Department of Environmental Protection

Lawton Chiles
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Virginia B. Wetherell
Secretary

October 3, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Joseph T. Piermatteo, Sr. Vice President
Florida Crushed Stone Company
10311 Cement Plant Road
Brooksville, Florida 34601

Dear Mr. Piermatteo:

Re: DEP Files PSD-FL-227, AC 27-274892, PA 82-17
Florida Crushed Stone, Proposed Cement Plant

Enclosed is one copy of the draft permit, Technical Evaluation and Preliminary Determination, proposed BACT determination, to construct a second cement plant at your existing facility in Hernando County, Florida. Also included is the Intent to Issue as well as the Notice of Intent to Issue Permit for you to publish in a newspaper of general circulation in Hernando County.

Please provide proof of publication along with any comments you wish to have considered concerning the Department's proposed action to A. A. Linero, P.E., Administrator, New Source Review Section, at the above address. If you have any questions please call Ms. Teresa Heron or Mr. Linero at (904)488-1344.

Sincerely,

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

CHF/th/t

Enclosure

cc: Jewell Harper, EPA
John Bunyak, NPS
Buck Oven, DEP
Bill Thomas, SWD
Doug Beason, DEP
Lawrence Jennings, Hernando County
Don Elias, RTP Env. Assoc.
Lawrence Curtin, H&K
Tom Mountain, FCS

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PERMITTEE:
Florida Crushed Stone Company
10311 Cement Plant Road
Brooksville, FL 34601

Permit Number: AC 27-274892
PSD-FL-227
Expiration Date: 11/30/98
Project: No. 2 Cement Kiln and Associated Equipment

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4, 62-210 through 297. 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 construction of a second portland cement kiln a maximum clinker production capacity of 83 tons per hour (TPH) and associated equipment consisting of a clinker cooler, Gepol preheater, raw mill, finish mill, conveyers, transport systems, feed systems, and raw material and product silos, bins and hoppers. The cement kiln will be preheated with fuel oil and/or natural gas, fired with coal as the main fuel, and burn whole tires as supplemental fuel.

The Florida Crushed Stone (FCS) facility is located approximately 3.5 miles northwest of Brooksville, Hernando County, Florida. The UTM coordinates of this facility are Zone 17, 360.0 km East and 3162.5 km North.

The project shall be constructed in accordance with the permit application, plans, documents, amendments and drawings, except as otherwise noted in the General and Specific Conditions.

Attachments are listed below:

1. Application received March 13, 1995.
2. Department's letters dated April 21, memo dated June 16, letter dated August 3 and August 10, 1995.
3. RTP Environmental Associates letters dated March 21, May 10, May 19, July 11, July 17, August 11, August 22, September 5, September 7, September 12, and September 14, 1995.
4. EPA's letter dated June 15, 1995.
5. Hernando County Planning Department's letter dated April 28, June 5, and August 11, 1995.

GENERAL CONDITIONS:

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

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

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

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

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

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

GENERAL CONDITIONS:

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

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

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

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

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

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

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

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

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

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

10. The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance,

GENERAL CONDITIONS:

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 17-4.120 and 17-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

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

13. This permit also constitutes:

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

14. The permittee shall comply with the following:

a. Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.

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

c. Records of monitoring information shall include:

- the date, exact place, and time of sampling or measurements;
- the person responsible for performing the sampling or measurements;
- the dates analyses were performed;
- the person responsible for performing the analyses;

GENERAL CONDITIONS:

- the analytical techniques or methods used; and
- the results of such analyses.

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

SPECIFIC CONDITIONS:

1. The construction and operation of of the No. 2 kiln and associated equipment shall comply with all applicable provisions of Chapter 403, F.S., Chapters 62-4, 62-210 through 297, F.A.C., and 40 CFR 60 (1994 version).

2. Unless otherwise indicated, the construction and operation of the No. 2 cement kiln and associated equipment shall be in accordance with the capacities and specifications stated in the application. The facility shall comply with all applicable requirements of 40 CFR 60, Subpart A, Appendix A and Appendix B (1994 version); Subpart F - Standards of Performance for Portland Cement Plants which are adopted by reference in Rule 62-296.800(2)(a), F.A.C.

3. The No. 2 kiln clinker production rate shall not exceed 83.0 tons per hour (TPH), 1992 tons per day (TPD) and 727,080 tons per year (TPY) based upon 8,760 hours of operation per year.. The permitted maximum preheater feed is 138.0 TPH, which is equivalent to a maximum kiln feed rate of 127.0 TPH. [Rule 62-212.200(58), F.A.C.]

4. Fuels fired in No. 2 kiln shall not exceed a total heat input rate of 303 MMBtu/hr and shall consist <u>only</u> of:

a. Coal and whole tires for normal operation

b. Natural gas and blends of unused No. 2 fuel oil and on-spec used oils for startup.

5. The maximum sulfur content of the coal fired in the No. 2 kiln shall not exceed 0.76% sulfur by weight. The coal usage rate shall not exceed 10.3 TPH or 90,228 TPY based on continuous operation. The coal sulfur content shall be determined using ASTM Method D-2234, D-3173, D-3176, D-3177 or D-4239.

6. Whole tires fired may be fed continuously at the kiln inlet at the base of the preheater at a rate not to exceed 45 MMBtu/hr (15% of total kiln fuel input) or 1.33 TPH and 11,039 tons per year based on 8300 hours per year.

7. Before initiating tire firing, the gases exiting the kiln ahead of the preheater shall reach a minimum temperature of 1400 degrees F for one hour and the oxygen level in the kiln, as measured at the cement plant induced draft fan, shall reach at least 3 percent (1-hour average). Thereafter, gases exiting the kiln shall be maintained at an outlet temperature of 1750 degrees F.

8. The sulfur content of the fuel oil blend shall not exceed 1.5% by weight. The constituents and properties of the on-spec used oil shall comply with the following allowable concentration levels, as stipulated and defined in 40 CFR 266.40 (July 1, 1992 version), which is adopted by reference in Rule 62-730.181, Florida Administrative Code (F.A.C.):

Constituent/Property	Allowable Concentration
Cadmium	2 ppm maximum
Arsenic	5 ppm maximum
Chromiun	10 ppm maximum
Lead	100 ppm maximum
Total Halogens	1000 ppm maximum
Flash Point	140 F minimum
Polychlorinated Byphenyls (PCBs)	Less than 2 ppm

9. On-spec used oil to be blended and burned at this facility shall not be a hazardous waste as defined by Rule 62-730.030, F.A.C., or 40 CFR Part 261 (July 1, 1992 version). It shall not include fuels or blended fuels consisting in whole or in part of hazardous waste or which include mixture of any solid waste generated from the treatment, storage, or disposal of hazardous waste. The on-spec used oil shall be burned in compliance with Section 403.769(3), Florida Statutes.

10. The on-spec used oil to be blended with the unused fuel oil in the cement kiln fuel storage tank shall be obtained only from the used oil storage tanks located at the FCS Greg Mine and CPL Plant.

11. The maximum on-specification used oil concentration in the final storage tank blend of on-specification used oil and purchased unused oil shall not exceed 15 percent by volume.

12. The maximum allowable emission rates for the No. 2 kiln, clinker cooler, raw mill and preheater shall not exceed the limits listed in Table II.

13. The permittee shall not cause or allow to be discharged into the atmosphere visible emissions which exceed the limits listed in Table I.

14. Compliance with the allowable emission limiting standards listed in Tables I and II shall be determined within 60 days after achieving the maximum production rate at which this plant will be operated, but not later than 180 days of initial operation, and annually (where specified) thereafter, by using the following reference methods as described in 40 CFR 60, Appendix A (1994 version) and 40 CFR 61 Appendix B 1994 version) adopted by reference in Chapter 62-297, F.A.C.

Method 5 Determination of Particulate Matter Emissions from Stationary Sources (I) and (A).
Method 8 Determination of Sulfuric Acid Mist from Stationary Sources (I).
Method 9 Visual Determination of the Opacity of Emissions from Stationary Sources (I) and (A).
Method 10 Determination of Carbon Monoxide Emissions from Stationary Sources (I) and (A).
Method 22 Visual Determination of Fugitive Emissions from Material Sources (I) and (A).
Method 25 Determination of Volatile Organic Compound Emissions from Stationary Sources (I).
Method 29 Determination of Lead, Cadmium, and Mercury from Stationary Sources (proposed) (I).
Method 104 Determination of Beryllium Emissions from Stationary Sources (I).

15. Emission testing shall be performed at the No. 2 kiln/cooler stack during a period when the No. 2 kiln, cooler, raw Mill and preheater are operating simultaneously and under normal operating conditions. The measured emission rates will be the combined rates from the kiln and clinker cooler determined at the stack. The Initial (I) compliance test shall be performed within 180 days of start up. Annual (A) compliance tests shall be performed during every federal fiscal year (October 1 - September 30) pursuant to Rule 62-297.340, F.A.C.

16. EPA-reference methods for sampling pollutants shall consisting of 3 consecutive test runs, each of one hour duration, shall be performed on the common kiln/cooler stack for each pollutant specified in Tables I and II.

17. Stack sampling facilities shall be installed in accordance with Rule 62-297.345, F.A.C.

18. The DEP may request a special compliance test pursuant to Rule 62-297.340(2), F.A.C., when, after investigation (such as complaints, increased visible emissions, or questionable maintenance of control equipment), there is reason to believe that any applicable emission limit is being violated.

19. The Department's Southwest District office shall be notified 30 days prior to any compliance test to allow witnessing. Results of the tests shall be submitted to the Department's Southwest Florida District office within 45 days after testing.

20. Testing of emissions shall be conducted with the emission unit operating at capacity (85% coal and 15% tires). Permitted capacity is defined as 90-100% of the maximum operating rate allowed by the permit. If it is impracticable to test at permitted capacity, then the unit may be tested at less than 90% of the maximum operating rate allowed by the permit; in this case, subsequent source operation is limited to 110% of the test load until a new test is conducted. Once the unit is so limited, then operation at higher capacities is allowed for no more than fifteen consecutive days for the purpose of additional compliance testing to regain the permitted capacity in the permit.

21. Continous monitoring equipment shall be installed, operated, and used to determine compliance for NOx and SO2. Continuous emission monitors must be installed and certified, before the initial performance test, and operated in compliance with 40 CFR 60, Appendix F, Quality Assurance Procedures (1994 version) or other Department approved QA plan; 40 CFR 60 Appendix B, Performance Specification 1, 2, and 3 (1994 version).

22. Continuous opacity monitors shall be installed, operated, and maintained at the common kiln/cooler stack pursuant to 40 CFR 60.63.

23. Continuous monitors shall be installed for CO or O_2 to insure proper combustion practices and for use in determining plant operating parameters to optimize emissions of CO, NO_X, and SO_2.

24. Reasonable precautions to prevent fugitive particulate emissions during construction, such as coating of roads and construction sites used by contractors, and regrassing or watering areas of disturbed soils, will be taken by the permittee. These provisions are applicable to any source, including but not limited to vehicular movement, transportation of materials, construction, alteration, demolition or wrecking, or industrial related activities such as loading, unloading, storing and handling. At all times, unconfined particulate matter emissions shall be minimized by dust suppressing techniques, such as covering

and/or application of water or chemicals to the affected areas pursuant to Rule 62-296.310(3), F.A.C.- Unconfined Emissions of Particulate Matter.

25. Particulate emissions from coal handling facilities related to the No. 2 kiln shall be minimized by following the procedures listed below: [Rule 62-296.310(3)]

a. All conveyers and transfer points shall be enclosed to preclude particulate emissions (except those directly associated with coal stacking/reclaiming).

b. Coal storage piles shall be shaped, compacted and oriented to minimize wind erosion.

c. Water sprays or chemical wetting agents and stabilizers shall be applied to storage piles, handling equipment, etc, during dry periods and as necessary to all facilities to maintain an opacity of less than 5 percent, except when adding, moving or removing coal from the coal pile, during which the opacity shall be no more than 20%.

26. The part of the fly ash handling system related to the No. 2 kiln (including transfer equipment, flyash bin, and pneumatic system exhaust) will be totally enclosed and vented through fabric filters.

27. In order to document compliance with Specific Condition No. 6:

a. A log shall be established and maintained for the hours of operation using tires as supplemental fuels. The log shall include the daily tire usage (hours) as supplemental fuel at the facility, a monthly running total of the tire usage (hours), and a cumulative 12 month running total (hours), to ensure that the annual limit is not exceeded. The log shall be maintained on file for at least two (5) years and shall be made available to the Department upon request.

b. A log that includes the date of all tire deliveries to the facility, and the total quantity (nearest 0.1 tons) of tires received.

c. A tire usage-control system shall be installed to assure that the tire usage as supplemental fuel at the facility does not exceed the maximum 15% of the total Btu heat input to the No. 2 kiln or 1.33 tons per hour. The control system shall include a verification method and a log that insures and documents that the tires usage and heat input limits are not exceeded.

d. A log for the utilization rate (tons per hour) of tires. The utilization rate of tires as supplemental fuel shall be determined by a continuous weighing method and shall be recorded.

e. The logs shall be maintained on file for at least five (5) years and shall be made available to the Department upon request.

28. FCS shall record, as a minimum, the daily dry feed rate into the No. 2 kiln (TPH), and the clinker production rate. The above records shall be retained for a period of five (5) years and made available to the Department upon request.

29. In order to document compliance with Specific Condition No. 5, a coal usage control system shall be established to assure that the coal usage does not exceed a maximum of 10.3 TPH.

