

Notice of Proposed Agency Action

Technical Evaluation
and
Preliminary Determination

Florida Crushed Stone Company
Power Plant/Cement Plant Cogeneration Facility

State Permit Numbers

AC 27-61012	AC 27-61027
AC 27-61013	AC 27-61030
AC 27-61016	AC 27-61032
AC 27-61017	AC 27-61033
AC 27-61019	AC 27-61037
AC 27-61020	AC 27-61038
AC 27-61021	AC 27-61040
AC 27-61026	AC 27-61041
	AC 27-61042

Federal Permit Numbers

PSD-FL-090
PSD-FL-091

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

May 24, 1983

NOTICE OF PROPOSED AGENCY ACTION

The Department of Environmental Regulation gives notice of its intent to issue permits to Florida Crushed Stone Company to construct an air pollutant emitting facility. These permits will give the company partial approval to construct a combined cement plant/power plant facility. This facility will be located near Brooksville in Hernando County, Florida. A best available control technology (BACT) determination was required for emissions of sulfur dioxide (SO₂), nitrogen oxides (NO_x), particulate matter (PM), and carbon monoxide (CO). A prevention-of-significant-deterioration (PSD) air quality impact analysis was also required for emissions of these pollutants. By authority of the U.S. Environmental Protection Agency (EPA), the Department has also reviewed the proposed construction under federal prevention of significant deterioration regulations (40 CFR 52.21) and has made a preliminary determination that the construction can be approved provided certain conditions are met.

Maximum emissions of pollutants in tons per year from the facility will be as follows:

<u>Pollutant</u>	<u>Emissions</u>
PM	595
SO ₂	5,475
NO _x	4,598
CO	197

Emissions from the facility will consume PSD increment but will not violate any state or federal ambient air quality standards. The maximum percent of allowable PSD increment consumed will be as follows:

<u>Class I Increment</u>	<u>Percent Consumed</u>
SO ₂	
Three-hour	68
24-hour	80
Annual	30
PM	
24-hour	18
Annual	8

Class II Increment Percent Consumed

SO₂

Three-hour	15
24-hour	23
Annual	30

PM

24-hour	76
Annual	12

Copies of the applications for permits submitted by Florida Crushed Stone Company and a summary of the basis of the Department's proposed action are available for public review in the following locations:

Department of Environmental Regulation
Southwest District
7601 Highway 301 North
Tampa, Florida 33610

Department of Environmental Regulation
Bureau of Air Quality Management
2600 Blair Stone Road
Tallahassee, Florida 32301

Hernando County Public Library
238 Howell Avenue
Brooksville, Florida 33512

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

Any person who is substantially affected by the Department's proposed permitting decision may request a hearing in accordance with Section 120.57, Florida Statutes, and Florida Administrative Code Rules 17-1 and 28-5. The request for hearing must be filed (received) in the Office of General Counsel of the Department at 2600 Blair Stone Road, Tallahassee, Florida 32301, within fourteen (14) days of publication of this notice. Failure to file a request for hearing within this time period shall constitute a waiver of any right such person may have to request a hearing under Section 120.57, Florida Statutes.

This notice and opportunity to request a hearing applies to the Department's proposed approval of the cement plant portion of the facility and EPA's proposed approval of the combined cement plant/power plant facility. The Department's proposed action on the power plant portion of the facility is the subject of a separate notice to be published pursuant to the Power Plant Siting Act.

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

28-5.15 Requests for Formal and Informal Proceedings

- (1) Requests for proceedings shall be made by petition to the agency involved. Each petition shall be printed typewritten or otherwise duplicated in legible form on white paper of standard legal size. Unless printed, the impression shall be on one side of the paper only and lines shall be double spaced and indented.
- (2) All petitions filed under these rules should contain:
 - (a) The name and address of each agency affected and each agency's file or identification number, if known;
 - (b) The name and address of the petitioner or petitioners;
 - (c) All disputed issues of material fact. If there are none, the petition must so indicate;
 - (d) A concise statement of the ultimate facts alleged, and the rules, regulations and constitutional provisions which entitle the petitioner to relief;
 - (e) A statement summarizing any informal action taken to resolve the issues, and the results of that action;
 - (f) A demand for the relief to which the petitioner deems himself entitled; and
 - (g) Such other information which the petitioner contends is material.

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and
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Cement Plant

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AC 27-61026	AC 27-61041
	AC 27-61042

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

May 19, 1983

I. APPLICANT AND SOURCE LOCATION

A. Applicant

Florida Crushed Stone (FCS) Company
P. O. Box 317
Leesburg, FL 32748

B. Location

The proposed construction, a 600,000 ton-per-year Portland cement plant and cogeneration facility, is located in Hernando County, approximately 3.5 miles northwest of Brooksville, Florida. The plant will be located on 6,400 acres of property owned by Florida Crushed Stone. The UTM coordinates of the plant are 360.0 - 360.1 km East and 3162.1 - 3162.5 km North.

II. PROJECT AND PROCESS DESCRIPTIONS

The proposed cement plant will be designed to produce 1,800 tons of cement clinker per day by the latest dry process technology. The major equipment of the plant includes a kiln, a clinker cooler, a dryer, a raw mill, storage silos, and conveyer systems. For power and heat supply, a 125 MW power plant will be constructed with the cement plant. The cement plant will utilize the heat generated from the steam and flue gas from the power plant for energy saving. Both cement plant and power plant will use the same baghouse for particulate emission control.

The existing site is presently zoned for mining. Associated with the limestone mining operation is a lime production plant. The limestone and clay used in the production of cement will be supplied on site.

It is estimated that 820,000 tons of limestone fines, 82,000 tons of clay and 21,000 tons of ash will be utilized annually in the cement plant. The limestone and clay will be mixed on the blending conveyor and transported to the rotary dryer where the moisture content of the blended material will be reduced to approximately two percent. The dry limestone/clay mixture, referred to as premix, will then be transported to the raw mill storage silos.

The raw materials, premix, high grade limestone and ash, will be discharged from the respective storage silos through metering systems and transferred to the raw mill. The raw mill will grind the raw materials to a product size of 80 percent minus 200 mesh and dry the materials to a moisture content of less than one percent. The heat for drying will be provided by flue gases from the power plant. The dried ground material will be pneumatically transported to the blending silos. The blended

material will then be transported pneumatically to a preheater section of the kiln. In the preheater, kiln gases are used to heat the material before it passes into the kiln. The clinker is formed in the rotary kiln, and cooled in the clinker cooler, then crushed and transported by deep bucket conveyor to the clinker silo. The exit air from the cooler will be used for combustion air in the kiln and the power plant.

The material from the clinker silo will be blended with about five percent gypsum and transported to the finish mill where the material will be ground to finished size. The gypsum used in the production of Portland cement will be received on site by truck and transferred by belt conveyor into a storage silo. From the finish mill, the cement will be cooled and pneumatically transferred to the finished cement silos. From these silos, the cement will be loaded into trucks for transport from the site.

Low sulfur coal will be used as fuel in the kiln. Coal consumption in the cement plant will be 248 tons daily or approximately 75,000 tons annually.

Florida Crushed Stone Company has submitted an application for the power plant portion of the project under Rule 17-17, "Electrical Power Plant Siting." This Technical Evaluation and Preliminary Determination addresses the cement plant portion of the project which consists of 17 individual sources.

III. EMISSIONS AND CONTROLS

As proposed by Florida Crushed Stone Company, all emission sources addressed in the 17 applications listed in Table 1 are controlled by baghouses. The major emission source in the cement plant is the kiln. The exhaust gases from the kiln discharge into the ambient air through the kiln-power plant baghouse and may result in particulate emissions of up to 49.5 pounds per hour (216 tons/yr). The total particulate emissions from the other 16 sources will be about 20 pounds per hour or 87 tons per year. Therefore, the total particulate emissions from the cement plant will be about 70 pounds per hour (302 tons/yr). All the baghouses used in the proposed cement plant are designed to operate with particulate matter concentrations in the exhaust gas streams of 0.012 to 0.015 grains per actual cubic foot (gr/acf).

