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LETTER OF TRANSMITTAL

TO Mr. Clair Fancy
FDEP
111 S. Magnolia, Suite 4
Tallahassee, FL 32301

Date: 05-10-95 Proj. ID: FCS

WE ARE SENDING YOU: [X] Attached [ ] Under separate cover
VIA: [ ] 1st Class Mail [X] Federal Express a.m. Delivery [ ] Hand Delivery [ ] Other
THE FOLLOWING ITEMS:

Copies	Date	No.	Description
2	05-10-95		Comment Responses to FDEP 04/20/95 Permit Review
1	05-10-95		Copy Same Above for T. Heron

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May 10, 1995

Mr. Hamilton S. Oven, Jr., P.E.
Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Florida Crushed Stone Incompleteness/Insufficiency Review
File No. PSD-FL-227 and PA 82-17

Dear Mr. Fancy:

RTP Environmental Associates, Inc. (RTP) and the applicant have prepared the following responses to the comments in the Department's April 20, 1995 memorandum regarding the Florida Crushed Stone air permit application for the additional cement kiln. These responses are given below in the numbered order in the FDEP memorandum. In addition, responses to the National Park Service's April 19th letter follow the FDEP responses.

(1) The contemporaneous emission changes for the proposed action (addition of a second cement kiln) have been identified in the air permit application. The proposed action is a stand-alone cement kiln which will not affect currently permitted operations for the existing power plant or cement kiln. No de-bottlenecking of plant processes will occur due to the proposed kiln and any changes in actual versus potential emissions for the existing power plant or cement kiln would not be related to the proposed action. Such increases between actual and potential emissions for existing operations are excluded from PSD applicability consideration in 40 CFR 52.21(b)(2)(iii). As stated on page A.34 of the NSR Workshop Manual, "...any increase in the hours or rate of operation of a source, so long as the increase would not be prohibited by any federally-enforceable permit condition..." would not be considered for purposes of PSD applicability.

Further, as stated in the NSR Workbook on page A.40, "an emissions increase or decrease already considered in a source's PSD permit (state or federal) can not be considered a contemporaneous increase or decrease since the increases or decrease was obviously relied upon for the purpose of issuing the permit." As noted above, no changes in permitted emissions for existing operations are required for the proposed action.

(2) Besides the main facility stack, most emissions from the proposed action will be controlled by a number of fabric filter baghouses, which are summarized on Table 3-2 of the air permit application. Roads associated with the facility represent the primary source of "fugitive and unconfined" emissions associated with the proposed action. These emissions were identified and quantified in Section 3.3 of the air permit application. Table 2-1 of the air permit application has been revised to include the minor source and fugitive emissions and is attached.

Roads are washed on a daily basis in order to control excessive dust. Storage piles are not a significant source of dust due to the moisture content of the materials (approximately 10%). The applicant maintains an ambient air TSP monitoring network which is reviewed by FDEP to ensure that it meets PSD requirements. Measurements from this network, summarized in Section 5.0 of the air permit application, show that particulate emissions do not cause ambient concentrations in excess of the ambient air quality standards.

(3) Estimates of potential HAP emissions from the Unit II kiln were derived from primarily two sources: (a) existing test data for FCS Unit I and similar plants and (b) the USEPA "*Emission Factor Documentation for AP-42 Section 11.6 - Portland Cement Manufacturing*". Attached Table A lists the specific HAP compounds and associated worse-case emission values (highest recorded single test emission rate or literature value found regardless of kiln technology, input feed, input fuel other than hazardous waste, or other differentiating factors). Available FCS data are for tests when the power plant was operating with the existing kiln, so the emissions estimates based on FCS data are extremely conservative. Limited data regarding HAP emissions currently exist. These data were compiled at the request of FDEP solely for use in this analysis. Thus, this compilation of worse-case emission values available at this time is preliminary in nature and not of sufficient quality from which to develop permit levels.

As requested, RTP contacted Mr. John Smith at USEPA Region VII to obtain additional HAP data. Mr. Smith could not provide additional data other than from kilns burning hazardous waste. The proposed FCS Unit II kiln will not utilize hazardous waste as fuel. Mr. Smith felt that the data he had available would not be representative of cement kilns not burning hazardous waste. Thus, emissions data from cement plants burning hazardous waste were deemed unrepresentative and were not used.

Attached Table B presents calculated maximum ambient 8-hour, 24-hour, and annual average concentrations for each of the HAPs listed in Table A with FDEP No Threat Levels (NTLs). Impacts are shown for both the increase in facility impacts due to the proposed kiln as well as total facility impacts for two operating kilns (since only cement kiln HAP emissions are available, HAP emissions and impacts due to the existing power plant cannot be assessed). These impacts were calculated by multiplying the unitized impacts from Tables 6-4 and 6-5 of the air permit application by the appropriate cement kiln(s) HAP emission rate in grams per second.

As can be seen from the results, estimated worse-case emissions of HAPs results in impacts less than 9% of the NTLs for all pollutants. For most pollutants, particularly the organic HAPS, impacts are generally less than a fraction of the NTLs. Since the NTLs are designed to be conservative (i.e., protective of the public health), ambient HAP impacts are expected to be minimal.

(4) The applicant currently tests cement kiln dust (CKD) from the existing cement kiln and will continue to do so for the proposed cement kiln. The applicant will comply with CKD regulations as they are promulgated.