30. In order to document compliance with Specific Conditions No. 8 through 11, the following used oil control system shall be used, as a minimum:

a. Record the transfer of used oil and unused oil to the blend tanks (dates and gallons).

b. Record the final blend quantities of on-spec used oil and unused oil (gallons)

c. Calculate and record the final percentage of on-spec used oil in the tank blend of on-spec used oil and unused oil, and verify that the percentage does not exceed 15.0 percent, by volume.

These records shall be maintained on file for at least five (5) years and shall be made available to the Department upon request. [Rule 62-4.070(3), F.A.C. and FCS letter on Used Oil Sampling].

31. Recordkeeping requirement when burning on-spec used oil shall be in accordance with 40 CFR 266.43 (b) and (6) (July 1, 1992 version). The results of each sample analysis shall be submitted to the Department Southwest District office and the Hernando County Planning offices within 30-days after a sample is taken. The dates and quantities of both on-spec purchased fuel oil transferred to the facility storage tank shall be reported quarterly (i.e., Jan-Mar, April-June, July-Sept, and Oct-Dec). The report is due in the month following the ending quarter. All records shall be kept for a minimum of five (5) years period for public and regulatory agency inspection.

32. All measurements, records, and other data required to be maintained by the permittee shall be reported to the Southwest District office on a quarterly basis with the start of commercial operation in accordance with 40 CFR 60.7. All measurements, records and other data required to be maintained by the permittee shall be retained for at least 5 years following the date on which such measurements, records, or data are recorded. The data shall be available to Department staff as requested. [40 CFR 60.7]

33. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting requirements and regulations (Rule 62-210.300(1), F.A.C.).

34. In the event of any malfunction resulting in failure of emission control equipment or any malfunction of process equipment resulting in kiln emissions exceeding limits set forth in Tables I and II, the operator shall immediately stop the feeding of tires into the kiln and shall not resume the firing of tires until the emission control equipment has been put into proper working order. [Rules 62-212.200(58); 62-212.200(107)]

35. Objectionable odors associated with air emissions from this facility shall be prohibited. [Rule 62-296.320]

36. Pursuant to Rule 62-210.370(2), F.A.C., Annual Operating Reports, the permittee is required to submit annual reports to the Southwest District office by March 1 of each calendar year, on the actual operating rates and emissions from this facility. These reports shall include at a minimum the following:

a. the input process rate

b. total quantity (by weight) of tire used as supplemental fuel.

c. total coal, natural gas, and oil usage, and

d. regulated pollutant emission rates.

37. The permittee may, for good cause, request that this construction permit be extended. Such a request shall be submitted to the Bureau of Air Regulation prior to 60 days before the expiration of the permit. However, the permittee shall promptly notify the Southwest District office of any delays in completion of the project which would affect the startup date by more than 90 days. [Rule 62-4.090, F.A.C.].

38. An application for an operation permit must be submitted to the DEP'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 permittee shall submit the appropriate application form, fee, certification that construction was completed noting any deviations from the conditions in the construction permit, and compliance test reports as required by this permit (Rules 62-4.055 and 62-4.220, F.A.C.).

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Howard L. Rhodes, Director
Division of Air Resources Management

Table I
Allowable Opacity Limits

Description	Control	Emission Unit Equipment	Grain Loading (gr/dscf)	OPACITY
Emission Unit: Raw Material Processed Process Rate				
Material Processing (Fugitive)				10
Handling and Storage (Fugitive)				10
Emission Unit: Raw Mill System Process Rate = 127 TPH Dry Feed				
Iron Ore Bin	Baghouse	2D-61	0.01	5
Fly Ash Bin	Baghouse	2D-64	0.01	5
Filter Dust Bin	Baghouse	2D-72	0.01	5
Raw Meal Transport	Baghouse	2F-03	0.01	5
Limo Silo Storage	Baghouse	2F-21	0.01	5
Raw Mill Storage and Homogenizing Silos	Baghouse	2T-01	0.01	5
Emission Unit: Kiln Operations Process Rate = 303 MMBTU/hr				
Kiln Feed System	Baghouse	2H-05, 2E-66	0.01	5
Kiln Main Stack	Baghouse	2E-40		10
Emission Unit: Finish Mill Process Rate = 83 TPH Clinker				
Gypsum Storage Bin	Baghouse	2L-14	0.01	5
Clinker Transport	Baghouse	2L-03	0.01	5
Belt Conveyor	Baghouse	2M-08	0.01	5
Finish Mill Discharge Vent	Baghouse	2N-02	0.01	5
Finish Mill Sepal Separator	Baghouse	2N-08	0.01	5
Emission Unit: Cement Handling Process Rate: ~ 90 TPH Portland Cement				
Cement Storage Silo A	Baghouse	2Q-01, 2Q-20	0.01	5
Cement Storage Silo B	Baghouse	2Q-01, 2Q-20	0.01	5
Cement Silo Discharge Hopper	Baghouse	2Q-01, 2Q-20	0.01	5
Emission Unit: Coal Handling Process Rate = 10.3 TPH				
Coal Transport Conveyor	Baghouse	2S-03	0.01	5
Coal Storage Bin	Baghouse	2S-01	0.01	5
Coal Handling and Storage (Fugitive)				5/20

Table II
Allowable Emissions
Main Stack

POLLUTANT	BACT EMISSION LIMIT		EMISSION RATE		BASIS
	lb/ton clinker	lb/ton dry feed	lbs/hr	tons/yr	
PM/PM_{10} (kiln)	0.310	0.200	25.400	111.250	BACT
PM/PM_{10} (cooler)	0.150	0.100	12.700	55.620	BACT-NSPS
SO_2	0.270	0.176	22.410	98.156	BACT
NO_x	2.500	1.634	207.500	908.850	BACT
CO	2.000	1.307	166.000	727.080	BACT
VOC	0.100	0.065	8.300	36.354	FCS/DEP
H_2SO_4	0.014	0.009	1.162	5.090	FCS DATA
Beryllium	9.90E-07	6.47E-07	8.22E-05	3.60E-04	FCS/DEP
Mercury	2.40E-05	1.57E-05	1.99E-03	8.72E-03	FCS DATA
Lead	5.20E-04	3.40E-04	4.32E-02	1.89E-01	FCS DATA

Technical Evaluation
and
Preliminary Determination

Florida Crushed Stone Company
Brooksville, Hernando County, Florida

Portland Cement Plant
AC 27-274892
PSD-FL-227
PA 82-17
Hernando County

Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation

October 3, 1995

SYNOPSIS OF APPLICATION

I. APPLICANT NAME AND ADDRESS

Florida Crushed Stone Company
10311 Cement Plant Road
Brooksville, Florida 34601

II. FACILITY INFORMATION

A. FACILITY LOCATION

Florida Crushed Stone Company (FCS) plans to construct a second 83 ton per hour (TPH) cement plant at its existing facility located approximately 3.5 miles northwest of Brooksville, Hernando County. In addition to the existing cement plant, there are large limestone reserves, quarrying operations, a lime plant, and a 150 megawatt power plant on 6400 contiguous acres.

This site is approximately 20 to 30 kilometers east to southeast of the Chassahowitzka National Wildlife Refuge, a Class I PSD Area, and over 50 kilometers north of ozone (O_3) and lead (Pb) non-attainment areas in Pinellas and Hillsborough Counties. The UTM coordinates of this facility are Zone 17, 360.0 km East and 3162.5 km North.

B. FACILITY Classification CODE (SIC)

Major Group No. 32, Clay, Glass, and Concrete Products

Industry Group No. 324 Cement, Hydraulic

Industry No. 3241 Cement, Hydraulic

C. FACILITY CATEGORY

Florida Crushed Stone/Central Power and Lime facility is classified as a major air emitting facility. As proposed, the project is subject to New Source Review because it constitutes a Major Source with emissions of approximately 301 tons per year (TPY) of particulate matter (PM and PM_{10}), 199 TPY of sulfur dioxide (SO_2), 1581 TPY of nitrogen oxides (NO_X) and 569 TPY of carbon monoxide (CO).

Less than significant emissions of other criteria pollutants, as proposed, are 31 TPY of volatile organic compounds (VOC), 5.1 TPY of sulfuric acid mist (H_2SO_4 as SO_3), 0.04 TPY of lead (Pb), and 0.009 TPY of mercury (Hg), and 0.0003 TPY of beryllium (Be).

III. PROJECT DESCRIPTION

The proposed cement plant will be designed to produce up to 83 TPH of clinker (highest maintained rate over a day). Although the plant will operate continuously and at a lower average production rate, the annual potential production rate will be 727,080 TPY clinker (i.e. 83 TPH x 8760 hours per year). The major equipment will include a kiln with a preheater, a clinker cooler, raw mill, finish mill, silos, conveyers, and particulate control/dust collection and recycling equipment. Another stack servicing the kiln and cooler will be erected and attached to the existing 320 foot stack. The cement product will be stored in silos and shipped in bags or in bulk by rail or truck.

The main raw materials will be limestone, clay, ash, iron ore from various sources and gypsum (e.g. from Tampa Electric's scrubbing system).

IV. PROCESS DESCRIPTION

Portland cement is a fine powder, usually gray in color, that consists of a mixture of dicalcium silicate, tricalcium silicate, tricalcium aluminate, and tricalcium aluminoferrite, and miscellaneous minerals to which one or more forms of calcium sulfate have been added. About 95% of the cement production in the United States is portland cement. Masonry cement, also produced at the portland cement plant, represents the balance of the domestic cement production.

There are several variations in cement manufacturing including the wet, dry, dry preheater, and dry preheater/precalciner processes. These processes are essentially identical relative to the manufacture of cement from raw materials. However, the type of process does affect the equipment design, method of operation, and fuel consumption. Because of its lower fuel requirements, most new portland cement plants use the dry preheater/precalciner process. FCS proposes to use the dry preheater process depicted in simplified form in Figure 1.

The choice of fuel is based on economics. The most commonly used kiln fuels are coal, natural gas, and oil. Supplementary fuels such as petroleum coke, tires, used oil and various kinds of wastes are burned at many plants. FCS will burn coal in the kiln burner and introduce tires with the raw materials entering the kiln. FCS will use a blend of virgin oils with on-spec used oil for kiln startup and proposes use of natural gas at any time.

Fuel combustion differs between the various processes. In all of the variations, combustion occurs in the kiln. In the dry

