Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

September 28, 1995

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. John D. Baker, President
Florida Rock Industries, Inc.
155 East 21st Street
Jacksonville, Florida 32206

Dear Mr. Baker:

Re: DEP File PSD-FL-228, AC 01-267311
Florida Rock Industries, Proposed Cement Plant

Enclosed is one copy of the draft permit, Technical Evaluation and Preliminary Determination, proposed BACT determination, to construct a cement plant in Alachua 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 Alachua 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
Arthur Saarinen, HCA
Chris Kirts, NED
Pat Reynolds, NEDB
Jeff Braswell, DEP
Mona Sullivan, Alachua County
John Koogler, K & A
Alachua County Library - Newberry Branch

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

In the Matter of an
Application for Permit by:

DEP File No. AC 01-267311
PSD-FL-228

Florida Rock Industries, Inc.
155 East 21st Street
Jacksonville, Florida 32206

_____/

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 Rock Industries, Inc. applied on March 17, 1995, to the Department of Environmental Protection for a permit to construct a cement plant at the site of its existing quarry, 2.5 miles northeast of Newberry, Alachua 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 9-29-95 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 9-29-95 Date

Copies furnished to:

Jewell Harper, EPA
John Bunyak, NPS
Arthur Saarinen, HCA
Chris Kirts, NED
Pat Reynolds, NEDB
Jeff Braswell, DEP
Mona Sullivan, Alachua County
John Koogler, K & A
Alachua County Library - Newberry Branch

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

AC 01-267311
PSD-FL-228

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to Florida Rock Industries, Inc. (FRI), 155 East 21st Street in Jacksonville, Florida, for a 2,300 ton per day cement plant. The plant will be located at the site of FRI's existing quarry, 2.5 miles northeast of Newberry by County Road 235 in Alachua County, Florida. The project includes a single dry process tire and coal-fired kiln with a preheater/precalciner, clinker cooler, crushers, raw mill, finish mill, material and fuel handling equipment silos, and shipping facilities. Pollution control equipment includes electrostatic precipitators (ESP) for particulate emissions from the kiln and cooler; absorption of sulfur compounds and metals into the product; combustion controls for volatile organic compounds (VOC), carbon monoxide (CO), and nitrogen oxides (NO_x); 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	268
SO_2	109
NOx	916
CO	1289
VOC	43
Lead (Pb)	0.26
Mercury	0.07
Beryllium	0.0006

An air quality impact analysis was conducted. Emissions from the facility will consume PSD increment but will not cause a violation of any state or federal ambient air quality standards. The maximum percent of allowable PSD Class V increment consumed from this project, along with all other sources in the area, will be as follows:

PSD Class II Increments (ug/m3)		Allowable Increment (ug/m^3)	Percent Increment Consumed
SO_2			
Three-hour	148	512	29
24-hour	45	91	49
Annual	7	20	35
PM			
24-hour	10	30	33
Annual	1	17	6
NO_2 Annual	8	25	32

The project has an insignificant impact on the Chassahowitzka and Okeefenokee PSD Class I areas; therefore, no increment consumption was determined.

No RCRA hazardous waste or used oil will be burned. Cement Kiln Dust (CKD) collected in the kiln ESP will be returned to the process. Any CKD not returned to the process will be handled in accordance with Subtitle C rules under development by EPA as well as the solid waste provisions of the air permit and a separate required stormwater permit issued by DEP on behalf of the Suwannee Water Management District.

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
Northeast District Office
7825 Baymeadows Way, Suite B200
Jacksonville, Florida 32256-7577

Department of Environmental Protection
Northeast District Branch Office
5700 Southwest 34th Street, Suite 1204
Gainesville, Florida 32608

Alachua County Environmental Protection Department
226 South Main Street
Gainesville, Florida 32601-6538

Any person may send written comments on the proposed action to Administrator, New Source Review 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.

Technical Evaluation
and
Preliminary Determination

Florida Rock Industries, Inc.
Newberry, Alachua County, Florida

Portland Cement Plant
AC 01-267311
PSD-FL-228
Alachua County

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

September 28, 1995

SYNOPSIS OF APPLICATION

I. APPLICANT NAME AND ADDRESS

Florida Rock Industries, Inc.
155 East 21st Street
Jacksonville, Florida 32201

II. FACILITY INFORMATION

A. FACILITY LOCATION

Florida Rock Industries, Inc. (FRI) plans to construct a 2,300 ton per day (TPD as clinker) cement plant at its existing quarry located off Alachua County Road 235, 2.5 miles northeast of Newberry, Florida. The UTM coordinates of the Florida Rock facility are Zone 17, 346.8 km East and 3287.0 km North. The plant site consists of 46 acres located close to the center of more than 1,300 acres of limestone and overburden reserves.

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

The proposed plant is classified as a major air emitting facility. Since it will generate approximately 267.6 tons per year (TPY) of particulate matter (PM) 227.4 TPY of PM_{10}, 108.6 TPY of sulfur dioxide (SO_2), 5 TPY of sulfuric acid mist (H_2SO_4), 915.6 tons per year of nitrogen oxides (NOx), 1289 tons per year of carbon monoxide (CO), 42.7 TPY of volatile organic compounds (VOC), 0.0006 TPY of beryllium (Be), 0.26 TPY of lead (Pb), and 0.29 TPY of fluorides (F) if operated 8760 hours per year.

III. PROJECT DESCRIPTION

The proposed cement plant will be designed to produce up to 2300 TPD of clinker. The plant will operate continuously, but at a lower average production rate. Thus annual production will be limited to 712,500 TPY of clinker which after addition of gypsum, corresponds to 772,400 TPY of cement. The major equipment will include a kiln with a preheater/precalciner, a clinker cooler, crushers, raw mill, finish mill, silos, conveyors, and particulate control/dust collection and recycling equipment. The cement product will be stored in silos and shipped in bags or in bulk by rail or truck.

IV. PROCESS DESCRIPTION

A. GENERAL INFORMATION

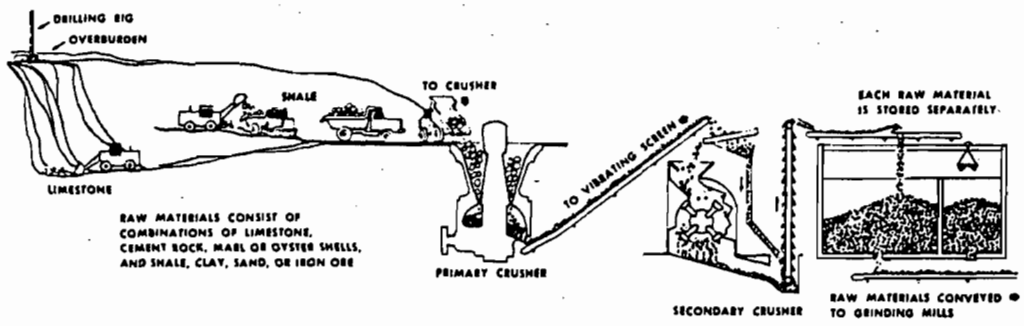
Portland cement is a fine powder, usually gray in color, that consists of a mixture of dicalcium silicate, tricalcium silicate, tricalcium aluminate, and tricalcium aluminoferrite, and miscellaneous minerals to which one or more forms of calcium sulfate have been added. About 95% of the cement production in the U.S. 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 dry preheater, wet, dry, 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.