We have reviewed the methodology in USEPA's Region VII document cited. It should be noted that this is a Draft document. Over 75 pages of comments have been submitted by State and Federal agencies which will require revisions to the document and the final methodologies. The Region VII document relates to cement kilns which burn hazardous waste and require a multi-pathway health risk assessment for a RCRA Part B permit. The methodology presented is an extremely involved multi-pathway assessment requiring large amounts of site specific input data. Such an effort would cost in excess of $50,000 for the proposed facility. Neither the proposed nor the existing cement kilns burn RCRA hazardous wastes. The proposed facility is a relatively minor source of non-criteria pollutants as compared to a hazardous waste incinerator. In conversations with Mr. John Smith, a RCRA specialist with Region VII, he stated a multi-pathway health risk assessment would not typically be required for a dry process cement kiln not burning hazardous waste. Compliance with ambient air quality standards was demonstrated in the air permit application for criteria pollutant emissions. Non-criteria pollutant impacts were shown in the response to comment 3 to comply with FDEP's NTLs.

(5) Again, the applicant wishes to stress that the existing and proposed cement kilns do not burn hazardous waste. The air quality modeling analyses in the permit application and in the response to comment 3 above clearly show that the facility will continue to comply with all ambient air quality standards and FDEP NTLs promulgated or established to protect the public health and welfare.

(6) The proposed kiln will utilize the existing cement plant 20,000 gallon fuel oil tank. Use of the tank will eventually double when the proposed kiln reaches full operation. There would be no increase in VOC emissions beyond that allowed for in the current permit. Annual fuel oil usage is approximately 105,000 gallons per year for the existing cement kiln. Assuming the same utilization rate for the proposed kiln would result in an increase of 10 to 25 pounds per year of actual VOC emissions due to the proposed kiln. A revised Table 2-1 is attached which includes these VOC emission increases, as well as minor and fugitive emissions, for comparisons to the PSD significant emission limits.

(7) As noted above, the proposed cement kiln is a stand-alone cement kiln which will not affect currently permitted operations for the existing power plant or cement kiln. All

of the proposed emission sources and control devices are new units and will not affect operation of the particulate sources or control devices currently permitted for the existing cement kiln. Attached please find a new Table 3-2 which has been revised to include emission unit and control device equipment numbers shown in the permit application forms, flow diagrams, and plot plan. This table is identical to the one provided at our April 27, 1995 meeting. The flow rates were determined for each baghouse based on engineering design specifications.

(8) Available initial design specifications for each baghouse are attached. Selection of baghouse vendors will depend on competitive bidding based on final facility design criteria. Flows are best available estimates made by the engineering design firm.

(9) As noted in the response to comment 2 above, most particulate emissions will be controlled by a number of fabric filter baghouses, which are summarized on Table 3-2 of the air permit application. Roads associated with the facility represent the primary source of "fugitive and unconfined" emissions associated with the proposed action. These emissions were identified and quantified in Section 3.3 of the air permit application. Roads are washed on a daily basis in order to control excessive dust. Storage piles are not a significant source of dust due to the moisture content of the materials (approximately 10%). There are no cement kiln dust (CKD) storage piles at the facility. All CKD is stored in silos for use at the facility or for sale.

(10) The process group categories for each new emission point are as follows:

PROCESS GROUPS	EMISSION UNIT DESCRIPTION
RAW MILLING	1. Iron Ore Bin 2. Fly Ash Bin 3. Filter Dust Bin 4. Raw Meal Transport 5. Lime Silo Storage 6. Raw Meal Storage & Homogenizing Silos
KILN OPERATIONS	1. Kiln Feed System 2. Kiln Main Stack
FINISH MILLING	1. Gypsum Storage Bin 2. Clinker Transport 3. Belt Conveyor 4. Finish Mill Discharge Vent 5. Finish Mill Sepol Separator

PROCESS GROUPS	EMISSION UNIT DESCRIPTION
CEMENT HANDLING	1. Cement Storage Silo A 2. Cement Storage Silo B 3. Cement Silo Discharge Hopper
COAL HANDLING	1. Coal Transport Conveyor 2. Coal Storage Bin

The order of the emission unit descriptions above follow the order of the minor particulate sources shown on Table 3-2. As noted in the response to comment 7, a revised Table 3-2 is attached which contains the emission unit and control device equipment numbers shown in the permit application forms, flow diagrams, and plot plan.

(11) Startup of the proposed cement kiln will be accomplished with oil or natural gas. Oil or natural gas will first be combusted at low utilization rates. Utilization rates are increased gradually during the startup period to increase the kiln temperature to operating conditions. Cold startups require approximately 24 hours until the kiln is ready for operation. Since oil or natural gas utilization rates during the entire startup period are less than fuel consumption rates at normal operating conditions and no product or coal is introduced to the kiln, emissions during startup periods would be less than emissions under normal operation. No coal or product will be introduced into the kiln until optimum operating conditions are attained. Like the startup period, coal and product feed first occurs at reduced rates, ramping up gradually to the final operating conditions.

As described in the next response, the burner incorporates many design features allowing for manual and automatic control of the combustion process. The controls will ensure that the combustion process can be optimized for both normal operations and for startup and shutdown conditions. At no time will the baghouse be bypassed during either startup or shutdown periods. This will help to insure that excess opacity periods do not occur as experienced at a facility in Utah which you mentioned at our meeting.

Shutdown of the kiln occurs by terminating the feed of product and fuel to the kiln. Since no fuel combustion occurs, emissions during shutdown periods would mostly be limited to particulate emissions, which will be controlled by the baghouse. Up to 24 hours are required during the shutdown period to return the kiln to ambient temperatures.