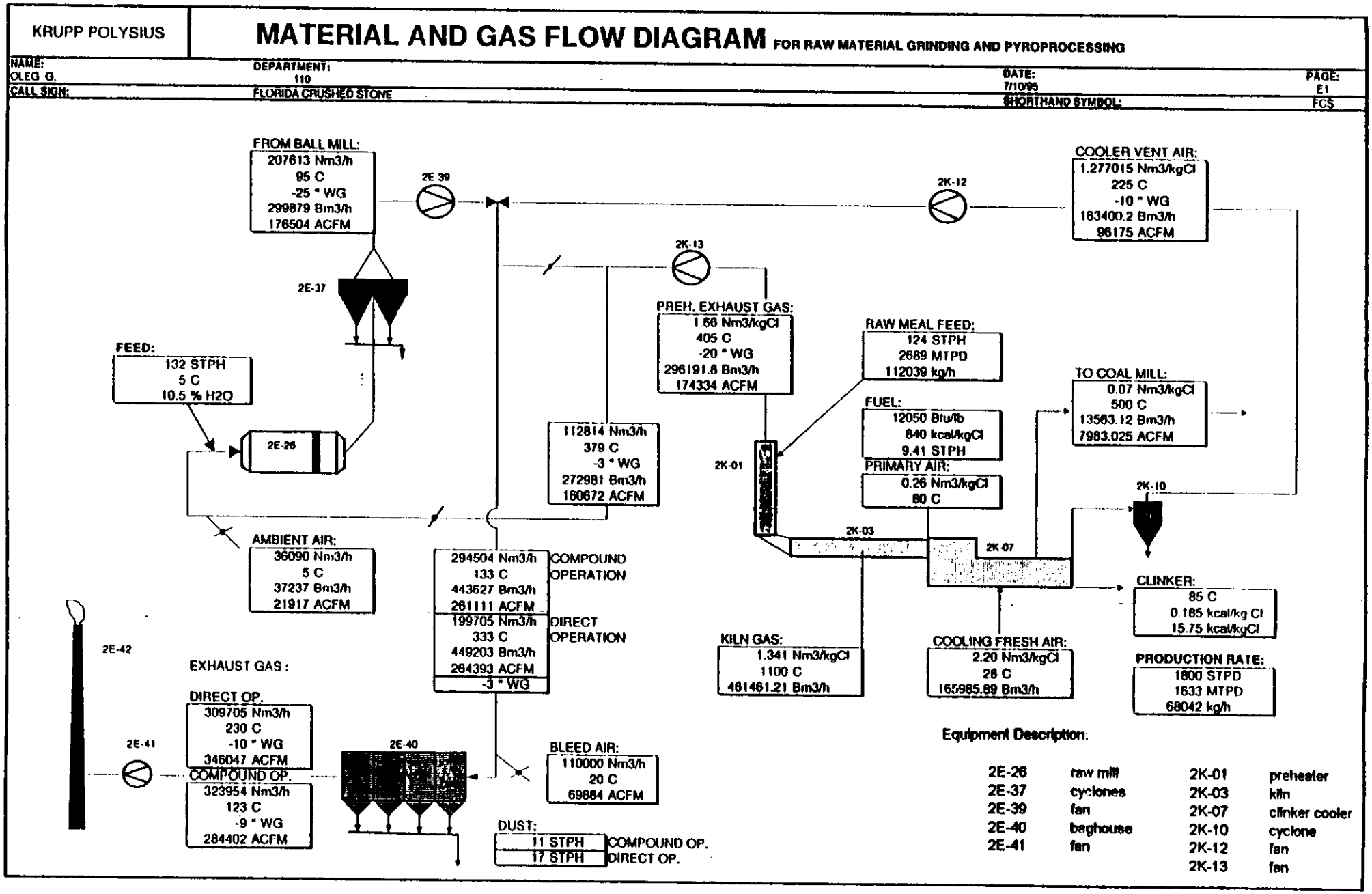
KRUPP POLYSIUS
MATERIAL AND GAS FLOW DIAGRAM FOR RAW MATERIAL GRINDING AND PYROPROCESSING
NAME: OLEG G.
DEPARTMENT: 110
CALL SIGN:
FLORIDA CRUSHED STONE
DATE: 7/10/95
PAGE: E1
SHORTHAND SYMBOL: FCS
FROM BALL MILL:
207613 Nm3/h
95 C
-25 " WG
299879 Bm3/h
176504 ACFM
2E-39
2K-12
COOLER VENT AIR:
1.277015 Nm3/kgCl
225 C
-10 " WG
163400.2 Bm3/h
96175 ACFM
2K-13
2E-37
PREH. EXHAUST GAS:
1.66 Nm3/kgCl
405 C
-20 " WG
296191.8 Bm3/h
174334 ACFM
RAW MEAL FEED:
124 STPH
2689 MTPD
112039 kg/h
FEED:
132 STPH
5 C
10.5 % H2O
2E-26
112814 Nm3/h
379 C
-3 " WG
272981 Bm3/h
160672 ACFM
2K-01
FUEL:
12050 Btu/lb
840 kcal/kgCl
9.41 STPH
PRIMARY AIR:
0.26 Nm3/kgCl
80 C
TO COAL MILL:
0.07 Nm3/kgCl
500 C
13563.12 Bm3/h
7983.025 ACFM
2K-10
2K-03
2K-07
AMBIENT AIR:
36090 Nm3/h
5 C
37237 Bm3/h
21917 ACFM
294504 Nm3/h
133 C
443627 Bm3/h
261111 ACFM
COMPOUND OPERATION
199705 Nm3/h
333 C
449203 Bm3/h
264393 ACFM
-3 " WG
DIRECT OPERATION
CLINKER:
85 C
0.185 kcal/kg Cl
15.75 kcal/kgCl
PRODUCTION RATE:
1800 STPD
1633 MTPD
68042 kg/h
KILN GAS:
1.341 Nm3/kgCl
1100 C
461461.21 Bm3/h
COOLING FRESH AIR:
2.20 Nm3/kgCl
28 C
165985.89 Bm3/h
2E-42
EXHAUST GAS :
DIRECT OP.
309705 Nm3/h
230 C
-10 " WG
346047 ACFM
2E-41
2E-40
COMPOUND OP.
323954 Nm3/h
123 C
-9 " WG
284402 ACFM
BLEED AIR:
110000 Nm3/h
20 C
69884 ACFM
DUST:
11 STPH COMPOUND OP.
17 STPH DIRECT OP.
Equipment Description:
2E-26 raw mill
2E-37 cyclones
2E-39 fan
2E-40 baghouse
2E-41 fan
2K-01 preheater
2K-03 kiln
2K-07 clinker cooler
2K-10 cyclone
2K-12 fan
2K-13 fan

Figure 1

preheater/precalciner process, substantial fuel combustion also occurs in a calcining loop between the preheater and kiln material feed point. It is also not uncommon to introduce some fuel in the preheater section in dry preheater pyroprocessing systems (e.g. to assist in controlling NO_X). As mentioned above, FCS will introduce tires near the kiln entrance.

The production of portland cement is a four-step process: (1) raw materials acquisition and handling (2) kiln feed preparation for pyroprocessing, (3) pyroprocessing, and (4) finished cement grinding. The chemical reactions and physical processes that constitute the transformation are quite complex. The main portion of the advanced, dry processes is the pyroprocessing system which includes the rotary kiln, suspension preheater, and calcining loop (if present). Several complex chemical reactions necessary to produce portland cement minerals take place in the rotary kiln. Pyroprocessing (dry process with preheater) may be conveniently divided into five stages, depending on location and temperature of the materials in the system.

1. Uncombined water evaporates from raw materials as material temperature increases to 100°C (212°F) in the raw mill and preheater.

2. As the material temperature increases from 100°C to approximately 430°C (800°F) in the preheater, combined water is liberated from argillaceous compounds.

3. Between 430°C and 900°C (1650°F), calcination occurs between the lower preheater, and within the kiln near the entrance. Carbon dioxide is liberated from the carbonates. A portion of the fuel may be burned in this section, particularly if a separate calcining loop is present.

4. Following calcination, sintering of the oxides occurs in the burning zone of the rotary kiln at temperatures up to 1510°C (2750°F). Lime, silica, and iron and aluminum compounds react to form calcium silicates, aluminates, ferrites and aluminoferrites. Alkali sulfates and chlorides evaporate.

5. Following sintering, clinker nodules are produced as the temperature of the material decreases from 1510°C to 1370°C (2500°F).

The raw materials enter the pyroprocessing system in the uppermost preheater. They exit the preheater and (together with tires) enter the kiln at the elevated end. The rotation of the kiln causes the solid materials to be slowly transported downward from the front end. Coal (or fuel oil blend or natural gas) is supplied at the

lower or discharge end of the kiln. The hot, gaseous combustion products move countercurrent to the materials flow, thereby transferring heat to solids in the kiln and preheater.

The product of the rotary kiln is known as clinker which enters a vessel where it is cooled by air. Hot air from the clinker cooler is recovered and returned to the pyroprocessing system as combustion air or to dry or convey materials. The cooled clinker is mixed with a form of calcium sulfate, such as waste gypsum from electric utility scrubbers, and ground in the finish mill to produce portland cement.

Portland cement is shipped from the packhouse or shipping department in bulk or in paper bags by truck or rail.

IV. FUEL CONSUMPTION

The main fuels to be burned in the kiln are coal (0.76% S) and tires (up to 15% of total heat input). Blends of virgin and on-spec used oil (up to 1.5% S and a flash point of 140°F minimum) will be used for startup. The applicant proposes to use natural gas at any time. There are no plans to burn petroleum coke or hazardous wastes.

Startup of the proposed cement kiln will be accomplished with oil or natural gas. Oil and gas will be combusted first at low utilization rates. Cold start up requires approximately 24 hours until the kiln is ready to receive feed. Since oil or natural gas utilization rates during the entire startup period are less than fuel consumption rates at normal operating conditions and no product or coal is introduced to the kiln, emissions during start up period should be less than emissions under normal operation. No coal or product will be introduced into the kiln until optimum operating conditions are attained. Like the start up period, coal and product feed begins at reduced rates, ramping up gradually to the final operating conditions.

Tires will not be fed until the kiln is hot enough to support proper combustion and maintained high enough to destroy dioxins and furans.

V. RULE APPLICABILITY

The proposed project is subject to the preconstruction review requirements under the provisions of Chapter 403, Florida Statutes, and Chapters 62-4, and 62-210 through 62-297, Florida Administrative Code (F.A.C.).

The new cement plant will be a major emitting facility for PM, PM10, SO2, NOx, and CO. The proposed plant will be located in an area (Hernando County) designated attainment for all criteria

pollutants (Rule 62-275.400 F.A.C.) The proposed facility is subject to the Prevention of Significant Deterioration (PSD) regulations because the potential emissions of each of these pollutants exceed 100 TPY (Rule 62-212.200, F.A.C.).

PSD Review consists of a determination of best available control technology (BACT) and an air quality impact analysis for each of these regulated pollutants. The allowable emissions of these pollutants will be established by a Best Available Control Technology (BACT) determination (Rule 62-212.410, F.A.C.). The BACT review is included as a separate document.

The additional plant is also subject to the applicable requirements of the federal New Source Performance Standards (NSPS) including:

- 40 CFR 60 Subpart F, Standards of Performance for Portland Cement Plants.

- 40 CFR 51 Subpart P, Protection of Visibility

The proposed cement plant is also subject to the applicable requirements related to used fuels and wastes given 40 CFR 266.40, which is adopted by reference in Rule 62-730.181 F.A.C. and Rule 62-730.030 F.A.C. or 40 CFR Part 261 (July 1994 version).

In processing the application, the Department must conduct its review consistent with the roles and requirements of States, the EPA Administrator (role delegated to Florida), the Federal Land Manager, and Federal official charged with direct responsibility for a Class I area. The requirements are given in Section 164 and 165 of the Clean Air Act and 40 CFR 51.300 Subpart P, Protection of Visibility. In this case, the Class I area is the nearby Chassahowitzka National Wildlife Area.

VII. SOURCE IMPACT ANALYSIS

A. Control Technology Review

PARTICULATE MATTER

As proposed by the applicant, all emissions sources addressed in Table I will be controlled by baghouses. The major emission unit in the cement plant is the kiln. The exhaust gases from the kiln and cooler will be controlled by a common baghouse and emitted to the atmosphere through a dedicated stack adjacent to the existing power plant/cement plant No. 1 stack.

All the baghouses used in the proposed cement plant are designed to operate such that particulate matter concentrations in the exhaust gas stream will not exceed 0.01 grains per dry cubic foot (gr/dscf).

All dry raw materials, intermediate products and final products within the cement plant will be transferred by enclosed conveyer, air slides, screw conveyors, or enclosed elevators. All of the enclosed transfer systems will be operated under negative pressure with the gases vented through baghouses before being discharged to the atmosphere. Storage silos and the coal receiving and storage system will also be vented through baghouses. Water sprays will be used as necessary to control fugitive particulate matter emission. Quarrying and raw material storage piles will be under moist conditions with relatively low unconfined emissions. Roads will be washed on a daily basis in order to control excessive dust.

According to FCS, this cement plant will not generate cement kiln dust (CKD) as a waste product. This is consistent with the greater opportunity for recycle afforded by the dry processes and with the present practice which is to reuse the material or sell it from a storage silo. CKD collected in kiln/cooler baghouse will be returned to the process.

No dust disposal piles are planned. FCS will eventually be required to comply with Subtitle C regulations to be promulgated by EPA to address CKD.

A covered coal conveyer and baghouse will be used to limit fugitive emissions from the coal handling system.

Manual and automatic control of the combustion process will insure that the combustion process can be optimized for both normal operation and for startup and shutdown conditions. At no time will the baghouse be bypassed during either startup or shutdown periods.

SULFUR DIOXIDE

The Department's SO_2 emission limit of 0.27 pounds per ton of clinker will be accomplished by firing low sulfur content coal (0.76% S), and limiting fuel oil use to startup. Sulfur dioxide emissions will minimized by maintaining proper ratios of sulfur and alkali in the pyroprocessing environment and intimate contact between raw materials and exhaust gases. Ultimately the sulfur oxides are incorporated into the clinker lattice structure, thus minimizing the amount emitted to the atmosphere.

NITROGEN OXIDE

A nitrogen oxides emission limit of 2.5 pounds per ton of clinker will be met through proper combustion practices and secondary tire burning. If this method is insufficient, then FCS must examine additional options such as limited Selective Non-Catalytic Reduction to achieve the target limit.

CARBON MONOXIDE AND VOLATILE ORGANIC COMPOUNDS

Carbon Monoxide and Volatile Organic Compounds emission limits of 2.0 and 0.10 pounds per ton of clinker, respectively, will be accomplished through combustion controls.

B. EMISSION LIMITATIONS

The proposed facility will emit the following PSD pollutants (Table 212.400-2): particulate matter, sulfur dioxide, nitrogen oxides, and carbon monoxide in significant amounts and volatile organic compounds, sulfuric acid mist, beryllium, mercury and lead at less than significant levels. The proposed emissions for this facility are summarized in Table A. Table I and Table II list permitted emissions for each emission unit.

C. AIR TOXICS ASSESSMENT

Concerns about air toxic emissions are mitigated by the fact that there will be no combustion or treatment of hazardous waste, only moderate combustion of used oil and that FCS will recycle or sell all CKD.

The reader is referred to the EPA's Regulatory Determination on CKD dated Tuesday, February 7, 1995 for a full discussion. EPA concludes that "when reintroduced, CKD does not contribute any constituents to clinker production that are not already present in the production process. Furthermore, at this time, EPA has no indication that such clinker poses unacceptable threats to human health or the environment." FCS will have to comply with any rules promulgated by EPA under Subtitle C of RCRA designed to control releases to groundwater.

There are numerous impurities contained in the fuel and raw materials. These include at least arsenic, lead, beryllium, cadmium, chromium, fluoride, nickel, mercury, vanadium and zinc. These constituents are absorbed to a very high extent in the pyroprocessing system and consolidated into the clinker lattice structure. The exception is mercury. However, insufficient quantities are evolved to require a determination for Best Available Control Technology (BACT).

The very high temperatures in the kiln should insure destruction of furans and dioxins. A more detailed plan will need to be developed to insure that introduction of tires at the kiln material inlet will not result in conditions conducive to dioxin/furans formation. The possibility of subsequent dioxin (re)formation in the baghouse will be minimized by the clinker's propensity for chlorine adsorption and by maintaining the inlet temperature of the baghouse

below 450 degrees F. According to the BIF regulations, this is below the temperature where EPA believes a possibility of the post-combustion formation of dioxins/furans may exist.