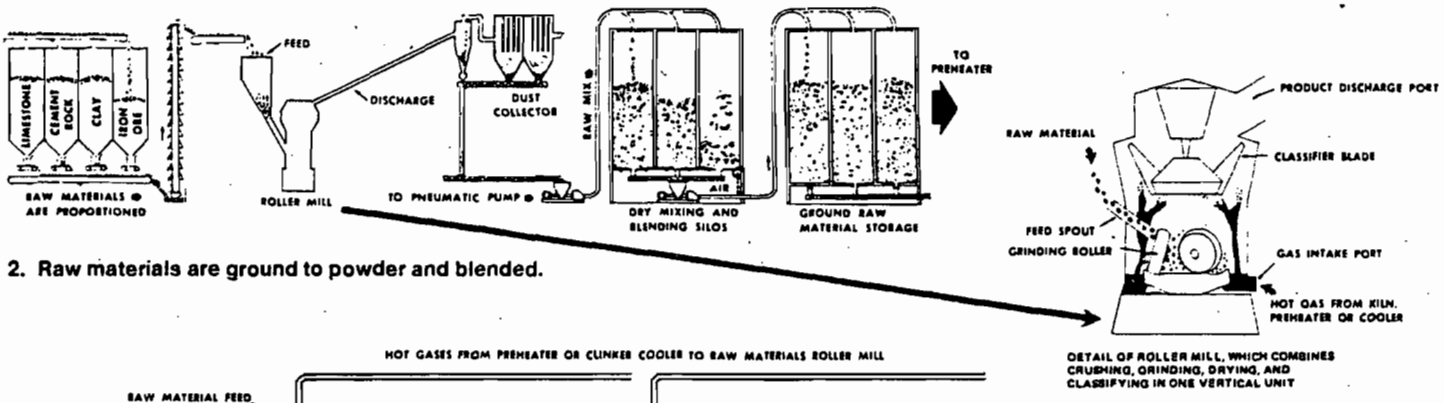
The choice of fuel is based on economics. The most commonly used kiln fuels are coal, natural gas, and oil. Supplementary fuels such as petroleum coke, tires, used oil and various kinds of wastes are burned at many plants. Fuel combustion differs between the wet and dry process and the preheater/precalciner process. In the former two, all fuel combustion occurs in the kiln. In the latter, some fuel combustion occurs in a precalcining loop in the preheater or a calcining vessel before the materials enter the kiln. FRI proposes to use the dry preheater/precalciner process a version of which is depicted in simplified form in Figure 1 (from a Portland Cement Association publication).

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 heart of the Portland cement manufacturing process is the pyroprocessing system which includes the rotary kiln and suspension preheater/precalciner. Several and complex chemical reactions necessary to produce portland cement minerals take place in the rotary kiln.

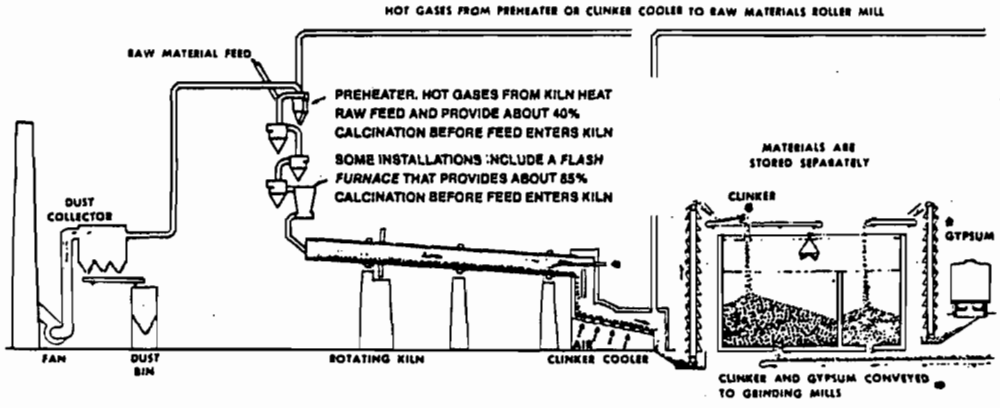
Pyroprocessing may be conveniently divided into five stages, depending on location and temperature of the materials in the system.



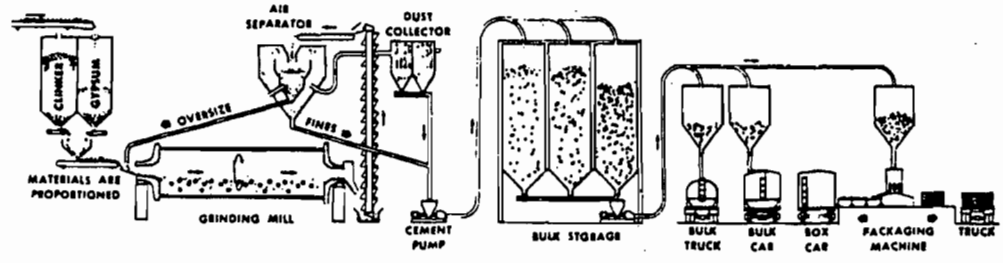
1. Stone is first reduced to 125 mm size, then to 20 mm, and stored.



2. Raw materials are ground to powder and blended.



3. Burning changes raw mix chemically into cement clinker. Note four-stage preheater, flash furnaces, and shorter kiln.



4. Clinker with gypsum is ground into Portland cement and shipped.

Figure 1. New technology in dry-process cement manufacturing

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

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

3. Between 430°C and 900°C (1650°F), calcination occurs in the lower preheater, calcination loop and near the kiln entrance. Carbon dioxide is liberated from the carbonates. A portion of the fuel is burned in this section to effect the greatest degree of calcination.

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 aluminofarites. 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/precalciner and 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. Fuel 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/precalciner.

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. The cooled clinker is mixed with a form of calcium sulfate, usually gypsum, and ground in ball or tube mills in the finish mill department to produce portland cement.

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

B. CEMENT PLANT OPERATION

1. RAW MATERIAL HANDLING

Limestone from the Ocala formation will be mined above the water table with a dozer/ripper and below the water table with a drag line. The overburden, consisting of sand and clay, will be removed

from the limestone surface and stockpiled in the vicinity of the crusher. The crusher will be movable, and will be relocated periodically in accordance with the mining plan. The overburden and the limestone will be fed into the crusher with frontend loaders in the ratios dictated by the target chemical composition of the desired raw mix. Moist fly ash will be added at the crusher as well. The raw materials, hereinafter called "quarry mix", will be delivered to a stacker/reclaimer by a conveyor belt system.

The covered storage hall for the quarry mix will hold two 15,000 ton piles. Stacking will be done with a traversing tripper conveyor from the apex of an A-frame cover. A scraper and rake device will reclaim the mix at the ground level of the stockpiles. The quarry mix will have a moisture content of 8-12%. The reclaimer will have a variable speed drive for a feed rate to the raw mill of 150-230 tph.

At the east end of the storage area will be space for iron ore, sand, coal ash, and limestone. The iron ore, coal ash and sand will be transported to the reclaim system by truck. The limestone will be processed through the crusher and discharged at the end of the tripper conveyor. Each material will be fed by a frontend loader into its designated hopper and proportioned onto the reclaim belt with chain feeders and weigh belts. Iron ore and coal ash will use a common hopper/feeder.

2. RAW MILLING OPERATIONS

From the reclaim belt, the materials will be transported to a belt which feeds a raw mill feed bin of 20 tons capacity. An apron feeder under the bin will control the feed rate to the roller mill rated at 212 short tons per hour (STPH).

The raw mill will be equipped with a high efficiency separator and a reject recirculating bucket elevator. The product will be collected in four (4) cyclones, and conveyed with airslides to an airlift. Draft will be provided by a fan which discharges the gases and fine product to an electrostatic precipitator (ESP). The ESP is kept under slight negative pressure with an induced draft fan discharging into a stack. Heat for raw material drying will be provided by the preheater exhaust gases. The ESP catch (kiln dust) and the raw mill product will be conveyed to the homogenization silo.

3. KILN SYSTEM

The kiln feed from the homogenization silo will be conveyed to the preheater by means of an airlift. The feed will enter the top stage of the preheater or, during wet material conditions, drop into the next lower stage of the preheater to increase the gas temperature to the raw mill.

Coal will be burned in the calciner near the inlet to the kiln as well as at the main burner at the discharge end of the kiln. The estimated coal requirement is 14 tph. Provisions are included for the future addition of a whole tire or tire-derived fuel (TDF) burning system. Combustion air for the calciner will be provided through a tertiary air duct from the clinker cooler.

The pyroprocessing system will transform the raw meal into clinkers, which are gray, glass-hard, spherically shaped nodules which range from 0.125 to 2.0 inches in diameter. The rotary kiln will be sized to produce 2300 STPD (95.83) (STPH) of clinker.