Cold startup and full shutdown periods are limited in frequency, typically less than six per year. As noted above, cement kiln emissions during these periods will be less than emissions during normal operations.

(12) The proposed cement kiln is identical to the existing kiln. This kiln uses a direct-fired burner (described below), which allows for a cooler flame to reduce formation of NO_x. For this burner type, low-NO_x burner technology would not be applicable (burner already minimizes NO_x formation through the use of large amounts of primary combustion air and less intensive flame core). The kiln design is based on a Gepol tower system without a precalciner. Heat from the kiln exhaust gases are used for other parts of the cement kiln process, so no other combustion sources are required for the proposed cement kiln.

The proposed FCS cement kiln differs from cement kilns utilizing an indirect-fired burner with a precalciner. When using indirect-fired burners, an intense high-temperature flame is required to maintain the proper kiln operating temperatures. Low-NO_x burner technology may be applicable to these type burners. Also, a separately fired burner is required for the precalciner in this design.

The kiln utilizes a direct-fired pulverized coal (PC) and oil burner specifically designed for cement kilns. The amount of primary combustion air and the amount of fuel can be independently adjusted to optimize the combustion process. A primary air tube assembly controls the primary air for PC firing while a dual-zone, mechanically atomized oil gun controls oil firing. A steel spinner is provided for better control of the flame and flame length for both PC and oil by adjusting the amount and pressure of spin air. A natural gas and electric pilot assembly is provided for ignition of the startup fuel. The position and firing angle of the burner inside the kiln is controlled by several systems.

A final operational plan will be prepared for the proposed cement kiln at a later date.

(13) The only combustion source for the proposed action is the proposed cement kiln, described in detail in the permit application. The cement kiln will be preheated with fuel oil (or a mixture of fuel oil and used oil -- see response to comment 23), fired with coal as the main fuel, and utilizes tires as supplement fuel. The applicant is requesting permit conditions to allow natural gas, an inherently clean fuel, to also be utilized as a startup fuel or for normal operations. Tires are fed whole or shredded to the kiln as a supplement fuel as discussed in the response to comment 14. "Tire-derived-fuel (TDF)" as referred to in the comment and on page 4-15 of the permit application merely refers to a mixture of tires and coal as allowed for in the permit for the existing cement kiln. Permit limits for emissions and tire utilization rates, discussed in the response to comment 14 below, represent worst-case and demonstrate compliance with applicable regulations. Fuel analyses of commercially available new fuel oil are not necessary to insure compliance with applicable regulations. As discussed in the response to comment 23, quarterly testing of the used on-specification oil is performed for the existing cement kiln. Such testing will continue for the proposed cement kiln.

(14) The only combustion source for the proposed action is the cement kiln, described in detail in the permit application. The cement kiln will be preheated with fuel oil (or a mixture of fuel oil and used oil -- see response to comment 23), fired with coal as the main fuel, and utilizes tires as supplement fuel. The applicant is requesting permit conditions to allow natural gas, an inherently clean fuel, to also be utilized as a startup fuel or for normal operations. Except for the additional use of natural gas, the applicant is requesting permit conditions for the proposed kiln similar to the existing cement kiln. In the existing cement kiln operating permit (AO27-231888A) recently amended on 8/30/94, the specific permit conditions relating to fuel firing are:

> 5. The permitted maximum coal feed input rate to the cement kiln is 10.3 tons per hour.
> 7. The utilization of tires as supplemental fuel shall not exceed 8300 hours per year.
> 8. The maximum utilization rate for tires as supplemental fuel shall not exceed 1.33 tons per hour (approximately 30 MMBtu per hour), or 15.0 percent of the total heat input to the cement kiln.
> 9. Tires used as supplemental fuel shall only be introduced into the cement kiln at the base of the preheater (kiln inlet).
> 10. The cement kiln shall be preheated using new fuel oil and/or a blend of on-specification used oil and new fuel oil with a total sulfur content not to exceed 1.5 percent by weight, and a flash point of 140 Degree F minimum. (Remainder of permit condition 10 contained in the response to comment 23 below.)
> 16. Tires used as supplemental fuel shall not be introduced into the cement kiln until <u>both</u> of the following conditions have been achieved:
> (A) the operating temperature of the cement kiln has reached a minimum temperature of 1400 degrees F, for one hour. The operating temperature shall be measured at the cement kiln inlet.
> (B) the oxygen level in the cement kiln is at least 3 percent (one hour average). The oxygen level shall be measured at the cement plant induced draft fan.

Except for the use of natural gas, the applicant is requesting permit conditions for the proposed cement kiln similar to the existing kiln to define the quantities and types of fuel combusted. Fuel quantities will be based on equivalent BTU quantities to fuels currently permitted for the existing cement kiln.

(15) The kiln uses a direct-fired burner specifically designed for combusting coal, oil, or natural gas in a cement kiln. The amount of primary combustion air and fuel, together with spin air, are adjusted to control the flame, flame length, and combustion conditions. The burner system is already an inherently low-NO_x design as described in the response to comment 12 above.

(16) In the applicants' opinion and as described in Sections 4.3 and 4.4 of the air permit application, fabric filter baghouses (FF) are equivalent to electrostatic precipitators (ESPs) for the control of particulate emissions (although FF may provide slightly better

control of fine particulates and acid gases) and, with ESPs, are the top particulate control technology for cement kilns. Since the top technology was selected for the proposed action, no technical, economic, or environmental analyses (typically required to substantiate a lesser ranked technology) are required in accordance with the 'Top-Down' BACT review methodology (see page B.26 in NSR Workshop Manual).