The applicant plans to burn whole tires. According to document EPA-450/3-91-024, Burning Tires for Fuel and Tire Pyrolysis: Air Implications, Chapter 4 - Tire and TDF use in Portland Cement Plants, "the long residence time and high operating temperatures of cement kilns provide an ideal environment to burn tires as supplemental fuel. Results of several tests conducted on cement kilns while burning tires or TDF indicate the emissions are not adversely affected, but in many cases improve when burning tires." In contrast to wet processes, the process to be employed by FCS exhibits very high temperature at both ends of the kiln. This affords more options for introduction of tires while insuring complete combustion.

The Department has no information that the proposed facility poses an unacceptable health risk.

D. AIR QUALITY ANALYSIS

1. INTRODUCTION

The proposed project is located in an attainment area for all regulated pollutants, but will emit four pollutants at levels in excess of PSD significant amounts as shown in Table B. These pollutants are SO_2, PM/PM_{10}, NO_x and CO.

The air quality impact analyses required by the PSD regulations for these pollutants include:

* An analysis of existing air quality;
* A PSD increment analysis (SO_2, PM_{10}, and NO_2);
* An Ambient Air Quality Standards (AAQS) analysis;
* An analysis of impacts on soils, vegetation, and visibility and of growth-related air quality modeling impacts; and,
* A "Good Engineering Practice" (GEP) stack height determination.

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

Based on the required analyses, the Department has reasonable assurance that the proposed project, as described in this report and subject to the conditions of approval proposed herein, will not cause or contribute to a violation of any AAQS or PSD increment.

However, the following EPA-directed stack height language is included: "In approving this permit, the Department has determined that the application complies with the applicable provisions of the stack height regulations as revised by EPA on July 8, 1985 (50 FR 27892). Portions of the regulations have been remanded by a panel of the U.S. Court of Appeals for the D.C. Circuit in NRDC v. Thomas, 838 F. 2d 1224 (D.C. Cir. 1988). Consequently, this permit may be subject to modification if and when EPA revises the regulation in response to the court decision. This may result in revised emission limitations or may affect other actions taken by the source owners or operators." A discussion of the modeling procedure and required analyses follows.

2. ANALYSIS OF EXISTING AIR QUALITY AND DETERMINATION OF BACKGROUND CONCENTRATIONS

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review. However, an exemption to the monitoring requirement can be obtained if the maximum air quality impact resulting from the projected emissions increase, as determined by air quality modeling, is less than a pollutant-specific de minimus concentration.

Even if preconstruction ambient monitoring is exempted, determination of background concentrations for PSD significant pollutants may be necessary for use in any required AAQS analysis. These concentrations may be established from the required preconstruction ambient air quality monitoring analysis or from previously existing representative monitoring data. These background ambient air quality concentrations are added to pollutant impacts predicted by modeling and represent the air quality impacts of sources not included in the modeling.

Table C shows that SO_2, PM_{10}, NO_2 and CO impacts from the project are predicted to be less than the applicable de minimus levels. Therefore, preconstruction ambient air quality monitoring is not required for these pollutants. However, since an AAQS analysis is required for PM_{10} (the project's impacts alone for this pollutant are greater than significant, as will be discussed later in this section), previously existing representative monitoring data from PM_{10} monitors located just east of the FCS fenceline are used to establish background concentrations. Background concentrations for PM_{10} are given in Table H.

3. MODELING PROCEDURE

The EPA-approved SCREEN2 and Industrial Source Complex Short-Term (ISCST2) dispersion models were used to evaluate the pollutant emissions from the proposed project. SCREEN2 is a single-source

screening model which uses default meteorology inputs to predict pollutant impacts. The ISCST2 model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, area and volume sources. The model incorporates elements for plume rise, transport by the mean wind, Gaussian dispersion, and pollutant removal mechanisms such as deposition. The ISCST2 model allows for the separation of sources, building wake downwash, and various other input and output features. A series of specific model features, recommended by the EPA, are referred to as the regulatory options. The applicant used the EPA recommended regulatory options in each modeling scenario. Direction-specific downwash parameters were used for all sources for which downwash was considered.

Initially, the applicant conducted preliminary modeling using only the proposed project's emissions. This modeling was done to determine the significant impact area (SIA), if any, for each pollutant subject to PSD. This preliminary modeling used both models. For determination of the proposed project's SIA, the receptor grid consisted of discrete receptors located at 0.1 km intervals around the entire property boundary and polar receptors outside the property boundary from the property boundary to 10 km, with a receptor spacing of 1.0 km.

For the AAQS and PSD Class II analyses, the ISCST2 model is used and the receptor grids are based on the size of the SIA for each pollutant, if any. Only maximum predicted impacts for PM_{10} emissions were greater than the significant impact levels (SIL) as shown in Table D.

The Chassahowitzka National Wilderness Area (CNWA) is a PSD Class I area that is located approximately 20 to 30 km west to northwest from the project site. In the PSD Class I analysis, CNWA is represented by 13 Department-approved standard discrete receptors.

Meteorological data used in the ISCST2 model to determine air quality impacts consisted of a concurrent 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Tampa International Airport (surface data) and Ruskin (upper air data). The 5-year period of meteorological data was from 1982 through 1986. These NWS stations were selected for use in the study because they are the closest primary weather stations to the study area and are most representative of the project site. The surface observations included wind direction, wind speed, temperature, cloud cover and cloud ceiling.

Since five years of data were used in ISCST2, the highest second-high (HSH) short-term predicted concentrations were compared with the appropriate ambient air quality standards or PSD

increments. For the annual averages, the highest predicted yearly average was compared with the standards. For determining the SIA, both the highest short-term predicted concentrations and the highest predicted yearly averages were compared to their respective significant impact levels.

4. SIGNIFICANT IMPACT ANALYSIS

As stated in the section above and as shown in Table D, the maximum air quality impacts due to SO_2, NO_X and CO emissions from the proposed project are less than the applicable PSD Class II significant impact levels. Therefore, the applicant was not required to do further impact analyses for these pollutants for comparison with the AAQS and the PSD Class II increments. However, the maximum 24-hour average PM10 air quality impacts due to emissions from the proposed project are greater than the significant impact level. Therefore, a further impact analysis for comparison with the AAQS and PSD Class II increments was required for this pollutant.

5. PSD INCREMENT ANALYSIS

a. Class II Area

The PSD increment represents the amount that new sources in an area may increase ambient ground level concentrations of a pollutant. Atmospheric dispersion modeling, as previously described, was performed to quantify the amount of PSD increment consumed. The results, given in Table E, show that the maximum PM_{10} PSD increment consumption will not exceed the allowable Class II PSD increments.

b. Class I Area

Table F shows the comparison between the maximum predicted PM_{10}, SO_2 and NO_2 impacts at the CNWA due to the proposed project and the National Park Service's SIL. The maximum impacts are less than the applicable SIL for PM_{10} and SO_2 (using the Department's BACT limit). Therefore, no further Class I modeling was necessary for these pollutants. However, the maximum NO_2 impact was greater than the SIL; therefore, further refined NO_2 Class I increment modeling was required. The results of this modeling is given in Table G, and shows that maximum predicted NO_2 increment consumption is less than the NO_2 increment in the CNWA.

6. AAQS ANALYSIS

For pollutants subject to an AAQS review, the total impact on ambient air quality is obtained by adding a background concentration to the maximum modeled concentration. This background concentration takes into account all sources of a particular pollutant that are

not explicitly modeled. Since the area of significant impact is small (approximately one-third of a square km immediately outside the east and southeast property fenceline) and is very close to one of two PSD PM monitoring sites, only FCS sources were explicitly modeled.

The background concentration represents the remainder of the sources in the area. The highest second-highest 24-hour concentration measured during 1991 to 1993 at this monitor was used as the background concentration value for the 24-hour averaging time, and the highest annual geometric mean concentration at this monitor during these years was used as the background concentration value for the annual averaging time.

The results of the AAQS analysis for PM_{10} are summarized in Table H. As shown in this table, emissions from the proposed facility are not expected to cause or contribute to a violation of an AAQS.

7. AIR TOXICS AIR QUALITY ANALYSIS

The maximum predicted impacts of regulated and non-regulated toxic air pollutants that are proposed to be emitted by the project are presented in Table I. Each pollutant's maximum 8-hour, 24-hour, and annual impact is compared to the Department's draft Ambient Reference Concentrations (ARC). As shown in the table, all predicted impacts are less than their respective ARC.

E. Additional Impacts Analysis

1. IMPACTS ON SOILS, VEGETATION, AND WILDLIFE

The maximum ground-level concentrations predicted to occur for SO_2, PM_{10}, CO, and NO_X as a result of the proposed project, including background concentrations and all other nearby sources, will be below the associated AAQS. The AAQS are designed to protect both the public health and welfare. As such, this project is not expected to have a harmful impact on soils and vegetation in the PSD Class II area. An air quality related values (AQRV) analysis was done by the applicant for the Class I area. No significant impacts on this area are expected.

2. IMPACT ON VISIBILITY

The Visual Impact Screening and Analysis (VISCREEN) computer model was used for the more conservative level-1 and level-2 visibility analyses and the PLUVUE-II computer model was used for a level-3 visibility analysis. These EPA-approved visibility computer models were used to estimate the impact of the proposed project's stack emissions on visibility in the CNWA. Based on the applicant's

proposed emission rate of NO_2, the results of these three analyses showed that a plume may be visible to an observer located in the CNWA greater than 0% of the time. However, the Department's BACT determination for NO_2 emissions is less than that requested by the applicant. When this emission rate is input into the level-3 PLUVUE-II analysis, a visible plume is predicted 0% of the time. As a result, there is no significant impact on visibility predicted for this Class I area with the Department's proposed NO_2 emission rate.

3. GROWTH-RELATED AIR QUALITY IMPACTS

There will be a small number of temporary construction workers during construction and even smaller number of new permanent workers after project is completed. However, there will be no significant impacts on air quality caused by associated population growth.

Locally, there will be impacts upon background noise and traffic congestion due to increased truck traffic. The area has been zoned for the proposed activities for many years. The developmental effects fall within the purview of the transportation and planning bodies having jurisdiction over the area.

4. GEP STACK HEIGHT DETERMINATION

Good Engineering Practice (GEP) stack height means the greater of: (1) 65 m (213 ft) or (2) the maximum nearby building height plus 1.5 times the building height or width, whichever is less. The plant's main stack will be 97.6 m (320 ft). This stack height represents the GEP stack height and will comply with GEP stack height regulations.

VII. CONCLUSION

Based on the foregoing technical evaluation of the application and additional information submitted by Florida Crushed Stone Company, the Department has made a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations provided the Department's Best Available Control Technology Determination is implemented and certain conditions are met. The general and specific conditions are listed in the attached draft conditions of approval.

Cap 10/3

Table A
Summary of Proposed Emissions

POLLUTANT	POTENTIAL INCREASE IN FACILITY EMISSIONS (tons/year)	PSD SIGNIFICANT EMISSION RATES (tons/year)	SUBJECT TO PSD REVIEW
SO_2	198.5	40	Yes
NO_x	1581.2	40	Yes
CO	569.4	100	Yes
TSP	300.9	25	Yes
PM_{10}	300.9	15	Yes
O_3 (VOC emission	31.21	40	No
Pb	0.04	0.6	No
Hg	0.07	0.1	No
Be	0.0003	0.0004	No
H_2SO_4	5.1	7	No
Fluorides	0.07	3	No

Table B. Projected Cement Plant Emission Rates for Comparison with PSD Significant Emission Rates (Tons per Year)

Pollutant	Proposed Emission Rate	Significant Emission Rate	Applicable Pollutant (Yes/No)
PM	226	25	Yes
PM_{10}	147	15	Yes
SO_2	98	40	Yes
NO_x	909	40	Yes
CO	556	100	Yes
VOC	28	40	No
Pb	0.027	0.6	No
Be	0.0002	0.0004	No
H_2SO_4	5.1	7	No
Hg	0.009	0.1	No

Table C. Maximum Project Air Quality Impacts for Comparison to the De Minimus Ambient Levels.

Pollutant	Avg. Time	Max Predicted Impact[1] (ug/m^3)	De Minimus Level (ug/m^3)
SO_2	24-hour	0.6	13
PM_{10}	24-hour	9.0	10
NO_2	Annual	0.3	14
CO	8-hour	4	575

1. Highest, high value over a five year period for all averaging times.

Table D. Maximum Project Air Quality Impacts for Comparison to the PSD Class II Significant Impact Levels.