The transfer of all dry raw materials, intermediate products and final products within the cement plant is either by enclosed conveyor, air slides, screw conveyors or enclosed elevators. All of the enclosed transfer systems are operated under negative pressure with the gases being vented through baghouses before being discharged to the atmosphere. All storage silos are also vented through baghouses. With the coal receiving

and storage system, water sprays will be used as necessary to control fugitive particulate matter emissions.

IV. RULE APPLICABILITY

The proposed project is subject to preconstruction review under the provisions of Chapter 403, Florida Statutes, and Rule 17-2, Florida Administrative Code (FAC), because it constitutes construction of a facility as defined in Rule 17-2.100 (95). Specifically, the project is subject to review under the provisions of Rule 17-2.500, "Prevention of Significant Deterioration (PSD)," because:

- (1) The proposed project is located in an area designated attainment for all criteria pollutants;
- (2) The proposed project will result in a significant net emissions increase of one or more regulated pollutants;
- (3) The proposed project is a new major facility of a category listed in Table 500-1, Major Facility Categories, and not exempted under any provision of Rule 17-2.500(2).

PSD review consists of a determination of best available control technology (BACT) and an air quality impact analysis for each regulated pollutant for which emissions would increase by a significant net amount. At the emission levels proposed by the applicant, the entire cogeneration project would result in a significant emissions increase of four pollutants: particulate matter (PM), sulfur dioxide (SO₂), nitrogen oxides (NO_x), and carbon monoxide (CO).

The project is also subject to Rule 17-2.600(7)(b), emission limiting standards for new Portland cement plants, and to federal New Source Performance Standards (NSPS), 40 CFR 60.60, Subpart F, adopted by reference in Rule 17-2.660.

V. CONTROL TECHNOLOGY REVIEW

Based on an analysis of the economic, environmental, and energy impacts of the proposed project, the Department has made a preliminary BACT determination for the cement plant, a copy of which is appended to this document. The emission limits from the BACT determination are as follows:

Source and Pollutant

Emission Limit

Kiln - PM	0.30 lb/ton of kiln feed
Kiln - SO ₂	0.60 lb/ton of kiln feed
Kiln - NOx	2.9 lb/ton of kiln feed
Kiln - visible emissions	not to exceed 10% opacity
Clinker cooler - PM	0.10 lb/ton of kiln feed
Clinker cooler - visible emis.	not to exceed 10% opacity
Dryer - visible emissions	not to exceed 10% opacity
Raw Mill - visible emissions	not to exceed 10% opacity

BACT for the sources listed in Table 1 (except the cement kiln) is that visible emissions shall not exceed 5 percent opacity.

The maximum kiln feed rate is 123.8 tons per hour. Based on the BACT determination, the maximum PM, SO₂ and NOx emission rates from the kiln and cooler would be:

<u>Pollutant</u>	<u>Maximum Emissions, lb/hr</u>
PM	49.5
SO ₂	74.3
NOx	359.0

VI. AIR QUALITY IMPACT ANALYSIS

As noted in Section IV., the operation of the FCS cogeneration power plant/cement plant will result in significant emissions of PM, SO₂, NOx, and CO. For purposes of the air quality impact analysis, emissions from the entire cogeneration facility, not just the cement plant alone, are considered.

The air quality impact analysis required for PM, SO₂, NOx, and CO includes:

- * An analysis of existing air quality;
- * A PSD increment analysis (for PM and SO₂ only);
- * An Ambient Air Quality Standards (AAQS) analysis;
- * An analysis of impacts on soils, vegetation, and visibility, and growth-related air quality impacts; and
- * A "good engineering practice (GEP)" stack height analysis.

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

TABLE 1

BAGHOUSE INVENTORY

<u>Permit No.</u>	<u>Source Name</u>	<u>Estimated PM Emissions</u>	
		<u>lb/hr</u>	<u>TPY</u>
61016	Cement Kiln	49.5	216.0
61019	Raw Materials Bin	0.8	3.5
61012	Pre Mix Bin	0.6	2.6
61013	Fly Ash Bin	0.6	2.6
61017	Raw Meal Transfer	0.3	1.3
61020	Blending Silo	3.3	14.5
61021	Kiln Feed	0.8	3.5
61030	Clinker Silo	0.6	2.6
61032	Clinker Silo	0.6	2.6
61027	Cooler Discharge	0.8	3.5
61033	Silo Discharges	1.8	7.9
61037	Finish Mill	6.4	28.0
61038	Cement Silo Discharge	0.6	2.6
61040	Cement Silo	0.6	2.6
61041	Cement Silo	0.6	2.6
61042	Cement Silo	0.6	2.6
61026	Coal Handling	0.8	3.5
Total Particulate Emission -		69.3	302.5

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

A. Modeling Methodology

The EPA-approved Industrial Source Complex (ISC) dispersion model was used in the air quality impact analysis. Since FCS is also proposing to construct a power plant with the cement plant, the ISC model was used to predict annual, 24-hour and 3-hour average concentrations resulting from point and fugitive emissions sources at the power plant/cement plant site and all other existing and new sources in the vicinity of the proposed facility.

Receptor points in this model were positioned at 1.0 kilometer and 0.1 and 0.5 kilometer intervals, respectively, for determination of annual and short-term concentrations along the plant boundary.

The surface meteorological data used in the model were National Weather Service data collected at Tampa, Florida, during the period 1973-75, 1978 and 1979. Upper air meteorological data used in the model were collected during the same time period at Tampa, Florida. These data represent five consecutive years of available data.

Stack parameters and emission rates used in evaluating the proposed FCS facility are contained in Table 2. (Stack parameters and emission rates from the power plant and coal handling sources are not included in this table, but were included in the modeling.)

B. Analysis of Existing Air Quality

Four months (from May 25, 1982, through September 26, 1982) of preconstruction ambient air quality data were collected by FCS at the proposed site. The instruments (all EPA-reference or the equivalent) were sited in accordance with the recommendations given in Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA 450/4-80-012) and operated in accordance with the quality assurance procedures of 40 CFR 58, Appendix B. Data recovery rates for all pollutants subject to PSD review exceeded 85 percent. The results of the monitoring program are summarized in Table 3.

C. PSD Increment Analysis

The proposed FCS facility will be located in an area where the Class II PSD increments apply. However, the

TABLE 2

PROPOSED FLORIDA CRUSHED STONE CEMENT PLANT STACK PARAMETERS AND EMISSION RATES

Emissions Unit	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	Emission Rate g/s		
					PM	SO ₂	NO _x
Cement Kiln ¹	94.50	4.88	14.66	389.0	6.27	10.08	52.42
Raw Materials Bin	30.50	.61	12.90	314.0	.10	--	--
PreMix Bins	38.10	.61	9.70	314.0	.08	--	--
Fly Ash Bin	38.10	.61	9.70	314.0	.08	--	--
Raw Meal Transfer	21.30	.30	12.90	355.0	.04	--	--
Blending Silo	73.20	1.10	13.72	355.0	.42	--	--
Kiln Feed	15.20	.61	9.70	366.0	.10	--	--
Clinker Silo	41.20	.46	14.39	366.0	.08	--	--
Clinker Silo	61.00	.46	14.39	366.0	.08	--	--
Cooler Dis- charge	8.80	.61	9.70	366.0	.10	--	--
Silo Discharges	15.20	.76	14.48	314.0	.23	--	--
Finish Mill	21.30	1.50	12.93	372.0	.81	--	--
Cement Silo Discharge	15.20	.46	14.39	344.0	.08	--	--
Cement Silos	61.00	.46	14.39	355.0	.30	--	--

¹ Cement kiln and power plant share a common stack, total proposed emissions from which equal: PM, 21.8 g/s; SO₂, 157.5 g/s; NO_x, 161.2 g/s; and CO, 6.3 g/s.