The following description of SO_2 control for cement kilns is taken from the Final Report -- Emission Factor Documentation for AP-42 Section 11.6 -- Portland Cement Manufacturing (May 18, 1994):

> "Cement kiln systems have highly alkaline internal environments that can absorb up to 95 percent of potential SO_2 emissions. However, in systems that have sulfide sulfur (pyrites) in the kiln feed, the sulfur absorption rate may be as low as 50 percent without unique design considerations or changes in raw materials. The cement kiln system itself has been determined to provide substantial SO_2 control. Fabric filters on cement kilns are also reported to absorb SO_2. Generally, substantial control is not achieved. An absorbing reagent (e.g., CaO) must be present in the filter cake for SO_2 capture to occur. Without the presence of water, which is undesirable in the operation of a fabric filter, $CaCO_3$ is not an absorbing reagent. It has been observed that as much as 50 percent of the SO_2 can be removed from the pyroprocessing system exhaust gases when this gas stream is used in a raw mill for heat recovery and drying. In this case, moisture and calcium carbonate are simultaneously present for sufficient time to accomplish the chemical reaction with SO_2."

According to the 1992 AWMA Air Pollution Engineering Manual (1992), the cement kiln system itself has been determined to be BACT for SO_2 emissions.

Organic HAP emissions are expected to be very low due to the extremely high temperatures attained in the cement kiln and the long residence times of the materials in the kiln. The kiln materials are heated to more than 2700°F as required for the pyroprocessing of the kiln materials. The material transit time in the rotary kiln is typically measured in hours. These properties explain why cement kilns are sometimes utilized to incinerate many types of hazardous wastes. Rotary kiln incinerators similar to cement kilns are considered the most versatile and most durable of the hazardous waste incinerator technologies. Inorganic (metallic or mineral) HAPs would be limited to those materials found in the fuel or the material feed. Much of these materials will be bound into the clinker product during the pyroprocessing. Most HAPs escaping in the exhaust gases would be expected to be found in the particulate fraction, which will be controlled by the fabric filter baghouse.

A discussion of startup emissions of particulate matter and visible emissions is contained above in the response to comment 11. As noted in the response, the baghouse will not be bypassed during startup, and represents top-down BACT for this application. No significant difference in HAP or SO_2 emissions are expected from use of an ESP versus a baghouse .

(17) Due to the variability in SO_2 control efficiencies by the cement kiln process as described in the previous response, no significant changes in SO_2 emissions would be expected due to the use of cleaner fuels (i.e., natural gas or No. 2 fuel oil at 0.05% sulfur).

As reported in the AWMA Air Pollution Engineering Manual (1992), a 1982 survey showed that the average SO_2 and NO_x emissions for approximately 50 kilns were 8.41 and 4.62 lbs per ton of clinker, respectively. The standard deviation of the survey for each constituent was nearly equal to the mean value and the frequency distribution revealed a wide range of values. It is impossible, therefore, to characterize the industry for gaseous emissions of SO_2 and NO_x with a single number or narrow numerical range. Each individual pyroprocessing system has its own emissions characteristics. Extensive continuous testing of a few cement plants has shown that SO_2 and NO_x emissions from a single source will vary with time over a rather large range for a variety of reasons (e.g., 70-700 lb/hr of SO_2). Short-term tests, such as USEPA Methods 6 and 7, can lead to very erroneous conclusions regarding SO_2 and NO_x emissions since these methods represent nearly instantaneous process conditions.

The Florida Mining and Materials (FMM) Southdown permitted NO_x emission rate of 250 lbs/hr (3.14 lb/ton of clinker) is for a 30-day average. The PSD permit application for this NO_x increase showed that CEM data collected over a period of about 30 days indicated NO_x emissions varying between 138 and 730 ppdmv at 7% O_2, corresponding to between 84 and 445 lbs/hour. Given this large variation in measured emissions and the 30-day averaging time in the FMM permit limit, the proposed FCS NO_x emission limit of 359 lbs/hour (4.33 lbs/ton of clinker) based on USEPA stack test methodologies is roughly comparable to the FMM limit and perhaps even more restrictive.

The Ash Grove facility is a wet process kiln co-fired with waste solvents and thinners as well as coal. Apparently, the plant cannot operate on coal only and must mix fuels to operate. We cannot comment on the representativeness of the Ash Grove emission limits as compared to the proposed facility given the differences in the kilns and fuels.

(18) As described in previous responses, the most stringent available control technologies have been selected for all pollutants. Since the top technology was selected for all pollutants, no technical, economic, or environmental analyses (typically required to substantiate a lesser ranked technology) are required in accordance with the 'Top-Down' BACT review methodology (see page B.26 in NSR Workshop Manual).

(19) Four original signed and sealed copies of page 7 of DEP Form No. 62-210.900(1) were supplied with the air permit application. Since the seal is a raised embossed type, it may not have been visible on xeroxed copies.

(20) Questions 4 and 5 on page 22 of the application form were answered.

(21) Pages 28, 30, 32, and 34 of application form No. 62-210.900(1) have been revised and are attached.

(22) The coal processing yard is permitted by the FDEP (AO27-167363) to operate continuously in compliance with NSPS standards (40 CFR 60 Subpart Y). The coal processing yard consists of a 5 acre clay-lined storage yard, coal shaker screen, and conveyor system. On a daily basis, 1,400 to 1,600 tons of coal are processed with approximately 1,300 to 1,400 being consumed by the power plant.

