) stack height calculation is presented in Attachment 7. This calculation shows that the GEP stack height is 265 feet based on the closest structure of influence, the Air Mill. Since the existing stack height is approximately 100 feet, the stack does not meet the GEP requirements and a downwash analysis will be required. This analysis will be submitted in the near future.

(9) A review of the available air monitoring data by Brian Kerckhoff, of the Bureau of Air Quality shows that SO_2 and NO_x monitoring data at Crystal River in Citrus county is available for the calendar years 1984 and 1985. This data shows that SO_2 and NO_x ambient levels were insignificant and the monitoring was terminated. Citrus County, which is primarily rural and agricultural in nature, should reflect the expected backgrounds of SO_2 and NO_x in Hernando County, which is also rural and agricultural in nature.

(10) The elevation of the base of the kiln 2 stack is 101' 0" MSL.

(11) The only other sources at the FM&M facility which emit SO_2 and NO_x are Kiln 1 and the Clay Crusher/Dryer. Kiln 1 began construction on December 18, 1973 (Permit A0 27-2255) and began operation on August 24, 1976 (A0-27-2255). The Clay Crusher/Dryer also began construction on December 18, 1973 (A0 27-2260) and began operation on August 24, 1976 (Permit A0 27-2260).

Since the above operation date, there has been no change in the Kiln 1 operation and/or emissions. However, in 1980 in Clay Crusher/Dryer operating hours were extended form 2400 to 4800 hours per year. The emissions associated with the Clay Crusher/Dryer are

as follows:

SO_2 = 54 lb/hr

NO_x = 8.3 lb/hr

If you have any questions on the above, or require any additional data, please do not hesitate to call me.

Sincerely,

Joseph L. Tessitore

Joseph L. Tessitore, P.E.
Vice President

JLT:kbw
Enc.a/s
M0048

Copied Bradup Boyd
Tom Rogers
Barry Andrews
Wayne Aronson - EPA
Miguel Flores - NPS
Bill Thomas - SW Dist

12/4/87 MD

LIST OF ATTACHMENTS

1. SO_2 Collection Efficiency Documentation
2. BACT Analysis for SO_2 and NO_x
3. Coal Sulfur and Moisture Content
4. Flyash Ammonia Content
5. SO_2 and NO_x Emission Variations with Kiln Feed Rate
6. Air Modeling Output
7. Good Engineering Practice (GEP) Stack Height Calculations

ATTACHEMENT 1

SO_2 COLLECTION EFFICIENCY DOCUMENTATION

COLLECTION EFFICIENCY DOCUMENTATION FOR SO_2

The collection efficiency in the permit application was based on the following:

AP-42 states that uncontrolled SO_2 emissions from a Portland cement kiln (dry process) are:

(1) Mineral Source

10.2 lb SO_2 per ton of cement produced.

(2) Combustion Source

6.85 lb SO_2 per ton of cement produced

where S is the % sulfur in the coal.

For the FM & M case,

Cement Production = 73.5 tons per hour

Therefore,

SO_2 from mineral source

= 73.50 ton/hr x 10.2 lb/ton = 749.70 lb/hr

SO_2 from Coal Combustion

= 73.50 ton/hr x 6.8 (1.0) lb/ton = 499.80 lb/hr

Total Uncontrolled SO_2 = (749.70 + 499.80) = 1,249.50 lb/hr.

Assuming a proposed SO_2 emission rate of 20 lb/hr., the resulting control efficiency would be as follows:

$$\text{Collection Efficiency} = \left[1 - \frac{20}{1249.5}\right] = 0.984$$

If only the fuel source of SO_2 is used, the proposed collection efficiency would be as follows:

$$\text{Collection Efficiency} = \left[1 - \frac{20}{499.80}\right] = 0.960$$

ATTACHMENT 2

BACT ANALYIS FOR SO_2 AND NO_x

BACT ANALYSIS FOR SO_2

A summary of SO_2 emission factors and the associated pollution control systems for Portland Cement Plants are enclosed for permitted Florida facilities and nationwide facilities. This data shows that the SO_2 emission factor ranges from 0.28 lbs. SO_2 per ton of clinker to 12.1 lbs. SO_2 per ton of clinker. The proposed FM&M emission rate of 20 lbs. per hour yields an emission rate of 0.28 lbs. SO_2 per ton of clinker. This emission factor and emission rate is the lowest for existing and proposed Portland Cement Plants in Florida and the United States.

CEMENT KILN SO_2 EMISSIONS AND CONTROL TECHNOLOGY SUMMARY

FLORIDA FACILITIES

FACILITY	KILN THROUGHPUT (ton/hr clinker)	PERMIT LIMIT (lb/hr)	EMISSION FACTOR (lb/ton clinker)	POLLUTION CONTROL SYSTEM	DATE
Lonestar Florida Hialeah,FL		None	5.0	Doubled Chamber E.S.P.	12/84
Kiln 1	25				
Kiln 2	25				
Kiln 3	87.5				
FM&M	71	20*	0.28	Baghouse	12/80
Florida Crushed Stone	75	74	0.98	Baghouse	3/84

*Proposed emission limit

CEMENT KILN SO_2 EMISSIONS AND CONTROL TECHNOLOGY SUMMARY

(NATIONWIDE FACILITIES)

FACILITY	PLANT THROUGHPUT (ton/hr clinker)	PERMIT LIMIT (lb/hr)	EMISSION FACTOR (lb/ton clinker)	POLLUTION CONTROL SYSTEM	PERMIT DATE
California Portland Cement Plant Mojave,CA	79	616	7.8	Baghouse Alkali Dust	1/10/79
Kaiser Cement & Gypsum Corp. (2 kilns) Dermante, CA	145	481	3.3	Baghouse ALkali Dust	12/26/78
Lonestar Industries, Inc. Georgetown, TX	79	960	12.1	Baghouse Alkali Dust	2/19/80
Creole Corp. Imperial County,CA	67	78.3	1.17	Baghouse Alkali Dust	5/20/80
Monolith Portland Cement Co. Monolith, CA	67	300	4.4	Baghouse Alkali Dust	12/21/81
Southeastern Portland cement Co. Odessa, Texas					
Kiln 1	71	208	2.9	None	11/5/81
Kiln 2	62	86	1.4	Liquid Scrubber	
Kiln 3	104	134	1.3	Partial Liquid Scrubber	
Lonestar Industries Concrete, WA	100		2.75	Baghouse Alkali Dust	1/25/82

BACT Analysis For NOx

A summary of NOx emission factors and the associated pollution control systems for Portland Cement Plans are enclosed for permitted Florida facilities and nationwide facilities. This data shows that the NOx emission factors range from 2.50 lbs of NOx per ton of clinker to 7.98 lbs. of NOx per ton of clinker. The proposed FM&M emission rate of 320 lbs. per hour is the lowest emission rate for Florida facilities. The proposed FM&M emission factor of 4.65 lbs. of NOx per ton of clinker is in the mid range of values on a nationwide basis.

An important consideration is that the original NOx emission rate of 195 lbs per hour is the lowest in the nation and the resulting emission factor of 2.75 lbs. of NOx per ton of clinker is one of the lowest in the nation. Actual testing of the FM&M facility prior to the addition of ammonia to the flyash shows emission rates between 11.9 to 141.2 lbs. per hour. Unfortunately, the addition of ammonia to the fly ash results in a substantial increase in NOx emissions. These emissions are not directly controlled by combustion refinement but are more a product of high kiln temperatures and the ammonia source of nitrogen.

The alternatives to using ammonia fly ash in the kiln are (1) disposing of the fly ash in a landfill or other containment area (2) the elimination of ammonia from the flyash. The placing of ammonia contaminated flyash in a landfill provides for potential serious groundwater contamination. The elimination of ammonia from the flyash would result in serious H_2SO_4 mist emissions from Tampa Electric Big Bend 3. The use of this flyash in a cement product provides for the best overall solution with a minimal environmental impact. This is especially true when the ground level impact is considered.

CEMENT KILN SO_2 EMISSIONS AND CONTROL TECHNOLOGY SUMMARY

(NATIONWIDE FACILITIES)

FACILITY	PLANT THROUGHPUT (ton/hr clinker)	PERMIT LIMIT (lb/hr)	EMISSION FACTOR (lb/ton clinker)	POLLUTION CONTROL SYSTEM	PERMIT DATE
Las Vegas Portland Cement Jean, NV	148	260 (2hr avg.) 150 (30 day avg.)	1.76 1.0	Low Sulfur Coal & Alkali Dust	2/1/82
Lonestar Industries California	100	250	2.5	Alkaline Slurry Injection System	7/29/87

BACT Analysis For NOx

A summary of NOx emission factors and the associated pollution control systems for Portland Cement Plans are enclosed for permitted Florida facilities and nationwide facilities. This data shows that the NOx emission factors range from 2.50 lbs of NOx per ton of clinker to 7.98 lbs. of NOx per ton of clinker. The proposed FM&M emission rate of 320 lbs. per hour is the lowest emission rate for Florida facilities. The proposed FM&M emission factor of 4.65 lbs. of NOx per ton of clinker is in the mid range of values on a nationwide basis.

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The alternatives to using ammonia fly ash in the kiln are (1) disposing of the fly ash in a landfill or other containment area (2) the elimination of ammonia from the flyash. The placing of ammonia contaminated flyash in a landfill provides for potential serious groundwater contamination. The elimination of ammonia from the flyash would result in serious H_2SO_4 mist emissions from Tampa Electric Big Bend 3. The use of this flyash in a cement product provides for the best overall solution with a minimal environmental impact. This is especially true when the ground level impact is considered.

CEMENT KILN NO_x EMISSIONS AND CONTROL TECHNOLOGY SUMMARY

(FLORIDA FACILITIES)

FACILITY	PLANT THROUGHPUT (ton/hr clinker)	PERMIT LIMIT (lb/hr)	EMISSION FACTOR (lb/ton clinker)	POLLUTION CONTROL SYSTEM	PERMIT DATE
Lonestar Cement Hialeah, FL					
Kiln 1	25			ESP	12/85
Kiln 2	25				
Kiln 3	87.5	582*	4.23		
Florida Mining & Materials	71.0	320**	4.65	Baghouse	12/80
Florida Crushed Stone Brooksville, FL	75.0	359.6	4.8	Design	3/27/84

*Not a permit limit, but stated as "an emission estimate"

**Proposed Emission Limit

CEMENT KILN NO_x EMISSIONS AND CONTROL TECHNOLOGY SUMMARY

(NATIONWIDE FACILITIES)

FACILITY	PLANT THROUGHPUT (ton/hr clinker)	PERMIT LIMIT (lb/hr)	EMISSION FACTOR (lb/ton clinker)	POLLUTION CONTROL SYSTEM	PERMIT DATE
California Cement Mojove, CA Precalciner	79	No Limit	None	Reduced Fuel Usage Low Furnace Temp	1/10/79
Monolith Portland Cement Monolith, CA	67	260	3.88	Coal Fired Wet Process	12/21/81
Creole Corp. Plaster City, CA Kiln	67	213	3.17	Reduced Temp. in Precalcining Furnace High Fuel Efficiency	5/20/80
Lonestar Industries CA	100	250	2.50	O_2 Control on Combustion Air	7/29/86
Kaiser & Gypsum Cement Permeneute, CA	145	1158	7.98	Reduced Fuel Usage and Low Temp	12/26/78
Las Vegas Portland Cement Jean, NV	71	281	3.95	Baghouse	2/1/82
Lonestar Industries Georgetown, TX	79	360	4.50	Reclaimer Process Design	2/17/80
Lonestar, Ind. Concrete, WA	100	300	3.00	Process Design	1/25/82

ATTACHMENT 3

COAL SULFUR AND MOISTURE CONTENT

FLORIDA MINING & MATERIALS CORP. INTERNAL CORRESPONDENCE

TO: HANK ANDRE DATE: OCT. 8, 1987

FROM: BOB ROGERS

SUBJECT: MOISTURES AND SULFURS ON COAL RECEIVED SEPTEMBER 1985 TO PRESENT

Date	Supplier	% Sulfur	% Moisture
September 1985	ANR	0.75	4.16
	Benle	0.90	7.53
	Columbia	0.84	4.95
	Shelton	0.90	5.84
Average for month		0.85	5.62
October 1985	ANR	0.79	5.18
	Benle	0.80	7.93
	Columbia	0.70	-
Average for month		0.76	6.55
November 1985	ANR	0.73	4.56
	Columbia	0.69	-
Average for month		0.71	4.56
December 1985	ANR	0.90	4.32
	Columbia	0.42	5.78
	Hiller	1.05	4.70
Average for month		0.79	4.93
January 1986	ANR	0.76	4.73
	Columbia	1.08	4.87
	Hiller	0.73	5.31
Average for month		0.85	4.97
February 1986	ANR	0.73	3.09
	Columbia	0.80	3.15
	Hiller	0.79	5.29
Average for month		0.77	3.89
March 1986	Almetco	1.66	4.58
	Columbia	0.78	5.28
	Hiller	0.90	5.29
Average for month		1.11	5.05
April 1986	Almetco	1.20	3.52
	Benle	0.83	6.21
	Columbia	0.98	4.98
	P/M	0.67	6.38
Average for month		0.92	5.27
May 1986	P/M	0.69	6.03
June 1986	No coal received this month		

Date	Supplier	% Sulfur	% Moisture
July 1986	Mullen & Son	1.05	4.95
	P/M	0.58	4.45
Average for month		0.82	4.70
August 1986	Columbia	0.88	2.34
	Ohio Penna	1.12	3.77
	P/M	0.77	3.38
Average for month		0.92	3.16
September 1986	Columbia	0.98	5.71
	P/M	0.55	3.33
	Ohio Penna	0.53	3.38
Average for month		0.69	4.17
October 1986	Applo Fuel	0.81	4.46
	Hiller	0.83	6.01
	P/M	0.46	3.11
Average for month		0.70	4.52
November 1986	P/M	0.42	4.46
	Hiller	0.88	5.61
Average for month		0.65	4.57
December 1986	P/M	0.56	4.33
	Columbia	0.85	4.82
Average for month		0.71	4.58
January 1987	Coastal	0.55	4.89
	Columbia	0.72	4.48
	P/M	0.55	6.50
Average for month		0.61	5.29
February 1987	Coastal	0.70	4.94
	P/M	0.71	6.94
Average for month		0.70	5.94
March 1987	Coastal	0.63	5.22
	Columbia	0.97	6.73
	P/M	0.76	4.31
Average for month		0.79	5.42
April 1987	Columbia	0.79	4.22
	P/M	0.51	4.13
	Shelton	0.83	3.52
Average for month		0.71	3.96
May 1987	Columbia	0.79	4.04
	P/M	0.44	3.40
Average for month		0.62	3.72

Date	Supplier	% Sulfur	% Moisture
June 1987	Columbia	0.74	-
	P/M	0.55	3.09
	Coastal	0.68	4.63
	Average for month	0.66	3.86
July 1987	Coastal	0.79	5.15
	Columbian	0.74	5.12
	Average for month	0.77	5.13
August 1987	Columbian	0.73	9.57
September 1987	Columbian	No analysis same coal as last month	

ATTACHMENT 4

FLYASH AMMONIA CONTENT

FLORIDA MINING & MATERIALS CORP.

INTERNAL CORRESPONDENCE

TO: RALPH SHEPARD

DATE: OCTOBER 6, 1986

FROM: BOB ROGERS

SUBJECT: NH3 (AMMONIA) TESTING

In accordance to your agreement with the Florida Department of Environmental Regulation we initiated a program to monitor concentrations of ammonical nitrogen in the kiln feed being burned in #2 rotary kiln and also in the Big Bend #3 flyash which we are using in the kiln feed manufacturing process.

The first sample of kiln feed was taken on 9/29/86. Three samples were taken at approximately eight hour intervals on that date. The sample containers were sealed and refrigerated. The same procedure has been followed on a daily basis since that time. Truck samples were also taken from all Big Bend #3 flyash shipments received in the plant over this time period and stored under the same conditions.

On approximately seven day intervals all of the daily samples of both materials were compiled and sent to an independent testing facility (Thornton Laboratories, Inc.) to be analyzed for concentration of ammonical nitrogen.The results from four of these sample periods were received from Thornton Laboratories during the month of October. The results were as follows:

Test Period	#2 Kiln Feed	(Flyash) Big Bend #3
9/29/86-10/2/86	77 ppm	2140 ppm
10/3/86-10/10/86	290 ppm	2160 ppm
10/11/86-10/15/86	< 7.33 ppm	1901 ppm
10/16/86-10/23/86	< 7.00 ppm	1860 ppm

Please find attached the certificates of analysis from Thornton Laboratories for all samples which are reported above. Further results will be supplied on a monthly basis as they are received.

cc
Hank Andre

FLORIDA MINING & MATERIALS CORP.

INTERNAL CORRESPONDENCE

TO: RALPH SHEPARD

DATE: DECEMBER 4, 1986

FROM: ROBERT R. ROGERS

SUBJECT: NH3 (AMMONIA) TESTING

In accordance to your agreement with the Florida Department of Environmental Regulation we are continuing to monitor concentrations of ammonical nitrogen in the kikn feed being burned in #2 rotary kiln and also in the Big Bend #3 flyash which is being used in the kiln feed manufacturing process.

Four samples were collected during the month of November following the previously described procedure and sent to Thornton Laboratories for analysis. The results from all of these sample periods have been received. They were as follows :

TEST PERIOD	#2 KILN FEED	(flyash) BIG BEND #3
10/24/86-10/30/86	15 ppm	1800 ppm
10/31/86-11/06/86	22 ppm	none received
11/07/86-11/14/86	11 ppm	1780 ppm
11/14/86-11/20/86	97 ppm	1640 ppm

Please find attached the certificates of analysis from Thornton Laboratories for all samples which are reported above. Further results will be reported on a monthly basis as they are received.

cc
Hank Andre

FLORIDA MINING & MATERIALS CORP.