4. CLINKER HANDLING

After discharge from the kiln, the clinker will be quenched in a reciprocating grate cooler with flow control grates. The exhaust gases from the cooler will be cleaned by an ESP operating under negative pressure created by a fan at the outlet of the ESP. The cleaned gases will be exhausted through a stack. A portion of the clinker cooler gases will be ducted to the coal mill to dry the coal. These gases will then exhaust through the coal mill fabric filter. The discharge point of the clinker cooler will be vented by a fabric filter.

The clinker will be conveyed to one of two clinker silos. The silos and conveying system will be vented by a fabric filter. The clinker will be withdrawn from the silos by vibrating feeders, and discharged onto the finish mill feed belt. The transfer points will be vented through two fabric filters.

5. FINISH MILL

Gypsum and limestone will be received by truck and stored under cover in stockpiles. Each material will be transferred by a frontend loader to its designated feed hopper. These materials will be collected on a belt conveyor and transferred to the mill feed conveyor. The gypsum and limestone will be interground with the clinker in the finish mill. The finish mill can produce up to 136 STPH of cement.

The finish mill will be in a closed circuit with a high efficiency separator and four cyclones. The mill will be vented by a fabric filter. A nuisance fabric filter will vent all the conveying equipment. The finished cement will be conveyed to the storage silos.

6. CEMENT HANDLING

Finished cement will be stored in four concrete silos of 7000 tons capacity each, with a 2,000 ton interstitial silo. The four silos will be vented by three fabric filters. Cement withdrawal will

occur through rotary shut-off valves, flow control valves, and airslides to vented retractable loading spouts. There will be a truck scale under each pair of silos, and a railcar scale beside the silos. The silos will have additional outlets to convey cement to the bagging operation. Cement silo unloading rate will be up to 500 TPH. Each loading spout will be equipped with its own fabric filter.

The cement bagging operation will consist of a screen, a surge hopper, a bucket elevator, and an in-line four spout-packer. The bags will be palletized after being air cleaned. A fabric filter will vent all equipment, including the air cleaning device. The pallets will be moved by forklift to storage, from where they will be loaded on trucks or railcars.

7. COAL HANDLING

Coal will be received by rail in open top hopper cars. The coal will drop into a hopper and be belt-conveyed to a bucket elevator at a rate of 200 TPH. The bucket elevator will discharge the coal either into a covered storage facility or onto a belt and then to a bin. Coal in covered storage will be reclaimed by a frontend loader through the railcar unloading system.

The coal will be metered from the bin to a vertical mill. The coal will be dried in the mill with hot air drawn from the clinker cooler. The ground coal will be collected in a product fabric filter, and stored in a ground coal bin. The ground coal bin will be vented through a fabric filter. The coal grinding system will be equipped with explosion panels and a CO_2 fire protection system. The ground coal will be pumped to the main burner and precalciner burner.

C. FUEL CONSUMPTION

The fuels to be used in the combustion sources (raw mill heater and kiln main & calciner burners) at this facility are No. 2 fuel oil (0.05% S, by weight), low sulfur coal(0.75% S) and tires (up to 30% of total heat input). No blending of fuel types is proposed, except for the partial replacement of coal with tires at the calciner burner and the use of No. 2 fuel oil in the main burner to allow for kiln preheating during start-up. The use of No. 2 fuel oil in the main burner is necessary at start up to create favorable conditions for the combustion of coal. There are no plans to burn hazardous wastes, used oil, or any other controversial fuel.

V. <u>RULE APPLICABILITY</u>

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

The cement plant will be a major emitting facility for PM, PM_{10}, SO_2, NOx, and CO. The proposed facility will be located in an area (Alachua 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 proposed facility is also subject to the applicable requirements of the federal New Source Performance Standards (NSPS) including:

- 40 CFR 60 Subpart Y, Standards of Performance for Coal Preparation Plants
- 40 CFR 60 Subpart OOO, Standards of Performance for Non Metallic Mineral Processing Plants
- 40 CFR 60 Subpart F, Standards of Performance for Portland Cement Plants
- 40 CFR 60, Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels).

The proposed facility shall comply with all applicable provisions of Chapter 62-210 through 62-297, Florida Administrative Code (F.A.C.).

VI. SOURCE IMPACT ANALYSIS

A. CONTROL TECHNOLOGY REVIEW

PARTICULATE MATTER

As proposed by the applicant, all particulate emission points listed in Table 1 are controlled by baghouses. The major emission unit in the cement plant is the kiln. The exhaust gases from the kiln and clinker cooler will be controlled by electrostatic precipitators (ESP). All of 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 standard cubic foot (gr/dscf).

The raw materials are processed with an average surface moisture of 8-12%. The quarrying activities and material storage piles will involve moist or wet raw materials with negligible unconfined emissions. Haul roads will be sprayed by a water truck is deemed necessary. Material stockpiles at the plant will be covered to limit particulate matter generated by wind erosion.

According to FRI, this cement plant will not generate cement kiln dust (CKD) as a waste product. This is consistent with the low alkali characteristics of the raw limestone and the greater opportunity for recycle afforded by the dry preheater/precalciner. The process equipment utilized to transport the captured dust from the ESP back into the process is all enclosed and vented to baghouses. No unconfined emissions are expected from dust handling and transport activities.

The dust handling system for the Kiln/Raw Mill ESP is as follows: Dust is gravity-fed to a pneumatic screw pump through a conveying pipe. This operation is enclosed and vented to a baghouse. The dust is then pumped either into the homogenizing silo or into the kiln feed airlift. All of these activities are enclosed and vented to baghouses. There are no dust disposal piles planned for this facility.

If any CKD is not returned to the process, FRI will be required to comply with solid waste (CKD) provisions of the air permit and stormwater permit as well as any Subtitle C regulations promulgated by EPA to address CKD. A covered coal conveyor and baghouse will be used to limit fugitive emissions from the coal bin and coal handling system.

SULFUR DIOXIDE

A sulfur dioxide emission limit of 0.28 pounds/ton of clinker produced will be achieved by firing low sulfur oil (0.05% S by weight) and low sulfur content coal (0.75% S). Sulfur dioxide emissions will be 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 OXIDES

A nitrogen oxides emission limit of 2.5 pounds per ton of clinker produced will be met through process control and secondary combustion of fuel. If this method is insufficient, then FRI 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 3.6 and 0.12 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, volatile organic compounds, carbon monoxide, sulfuric acid mist, fluorides, beryllium, mercury and lead. The permitted emissions for this facility are summarized in Tables A and B. 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 or used oil and that FRI plans to recycle all CKD.

The Department assumes that most if not all CKD will be returned to the process. 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."

Despite FRI's assertions that all CKD will be recycled, and the Department's conclusion that it is technologically feasible, the Department will include solid waste provisions in the air permit and stormwater permit to minimize risk via water contamination related to any malfunctions the CKD handling system. Furthermore FRI 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 and precalciner insure destruction of furans and dioxins. The applicant notes that the possibility of dioxin formation in the ESP will be minimized by the clinker's propensity for chlorine adsorption and by maintaining the inlet temperature of the ESP 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 tires or tire derived fuel (TDF). 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 FRI exhibits very high temperature at both ends of the kiln and in the preheater/precalciner section. This affords more options for introduction of tires and TDF while insuring complete combustion.

The Department has no information that the proposed facility poses an unacceptable health risk. The Department can request that FRI conduct a multi-pathway risk assessment, but this would be expensive, resource intensive and has a low likelihood of producing a different review outcome. Another possibility (also expensive) is for the facility to provide a locally-approved epidemiological health assessment of the surrounding community as a baseline analysis. After every 5 years, a subsequent assessment would be conducted to determine whether body burdens of the contaminants emitted by the facility had risen in the surrounding population. This concept has been tested before and may be incorporated in future permit conditions for RCRA-type facilities.

D. AIR QUALITY ANALYSIS

1. INTRODUCTION

The proposed project is located in an attainment area for all regulated pollutants, but will emit six pollutants at levels in excess of PSD significant amounts as shown in Table C. These pollutants are SO_2, PM/PM_{10}, NO_x, CO, and VOC, along with the non-criteria pollutant beryllium (Be).