TABLE 3

SUMMARY OF ONSITE AIR QUALITY DATA FOR FOUR MONTHS BEGINNING
MAY 25, 1982, AND ENDING SEPTEMBER 26, 1982

<u>Pollutant and Time Average</u>	<u>Highest Recorded Concentration</u>	<u>Second-Highest Concentration</u>
SO ₂ (ug/m ³)		
3-hour	16	15
24-hour	4	3
Annual	0	---
PM (ug/m ³)		
24-hour	140	139
Annual	34 ¹	---

¹Geometric mean value based on 37 observations

Chassahowitzka Class I area is within 20 kilometers of the proposed site; therefore, an analysis of Class I impacts was also performed.

There are several sources besides the proposed FCS facility which could affect increment consumption in the area of the proposed site. These are Adams Construction Company, Florida Mining and Materials, and Florida Power Corporation-Crystal River. Modeling results shown in Table 4 predict that the power plant/cement plant facility proposed by FCS, in combination with other increment-affecting sources in the area, will not cause a violation of any Class I or Class II PSD increment. Since separate modeling runs for the cement plant sources alone were not done, the table contains values based on all cement plant and power plant sources. For both SO₂ and PM, the highest, second-highest short-term predicted concentrations are given in the table since five years of meteorological data were used in the modeling.

As shown in the table, the predicted 24-hour SO₂ concentration in the Class I area consumes the highest percent of the PSD Class I increments. The modeling results show the highest, second-highest 24-hour SO₂ impact to be 4.0 micrograms per cubic meter at a point 22.5 kilometers west northwest of the proposed power plant/cement plant kiln stack location in the southeastern corner of Chassahowitzka Class I PSD area. This 24-hour impact consumes about 80% of the available 24-hour Class I SO₂ increment. The predicted 24-hour PM concentration in the Class II area consumes the highest percent of the PSD Class II increments. The modeling results show the 24-hour PM impact to be 28 micrograms per cubic meter at a point 1.1 kilometers east of the proposed project. This impact is mainly due to fugitive emissions from the power plant/cement plant. This 24-hour impact consumes about 76% of the available 24-hour Class II PM increment.

D. AAQS Analysis

Given existing air quality in the area, the proposed FCS facility is not expected to cause or contribute to any violation of AAQS. The results of the AAQS analysis are contained in Table 5. The values contained in this table are based on emissions from all FCS cement and power plant sources.

For both SO₂ and PM, the highest, second-highest short-term predicted concentrations are given in the table since five years of meteorological data were used in the modeling. Based on the monitoring data, FCS has conservatively estimated the short-term PM background value as 112 micrograms per cubic meter and the long-term PM background value as 34 micrograms per cubic meter. The monitoring data show that both the short-term and long-term background SO₂ values can be assumed to be zero because values of zero were measured 97 percent of the time by the SO₂ monitor. For this project, no NO₂ or CO monitoring

TABLE 4

COMPARISON OF NEW SOURCE IMPACTS
WITH PSD INCREMENTS

Pollutant and Time Average	PSD Class I Increment	Predicted Concentration	Percent Increment Consumed	PSD Class II Increment	Predicted Concentration	Percent Increment Consumed
SO ₂ (ug/m ³)						
3-hour	25.0	16.9	68	512	76	15
24-hour	5.0	4.0	80	91	21	23
Annual	2.0	0.6	30	20	6	30
PM (ug/m ³)						
24-hour	10.0	1.8	18	37	28 ¹	76
Annual	5.0	0.4	8	19	2	12

¹ Includes maximum FCS fugitive emissions impact plus maximum impact of all non-fugitive new source emissions

TABLE 5

COMPARISON OF PREDICTED IMPACTS WITH
AMBIENT AIR QUALITY STANDARDS

<u>Pollutant and Time Average</u>	<u>Existing Background</u> ¹	<u>FCS Impact</u>	<u>All Sources</u> ²	<u>Florida AAQS</u>
SO ₂ (ug/m ³)				
3-hour	0	76	413	1300
24-hour	0	15	88	260
Annual	0	1.5	22	60
PM (ug/m ³)				
24-hour	112	27	148	150
Annual	34	1	51	60
NO ₂ (ug/m ³)				
Annual	20	1	--- ³	100
CO (ug/m ³)				
8-hour	0	<1	--- ³	10,000
1-hour	0	<10	--- ³	40,000

1) Existing background as defined by FCS

2) Includes existing background. Maximum FCS impact does not necessarily occur at the same point and time as maximum ambient impact of all sources in the area.

3) Because of insignificant FCS impact, the maximum ambient impact of all sources in the area was not evaluated.

was required by the Department; however, the Department has estimated a background NO₂ value of 20 ug/m³. This value is based upon data gathered elsewhere around the state.

The maximum predicted 24-hour PM impact which includes the background value, the impact of all new and existing sources, and the impact of the proposed FCS sources is 148 micrograms per cubic meter. This impact is predicted to occur 1.2 kilometers east-northeast of the proposed FCS site. Fugitive emissions from the proposed FCS project are the major contributor to this impact (19 micrograms per cubic meter). The maximum predicted annual PM impact is 51 micrograms per cubic meter and is predicted to occur 2.0 kilometers north-northwest of the site. The contribution by FCS sources to this impact is less than 1.0 microgram per cubic meter. The maximum predicted SO₂ impacts are all much less than AAQS as is the maximum predicted annual NO₂ impact. The maximum predicted CO impact was inferred from the SO₂ modeling and is insignificant.

E. Analysis of Impacts on Soils, Vegetation, and Visibility, and Growth-Related Air Quality Impacts.

The maximum ground-level concentrations predicted to occur as a result of emissions from the proposed FCS facility will be below all applicable AAQS including the secondary standards designed to protect public welfare related values. No soils or species of vegetation highly sensitive to these emissions are known to occur onsite, in the site vicinity, or in the Chassahowitzka Class I area.

The Department has performed a level-II visibility analysis for the power plant/cement plant facility which predicts no adverse impact on the visibility in the Class I area.

The proposed facility will employ persons who are already a part of the west-central Florida work force. This project is not expected stimulate additional growth or shift the nature of the projected growth. Therefore, no significant secondary residential commercial or industrial growth which will adversely affect air quality in the area is expected.

F. GEP Stack Height Evaluation

Regulations published by EPA in the Federal Register of February 8, 1982, define GEP stack height as the maximum nearby building height plus 1.5 times the building height or width, whichever is less. The stack height proposed for the power plant/cement kiln and used in the modeling is 310 feet. This stack height is less than the GEP stack height of 375 feet calculated from the FCS plot layout and preliminary building dimensions for the cement plant silo and preheater.

VII. CONCLUSIONS

Based on the foregoing technical evaluation of the applications and additional information submitted by Florida Crushed Stone Company, the Department has made a preliminary determination that the construction can be approved and that compliance with all applicable state and federal air pollution regulations will be achieved provided certain conditions are met. The general and specific conditions are listed in the attached draft state permits.

VIII. LIST OF ATTACHMENTS

1. Application to Construct Air Pollution Sources (DER Form 17-1.122(16)), for each of 17 sources received on September 30, 1982, revised January 13 and February 16, 1983.
2. Application for State and Federal PSD Approval, Volume I, received September 30, 1982.
3. DER's incompleteness letter to FCS, dated October 29, 1982.
4. FCS's additional information, received on November 3 and 8, 1982.
5. DER's request for additional information, dated Feb. 1, 1983.
6. DER's comments on revised applications to FCS, dated February 14, 1983.
7. FCS's responses to DER, received on February 16, 18, and 25, 1983.
8. DER's additional comments to FCS, dated March 10, 1983.
9. DER's additional comments to FCS, dated March 18, 1983.
10. FCS'S response to DER, received on March 21, 1983.
11. FCS's response to DER, received on March 30, 1983.
12. DER's transmittal of U. S. Fish and Wildlife Service comments to FCS, dated March 30, 1983.
13. FCS's additional information, received on April 1 and 15, 1983.
14. DER's BACT determination for cement plant sources.