INTERNAL CORRESPONDENCE

TO: RALPH SHEPARD

DATE: JANUARY 8, 1987

FROM: ROBERT R. ROGERS RRR

SUBJECT: NH3 (AMMONIA) TESTING

In accordance to your agreement with the Florida Department of Environmental Regulation we are continuing to monitor concentrations of ammonical nitrogen in the kiln feed being burned in #2 rotary kiln and also in the Big Bend #3 flyash which is being used in the kiln feed manufacturing process.

Six samples were collected during the month of December following the previously described procedure and sent to Thornton Laboratories for analysis. The results from five of these sample periods have been received. They were as follows :

TEST PERIOD	#2 KILN FEED	(flyash) BIG BEND #3
11/21/86-11/27/86	26 ppm	2110 ppm
11/28/86-12/ 4/86	170 ppm	1615 ppm
12/ 5/86-12/11/86	226 ppm	2000 ppm
12/12/86-12/18/86	77 ppm	803 ppm
12/19/86-12/25/86	62 ppm	1360 ppm

Please find attached the certificates of analysis from Thornton Laboratories for all samples which are reported above. Further results will be reported on a monthly basis as they are received.

cc :
Hank Andre

FLORIDA MINING & MATERIALS CORP.

INTERNAL CORRESPONDENCE

TO: RALPH SHEPARD

DATE: FEBRUARY 4, 1987

FROM: ROBERT R. ROGERS

SUBJECT: NH3 (AMMONIA) TESTING

In accordance to your agreement with the Florida Department of Environmental Regulation we are continuing to monitor concentrations of ammonical nitrogen in the kikn feed being burned in #2 rotary kiln and also in the Big Bend #3 flyash which is being used in the kiln feed manufacturing process.

Five samples were collected during the month of January following the previously described procedure and sent to Thornton Laboratories for analysis. The results from five of these sample periods have been received. They were as follows :

TEST PERIOD	#2 KILN FEED	(flyash) BIG BEND #3
12/26/87- 1/ 1/87	180 ppm	none received
1/ 2/87- 1/ 8/87	13 ppm	2200 ppm
1/ 9/87- 1/15/87	55 ppm	2270 ppm
1/16/87- 1/22/87	Kiln down	1660 ppm

Please find attached the certificates of analysis from Thornton Laboratories for all samples which are reported above. Further results will be reported on a monthly basis as they are received.

cc
Hank Andre

...DA MINING & MATERIALS CORP.

INTERNAL CORRESPONDENCE

TO: RALPH SHEPARD

DATE: MARCH 3, 1987

FROM: ROBERT R. ROGERS

SUBJECT: NH3 (AMMONIA) TESTING

In accordance to your agreement with the Florida Department of Environmental Regulation we are continuing to monitor concentrations of ammonical nitrogen in the kiln feed being burned in #2 rotary kiln and also in the Big Bend #3 flyash which is being used in the kiln feed manufacturing process.

Five samples were collected during the previous sampling period following the previously described procedure and sent to Thornton Laboratories for analysis. The results from four of these samples have been received. They were as follows :

TEST PERIOD	#2 KILN FEED	(flyash) BIG BEND #3
1/23/87- 1/29/87	9 ppm	2660 ppm
1/30/87- 2/ 5/87	105 ppm	2300 ppm
2/ 6/87- 2/12/87	25 ppm	1730 ppm
2/13/87- 2/19/87	55 ppm	4890 ppm

Please find attached the certificates of analysis from Thornton Laboratories for all samples which are reported above. Further results will be reported on a monthly basis as they are received.

cc
Hank Andre

...JA MINING & MATERIALS CORP.

INTERNAL CORRESPONDENCE

TO: RALPH SHEPARD

DATE: APRIL 2, 1987

FROM: ROBERT R. ROGERS

SUBJECT: NH3 (AMMONIA) TESTING

In accordance to your agreement with the Florida Department of Environmental Regulation we are continuing to monitor concentrations of ammonical nitrogen in the kiln feed being burned in #2 rotary kiln and also in the Big Bend #3 flyash which is being used in the kiln feed manufacturing process.

Four samples were collected during the month of March following the previously described procedure and sent to Thornton Laboratories for analysis. The results from these samples are as follows :

TEST PERIOD	#2 KILN FEED	(flyash) BIG BEND #3
2/20/87- 2/26/87	91 ppm	1890 ppm
3/ 2/87- 3/ 6/87	62 ppm	227 ppm
3/ 7/87- 3/13/87	55 ppm	1760 ppm
3/14/87- 3/19/87	84 ppm	1970 ppm

Please find attached the certificates of analysis from Thornton Laboratories for all samples which are reported above. Further results will be reported on a monthly basis as they are received.

cc
Hank Andre

TO: RALPH SHEPARD DATE: MAY 1, 1987

FROM: ROBERT R. ROGERS RRR

SUBJECT: NH3 (AMMONIA) TESTING

In accordance to your agreement with the Florida Department of Environmental Regulation we are continuing to monitor concentrations of ammonical nitrogen in the kiln feed being burned in #2 rotary kiln and also in the Big Bend #3 flyash which is being used in the kiln feed manufacturing process.

Five samples were collected during the previous sampling period following the previously described procedure and sent to Thornton Laboratories for analysis. The results from four of these samples have been received. They were as follows :

TEST PERIOD	#2 KILN FEED	(flyash) BIG BEND #3
3/20/87- 3/26/87	13 ppm	2260 ppm
3/27/87- 4/ 2/87	3 ppm	* NONE RECEIVED
4/ 3/87- 4/ 9/87	28 ppm	* NONE RECEIVED
4/10/87- 4/16/87	55 ppm	1060 ppm

Please find attached the certificates of analysis from Thornton Laboratories for all samples which are reported above. Further results will be reported on a monthly basis as they are received.

* No Big Bend flyash was received for a for two sampling periods due to shutdown of this unit for routine maintenance.

cc
Hank Andre

...MATERIALS CORP. INTERNAL CORRESPONDENCE

TO: RALPH SHEPARD DATE: JUNE 4, 1987

FROM: ROBERT R. ROGERS

...JECT: NH3 (AMMONIA) TESTING

In accordance to your agreement with the Florida Department of ...nvironmental Regulation we are continuing to monitor concentrations ...f ammonical nitrogen in the kiln feed being burned in #2 rotary kiln ...nd also in the Big Bend #3 flyash which is being used in the kiln ...eed manufacturing process.

Five samples were collected during the previous sampling period ...ollowing the previously described procedure and sent to Thornton ...aboratories for analysis. The results from four of these samples have ...en received. They were as follows :

TEST PERIOD	#2 KILN FEED	(flyash) BIG BEND #3
4/17/87- 4/23/87	10 ppm	* NONE RECEIVED
4/24/87- 4/30/87	36 ppm	* NONE RECEIVED
...1/87- 5/ 7/87	18 ppm	* NONE RECEIVED
...8/87- 5/14/87	24 ppm	* NONE RECEIVED

Please find attached the certificates of analysis from Thornton ...oratories for all samples which are reported above. Further results ...l be reported on a monthly basis as they are received.

...o Big Bend flyash was received during this sampling period due to ...utdown of this unit and limited supply.

Andre

TO: RALPH SHEPARD DATE: JULY 10, 1987

FROM: ROBERT R. ROGERS

SUBJECT: NH3 (AMMONIA) TESTING

In accordance to your agreement with the Florida Department of Environmental Regulation we are continuing to monitor concentrations of ammonical nitrogen in the kiln feed being burned in #2 rotary kiln and also in the Big Bend #3 flyash which is being used in the kiln feed manufacturing process.

Five samples were collected during the previous sampling period following the previously described procedure and sent to Thornton Laboratories for analysis. The results of these samples have been received. They were as follows :

TEST PERIOD	#2 KILN FEED	(flyash) BIG BEND #3
5/15/87- 5/21/87	4.8 ppm	* NONE RECEIVED
5/22/87- 5/28/87	8 ppm	* NONE RECEIVED
5/29/87- 6/ 4/87	16 ppm	600 ppm
6/ 5/87- 6/11/87	7.6 ppm	1600 ppm
6/12/87- 6/18/87	16 ppm	710 ppm

Please find attached the certificates of analysis from Thornton Laboratories for all samples which are reported above. Further results will be reported on a monthly basis as they are received.

* No Big Bend flyash was received during this sampling period due to shutdown of this unit and limited supply.

cc
Hank Andre

FLORIDA MINING & MATERIALS CORP.

INTERNAL CORRESPONDENCE

TO: RALPH SHEPARD

DATE: AUGUST 7, 1987

FROM: ROBERT R. ROGERS

SUBJECT: NH3 (AMMONIA) TESTING

In accordance to your agreement with the Florida Department of Environmental Regulation we are continuing to monitor concentrations of ammonical nitrogen in the kiln feed being burned in #2 rotary kiln and also in the Big Bend #3 flyash which is being used in the kiln feed manufacturing process.

Five samples were collected during the previous sampling period following the previously described procedure and sent to Thornton Laboratories for analysis. The results of these samples have been received. They were as follows :

TEST PERIOD	#2 KILN FEED	(flyash) BIG BEND #3
6/19/87- 6/25/87	15 ppm	1711 ppm
6/25/87- 7/ 2/87	18 ppm	* NONE RECEIVED
7/ 3/87- 7/ 9/87	16 ppm	* NONE RECEIVED
7/10/87- 7/16/87	30 ppm	1910 ppm
7/17/87- 7/23/87	12 ppm	1870 ppm

Please find attached the certificates of analysis from Thornton Laboratories for all samples which are reported above. Further results will be reported on a monthly basis as they are received.

* No Big Bend flyash was received during this sampling period due to shutdown of this unit and limited supply.

cc
Hank Andre

ATTACHMENT 5

SO_2 and NO_x VARIATIONS WITH KILN FEED RATE

SO_2 and NO_x EMISSIONS VERSUS KILN FEED RATE

TEST DATE	TEST RUN	KILN FEED RATE (tons/hr)	SO_2 EMISSIONS (lb/hr)	NO_x EMISSIONS (lb/hr)
4-4-83	1	119	10.30	
4-6-83	2	119	15.70	
4-6-83	3	119	9.98	
4-21-83	1	115	4.70	
4-21-83	2	103	2.40	
4-21-83	3	103	8.80	
4-21-83	4	103	9.00	
4-21-83	5	105	9.60	
5-25-83	1	112	< 2.70	
5-25-83	2	112	< 2.70	
5-25-83	3	112	< 2.70	
4-16-84	1	111		137
4-16-84	2	111		132
4-16-84	3	110		155
4-16-84	4	110	3.33	
4-16-84	5	112	4.54	
4-16-84	6	110	6.01	
4-22-85	1	113	10.20	80.7
4-22-85	2	113	9.60	103.8
4-22-85	3	113	8.80	100.3

SO_2 and NO_x EMISSIONS VERSUS KILN FEED RATE (con't)

TEST DATE	TEST RUN	KILN FEED RATE (tons/hr)	SO_2 EMISSIONS (lb/hr)	NO_x EMISSIONS (lb/hr)
4-4-86	1	112		347.0
4-4-86	2	112		379.0
4-4-86	3	112		483.7
5-5-86	1	122		302.5
5-5-86	2	122		252.0
5-5-86	3	122		192.0
5-5-86	4	122		214.0
8-20-86	1	120	< 2.7	116.2
8-20-86	2	120	< 2.7	96.2
8-20-86	3	120	< 2.7	123.4
4-13-87	1	129	1.68	166.9
4-13-87	2	129	4.86	338.6
4-13-87	3	129	7.77	12.8
9-23-87	1	120	Aborted	
9-23-87	2	120	Aborted	
9-23-87	3	120	< 2.70	
9-23-87	4	120	< 2.70	
9-23-87	5	120	< 2.70	
9-23-87	6	120	< 2.70	

To Maggie

Date 9-16 Time 4.15

WHILE YOU WERE OUT

M Pradeep

of

Phone
Area Code Number Extension

	TELEPHONED		PLEASE CALL
	CALLED TO SEE YOU		WILL CALL AGAIN
	WANTS TO SEE YOU		URGENT
	RETURNED YOUR CALL		

Message Pls give copies of Fla. Mining & Materials to
1) BARRY for BACT Analysis
2) TOM Rogers for Modelling

Operator

CROSS/TESSITORE & ASSOCIATES, P.A.
4763 S. CONWAY ROAD
BOX 12, SUITE F
ORLANDO, FLORIDA 32812
305/851-1484

August 28, 1987

Mr. Bill Thomas
Air Permitting
FDER/Southwest District
4520 Oak Fair Blvd.
Tampa, Florida 33610-7347

Subject: FM&M Kiln #2 Permit Modification

Dear Bill:

Attached are the following items for the subject source:

(1) Four (4) copies Application to Modify Air Pollution Source

(2) A check for $500.00.

(3) One (1) copy of ISCST Output for Air Quality Modeling.

This submission fulfills the requirements of Consent Order OGC 86-1471 dated January 23, 1987.

If you have any questions, please do not hesitate to call upon me.

Sincerely,

Joseph L. Tessitore

Joseph L. Tessitore, P.E.
Vice President

JLT:kbw
cc: Sandra Tippin
Ralph Shepard

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

AC27-138850

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

ROY DUKE
DISTRICT MANAGER

APPLICATION TO OPERATE/CONSTRUCT AIR POLLUTION SOURCES

SOURCE TYPE: Portland Cement Plant [ ] New[1] [X] Existing[1]

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

COMPANY NAME: Florida Mining and Materials COUNTY: Hernando

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) No.2 Cement Kiln

SOURCE LOCATION: Street U.S. Highway 98 (North) City NW of Brooksville

UTM: East 17-356.00 North 3169.89

Latitude 28 ° 38 ' 34 "N Longitude 82 ° 28' 25 "W

APPLICANT NAME AND TITLE: C.M. Coleman, Jr.; Vice President

APPLICANT ADDRESS: P.O. Box 6, Brooksville, Florida 33512

SECTION I: STATEMENTS BY APPLICANT AND ENGINEER

A. APPLICANT

I am the undersigned owner or authorized representative* of Florida Mining & Materials

I certify that the statements made in this application for a Modification 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 control facilities in such a manner as to comply with the provision of Chapter 403, Florida Statutes, and all the rules and regulations of the department and revisions thereof. I also understand that a permit, if granted by the department, will be non-transferable and I will promptly notify the department upon sale or legal transfer of the permitted establishment.

*Attach letter of authorization

Signed: C.M. Coleman

C. M. Coleman, Jr., Vice President
Name and Title (Please Type)

Date: 8/28/87 Telephone No. 904/796-7241

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 have been designed/examined by me and found to be in conformity with modern engineering principles applicable to the treatment and disposal of pollutants characterized in the 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 Joseph L. Tessitore

Joseph L. Tessitore
Name (Please Type)

Cross/Tessitore & Associates, P.A.
Company Name (Please Type)

4763 S. Conway Rd., Suite F, Orlando, FL 32812
Mailing Address (Please Type)

Florida Registration No. 23374 Date: 8/24/87 Telephone No. 305/851-1484

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 Attached Sheet II-A

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

Start of Construction N/A Completion of Construction N/A

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.)

Equipment for Baghouse	$2,825,000.00
Erection	2,800.000.00
Total	5,625,000.00

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

AC 27-30450 Issued July 25, 1980 Date of Expiration Dec. 31, 1983

A027-65207 Issued August 16, 1983 " " " August 16, 1988

Warning Notice 53-86-07-258 Dated 7-14-86
Consent Order OGC 86-1471 Dated 1-23-87

E. Requested permitted equipment operating time: hrs/day 24 ; days/wk 7 ; wks/yr 45 ;

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? NO

   a. If yes, has "offset" been applied?

   b. If yes, has "Lowest Achievable Emission Rate" been applied?

   c. If yes, list non-attainment pollutants.

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.

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		
Limestone	Particulate	0.02	191667	See Process Flow Diagram
Clay	"	0.08	19167	See V-6
Fly Ash	"	0.14	24167	
Staurolite	"	1.40	2500	
Mill Scale	"	1.40	2500	

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

1. Total Process Input Rate (lbs/hr): 240,000

2. Product Weight (lbs/hr): 147,000 73.5 TPH

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/hr	T/yr	
Particulate	24	90.7	17-2.660	36	18,008	68,070	See V-6
SO_2	20	75.6	60.60	N/A	1,250	4,725	E-19 "
NO_x	330	1247.4	Subpart F	N/A	330	1247.4	"
CO	10	37.8		N/A	10	37.8	"
HC	3	11.3		N/A	3	11.3	"
Opacity	less than 20%			20%			

[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)
American Air	Particulate	99.94%	0-60	Testing
Filter (Reserve				
Air, Variable				
Cycle)				

E. Fuels

Type (Be Specific)	Consumption*		Maximum Heat Input (MMBTU/hr)
	avg/hr	max./hr	
Coal	17,200	20,000	2.5×10^8

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

Fuel Analysis:

Percent Sulfur: 1 Percent Ash: 12

Density: _____ lbs/gal Typical Percent Nitrogen: Negligible

Heat Capacity: 12,500 BTU/lb _____ BTU/gal

Other Fuel Contaminants (which may cause air pollution): _____

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

Annual Average _____ Maximum _____

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

Any solids collected from the fabric filter will be returned to the kiln feed and recycled through the system.

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

Stack Height: 90 ft. Stack Diameter: 16.0 ft.

Gas Flow Rate: 300,000 ACFM 199,000 DSCFM Gas Exit Temperature: ~386 °F.

Water Vapor Content: ~ 10 % Velocity: 24.87 FPS

SECTION IV: INCINERATOR INFORMATION

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?

[ ] Yes [ ] No

Contaminant	Rate or Concentration

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

[ ] Yes [ ] No

Contaminant	Rate or Concentration

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

Contaminant	Rate or Concentration

D. Describe the existing control and treatment technology (if any).

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).

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 space, 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. Applicability 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:

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 Monitoring not required since all impacts below deminimus levels.

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 instrumentation calibrated in accordance with Department procedures?