Pollutant	Avg. Time	Max Predicted Impact[1] (ug/m^3)	Significant Impact Level (ug/m^3)
SO_2	Annual	0.04	1
	24-hour	0.6	5
	3-hour	2.4	25
PM_{10}	Annual	0.7	1
	24-hour	9.0	5
NO_2	Annual	0.3	1
CO	8-hour	4	500
	1-hour	14	2000

1. Highest, high value over a five year period for all averaging times.

Table E. PSD Class II Increment Analysis

Pollutant	Averaging Time	Max. Predicted Impact[1] (ug/m^3)	Allowable Increment (ug/m^3)
PM_{10}	Annual	3	17
	24-hour	27	30

1. Highest, second-highest value over a five year period for 24-hour averaging time.

Table F. Maximum Project Air Quality Impacts for Comparison to the PSD Class I Significant Impact Levels

Pollutant	Averaging Time	Max. Predicted Impact[1] (ug/m^3)	National Park Service (NPS) Significant Impact Level (ug/m^3)
SO_2	Annual	0.003	0.025
	24-hour	0.0699	0.07
	3-hour	0.27	0.48
PM_{10}	Annual	0.01	0.08
	24-hour	0.22	0.27
NO_2	Annual	0.091	0.025

1. Highest, high value over a five year period for all averaging times.

Table G. PSD Class I Increment Analysis

Pollutant	Averaging Time	Max. Predicted Impact[1] (ug/m^3)	Allowable Increment (ug/m^3)
NO_2	Annual	1.0	2.5

1. Highest, high value over a five year period.

Table H. Ambient Air Quality Impacts

Pollutant	Averaging Time	Major Sources Impact[1] (ug/m^3)	Background Conc. (ug/m^3)	Total Impact (ug/m^3)	Florida AAQS (ug/m^3)
PM_{10}	Annual	1	33	34	50
	24-hour	10	67	77	150

1. Highest, second-highest value over a five year period for 24-hour averaging time.

Table I. Air Toxics Analysis

	8- hour		24- hour		Annual	
Pollutant	Impact (ug/m^3)	ARC (ug/m^3)	Impact (ug/m^3)	ARC (ug/m^3)	Impact (ug/m^3)	ARC (ug/m^3)
Arsenic	3.58e-04	2	1.28e-04	0.48	1.3e-05	2.3e-04
Benzene	0.15	30	0.05	7.2	5.2e-03	1.2e-01
Beryllium	7.4e-06	0.02	2.6e-06	4.8e-03	3.0e-07	4.2e-04
Biphenyl	6.0e-05	13	2.0e-05	3.12	-	-
Cadmium	4.47e-04	0.5	1.60e-04	0.12	1.6e-05	5.6e-04
Carbon disulfide	1.9e-02	310	6.65e-03	74	6.8e-04	200
Chlorobenzene	2.91e-03	3450	1.04e-03	828	-	-
Chromium	1.86e-03	5	6.6e-04	1.2	7.0e-05	8.3e-04
Cobalt	4.5e-04	0.5	1.6e-04	0.12	-	-
Dioxin	-	-	-	-	1.78e-10	2.2e-08
Ethylbenzene	1.34e-03	4340	4.79e-04	1042	4.9e-05	1000
Formaldehyde	4.03e-03	12	1.44e-03	2.88	1.5e-04	7.7e-02
Hexane	4.25e-04	1760	1.52e-04	422	1.6e-05	200
Hydrogen Chloride	1.04	75	0.373	18	0.038	7
Lead	0.012	0.5	4.25e-03	0.12	4.4e-04	9.0e-02
Manganese	8.2e-03	50	2.92e-03	12	3.0e-04	0.4
Mercury	3.58e-03	0.1	1.28e-03	2.4e-02	1.3e-01	0.3
Methyl Chloride	2.68e-03	1030	9.6e-04	247	-	-
Methyl Ethyl Ketone	2.24e-04	5900	8.0e-05	1416	8.0e-06	80
Methylene Chloride	5.82e-03	1740	2.07e-03	418	2.1e-04	2.1
Napthalene	0.029	520	0.01	125	-	-
Nickel	1.79e-03	1	6.4e-04	0.24	7e-05	4.2e-03
Phenol	8.2e-04	190	2.92e-04	46	3.0e-05	30
Selenium	1.94e-03	2	6.9e-04	0.48	-	-
Styrene	3.88e-03	2130	1.38e-03	511	-	-
Toluene	0.02	3770	6.38e-03	898	6.6e-04	300
Trichloroethylene	3.2e-05	2690	1.1e-05	646	-	-
Xylene	5.15e-03	4340	1.83e-03	1042	1.9e-04	80

Note: ARC = Ambient Reference Concentration

Table A
Summary of Proposed Emissions

POLLUTANT	POTENTIAL INCREASE IN FACILITY EMISSIONS (tons/year)	PSD SIGNIFICANT EMISSION RATES (tons/year)	SUBJECT TO PSD REVIEW
SO_2	198.5	40	Yes
NO_x	1581.2	40	Yes
CO	569.4	100	Yes
TSP	300.9	25	Yes
PM_{10}	300.9	15	Yes
O_3 (VOC emission	31.21	40	No
Pb	0.04	0.6	No
Hg	0.07	0.1	No
Be	0.0003	0.0004	No
H_2SO_4	5.1	7	No
Fluorides	0.07	3	No

Table B. Projected Cement Plant Emission Rates for Comparison with PSD Significant Emission Rates (Tons per Year)

Pollutant	Proposed Emission Rate	Significant Emission Rate	Applicable Pollutant (Yes/No)
PM	226	25	Yes
PM_{10}	147	15	Yes
SO_2	98	40	Yes
NO_x	909	40	Yes
CO	556	100	Yes
VOC	28	40	No
Pb	0.027	0.6	No
Be	0.0002	0.0004	No
H_2SO_4	5.1	7	No
Hg	0.009	0.1	No

Table C. Maximum Project Air Quality Impacts for Comparison to the De Minimus Ambient Levels.

Pollutant	Avg. Time	Max Predicted Impact[1] (ug/m^3)	De Minimus Level (ug/m^3)
SO_2	24-hour	0.6	13
PM_{10}	24-hour	9.0	10
NO_2	Annual	0.3	14
CO	8-hour	4	575

1. Highest, high value over a five year period for all averaging times.

Table D. Maximum Project Air Quality Impacts for Comparison to the PSD Class II Significant Impact Levels.

Pollutant	Avg. Time	Max Predicted Impact[1] (ug/m^3)	Significant Impact Level (ug/m^3)
SO_2	Annual	0.04	1
	24-hour	0.6	5
	3-hour	2.4	25
PM_{10}	Annual	0.7	1
	24-hour	9.0	5
NO_2	Annual	0.3	1
CO	8-hour	4	500
	1-hour	14	2000

1. Highest, high value over a five year period for all averaging times.

Table E. PSD Class II Increment Analysis

Pollutant	Averaging Time	Max. Predicted Impact[1] (ug/m^3)	Allowable Increment (ug/m^3)
PM_{10}	Annual	3	17
	24-hour	27	30

1. Highest, second-highest value over a five year period for 24-hour averaging time.

Table F. Maximum Project Air Quality Impacts for Comparison to the PSD Class I Significant Impact Levels

Pollutant	Averaging Time	Max. Predicted Impact[1] (ug/m^3)	National Park Service (NPS) Significant Impact Level (ug/m^3)
SO_2	Annual	0.003	0.025
	24-hour	0.0699	0.07
	3-hour	0.27	0.48
PM_{10}	Annual	0.01	0.08
	24-hour	0.22	0.27
NO_2	Annual	0.091	0.025

1. Highest, high value over a five year period for all averaging times.

Table G. PSD Class I Increment Analysis

Pollutant	Averaging Time	Max. Predicted Impact[1] (ug/m^3)	Allowable Increment (ug/m^3)
NO_2	Annual	1.0	2.5

1. Highest, high value over a five year period.

Table H. Ambient Air Quality Impacts

Pollutant	Averaging Time	Major Sources Impact[1] (ug/m^3)	Background Conc. (ug/m^3)	Total Impact (ug/m^3)	Florida AAQS (ug/m^3)
PM_{10}	Annual	1	33	34	50
	24-hour	10	67	77	150

1. Highest, second-highest value over a five year period for 24-hour averaging time.

Table I. Air Toxics Analysis

Pollutant	8- hour		24- hour		Annual	
	Impact (ug/m^3)	ARC (ug/m^3)	Impact (ug/m^3)	ARC (ug/m^3)	Impact (ug/m^3)	ARC (ug/m^3)
Arsenic	3.58e-04	2	1.28e-04	0.48	1.3e-05	2.3e-04
Benzene	0.15	30	0.05	7.2	5.2e-03	1.2e-01
Beryllium	7.4e-06	0.02	2.6e-06	4.8e-03	3.0e-07	4.2e-04
Biphenyl	6.0e-05	13	2.0e-05	3.12	-	-
Cadmium	4.47e-04	0.5	1.60e-04	0.12	1.6e-05	5.6e-04
Carbon disulfide	1.9e-02	310	6.65e-03	74	6.8e-04	200
Chlorobenzene	2.91e-03	3450	1.04e-03	828	-	-
Chromium	1.86e-03	5	6.6e-04	1.2	7.0e-05	8.3e-04
Cobalt	4.5e-04	0.5	1.6e-04	0.12	-	-
Dioxin	-	-	-	-	1.78e-10	2.2e-08
Ethylbenzene	1.34e-03	4340	4.79e-04	1042	4.9e-05	1000
Formaldehyde	4.03e-03	12	1.44e-03	2.88	1.5e-04	7.7e-02
Hexane	4.25e-04	1760	1.52e-04	422	1.6e-05	200
Hydrogen Chloride	1.04	75	0.373	18	0.038	7
Lead	0.012	0.5	4.25e-03	0.12	4.4e-04	9.0e-02
Manganese	8.2e-03	50	2.92e-03	12	3.0e-04	0.4
Mercury	3.58e-03	0.1	1.28e-03	2.4e-02	1.3e-01	0.3
Methyl Chloride	2.68e-03	1030	9.6e-04	247	-	-
Methyl Ethyl Ketone	2.24e-04	5900	8.0e-05	1416	8.0e-06	80
Methylene Chloride	5.82e-03	1740	2.07e-03	418	2.1e-04	2.1
Napthalene	0.029	520	0.01	125	-	-
Nickel	1.79e-03	1	6.4e-04	0.24	7e-05	4.2e-03
Phenol	8.2e-04	190	2.92e-04	46	3.0e-05	30
Selenium	1.94e-03	2	6.9e-04	0.48	-	-
Styrene	3.88e-03	2130	1.38e-03	511	-	-
Toluene	0.02	3770	6.38e-03	898	6.6e-04	300
Trichloroethylene	3.2e-05	2690	1.1e-05	646	-	-
Xylene	5.15e-03	4340	1.83e-03	1042	1.9e-04	80

Note: ARC = Ambient Reference Concentration

BEST AVAILABLE CONTROL TECHNOLOGY (BACT) DETERMINATION
PORTLAND CEMENT PLANT
Florida Crushed Stone
PSD-FL-227 and AC 27-274892
Hernando County

The applicant, Florida Crushed Stone Company (FCS), plans to construct an 83 ton per hour (maximum TPH as clinker) dry process portland cement kiln with a preheater design at its existing cement plant approximately 3.5 miles northwest of Brooksville, Hernando County, Florida. The project includes a single kiln and clinker cooler along with raw mill, finish mill, cement and clinker handling equipment, coal handling equipment, silos, and air pollution control equipment. The facility will produce 727,080 tons per year (maximum TPY as clinker) and approximately between 760,000 and 800,000 TPY of portland cement. A process description is included in the Technical Evaluation and Preliminary Determination.

Following is the BACT determination proposed by the applicant:

BACT Determination Requested by the Applicant:

POLLUTANT	EMISSION LIMIT
Particulate Matter (kiln)	0.3 lbs/ton of dry kiln feed
Particulate Matter (cooler)	0.1 lbs/ton of dry kiln feed
Particulate Matter (material handling, conveying, storage)	0.01 gr/dscf by baghouses
Sulfur Dioxide (kiln)	0.55 lbs/ton clinker
Sulfuric Acid Mist (kiln)	0.014 lbs SO_3/ton clinker
Nitrogen Oxides (kiln)	4.3 lbs/ton clinker
Carbon Monoxide (kiln)	1.0 lbs/ton dry kiln feed
Volatile Organic Compounds (kiln)	0.07 lbs/ton clinker
Beryllium	6.6×10^{-7} lbs/ton clinker
Lead	7.5×10^{-5} lbs/ton clinker

A single, large, fabric filter system (baghouse) will be used to capture particulate matter from the kiln and the cooler. Baghouses will also be used to limit particulate emissions from other process emission points. Table 1 is a list of the emission units to be controlled by baghouses.

Portland cement plants are among the major facilities listed in Florida Administrative Code (F.A.C.) Chapter 62-212, Prevention of Significant Deterioration (PSD), Table 212.400-1, "Major Facilities Categories." A BACT determination is required for each pollutant exceeding the significant emission rates in Table 212.400-2, "Regulated Air Pollutants Significant Emissions Rates," which in this case are particulate matter (PM), sulfur dioxide (SO_2), carbon monoxide (CO), and nitrogen oxides (NO_x).

This facility is also subject to:

- 40 CFR 60, Subpart F - Standards of Performance for Portland Cement Plants.

- 40 CFR 51, Subpart P - Protection of Visibility.

Date of Receipt of a BACT Application:

March 13, 1995

Review Group Members:

Teresa Heron, Marty Costello, and A. A. Linero of the New Source Review Section.

BACT Determination Procedure

In accordance with Chapter 62-212, F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (Department), 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 BACT pursuant to Section 169, and any emission limitation contained in 40 CFR Part 60 - Standards of Performance for New Stationary Sources 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 determination 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 unit in question, the most stringent control available for a similar or identical emission unit or emission unit category. If it is shown that this level of control is technically or economically infeasible for the emission unit 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.

The air pollutant emissions from this facility can be grouped into categories based upon the control equipment and techniques that are available to control emissions from these emission units. Using this approach, the emissions can be classified as follows:

- Combustion Products (e.g., SO_2, NO_X, PM). Controlled generally by good combustion of clean fuels, reactions with clinker and raw materials, removal in add-on control equipment.

- Products of Incomplete Combustion (e.g., CO, VOC). Control is largely achieved by proper combustion techniques.