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II. PROJECT AND PROCESS DESCRIPTIONS

The proposed power plant/cement plant facility will be designed to produce 1,800 tons of cement clinker per day by the latest dry process technology. The major equipment of the plant includes a kiln, a clinker cooler, a dryer, a raw mill, storage silos, and conveyer systems. For power and heat supply, a 125 MW power plant will be constructed with the cement plant. The cement plant will utilize the heat generated from the steam and flue gas from the power plant for energy saving. In addition, the cement plant will consume about 25 MW of the electric power generated, with the excess to be sold to Florida Power Corporation for distribution to the Florida electric power grid. Both cement plant and power plant will use the same baghouse for particulate emission control.

The existing site is presently zoned for mining. Associated with the limestone mining operation is a lime production plant. The limestone and clay used in the production of cement will be supplied on site.

It is estimated that 820,000 tons of limestone fines, 82,000 tons of clay and 21,000 tons of ash will be utilized annually in the cement plant. The limestone and clay will be mixed on the blending conveyor and transported to the rotary dryer where the moisture content of the blended material will be reduced to approximately two percent. The dry limestone/clay mixture, referred to as premix, will then be transported to the raw mill storage silos.

The raw materials, premix, high grade limestone and ash, will be discharged from the respective storage silos through metering systems and transferred to the raw mill. The raw mill will grind the raw materials to a product size of 80 percent minus 200 mesh and dry the materials to a moisture content of

less than one percent. The heat for drying will be provided by flue gases from the power plant. The dried ground material will be pneumatically transported to the blending silos. The blended material will then be transported pneumatically to a preheater section of the kiln. In the preheater, kiln gases are used to heat the material before it passes into the kiln. The clinker is formed in the rotary kiln, and cooled in the clinker cooler, then crushed and transported by deep bucket conveyor to the clinker silo. The exit air from the cooler will be used for combustion air in the kiln and the power plant.

The material from the clinker silo will be blended with about five percent gypsum and transported to the finish mill where the material will be ground to finished size. The gypsum used in the production of Portland cement will be received on site by truck and transferred by belt conveyor into a storage silo. From the finish mill, the cement will be cooled and pneumatically transferred to the finished cement silos. From these silos, the cement will be loaded into trucks for transport from the site.

Low sulfur coal will be used as fuel in the kiln and the power plant. Coal consumption in the cement plant will be 248 tons daily or approximately 75,000 tons annually. Maximum coal consumption in the power plant will be 1200 tons daily or approximately 438,000 tons annually.

III. EMISSIONS AND CONTROLS

With respect to the power plant boiler, Florida Crushed Stone proposes to install a baghouse to limit particulate emissions to 0.1 pounds per million Btu heat input. A sulfur dioxide emission limit of 1.2 pounds per million Btu heat input will be achieved by firing low sulfur content coal (approximately 0.7% S). A nitrogen oxides emission limit of 0.7 pounds per million Btu heat input will be met through the use of low-NOx burners. A covered coal conveyor and baghouse will be used to limit fugitive emissions from the boiler coal bin coal handling system.

As proposed by FCS, all emission sources associated with the cement plant portion of the project will also be controlled by baghouses (see Table 1). The major emission source in the cement plant is the kiln. The exhaust gases from the kiln discharge into the ambient air through the kiln/power plant baghouse and may result in particulate emissions of up to 49.5 pounds per hour (216 tons/yr). The total particulate emissions from the other 16 sources will be about 20 pounds per hour or 87 tons per year. Therefore, the total particulate emissions from the cement plant will be about 70 pounds per hour (302 tons/yr). All the baghouses used in the proposed cement plant are designed to operate with particulate matter concentrations in the exhaust gas streams of 0.012 to 0.015 grains per actual cubic foot (gr/acf).

TABLE 1

BAGHOUSE INVENTORY

Florida Permit No. (AC 27 -)	Source Name	Estimated PM Emissions	
		lb/hr	TPY
61016	Cement Kiln	49.5	216.0
61019	Raw Materials Bin	0.8	3.5
61012	Pre Mix Bin	0.6	2.6
61013	Fly Ash Bin	0.6	2.6
61017	Raw Meal Transfer	0.3	1.3
61020	Blending Silo	3.3	14.5
61021	Kiln Feed	0.8	3.5
61030	Clinker Silo	0.6	2.6
61032	Clinker Silo	0.6	2.6
61027	Cooler Discharge	0.8	3.5
61033	Silo Discharges	1.8	7.9
61037	Finish Mill	6.4	28.0
61038	Cement Silo Discharge	0.6	2.6
61040	Cement Silo	0.6	2.6
61041	Cement Silo	0.6	2.6
61042	Cement Silo	0.6	2.6
61026	Coal Handling	0.8	3.5
Total Particulate Emission -		69.3	302.5

The transfer of all dry raw materials, intermediate products and final products within the cement plant is either by enclosed conveyor, air slides, screw conveyors or enclosed elevators. All of the enclosed transfer systems are operated under negative pressure with the gases being vented through baghouses before being discharged to the atmosphere. All storage silos are also vented through baghouses. With the coal receiving and storage system, water sprays will be used as necessary to control fugitive particulate matter emissions.

IV. RULE APPLICABILITY

The maximum emissions for the proposed project and significant emission rates (40 CFR 52.21(b)(23)), in tons per year, are as follows:

<u>Pollutant</u>	<u>Maximum Emissions</u>	<u>Significant Emission Rate</u>
Particulate Matter (PM)	595	25
Sulfur Dioxide (SO ₂)	5475	40
Nitrogen Oxides (NO _x)	4598	40
Carbon Monoxide (CO)	197	100
Hydrocarbons (HC)	59*	40 (VOC)

* non-methane HC emissions (VOC) will be less than 40 tons per year

The proposed project is subject to preconstruction review under the provisions of 40 CFR 52.21, "Prevention of Significant Deterioration (PSD)," because:

- (1) The proposed project is located in an area designated attainment for all criteria pollutants;
- (2) The proposed project will result in a significant net emissions increase of one or more regulated pollutants;
- (3) The proposed project is a new major stationary source (40 CFR 52.21(b)(1)(i)) and not exempted from PSD review under any provision of 40 CFR 52.21(i).

PSD review consists of a determination of best available control technology (BACT) and an air quality impact analysis for each regulated pollutant for which emissions would increase by a significant net amount. At the emission levels proposed by the applicant, the project would result in a significant emissions increase of four pollutants: particulate matter (PM), sulfur dioxide (SO₂), nitrogen oxides (NO_x), and carbon monoxide (CO).

The proposed boiler is not subject to federal new source performance standards (NSPS) as a new boiler, because it was constructed in another state prior to the August 17, 1971, and September 18, 1978, applicability dates for 40 CFR 60.40, Subparts D and Da, respectively.

The proposed boiler is also not subject to NSPS as a modification or as reconstruction. Though fired with oil prior to its removal from service in 1977, the boiler was originally designed to accommodate the firing of coal as an alternate fuel. Therefore, the conversion from oil to coal firing is not a modification as set forth in 40 CFR 60.14(e)(4). Also, a change in ownership or relocation does not constitute a modification (40 CFR 60.4(e)(b)). The unit will require the replacement of several components which will be purchased new. However, the cost of the replacement components is not sufficient to trigger the reconstruction provisions of 40 CFR 60.15.

The cement plant portion of the proposed project is subject to the NSPS for new Portland cement plants, 40 CFR 60.60, Subpart F. The BACT determination for this portion of the project must be at least as stringent as the NSPS.

V. CONTROL TECHNOLOGY REVIEW

Based on an analysis of the economic, environmental, and energy impacts of the proposed project, the Department has made preliminary BACT determinations for the power plant (PSD-FL-090) and cement plant (PSD-FL-091) portions of the project, the details of which are as follows:

A. Power Plant (PSD-FL-090)

The emission limits from the BACT determination for the power plant portion of the project are as follows:

<u>Pollutant (Power Plant Boiler)</u>	<u>Emission Limit</u>
Particulate Matter	0.10 pounds per million Btu heat input, averaging time per 40 CFR 60.46.
Sulfur Dioxide	1.2 pounds per million Btu heat input, maximum daily average, and 1,200 pounds per hour, maximum 3-hour average, when the boiler is operated alone; 1250 pounds per hour, maximum 3-hour average, when the boiler and cement plant are operated together.