[ ] Yes [ ] No [ ] Unknown

B. Meteorological Data Used for Air Quality Modeling

1. 5 Year(s) of data from 1 / 1 / 70 to 2 / 31 / 74
month day year month day year

2. Surface data obtained from (location) Tampa/Station No. 12842

3. Upper air (mixing height) data obtained from (location) Tampa/Station No. 12842

4. Stability wind rose (STAR) data obtained from (location) N/A

C. Computer Models Used

1. Industrial Source Complex-Short Term Modified? If yes, attach description.

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

Pollutant	Emission Rate	
TSP		grams/sec
SO^2	2.52	grams/sec
NO_x	41.62	grams/sec

E. Emission Data Used in Modeling

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.

G. Discuss 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.

ITEM II-A DESCRIPTION OF PROJECT

The existing source, Kiln #2 (E-19), has been in operation since August 15, 1983, under permit A027-65207. The results of the compliance testing for this source are presented in Table II-1. This Table shows that: (1) SO_2 emissions have varied from 2.40 lb/hr to 11.99 lb/hr and have exceeded the permit limit of 3.0 lb/hr on five (5) occasions, (2) particulate emissions have ranged from 3.83 lb/hr to 13.47 lb/hr and been in compliance with the permit limit of 24 lb/hr, and (3) NO_x emissions have varied form 141.2 lb/hr to 403.0 lb/hr and have shown compliance with the permit limit of 195.3 lb/hr until the testing of April 4, 1986.

The purpose of this modification is to request the following emission limitation increases:

1) SO_2 increase from 3 lb/hr to 20 lb/hr and

2) NO_x increase from 195.3 lb/hr to 330 lb/hr

The basis for requesting these modifications is presented below for each pollutant:

SO_2

Original SO_2 emission rates for Kiln #2 are based on testing of FM & M Kiln #1. In this original series of tests, no detectable SO_2 could be measured; therefore, an emission rate of 3.0 lb/hr was requested since the minimum detectable level for EPA Method 8 is 2.7 lb/hr. However, subsequent compliance testing on Kiln #2 has shown that emission levels of 3.0 lb/hr cannot be consistently achieved. This testing has shown that SO_2 emissions are sensitive to the following:

1) Sulfur content in coal may vary as much as 50% from average sulfur content. For example, a 1% average S content coal may vary from 0.5% S to 1.5% S during specific testing condition.

2) Coal moisture may vary significantly so that for higher moisture conditions, increased coal quantities are required and, therefore, additional SO_2 is produced in the combustion process.

3) The reaction between SO_2 and the alkaline dust in the kiln and the fabric filter depends on the gas retention time in the kiln and the thickness of dust in the fabric filter.

Based on the above, consistently achieving an SO_2 emission level of 3.0 lb/hr has not been possible. Therefore, an SO_2 emission rate of 20 lb/hr is being requested. This value would allow for the above variations and uncertainties without exceeding the permitted emission limit. Also, this value, as shown in Table II-2, is considerably below the BACT value of 50 lb/hr for an identical kiln and production rate as defined in the Florida Crushed Stone Company, Permit AC27-61016.

NO_x

Original compliance testing in 1984 and 1985 showed NO_x emission rates below the permitted levels of 195.3 lb/hr. However, in 1986 this level was exceeded as shown in Table II-1. This exceedence was due primarily to the high ammonia concentration in the fly ash, which is a constituent of the kiln feed. This was due to the use of ammonia to control H_2SO_4 mist and opacity at the Tampa ELectric Big Bend 4 Plant. To verify this, all fly ash containing ammonia was flushed from the kiln system, the system was then retested. The resulting NO_x emissions were considerably below the 195.3 lb/hr.

Since the fly ash/ammonia problem from the Tampa Electric Big Bend 4 Plant has no short term solution, it is being requested that the NO_x emission limit be raised from 195.3 lb/hr to 330 lb/hr (an emission level of 330 lb/hr allows 195.3 lb/hr due to combustion NO_x and 134.7 lb/hr due to fly ash contribution.) This proposed level is below the BACT level as defined in the Florida Crushed Stone Company Permit AC27-61016.

TABLE II-1

FM & M KILN 2 COMPLIANCE TESTING SUMMARY

POLLUTANT (lb/hr)

DATE	PARTICULATE	SO_2	NO_x
4/6/83		11.99	
4/21/83		6.90	
5/25/83		2.68	
4/26/84	8.66	4.63	141.2
4/22/85	13.47	9.53	128.4
4/4/86	6.15	2.40	403.0
5/5/86			244.0
8/20/86			111.9
4/13/87	3.83	4.77	172.8

TABLE II-2

FM & M KILN 2 EMISSION RATES vs BACT REQUIREMENTS

POLLUTANT	EMISSION RATE	BACT LIMIT	BASIS
Particulate	24 lb/hr	24 lb/hr	0.2 lb/ton feed Permit A027-65207
SO_2	20 lb/hr	50 lb/hr	Florida Crushed Stone Company, Brooksville, FL AC 27-61016
NO_x	330 lb/hr	359 lb/hr	Florida Crushed Stone Company, Brooksville, FL AC 27-61016

ITEM V-1 TOTAL PROCESS INPUT RATE

Process Input = 240,000 lb/hr (See Section III-A)

= 120 ton/hr

Production Rate = 147,000 lb/hr (Cement)

73.50 ton/hr

ITEM V-2 EMISSION ESTIMATES (7560 hours/yr)

POLLUTANT	LIMITATION	BASIS
Particulate	24 lb/hr 90.7 ton/yr	Permit A027-65207 limit 0.2 lb/ton feed
SO_2	20 lb/hr 75.6 ton/yr	Previous testing including sulfur and moisture content variability of coal
NO_x	330 lb/hr 1247.4 ton/yr	Previous testing and ammonia content of ash in kiln feed
CO	10 lb/hr 37.8 ton/yr	Permit AO27-65207 and increased coal consumption
HC	3 lb/hr 11.3 ton/yr	Permit AO27-65207 and increased coal consumption
Opacity	10%	Permit AO27-65207

ITEM V-3 POTENTIAL EMISSIONS

Particulate

AP-42 Emission Factor = 245.0 lb/ton of cement

(73.50 ton/hr) x (245 lb/ton) = 18,007.5 lb/hr

$$\frac{(18{,}007.5 \text{ lb/hr}) \times (7{,}560 \text{ hr/yr})}{(2000 \text{ lb/ton})} = 68{,}068 \text{ ton/yr}$$

SO_2

AP-42

Mineral Source = 10.2 lb/ton

Coal Combustion = 6.8 S lb/ton where S = 1.0% Coal

Mineral Source

73.50 ton/hr x 10.2 lb/ton = 749.70 lb/hr

Coal Combustion

73.50 ton/hr x 6.8 (1.0) lb/ton = 499.80 lb/hr

Total SO_2

(749.70 + 499.80) lb/hr = 1,249.50 lb/hr

4,723.11 ton/yr

NO_x

AP-42

Combustion = 2.6 lb/ton of cement

= (2.6)(73.5 ton/hr) = 191.0 lb/hr

Fly Ash/Ammonia Contribution = 139.0 lb/hr

Total 330.0 lb/hr

$$\frac{(330 \text{ lb/hr}) \times (7560 \text{ hr/yr})}{(2000 \text{ lb/ton})} = 1247.4 \text{ ton/yr}$$

CO

Same as V-2

Based on 1 lb/ton of coal and maximum coal consumption of 10 tons/hr

10 lb/hr and 37.8 tons/yr

HC

Same as V-2

Based on 0.3 lb/ton of coal and maximum coal consumption of 10 tons/hr

3 lb/hr and 11.3 tons/yr

ITEM V-5

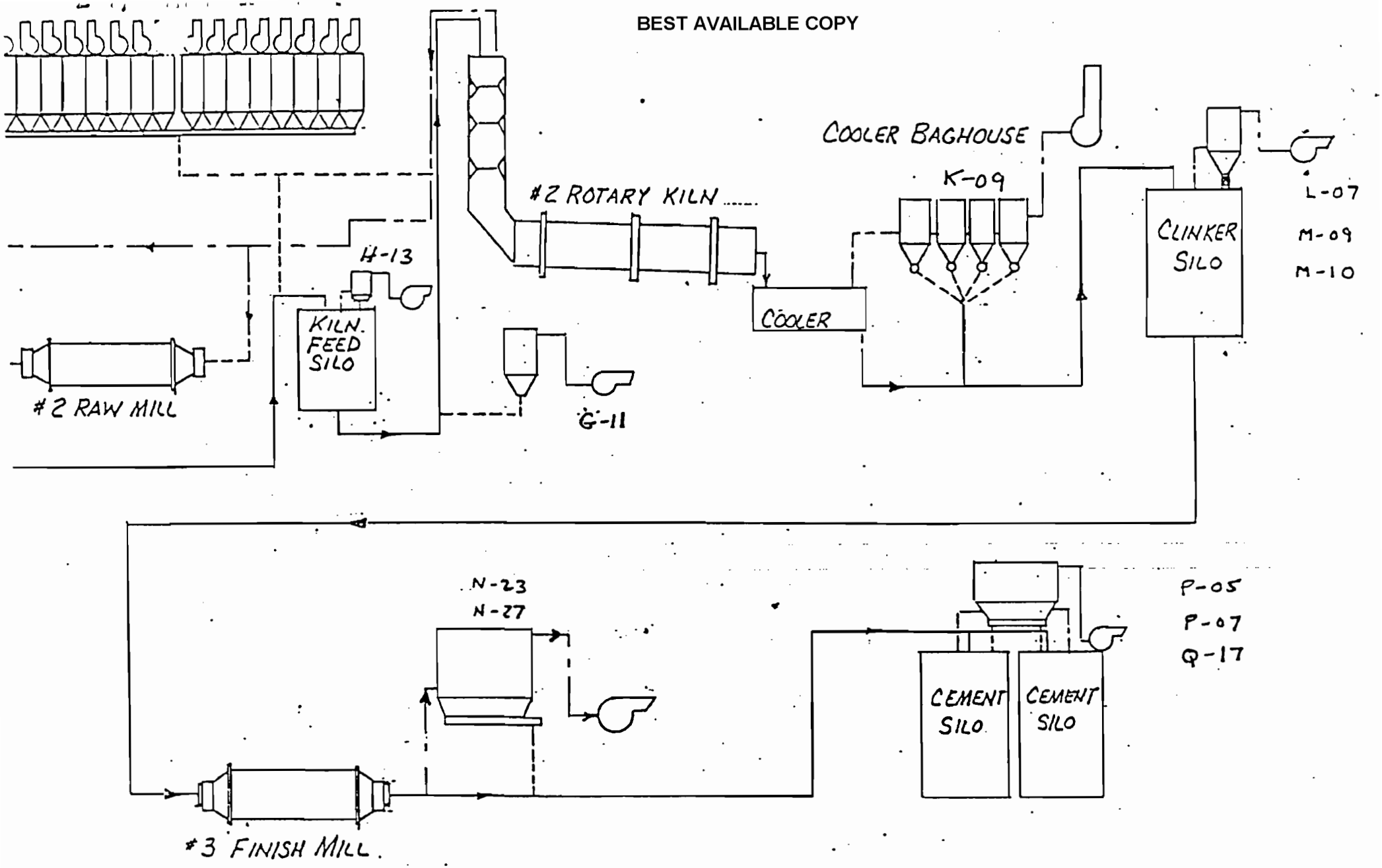
Particulates

$$\text{Collection Efficiency} = \left[1 - \frac{24}{18{,}007.5}\right] = 0.9986$$

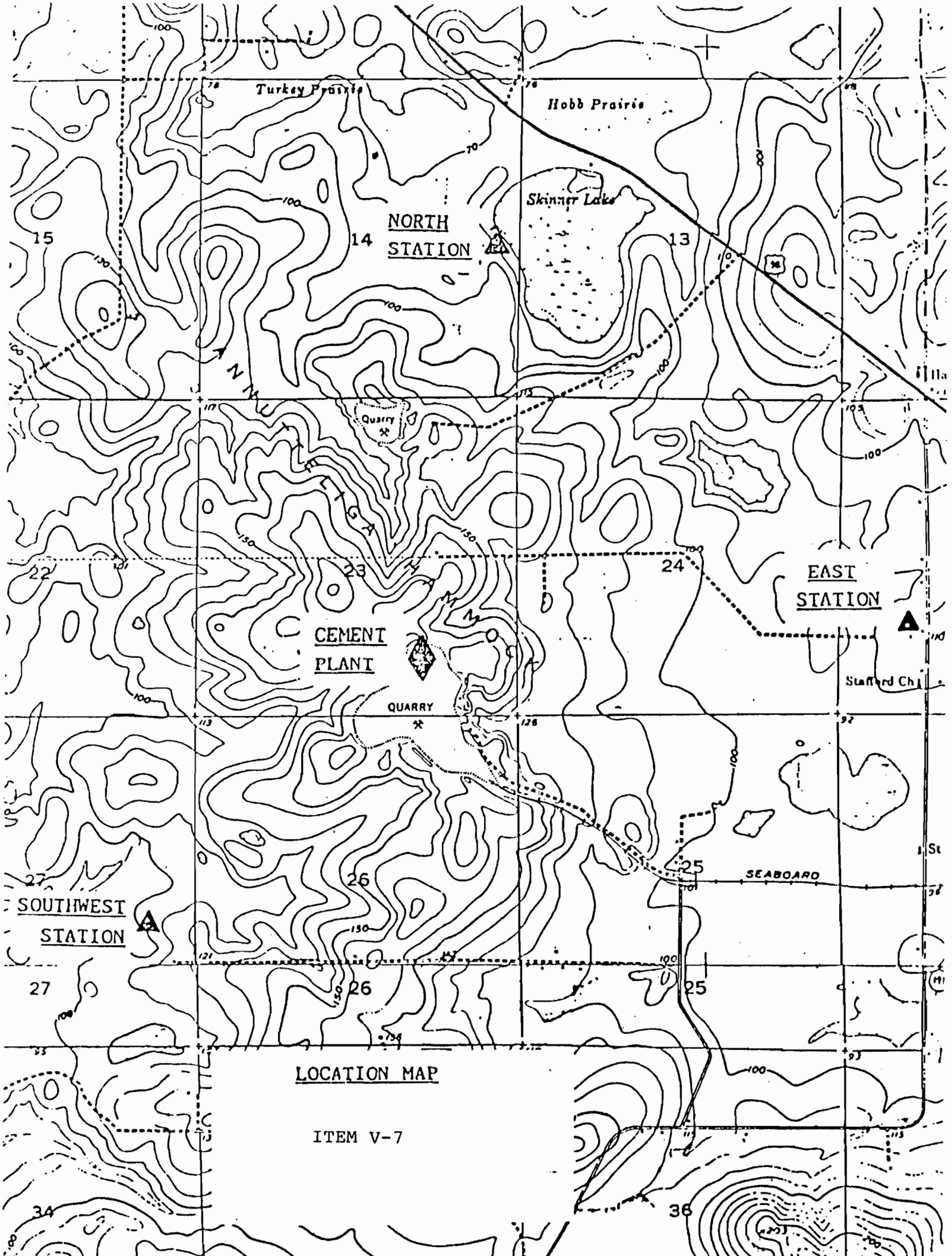
SO_2

$$\text{Collection Efficiency} = \left[1 - \frac{20}{1249.5}\right] = 0.984$$

This collection efficiency is based as kiln feed and fabric filter alkaline dust reaction.

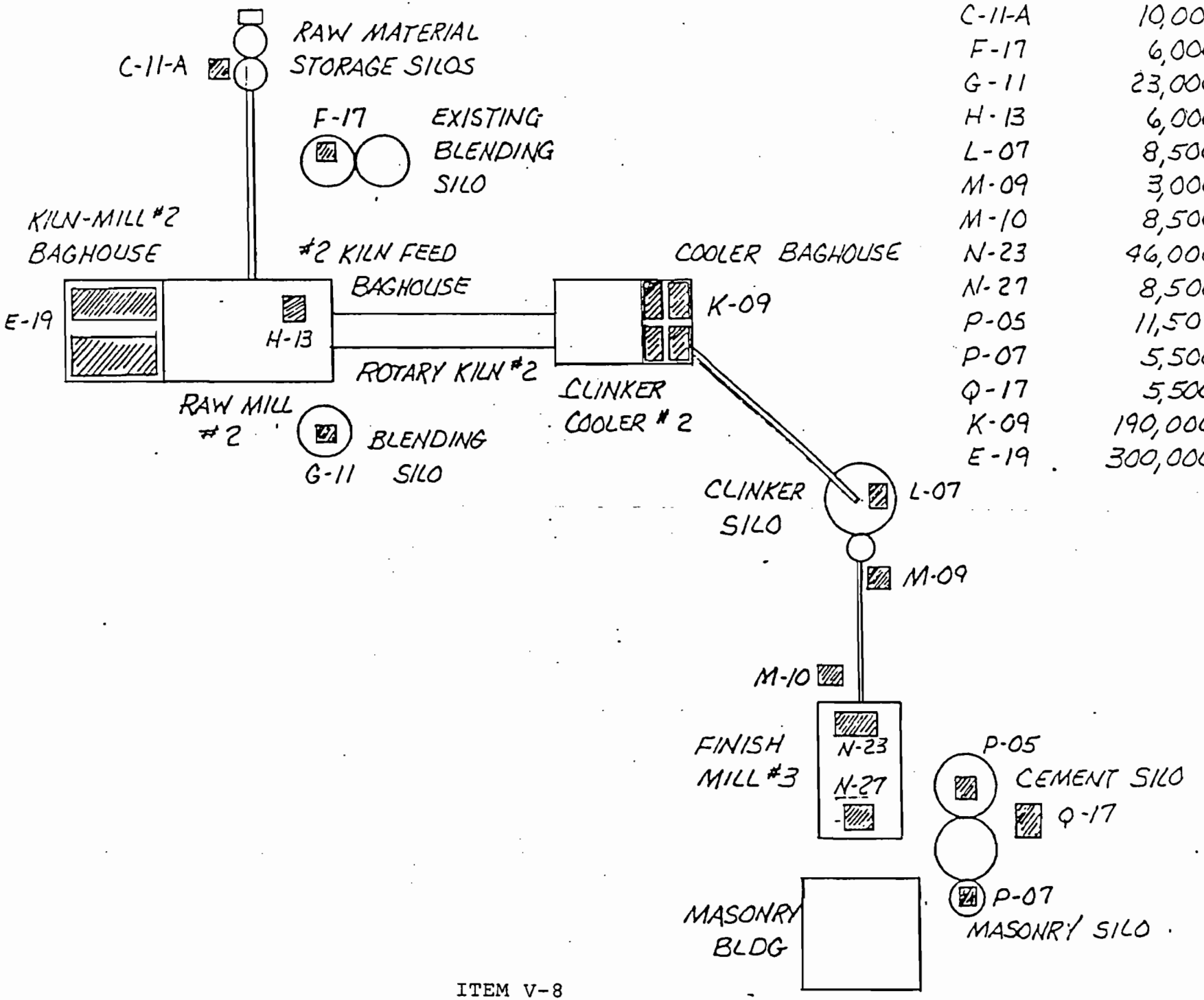


ITEM V-6
PROCESS FLOW DIAGRAM



LOCATION MAP

ITEM V-7



C-11-A	10,000
F-17	6,000
G-11	23,000
H-13	6,000
L-07	8,500
M-09	3,000
M-10	8,500
N-23	46,000
N-27	8,500
P-05	11,500
P-07	5,500
Q-17	5,500
K-09	190,000
E-19	300,000

ITEM V-8

PLOT PLAN

Section VII-E Emission Data Used in Modeling

(1) Source: FM&M Kiln No. 2

(2) Description: Portland Cement Kiln With Fabric Filter Control System

(3) VTM Coordinates: E 356,200 M, N 3,169,900 M

(4) Stack Data

Height = 27.4 m

Temperature = 470°K
Diameter = 4.9 m
Exit Velocity = 7.6 m/sec

(5) Allowable Emissions

	Current	Proposed
SO_2	3 lb/hr	20 lb/hr
NO_x	195.3 lb/hr	330 lb/hr

(6) Normal Operating Conditions

24 hrs/day, 7 days/wk, 45 wks/yr

Section VII-G Impacts

The results of the air quality modeling are presented in Table VII-1 and the computer output for worst year case are also attached. The computer modeling results show that resulting SO_2 and NO_x impacts from the proposed emission rates are all below the respective significance levels for Class I and Class II Areas.