- Emissions from materials handling, conveyance, and storage (primarily PM). Controlled generally by fabric filters and reasonable precautions.

Grouping the pollutants in this manner facilitates the BACT analysis because it enables the equipment available to control the type or group of pollutants emitted and the corresponding energy, economic, and environmental impacts to be examined on a common basis. Although all of the pollutants addressed in the BACT analysis may be subject to a specific emission limiting standard as a result of PSD review, the control of "non-regulated" air pollutants is considered in imposing a more stringent BACT limit on a "regulated" pollutant (i.e., PM, SO_2, H_2SO_4, fluorides, etc.), if a reduction in "non-regulated" air pollutants can be directly attributed to the control device selected as BACT for the abatement of the "regulated" pollutants.

COMBUSTION PRODUCTS

Nitrogen Oxides (NOx)

Emissions of NO_X from dry process cement plants with a preheater include the kiln and any fuel-fired support operation.

Oxides of nitrogen (NOx) are generated during fuel combustion by oxidation of chemically bound nitrogen in the fuel (fuel NOx) and by thermal fixation of nitrogen in the combustion air (thermal NOx). As flame temperature increases, the amount of thermally generated NOx increases. Fuel type affects the quantity and type of NOx generated. Generally, natural gas is low in nitrogen. However it causes higher flame temperatures and generates more thermal NOx than oil or coal, which have higher fuel nitrogen content, but exhibit lower flame temperatures.

NO_X emissions represent a significant portion of the total emissions generated by this project, and must be minimized using BACT.

The emissions of NOx can potentially be reduced at Portland cement plants by two methods:

1. Minimizing the quantity of NOx generated during combustion (combustion modifications).

2. Reducing the quantity of NOx in the flue gas stream (flue gas controls).

A review of EPA BACT/LAER Clearinghouse (BACT Clearinghouse) information indicates that NO_X emissions at most facilities are minimized by process control and good combustion practices.

The applicant stated that NO_X emissions at this facility will be controlled through "proper combustion practices" such as burner design with primary combustion air control. Introduction of tires in the material feed end of the kiln will reduce the thermal load on the burner end and possibly result in lower NO_X emissions. In its original submittal, the applicant ruled out Selective Catalytic Reduction (SCR) and Selective Non-Catalytic Reduction (SNCR) as technically infeasible or cost prohibitive.

The applicant gave subsequent consideration to other possible control methods following a request by the Department for additional details justifying the selected method. The applicant rejected Low NO_X Burners, Low Nitrogen Fuel, Flue Gas Recirculation, Fuel Reburning, and Contemporaneous Reductions from the on-site power plant and cement kiln as options which are ineffective, undemonstrated, or beyond the control of the applicant.

The Department requested that the applicant provide an expanded BACT analysis using the procedures described in the EPA New source Review Workshop Manual to show, at a minimum, a technical, economic, and environmental analysis of any applicable control

technology. The applicant's response was that the "top" technology was selected for all pollutants and that the technical, economic, and environmental analyses were not required.

The applicant has proposed a NOx emission rate of 359 lb/hr and 4.3 lb/ton clinker. It is compared below with previous determinations documented by the BACT Clearinghouse.

Previous BACT Determinations

BASIS	Least Stringent	Most Stringent	Proposed
	Year 1978	Year 1981	Year 1995
lb/ton clinker	11.13	0.85	4.3

It is important to note that the facility which was given the 0.85 lb/ton NO_X limit has not been able to meet it since construction. A dry process plant with preheater/precalciner received a NO_X limit of 1.11 lb/ton but was never built. Another dry process plant with preheater and calcining loop received a BACT determination of 2.09 lb NO_X/ton. However, it appears that since that time a less stringent standard was applied. Two other dry process preheater/precalciner plants (including proposed Florida Rock Industries Plant) received a NO_X value of 2.5 lb/ton. A review of the NOx emission rate summary indicates that the applicant's proposal is not representative of the most stringent BACT determinations made to-date for plants utilizing dry processes.

The dry process with preheater/precalciner is considered to be the most energy-efficient process. Dry process preheater designs, such as the one to be employed by FCS, are also energy efficient. Therefore one would expect the lower fuel use to result in relatively low NO_X, all else being equal.

A survey of stack test data from various kilns around the country, operating for more than three years, suggests that a lower emission level than the one proposed for NOx is possible. Additionally, the Department became aware of a recent BACT determination in Nevada which was based on application of SNCR. These factors will also be considered in determining what emission rate can be achieved in accordance with a top-down BACT determination.

Sulfur dioxide

Sulfur dioxide (SO_2) may be generated both from sulfur compounds such as sulfates in the raw materials and from sulfur in the fuel. The sulfur content of both raw materials and fuels varies from plant to plant and with geographic location. Sulfur dioxide at this facility will be generated by the combustion of coal and tires in the kiln and generation of sulfur gases from the raw materials.

The exhaust gas from a cement kiln can contain varying amounts of SO_2. Under low oxygen conditions, sulfates in the raw materials can be converted to SO_2. At high temperature and excess air conditions, some of the sulfur introduced into the cement kiln with the raw materials, and most of the sulfur contained in the fuel, are converted to SO_2. Most of the SO_2 subsequently reacts with oxygen and alkali compounds (such as Na_2O and K_2O vaporized at sintering temperatures) to form alkali sulfates, which are found in cement clinker and in kiln dust. The amount of SO_2 released in the kiln flue gases will vary with the amount of excess alkali available for absorption. Additional SO_2 may be removed through contact with the incoming raw materials and, to some extent, in the particulate control equipment.

SO_2 control processes can be classified into five categories: fuel/material sulfur content limitations, absorption by a solution, adsorption on a solid bed, direct conversion to sulfur, or direct conversion to sulfuric acid.

FCS proposes to limit SO_2 emissions by taking advantage of the alkaline environment in the kiln, preheater, and raw mill to effect substantial removal of SO_2. Ultimately the sulfur is incorporated into the clinker lattice structure, thus minimizing the amount emitted to the atmosphere. Some additional SO_2 removal through contact with particulate matter may also take place in the kiln/cooler baghouse.

The SO_2 limit proposed by the applicant (0.55 lbs/ton clinker) is less stringent than some BACT determinations for other portland cement plants.

A review of the BACT determinations for cement plants as contained in the BACT Clearinghouse indicates SO_2 reduction levels from 70 to 96% (percent) from facilities utilizing the dry processes. The Department did not find instances of BACT involving measures beyond those proposed by FCS. Some plants use baghouses as proposed by FCS instead of Electrostatic Precipitators (ESPs) for particulate control. It is possible that the filter cake on the bags enhances SO_2 removal compared with an ESP. However the difference is marginal compared with the primary removal mechanism involving oxidation of SO_2 to SO_3, alkali reactions, and subsequent removal of sulfates as particulate matter and with the clinker.

A survey of stack test data from different facilities around the country operating for at least three years demonstrates lower rates possible for SO_2. This factor along with the energy efficiency of the plant, and the possible benefits of removal by the particulate control system will be considered by the Department in making a top-down BACT determination.

COMBUSTION PRODUCTS

Particulate Matter (PM, PM10) and Beryllium

Particulate Matter is generated by the various physical and chemical processes at a cement manufacturing plant. Sources of particulate matter at cement plants include (1) quarrying and crushing, (2) raw material storage, (3) grinding and blending, 4) clinker production, 5) finish grinding, and 6) packaging and loading. Additional sources of PM are raw material storage piles, conveyers, storage silos, and unloading facilities. The largest emission source of PM within cement plants is the pyroprocessing system that includes the kiln and clinker cooler exhaust stacks (in this case, common kiln/cooler stack). Emissions from kilns are affected by several factors, including differences in convective patterns, material movement patterns, burner locations and insertion lengths, heat transfer mechanisms, and the type of clinker cooler that supplies secondary air to the kiln for combustion. Typically, dust from the pollution control equipment servicing the kiln and cooler is collected and recycled into the kiln and thus incorporated into the clinker. FCS has not stated that all cement kiln dust (CKD) captured in the baghouse will be returned to the pyroprocessing system as raw material. It is expected that the majority of it will be recycled, while any excess will be stored in a silo for sale.

Common control devices for stack gases include settling chambers, inertial separators, impingement separators, wet scrubbers, fabric filters, and electrostatic precipitators. Fabric filters (baghouses) and electrostatic precipitator (ESPs) are generally considered equivalent for particulate control. Both types of devices can achieve removal efficiencies of over 99%. ESPs and baghouses are used extensively as control devices at cement plants. ESPs are generally specified for kiln and clinker cooler exhaust gases because of their ability to operate effectively at varying temperatures. Baghouses are also used at various facilities for particulate control from kilns and coolers. Both types of control equipment provide for the recovery/recycling of collected dust back into the process stream. Baghouses are also used to control particulate emissions from most other material processing operations at cement plants.

Common controls to limit particulate emissions from fugitive sources (such as roadways, stockpiles, and material processing and conveying equipment) include wet suppression, sweeping, application of surfactants, paving of roads and covering of stockpiles to reduce wind erosion. Wet suppression of fugitive particulate emissions is considered as BACT for most material

handling operations and unpaved roads. Dust from stockpiles can be minimized by relatively high material moisture content with additional water spraying as necessary.

Small quantities of beryllium (Be) are generated by the combustion of coal and fuel oil blends. Beryllium will be generated as a particulate emission from the combustion of fuels, and will be controlled by the kiln/cooler baghouse. The applicant projects low emissions of Be such that it will not be subject to BACT.

A review of the BACT Clearinghouse shows that baghouses and ESPs are widely used to control particulate matter from process emission units at cement plants. They are commonly accepted as BACT.

The applicant has proposed the New Source Performance Standard NSPS limits of 0.3 pounds per ton of dry feed (kiln) and 0.1 pounds per ton of dry feed (cooler) as BACT for this facility. The NSPS values constitute the "floor" for BACT determinations. Consideration will also be given to any more stringent emission rates determined for kilns in Florida.

PRODUCTS OF INCOMPLETE COMBUSTION

Carbon Monoxide and Volatile Organic Compounds

Carbon monoxide (CO) is a pollutant formed by the incomplete combustion (oxidation) of carbon containing compounds in the cement kiln fuel and during the transformation of cement raw materials to cement clinker. When insufficient oxygen is provided, more CO and less CO_2 are formed than under excess air conditions. Substantial quantities of CO and CO_2 are also generated through calcining of limestone and other calcareous material. This calcining process thermally decomposes $CaCO_3$ to CaO and CO_2. The calcining of limestone in the cement manufacturing process liberates large amounts of CO_2, which is available for dissociation into CO.

VOC is also a pollutant formed by the incomplete combustion of fuel or hydrocarbons contained in the raw materials.

Emissions of CO can potentially be reduced at portland cement plants by two main methods: utilization of proper combustion practices to maximize the oxidation of CO to CO_2 and reducing the quantity of CO in the flu gas stream (flue gas control).

Emissions of VOC can be controlled by add-on control devices by the mechanisms of adsorption, absorption, or incineration (afterburning). Incineration processes include flame incineration, thermal incineration, and catalytic incineration. No add-on controls for CO or VOC have been demonstrated for cement plants.

The high temperatures and control of excess air and fuel, typically results in simultaneous optimization for control of products of incomplete combustion and NO_X. The applicant proposes proper combustion practices as BACT to control emissions of CO from this plant. The applicant estimates low emissions of VOC such that the new kiln will not be subject to BACT for this pollutant.

A review of the BACT Clearinghouse reveals that for CO and VOC, BACT from cement plants for these pollutants is proper combustion practices.

BACT Determination by DEP:

Based on the information provided by the applicant and the information searches conducted by the Department, lower emissions limits can be obtained employing the top-down BACT approach for SO_2 and NO_X.

The Department has determined that the NO_X and SO_2 levels proposed by the applicant are roughly equal to typical emission limits from plants already in operation throughout the country and do not reflect previous BACT determinations for portland cement plants.

The Department reviewed Document EPA-453/R-94-004, "Alternative Control Techniques - NO_X Emissions from Cement Manufacturing." Various methods beyond the one proposed by the applicant are detailed. As previously mentioned, the high energy efficiency of the dry preheater process also suggests a lower NO_X limit is achievable. Based on the referenced document, it appears that SNCR, Low NO_X burners and Indirect Firing are available (at least as technology transfer) to consider in achieving a lower NO_X emission limit.

The Department also reviewed a paper presented at the Air and Waste Management Association (AWMA) International Specialty Conference on Waste Combustion in Boilers and Industrial Furnaces. The paper, "Reduction of NO_X Emissions from Cement Kiln/Calciner through the Use of the NO_XOUT Process," which was written by representatives of Nalco and Ash Grove Cement, suggests that SNCR is a viable control method. A level as low as 1.0 lb/ton of clinker was reached based on demonstration tests conducted at the Ash Grove cement plant in Seattle, Washington.

Recently a proposed cement plant (Great Star Cement, Clark County, Nevada) was permitted with the urea-based SNCR/NO_XOUT process as BACT. The process relies on the reaction between ammonia and NO_X to yield molecular nitrogen. The delivery system consists of urea injectors in one of the preheater sections. The objective was to achieve 50% reduction of NO_X emissions. At that level there should be no ammonia slip while meeting the BACT limit of 3.1 lb/ton clinker.

The Department recently issued a BACT determination to Florida Rock Industries (FRI) with a NO_X limit of 2.5 lb/ton clinker. FRI had proposed a BACT limit of 4.6 lbs/ton. The Department is requiring FRI to examine additional control options, such as SNCR to insure the limit is achieved.