Nitrogen Oxides	0.7 pounds per million Btu heat input, averaging time per 40 CFR 60.46.
Visible Emissions (Power Plant Boiler)	Not greater than 20 percent opacity, six-minute average, except for one six-minute period per hour of not more than 27 percent opacity
Visible Emissions (Fugitive Emissions)	Not greater than 10 percent opacity, six-minute average

Power Plant BACT Determination Rationale

Florida Crushed Stone proposes to use a baghouse to control particulate matter emissions from the combined power plant/cement kiln exhaust gas stream. Fabric filters have the advantage of being able to operate independently of the gas flow rate and should be able to operate effectively over the wide range of gas flows expected in the Florida Crushed Stone system. Other advantages include a high efficiency for removing particles with a high resistivity, the collection of particulate matter in a dry form, and a relatively low operational cost (low pressure drop).

Disadvantages of the fabric filters include a relatively high capital cost and a relatively high maintenance cost due to bag replacement.

Florida Crushed Stone proposes the use of low sulfur coal, 0.75 percent, for SO₂ emission control. The use of low sulfur coal is proposed since it is the most cost-effective means of achieving the emission limitation. Low-NO_x burners are proposed by Florida Crushed Stone for NO_x emissions control.

Hydrocarbon and carbon monoxide emissions from the proposed power plant will result from the incomplete combustion of the fuel. These emissions will be minimized by balancing boiler operating parameters to achieve an optimum balance between complete combustion and excessive nitrogen oxides emissions.

Additional BACT Considerations

The proposed site is in an area dedicated to long-term mining of limestone and manufacturing of cement, but it is only about 20 kilometers south-southeast of the Chassahowitzka National Wilderness Area, a Class I PSD area. Air quality modeling predicts the SO₂ impact to approach the 24-hour PSD increment of 5 ug/m³. Some SO₂ removal from the boiler flue gases is expected due to the alkalinity of the dust removed from the cement plant gas stream. However, the boiler may operate when the cement plant is down, and in that mode the amount of SO₂ removed would be negligible.

To minimize the impact of SO₂ emissions on long-term regional development, the Department has determined that the power plant, operating independently, shall not be allowed to emit SO₂ in excess of 1200 pounds per hour (the equivalent of 100 MW output, or the excess generating capacity of the facility). In addition, the Department has determined that the power plant and cement plant, operating together, shall not be allowed to emit SO₂ in excess of 1250 pounds per hour (the equivalent of a 30% overall in-process SO₂ removal efficiency). To verify these limits, the Department has determined that BACT will include the installation of a continuous SO₂ monitor. The analyzer data will produce a record of SO₂ emissions during the various operating modes. These data would not be obtainable with periodic manual stack tests.

B. Cement Plant (PSD-FL-091)

The emission limits from the cement plant portion of the project are as follows:

<u>Source and Pollutant</u>	<u>Emission Limit</u>
Kiln - PM	0.30 lb/ton of kiln feed
Kiln - SO ₂	0.60 lb/ton of kiln feed
Kiln - NOx	2.9 lb/ton of kiln feed
Kiln - visible emissions	not to exceed 10% opacity
Clinker cooler - PM	0.10 lb/ton of kiln feed
Clinker cooler - visible emis.	not to exceed 10% opacity
Dryer - visible emissions	not to exceed 10% opacity
Raw Mill - visible emissions	not to exceed 10% opacity

BACT for the sources listed in Table 1 (except the cement kiln) is that visible emissions shall not exceed 5 percent opacity.

The maximum kiln feed rate is 123.8 tons per hour. Based on the BACT determination, the maximum PM, SO₂ and NOx emission rates from the kiln and cooler would be:

<u>Pollutant</u>	<u>Maximum Emissions, lb/hr</u>
PM	49.5
SO ₂	74.3
NOx	359.0

Cement Plant BACT Determination Rationale

The NSPS visible emission limitation for the clinker cooler, dryer and raw mill exhaust gases is less than 10 percent opacity, and the cement kiln exhaust gases must not exceed 20 percent opacity. Exhaust gases from all four sources pass through a common baghouse and only one VE limitation would be practical. The visible emissions BACT for these four sources and the baghouse was determined to be the 10 percent.

BACT for particulate emissions was determined to be equivalent to NSPS for Portland Cement Plants, 40 CFR 60.60, Subpart F.

BACT for SO₂ emissions from the cement kiln was determined to be equal to 25 percent of the rate calculated from the emission factor in AP-42, Table 1.1-2. The 75 percent reduction in SO₂ emissions is due to the alkaline nature and affinity for SO₂ of the material being processed.

BACT for the sources listed in Table 1, other than the cement kiln, is that the exhaust gases must not exhibit greater than 5 percent opacity. The department feels the 5 percent opacity determined as BACT, which is more stringent than the NSPS standard, is attainable with a baghouse.

BACT for NO_x emissions from the cement kiln was determined to be equal to 360 pounds per hour. This rate was obtained from the EPA-BACT clearinghouse report.

VI. AIR QUALITY IMPACT ANALYSIS

As noted in Section IV., the operation of the Florida Crushed Stone cogeneration power plant/cement plant will result in significant emissions of PM, SO₂, NO_x, and CO. The air quality impact analysis required for these pollutants includes:

- * An analysis of existing air quality;
- * A PSD increment analysis (for PM and SO₂ only);
- * An Ambient Air Quality Standards (AAQS) analysis;
- * An analysis of impacts on soils, vegetation, and visibility, and growth-related air quality impacts; and
- * A "good engineering practice (GEP)" stack height analysis.

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

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

A. Modeling Methodology

The EPA-approved Industrial Source Complex (ISC) dispersion model was used in the air quality impact analysis. Since FCS is also proposing to construct a power plant with the cement plant, the ISC model was used to predict annual, 24-hour and 3-hour average concentrations resulting from point and fugitive emissions sources at the power plant/cement plant site and all other existing and new sources in the vicinity of the proposed facility.

Receptor points in this model were positioned at 1.0 kilometer and 0.1 and 0.5 kilometer intervals, respectively, for determination of annual and short-term concentrations along the plant boundary.

The surface meteorological data used in the model were National Weather Service data collected at Tampa, Florida, during the period 1973-75, 1978 and 1979. Upper air meteorological data used in the model were collected during the same time period at Tampa, Florida. These data represent five consecutive years of available data.

Stack parameters and emission rates used in evaluating the proposed FCS facility are contained in Tables 2 and 3.

B. Analysis of Existing Air Quality

Four months (from May 25, 1982, through September 26, 1982) of preconstruction ambient air quality data were collected by FCS at the proposed site. The instruments (all EPA-reference or the equivalent) were sited in accordance with the recommendations given in Ambient Monitoring Guidelines for Prevention of Significant Deterioration (EPA 450/4-80-012) and operated in accordance with the quality assurance procedures of 40 CFR 58, Appendix B. Data recovery rates for all pollutants subject to PSD review exceeded 85 percent. The results of the monitoring program are summarized in Table 4.

C. PSD Increment Analysis

The proposed FCS facility will be located in an area where the Class II PSD increments apply. However, the Chassahowitzka Class I area is within 20 kilometers of the proposed site; therefore, an analysis of Class I impacts was also performed.