Also attached is a visibility analysis of the proposed emission in the Class I Area. This analysis shows that the air quality impacts are below the visibility impairment criteria.

Based on the above insignificant impacts, no effect on health, vegetation, or air quality is expected. No significant economic and/or social changes are expected from the change in emissions.

TABLE VII-I

AIR QUALITY IMPACT ANALYSIS

FLORIDA MINING AND MATERIALS
NO. 2 KILN ONLY
SULFUR DIOXIDE CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

NO. 2 KILN
INCREASE IN
SO_2 = 17.0 LB/HR

AVERAGING TIME	CLASS II AREA MAXIMUM	CLASS I AREA MAXIMUM	CLASS II SIGNIF. IMPACT	CLASS I SIGNIF. IMPACT	DE MINIMUS IMPACT
ANNUAL	0.068	0.033	1.0	N/A	N/A
24 HOUR	0.652	0.232	5.0	1.0	13.0
3 HOUR	1.821	0.875	25.0	N/A	N/A

FLORIDA MINING AND MATERIALS
NO. 2 KILN ONLY
NITROGEN DIOXIDE CONCENTRATIONS
(MICROGRAMS/CUBIC METER)

NO. 2 KILN
INCREASE IN
NO_X = 134.7 LB/HR

AVERAGING TIME	CLASS II AREA MAXIMUM	CLASS I AREA MAXIMUM	SIGNIF. IMPACT	DE MINIMUS IMPACT
ANNUAL	0.534	0.250	1.0	14.0

ISCST OUTPUT

CASE: SO_2 = 20 lb/hr

100 m Receptor Grid

Worst Year for 3-Hr Concentration

ISCST (DATED 86170)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 1. GUIDELINE MODELS
IN UNAMAP (VERSION 6) JULY 86.
SOURCE: FILE 6 ON UNAMAP MAGNETIC TAPE FROM NTIS.

IBM-PC VERSION (1.20)

SERIAL NUMBER 5070 SOLD TO CROSS, TESSITORE & ASSOCIATES
RUN BEGAN ON 08-24-87 AT 16:46:35

CALCULATE (CONCENTRATION=1,DEPOSITION=2)	ISW(1) = 1
RECEPTOR GRID SYSTEM (RECTANGULAR=1 OR 3, POLAR=2 OR 4)	ISW(2) = 3
DISCRETE RECEPTOR SYSTEM (RECTANGULAR=1,POLAR=2)	ISW(3) = 1
TERRAIN ELEVATIONS ARE READ (YES=1,NO=0)	ISW(4) = 0
CALCULATIONS ARE WRITTEN TO TAPE (YES=1,NO=0)	ISW(5) = 0
LIST ALL INPUT DATA (NO=0,YES=1,MET DATA ALSO=2)	ISW(6) = 1
COMPUTE AVERAGE CONCENTRATION (OR TOTAL DEPOSITION)	
WITH THE FOLLOWING TIME PERIODS:	
HOURLY (YES=1,NO=0)	ISW(7) = 0
2-HOUR (YES=1,NO=0)	ISW(8) = 0
3-HOUR (YES=1,NO=0)	ISW(9) = 1
4-HOUR (YES=1,NO=0)	ISW(10) = 0
6-HOUR (YES=1,NO=0)	ISW(11) = 0
8-HOUR (YES=1,NO=0)	ISW(12) = 0
12-HOUR (YES=1,NO=0)	ISW(13) = 0
24-HOUR (YES=1,NO=0)	ISW(14) = 0
PRINT 'N'-DAY TABLE(S) (YES=1,NO=0)	ISW(15) = 0
PRINT THE FOLLOWING TYPES OF TABLES WHOSE TIME PERIODS ARE	
SPECIFIED BY ISW(7) THROUGH ISW(14):	
DAILY TABLES (YES=1,NO=0)	ISW(16) = 0
HIGHEST & SECOND HIGHEST TABLES (YES=1,NO=0)	ISW(17) = 1
MAXIMUM 50 TABLES (YES=1,NO=0)	ISW(18) = 0
METEOROLOGICAL DATA INPUT METHOD (PRE-PROCESSED=1,CARD=2)	ISW(19) = 1
RURAL-URBAN OPTION (RU.=0,UR. MODE 1=1,UR. MODE 2=2,UR. MODE 3=3)	ISW(20) = 0
WIND PROFILE EXPONENT VALUES (DEFAULTS=1,USER ENTERS=2,3)	ISW(21) = 1
VERTICAL POT. TEMP. GRADIENT VALUES (DEFAULTS=1,USER ENTERS=2,3)	ISW(22) = 1
SCALE EMISSION RATES FOR ALL SOURCES (NO=0,YES)0)	ISW(23) = 0
PROGRAM CALCULATES FINAL PLUME RISE ONLY (YES=1,NO=2)	ISW(24) = 1
PROGRAM ADJUSTS ALL STACK HEIGHTS FOR DOWNWASH (YES=2,NO=1)	ISW(25) = 2
PROGRAM USES BUOYANCY INDUCED DISPERSION (YES=1,NO=2)	ISW(26) = 1
CONCENTRATIONS DURING CALM PERIODS SET = 0 (YES=1,NO=2)	ISW(27) = 1
REG. DEFAULT OPTION CHOSEN (YES=1,NO=2)	ISW(28) = 1
TYPE OF POLLUTANT TO BE MODELLED (1=SO2,2=OTHER)	ISW(29) = 1
DEBUG OPTION CHOSEN (1=YES,2=NO)	ISW(30) = 2
NUMBER OF INPUT SOURCES	NSOURC = 1
NUMBER OF SOURCE GROUPS (=0,ALL SOURCES)	NGROUP = 0
TIME PERIOD INTERVAL TO BE PRINTED (=0,ALL INTERVALS)	IPERD = 0
NUMBER OF X (RANGE) GRID VALUES	NXPNTS = 21
NUMBER OF Y (THETA) GRID VALUES	NYPNTS = 21
NUMBER OF DISCRETE RECEPTORS	NXWYPT = 0
SOURCE EMISSION RATE UNITS CONVERSION FACTOR	TK=.10000E+07
HEIGHT ABOVE GROUND AT WHICH WIND SPEED WAS MEASURED	ZR = 10.00 METERS
LOGICAL UNIT NUMBER OF METEOROLOGICAL DATA	IMET = 9
DECAY COEFFICIENT FOR PHYSICAL OR CHEMICAL DEPLETION	DECAY = .000000E+00
SURFACE STATION NO.	ISS = 12842
YEAR OF SURFACE DATA	ISY = 74
UPPER AIR STATION NO.	IUS = 12842
YEAR OF UPPER AIR DATA	IUY = 74
ALLOCATED DATA STORAGE	LIMIT = 43500 WORDS
REQUIRED DATA STORAGE FOR THIS PROBLEM RUN	MIMIT = 3344 WORDS

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1974 ***

*** METEOROLOGICAL DAYS TO BE PROCESSED ***
(IF=1)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
B	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
C	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00
D	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
E	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00
F	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

CALM HOURS (=1) FOR DAY 130 * 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 146 * 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 149 * 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 150 * 0 1 1 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 151 * 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY 153 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 155 * 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 156 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 157 * 1 1 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 162 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1
CALM HOURS (=1) FOR DAY 163 * 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1
CALM HOURS (=1) FOR DAY 164 * 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1
CALM HOURS (=1) FOR DAY 165 * 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 166 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 167 * 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1
CALM HOURS (=1) FOR DAY 168 * 0 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 169 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 170 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 172 * 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 1 0 0 0
CALM HOURS (=1) FOR DAY 173 * 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 177 * 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 179 * 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1
CALM HOURS (=1) FOR DAY 180 * 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 185 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 186 * 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 188 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 189 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 190 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY 191 * 0 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 194 * 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 196 * 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 197 * 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1
CALM HOURS (=1) FOR DAY 198 * 1 0 1 1 1 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 1 0 0 0
CALM HOURS (=1) FOR DAY 200 * 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1
CALM HOURS (=1) FOR DAY 201 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 203 * 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 204 * 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 207 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0
CALM HOURS (=1) FOR DAY 210 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 211 * 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0
CALM HOURS (=1) FOR DAY 212 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 213 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
CALM HOURS (=1) FOR DAY 218 * 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 223 * 1 0 1 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 224 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
CALM HOURS (=1) FOR DAY 226 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
CALM HOURS (=1) FOR DAY 228 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
CALM HOURS (=1) FOR DAY 230 * 0 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 232 * 1 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 236 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0
CALM HOURS (=1) FOR DAY 237 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 0
CALM HOURS (=1) FOR DAY 239 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 243 * 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 244 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 245 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 246 * 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 249 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
CALM HOURS (=1) FOR DAY 257 * 0 0 0 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 258 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 261 * 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 271 * 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 272 * 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 273 * 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 282 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 288 * 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 289 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 291 * 1 1 1 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 292 * 0 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 300 * 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 307 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 308 * 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
CALM HOURS (=1) FOR DAY 309 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1
CALM HOURS (=1) FOR DAY 310 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
CALM HOURS (=1) FOR DAY 315 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0
CALM HOURS (=1) FOR DAY 316 * 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 322 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1974 ***

*** X-COORDINATES OF RECTANGULAR GRID SYSTEM ***
(METERS)

357200.0, 357300.0, 357400.0, 357500.0, 357600.0, 357700.0, 357800.0, 357900.0, 358000.0, 358100.0,
358200.0, 358300.0, 358400.0, 358500.0, 358600.0, 358700.0, 358800.0, 358900.0, 359000.0, 359100.0,
359200.0,

*** Y-COORDINATES OF RECTANGULAR GRID SYSTEM ***
(METERS)

3168900.0, 3169000.0, 3169100.0, 3169200.0, 3169300.0, 3169400.0, 3169500.0, 3169600.0, 3169700.0, 3169800.0,
3169900.0, 3170000.0, 3170100.0, 3170200.0, 3170300.0, 3170400.0, 3170500.0, 3170600.0, 3170700.0, 3170800.0,
3170900.0,

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1974 ***

*** SOURCE DATA ***

SOURCE NUMBER	T Y P E	W A K E	NUMBER PART. CATS.	EMISSION RATE TYPE=0,1 (GRAMS/SEC) TYPE=2 (GRAMS/SEC) *PER METER**2	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	HEIGHT (METERS)	TEMP. TYPE=0 (DEG.K); VERT.DIM TYPE=1 (METERS)	EXIT VEL. TYPE=0 (M/SEC); HORZ.DIM TYPE=1,2 (METERS)	DIAMETER TYPE=0 (METERS)	BLDG. HEIGHT TYPE=0 (METERS)	BLDG. LENGTH TYPE=0 (METERS)	BLDG. WIDTH TYPE=0 (METERS)
1	0	0	0	.25200E+01	356200.0	3169300.0	.0	27.40	470.00	7.60	4.90	.00	.00	.00

CALM HOURS (=1) FOR DAY	4	*	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	6	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
CALM HOURS (=1) FOR DAY	8	*	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	10	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0
CALM HOURS (=1) FOR DAY	12	*	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	14	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	1	1
CALM HOURS (=1) FOR DAY	15	*	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	17	*	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	19	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
CALM HOURS (=1) FOR DAY	23	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
CALM HOURS (=1) FOR DAY	24	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
CALM HOURS (=1) FOR DAY	27	*	0	1	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	29	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CALM HOURS (=1) FOR DAY	33	*	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	34	*	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	41	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0
CALM HOURS (=1) FOR DAY	42	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
CALM HOURS (=1) FOR DAY	43	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
CALM HOURS (=1) FOR DAY	44	*	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CALM HOURS (=1) FOR DAY	45	*	1	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
CALM HOURS (=1) FOR DAY	46	*	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	51	*	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	55	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
CALM HOURS (=1) FOR DAY	59	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
CALM HOURS (=1) FOR DAY	60	*	1	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	61	*	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0
CALM HOURS (=1) FOR DAY	63	*	0	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	64	*	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	65	*	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	68	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
CALM HOURS (=1) FOR DAY	69	*	1	1	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
CALM HOURS (=1) FOR DAY	77	*	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
CALM HOURS (=1) FOR DAY	78	*	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	84	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0
CALM HOURS (=1) FOR DAY	86	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CALM HOURS (=1) FOR DAY	87	*	0	0	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	90	*	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	96	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
CALM HOURS (=1) FOR DAY	97	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
CALM HOURS (=1) FOR DAY	99	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
CALM HOURS (=1) FOR DAY	102	*	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	104	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
CALM HOURS (=1) FOR DAY	105	*	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
CALM HOURS (=1) FOR DAY	106	*	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	107	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
CALM HOURS (=1) FOR DAY	108	*	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	112	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
CALM HOURS (=1) FOR DAY	113	*	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
CALM HOURS (=1) FOR DAY	114	*	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	120	*	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	121	*	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	122	*	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	123	*	1	1	0	0	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	124	*	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
CALM HOURS (=1) FOR DAY	125	*	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	126	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
CALM HOURS (=1) FOR DAY	127	*	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CALM HOURS (=1) FOR DAY	129	*	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1

CALM HOURS (=1) FOR DAY 325 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 1 0
CALM HOURS (=1) FOR DAY 326 * 0 1 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 327 * 0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 329 * 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 331 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY 337 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0
CALM HOURS (=1) FOR DAY 338 * 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 339 * 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 342 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1
CALM HOURS (=1) FOR DAY 343 * 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 344 * 1 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 345 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 347 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 351 * 0 0 0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 352 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 0
CALM HOURS (=1) FOR DAY 353 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 355 * 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1
CALM HOURS (=1) FOR DAY 356 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 358 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 359 * 0 0 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 360 * 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 361 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY 362 * 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
CALM HOURS (=1) FOR DAY 363 * 1 0 1 0 0 0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 364 * 0 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 365 * 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1974 ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 2.43370 AND OCCURRED AT (357900.0, 3169800.0) *

Y-AXIS (METERS) /	X-AXIS (METERS) 357200.0	357300.0	357400.0	357500.0	357600.0
3170900.0 /	1.59798 (90, 5)	1.54750 (157, 4)	1.56570 (157, 4)	1.43014 (157, 4)	1.54094 (86, 5)
3170800.0 /	1.45404 (158, 5)	1.43641 (157, 4)	1.47071 (204, 5)	1.58639 (86, 5)	1.74331 (86, 5)
3170700.0 /	1.46280 (204, 5)	1.56144 (204, 5)	1.58320 (86, 5)	1.70985 (86, 5)	1.70339 (86, 5)
3170600.0 /	1.59552 (204, 5)	1.52491 (204, 5)	1.58304 (86, 5)	1.51644 (86, 5)	1.56611 (158, 4)
3170500.0 /	1.43448 (204, 5)	1.48797 (151, 5)	1.50752 (151, 5)	1.50565 (205, 5)	1.48793 (205, 5)
3170400.0 /	1.45790 (151, 5)	1.52187 (205, 5)	1.54293 (205, 5)	1.50468 (205, 5)	1.43631 (205, 5)
3170300.0 /	1.44137 (205, 5)	1.45433 (205, 5)	1.42215 (205, 5)	1.37134 (205, 5)	1.45042 (191, 5)
3170200.0 /	1.25301 (197, 5)	1.38505 (197, 5)	1.44842 (197, 5)	1.45562 (197, 5)	1.47389 (145, 4)
3170100.0 /	1.30042 (197, 5)	1.34499 (197, 5)	1.39527 (157, 5)	1.42714 (157, 5)	1.54066 (125, 5)
3170000.0 /	1.51023 (125, 5)	1.67256 (125, 5)	1.78876 (125, 5)	1.86448 (125, 5)	1.90659 (125, 5)
3169900.0 /	1.49744 (163, 5)	1.70147 (163, 5)	1.86453 (163, 5)	1.98630 (163, 5)	2.06985 (163, 5)
3169800.0 /	1.57172 (163, 5)	1.83255 (163, 5)	2.04493 (163, 5)	2.20662 (163, 5)	2.32040 (163, 5)
3169700.0 /	1.45320 (192, 4)	1.60396 (126, 5)	1.71062 (126, 5)	1.75863 (126, 5)	1.76044 (126, 5)
3169600.0 /	1.53268 (192, 4)	1.74866 (192, 4)	1.85180 (192, 4)	1.86522 (192, 4)	1.84435 (126, 5)
3169500.0 /	1.42350 (167, 5)	1.55408 (167, 5)	1.57373 (167, 5)	1.71113 (192, 4)	1.84443 (192, 4)
3169400.0 /	1.18707 (167, 5)	1.46475 (167, 5)	1.67497 (167, 5)	1.79142 (167, 5)	1.81284 (167, 5)
3169300.0 /	1.15411 (335, 4)	1.09754 (167, 5)	1.34706 (167, 5)	1.57364 (167, 5)	1.74664 (167, 5)
3169200.0 /	1.34087 (335, 4)	1.45087 (335, 4)	1.15032 (335, 4)	1.18010 (167, 5)	1.38032 (167, 5)
3169100.0 /	.92560 (99, 5)	1.27430 (335, 4)	1.57741 (335, 4)	1.46262 (335, 4)	1.12487 (196, 6)
3169000.0 /	1.01588 (99, 5)	.97949 (99, 5)	1.14098 (335, 4)	1.56816 (335, 4)	1.63849 (335, 4)
3168900.0 /	1.06300 (99, 5)	1.02857 (99, 5)	.99661 (99, 5)	1.00534 (335, 4)	1.47385 (335, 4)