Based on a recent Nalco estimate prepared for Great Star Cement, the capital costs for SNCR on a 3100 TPD kiln is $471,000 ($54,165 on an annualized basis). Operating costs to reduce NO_X emissions by 3.0 lb/ton clinker are $674,000. First year costs are projected to be $728,000 and $410/ton NO_X removed.

The Department examined the worst case scenario which assumes that FCS can only achieve its proposed BACT NO_X value of 4.3 lb/ton clinker while employing proper combustion practices. The Department reviewed the degree to which SNCR can be employed in order to achieve a further (roughly 40%) NO_X reduction to 2.5 lb/ton clinker.

For the FCS plant, the purchase and installation of an SNCR system similar to the one proposed for Great Star Cement (but with a lower removal objective) would be approximately $575,000 for an annualized capital investment of approximately $65,000 per year. Annual operating costs would be approximately $200,000. First year costs would be approximately $265,000 or approximately $425 per additional ton of NO_X removed.

The cost per ton of NO_X removed is well within BACT costs for industry in general. The added cost to clinker production is low (approximately $0.40 per ton of clinker) relative to other factors such as raw materials, product, and transportation cost fluctuations.

The Department is also aware of a cement plant owned by Mitsubishi in California, which makes use of a similar principal by injecting municipal wastewater sludge into a preheater section and relying (to some extent) on released ammonia to help lower NO_X emissions.

FCS previously ruled out SNCR as infeasible because the "optimum temperature range to drive the SNCR reactions between 1600-2000 degrees F is encountered in a typical kiln system only in the kiln itself." FCS contends that injection of ammonia/urea in the kiln will cause increases in NO_X.

Although SNCR has been demonstrated in the U.S. on a preheater/precalciner kiln and is being required at another one, the previously-mentioned EPA cement plant NO_X document refers to an SNCR demonstration in Europe on a preheater type kiln. It is possible that the applicant considered the temperature of the materials entering the kiln rather than the gases leaving the kiln.

For SO_2 the Department reviewed information in the BACT Clearinghouse, performance test results, and various cement technology documents detailing the chemical reactions and technological problems of making cement. It is the conclusion of the Department that the key factors in SO_2 removal is maintaining proper ratios of sulfur and alkali in the kiln environment and intimate contact between raw materials and exhaust gases. This is considered by the Department to be BACT. It is clear that FCS can insure low SO_2 emissions is through its preheater dry process.

The Department believes that lower values than proposed by the applicant with no add-on gas treatment, are possible. This is substantiated by the letter of October 28, 1983 from Sholtes and Koogler, Environmental Consultants, regarding the original kiln at FCS (which is identical to the one proposed). Per page 13, "Polysius (cement plant designer) states that if only sulfur dioxide from the cement plant were considered, sulfur dioxide emissions as low as 20 pounds per hour could be expected from the cement plant." This is further proved by actual emissions tests from the original kiln which average about 10 lbs of SO_2 per hour or approximately 0.1 lbs/ton clinker.

The Department has also concluded that sulfuric acid mist emissions are not expected to be significant because free sulfite (SO_3) will preferentially react with clinker and kiln dust in the alkali environment of the kiln. Also, little water is available to complete the reaction to acid mist.

The BACT emission levels are established by the Department as follows:

Source	Pollutant Emission Limit
Kiln (PM)	0.20 lbs/ton kiln feed (dry basis) and 0.31 lbs/ton clinker - 1 hour average
Kiln (PM_{10})	0.26 lbs/ton clinker - 1 hour average
Kiln (VE)	Visible emissions not to exceed 10 percent opacity
Kiln (SO_2)	0.27 lbs/ton clinker 24 hr rolling average
	Coal (0.76% sulfur by weight), blend of fuel oil and on-spec used oil (1.5 sulfur by weight), tires (up to 15% of heat input), and natural gas are the only fuels allowed

Kiln (NOx)	2.5 lbs/ton clinker - 24 hr rolling average
Kiln (CO)	2.0 lbs/ton clinker - 1 hr average
Kiln (SO_3)	0.014 lbs/ton clinker (non-BACT)
Kiln (VOC)	0.10 lbs/ton clinker (non-BACT)
Kiln (Be)	9.9×10^{-7} lbs/ton clinker (non-BACT)
Kiln (Hg)	2.4×10^{-5} lbs/ton clinker (non-BACT)
Kiln (Pb)	5.2×10^{-4} lbs/ton clinker (non-BACT)
Cooler (PM)	0.10 lbs/ton kiln feed (dry basis) and 0.16 lbs/ton clinker
Cooler (PM10)	0.13 lbs/ton clinker
Cooler (VE)	Visible emissions not to exceed 10% opacity
Minor points with baghouses	Visible emissions not to exceed 5% opacity
Fugitive sources	Visible emissions not to exceed 10% opacity

Compliance with the particulate emission limitations shall be in accordance with the EPA Reference Method 5 as contained in Appendix A, 40 CFR 60, and set forth in Subsection 60.64 of the NSPS for Portland Cement Plants, 40 CFR 60.

Compliance with opacity standards shall be determined by conducting observations in accordance with 40 CFR 60, Appendix A, Method 9.

Compliance with the SO_2 and NO_x emission limitations shall be demonstrated using CEMS.

Compliance with the CO limitations shall be demonstrated by 3 one-hour tests using EPA Method 10.

Pursuant to F.A.C. 62-4.070(3), 62-212.400(5)(c) and 62-296.330, the kiln/cooler exhaust system shall be equipped with continuous monitors to record NO_x and SO_2 for the purposes of compliance; opacity at the stack to indicate proper maintenance and operation; and CO and/or O_2 to optimize combustion conditions for pollution control.

Compliance with the VOC limitations shall be demonstrated (on a one time basis) by three one hour stack tests using Method 25 or 25A to confirm emission rate is less than the PSD significant emission rate.

Compliance with the Pb, Hg, and Be limitations shall be demonstrated (on a one time basis) by three one-hour stack tests using EPA Method 29 to confirm emission rate is less than the PSD significant emission rate.

BACT Determination Rationale:

BACT for visible emissions was determined to be more stringent than the NSPS for Portland Cement Plant, 40 CFR 60, Subpart F. With respect to the kiln, BACT for PM was determined to be more stringent than the NSPS for Portland Cement Plant, 40 CFR 60, Subpart F. The basis is the BACT Determination set by EPA for Pennsuco Cement, Medley, Florida in 1980.

BACT for SO_2 emissions from the cement kiln was based on the lowest number (0.28 lbs/ton clinker) given in the BACT Clearinghouse database. A slightly lower value of 0.27 lbs/ton clinker will also insure that ambient SO_2 concentration increases will be less than applicable National Park Service Significant Impact Level. Although it appears that FCS can achieve even lower values, it would be prudent to allow sufficient flexibility such that emissions of all combustion products can be minimized simultaneously.

For each small baghouse in the material handling process the exhaust gases must not exhibit greater than 5 percent opacity. The Department has determined that 5 percent opacity is BACT, and is attainable with a baghouse.

BACT for NO_X emissions from the cement kiln was determined to be equal to 2.5 lbs/tons of clinker. This rate was obtained from the BACT Clearinghouse. Unless the company commits to installing SNCR, FCS will need to develop a contingency project plan to implement additional technology if the plant fails to meet the NO_X limit. The Department will need to review and approve that plan prior to initiation of construction.

BACT for CO was determined to be 2.0 lbs/ton clinker. This value is greater than the proposed by FCS or given in AP-42. It will provide additional flexibility to minimize NO_X and SO_2 emissions. No BACT determination was required for VOC. The Department set a limit higher than requested by FCS which will result in annual emissions less than the BACT threshold, but allow FCS a little more flexibility in optimizing all control for all combustion products.

No BACT determination was required for Pb. The limit requested by FCS was adopted insures BACT will not be triggered.

No BACT was required for Be. The limit requested by FCS was not adopted because it would trigger BACT. The adopted value will

result in emissions less than the PSD significant threshold value.

No BACT was required for Hg. The estimate provided by FCS will result in emissions less than the applicable BACT threshold.

Details of the Analysis May be Obtained by Contacting:

Teresa Heron, Review Engineer,
A. A. Linero, Administrator, New Source Review Section
Department of Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Recommended By:

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

Date: _____

Approved:

_____
Howard L. Rhodes, P.E., Director
Division of Air Resources Management

Date: _____

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the Matter of an
Application for Permit by:

DEP File No. AC 27-274892
PSD-FL-227
PA 82-17

Florida Crushed Stone Company
10311 Cement Plant Road
Brooksville, Florida 34601

_____/

INTENT TO ISSUE

The Department of Environmental Protection hereby gives notice of its intent to issue a construction permit (copy attached) for the proposed project, as detailed in the application specified above, and the attached Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, Florida Crushed Stone Company applied on March 13, 1995, to the Department of Environmental Protection for a permit to construct a second cement plant at its existing facility, 3.5 miles northwest of Brooksville, Hernando County, Florida.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Chapters 62-212 and 62-4, Florida Administrative Code (F.A.C.). The project is not exempt from permitting procedures. The Department has determined that a construction permit is required for the proposed project.

Pursuant to Section 403.815, F.S., and Rule 62-103.150, F.A.C., you (the applicant) are required to publish at your own expense the enclosed Notice of Intent to Issue Permit. The notice shall be published one time only within 30 days in the legal ad section of a newspaper of general circulation in the area affected. For the purpose of this rule, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within seven days of publication. 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, F.S. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. Petitions filed by the permit applicant and the parties listed below must be filed within 14 days of receipt of this intent. Petitions filed by other persons must be filed within 14 days of publication of the public notice or within 14 days of their receipt of this intent, whichever first occurs. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. 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, F.S.

The Petition shall contain the following information;

(a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed;
(b) A statement of how and when each petitioner received notice of the Department's action or proposed action;
(c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action;
(d) A statement of the material facts disputed by Petitioner, if any;
(e) A statement of facts which petitioner contends warrant reversal or modification of the Department's action or proposed action;
(f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and,
(g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

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 position taken by it in this intent. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of receipt of this intent in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this

proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, F.A.C.

Executed in Tallahassee, Florida.

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION

C. H. Fancy, P.E., Chief
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
904-488-1344

CERTIFICATE OF SERVICE

The undersigned duly designated deputy clerk hereby certifies that this INTENT TO ISSUE and all copies were mailed by certified mail before the close of business on 10-3-95 to the listed persons.

Clerk Stamp

FILING AND ACKNOWLEDGMENT
FILED, on this date, pursuant to §120.52(11), Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Clerk

10-3-95
Date

Copies furnished to:

Jewell Harper, EPA
John Bunyak, NPS
Buck Oven, DEP
Bill Thomas, SWD
Doug Beason, DEP
Lawrence Jennings, Hernando County
Don Elias, RTP Env. Assoc.
Lawrence Curtin, H&K
Tom Mountain, FCS

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF INTENT TO ISSUE PERMIT

AC 27-274892
PSD-FL-227

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to Florida Crushed Stone Company (FCS), 10311 Cement Plant Road, Brooksville, Florida, for a second 83 ton per hour cement plant. The plant will be located at the site of the existing FCS/Central Power and Lime facility, 3.5 miles northwest of Brooksville, Hernando County. The project includes a dry process kiln with a preheater, clinker cooler, crushers, raw mill, finish mill, material and fuel handling equipment, silos, and shipping facilities. Pollution control equipment include a common fabric filter system (baghouse) for particulate emissions from the kiln and cooler; absorption of sulfur compounds and metals into the product; combustion controls for volatile organic compounds (VOC) and carbon monoxide (CO); combustion controls for nitrogen oxides (NO_x) with additional controls to be specified as needed to meet permit limits; and baghouses for particulate emissions from other process emission units.

A Best Available Control Technology (BACT) determination was required for emissions of sulfur dioxide (SO_2), nitrogen oxides (NOx), particulate matter (PM), and carbon monoxide (CO) pursuant to 40 CFR 52.21, Prevention of Significant Deterioration (PSD).

Emissions of these pollutants will not exceed the following limits:

Pollutant	Maximum Emissions (Tons Per Year)
PM	250
SO_2	98
NOx	909
CO	727
VOC	39.8
Sulfuric Acid Mist	5.1
Lead	0.2
Mercury	0.009
Beryllium	0.00036

An air quality impact analysis was conducted. SO_2 and NO_2 impacts from the project will not have a significant impact in the PSD Class II area; therefore, no Class II increment consumption was predicted for these two pollutants. The maximum PM_{10} PSD Class II increment and maximum percent of allowable PSD Class II increment consumed due to this project will be as follows:

PSD Class II Increment Consumed (ug/m^3)		Allowable Increment (ug/m^3)	Percent Increment Consumed
PM_{10}			
24-hour	27	30	90
Annual	3	17	18

The project, as amended by the Department BACT Determination, will not have a significant impact on the Chassahowitzka PSD Class I area with respect to SO_2, PM_{10} and visibility; therefore, no increment consumption was determined for SO_2 and PM_{10} was determined. The maximum NO2 PSD Class I increment and maximum percent of allowable increment due to this project will be as follows:

PSD Class I Increment Consumed (ug/m^3)		Allowable Increment (ug/m^3)	Percent Increment Consumed
NO_2 Annual	1.0	2.5	40

Coal and tires will be the primary fuels consumed. A blend of fuel oil and on-spec used oil will be burned during startup with occasional use of natural gas. No RCRA hazardous waste will be burned. Cement Kiln Dust (CKD) collected in the kiln/cooler baghouse will be returned to the process. Any CKD not returned to the process will be stored in silos for sale and ultimately handled in accordance with Subtitle C rules under development by EPA.