There are several sources besides the proposed FCS facility which could affect increment consumption in the area of the proposed site. These are Adams Construction Company, Florida Mining and Materials, and Florida Power Corporation-Crystal River. Modeling results shown in Table 5 predict that the power plant/cement plant facility proposed by FCS, in combination with other increment-affecting sources in the area, will not cause a

TABLE 2

PROPOSED FLORIDA CRUSHED STONE CEMENT PLANT STACK PARAMETERS AND EMISSION RATES

Emissions Unit	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	PM	Emission Rate g/s	
						SO ₂	NO _x
Cement Kiln ¹	94.50	4.88	14.66	389.0	6.27	10.08	52.42
Raw Materials Bin	30.50	.61	12.90	314.0	.10	--	--
PreMix Bins	38.10	.61	9.70	314.0	.08	--	--
Fly Ash Bin	38.10	.61	9.70	314.0	.08	--	--
Raw Meal							
Transfer	21.30	.30	12.90	355.0	.04	--	--
Blending Silo	73.20	1.10	13.72	355.0	.42	--	--
Kiln Feed	15.20	.61	9.70	366.0	.10	--	--
Clinker Silo	41.20	.46	14.39	366.0	.08	--	--
Clinker Silo	61.00	.46	14.39	366.0	.08	--	--
Cooler Dis-charge	8.80	.61	9.70	366.0	.10	--	--
Silo Discharges	15.20	.76	14.48	314.0	.23	--	--
Finish Mill	21.30	1.50	12.93	372.0	.81	--	--
Cement Silo							
Discharge	15.20	.46	14.39	344.0	.08	--	--
Cement Silos	61.00	.46	14.39	355.0	.30	--	--

1 Cement kiln and power plant share a common stack, total proposed emissions from which equal: PM, 21.8 g/s; SO₂, 157.5 g/s; NO_x, 161.2 g/s; and CO, 6.3 g/s.

TABLE 3

PROPOSED FCS POWER/CEMENT PLANT KILN AND FUGITIVE EMISSIONS SOURCE PARAMETERS AND EMISSION RATES

Emissions Unit	Stack Height (m)	Stack Diameter (m)	Exit Velocity (m/s)	Exit Temperature (K)	Emission Rate (g/s)			
					PM	SO ₂	NO _x	CO
Power Plant/ Cement Plant Kiln	94.50	4.88	14.66	389.00	21.8	157.5	161.2	6.3
Unloading Coal From Railroad Cars	15.00	1.00	1.00	314.00	2.0	---	---	---
Loadout From Storage Pile	15.00	1.00	1.00	314.00	.05	---	---	---
Transfer From Loadout To Coal Storage Bin	15.00	1.00	1.00	314.00	.15	---	---	---
<u>Area Source</u>	<u>Release Height(m)</u>	<u>Area Width(m)</u>		<u>PM Emission Rate (g/s/m²)</u>				
Loading/Pushing Coal From Rail Car Onto Coal Pile	10.0	80.0		0.000080				
Vehicular Traffic Around Coal Pile	10.0	80.0		0.000028				
Wind Erosion	10.0	80.0		0.000002				

TABLE 4

SUMMARY OF ONSITE AIR QUALITY DATA FOR FOUR MONTHS BEGINNING
MAY 25, 1982, AND ENDING SEPTEMBER 26, 1982

<u>Pollutant and Time Average</u>	<u>Highest Recorded Concentration</u>	<u>Second-Highest Concentration</u>
SO ₂ (ug/m ³)		
3-hour	16	15
24-hour	4	3
Annual	0	---
PM (ug/m ³)		
24-hour	140	139
Annual	34 ¹	---

¹Geometric mean value based on 37 observations

violation of any Class I or Class II PSD increment. Since separate modeling runs for the cement plant sources alone were not done, the table contains values based on all cement plant and power plant sources. For both SO₂ and PM, the highest, second-highest short-term predicted concentrations are given in the table since five years of meteorological data were used in the modeling.

As shown in the table, the predicted 24-hour SO₂ concentration in the Class I area consumes the highest percent of the PSD Class I increments. The modeling results show the highest, second-highest 24-hour SO₂ impact to be 4.0 micrograms per cubic meter at a point 22.5 kilometers west northwest of the proposed power plant/cement plant kiln stack location in the southeastern corner of Chassahowitzka Class I PSD area. This 24-hour impact consumes about 80% of the available 24-hour Class I SO₂ increment. The predicted 24-hour PM concentration in the Class II area consumes the highest percent of the PSD Class II increments. The modeling results show the 24-hour PM impact to be 28 micrograms per cubic meter at a point 1.1 kilometers east of the proposed project. This impact is mainly due to fugitive emissions from the power plant/cement plant. This 24-hour impact consumes about 76% of the available 24-hour Class II PM increment.

D. AAQS Analysis

Given existing air quality in the area, the proposed FCS facility is not expected to cause or contribute to any violation of state or federal AAQS. The results of the AAQS analysis are contained in Table 6. The values contained in this table are based on emissions from all FCS cement and power plant sources.

For both SO₂ and PM, the highest, second-highest short-term predicted concentrations are given in the table since five years of meteorological data were used in the modeling. Based on the monitoring data, FCS has conservatively estimated the short-term PM background value as 112 micrograms per cubic meter and the long-term PM background value as 34 micrograms per cubic meter. The monitoring data show that both the short-term and long-term background SO₂ values can be assumed to be zero because values of zero were measured 97 percent of the time by the SO₂ monitor. For this project, no NO₂ or CO monitoring was required by the Department; however, the Department has estimated a background NO₂ value of 20 ug/m³. This value is based upon data gathered elsewhere around the state.

The maximum predicted 24-hour PM impact which includes the background value, the impact of all new and existing sources, and the impact of the proposed FCS sources is 148 micrograms per cubic meter. This impact is predicted to occur 1.2 kilometers east-northeast of the proposed FCS site. Fugitive emissions from the proposed FCS project are the major contributor to this impact

TABLE 5

COMPARISON OF NEW SOURCE IMPACTS
WITH PSD INCREMENTS

Pollutant and Time Average	PSD Class I Increment	Predicted Concentration	Percent Increment Consumed	PSD Class II Increment	Predicted Concentration	Percent Increment Consumed
SO ₂ (ug/m ³)						
3-hour	25.0	16.9	68	512	76	15
24-hour	5.0	4.0	80	91	21	23
Annual	2.0	0.6	30	20	6	30
PM (ug/m ³)						
24-hour	10.0	1.8	18	37	28 ¹	76
Annual	5.0	0.4	8	19	2	12

¹ Includes maximum FCS fugitive emissions impact plus maximum impact of all non-fugitive new source emissions

TABLE 6
COMPARISON OF PREDICTED IMPACTS WITH
AMBIENT AIR QUALITY STANDARDS

<u>Pollutant and Time Average</u>	<u>Existing Background</u> ¹	<u>FCS Impact</u>	<u>All Sources</u> ²	<u>Florida AAQS</u>
SO ₂ (ug/m ³)				
3-hour	0	76	413	1300
24-hour	0	15	88	260
Annual	0	1.5	22	60
PM (ug/m ³)				
24-hour	112	27	148	150
Annual	34	1	51	60
NO ₂ (ug/m ³)				
Annual	20	1	--- ³	100
CO (ug/m ³)				
8-hour	0	<1	--- ³	10,000
1-hour	0	<10	--- ³	40,000

- 1) Existing background as defined by FCS
- 2) Includes existing background. Maximum FCS impact does not necessarily occur at the same point and time as maximum ambient impact of all sources in the area.
- 3) Because of insignificant FCS impact, the maximum ambient impact of all sources in the area was not evaluated.

(19 micrograms per cubic meter). The maximum predicted annual PM impact is 51 micrograms per cubic meter and is predicted to occur 2.0 kilometers north-northwest of the site. The contribution by FCS sources to this impact is less than 1.0 microgram per cubic meter. The maximum predicted SO₂ impacts are all much less than AAQS as is the maximum predicted annual NO₂ impact. The maximum predicted CO impact was inferred from the SO₂ modeling and is insignificant.

E. Analysis of Impacts on Soils, Vegetation, and Visibility, and Growth-Related Air Quality Impacts.

The maximum ground-level concentrations predicted to occur as a result of emissions from the proposed FCS facility will be below all applicable AAQS including the secondary standards designed to protect public welfare related values. No soils or species of vegetation highly sensitive to these emissions are known to occur onsite, in the site vicinity, or in the Chassahowitzka Class I area.