HIGH
3-HR
SGROUP# 1

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1974 ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 2.43370 AND OCCURRED AT (357900.0, 3169800.0) *

Y-AXIS (METERS) /	X-AXIS (METERS) 357700.0	357800.0	357900.0	358000.0	358100.0
3170900.0 /	1.71199 (86, 5)	1.79002 (86, 5)	1.77501 (86, 5)	1.67994 (86, 5)	1.52654 (86, 5)
3170800.0 /	1.78642 (86, 5)	1.72374 (86, 5)	1.57955 (86, 5)	1.57624 (158, 4)	1.58339 (158, 4)
3170700.0 /	1.58578 (86, 5)	1.59665 (158, 4)	1.61053 (158, 4)	1.56631 (158, 4)	1.47463 (158, 4)
3170600.0 /	1.58821 (158, 4)	1.54354 (158, 4)	1.44420 (158, 4)	1.30840 (158, 4)	1.29847 (146, 4)
3170500.0 /	1.42985 (205, 5)	1.35207 (205, 5)	1.36469 (146, 4)	1.41534 (146, 4)	1.42389 (191, 5)
3170400.0 /	1.36659 (146, 4)	1.45307 (191, 5)	1.51910 (191, 5)	1.53516 (191, 5)	1.51127 (191, 5)
3170300.0 /	1.49704 (191, 5)	1.48929 (191, 5)	1.56470 (145, 4)	1.60835 (145, 4)	1.62068 (145, 4)
3170200.0 /	1.54570 (145, 4)	1.57981 (145, 4)	1.58405 (145, 4)	1.56584 (145, 4)	1.53156 (145, 4)
3170100.0 /	1.63467 (125, 5)	1.70191 (125, 5)	1.74606 (125, 5)	1.77079 (125, 5)	1.77949 (125, 5)
3170000.0 /	1.92187 (125, 5)	1.91635 (125, 5)	1.89513 (125, 5)	1.86236 (125, 5)	1.83876 (230, 4)
3169900.0 /	2.11999 (163, 5)	2.15180 (230, 4)	2.18387 (230, 4)	2.19455 (230, 4)	2.18776 (230, 4)
3169800.0 /	2.39177 (163, 5)	2.42733 (163, 5)	2.43370 (163, 5)	2.41699 (163, 5)	2.38252 (163, 5)
3169700.0 /	1.82657 (163, 5)	1.93989 (163, 5)	2.01971 (163, 5)	2.07017 (163, 5)	2.09572 (163, 5)
3169600.0 /	1.93040 (126, 5)	1.97199 (126, 5)	1.97754 (126, 5)	1.95501 (126, 5)	1.91139 (126, 5)
3169500.0 /	1.89540 (192, 4)	1.88224 (192, 4)	1.82424 (192, 4)	1.82993 (126, 5)	1.86869 (126, 5)
3169400.0 /	1.75536 (167, 5)	1.70570 (114, 5)	1.73853 (114, 5)	1.73906 (192, 4)	1.72176 (192, 4)
3169300.0 /	1.84767 (167, 5)	1.87378 (167, 5)	1.83393 (167, 5)	1.74362 (167, 5)	1.72387 (114, 5)
3169200.0 /	1.56148 (167, 5)	1.70273 (167, 5)	1.79067 (167, 5)	1.82152 (167, 5)	1.79964 (167, 5)
3169100.0 /	1.17646 (167, 5)	1.33649 (167, 5)	1.48192 (167, 5)	1.59815 (167, 5)	1.67523 (167, 5)
3169000.0 /	1.39811 (335, 4)	1.22784 (196, 6)	1.20291 (196, 6)	1.25366 (167, 5)	1.37174 (167, 5)
3168900.0 /	1.68845 (335, 4)	1.59812 (335, 4)	1.30251 (335, 4)	1.27148 (196, 6)	1.22269 (196, 6)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1974 ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 2.43370 AND OCCURRED AT (357900.0, 3169800.0) *

Y-AXIS (METERS) /	X-AXIS (METERS) 358200.0	358300.0	358400.0	358500.0	358600.0
3170900.0 /	1.52346 (158, 4)	1.52558 (158, 4)	1.48658 (158, 4)	1.41384 (158, 4)	1.31659 (158, 4)
3170800.0 /	1.54128 (158, 4)	1.45893 (158, 4)	1.34808 (158, 4)	1.22197 (88, 5)	1.15764 (146, 4)
3170700.0 /	1.35031 (158, 4)	1.20817 (158, 4)	1.26556 (146, 4)	1.29560 (146, 4)	1.29543 (146, 4)
3170600.0 /	1.35881 (146, 4)	1.37721 (146, 4)	1.36037 (146, 4)	1.34527 (191, 5)	1.33947 (191, 5)
3170500.0 /	1.46004 (191, 5)	1.46065 (191, 5)	1.43287 (191, 5)	1.38380 (191, 5)	1.37741 (145, 4)
3170400.0 /	1.49381 (145, 4)	1.52349 (145, 4)	1.52903 (145, 4)	1.51528 (145, 4)	1.48671 (145, 4)
3170300.0 /	1.60843 (145, 4)	1.57783 (145, 4)	1.53416 (145, 4)	1.48177 (145, 4)	1.44806 (315, 5)
3170200.0 /	1.52709 (315, 5)	1.55552 (315, 5)	1.56916 (315, 5)	1.57028 (315, 5)	1.56101 (315, 5)
3170100.0 /	1.77519 (125, 5)	1.76050 (125, 5)	1.73766 (125, 5)	1.70850 (125, 5)	1.67458 (125, 5)
3170000.0 /	1.84263 (230, 4)	1.83451 (230, 4)	1.81675 (230, 4)	1.79139 (230, 4)	1.76017 (230, 4)
3169900.0 /	2.16701 (230, 4)	2.13537 (230, 4)	2.09541 (230, 4)	2.04928 (230, 4)	1.99876 (230, 4)
3169800.0 /	2.33480 (163, 5)	2.27749 (163, 5)	2.21357 (163, 5)	2.14537 (163, 5)	2.07473 (163, 5)
3169700.0 /	2.10074 (163, 5)	2.08919 (163, 5)	2.06459 (163, 5)	2.02992 (163, 5)	1.98770 (163, 5)
3169600.0 /	1.85257 (126, 5)	1.78333 (126, 5)	1.70747 (126, 5)	1.62796 (126, 5)	1.60690 (163, 5)
3169500.0 /	1.88333 (126, 5)	1.87816 (126, 5)	1.85698 (126, 5)	1.82307 (126, 5)	1.77925 (126, 5)
3169400.0 /	1.67278 (192, 4)	1.61626 (173, 6)	1.65110 (126, 5)	1.67113 (126, 5)	1.67796 (126, 5)
3169300.0 /	1.72680 (114, 5)	1.68507 (114, 5)	1.61203 (114, 5)	1.61737 (173, 6)	1.63269 (173, 6)
3169200.0 /	1.73442 (167, 5)	1.64231 (114, 5)	1.67376 (114, 5)	1.66156 (114, 5)	1.61524 (114, 5)
3169100.0 /	1.70933 (167, 5)	1.70209 (167, 5)	1.65899 (167, 5)	1.58750 (167, 5)	1.57739 (114, 5)
3169000.0 /	1.46845 (167, 5)	1.53635 (167, 5)	1.57192 (167, 5)	1.57536 (167, 5)	1.54969 (167, 5)
3168900.0 /	1.15538 (167, 5)	1.25247 (167, 5)	1.33381 (167, 5)	1.39378 (167, 5)	1.42934 (167, 5)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1974 ***

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* MAXIMUM VALUE EQUALS 2.43370 AND OCCURRED AT (357900.0, 3169800.0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 358700.0	358800.0	358900.0	359000.0	359100.0
3170900.0 /	1.25409 (88, 5)	1.21333 (88, 5)	1.13080 (88, 5)	1.10769 (146, 4)	1.10880 (146, 4)
3170800.0 /	1.19455 (146, 4)	1.20628 (146, 4)	1.19628 (146, 4)	1.16850 (146, 4)	1.26825 (143, 5)
3170700.0 /	1.27035 (146, 4)	1.24667 (143, 5)	1.34593 (143, 5)	1.41294 (143, 5)	1.44820 (143, 5)
3170600.0 /	1.36159 (143, 5)	1.39026 (143, 5)	1.38689 (143, 5)	1.35694 (143, 5)	1.30629 (143, 5)
3170500.0 /	1.38246 (145, 4)	1.37258 (145, 4)	1.35082 (145, 4)	1.31998 (145, 4)	1.28244 (145, 4)
3170400.0 /	1.44726 (145, 4)	1.40024 (145, 4)	1.34832 (145, 4)	1.30169 (315, 5)	1.30038 (315, 5)
3170300.0 /	1.45607 (315, 5)	1.45468 (315, 5)	1.44541 (315, 5)	1.42964 (315, 5)	1.40863 (315, 5)
3170200.0 /	1.54330 (315, 5)	1.51887 (315, 5)	1.48919 (315, 5)	1.45554 (315, 5)	1.41986 (125, 5)
3170100.0 /	1.63716 (125, 5)	1.59727 (125, 5)	1.55573 (125, 5)	1.51323 (125, 5)	1.47030 (125, 5)
3170000.0 /	1.72452 (230, 4)	1.68564 (230, 4)	1.64451 (230, 4)	1.60193 (230, 4)	1.55853 (230, 4)
3169900.0 /	1.94527 (230, 4)	1.88995 (230, 4)	1.83371 (230, 4)	1.77726 (230, 4)	1.72115 (230, 4)
3169800.0 /	2.00305 (163, 5)	1.93139 (163, 5)	1.86055 (163, 5)	1.79111 (163, 5)	1.72350 (163, 5)
3169700.0 /	1.93998 (163, 5)	1.88843 (163, 5)	1.83440 (163, 5)	1.77896 (163, 5)	1.72294 (163, 5)
3169600.0 /	1.60422 (163, 5)	1.59324 (163, 5)	1.57553 (163, 5)	1.55245 (163, 5)	1.52519 (163, 5)
3169500.0 /	1.72791 (126, 5)	1.67110 (126, 5)	1.61051 (126, 5)	1.54757 (126, 5)	1.48343 (126, 5)
3169400.0 /	1.67363 (126, 5)	1.65984 (126, 5)	1.63809 (126, 5)	1.60970 (126, 5)	1.57583 (126, 5)
3169300.0 /	1.62798 (173, 6)	1.60688 (173, 6)	1.57279 (173, 6)	1.52879 (173, 6)	1.47754 (173, 6)
3169200.0 /	1.54528 (173, 6)	1.57083 (173, 6)	1.57789 (173, 6)	1.56925 (173, 6)	1.54766 (173, 6)
3169100.0 /	1.59202 (114, 5)	1.57303 (114, 5)	1.52751 (114, 5)	1.46658 (173, 6)	1.48345 (173, 6)
3169000.0 /	1.49966 (167, 5)	1.45778 (114, 5)	1.49345 (114, 5)	1.49841 (114, 5)	1.47665 (114, 5)
3168900.0 /	1.43997 (167, 5)	1.42721 (167, 5)	1.39400 (167, 5)	1.34404 (167, 5)	1.37914 (114, 5)

HIGH
3-HR
SGROUP# 1

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1974 ***

* HIGHEST 3-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 2.43370 AND OCCURRED AT (357900.0, 3169800.0) *

Y-AXIS (METERS)	X-AXIS (METERS) 359200.0
3170900.0	1.09414 (146, 4)
3170800.0	1.35931 (143, 5)
3170700.0	1.45186 (143, 5)
3170600.0	1.23839 (143, 5)
3170500.0	1.24025 (145, 4)
3170400.0	1.29314 (315, 5)
3170300.0	1.38344 (315, 5)
3170200.0	1.39947 (125, 5)
3170100.0	1.44676 (147, 6)
3170000.0	1.51483 (230, 4)
3169900.0	1.66579 (230, 4)
3169800.0	1.65800 (163, 5)
3169700.0	1.66700 (163, 5)
3169600.0	1.49472 (163, 5)
3169500.0	1.41875 (126, 5)
3169400.0	1.53712 (126, 5)
3169300.0	1.44915 (126, 5)
3169200.0	1.51570 (173, 6)
3169100.0	1.48598 (173, 6)
3169000.0	1.43335 (114, 5)
3168900.0	1.40189 (114, 5)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1974 ***

* SECOND HIGHEST 3-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 2.14209 AND OCCURRED AT (357800.0, 3169900.0) *

Y-AXIS (METERS) /	X-AXIS (METERS) 357200.0	357300.0	357400.0	357500.0	357600.0
170900.0 /	1.45943 (158, 5)	1.44971 (158, 5)	1.40231 (158, 5)	1.35356 (204, 5)	1.35611 (204, 5)
170800.0 /	1.42915 (157, 4)	1.38346 (158, 5)	1.32837 (86, 5)	1.45372 (204, 5)	1.35068 (204, 5)
170700.0 /	1.31234 (158, 5)	1.33039 (86, 5)	1.51935 (204, 5)	1.37938 (204, 5)	1.40097 (158, 4)
170600.0 /	1.27828 (86, 5)	1.50610 (86, 5)	1.40491 (151, 5)	1.48399 (87, 5)	1.55547 (87, 5)
170500.0 /	1.35550 (151, 5)	1.36132 (158, 4)	1.46148 (158, 4)	1.49260 (158, 4)	1.45009 (158, 4)
170400.0 /	1.40984 (205, 5)	1.44526 (151, 5)	1.34738 (151, 5)	1.25326 (129, 4)	1.26549 (146, 4)
170300.0 /	1.22108 (151, 5)	1.14230 (129, 4)	1.25213 (197, 5)	1.33739 (191, 5)	1.37277 (197, 5)
170200.0 /	1.22562 (205, 5)	1.23273 (205, 5)	1.27785 (232, 4)	1.35747 (145, 4)	1.42176 (197, 5)
170100.0 /	1.19500 (157, 5)	1.32057 (157, 5)	1.33649 (197, 5)	1.41666 (125, 5)	1.42569 (157, 5)
170000.0 /	1.46314 (128, 5)	1.53885 (128, 5)	1.56137 (128, 5)	1.54474 (128, 5)	1.54108 (230, 4)
169900.0 /	1.39638 (128, 5)	1.54126 (230, 4)	1.73128 (230, 4)	1.88669 (230, 4)	2.00698 (230, 4)
169800.0 /	1.28702 (144, 4)	1.45705 (144, 4)	1.58267 (144, 4)	1.66653 (144, 4)	1.72186 (230, 4)
169700.0 /	1.42916 (126, 5)	1.46025 (192, 4)	1.50022 (192, 5)	1.52662 (192, 5)	1.67678 (163, 5)
169600.0 /	1.21295 (200, 5)	1.35945 (114, 5)	1.51067 (126, 5)	1.70609 (126, 5)	1.81727 (192, 4)
169500.0 /	1.10842 (200, 5)	1.25753 (200, 5)	1.48528 (192, 4)	1.55797 (114, 5)	1.64283 (114, 5)
169400.0 /	1.01057 (89, 4)	1.11585 (200, 5)	1.21112 (200, 5)	1.29838 (200, 5)	1.40814 (114, 5)
169300.0 /	1.14464 (89, 4)	1.06458 (89, 4)	1.11406 (200, 5)	1.16530 (200, 5)	1.20529 (200, 5)
169200.0 /	.99249 (89, 4)	1.11400 (89, 4)	1.07803 (89, 4)	1.09295 (200, 5)	1.12931 (200, 5)
169100.0 /	.76718 (237, 5)	.86012 (89, 4)	1.01929 (89, 4)	1.03915 (89, 4)	1.09548 (335, 4)
169000.0 /	.66339 (237, 5)	.74268 (237, 5)	.89326 (99, 5)	.89719 (89, 4)	1.01246 (196, 6)
168900.0 /	.81014 (76, 5)	.75469 (76, 5)	.73343 (325, 5)	.92672 (99, 5)	.84040 (120, 6)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1974 ***