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 D shows that SO_2, NO_2, CO, and Be impacts from the project are predicted to be less than the de minimus levels. Therefore, preconstruction ambient air quality monitoring is not required for these pollutants. However, since AAQS analyses are required for SO_2 and NO_2 (the project's impacts alone for these two pollutants is greater than significant, as will be discussed later in this section), previously existing representative monitoring data from SO_2 and NO_2 monitors located in the vicinity of the project are used to establish background concentrations. Background concentrations

for SO_2 and NO_2 are given in Table H. The net emissions increase of VOC is compared to a de minimus monitoring emission rate in tons per year instead of a concentration level. For this project, the net emissions increase of VOC is less than the de minimus emissions rate of 100 tons per year; thus, preconstruction ambient air monitoring for VOC is not required.

Table D also shows that PM_{10} impacts from the project are predicted to be greater than the corresponding de minimus level. Therefore, preconstruction ambient air quality monitoring is required for PM_{10}. However, previously existing representative monitoring data from PM_{10} monitors located in Gainesville are used to fulfill the monitoring requirement for this pollutant and to establish a background concentration for use in the PM_{10} AAQS analysis. The PM_{10} background concentration is given in Table H.

3. MODELING PROCEDURE

The EPA-approved Industrial Source Complex Short-Term (ISCST2) dispersion model was used to evaluate the pollutant emissions from the proposed project and other existing major facilities. The 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 is done to determine the significant impact area (SIA), if any, for each pollutant subject to PSD. For determination of the proposed project's PM_{10} SIA, the receptor grid consisted of 382 receptors with 130 receptors located at the fenced property and 252 receptors located at distances of 1.0, 2.0, 3.0, 4.0, 5.0, 7.5, and 10.0 km from the cement plant along 36 radials with each radial spaced at 10-degree intervals. For determination of the proposed project's SO_2 and NO_2 SIA, the receptor grids consisted of 468 (504 for NO_2) receptors, with 216 discrete receptors located at the fenceline and out to 2.5 km from the cement plant, and 252 (288 for NO_2) polar receptors. The polar receptors were located at distances of 2.5, 3.0, 4.0, 5.0, 6.0, 8.0, and 10.0 km (and 11.0 km for NO_2) from the proposed cement plant.

For the AAQS and PSD Class II analyses, receptor grids normally are based on the size of the significant impact area for each pollutant. SO_2, PM_{10} and NO_2 maximum predicted impacts were greater than significant impact levels as shown in Table E. The radius of significant impact for each pollutant and applicable pollutant averaging time is also shown in Table E. For the PM_{10} 24-hour averaging time, the receptor grid consisted of the same 382 receptors used in the SIA analysis. For the PM_{10} annual averaging time, the same receptors were used, but only out to 4.0 km from the proposed facility. However, for the SO_2 and NO_2 analyses, the same receptor grids used in the SIA analyses were used in the AAQS and PSD Class II analyses, even though the SO2 radius of significant impact was 2.5 km.

The Chassahowitzka National Wilderness Area (CWNA) in Florida and the Okefenokee National Wilderness Area (OWNA) in Georgia are PSD Class I areas that are located just over 100 km from the project site at their closest points. The MESOPUFF II long range transport model was used for assessing the impacts of PM_{10}, SO_2 and NO_x emissions from this project on these Class I areas.

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 Gainesville, Florida (surface data) and Waycross, Georgia (upper air data). The 5-year period of meteorological data was from 1984 through 1988. 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.

Meteorological data used in MESOPUFF II for evaluating impacts on the CWNA consisted of 1986 data from the Gainesville (surface only) and Tampa/Ruskin (surface and upper air) NWS stations. Meteorological data used in this model for evaluating impacts on the OWNA consisted of 1986 data from the Gainesville (surface), Jacksonville (surface), and Waycross, Georgia (upper air) NWS stations.

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 and impacts on the Class I areas, 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 E, the maximum air quality impacts due to PM_{10}, SO_2 and NO_x emissions from the proposed project are greater than the significant impact levels. Therefore, the applicant was required to do full impact analyses for these pollutants for comparison with the AAQS and the PSD Class II increments.

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, summarized in Table F, show that the maximum PM_{10}, SO_2 and NO_2 PSD increment consumption will not exceed the allowable Class II PSD increments.

b. Class I Area

Table G shows the comparison between the maximum predicted PM_{10}, SO_2 and NO_2 impacts at the CWNA and the OWNA due to the proposed project and the National Park Service's significant impact levels (SIL). The maximum impacts are less than the applicable SIL for all three pollutants. Therefore, no further Class I modeling was necessary.

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. The results of the AAQS analysis for PM_{10}, SO_2 and NO_2 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

Visual Impact Screening and Analysis (VISCREEN), the EPA-approved Level I visibility computer model, was used to estimate the impact of the proposed project's stack emissions on visibility in the CWNA and the OWNA. The results indicate that the maximum visibility impacts do not exceed the screening criteria inside or outside these areas. As a result, there is no significant impact on visibility predicted for these Class I areas.

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.

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 76.3 m (250 ft), respectively. This stack will not exceed the GEP stack height and will comply with GEP stack height regulations. However, this stack will be less than GEP; therefore, the potential for building downwash to occur was considered in the modeling analysis for this stack.

F. SOCIOECONOMIC IMPACTS

The Department recognizes that on a localized level there will be impacts upon background noise levels, traffic flows, and particulate matter. Residents in the nearby community of Haile have brought them along with impacts on lifestyles and land values to the attention of the responsible local planning and zoning bodies including the Alachua County Commission.

VII. CONCLUSION

Based on the foregoing technical evaluation of the application and additional information submitted by Florida Rock Industries (FRI), 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.

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Table A
Emission Units Summary of Proposed Emissions