For 40 CFR 60 Subpart OOO, Section 60.670(b) excludes portland cement plants subject to Subpart F (like the proposed cement kiln) for applicability to this subpart.

(23) The applicant is requesting permit conditions for the proposed kiln similar to the existing cement kiln. In the existing cement kiln operating permit (AO27-231888A) recently amended on 8/30/94, the specific permit conditions to ensure compliance with Hernando County Ordinance 90-8 (which were reviewed and approved by Hernando County Planning Department) are as follows:

10. The cement kiln shall be preheated using new fuel oil and/or a blend of on-specification used oil and new fuel oil with a total sulfur content not to exceed 1.5 percent by weight, and a flash point of 140 Degree F minimum. The constituents of the on-specification used oil shall not exceed the following associated allowable concentrations, as stipulated and defined in 40 CFR 266.40 (July 1, 1992 Version) which is adopted by reference in Rule 62-730.181, Florida Administrative Code (F.A.C.):

Constituent	Allowable Concentration
Cadmium	2 ppm maximum
Arsenic	5 ppm maximum
Chromium	10 ppm maximum
Lead	100 ppm maximum
Total Halogens	1000 ppm maximum
Polychlorinated Byphenyls (PCB's)	less than 50 ppm

11. The on-specification used oil, to be blended with the new fuel oil in the cement kiln's storage tank, shall be obtained only from the used oil storage tanks located at the FCSC's Greg Mine and CPL Plant.

12. The maximum on-specification used oil concentration, in the final blend of on-specification used oil and new fuel oil, shall not exceed 15 percent, by volume.

13. The on-specification used oil to be blended and subsequently used for preheating the cement kiln shall not be a hazardous waste as defined by Rule 62-730.030, F.A.C., or 40 CFR Part 261 (July 1, 1992 Version), and shall not include fuels or blended fuels consisting in whole or part of hazardous waste or which include mixtures of any solid waste. The on-specification used oil shall be burned in compliance with Section 403.769(3), Florida Statutes.

14. The used oil sample shall be taken directly from the used oil mobile collection tank after final collection and prior to the time of initial transfer to the blend tank. The sampling frequency shall be at least quarterly.

NOTE: This sampling method was selected by the FCSC and has been approved by the Department of Environmental Protection, Southwest District and the Hernando County Planning Department.

15. The used oil sample from Specific Condition No. 14 shall be analyzed for the following constituent/property, associated unit, and using the test methods indicated:

Constituent/Property	Unit	Test Method
Cadmium	ppm	EPA SW-846(6010)
Arsenic	ppm	EPA SW-846(6010)
Chromium	ppm	EPA SW-846(6010)
Lead	ppm	EPA SW-846(6010)
Total Halogens	ppm	EPA SW-846(9252)
Sulfur	percent	ASTM D129 or ASTM D1552
Flash Point	Degree F	EPA SW-846(1010)
Heat of Combustion	Btu/gal	ASTM D240
Density	lbs/gal	-
Polychlorinated Byphenyls (PCB's)	ppm	-

Again, the applicant is requesting permit conditions for the proposed cement kiln similar to the existing kiln which will ensure compliance with the Hernando County Ordinance 90-8.

(24) Responses to the National Park Service letter are given below.

(25) As described in the response to comment 1 above, the proposed cement kiln is a stand-alone plant which will not affect currently permitted operations for the existing power plant or cement kiln. Additionally, the proposed megawatt increase for the power plant would only be for periods when the cement kilns are not operating. Thus, the power plant changes would not affect air quality impacts modeled and presented in the air permit application for the proposed cement kiln. Separate modeling analyses were prepared by Koogler and Associates for the power plant megawatt increase.

(26) As discussed at the April 27, 1995 meeting with FDEP, the three largest minor PM sources were modeled. These three minor PM sources, located about 850 meters from the nearest property boundary, account for over 78% of total minor source particulate

emissions. Source 2G-12 is located on top of the two Raw Mill storage silos, which are 210 feet high and 36 feet in diameter. Sources 2N-13 and 2N-20 are located on top of the Finish Mill, which is about 115 feet high, 130 feet long, and 40 feet wide. Modeling was performed first with SCREEN2 to determine worst-case centerline concentrations at the nearest property boundary to five kilometers. The source characteristics input to SCREEN2 are as follows:

Source:	--------2G-12--------		--------2N-13--------		--------2N-20--------	
Height:	219 ft	66.75 m	123 ft	37.49 m	123 ft	37.49 m
Diameter:	3.29 ft	1.003 m	5.05 ft	1.538 m	8.52 ft	2.597 m
Temp:	180°F	355.4 K	200°F	366.5 K	160°F	344.3 K
Flowrate:	17,000 ACFM		40,000 ACFM		115,000 ACFM	
Exit Vel:		10.16 m/s		10.16 m/s		10.16 m/s
Emission:	1.5 lb/hr	0.189 g/s	3.43 lb/hr	0.432 g/s	9.86 lb/hr	1.242 g/s
Bld Dims:	210 ft H	64.01 m	115 ft H	35.05 m	115 ft H	35.05 m
	72 ft L	21.95 m	130 ft L	39.62 m	130 ft L	39.62 m
	36 ft W	10.97 m	40 ft W	12.19 m	40 ft W	12.19 m