* SECOND HIGHEST 3-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 2.14209 AND OCCURRED AT (357800.0, 3169900.0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 357700.0	357800.0	357900.0	358000.0	358100.0
3170900.0 /	1.28470 (204, 5)	1.25073 (9, 5)	1.29504 (9, 5)	1.42299 (87, 5)	1.47962 (87, 5)
3170800.0 /	1.27651 (158, 4)	1.43900 (87, 5)	1.53511 (87, 5)	1.53179 (87, 5)	1.44969 (87, 5)
3170700.0 /	1.54644 (87, 5)	1.57257 (87, 5)	1.49583 (87, 5)	1.35119 (87, 5)	1.23373 (227, 5)
3170600.0 /	1.49461 (87, 5)	1.36242 (205, 5)	1.30210 (205, 5)	1.22837 (205, 5)	1.19179 (124, 4)
3170500.0 /	1.34698 (158, 4)	1.25727 (146, 4)	1.26930 (205, 5)	1.34624 (191, 5)	1.41644 (146, 4)
3170400.0 /	1.35854 (205, 5)	1.40060 (146, 4)	1.37961 (146, 4)	1.34415 (145, 4)	1.43531 (145, 4)
3170300.0 /	1.36849 (197, 5)	1.48323 (145, 4)	1.44148 (191, 5)	1.36702 (191, 5)	1.32632 (188, 5)
3170200.0 /	1.42567 (188, 5)	1.42203 (188, 5)	1.45514 (123, 4)	1.48326 (123, 4)	1.48877 (123, 4)
3170100.0 /	1.41593 (123, 4)	1.47703 (260, 5)	1.54362 (260, 5)	1.59052 (260, 5)	1.62004 (260, 5)
3170000.0 /	1.64719 (230, 4)	1.72741 (230, 4)	1.78412 (230, 4)	1.82022 (230, 4)	1.82133 (125, 5)
3169900.0 /	2.09419 (230, 4)	2.14209 (163, 5)	2.14144 (163, 5)	2.12285 (163, 5)	2.09049 (163, 5)
3169800.0 /	1.83773 (230, 4)	1.92397 (230, 4)	1.98346 (230, 4)	2.01965 (230, 4)	2.03610 (230, 4)
3169700.0 /	1.72832 (126, 5)	1.67277 (126, 5)	1.60622 (144, 4)	1.61819 (144, 4)	1.61214 (144, 4)
3169600.0 /	1.73286 (192, 4)	1.63063 (192, 4)	1.63929 (197, 6)	1.66249 (197, 6)	1.66465 (197, 6)
3169500.0 /	1.65112 (114, 5)	1.66073 (126, 5)	1.76226 (126, 5)	1.73822 (192, 4)	1.63725 (192, 4)
3169400.0 /	1.59795 (114, 5)	1.64222 (167, 5)	1.71288 (192, 4)	1.71227 (114, 5)	1.64469 (114, 5)
3169300.0 /	1.24578 (200, 5)	1.34662 (114, 5)	1.53767 (114, 5)	1.66360 (114, 5)	1.61938 (167, 5)
3169200.0 /	1.13814 (200, 5)	1.14250 (200, 5)	1.15245 (200, 5)	1.24129 (114, 5)	1.42467 (114, 5)
3169100.0 /	1.13457 (196, 6)	1.08784 (200, 5)	1.08268 (228, 6)	1.11208 (228, 6)	1.10542 (228, 6)
3169000.0 /	1.16678 (196, 6)	1.02667 (200, 5)	1.12462 (167, 5)	1.11386 (196, 6)	1.07968 (228, 6)
3168900.0 /	.96468 (196, 6)	1.14695 (196, 6)	1.25034 (196, 6)	.97699 (200, 5)	1.10804 (99, 6)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1974 ***

* SECOND HIGHEST 3-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 2.14209 AND OCCURRED AT (357800.0, 3169900.0) *

Y-AXIS (METERS) /	359200.0
3170900.0 /	1.02878 (143, 5)
3170800.0 /	1.07919 (191, 5)
3170700.0 /	1.10806 (191, 5)
3170600.0 /	1.20438 (145, 4)
3170500.0 /	1.13912 (315, 5)
3170400.0 /	1.22748 (75, 6)
3170300.0 /	1.18971 (260, 5)
3170200.0 /	1.38041 (315, 5)
3170100.0 /	1.42728 (125, 5)
3170000.0 /	1.40973 (147, 6)
3169900.0 /	1.46911 (163, 5)
3169800.0 /	1.64268 (230, 4)
3169700.0 /	1.45222 (230, 4)
3169600.0 /	1.41823 (75, 7)
3169500.0 /	1.40058 (75, 7)
3169400.0 /	1.39482 (197, 6)
3169300.0 /	1.42130 (173, 6)
3169200.0 /	1.34590 (151, 6)
3169100.0 /	1.29973 (114, 5)
3169000.0 /	1.34280 (173, 6)
3168900.0 /	1.26919 (76, 1)

RUN ENDED ON 08-24-87 AT 20:46:27

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1974 ***

* SECOND HIGHEST 3-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 2.14209 AND OCCURRED AT (357800.0, 3169900.0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 358200.0	358300.0	358400.0	358500.0	358600.0
3170300.0 /	1.45878 (87, 5)	1.37770 (87, 5)	1.25666 (87, 5)	1.16370 (88, 5)	1.23993 (88, 5)
3170800.0 /	1.31566 (87, 5)	1.17095 (227, 5)	1.23066 (88, 5)	1.22053 (158, 4)	1.15529 (88, 5)
3170700.0 /	1.18832 (88, 5)	1.20122 (146, 4)	1.11082 (124, 4)	1.11860 (191, 5)	1.17319 (191, 5)
3170600.0 /	1.19595 (191, 5)	1.27723 (191, 5)	1.32598 (191, 5)	1.31613 (146, 4)	1.29679 (143, 5)
3170500.0 /	1.37840 (146, 4)	1.31218 (146, 4)	1.30971 (145, 4)	1.35420 (145, 4)	1.31987 (191, 5)
3170400.0 /	1.45792 (191, 5)	1.38464 (191, 5)	1.29932 (191, 5)	1.20811 (191, 5)	1.22561 (315, 5)
3170300.0 /	1.32325 (123, 4)	1.35101 (315, 5)	1.39719 (315, 5)	1.42899 (315, 5)	1.42404 (145, 4)
3170200.0 /	1.48634 (145, 4)	1.44969 (123, 4)	1.44219 (260, 5)	1.44900 (260, 5)	1.45760 (125, 5)
3170100.0 /	1.63462 (260, 5)	1.63660 (260, 5)	1.62819 (260, 5)	1.61134 (260, 5)	1.58777 (260, 5)
3170000.0 /	1.77462 (125, 5)	1.72422 (125, 5)	1.67164 (125, 5)	1.63318 (64, 5)	1.60721 (64, 5)
3169900.0 /	2.04784 (163, 5)	1.99778 (163, 5)	1.94261 (163, 5)	1.88416 (163, 5)	1.82386 (163, 5)
3169800.0 /	2.03620 (230, 4)	2.02306 (230, 4)	1.99938 (230, 4)	1.96751 (230, 4)	1.92940 (230, 4)
3169700.0 /	1.59210 (144, 4)	1.56151 (144, 4)	1.57782 (230, 4)	1.58491 (230, 4)	1.58270 (230, 4)
3169600.0 /	1.65043 (197, 6)	1.62383 (197, 6)	1.58816 (197, 6)	1.59949 (163, 5)	1.54703 (126, 5)
3169500.0 /	1.66062 (197, 6)	1.67164 (197, 6)	1.66498 (197, 6)	1.64454 (197, 6)	1.61367 (197, 6)
3169400.0 /	1.58734 (173, 6)	1.61551 (126, 5)	1.62026 (173, 6)	1.60384 (173, 6)	1.57134 (173, 6)
3169300.0 /	1.51105 (192, 4)	1.52668 (192, 4)	1.57845 (173, 6)	1.51954 (114, 5)	1.42375 (192, 4)
3169200.0 /	1.56004 (114, 5)	1.63729 (167, 5)	1.51945 (167, 5)	1.42888 (173, 6)	1.49866 (173, 6)
3169100.0 /	1.12052 (114, 5)	1.29077 (114, 5)	1.42738 (114, 5)	1.52344 (114, 5)	1.49559 (167, 5)
3169000.0 /	1.10303 (228, 6)	1.09593 (228, 6)	1.06734 (124, 6)	1.15459 (114, 5)	1.28654 (114, 5)
3168900.0 /	1.14785 (99, 6)	1.08472 (99, 6)	1.07054 (228, 6)	1.06421 (228, 6)	1.07768 (124, 6)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1974 ***

* SECOND HIGHEST 3-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS 2.14209 AND OCCURRED AT (357800.0, 3169900.0) *

Y-AXIS (METERS) /	X-AXIS (METERS) 358700.0	358800.0	358900.0	359000.0	359100.0
3170900.0 /	1.20410 (158, 4)	1.12278 (88, 7)	1.08810 (146, 4)	1.02139 (88, 5)	.92646 (191, 5)
3170800.0 /	1.04896 (88, 5)	1.02340 (191, 5)	1.06091 (191, 5)	1.14964 (143, 5)	1.12694 (146, 4)
3170700.0 /	1.20438 (191, 5)	1.22598 (146, 4)	1.20686 (191, 5)	1.18446 (191, 5)	1.15055 (191, 5)
3170600.0 /	1.31342 (191, 5)	1.27185 (191, 5)	1.21907 (191, 5)	1.22422 (145, 4)	1.21903 (145, 4)
3170500.0 /	1.24651 (191, 5)	1.16805 (191, 5)	1.08784 (191, 5)	1.11073 (315, 5)	1.12834 (315, 5)
3170400.0 /	1.25917 (315, 5)	1.28225 (315, 5)	1.29603 (315, 5)	1.29361 (145, 4)	1.23773 (145, 4)
3170300.0 /	1.36353 (145, 4)	1.30215 (145, 4)	1.24257 (123, 4)	1.21127 (260, 5)	1.20232 (260, 5)
3170200.0 /	1.46128 (125, 5)	1.45842 (125, 5)	1.44999 (125, 5)	1.43688 (125, 5)	1.41899 (315, 5)
3170100.0 /	1.55897 (260, 5)	1.52617 (260, 5)	1.49044 (260, 5)	1.45265 (260, 5)	1.42089 (147, 6)
3170000.0 /	1.57681 (64, 5)	1.54310 (64, 5)	1.50701 (64, 5)	1.46929 (64, 5)	1.43058 (64, 5)
3169900.0 /	1.76280 (163, 5)	1.70183 (163, 5)	1.64158 (163, 5)	1.58250 (163, 5)	1.52494 (163, 5)
3169800.0 /	1.88667 (230, 4)	1.84068 (230, 4)	1.79249 (230, 4)	1.74299 (230, 4)	1.69287 (230, 4)
3169700.0 /	1.57282 (230, 4)	1.55671 (230, 4)	1.53561 (230, 4)	1.51058 (230, 4)	1.48253 (230, 4)
3169600.0 /	1.46638 (126, 5)	1.40011 (197, 6)	1.40079 (75, 7)	1.41423 (75, 7)	1.41986 (75, 7)
3169500.0 /	1.57516 (197, 6)	1.53128 (197, 6)	1.48386 (197, 6)	1.43431 (197, 6)	1.38375 (197, 6)
3169400.0 /	1.54905 (197, 6)	1.53195 (197, 6)	1.50599 (197, 6)	1.47332 (197, 6)	1.43577 (197, 6)
3169300.0 /	1.41802 (126, 5)	1.43969 (126, 5)	1.45262 (126, 5)	1.45797 (126, 5)	1.45667 (126, 5)
3169200.0 /	1.54462 (114, 5)	1.45854 (114, 5)	1.36422 (114, 5)	1.27643 (207, 6)	1.30891 (151, 6)
3169100.0 /	1.39071 (167, 5)	1.38208 (173, 6)	1.43337 (173, 6)	1.46268 (114, 5)	1.38511 (114, 5)
3169000.0 /	1.38878 (114, 5)	1.43077 (167, 5)	1.34848 (167, 5)	1.25781 (167, 5)	1.30471 (173, 6)
3168900.0 /	1.13761 (124, 6)	1.14958 (114, 5)	1.25222 (114, 5)	1.32957 (114, 5)	1.28127 (167, 5)

ISCST OUTPUT

CASE: SO_2 = 20 lb/hr

100 m Receptor Grid

Worst Year for 24-hr Concentration

ISCST (DATED 86170)
AN AIR QUALITY DISPERSION MODEL IN
SECTION 1. GUIDELINE MODELS
IN UNAMAP (VERSION 6) JULY 86.
SOURCE: FILE 6 ON UNAMAP MAGNETIC TAPE FROM NTIS.

IBM-PC VERSION (1.20)

SERIAL NUMBER 5070 SOLD TO CROSS, TESSITORE & ASSOCIATES
RUN BEGAN ON 08-25-87 AT 18:51:05

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972 ***

CALCULATE (CONCENTRATION=1,DEPOSITION=2)	ISW(1) = 1
RECEPTOR GRID SYSTEM (RECTANGULAR=1 OR 3, POLAR=2 OR 4)	ISW(2) = 3
DISCRETE RECEPTOR SYSTEM (RECTANGULAR=1,POLAR=2)	ISW(3) = 1
TERRAIN ELEVATIONS ARE READ (YES=1,NO=0)	ISW(4) = 0
CALCULATIONS ARE WRITTEN TO TAPE (YES=1,NO=0)	ISW(5) = 0
LIST ALL INPUT DATA (NO=0,YES=1,MET DATA ALSO=2)	ISW(6) = 1
COMPUTE AVERAGE CONCENTRATION (OR TOTAL DEPOSITION)	
WITH THE FOLLOWING TIME PERIODS:	
HOURLY (YES=1,NO=0)	ISW(7) = 0
2-HOUR (YES=1,NO=0)	ISW(8) = 0
3-HOUR (YES=1,NO=0)	ISW(9) = 0
4-HOUR (YES=1,NO=0)	ISW(10) = 0
6-HOUR (YES=1,NO=0)	ISW(11) = 0
8-HOUR (YES=1,NO=0)	ISW(12) = 0
12-HOUR (YES=1,NO=0)	ISW(13) = 0
24-HOUR (YES=1,NO=0)	ISW(14) = 1
PRINT 'N'-DAY TABLE(S) (YES=1,NO=0)	ISW(15) = 0
PRINT THE FOLLOWING TYPES OF TABLES WHOSE TIME PERIODS ARE	
SPECIFIED BY ISW(7) THROUGH ISW(14):	
DAILY TABLES (YES=1,NO=0)	ISW(16) = 0
HIGHEST & SECOND HIGHEST TABLES (YES=1,NO=0)	ISW(17) = 1
MAXIMUM 50 TABLES (YES=1,NO=0)	ISW(18) = 0
METEOROLOGICAL DATA INPUT METHOD (PRE-PROCESSED=1,CARD=2)	ISW(19) = 1
RURAL-URBAN OPTION (RU.=0,UR. MODE 1=1,UR. MODE 2=2,UR. MODE 3=3)	ISW(20) = 0
WIND PROFILE EXPONENT VALUES (DEFAULTS=1,USER ENTERS=2,3)	ISW(21) = 1
VERTICAL POT. TEMP. GRADIENT VALUES (DEFAULTS=1,USER ENTERS=2,3)	ISW(22) = 1
SCALE EMISSION RATES FOR ALL SOURCES (NO=0,YES)0)	ISW(23) = 0
PROGRAM CALCULATES FINAL PLUME RISE ONLY (YES=1,NO=2)	ISW(24) = 1
PROGRAM ADJUSTS ALL STACK HEIGHTS FOR DOWNWASH (YES=2,NO=1)	ISW(25) = 2
PROGRAM USES BUOYANCY INDUCED DISPERSION (YES=1,NO=2)	ISW(26) = 1
CONCENTRATIONS DURING CALM PERIODS SET = 0 (YES=1,NO=2)	ISW(27) = 1
REG. DEFAULT OPTION CHOSEN (YES=1,NO=2)	ISW(28) = 1
TYPE OF POLLUTANT TO BE MODELLED (1=SO2,2=OTHER)	ISW(29) = 1
DEBUG OPTION CHOSEN (1=YES,2=NO)	ISW(30) = 2
NUMBER OF INPUT SOURCES	NSOURC = 1
NUMBER OF SOURCE GROUPS (=0,ALL SOURCES)	NGROUP = 0
TIME PERIOD INTERVAL TO BE PRINTED (=0,ALL INTERVALS)	IPERD = 0
NUMBER OF X (RANGE) GRID VALUES	NXPNTS = 21
NUMBER OF Y (THETA) GRID VALUES	NYPNTS = 21
NUMBER OF DISCRETE RECEPTORS	NXWYPT = 0
SOURCE EMISSION RATE UNITS CONVERSION FACTOR	TK=.10000E+07
HEIGHT ABOVE GROUND AT WHICH WIND SPEED WAS MEASURED	ZR = 10.00 METERS
LOGICAL UNIT NUMBER OF METEOROLOGICAL DATA	IMET = 9
DECAY COEFFICIENT FOR PHYSICAL OR CHEMICAL DEPLETION	DECAY = .000000E+00
SURFACE STATION NO.	ISS = 12842
YEAR OF SURFACE DATA	ISY = 72
UPPER AIR STATION NO.	IUS = 12842
YEAR OF UPPER AIR DATA	IUY = 72
ALLOCATED DATA STORAGE	LIMIT = 43500 WORDS
REQUIRED DATA STORAGE FOR THIS PROBLEM RUN	MIMIT = 3344 WORDS

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972 ***

*** METEOROLOGICAL DAYS TO BE PROCESSED ***
(IF=1)

```
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1   1 1 1 1 1 1
```

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

*** WIND PROFILE EXPONENTS ***

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
B	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01	.70000E-01
C	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00	.10000E+00
D	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00	.15000E+00
E	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00	.35000E+00
F	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00	.55000E+00

*** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
(DEGREES KELVIN PER METER)

STABILITY CATEGORY	WIND SPEED CATEGORY 1	2	3	4	5	6
A	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
B	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
C	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
D	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00	.00000E+00
E	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01	.20000E-01
F	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01	.35000E-01

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972 ***

*** X-COORDINATES OF RECTANGULAR GRID SYSTEM ***
(METERS)

358200.0, 358300.0, 358400.0, 358500.0, 358600.0, 358700.0, 358800.0, 358900.0, 359000.0, 359100.0,
359200.0, 359300.0, 359400.0, 359500.0, 359600.0, 359700.0, 359800.0, 359900.0, 360000.0, 360100.0,
360200.0,