Segment		Stack		SO2		NOX		CO		VOC		PM		PM10	
#	Description	#	Description	PPH	TPY	PPH	TPY	PPH	TPY	PPH	TPY	PPH	TPY	PPH	TPY
Emission Unit 1: Raw Material															
1/1/4	Material unloading	NONE	N/A	0	0	0	0	0	0	0	0	--	0.3	--	0.1
1/2/4	Unpaved roads	NONE	N/A	0	0	0	0	0	0	0	0	--	10.7	--	3.8
1/3/4	Paved roads	NONE	N/A	0	0	0	0	0	0	0	0	--	14.1	--	3.1
1/4/4	VOC storage	NONE	N/A	0	0	0	0	0	0	0	0.4	--	0.0	--	0.0
Subtotal				**0.0**	**0.0**	0.0	0.0	**0.0**	**0.0**	**0.0**	**0.4**	--	**25.1**	--	**7.0**
Emission Unit 2: Raw Mill															
2/1/6	Raw mill	E-21	Kiln/raw mill ESP	0	0	0	0	0	0	0	0	6.52	24.23	5.54	20.59
2/2/6	Recycle to airlift	E-29	Baghouse	0	0	0	0	0	0	0	0	0.05	0.20	0.05	0.20
2/3/6	Raw meal to silo	E-28	Baghouse	0	0	0	0	0	0	0	0	0.82	3.60	0.82	3.60
2/4/6	Raw meal into silo	G-07	Baghouse	0	0	0	0	0	0	0	0	1.01	4.40	1.01	4.40
2/5/6	Raw meal to preheater	H-08	Baghouse	0	0	0	0	0	0	0	0	0.40	1.80	0.40	1.80
2/6/6	Air heater	E-19	Kiln/raw mill ESP	1.99	8.8	5.6	24.90	1.4	6.20	0.06	0.20	0.0006	0.0020	0.0003	0.0010
Subtotal				**1.99**	**8.80**	**5.60**	**24.90**	**1.40**	**6.20**	**0.06**	**0.20**	**8.80**	**34.23**	**7.82**	**30.59**
Emission Unit 3: Kiln System															
3/1/3	Kiln operations	E-21	Kiln/raw mill ESP	51.75	192.4	440.82	1638.8	354.57	1318.1	11.50	42.8	44.96	167.2	38.22	142.1
3/2/3	In-process fuel: coal	E-19	Kiln/raw mill ESP	0	0	0	0	0	0	0	0	0	0	0	0
3/3/3	In-process fuel: tires	E-19	Kiln/raw mill ESP	0	0	0	0	0	0	0	0	0	0	0	0
Subtotal				**51.75**	**192.4**	**440.82**	**1638.8**	**354.57**	**1318.1**	**11.50**	**42.8**	**44.96**	**167.2**	**38.22**	**142.1**
Emission Unit 4: Clinker Handling															
4/1/3	Clinker Cooler	K-15	Clinker cooler ESP	0	0	0	0	0	0	0	0	14.99	55.7	12.74	47.4
4/2/3	Clinker to silos	L-03	Baghouse	0	0	0	0	0	0	0	0	0.18	0.8	0.18	0.8
4/3/3	Clinker into silos	L-06	Baghouse	0	0	0	0	0	0	0	0	0.23	1.0	0.23	1.0
Subtotal				**0**	**0**	0	0	**0**	**0**	**0**	**0**	**15.40**	**57.5**	**13.15**	**49.2**
Emission Unit 5: Finish Grinding															
5/1/4	Finish mill belt	M-07, M-08	Baghouses	0	0	0	0	0	0	0	0	0.53	2.3	0.53	2.3
5/2/4	Fisnish mill	N-12	Baghouse	0	0	0	0	0	0	0	0	1.99	8.7	1.99	8.7
5/3/4	Finish mill air separator	N-09	Baghouse	0	0	0	0	0	0	0	0	0.66	2.9	0.66	2.9
5/4/4	Cement to silos	-14, Q-25,Q-26, Q-2	Baghouses	0	0	0	0	0	0	0	0	3.02	13.2	3.02	13.2
Subtotal				**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6.20**	**27.1**	**6.20**	**27.1**
Emission Unit 6: Cement Handling															
6/1/2	Silo unloading	Q-14, Q-17, Q-21	Baghouses	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.65	2.9	0.65	2.90
6/2/2	Bagging of cement	R-12	Baghouse	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.87	3.8	0.87	3.80
Subtotal				**0.0**	**0.0**	0.0	0.0	0.0	0.0	0.0	**0.0**	**1.52**	**6.7**	**1.52**	**6.70**
Emission Unit 7: Coal Handling															
7/1/2	Coal mill	S-17	Baghouse	0	0	0	0	0	0	0	0	1.25	5.5	1.25	5.5
7/2/2	Coal transfer	S-21	Baghouse	0	0	0	0	0	0	0	0	0.22	1.0	0.22	1.0
Subtotal				**0**	**0**	0	0	0	0	0	0	**1.47**	**6.5**	**1.47**	**6.5**
Total				53.74	201.20	446.42	1663.70	355.97	1324.30	11.56	43.40	78.35	324.33	68.38	269.19

Table B
Summary of Proposed Emissions

Pollutant	LB/HR	TPY	LB/YEAR
Particulate Matter (PM)	**78.35**	**299.23**	
Raw Mill, 212 tph & 1,211,250 tpy processed	6.52	24.23	
Air Heater, 280 gal/hr & 2,485,000 gal/yr of #2 fuel oil	0.0006	0.002	
Kiln, 95.83 tph & 712,500 tpy of clinker	44.96	167.20	
Clinker Cooler, 95.83 tph & 712,500 tpy of clinker	14.99	55.70	
20 baghouses, 0.01 gr/dscf, 8760 hpy	11.89	52.10	
Particulate Matter (PM10)	**68.38**	**262.19**	
Raw Mill, 212 tph & 1,211,250 tpy processed	5.54	20.59	
Air Heater, 280 gal/hr & 2,485,000 gal/yr of #2 fuel oil	0.0030	0.001	
Kiln, 95.83 tph &712,500 tpy of clinker	38.22	142.10	
Clinker Cooler, 95.83, tph & 712,500 tpy of clinker	12.74	47.40	
20 baghouses, 0.01 gr/dscf, 8760 hpy	11.89	52.10	
Sulfur Dioxide (SO2)	**53.74**	**201.2**	
Air Heater, 280 gal/hr & 2,485,000 gal/yr of #2 fuel oil	1.99	8.8	
Kiln, 95.83 tph & 712,500 tpy of clinker	51.75	192.4	
Nitrogen Oxides (NOx)	**446.42**	**1663.7**	
Air Heater, 280 gal/hr & 2,485,000 gal/yr of #2 fuel oil	5.60	24.9	
Kiln, 95.83 tph & 712,500 tpy of clinker	440.82	1638.8	
Volatile Organic Compounds (VOC)	**11.56**	**43.0**	
Air Heater, 280 gal/hr & 2,485,000 gal/yr of #2 fuel oil	0.06	0.2	
Kiln, 95.83 tph & 712,500 tpy of clinker	11.5	42.8	
Carbon Monoxide (CO)	**355.97**	**1324.3**	
Air Heater, 280 gal/hr & 2,485,000 gal/yr of #2 fuel oil	1.40	6.2	
Kiln, 95.83 tph & 712,500 tpy of clinker	354.57	1318.1	
Beryllium (Be)	**0.0002**	**0.0006**	**1.38**
Air Heater, 280 gal/hr & 2,485,000 gal/yr of #2 fuel oil	0.0001	0.0004	0.88
Kiln, 95.83 tph & 712,500 tpy of clinker	0.0001	0.0002	0.50
Lead (Pb)	**0.07**	**0.2614**	**509.12**
Air Heater, 280 gal/hr & 2,485,000 gal/yr of #2 fuel oil	0.0004	0.0014	3.12
Kiln, 95.83 tph & 712,500 tpy of clinker	0.07	0.26	506
Hydrogen Chloride (HCl)	**4.7**	**17.5**	
Air Heater, 280 gal/hr & 2,485,000 gal/yr of #2 fuel oil	4.7	17.5	
Benzene	**0.3**	**1.1**	
Air Heater, 280 gal/hr & 2,485,000 gal/yr of #2 fuel oil	0.3	1.1	
Fluorides	**0.08**	**0.29**	
Mercury	**0.02**	**0.07**	**156**
Sulfuric Acid Mist	**To Be determined by stack test**		

Table C. 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	268	25	Yes
PM_{10}	228	15	Yes
SO_2	109	40	Yes
NO_x	916	40	Yes
CO	1289	100	Yes
VOC	43	40	Yes
Lead	0.26	0.6	No
Beryllium	0.0006	0.0004	Yes
Fluorides	0.29	3	No
H_2SO_4	5	7	No
Mercury	0.07	0.1	No

Table D. 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	7	13
PM_{10}	24-hour	29	10
NO_2	Annual	5	14
CO	8-hour	99	575
VOC	Annual	43.0 TPY[2]	100 TPY
Be	24-hour	0.00004	0.001

1. Highest, high value over a five year period for all averaging times.
2. No significant air quality de minimus concentration level for O_3 has been established. Instead de mininus level is based on net emissions increase of VOC's.