Other SCREEN2 inputs were an ambient temperature of 293 Kelvins, full SCREEN2 meteorology dataset, and rural dispersion conditions. Only simple terrain impacts were considered and no terrain or flagpole heights were input. Maximum 1-hour SCREEN2 impacts occurred near the property fenceline (no cavity wakes reached the property fenceline) and were 2.235, 20.28, and 33.32 ug/m^3 for sources 2G-12, 2N-13, and 2N-20, respectively. Multiplying by a 24-hour averaging time ratio of 0.4 gives respective maximum 24-hour PM impacts of 0.894, 8.11, and 13.33 ug/m^3. The impacts for the two larger sources are greater than the 24-hour TSP and PM_{10} significant impact levels (SILs) of 5.0 ug/m^3. Therefore, additional refined modeling analyses were performed with ISCST2 using the full five years of meteorological data and the modeling methodology for the refined modeling analyses presented in the air permit application. Table C gives the maximum combined PM impacts for all five years of meteorology for the three minor PM sources. As can be seen, annual PM impacts are all less than the SIL of 1 ug/m^3. Impacts for 24-hour averaging times exceeded the SIL of 5 ug/m^3 primarily in the property fenceline grid. A review of the ISCST2 outputs shows that only those receptors along the nearest east fenceline exceeded the SIL (about 22 out of the 422 fenceline receptors modeled). Only one radial grid receptor (1000 meters at 90° -- just beyond the east fenceline) exceed the 24-hour SIL.

In order to determine the extent of significant 24-hour PM impacts, the fine grid receptors (out to 3 kilometers) shown as Attachment 4 to the April 12, 1995 letter to Cleve Holladay were modeled with ISCST2 and all five years of meteorological data. These maximum impacts are included on Table C. Figure A shows those receptors with 24-hour PM impacts greater than the 5 ug/m^3 SIL. As can be seen, the area of significant impacts is quite small, approximately one-third of a square kilometer immediately outside the property fenceline.

The maximum 24-hour PM impact from the three modeled minor PM sources is 8.36 ug/m^3, predicted to occur at the property fenceline. This maximum minor source impact is less than the TSP and PM_{10} Class II increments of 37 and 30 ug/m^3, respectively. This area of significant minor source PM impacts is very close to one of the two TSP monitoring sites (1740-005) maintained by the applicant as shown on Figure A. Adding the maximum second-highest background TSP concentration measured at this monitoring site of 67 ug/m^3 (see Table 5-3 of the air permit application) to the maximum second-highest 24-hour impact of 6.68 ug/m^3 (in the fine grid) gives a maximum 24-hour total concentration of 74 ug/m^3, which is considerably less than the TSP and PM_{10} AAQS of 150 ug/m^3.

Therefore, compliance with AAQS and Class II increments are indicated for the minor PM sources. As shown on Figure A, the TSP monitoring site is close to the significant impact area. Since this monitoring site has and will continue to measure impacts from existing sources, including the various FCS operations, multisource modeling analyses should not be required to demonstrate compliance with AAQS.

Responses to the National Park Service (NPS) comments in their April 19, 1995 letter are given below.

Second Paragraph -- As noted in previous responses to FDEP comments (Responses 1, 7, and 25), the proposed cement kiln is independent of other FCS sources and, as such, constitutes a separate PSD action from the current power plant modification and existing emissions.

Third Paragraph -- Table 7 in the information submitted on March 21, 1995 contains a listing of maximum facility impacts (for both two cement kilns and two cement kilns plus power plant) on Class I areas for the criteria pollutants with increments (i.e., SO_2, NO_2, and PM)."

Third Paragraph -- As shown on Table 6-8 of the permit application, the proposed modification will result in increases in facility impacts less than the significant impact levels proposed by USEPA in their preproposal draft revisions to the NSR regulations. In addition, we believe that only increases in facility impacts due to the proposed action (rather than total facility impacts) are applicable when considering modeling requirements. Therefore, we do not believe that multisource modeling analyses are appropriate for the proposed action.

Fourth Paragraph -- Annual Class I impacts due to the proposed modification for Pb, Be, and Hg emissions were calculated from Tables 6-4 and 6-5 of the air permit application for two operating cement kilns. Maximum increases in annual Class I impacts due to the proposed kiln are 2.31×10^{-6}, 5.20×10^{-7}, 1.73×10^{-8}, and 2.95×10^{-4} ug/m^3 for Pb, Hg, Be, and H_2SO_4, respectively. Maximum annual Class I impacts for two operating kilns are 6.47×10^{-6}, 1.46×10^{-6}, 4.85×10^{-8}, and 8.25×10^{-4} ug/m^3 for Pb, Hg, Be, and H_2SO_4, respectively. Concerning AQRVs, see the response to the eighth paragraph below.

Fifth Paragraph -- The VISCREEN analysis was redone with the more conservative assumptions requested by the NPS. Emissions of H_2SO_4 were considered as primary sulfate emissions for the cement kilns (0.146 g/s per kiln). Power plant sulfate emissions were assumed to be equal to 1.4% of the SO_2 emission rate (1.289 g/s) based on Table 1.1-1, footnote b, of AP-42 Supplement F. A background visual range (BVR) of 65 kilometers (km) was used, representing the 90th percentile annual visual range, rather than the 25 km default BVR given in Figure 9 of the visibility workbook. Finally, wind speeds measured at the Tampa Airport (height of 22 feet) were considered to be representative of wind speeds at stack top (height of 320 foot) for computing the joint frequency distribution.