*** Y-COORDINATES OF RECTANGULAR GRID SYSTEM ***
(METERS)

3168900.0, 3169000.0, 3169100.0, 3169200.0, 3169300.0, 3169400.0, 3169500.0, 3169600.0, 3169700.0, 3169800.0,
3169900.0, 3170000.0, 3170100.0, 3170200.0, 3170300.0, 3170400.0, 3170500.0, 3170600.0, 3170700.0, 3170800.0,
3170900.0,

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```
                                   *** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972                                ***

                                                              *** SOURCE DATA ***

                     EMISSION RATE                                                     TEMP.      EXIT VEL.
                       TYPE=0,1                                                        TYPE=0      TYPE=0
        T W          (GRAMS/SEC)                                                      (DEG.K);   (M/SEC);              BLDG.      BLDG.      BLDG.
        Y A NUMBER     TYPE=2                               BASE                      VERT.DIM   HORZ.DIM DIAMETER    HEIGHT     LENGTH     WIDTH
SOURCE  P K  PART.   (GRAMS/SEC)      X           Y         ELEV.       HEIGHT         TYPE=1     TYPE=1,2  TYPE=0     TYPE=0     TYPE=0     TYPE=0
NUMBER  E E  CATS.  *PER METER**2 (METERS)    (METERS)    (METERS)     (METERS)       (METERS)   (METERS) (METERS)   (METERS)   (METERS)   (METERS)
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

     1  0 0    0    .25200E+01  356200.0 3169900.0         .0        27.40         470.00       7.60      4.90       .00        .00        .00
CALM HOURS (=1) FOR DAY   3 *  1 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1 0
CALM HOURS (=1) FOR DAY   9 *  0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0
CALM HOURS (=1) FOR DAY  11 *  0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  15 *  0 0 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  21 *  0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY  22 *  0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  23 *  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1
CALM HOURS (=1) FOR DAY  24 *  1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0
CALM HOURS (=1) FOR DAY  25 *  1 1 0 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
CALM HOURS (=1) FOR DAY  26 *  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  28 *  0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  29 *  0 1 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1
CALM HOURS (=1) FOR DAY  30 *  1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  37 *  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY  45 *  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY  46 *  0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  48 *  0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  49 *  0 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  52 *  0 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  54 *  0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  55 *  0 1 1 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1
CALM HOURS (=1) FOR DAY  56 *  1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0
CALM HOURS (=1) FOR DAY  57 *  0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1
CALM HOURS (=1) FOR DAY  58 *  0 0 0 0 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 1 0 0 1 0
CALM HOURS (=1) FOR DAY  59 *  0 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  61 *  0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  64 *  1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY  67 *  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
CALM HOURS (=1) FOR DAY  68 *  0 1 0 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  71 *  0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  73 *  0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0
CALM HOURS (=1) FOR DAY  75 *  0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY  78 *  0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1
CALM HOURS (=1) FOR DAY  79 *  0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY  80 *  0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  81 *  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
CALM HOURS (=1) FOR DAY  84 *  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY  85 *  1 1 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  87 *  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY  88 *  0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  93 *  0 1 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1
CALM HOURS (=1) FOR DAY  94 *  1 1 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  96 *  0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY  97 *  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY  98 *  0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 103 *  0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 105 *  0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 106 *  1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0
CALM HOURS (=1) FOR DAY 107 *  1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 109 *  0 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 111 *  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 113 *  1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 114 *  0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 115 *  0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 124 *  0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 137 *  0 0 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 140 *  0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1
CALM HOURS (=1) FOR DAY 141 *  1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
```

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CALM HOURS (=1) FOR DAY 142 * 0 0 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 143 * 0 1 1 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 145 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 146 * 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY 147 * 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 149 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1
CALM HOURS (=1) FOR DAY 150 * 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 154 * 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 163 * 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 184 * 0 1 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 185 * 1 1 1 1 1 0 1 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 186 * 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY 187 * 1 0 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 194 * 0 1 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 195 * 0 1 1 1 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 208 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 1 0
CALM HOURS (=1) FOR DAY 211 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 215 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1
CALM HOURS (=1) FOR DAY 216 * 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 217 * 1 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 218 * 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY 219 * 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 222 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
CALM HOURS (=1) FOR DAY 224 * 1 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 226 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
CALM HOURS (=1) FOR DAY 231 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 232 * 0 1 0 1 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 235 * 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 236 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 1 1 0 0 0
CALM HOURS (=1) FOR DAY 237 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 1 0 0 1
CALM HOURS (=1) FOR DAY 238 * 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 239 * 0 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0
CALM HOURS (=1) FOR DAY 240 * 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
CALM HOURS (=1) FOR DAY 241 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 242 * 0 1 1 1 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 243 * 0 0 1 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 244 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
CALM HOURS (=1) FOR DAY 245 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
CALM HOURS (=1) FOR DAY 249 * 0 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 250 * 0 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 253 * 0 1 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 258 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0
CALM HOURS (=1) FOR DAY 260 * 0 0 1 1 1 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 263 * 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 264 * 1 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 273 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
CALM HOURS (=1) FOR DAY 274 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0
CALM HOURS (=1) FOR DAY 275 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 280 * 0 0 1 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 282 * 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY 287 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 288 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 289 * 1 1 0 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 290 * 0 0 0 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1
CALM HOURS (=1) FOR DAY 291 * 0 1 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 1 0 0 1 0
CALM HOURS (=1) FOR DAY 292 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 293 * 0 0 1 1 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 298 * 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 299 * 0 0 1 0 1 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 303 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0
CALM HOURS (=1) FOR DAY 308 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0
CALM HOURS (=1) FOR DAY 315 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0
CALM HOURS (=1) FOR DAY 323 * 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
CALM HOURS (=1) FOR DAY 326 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1
CALM HOURS (=1) FOR DAY 332 * 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 333 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
CALM HOURS (=1) FOR DAY 334 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 1
CALM HOURS (=1) FOR DAY 335 * 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 336 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0
CALM HOURS (=1) FOR DAY 340 * 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 341 * 0 0 0 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 342 * 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 348 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 1 0 0 0 0
CALM HOURS (=1) FOR DAY 349 * 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 0 0 0 0
CALM HOURS (=1) FOR DAY 355 * 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
CALM HOURS (=1) FOR DAY 358 * 0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

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CALM HOURS (=1) FOR DAY 362 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
CALM HOURS (=1) FOR DAY 363 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  1
CALM HOURS (=1) FOR DAY 366 *  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  1  0  0
```

HIGH
24-HR
SGROUP# 1

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972 ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS .84409 AND OCCURRED AT (359200.0, 3169900.0) *

Y-AXIS (METERS) /	X-AXIS (METERS) 358200.0	358300.0	358400.0	358500.0	358600.0
170900.0 /	.31223C(107, 1)	.30980C(107, 1)	.30178C(107, 1)	.28945C(107, 1)	.27468C(107, 1)
170800.0 /	.29332C(107, 1)	.27903C(107, 1)	.26239C(107, 1)	.27750 (172, 1)	.30699 (172, 1)
170700.0 /	.28092C(194, 1)	.29013 (172, 1)	.32052 (172, 1)	.34493 (172, 1)	.36453 (172, 1)
170600.0 /	.32972 (172, 1)	.35371 (172, 1)	.37292 (172, 1)	.38879 (172, 1)	.40225 (172, 1)
170500.0 /	.37230 (172, 1)	.38775 (172, 1)	.40075 (172, 1)	.41140 (172, 1)	.42429 (177, 1)
170400.0 /	.38417 (172, 1)	.41548 (177, 1)	.45218 (177, 1)	.48220 (177, 1)	.50589 (177, 1)
170300.0 /	.44905 (177, 1)	.47002 (177, 1)	.48534 (177, 1)	.49579 (177, 1)	.50213 (177, 1)
170200.0 /	.50963C(219, 1)	.52430C(219, 1)	.53378C(219, 1)	.53880C(219, 1)	.54007C(219, 1)
170100.0 /	.59457C(219, 1)	.59521C(219, 1)	.59211C(219, 1)	.58601C(219, 1)	.58312 (173, 1)
170000.0 /	.62865 (173, 1)	.65451 (173, 1)	.67746 (173, 1)	.69766 (173, 1)	.71527 (173, 1)
169900.0 /	.73588 (173, 1)	.75746 (173, 1)	.77612 (173, 1)	.79206 (173, 1)	.80548 (173, 1)
169800.0 /	.70068 (173, 1)	.72703 (173, 1)	.74994 (173, 1)	.76967 (173, 1)	.78646 (173, 1)
169700.0 /	.55281C(242, 1)	.56671 (175, 1)	.59074 (175, 1)	.61208 (175, 1)	.63089 (175, 1)
169600.0 /	.49193 (181, 1)	.49331 (181, 1)	.49097 (181, 1)	.48567 (181, 1)	.47806 (181, 1)
169500.0 /	.40631 (181, 1)	.42062 (181, 1)	.43056 (181, 1)	.43669 (181, 1)	.43954 (181, 1)
169400.0 /	.32307 (144, 1)	.32993C(103, 1)	.33874 (181, 1)	.35424 (181, 1)	.36624 (181, 1)
169300.0 /	.37012C(143, 1)	.35107C(143, 1)	.33290C(143, 1)	.32492 (144, 1)	.31505 (144, 1)
169200.0 /	.41579C(143, 1)	.40384C(143, 1)	.38793C(143, 1)	.37001C(143, 1)	.35170C(143, 1)
169100.0 /	.41385C(143, 1)	.41804C(143, 1)	.41651C(143, 1)	.40951C(143, 1)	.39782C(143, 1)
169000.0 /	.37126C(143, 1)	.38924C(143, 1)	.40132C(143, 1)	.40822C(143, 1)	.41044C(143, 1)
168900.0 /	.31093C(143, 1)	.33287C(143, 1)	.35492C(143, 1)	.37327C(143, 1)	.38657C(143, 1)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972 ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS .84409 AND OCCURRED AT (359200.0, 3169900.0) *

Y-AXIS (METERS) /	X-AXIS (METERS) 358700.0	358800.0	358900.0	359000.0	359100.0
3170900.0 /	.26335 (172, 1)	.29140 (172, 1)	.31485 (172, 1)	.33411 (172, 1)	.34955 (172, 1)
3170800.0 /	.33116 (172, 1)	.35076 (172, 1)	.36676 (172, 1)	.38012 (172, 1)	.39134 (172, 1)
3170700.0 /	.38057 (172, 1)	.39406 (172, 1)	.40568 (172, 1)	.41573 (172, 1)	.42422 (172, 1)
3170600.0 /	.41372 (172, 1)	.42328 (172, 1)	.43079 (172, 1)	.45641 (177, 1)	.48674 (177, 1)
3170500.0 /	.46103 (177, 1)	.49181 (177, 1)	.51678 (177, 1)	.53633 (177, 1)	.55104 (177, 1)
3170400.0 /	.52388 (177, 1)	.53685 (177, 1)	.54552 (177, 1)	.55053 (177, 1)	.55247 (177, 1)
3170300.0 /	.50503 (177, 1)	.50507 (177, 1)	.50276 (177, 1)	.49854 (177, 1)	.49277 (177, 1)
3170200.0 /	.53826C(219, 1)	.53393C(219, 1)	.52761C(219, 1)	.52261 (173, 1)	.53879 (173, 1)
3170100.0 /	.60314 (173, 1)	.62092 (173, 1)	.63659 (173, 1)	.65027 (173, 1)	.66210 (173, 1)
3170000.0 /	.73046 (173, 1)	.74339 (173, 1)	.75425 (173, 1)	.76320 (173, 1)	.77041 (173, 1)
3169900.0 /	.81660 (173, 1)	.82560 (173, 1)	.83268 (173, 1)	.83801 (173, 1)	.84177 (173, 1)
3169800.0 /	.80057 (173, 1)	.81223 (173, 1)	.82167 (173, 1)	.82910 (173, 1)	.83471 (173, 1)
3169700.0 /	.64733 (175, 1)	.66490 (173, 1)	.68483 (173, 1)	.70210 (173, 1)	.71691 (173, 1)
3169600.0 /	.48448 (175, 1)	.50632 (175, 1)	.52616 (175, 1)	.54407 (175, 1)	.56010 (175, 1)
3169500.0 /	.43957 (181, 1)	.43723 (181, 1)	.44133 (178, 1)	.45869 (178, 1)	.47479 (178, 1)
3169400.0 /	.37518 (181, 1)	.38145 (181, 1)	.38540 (181, 1)	.38733 (181, 1)	.40264 (178, 1)
3169300.0 /	.31230C(103, 1)	.32509 (174, 1)	.33421 (174, 1)	.33994 (174, 1)	.34303 (174, 1)
3169200.0 /	.33410C(143, 1)	.32755 (144, 1)	.31837 (144, 1)	.30636 (144, 1)	.30510 (174, 1)
3169100.0 /	.38280C(143, 1)	.36598C(143, 1)	.34871C(143, 1)	.33302 (144, 1)	.32962 (144, 1)
3169000.0 /	.40794C(143, 1)	.40081C(143, 1)	.38967C(143, 1)	.37563C(143, 1)	.35986C(143, 1)
3168900.0 /	.39532C(143, 1)	.40018C(143, 1)	.40119C(143, 1)	.39813C(143, 1)	.39080C(143, 1)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972 ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS .84409 AND OCCURRED AT (359200.0, 3169900.0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 359200.0	359300.0	359400.0	359500.0	359600.0
3170900.0 /	.36214 (172, 1)	.37277 (172, 1)	.38199 (172, 1)	.39014 (172, 1)	.39739 (172, 1)
3170800.0 /	.40071 (172, 1)	.40891 (172, 1)	.41599 (172, 1)	.42188 (172, 1)	.42643 (172, 1)
3170700.0 /	.43047 (172, 1)	.44231 (177, 1)	.47056 (177, 1)	.49442 (177, 1)	.51396 (177, 1)
3170600.0 /	.51110 (177, 1)	.53033 (177, 1)	.54508 (177, 1)	.55585 (177, 1)	.56315 (177, 1)
3170500.0 /	.56078 (177, 1)	.56640 (177, 1)	.56901 (177, 1)	.56909 (177, 1)	.56707 (177, 1)
3170400.0 /	.55133 (177, 1)	.54736 (177, 1)	.54178 (177, 1)	.53488 (177, 1)	.52695 (177, 1)
3170300.0 /	.48549 (177, 1)	.47641 (177, 1)	.46673 (177, 1)	.46989 (173, 1)	.48142 (173, 1)
3170200.0 /	.55310 (173, 1)	.56476 (173, 1)	.57495 (173, 1)	.58379 (173, 1)	.59137 (173, 1)
3170100.0 /	.67216 (173, 1)	.67932 (173, 1)	.68511 (173, 1)	.68968 (173, 1)	.69314 (173, 1)
3170000.0 /	.77600 (173, 1)	.77865 (173, 1)	.78010 (173, 1)	.78051 (173, 1)	.78000 (173, 1)
3169900.0 /	.84409 (173, 1)	.84355 (173, 1)	.84197 (173, 1)	.83954 (173, 1)	.83634 (173, 1)
3169800.0 /	.83868 (173, 1)	.83962 (173, 1)	.83939 (173, 1)	.83814 (173, 1)	.83600 (173, 1)
3169700.0 /	.72939 (173, 1)	.73851 (173, 1)	.74584 (173, 1)	.75157 (173, 1)	.75586 (173, 1)
3169600.0 /	.57421 (175, 1)	.58569 (175, 1)	.59562 (175, 1)	.60415 (175, 1)	.61136 (175, 1)
3169500.0 /	.48939 (178, 1)	.50194 (178, 1)	.51328 (178, 1)	.52342 (178, 1)	.53239 (178, 1)
3169400.0 /	.41701 (178, 1)	.42981 (178, 1)	.44173 (178, 1)	.45284 (178, 1)	.46320 (178, 1)
3169300.0 /	.35535 (178, 1)	.36982 (178, 1)	.38252 (178, 1)	.39379 (178, 1)	.40389 (178, 1)
3169200.0 /	.31513 (174, 1)	.32184 (174, 1)	.32586 (174, 1)	.33761 (178, 1)	.35137 (178, 1)
3169100.0 /	.32131 (144, 1)	.30991 (144, 1)	.29656 (144, 1)	.29217 (174, 1)	.30014 (174, 1)
3169000.0 /	.34345C(143, 1)	.33017 (144, 1)	.32805 (144, 1)	.32190 (144, 1)	.31238 (144, 1)
3168900.0 /	.37994C(143, 1)	.36663C(143, 1)	.35190C(143, 1)	.33670C(143, 1)	.32536 (144, 1)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972 ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS .84409 AND OCCURRED AT (359200.0, 3169900.0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 359700.0	359800.0	359900.0	360000.0	360100.0
3170900.0 /	.40380 (172, 1)	.40928 (172, 1)	.41374 (172, 1)	.42938 (177, 1)	.45131 (177, 1)
3170800.0 /	.45066 (177, 1)	.47374 (177, 1)	.49311 (177, 1)	.50889 (177, 1)	.52133 (177, 1)
3170700.0 /	.52946 (177, 1)	.54127 (177, 1)	.54981 (177, 1)	.55549 (177, 1)	.55873 (177, 1)
3170600.0 /	.56749 (177, 1)	.56932 (177, 1)	.56902 (177, 1)	.56696 (177, 1)	.56342 (177, 1)
3170500.0 /	.56332 (177, 1)	.55815 (177, 1)	.55181 (177, 1)	.54453 (177, 1)	.53650 (177, 1)
3170400.0 /	.51821 (177, 1)	.50883 (177, 1)	.49897 (177, 1)	.48877 (177, 1)	.47832 (177, 1)
3170300.0 /	.49172 (173, 1)	.50085 (173, 1)	.50889 (173, 1)	.51592 (173, 1)	.52200 (173, 1)
3170200.0 /	.59779 (173, 1)	.60314 (173, 1)	.60750 (173, 1)	.61096 (173, 1)	.61360 (173, 1)
3170100.0 /	.69557 (173, 1)	.69709 (173, 1)	.69777 (173, 1)	.69769 (173, 1)	.69692 (173, 1)
3170000.0 /	.77865 (173, 1)	.77657 (173, 1)	.77382 (173, 1)	.77048 (173, 1)	.76663 (173, 1)
3169900.0 /	.83246 (173, 1)	.82800 (173, 1)	.82300 (173, 1)	.81755 (173, 1)	.81170 (173, 1)
3169800.0 /	.83305 (173, 1)	.82941 (173, 1)	.82515 (173, 1)	.82034 (173, 1)	.81506 (173, 1)
3169700.0 /	.75886 (173, 1)	.76070 (173, 1)	.76149 (173, 1)	.76135 (173, 1)	.76037 (173, 1)
3169600.0 /	.61738 (175, 1)	.62229 (175, 1)	.63085 (173, 1)	.63839 (173, 1)	.64467 (173, 1)
3169500.0 /	.54022 (178, 1)	.54696 (178, 1)	.55265 (178, 1)	.55734 (178, 1)	.56110 (178, 1)
3169400.0 /	.47283 (178, 1)	.48173 (178, 1)	.48991 (178, 1)	.49736 (178, 1)	.50409 (178, 1)
3169300.0 /	.41307 (178, 1)	.42151 (178, 1)	.42932 (178, 1)	.43662 (178, 1)	.44346 (178, 1)
3169200.0 /	.36314 (178, 1)	.37320 (178, 1)	.38185 (178, 1)	.38935 (178, 1)	.39594 (178, 1)
3169100.0 /	.30557 (174, 1)	.31823 (178, 1)	.33192 (178, 1)	.34355 (178, 1)	.35334 (178, 1)
3169000.0 /	.30044 (144, 1)	.28701 (144, 1)	.27756 (174, 1)	.28404 (174, 1)	.29775 (178, 1)
3168900.0 /	.32517 (144, 1)	.32120 (144, 1)	.31379 (144, 1)	.30362 (144, 1)	.29145 (144, 1)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972 ***