Table E. 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)	Radius of Significant Impact (km)
SO_2	Annual	0.7	1	2.5
	24-hour	7	5	2.5
	3-hour	27	25	2.5
PM_{10}	Annual	4.7	1	4
	24-hour	29.1	5	10
NO_2	Annual	5	1	11
CO	8-hour	99	500	0
	1-hour	142	2000	0

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

Table F. PSD Class II Increment Analysis

Pollutant	Averaging Time	Max. Predicted Impact[1] (ug/m^3)	Allowable Increment (ug/m^3)
PM_{10}	Annual	5	17
	24-hour	28	30
SO_2	Annual	7	20
	24-hour	45	91
	3-hour	148	512
NO_2	Annual	8	25

1. Highest, second-highest value over a five year period for 3-hour and 24-hour averaging times.

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

Pollutant	Averaging Time	Max. Predicted Impact at Class I Area(s)[1] (ug/m^3)	National Park Service (NPS) Significant Impact Level (ug/m^3)
SO_2	Annual	0.002	0.025
	24-hour	0.05	0.07
	3-hour	0.24	0.48
PM_{10}	Annual	0.004	0.08
	24-hour	0.07	0.27
NO_2	Annual	0.019	0.025

1. Highest value for one year (1986) using MESOPUFF II model for all averaging times.

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	5	26	31	50
	24-hour	28	26	54	150
SO_2	Annual	7	8	15	60
	24-hour	45	8	53	260
	3-hour	148	8	156	1300
NO_2	Annual	8	29	37	100

1. Highest, second-highest value over a five year period for 3 hour and 24-hour averaging times.

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	0.08	30	0.05	7.2	0.01	1.2e-01
Beryllium	1.8e-05	0.02	1.0e-05	4.8e-03	2.0e-06	4.2e-04
Biphenyl	1.6e-04	13	9.3e-05	3.1	-	-
Cadmium	2.2e-04	0.5	1.3e-04	0.12	2.5e-05	5.6e-04
Carbon Disulfide	2.9e-03	310	1.7e-03	74	3.4e-04	200
Chromium	2.1e-04	0.5	1.2e-04	0.12	2.4e-05	8.3e-04
Di-n-butylphthalate	1.1e-03	50	6.3e-04	12	1.3e-04	100
Dioxins/Furans	-	-	-	-	4.7e-09	2.2e-08
Ethylbenzene	5.1e-04	4340	2.9e-04	1042	5.8e-05	1000
Fluoride	0.24	25	0.14	6	-	-
Formaldehyde	0.012	12	7.0e-03	2.88	1.4e-03	7.7e-02
Lead	0.02	0.5	0.01	0.12	2.0e-03	9.0e-02
Manganese	2.3e-02	50	1.3e-02	12	2.6e-03	0.4
Mercury	5.9e-03	0.1	3.4e-03	0.24	6.7e-04	0.3
Methyl Bromide	1.1e-03	190	6.6e-04	46	1.3e-04	0.8
Methyl Ethyl Ketone	8.0e-04	5900	4.6e-04	1416	9.2e-05	80
Methylene Chloride	0.013	1740	7.5e-03	418	1.5e-03	2.1
Napthalene	5.9e-03	520	3.4e-03	125	-	-
Phenol	2.9e-03	190	1.7e-03	46	3.4e-04	30
Selenium	4.0e-03	2	2.3e-03	0.48	-	-
Styrene	4.0e-05	2130	2.3e-05	511	-	-
Toluene	5.1e-03	3770	2.9e-03	898	5.8e-04	300
Xylene	3.5e-03	4340	2.0e-03	1042	4.0e-04	80
Zinc	0.14	50	8.2e-03	12	-	-

Note: ARC = Ambient Reference Concentration

Department of Environmental Protection

Lawton Chiles
Governor

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

Virginia B. Wetherell
Secretary

PERMITTEE:
Florida Rock Industries
155 East 21st Street
Jacksonville, FL 32206

Permit Number: AC01-267311
PSD-FL-228
Expiration Date: 12/31/98
County: Alachua
Project: Portland Cement Plant

This permit is issued under the provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4, 210, 212, 272, 275, 296, and 297. The above named permittee is hereby authorized to construct the emission units described in 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 Portland cement manufacturing plant to be located approximately 2.5 miles Northeast of Newborn on Alachua County Road in Alachua County, Florida. The latitude and longitude are 29° 24′ 21" and 82° 35′ 00", respectively.

The emission unit 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 on March 17, 1995.
2. Department's letters dated April 3, April 14, June 16, June 19, July 14, and August 1, 1995.
3. Alachua County Department of Growth Management's letter to John Baker dated March 3, 1995.
4. Koogler & Associates' correspondence dated May 16, June 30, July 17, July 25, August 15, and August 24, 1995.
5. U.S. Department of Interior's letter dated June 9, 1995.
6. U.S. EPA's letter dated June 19, 1995.
7. Haile Association's letters dated March 16, April 10, May 11, and June 5, 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 the subject facility shall comply with all applicable provisions of Chapter 403, F.S., Chapters 62-210 through 62-297, F.A.C., and 40 CFR 60 (1994 version).

2. Unless otherwise indicated, the construction and operation of the subject facility 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; Subpart Y - Standards of Performance for Coal Preparation Plants; Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants, Subpart Kb, Storage Vessels for Petroleum Liquids; all of which are adopted by reference in Rule 62-296.800(2)(a), F.A.C.

3. The kiln clinker production rate shall not exceed 95.8 tons per hour (TPH) and 2300 tons per day (TPD). On an annual basis, the clinker production rate shall not exceed 81.3 TPH, 1,952 TPD, and 712,500 tons per year (TPY). Continuous operation is allowed (8,760 hours per year) as long as the 712,500 TPY limit is not exceeded. [Rule 62-212.200(58), F.A.C.]

4. Fuels fired in the pyroprocessing system (kiln and calciner) shall not exceed a total maximum heat input of 364 MMBtu/hr and shall consist <u>only</u> of coal, whole tires, and unused No. 2 fuel oil which may also be fired in the Raw Mill Air Heater. All fuel usage shall be in compliance with the following limits and conditions: [Rule 62-212.200(58), F.A.C.]

a. The maximum sulfur content of the coal fired in the pyroprocessing system shall not exceed 0.75% sulfur, by weight. The coal usage rate shall not exceed 14.0 TPH. The coal sulfur content shall be determined using ASTM Method D-2234, D-3173, D-3176, D-3177 or D-4239.

b. Whole tires fired may be fed continuously to the kiln calciner burner at a rate not to exceed 109.2 MMBtu/hr (30% of total kiln fuel input) or 4.2 TPH. and 36,792 TPY. Before initiating tire firing, the gases exiting the kiln ahead of the calciner burner shall be maintained at a minimum of 1,440 degrees F for at least one hour.

c. No. 2 fuel oil fired shall not exceed a maximum sulfur content of 0.05% by weight (certified by fuel supplier) and usage shall not exceed 2,486,000 gallons per year for the Raw Mill Air Heater and 125,000 gallons per year for kiln startup.

5. Emissions from the facility shall comply with the pollutant limits specified in attached Tables I and II. Following completion of the performance tests required herein, the interim SO_2 emission limit may be revised based on the test results (and alkali/sulfur materials ratios) such that overall control attained for all air pollutants including, SO_2, NO_x, VOC, and CO, is optimized.

The Department shall issue the final SO_2 emission limits within 120 days following receipt of all test results required by this permit. Any changes will be publicly noticed.

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

Continuous monitoring equipment shall be installed, operated, and used to determine compliance for NOx and SO2. Continuous emission monitors shall 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).

Continuous opacity monitors shall be installed, operated, and maintained at both stacks pursuant to 40 CFR 60.63.

Continuous monitors shall be installed for CO and/or O_2 for use in determining plant operating parameters to optimize emissions of CO, NO_x, and SO_2 and to set a final SO_2 limit.

Performance tests shall begin within 60 days after achieving and maintaining the permitted production rate, but not later than 180 days after initial operation at that rate, using the following EPA reference methods:

Method 5 Determination of Particulate Matter Emissions from Stationary Sources

Method 9 Visual Determination of the Opacity of Emissions from Stationary Sources
Method 10 Determination of Carbon Monoxide Emissions from Stationary Sources
Method 22 Visual Determination of Fugitive Emissions from Material Sources
Method 25 Determination of Volatile Organic Compound Emissions from Stationary Sources
Method 104 Determination of Beryllium Emissions from Stationary Sources (40 CFR 61, Appendix B)

The manual stack tests shall be conducted while firing both primary fuels at permitted capacity (70% coal and 30% tires) and while all continuous monitoring systems are functioning properly, and with all process units operating at their permitted capacity. 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 units 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 units are so limited, then operation at higher capacities (with prior notification provided to the Department) is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the permitted capacity in the permit. [Rule 62-297.340(1)(a), F.A.C.]