The Department has performed a level-II visibility analysis for the power plant/cement plant facility which predicts no adverse impact on the visibility in the Class I area.

The proposed facility will employ persons who are already a part of the west-central Florida work force. This project is not expected stimulate additional growth or shift the nature of the projected growth. Therefore, no significant secondary residential commercial or industrial growth which will adversely affect air quality in the area is expected.

F. GEP Stack Height Evaluation

Regulations published by EPA in the Federal Register of February 8, 1982, define GEP stack height as the maximum nearby building height plus 1.5 times the building height or width, whichever is less. The stack height proposed for the power plant/cement kiln and used in the modeling is 310 feet. This stack height is less than the GEP stack height of 375 feet calculated from the FCS plot layout and preliminary building dimensions for the cement plant silo and preheater.

VII. CONCLUSIONS

Based on the foregoing technical evaluation of the applications and additional information submitted by Florida Crushed Stone Company, the Department has made a preliminary determination that the construction can be approved and that compliance with all applicable state and federal air pollution regulations will be achieved provided certain conditions are met. The general and specific conditions are listed in the attached draft conditions of approval.

VIII. LIST OF ATTACHMENTS

1. Application to Construct Air Pollution Sources (DER Form 17-1.122(16)), for each of 17 sources received on September 30, 1982, revised January 13 and February 16, 1983.
2. Application for State and Federal PSD Approval, Volume I, received September 30, 1982.
3. DER's incompleteness letter to FCS, dated October 29, 1982.
4. FCS's additional information, received on November 3 and 8, 1982.
5. DER's request for additional information, dated Feb. 1, 1983.
6. DER's comments on revised applications to FCS, dated February 14, 1983.
7. FCS's responses to DER, received on February 16, 18, and 25, 1983.
8. DER's additional comments to FCS, dated March 10, 1983.
9. DER's additional comments to FCS, dated March 18, 1983.
10. FCS'S response to DER, received on March 21, 1983.
11. FCS's response to DER, received on March 30, 1983.
12. DER's transmittal of U. S. Fish and Wildlife Service comments to FCS, dated March 30, 1983.
13. FCS's additional information, received on April 1 and 15, 1983.
14. DER's BACT determination for cement plant sources.

GENERAL CONDITIONS

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

(d) steps taken by the permittee to reduce and eliminate the noncomplying emission,

and

(e) steps taken by the permittee to prevent recurrence of the noncomplying emission.

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

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

(d) to sample at reasonable times any emission of pollutants;

and

(e) to perform at reasonable times an operation and maintenance inspection of the permitted source.

9. All correspondence required to be submitted to this permit to the permitting agency shall be mailed to:

Mr. James T. Wilburn
Chief, Air Management Branch
Air & Waste Management Division
U.S. EPA, Region IV
345 Courtland Street, NE
Atlanta, GA 30365

10. The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

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

Conditions of Approval

PSD-FL-090

The construction and operation of the Florida Crushed Stone Company (FCS) steam electric power plant shall be in accordance with the attached general conditions and all applicable provisions of 40 CFR 52.21. In addition to the foregoing, the permittee shall comply with the following specific conditions of approval:

A. Emission Limitations

1. Stack emissions from the power plant boiler only shall not exceed the following site specific limitations when burning coal:

- a. SO₂ - 1.2 lb. per million Btu heat input, maximum daily average, and 1,200 lb. per hour, maximum three-hour average.
- b. NO_x - 0.7 lb. per million Btu heat input, averaging time per 40 CFR 60.46.
- c. Particulates - 0.1 lb. per million Btu heat input, averaging time per 40 CFR 60.46.
- d. Visible emissions - 20% opacity, 6-minute average, except for one 6-minute period per hour of not more than 27% opacity.

2. Stack emissions from the combined cement plant and power plant boiler shall not exceed the following site specific limits:

- a. SO₂ - 1.2 lb. per million Btu heat input, maximum daily average, and 1,250 lb. per hour, maximum three-hour average.
- b. NO_x - 0.7 lb. per million Btu heat input plus 2.9 lb. per ton of kiln feed (dry basis), averaging time per 40 CFR 60.46.

- c. Particulates - 0.1 lb. per million Btu heat input plus 0.3 lb. per ton of kiln feed (dry basis), averaging time per 40 CFR 60.46.
- d. Visible emissions - 10 percent opacity, 6-minute average, except for one 6-minute period per hour of not more than 27% opacity.

3. When the power plant boiler is operating alone and the cement plant is not in operation, the maximum heat input rate of the boiler shall not exceed the site specific limit of 1,000 million Btu per hour, maximum three-hour average.

4. Particulate emissions from the coal and fly ash handling facilities.

- a. All conveyors and conveyor transfer points will be enclosed to preclude particulate emissions (except those directly associated with the coal stacker/reclaimer or emergency stockout stacker/reclaimer or emergency stockout).
- b. Inactive coal storage piles will be shaped, compacted and oriented to minimize wind erosion.
- c. Water sprays or chemical wetting agents and stabilizers will be applied to storage piles, handling equipment, etc. during dry periods and as necessary to all facilities to maintain an opacity of less than or equal to 5 percent, except when adding, moving or removing coal from the coal pile, during which the opacity shall be no more than 20%.
- d. The fly ash handling system (including transfer and silo storage) will be totally enclosed and vented (including pneumatic system exhaust) through fabric filters; and
- e. The permittee must submit to the Florida Department of Environmental Regulation within thirty (30) days after it becomes available a copy of the technical data pertaining to the selected particulate emissions control for the

coal and fly ash handling facilities. These data should include, but not be limited to, guaranteed efficiency and emission rates, and major design parameters such as air/cloth ratio and flow rate. The Department may, upon review of these data, disapprove the use of any such device if it determines the selected control device to be inadequate to meet the emission limits specified in Condition A.5. below. Such disapproval shall be issued within 30 days of receipt of the technical data.

5. Particulate emissions from bag filter exhausts from the coal and fly ash handling systems (excluding those facilities covered by Condition A.4.c. above) shall be limited to 0.02 gr/acf. A visible emission reading of 5% opacity or less may be used to establish compliance with this emission limit. A visible emission reading greater than 5% opacity will not create a presumption that the 0.02 gr/acf emission limit is being violated. However, a visible emission reading greater than 5% opacity will require the permittee to perform a stack test, as set forth in Condition C.

6. Compliance with opacity limits of the facilities listed in Condition A.5. will be determined by EPA reference method 9 (Appendix A, 40 CFR 60).

7. Construction shall reasonably conform to the plans and schedule given in the application.

8. The permittee shall report any delays in construction and completion of the project which would delay commercial operation by more than 90 days to the Department's Southwest District Office in Tampa.

9. 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.

10. Any fuel oil to be fired in the unit shall be "new oil", which means an oil which has been refined from crude oil

and has not been used. The quality of the fuel oil used by the boiler shall not cause the allowable emission limits listed in the table below to be exceeded. Such emissions may be calculated in accordance with AP-42, third edition.

Allowable Emission Limits

<u>Pollutant</u>	<u>lb/MMBtu</u>
PM	0.015
SO ₂	0.31
NO _x	0.16
Visible emissions	Maximum 20% Opacity

11. Samples of all fuel oil and coal fired in the boilers shall be taken and an ultimate analysis obtained including the heating value on a moisture free basis. Accordingly, samples shall be taken of each fuel shipment received. Coal sulfur content shall be determined and recorded on a daily basis to demonstrate compliance with the 1.2 lb. per million Btu SO₂ emission limits in Conditions A.1.a. and A.2.a. Records of all the analyses shall be kept for public inspection for a minimum of two years after the data are recorded.