* HIGHEST 24-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS .84409 AND OCCURRED AT (359200.0, 3169900.0) *

Y-AXIS (METERS) /	X-AXIS (METERS) 360200.0
3170900.0 /	.46988 (177, 1)
3170800.0 /	.53053 (177, 1)
3170700.0 /	.55979 (177, 1)
3170600.0 /	.55865 (177, 1)
3170500.0 /	.52786 (177, 1)
3170400.0 /	.46774 (177, 1)
3170300.0 /	.52720 (173, 1)
3170200.0 /	.61547 (173, 1)
3170100.0 /	.69554 (173, 1)
3170000.0 /	.76231 (173, 1)
3169900.0 /	.80551 (173, 1)
3169800.0 /	.80937 (173, 1)
3169700.0 /	.75865 (173, 1)
3169600.0 /	.64979 (173, 1)
3169500.0 /	.56393 (178, 1)
3169400.0 /	.51004 (178, 1)
3169300.0 /	.44979 (178, 1)
3169200.0 /	.40169 (178, 1)
3169100.0 /	.36134 (178, 1)
3169000.0 /	.31126 (178, 1)
3168900.0 /	.27791 (144, 1)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972 ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS .76682 AND OCCURRED AT (359200.0, 3169800.0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 358200.0	358300.0	358400.0	358500.0	358600.0
3170900.0 /	.26891C(85, 1)	.24702C(85, 1)	.24171C(298, 1)	.23896C(298, 1)	.23557 (309, 1)
3170800.0 /	.26443C(298, 1)	.26181C(298, 1)	.25389C(298, 1)	.25113 (309, 1)	.25083 (316, 1)
3170700.0 /	.27592C(298, 1)	.27184C(194, 1)	.27187 (316, 1)	.28906 (316, 1)	.29994 (316, 1)
3170600.0 /	.28832 (316, 1)	.30488 (316, 1)	.31392 (316, 1)	.31631 (316, 1)	.31312 (316, 1)
3170500.0 /	.31644 (316, 1)	.31570 (316, 1)	.33504 (177, 1)	.38194 (177, 1)	.41951 (172, 1)
3170400.0 /	.37219 (177, 1)	.39292 (172, 1)	.39854 (172, 1)	.40106 (172, 1)	.40070 (172, 1)
3170300.0 /	.39755 (99, 1)	.41069 (99, 1)	.42167 (99, 1)	.43130C(219, 1)	.44606C(219, 1)
3170200.0 /	.48495 (99, 1)	.49091 (99, 1)	.49485 (99, 1)	.49712 (99, 1)	.49799 (99, 1)
3170100.0 /	.50206 (99, 1)	.50858 (173, 1)	.53592 (173, 1)	.56075 (173, 1)	.57754C(219, 1)
3170000.0 /	.59525C(219, 1)	.58906C(219, 1)	.58030C(219, 1)	.57426 (175, 1)	.59028 (175, 1)
3169900.0 /	.67466 (175, 1)	.68973 (175, 1)	.70287 (175, 1)	.71424 (175, 1)	.72397 (175, 1)
3169800.0 /	.67908 (175, 1)	.69640 (175, 1)	.71131 (175, 1)	.72404 (175, 1)	.73479 (175, 1)
3169700.0 /	.53983 (175, 1)	.54916C(242, 1)	.55486 (173, 1)	.58723 (173, 1)	.61627 (173, 1)
3169600.0 /	.47872C(242, 1)	.48179C(242, 1)	.48221C(242, 1)	.48055C(242, 1)	.47727C(242, 1)
3169500.0 /	.39308C(242, 1)	.40577C(242, 1)	.41530C(242, 1)	.42196C(242, 1)	.42609C(242, 1)
3169400.0 /	.32260C(103, 1)	.32010 (183, 1)	.33294C(103, 1)	.34353C(242, 1)	.35573C(242, 1)
3169300.0 /	.32533 (144, 1)	.33138 (144, 1)	.33090 (144, 1)	.31623C(143, 1)	.30865C(103, 1)
3169200.0 /	.32484 (44, 1)	.32496 (44, 1)	.31623 (144, 1)	.32669 (144, 1)	.33236 (144, 1)
3169100.0 /	.28758 (77, 1)	.32074 (44, 1)	.34315 (44, 1)	.35174 (44, 1)	.34818 (44, 1)
3169000.0 /	.27167 (77, 1)	.28780 (77, 1)	.29344 (77, 1)	.32130 (44, 1)	.34885 (44, 1)
3168900.0 /	.24403C(49, 1)	.24580 (77, 1)	.27092 (77, 1)	.28816 (77, 1)	.29629 (77, 1)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972 ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS .76682 AND OCCURRED AT (359200.0, 3169800.0) *

Y-AXIS / (METERS) /	X-AXIS (METERS) 358700.0	358800.0	358900.0	359000.0	359100.0
3170900.0 /	.25932C(107, 1)	.24453C(107, 1)	.24514 (316, 1)	.25765 (316, 1)	.26599 (316, 1)
3170800.0 /	.26799 (316, 1)	.27998 (316, 1)	.28702 (316, 1)	.28955 (316, 1)	.28815 (316, 1)
3170700.0 /	.30499 (316, 1)	.30493 (316, 1)	.30062 (316, 1)	.33434 (177, 1)	.37374 (177, 1)
3170600.0 /	.33762 (177, 1)	.38106 (177, 1)	.42101 (177, 1)	.43608 (172, 1)	.43905 (172, 1)
3170500.0 /	.42492 (172, 1)	.42758 (172, 1)	.42756 (172, 1)	.42507 (172, 1)	.42040 (172, 1)
3170400.0 /	.39780 (172, 1)	.39276 (172, 1)	.38600 (172, 1)	.38617 (99, 1)	.39186 (99, 1)
3170300.0 /	.45704C(219, 1)	.46453C(219, 1)	.46888C(219, 1)	.47048C(219, 1)	.46971C(219, 1)
3170200.0 /	.49769 (99, 1)	.49637 (99, 1)	.50458 (173, 1)	.51971C(219, 1)	.51059C(219, 1)
3170100.0 /	.56724C(219, 1)	.55557C(219, 1)	.54290C(219, 1)	.52953C(219, 1)	.52028 (176, 1)
3170000.0 /	.60470 (175, 1)	.61761 (175, 1)	.62909 (175, 1)	.63921 (175, 1)	.64992 (174, 1)
3169900.0 /	.73221 (175, 1)	.73907 (175, 1)	.74466 (175, 1)	.74907 (175, 1)	.75242 (175, 1)
3169800.0 /	.74374 (175, 1)	.75106 (175, 1)	.75689 (175, 1)	.76138 (175, 1)	.76466 (175, 1)
3169700.0 /	.64211 (173, 1)	.66158 (175, 1)	.67381 (175, 1)	.68419 (175, 1)	.69286 (175, 1)
3169600.0 /	.48382 (178, 1)	.50218 (178, 1)	.51863 (178, 1)	.53323 (178, 1)	.54604 (178, 1)
3169500.0 /	.42800C(242, 1)	.42801C(242, 1)	.43292 (181, 1)	.42700 (181, 1)	.41979 (181, 1)
3169400.0 /	.36566C(242, 1)	.37350C(242, 1)	.37944C(242, 1)	.38675 (178, 1)	.38750 (181, 1)
3169300.0 /	.31190 (174, 1)	.31303C(103, 1)	.31981 (181, 1)	.32784 (181, 1)	.33847 (178, 1)
3169200.0 /	.33256 (144, 1)	.31780C(143, 1)	.30304C(143, 1)	.29273 (77, 1)	.30023 (77, 1)
3169100.0 /	.33511 (44, 1)	.32565 (144, 1)	.33159 (144, 1)	.33195C(143, 1)	.31627C(143, 1)
3169000.0 /	.36424 (44, 1)	.36805 (44, 1)	.36188 (44, 1)	.34793 (44, 1)	.32827 (44, 1)
3168900.0 /	.31514 (44, 1)	.34567 (44, 1)	.36596 (44, 1)	.37584 (44, 1)	.37558 (44, 1)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972 ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS .76682 AND OCCURRED AT (359200.0, 3169800.0) *

Y-AXIS (METERS) /	X-AXIS (METERS) 359200.0	359300.0	359400.0	359500.0	359600.0
3170900.0 /	.27043 (316, 1)	.27137 (316, 1)	.26928 (316, 1)	.28487 (177, 1)	.31599 (177, 1)
3170800.0 /	.29089 (177, 1)	.32619 (177, 1)	.36091 (177, 1)	.39380 (177, 1)	.42392 (177, 1)
3170700.0 /	.40985 (177, 1)	.43501 (172, 1)	.43772 (172, 1)	.43853 (172, 1)	.43743 (172, 1)
3170600.0 /	.43911 (172, 1)	.43684 (172, 1)	.43258 (172, 1)	.42656 (172, 1)	.41905 (172, 1)
3170500.0 /	.41348 (172, 1)	.40485 (172, 1)	.39515 (172, 1)	.38469 (172, 1)	.37372 (172, 1)
3170400.0 /	.39656 (99, 1)	.40098C(219, 1)	.40383C(219, 1)	.40572 (99, 1)	.40760 (99, 1)
3170300.0 /	.46687C(219, 1)	.46216C(219, 1)	.45703 (173, 1)	.45661 (177, 1)	.45391 (99, 1)
3170200.0 /	.50051C(219, 1)	.48959C(219, 1)	.47823C(219, 1)	.46660 (99, 1)	.46042 (176, 1)
3170100.0 /	.52733 (176, 1)	.53905 (174, 1)	.54994 (174, 1)	.55958 (174, 1)	.56803 (174, 1)
3170000.0 /	.65984 (174, 1)	.66685 (174, 1)	.67263 (174, 1)	.67733 (174, 1)	.68102 (174, 1)
3169900.0 /	.75477 (175, 1)	.75484 (175, 1)	.75417 (175, 1)	.75286 (175, 1)	.75098 (175, 1)
3169800.0 /	.76682 (175, 1)	.76658 (175, 1)	.76553 (175, 1)	.76381 (175, 1)	.76147 (175, 1)
3169700.0 /	.69993 (175, 1)	.70433 (175, 1)	.70754 (175, 1)	.70970 (175, 1)	.71091 (175, 1)
3169600.0 /	.55700 (178, 1)	.56536 (178, 1)	.57229 (178, 1)	.58577 (173, 1)	.59951 (173, 1)
3169500.0 /	.42361 (175, 1)	.44029 (175, 1)	.45565 (175, 1)	.46970 (175, 1)	.48248 (175, 1)
3169400.0 /	.38728C(242, 1)	.38660C(242, 1)	.38473C(242, 1)	.38186C(242, 1)	.37818C(242, 1)
3169300.0 /	.34383 (174, 1)	.34424C(242, 1)	.34849C(242, 1)	.35151C(242, 1)	.35336C(242, 1)
3169200.0 /	.30540 (77, 1)	.30844 (77, 1)	.32157 (178, 1)	.32769 (174, 1)	.32782 (174, 1)
3169100.0 /	.30177C(143, 1)	.28874C(143, 1)	.28452 (77, 1)	.28990 (77, 1)	.29378 (77, 1)
3169000.0 /	.32812 (144, 1)	.32745C(143, 1)	.31239C(143, 1)	.29853C(143, 1)	.28595C(143, 1)
3168900.0 /	.36704 (44, 1)	.35225 (44, 1)	.33303 (44, 1)	.32196 (144, 1)	.32176C(143, 1)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972 ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS .76682 AND OCCURRED AT (359200.0, 3169800.0) *

Y-AXIS (METERS) /	X-AXIS (METERS) 359700.0	359800.0	359900.0	360000.0	360100.0
3170900.0 /	.34696 (177, 1)	.37670 (177, 1)	.40437 (177, 1)	.41704 (172, 1)	.41904 (172, 1)
3170800.0 /	.42952 (172, 1)	.43105 (172, 1)	.43097 (172, 1)	.42930 (172, 1)	.42611 (172, 1)
3170700.0 /	.43452 (172, 1)	.42994 (172, 1)	.42387 (172, 1)	.41652 (172, 1)	.40812 (172, 1)
3170600.0 /	.41033 (172, 1)	.40067 (172, 1)	.39030 (172, 1)	.37945 (172, 1)	.36831 (172, 1)
3170500.0 /	.36245 (172, 1)	.35458 (99, 1)	.35736 (99, 1)	.35974 (99, 1)	.36173 (99, 1)
3170400.0 /	.40897 (99, 1)	.40988 (99, 1)	.41035 (99, 1)	.41659 (173, 1)	.42584 (173, 1)
3170300.0 /	.45166 (99, 1)	.44899 (99, 1)	.44593 (99, 1)	.44252 (99, 1)	.43878 (99, 1)
3170200.0 /	.46828 (176, 1)	.47507 (176, 1)	.48085 (176, 1)	.48571 (176, 1)	.48972 (176, 1)
3170100.0 /	.57537 (174, 1)	.58169 (174, 1)	.58705 (174, 1)	.59153 (174, 1)	.59518 (174, 1)
3170000.0 /	.68380 (174, 1)	.68573 (174, 1)	.68690 (174, 1)	.68736 (174, 1)	.68718 (174, 1)
3169900.0 /	.74858 (175, 1)	.74571 (175, 1)	.74241 (175, 1)	.73928 (174, 1)	.73715 (174, 1)
3169800.0 /	.75860 (175, 1)	.75524 (175, 1)	.75145 (175, 1)	.74728 (175, 1)	.74277 (175, 1)
3169700.0 /	.71127 (175, 1)	.71087 (175, 1)	.70979 (175, 1)	.70811 (175, 1)	.70588 (175, 1)
3169600.0 /	.61152 (173, 1)	.62193 (173, 1)	.62619 (175, 1)	.62917 (175, 1)	.63130 (175, 1)
3169500.0 /	.49401 (175, 1)	.50436 (175, 1)	.51357 (175, 1)	.52171 (175, 1)	.52884 (175, 1)
3169400.0 /	.37386C(242, 1)	.37922 (175, 1)	.39176 (175, 1)	.40343 (175, 1)	.41424 (175, 1)
3169300.0 /	.35413C(242, 1)	.35390C(242, 1)	.35273C(242, 1)	.35075C(242, 1)	.34804C(242, 1)
3169200.0 /	.32672 (174, 1)	.32477 (174, 1)	.32259C(242, 1)	.32531C(242, 1)	.32719C(242, 1)
3169100.0 /	.30233 (178, 1)	.30883 (174, 1)	.31027 (174, 1)	.31025 (174, 1)	.30911 (174, 1)
3169000.0 /	.27464C(143, 1)	.27265 (77, 1)	.27681 (77, 1)	.28200 (178, 1)	.28851 (174, 1)
3168900.0 /	.30757C(143, 1)	.29438C(143, 1)	.28231C(143, 1)	.27137C(143, 1)	.26144C(143, 1)

*** FM&M KILN #2 - 20.0 LB/HR SO2 - 1972 ***

* SECOND HIGHEST 24-HOUR AVERAGE CONCENTRATION (MICROGRAMS/CUBIC METER) *
* FROM ALL SOURCES *
* FOR THE RECEPTOR GRID *

* MAXIMUM VALUE EQUALS .76682 AND OCCURRED AT (359200.0, 3169800.0) *

Y-AXIS (METERS)	X-AXIS (METERS) 360200.0
3170900.0	.41954 (172, 1)
3170800.0	.42127 (172, 1)
3170700.0	.39872 (172, 1)
3170600.0	.35696 (172, 1)
3170500.0	.36335 (99, 1)
3170400.0	.43416 (173, 1)
3170300.0	.43472 (99, 1)
3170200.0	.49294 (176, 1)
3170100.0	.59807 (174, 1)
3170000.0	.68642 (174, 1)
3169900.0	.73453 (174, 1)
3169800.0	.73797 (175, 1)
3169700.0	.70317 (175, 1)
3169600.0	.63267 (175, 1)
3169500.0	.53501 (175, 1)
3169400.0	.42419 (175, 1)
3169300.0	.34467C(242, 1)
3169200.0	.32813C(242, 1)
3169100.0	.30715 (174, 1)
3169000.0	.29120 (174, 1)
3168900.0	.25935 (77, 1)

JN ENDED ON 08-25-87 AT 22:51:00