7. An operating log shall be established and maintained for the weight of tires fired. The log shall include the daily tire usage, a monthly running total of the tire usage, and a cumulative annual running total to ensure that the annual limit is not exceeded. The log shall be maintained on file for at least five (5) years and shall be made available to the Department upon request. Records of the quantity and analysis of coal and fuel oil consumed and invoices for all fuel purchases along with logs for all raw materials and products shall be kept for a minimum of 5 years. Periods of startup, shutdown, and process malfunctions shall be noted on the same logs used for tires. [Rule 62-212.200(58)]

8. The Department's Northeast District office shall be notified at least 15 days prior to performance testing. Written reports of the test results shall be submitted to the Bureau of Air Regulation in Tallahassee and the Northeast District office within 45 days of test completion. [Rules 62-297.340(1)(i); 62-297.570(1) and (2)]

9. All measurements, records, and other data required to be maintained by the permittee shall be reported to the Northeast 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]

10. 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. These provisions apply to any source of fugitive emissions, including but not limited to vehicular movement, transportation of materials, construction, alteration, demolition or wrecking, or related activities such as loading, unloading, storing and handling. [Rule 62-296.310(3), F.A.C.]

11. Particulate emissions from coal handling facilities 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 percent.

12. 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)]

13. 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.]

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

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

16. The Permittee shall limit the number of tires on site in order to protect against fires and mosquitoes. The permittee shall develop a program, for review and approval by the Department, which prevents breeding of mosquitoes due to tire handling at the site. The plan will include at least receiving, handling, treatment, storage, and inventory turnover provisions. This program shall be a condition of the operating permit.

17. The Permittee shall document the number of tires burned during a week and then establish storage and inventory based on a typical weekly requirement. The Permittee shall keep all documentation concerning tire inventory at the site and make the information available for Department review during inspections.

18. Storage of solid waste at the facility shall not be in violation of the prohibitions of FAC Rule 62-701.300. In addition, all solid waste materials to be used in cement production shall be stored under cover, on compacted clay, to prevent the generation of runoff or leachate.

19. No RCRA hazardous waste or used oil may be burned. Cement Kiln Dust (CKD) collected in the kiln electrostatic precipitator (ESP) will be returned to the process. Any CKD not returned to the process shall be handled in accordance with Subtitle C rules under development by EPA. In the interim, the permittee shall develop a contingent management practice (CMP) for storage, sales, or disposal of any CKD not reused. The CMP will be a condition of the operating permit.

20. In the event that baghouse or ESP catches come in contact with the soil, the waste shall be collected and a hazardous waste determination performed for metals in accordance with 40 CFR 262.11 and FAC Rule 62-730.160. If the material is not hazardous, it shall be reused, sold or disposed a permitted lined landfill. If the material is hazardous, it shall be disposed in a permitted hazardous waste disposal facility.

21. The Permittee shall store all hazardous waste generated at the site in D.O.T. approved containers and send it for disposal to a permitted hazardous waste facility in compliance with FAC Chapter 62-730.

22. The Permittee shall manage used oil and used oil filters generated at the facility in compliance with FAC Chapter 62-710 and 40 CFR 279.12.

23. In the event of a permanent shutdown of the facility, all residual materials will be either properly disposed at a permitted facility or transported to other cement production facilities within six (6) months following shutdown.

24. The permittee, for good cause, may 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 Northeast 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.]

25. An application for a Title V operation permit must be submitted to the Northeast District office at least 90 days prior to the expiration date of this construction permit but no later than 180 days after commencing operation. To properly apply for an operation permit, the permittee shall submit the appropriate application form, 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 62-213.420, 62-4.055 and 62-4.220, F.A.C.]

STATE OF FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

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Howard L. Rhodes, Director
Division of Air Resources Management

Table I
Allowable Opacity Limitations

Stack #	Description	Grain Loading	OPACITY
Emission Unit 1: Raw Material			
Process Rate = 1,211,250 TPY Processed			
Fugitive	Material Processing		10
Fugitive	Handling and Storage		10
Fugitive	Crusher		15
Emission Unit 2: Raw Mill System			
Process Rate = 212 TPH Raw Materials			
E-28	ecycle dust + raw meal to homogenization si	0.01 gr/dscf	5
E-29	Recycle dust airlift	0.01 gr/dscf	5
G-07	ecycle dust + raw meal to homogenization si	0.01 gr/dscf	5
H-08	Raw meal + recycle dust to preheater	0.01 gr/dscf	5
Emission Unit 3: Kiln System			
Process Rate = 364 MMBTU/heat input			
E-21	Kiln Operations (ESP)		10
E-21	In-process fuel: coal		10
E-21	In-process fuel: tires		10
	Tires (30 % of total heat input)		
Emission Unit 4: Clinker Handling			
Process Rate = 95.83 TPH Clinker			
L-03	Clinker cooler to silos	0.01 gr/dscf	5
L-06	Clinker into clinker silos	0.01 gr/dscf	5
K-15	Clinker Cooler (ESP)		10
Emission Unit 5: Finish Grinding Operations			
Process Rate = 136 TPH Cement Output			
M-07	Clinker to finish mill	0.01 gr/dscf	5
M-08	Clinker to finish mill	0.01 gr/dscf	5
N-09	Finish mill air separator	0.01 gr/dscf	5
N-12	Finish mill	0.01 gr/dscf	5
N-14	Cement handling in finish mill	0.01 gr/dscf	5
Q-25	Cement storage silos	0.01 gr/dscf	5
Q-26	Cement storage silos	0.01 gr/dscf	5
Q-27	Cement storage silos	0.01 gr/dscf	5
Emission Unit 6: Cement Handling			
Process Rate = 500 TPH Cement Unloading			
Q-14	Cement silo loadout	0.01 gr/dscf	5
Q-17	Cement silo loadout	0.01 gr/dscf	5
Q-21	Cement silo loadout	0.01 gr/dscf	5
R-12	Cement bagging operation	0.01 gr/dscf	5
Emission Unit 7: Coal Handling and Grinding			
Process Rate = 14 TPH Pulverized Coal			
S-17	Coal Mill	0.01 gr/dscf	5
S-21	Pulverized coal storage bin	0.01 gr/dscf	5
Fugitive	Coal Handling & Storage		5 / 20

Table II
Allowable Emissions

Pollutant	Bact Emission Limit		Emission Rate *		Basis
	lb/ton clinker	lb/ton dry feed	lb/hr	ton/yr	
PM (kiln)	0.31	0.20	30.00	110.50	BACT
PM_{10} (kiln)	0.26	0.17	25.50	93.93	BACT
PM (cooler)	0.16	0.10	14.99	55.70	BACT-NSPS
PM_{10} (cooler)	0.13	0.09	12.71	47.34	BACT
SO_2 (kiln)	0.28	0.18	28.82	108.55	BACT
NO_x (kiln)	2.50	1.60	245.17	915.53	BACT
H_2SO_4 (kiln)	TO BE DETERMINED BY FUTURE STACK TESTS				BACT
CO (kiln)	3.60	2.30	346.38	1288.60	BACT
VOC (kiln)	0.12	0.08	11.55	42.90	BACT
Beryllium	TO BE DETERMINED BY FUTURE STACK TESTS				BACT

*Note: The kiln emission rate includes fuel oil combustion emissions from the raw mill air heater

BEST AVAILABLE CONTROL TECHNOLOGY (BACT) DETERMINATION
PORTLAND CEMENT MANUFACTURING FACILITY
Florida Rock Industries
PSD-FL-228 and AC 01-267311
Alachua County

The applicant, Florida Rock Industries Inc. (FRI), plans to construct a 2,300 ton per day (maximum TPD as clinker) dry process portland cement plant with a preheater/precalciner design at its existing quarry approximately 2.5 miles northeast of Newberry, Alachua County, Florida. The project includes a single kiln and clinker cooler along with crushers, raw mill, finish mill, cement and clinker handling equipment, coal handling equipment, silos, and air pollution control equipment. The facility will, on average, operate at a lower rate and produce 712,500 tons per year (TPY) of clinker and yield 772,400 tons of portland cement per year. A process description is included in the Technical Evaluation and Preliminary Determination.

Table 1 is a list of the emission units from the proposed project.