Based on these revisions, a revised Table 7-2 from the air permit application is attached. This table shows that values of both ΔE and contrast exceed the critical values for a larger number of periods. Maximum absolute values for all meteorological conditions analyzed occur for sky backgrounds with the sun in front the observer for ΔE and the sun behind the observer for contrast values. Based on ΔE values, existing emissions could result in a visible plume about 5.5% of the time while facility emissions after the proposed modification could result in a visible plume about 5.9% of the time. Based on contrast values, existing emissions could result in a visible plume about 3.3% of the time while facility emissions after the proposed modification would result in a visible plume about 2.5% of the time. It should be noted that the periods with significant contrast values is a subset of the significant ΔE periods. Based on the difference of 0.4% from the ΔE values or 0.7% from the contrast values, the proposed modification might result in a plume being visible inside the Class I area one to three days per year more frequently than under current conditions. This value is less than the 1% value suggested in the visibility workbook as a worst-case percentile value and about the same as calculated previously in the air permit application.

A diskette containing the input and output files for the revised VISCREEN analyses have been sent to Mr. Cleve Holladay of your staff. A diskette has also been sent to the NPS for their review.

Sixth Paragraph -- All modeling input and output files were supplied to FDEP on 3.5" diskette with the March 21, 1995 submittal, as well as a hard-copy of all modeling outputs. At the request of Mr. Holladay, copies of these diskettes were sent by RTP directly to the NPS on April 28, 1995.

Eighth Paragraph -- AQRV analyses were presented in Section 7.0 of the air permit application. As noted in the comment given as the NPS fifth paragraph, Class I visibility analyses were specifically addressed. Soils and vegetation impacts for the project vicinity were addressed in Section 7.3. Since increases in facility impacts in the Class I area would be considerably less than impacts in the project vicinity, no significant impacts on Class I soils and vegetation or other AQRVs would be expected.

If you have any questions or need any additional information, please feel free to contact me at 908-968-9600.

Sincerely,

RTP ENVIRONMENTAL ASSOCIATES, INC.®

Donald F. Elias
Principal

DFE/WEC/wec

Attachments

cc: T. Mountain, Florida Crushed Stone
L. Curtin, Holland & Knight
C. Fancy (two copies), T. Heron, C. Holladay
S. Kukier, USEPA Region IV
J. Bunyak, NPS
M. Hober, W. Corbin, M. Lewis, RTP
FCS Project File

TABLE A

HAP EMISSION FACTORS
For Volatile Organic Compounds

#	COMPOUND	EMISSION FACTOR (lbs/ton Clinker)	SOURCE[a]
1.	Benzene	1.9×10^{-2}	(1)
2.	Biphenyl	7.8×10^{-6}	(1)
3.	Carbon disulfide	2.5×10^{-3}	(2)
4.	Chlorobenzene	3.9×10^{-4}	(2)
5.	Ethylbenzene	1.8×10^{-4}	(2)
6.	2-Ethyl hexyl phthalate	2.1×10^{-4}	(1)
7.	Formaldehyde	5.4×10^{-4}	(1)
8.	Hexane	5.7×10^{-5}	(3)
9.	Hydrogen chloride[b]	1.4×10^{-1}	(1)
10.	Methyl chloride	3.6×10^{-4}	(2)
11.	Methylene chloride	7.8×10^{-4}	(1)
12.	Methyl ethyl ketone	3.0×10^{-5}	(1)
13.	Naphthalene	3.9×10^{-3}	(1)
14.	Phenol	1.1×10^{-4}	(1)
15.	Styrene	5.2×10^{-4}	(2)
16.	2,3,7,8-TCDD[c]	6.5×10^{-10}	(2)
17.	Toluene	2.4×10^{-3}	(2)
18.	Trichloroethane	4.3×10^{-6}	(1)
19.	Xylenes	6.9×10^{-4}	(2)

[a](1) Emission data from the USEPA *Emission Factor Documentation for AP-42, Section 11.6 - Portland Cement Manufacturing*, May, 1994.
(2) Emission test data of FCS Unit I kiln, power plant, and lime plant operating simultaneously.
(3) Emission test data of cement plant similar to FCS Unit I.
[b]HCl is not a Volatile Organic Compound.
[c]Total penta through octa dioxin and furan emissions as 2,3,7,8-TCDD equivalents.

TABLE A (Concluded)

HAP EMISSION FACTORS
For Metals

#	COMPOUND	EMISSION FACTOR (lbs/ton clinker)	SOURCE[a]
1.	Arsenic	4.8×10^{-5}	(1)
2.	Beryllium	9.9×10^{-7}	(2)
3.	Cadmium	6.0×10^{-5}	(1)
4.	Chromium	2.5×10^{-4}	(2)
5.	Cobalt	6.0×10^{-5}	(1)
6.	Lead	1.6×10^{-3}	(1)
7.	Manganese	1.1×10^{-3}	(2)
8.	Mercury	4.8×10^{-4}	(1)
9.	Nickel	2.4×10^{-4}	(1)
10.	Selenium	2.6×10^{-4}	(2)

[a](1) Emissions test data of FCS Unit I kiln, power plant, and lime plant operating simultaneously.

(2) Emission data from the USEPA *Emission Factor Documentation for AP-42, Section 11.6 - Portland Cement Manufacturing*, May, 1994.