Any 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 (F.S.). The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, within 14 days of publication of this notice. Petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. 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, F.S.

The Petition shall contain the following information; (a) The name, address, and telephone number of each petitioner, the applicant's name and address, the Department Permit File Number and the county in which the project is proposed; (b) A statement of how and when each petitioner received notice of the Department's action or proposed action; (c) A statement of how each petitioner's substantial interests are affected by the Department's action or proposed action; (d) A statement of the material facts disputed by Petitioner, if any; (e) A statement of facts which petitioner

contends warrant reversal or modification of the Department's action or proposed action; (f) A statement of which rules or statutes petitioner contends require reversal or modification of the Department's action or proposed action; and, (g) A statement of the relief sought by petitioner, stating precisely the action petitioner wants the Department to take with respect to the Department's action or proposed action.

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 position taken by it in this Notice. Persons whose substantial interests will be affected by any decision of the Department with regard to the application have the right to petition to become a party to the proceeding. The petition must conform to the requirements specified above and be filed (received) within 14 days of publication of this notice in the Office of General Counsel at the above address of the Department. Failure to petition within the allowed time frame constitutes a waiver of any right such person has to request a hearing under Section 120.57, F.S., and to participate as a party to this proceeding. Any subsequent intervention will only be at the approval of the presiding officer upon motion filed pursuant to Rule 28-5.207, Florida Administrative Code.

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:

Department of Environmental Protection
Bureau of Air Regulation
111 S. Magnolia Drive, Suite 4
Tallahassee, Florida 32301

Department of Environmental Protection
Southwest District Branch Office
3804 Coconut Palm Drive
Tampa, Florida 33619-8218

Hernando County Planning Department
20 North Main Street, Room 262
Brooksville, Florida 34601-2807

Any person may send written comments on the proposed action to Administrator, New Source Review Section, at the Department of Environmental Protection, Bureau of Air Regulation, Mail Station 5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400. All comments received within 30 days of the publication of this notice will be considered in the Department's final determination.

Further, a public hearing can be requested by any person(s). Such requests must be submitted within 30 days of this notice.

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, and 4a & b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☒ Restricted Delivery
Consult postmaster for fee.

3. Article Addressed to:
Joseph J Permatteo
Fla Crushed Stone
10311 Cement Plant Rd
Brooksville, Fl 34601

4a. Article Number
Z 127 632 530

4b. Service Type
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail ☐ Return Receipt for Merchandise

7. Date of Delivery
10-5-95

5. Signature (Addressee)

8. Addressee's Address (Only if requested and fee is paid)

6. Signature (Agent)

PS Form 14

Thank you for using Return Receipt Service.

Z 127 632 530

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to	Joseph Permatteo
Street and No.	Fla Crushed Stone
P.O., State and ZIP Code	Brooksville, Fl
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date	PSD-FI-227 AC 27-274892 10-3-95 PA 82-17

PS Form 3800, March 1993

MEMORANDUM

TO: Teresa Heron

FROM: Donald F. Elias, William E. Corbin

DATE: September 12, 1995

SUBJECT: Florida Crushed Stone Emissions as compared to 62-296 FAC limits

The NO_x RACT limit for cement plants is given as 2.0 lbs/MMBTU at 62-296.570(4)(b)(8) FAC. The current air permit for the existing cement kiln limits the sum total maximum heat input to the equivalent of 10.3 tons/hour of coal. Due to the variability in coal heat contents, there is no limit in the existing kiln permit for the total heat input in units of MMBTU/hour. We adopted the same language in the proposed draft permit provided to you on July 17th -- namely a maximum coal feed rate but no maximum heat input rates.

In the permit application forms on page 19, we provided an estimate of the maximum heat input rate as 276.62 MMBTU/hour based on a July 1994 coal sample showing 13,428 BTU/lb. Based on historical data, the maximum tested coal sample was 14,029 BTU/lb, giving a heat input rate to the cement kiln of 289.00 MMBTU/hr. At the proposed NO_x emission limit of 359 lbs/hour, these heat inputs would give NO_x emissions of 1.24 to 1.30 lbs/MMBTU. Due to the variability in coal shipments, we have revised page 19 of the air permit application forms (attached) utilizing a 5% factor on the recent measurement, yielding 14,730 BTU/lb. This gives a maximum heat input of about 303 MMBTU/hr and a NO_x emission rate of 1.18 lbs/MMBTU. All of these lb/MMBTU emission factors are very much less than the RACT limit of 2.0 lbs/MMBTU and would allow for any variation in the coal heat contents.

The PM emission limit for new plants is given as 0.3 lbs/ton feed for the kiln and 0.1 lbs/ton feed for the clinker cooler at 62-296.407 FAC[a]. We adopted these NSPS limits in our proposed draft permit for the cement kiln. At the kiln feed rate of 127 tons/hour, NSPS translates to total PM emissions of 50.8 lbs/hour from the kiln and clinker cooler. In order to conform with the existing cement kiln permit, we also adopted an hourly emission limit of 49.5 lbs/hour (approximately 0.39 lbs/ton feed total) in the proposed draft permit.

If you have any questions or need any additional information, please feel free to contact us at 908-968-9600. If you need any assistance, either technical or clerical, please don't hesitate to call.

cc: T.Mountain
L.Curtin
M.Hober/M.Lewis/FCS Project File

[a]These PM emission limits are more restrictive than the RACT PM emission limits for cement

Emissions Unit Operating Capacity

1. Maximum Heat Input Rate:		**303** mmbtu/hr
2. Maximum Incineration Rate:	lb/hr	**Not Applicable** tons/day
3. Maximum Process or Throughput Rate: **Not Applicable**		
4. Maximum Production Rate: **83 tons clinker/hour**		
5. Operating Capacity Comment:		

Emissions Unit Operating Schedule

Requested Maximum Operating Schedule:

24 hours/day	**7** days/week
52 weeks/year	**8,760** hours/year

RTP ENVIRONMENTAL ASSOCIATES INC.®

MEMORANDUM

TO: Teresa Heron

FROM: Donald F. Elias, William E. Corbin WEC

DATE: September 12, 1995

FAXED 09-12-95

SUBJECT: PCB Limits on On-Spec Used Oil

Florida Crushed Stone is willing to revise the PCB limit in the permit application as a result of discussions by Mr. Tom Mountain of Florida Crushed Stone with Ms. Lizanne Garcia of the Hernando County Planning Department. The allowable concentration for Polychlorinated Biphenyls (PCBs) should be revised from 50 ppm to 2 ppm in Specific Condition 10 of the proposed draft permit conditions we transmitted to you with our letter dated July 17, 1995.

It is our understanding that this resolves all outstanding issues with Hernando County. Please call us at 908-968-9600 is you need any additional assistance.

cc: T.Mountain, Florida Crushed Stone
L.Curtin, Holland & Knight
M.Hober/M.Lewis/FCS Project File, RTP

United States Department of the Interior

FISH AND WILDLIFE SERVICE
1875 Century Boulevard
Atlanta, Georgia 30345

SEP 11 1995

IN REPLY REFER TO:

RECEIVED
SEP 12 1995
Bureau of
Air Regulation

RECEIVED
SEP 18 1995
Bureau of
Air Regulation

Mr. Clair H. Fancy
Chief, Bureau of Air Regulation
Department of Environmental Regulation
Twin Towers Office Building
2600 Blair Stone Road, MS 48
Tallahassee, Florida 32399

Dear Mr. Fancy:

Enclosed are additional comments on the Prevention of Significant Deterioration permit application for the new cement kiln proposed by Florida Crushed Stone.

Thank you for giving us the opportunity to comment on this permit application. We appreciate your cooperation in notifying us of proposed projects with the potential to impact the air quality and related resources of our Class I air quality areas. If you have questions, please contact Ms. Ellen Porter of our Air Quality Branch in Denver at telephone number 303/969-2617.

Sincerely yours,

For Noreen K. Clough
Regional Director

Enclosure

cc: T. Heron
Hernando Co.
EPA
SWD
T. Mountain
L. Curtin
D. Elias
H. Oven
C. Holladay

Technical Review of the
Prevention of Significant Deterioration
Permit Application for the New Cement Kiln
Proposed by Florida Crushed Stone
by
Air Quality Branch, Fish and Wildlife Service - Denver

In our April 19, June 16, and August 11, 1995, letters to you, we commented on the Prevention of Significant Deterioration permit application and additional information for the new cement kiln proposed by Florida Crushed Stone (FCS). The kiln would be located 20 kilometers southeast of Chassahowitzka Wilderness Area (WA), a Class I air quality area, administered by the U.S. Fish and Wildlife Service (FWS). The new kiln would emit significant amounts of PM-10, sulfur dioxide (SO_2), nitrogen oxides, and carbon monoxide.

Our August 11 letter expressed concern regarding the FCS visibility analysis of July 12, 1995, that predicted visible plume impacts at Chassahowitzka WA 3.2 percent of the time (289 hours per year) due to emissions from the proposed kiln. We requested that FCS repeat the analysis, eliminating the hours between 6 p.m. and midnight, in order to better assess visible plume impacts during daylight hours. The FWS Air Quality Branch, your office, and FCS agreed that a visible plume formed during these hours would probably not impact Chassahowitzka WA during daylight.

We received the requested analysis August 23, 1995. The analysis predicted that a visible coherent plume resulting from emissions from the proposed kiln would occur 2.23 percent of daylight hours in Chassahowitzka WA, or approximately 146 hours. According to FWS policy, such visible plume impacts would constitute an adverse impact to visibility at the wilderness area. In addition, such impacts would be contrary to the national goal set by Congress in the Clean Air Act Amendments of 1977: "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution."

Therefore, we request that FCS be required to reduce emissions to ensure that no visible plume impacts occur at Chassahowitzka WA during daylight hours due to the proposed kiln. If emission reductions cannot be achieved, we ask that FCS obtain emissions offsets and demonstrate that such offsets would result in a net environmental benefit to the wilderness area. We ask that your office consult with us on any proposed offsets.

In addition, we are concerned about the potential impacts of SO_2 emissions from the FCS proposed kiln. Our June 9 letter expressed concern regarding predicted exceedances of the 3-hour and 24-hour SO_2 Class I increments. Emissions from the new kiln would contribute significantly to these exceedances. In a July 5, 1995, conference call with your office and FCS, the FWS Air Quality Branch proposed that the SO_2 emission rate from the new kiln be reduced to ensure that its contribution to increment consumption would be below the FWS significant impact levels. As you know, your office has applied the FWS significant impact levels to evaluate all Prevention of Significant Deterioration permit applicants since 1993. We understand that FCS is now asking your office to apply less protective significant impact levels that may be proposed by the Environmental Protection Agency. To ensure consistency in evaluating emissions impacts to Class I increment consumption, we ask that the FWS levels be applied until the EPA not only proposes, but promulgates, alternate significant impact levels.

Fla. Crushed Stone

RTP ENVIRONMENTAL ASSOCIATES INC.®

RECEIVED
SEP 14 1995
Bureau of Air Regulation

MEMORANDUM

TO: Teresa Heron, Florida Dept. of Env. Protection

FROM: Bill Corbin, RTP Environmental Associates, Inc. BC

DATE: September 6, 1995

SUBJECT: Telephone Conversation of September 5, 1995

In our telephone conversation yesterday, you noted some differences between the draft permit conditions you were preparing and the draft permit conditions we proposed in our July 17, 1995 letter to the Department. Our proposed draft permit conditions were derived from the latest operating permit, A027-231888A, for the existing cement kiln, amended August 30, 1994, which was faxed to you yesterday. With respect to the differences in some of the numbers, I can offer you the following observations:

(1) The clinker production rate of 75 tons/hour, contained in permit A027-183508 dated May 29, 1991, was based on previous Department policy allowing operation at +/- 10% of design. When the Department changed the policy to require absolute maximum production rates, the number was revised to 83.0 tons/hour (i.e., 75 tons/hour plus 10%) as shown in permits A027-231888 dated March 11, 1994 and A027-231888A dated August 30, 1994. This value was reviewed and approved by the Southwest District Office and Mr. Clair Fancy. ✓

(2) The used oil sampling methodologies contained in our proposed draft permit conditions are the most recent methodologies as described in the August 10, 1994 letter from Mr. Howard L. Rhodes of FDEP to Mr. Tom Mountain of Florida Crushed Stone, which amends permit AC222095. One of the specific reasons for the permit update reflected in A027-231888A was to update these test methods.

(3) All of the versions of Florida Crushed Stone permits and correspondence in our possession contain the 1400 degrees Fahrenheit value specified in our proposed draft permit condition number 16(A) for firing tire derived fuel. The November 18, 1992 letter from Ms. Carol M. Browner of FDEP to Mr. Randy Thompson of Florida Crushed Stone, amended permit AC27-118674 and authorized the continuous utilization/firing of tire derived fuel. This correspondence contained the 1400 degrees F temperature value also.

(4) The requirement to test the coal sulfur content was dropped in the latest permit, A027-231888A in accordance with findings by Mr. John Taylor of the Southwest District Office (see August 23, 1994 letter from Mr. Taylor to Mr. Tom Mountain). If you have any questions, please call Mr. Taylor of the Southwest District Office.

(5) As shown in the permit application, the H_2SO_4 emission rate is less than the PSD significant emission level. Therefore, testing for H_2SO_4 or SO_3 should not be required if you are requiring testing for PSD significant pollutants only.

cc: T. Mountain
MJH, MCL, FCS Project File