<u>BACT Determination Requested by the Applicant:</u>

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)	0.54 lbs/ton clinker
Sulfuric Acid Mist (kiln)	Absorption by clinker. (future stack tests)
Nitrogen Oxides (kiln)	4.6 lbs/ton clinker
Carbon Monoxide (kiln)	3.6 lbs/ton clinker
Volatile Organic Compounds(kiln)	0.12 lbs/ton clinker
Beryllium	Particulate control equipment

Electrostatic Precipitators (ESPs) will be used to capture particulate matter from the kiln and the cooler. Fabric Filters (baghouses) and will be used to limit particulate emissions from all other process emission units.

Portland cement plants are among the major facilities listed in Florida Administrative Code (FAC) 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), volatile organic compounds (VOC), nitrogen oxides. (NO_X), and Beryllium (Be).

This facility is also subject to:

- 40 CFR 60, Subpart F - Standards of Performance for Portland Cement Plants.
- 40 CFR 60, Subpart OOO - Standards of Performance for Non-Metallic Mineral Processing Plants.
- 40 CFR 60, Subpart Y - Standards of Performance for Coal Preparation Plants.
- 40 CFR 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels).

Date of Receipt of a BACT Application:

March 17, 1995

Review Group Members:

Teresa Heron 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/precalciner include the kiln, the calcining loop, 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 should 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 the EPA's BACT/LAER Clearinghouse 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 Process Control and Secondary Combustion of Fuel. 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 Selective Catalytic Reduction (SCR), Selective Non-catalytic Reduction (SNCR), and Low NO_X burners (LNB) "as technologies involving adverse economic or questionable environmental and energy impacts."

The applicant has proposed a NOx emission rate of 440.82 lb/hr. Taking into consideration the clinker production rate of 95.83 tons/hr and heat input of 364 MMBtu/hr, the proposed emission rate equates to 4.60 lb/ton feed and 1.21 lb/MMBtu, respectively.

The proposed NOx emission rate is compared below with previous BACT determinations made irrespective of cement manufacturing process.

Previous BACT Determinations

BASIS	Least Stringent	Most Stringent	Proposed
	Year 1978	Year 1981	Year 1995
lb/ton clinker	11.13	0.85	4.6

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. Another plant with a NO_x limit of 1.11 lb/ton, utilizing the same process as planned by FRI, was never built. A plant with a process similar to that of FRI received a BACT determination of 2.09 lb NO_x/ton but apparently recieved a less stringent requirement in subsequent operating permits. Another plant with the same process as FRI 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 the same process. Also, these BACT determinations were established for sources which were permitted several years ago, and do not necessarily represent present top-down BACT evaluation.

The dry process with preheater/precalciner proposed by the applicant is the most energy-efficient process. Therefore one would expect the lower fuel use to result in the lowest possible emissions, all else being equal. Additionally, the lower flame temperature realized when burning coal (compared with burning gas or oil) as well as documented reductions from tire burning, are further reasons to expect the lowest possible emission rate among kilns employing Process Control and Secondary Combustion of Fuel.

A survey of stack test data from various kilns around the country, operating for more than three years, suggest 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 (including pyrites) 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 precalciner burners, and by the combustion of No. 2 fuel oil in the raw mill auxiliary heater. Sulfur reported as sulfite (SO_3) in the raw material is 0.08% (maximum as tested).

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 (such as pyrites), 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.

Per the applicant, 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.

FRI proposes to limit SO_2 emissions through Process Design and Material/Fuel Sulfur Limitations. This will be accomplished by taking advantage of the alkaline environment in the kiln, preheater/precalciner, 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 ESP.

The SO_2 limit proposed by the applicant (0.54 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 FRI. Some plants use baghouses 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 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. Emissions from kiln 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 is collected and recycled into the kiln thereby, producing clinker from the dust. According to FRI's application, all cement kiln dust (CKD) captured in the ESP will be returned to the pyroprocessing system as raw material.

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. Wind erosion of particles from stockpiles can be limited by the processing of wet materials (1.5% moisture or greater), and by covering of stockpiles where feasible.

Small quantities of beryllium are generated by the combustion of coal in the kiln and calciner burner, and by the combustion of No. 2 fuel oil in the raw mill auxiliary air heater. Beryllium will be generated as a particulate emission from the combustion of fuels, and will be controlled by the ESP on the kiln.

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 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 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 combustion control as BACT for VOC and CO from this plant.

A review of the BACT Clearinghouse reveals that for CO and VOC, as BACT from cement plants for these pollutants is as proposed by the applicant.

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 the most stringent BACT determinations for portland cement plants. The Department appreciates the concern by the applicant that compliance with such emissions limits may be more difficult in the future as a result of possible implementation of enhanced monitoring requirements pursuant to the Title V Operating Permit Program. However, there has not been any change in the methods for setting limits as a result of this pending program.

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. Some of the methods discussed therein are already planned for this project including tire burning and staged combustion. As previously mentioned, the high energy efficiency of the dry preheater/precalciner 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 only 50% reduction in 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 examined the worst case scenario which assumes that FRI can only achieve its proposed BACT NO_X value of 4.6 lb/ton clinker while employing process control and secondary combustion of fuel. The Department reviewed the degree to which SNCR can be employed in order to achieve a further NO_X reduction to 2.5 lb/ton clinker.

Based on a recent Nalco estimate prepared for Great Star Cement, the capital costs for servicing 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 estimated at $674,000. First year costs are projected to be $728,000 and $410/ton NO_X removed. After adjusting only the operating costs for the smaller FRI kiln and lesser removal objective, annual operating costs would be roughly $400,000. Thus the first year costs would be approximately $450,000 for a marginal cost less than $400/ton NO_X removed and less than $0.50/ton of clinker.

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 relative to other factors such as raw material, product, 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.

In addition to the BACT Clearinghouse and performance test results, the Department also reviewed 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 FRI can, with good operating practices, insure the lowest possible SO_2 emissions through its preheater/precalciner dry process. The Department believes that lower SO_2 values than proposed by the applicant are possible without add-on gas treatment systems.

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 pounds particulate matter per ton of feed (dry basis) and 0.31 lbs/ton clinker
Kiln (PM_{10})	0.26 lbs/ton clinker
Kiln (VE)	Visible emissions not to exceed 10 percent opacity
Kiln (SO_2)	0.28 lbs/ton clinker (interim) 24 hr rolling average
	Coal (0.75% sulfur by weight), No. 2 fuel oil (0.05% sulfur by weight), and tires (up to 30% of heat input) are the only fuels allowed
Sulfuric Acid Mist	Absorption by clinker (future stack tests)
Kiln (NOx)	2.5 lbs/ton clinker - 24 hr rolling average
Kiln (CO)	3.6 lbs/ton clinker - 1 hr average
Kiln (VOC)	0.12 lbs/ton clinker - 1 hr average
Kiln (Be)	as controlled by PM BACT (ESP)
Cooler(PM)	0.10 pounds particulate matter per ton of 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
Materials Handling Storage, Conveyance	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 the CEMS.

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

Compliance with the VOC limitations shall be demonstrated by 3 one-hour stack tests using Method 25 or Method 25A.

Pursuant to FAC 62-4.070(3), 62-212.400(5)(c) and 62-296.330, the kiln exhaust stack shall be equipped with continuous monitors to record NO_x and SO_2 for the purposes of compliance; opacity at both stacks to indicate proper maintenance and operation; and carbon monoxide and/or oxygen to optimize pollution control.

An additional purpose of the continuous monitors is to conduct a one-year program to optimize pollution removal and relate process variables to emissions. The Department will also consider a higher sulfur limit in the coal if it can be shown that the alkali/sulfur ratios are sufficiently balanced to minimize any additional SO_2 emissions.

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 given in the BACT Clearinghouse. However the Department

recognizes that because of the wide differences in fuels and raw materials nationwide it may be possible to meet a lower number or impossible to meet the value recommended by the Department. That is why the limit given is only an interim one. The final one will be determined after review of the process/pollutant optimization program described above.

For each small fabric filter in the material handling process the exhaust gases must not exhibit greater than 10 percent opacity. The Department has determined that 10 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 pounds per tons of clinker. This rate was obtained from the BACT clearinghouse report and was achieved by a dry preheater/precalciner process plant. Unless the company commits to installing SNCR, FRI 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.

Details of the Analysis May be Obtained by Contacting:

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