12. The height of the boiler exhaust stack for the plant shall not be less than 310 ft. above grade.

B. Air Monitoring Program

1. A flue gas oxygen meter shall be installed for the unit to continuously monitor a representative sample of the flue gas. The oxygen monitor shall be used with automatic feedback or manual controls to continuously maintain air/fuel ratio parameters at an optimum. Performance tests shall be conducted and operating procedures established. The document "Use of Flue Gas Oxygen Meter as BACT for Combustion Controls" may be used as a guide. The permittee shall install and operate continuous monitoring devices for the boiler exhaust for sulfur dioxide and opacity to demonstrate compliance with the pound-per-hour SO₂ emission limits and visible emission limits, respectively, in Conditions A.1.a. and A.2.a. The monitoring devices shall meet the applicable requirements of 40 CFR 60.45 and 40 CFR 60.13 including certification of each device. The Department shall be provided 30 days notice on each certification.

2. The permittee shall operate two ambient monitoring devices for suspended particulates in accordance with EPA quality assurance procedures and reference methods in 40 CFR 53. The monitoring devices shall be operated at a location approved by the Department. The frequency of operation of the particulate monitors shall be every six days commencing as specified by the Department. In addition, the permittee shall operate a meteorological station, which includes wind measuring equipment, at a location approved by the Department. These data will be reported with the ambient data.

3. The permittee shall maintain a daily log of the amounts and types of fuel used and copies of the ultimate fuel analyses containing the heating value on a moisture free basis. These logs shall be kept for at least two years.

4. The ambient monitoring program shall begin at least one year prior to initial start up of the boiler and shall continue for at least one year of commercial operation. The Department and the permittee shall review the results of the monitoring program annually and determine the necessity for the continuation of or modifications to the monitoring program.

5. Prior to operation of the source, the permittee shall submit to the Department a plan or procedure that will allow the permittee to monitor emission control equipment efficiency and enable the permittee to return malfunctioning equipment to proper operation as expeditiously as possible.

C. Stack Testing

1. Within 60 calendar days after achieving the maximum capacity at which each unit will be operated (but no later than 180 operating days after initial startup) and annually thereafter, the permittee shall conduct (1) performance tests on the main stack for particulates, SO₂, NO_x, and visible emissions during normal operations near (+3%) 1,234 million Btu per hour heat input when the power plant and cement plant are operating in combination, and 1,000 million Btu per hour when the power plant is operating alone and (2) visible emissions tests on all coal and fly ash handling baghouses. The Department shall be furnished a written report of the results of such performance tests within 45 days of completion of the test. The performance

tests will be conducted in accordance with the provisions of 40 CFR 60.46.

2. Performance tests shall be conducted under such conditions as the Department shall specify based on representative performance of the facility. The permittee shall make available to the Department such records as may be necessary to determine the conditions of the performance tests.

3. The permittee shall provide 30 days notice of the performance tests or 10 working days for stack tests in order to afford the Department the opportunity to have an observer present.

4. Stack tests for particulates, NO_x, and SO₂ and visible emissions tests shall be performed annually from the date of the first performance test(s) in accordance with Conditions C.2., 3., and 4. above.

D. Reporting

1. Stack monitoring, fuel usage and fuel analysis data shall be reported to the Department's Southwest District Office and to the Hernando County Health Department on a quarterly basis commencing with the start of commercial operation in accordance with 40 CFR 60.7.

2. Utilizing the SAROAD or other format approved in writing by the Department, ambient air monitoring data shall be reported to the Bureau of Air Quality Management of the Department quarterly. Commencing on the date of certification, such reports shall be due within 45 days following the quarterly reporting period. Reporting and monitoring shall be in conformance with 40 CFR, Parts 53 and 58.

3. Beginning one month after approval, the permittee shall submit to the Department a monthly status report briefly outlining progress made on engineering design and purchase of major pieces of air pollution control equipment. All reports and information required to be submitted under this condition shall be submitted to the Administrator of Power Plant Siting, Department of Environmental Regulation, 2600 Blair Stone Road, Tallahassee, Florida, 32301.

E. Coal Characteristics and Contracts

Before approval can be granted by the Department for use of control devices, characteristics of the coal to be fired must be known. Therefore, before these approvals are granted, the permittee must submit to the Department copies of coal contracts which should include the expected sulfur content, ash content, and heat content of the coal to be fired. These data will be used by the Department in its evaluation of the adequacy of the control devices. Also, the applicant must demonstrate the ability to acquire a low sulfur coal supply of sufficient length to enable the installation of sulfur removal equipment if the supplies of low sulfur coal should not become available or be discontinued. Therefore, the coal contracts must be for a period of at least five (5) years from the date of start-up of the boiler.

F. Coal Information

As an alternative to the submittal of contracts for purchase of coal under Condition E above, the permittee may submit the following information:

1. The name of the coal supplier;
2. The sulfur content, ash content, and heat content of the coal as specified in the purchase contracts;
3. The location of the coal deposits covered by the contract (including mine name and seam);
4. The date by which the first delivery of coal will be made;
5. The duration of the contract; and
6. An opinion of counsel for the permittee that the contracts are legally binding.

Conditions of Approval
PSD-FL-091

The construction and operation of the Florida Crushed Stone Company (FCS) cement plant shall be in accordance with the attached general conditions and all applicable provisions of 40 CFR 52.21. In addition to the foregoing, the permitting shall comply with the following specific conditions of approval:

1. The emission rates from the kiln and cooler shall not exceed the emission limits and maximum allowable emissions listed below:

<u>Pollutant</u>	<u>Emission Limits</u> lb/ton of kiln feed	<u>Maximum Allowable Emissions</u>	
		<u>lb/hr</u>	<u>tons/yr</u>
PM (cooler)	0.1	12.4	54
PM (kiln)	0.3	37.1	162
SO ₂	0.6	74.3	325
NO _x	2.9	359.0	1572

2. Visible emissions from the kiln, cooler, dryer and raw mill shall not be greater than 10 percent opacity demonstrated in accordance with EPA Method 9.

3. Compliance with the particulate emission limits in specific condition No. 1 shall be demonstrated in accordance with the EPA Reference Method 5 in Appendix A, 40 CFR 60, as set forth in subsection 60.64 of the NSPS for Portland Cement Plants, 40 CFR 60.60.

4. Compliance with the SO₂ and NO_x emission limits in specific condition No. 1 shall be demonstrated in accordance with EPA Methods 6 and 7, respectively, in 40 CFR 60, Appendix A.

5. The maximum coal consumption in the kiln shall not exceed 10.3 tons per hour.

6. Instruments shall be installed, calibrated, and maintained to continuously measure the amounts of coal used in the kiln, material fed to the kiln, and clinker produced. The records of fuel usage with the fuel analysis, daily kiln feed and clinker produced shall be reported quarterly to the Florida Department of Environmental Regulation Southwest District office.

7. Emissions of particulate matter from all other baghouse-equipped sources associated with the cement plant shall not exceed the maximum allowable emission limits listed below:

BAGHOUSE INVENTORY

Florida
Permit No.
(AC 27-)

Permit No. (AC 27-)	Source Name	Allowable PM Emissions	
		lb/hr	TPY
61019	Raw Materials Bin	0.8	3.5
61012	Pre Mix Bin	0.6	2.6
61013	Fly Ash Bin	0.6	2.6
61017	Raw Meal Transfer	0.3	1.3
61020	Blending Silo	3.3	14.5
61021	Kiln Feed	0.8	3.5
61030	Clinker Silo	0.6	2.6
61032	Clinker Silo	0.6	2.6
61027	Cooler Discharge	0.8	3.5
61033	Silo Discharges	1.8	7.9
61037	Finish Mill	6.4	28.0
61038	Cement Silo Discharge	0.6	2.6
61040	Cement Silo	0.6	2.6
61041	Cement Silo	0.6	2.6
61042	Cement Silo	0.6	2.6
61026	Coal Handling	0.8	3.5

8. Visible emissions from all sources listed in specific condition 7 shall not be greater than 5 percent opacity demonstrated in accordance with EPA Method 9.

9. Compliance with the particulate emission limits for all sources listed in specific condition No. 7 shall be demonstrated by EPA Method 5 or 17 (Appendix A, 40 CFR 60).

10. Reasonable precautions to prevent fugitive particulate emissions at the site, such as the application of dust suppressants on roads and the construction site, landscaping and planting of vegetation, shall be taken by the permittee.