TABLE B
HAP IMPACTS COMPARED TO NO THREAT LEVELS

Pollutant/ Avg.Time	Facility Increase Due to Proposed Kiln (ug/m^3)	Total Facility Impact With Proposed Kiln (ug/m^3)	NTL (ug/m^3)	---Percent of NTLs---- Facility Increase	Total Facility
Benzene					
8-HR	0.04755	0.14169	30	0.16%	0.47%
24-HR	0.02113	0.05051	7.2	0.29%	0.70%
ANNUAL	0.00150	0.00519	1.2E-01	1.25%	4.33%
Biphenyl					
8-HR	0.00002	0.00006	13	<0.005%	<0.005%
24-HR	0.00001	0.00002	3.12	<0.005%	<0.005%
Carbon disulfide					
8-HR	0.00626	0.01864	310	<0.005%	0.01%
24-HR	0.00278	0.00665	74.4	<0.005%	0.01%
ANNUAL	0.00020	0.00068	2.0E+02	<0.005%	<0.005%
Chlorobenzene					
8-HR	0.00098	0.00291	3450	<0.005%	<0.005%
24-HR	0.00043	0.00104	828	<0.005%	<0.005%
Ethylbenzene					
8-HR	0.000450	0.001342	4340	<0.005%	<0.005%
24-HR	0.000200	0.000479	1041.6	<0.005%	<0.005%
ANNUAL	0.000014	0.000049	1.0E+03	<0.005%	<0.005%
Formaldehyde					
8-HR	0.00135	0.00403	12	0.01%	0.03%
24-HR	0.00060	0.00144	2.88	0.02%	0.05%
ANNUAL	0.00004	0.00015	7.7E-02	0.05%	0.19%
Hexane[a]					
8-HR	0.000143	0.000425	1760	<0.005%	<0.005%
24-HR	0.000063	0.000152	422.4	<0.005%	<0.005%
ANNUAL	0.000004	0.000016	2.0E+02	<0.005%	<0.005%

[a]All Hexane emissions assumed to be n-Hexane for comparison to NTLs.

TABLE B (Continued)
HAP IMPACTS COMPARED TO NO THREAT LEVELS

Pollutant/ Avg.Time	Facility Increase (ug/m³)	Total Facility Impact (ug/m³)	NTL (ug/m³)	---Percent of NTLs---- Facility Increase	Total Facility
Hydrogen chloride					
8-HR	0.35036	1.04401	75	0.47%	1.39%
24-HR	0.15571	0.37218	18	0.87%	2.07%
ANNUAL	0.01104	0.03827	7.0E+00	0.16%	0.55%
Methyl chloride					
8-HR	0.00090	0.00268	1030	<0.005%	<0.005%
24-HR	0.00040	0.00096	247.2	<0.005%	<0.005%
Methylene chloride					
8-HR	0.00195	0.00582	1740	<0.005%	<0.005%
24-HR	0.00087	0.00207	417.6	<0.005%	<0.005%
ANNUAL	0.00006	0.00021	2.1E+00	<0.005%	0.01%
Methyl ethyl ketone					
8-HR	0.000075	0.000224	5900	<0.005%	<0.005%
24-HR	0.000033	0.000080	1416	<0.005%	<0.005%
ANNUAL	0.000002	0.000008	8.0E+01	<0.005%	<0.005%
Napthalene					
8-HR	0.00976	0.02908	520	<0.005%	0.01%
24-HR	0.00434	0.01037	124.8	<0.005%	0.01%
Phenol					
8-HR	0.000275	0.000820	190	<0.005%	<0.005%
24-HR	0.000122	0.000292	45.6	<0.005%	<0.005%
ANNUAL	0.000009	0.000030	3.0E+01	<0.005%	<0.005%
Styrene					
8-HR	0.00130	0.00388	2130	<0.005%	<0.005%
24-HR	0.00058	0.00138	511.2	<0.005%	<0.005%
2,3,7,8-TCDD (Dioxin)					
ANNUAL	5.13E-11	1.78E-10	2.2E-08	0.23%	0.81%

TABLE B (Continued)
HAP IMPACTS COMPARED TO NO THREAT LEVELS

Pollutant/ Avg.Time	Facility Increase (ug/m^3)	Total Facility Impact (ug/m^3)	NTL (ug/m^3)	---Percent of NTLs---- Facility Increase	Total Facility
Toluene					
8-HR	0.00601	0.01790	3770	<0.005%	<0.005%
24-HR	0.00267	0.00638	898	<0.005%	<0.005%
ANNUAL	0.00019	0.00066	3.0E+02	<0.005%	<0.005%
Trichloroethylene					
8-HR	0.000011	0.000032	2690	<0.005%	<0.005%
24-HR	0.000005	0.000011	645.6	<0.005%	<0.005%
Xylenes					
8-HR	0.00173	0.00515	4340	<0.005%	<0.005%
24-HR	0.00077	0.00183	1041.6	<0.005%	<0.005%
ANNUAL	0.00005	0.00019	8.0E+01	<0.005%	<0.005%
Arsenic (As)					
8-HR	0.000120	0.000358	2	0.01%	0.02%
24-HR	0.000053	0.000128	0.48	0.01%	0.03%
ANNUAL	0.000004	0.000013	2.3E-04	1.74%	5.65%
Beryllium (Be)					
8-HR	0.0000025	0.0000074	0.02	0.01%	0.04%
24-HR	0.0000011	0.0000026	0.0048	0.02%	0.05%
ANNUAL	0.0000001	0.0000003	4.2E-04	0.02%	0.07%
Cadmium (Cd)					
8-HR	0.000150	0.000447	0.5	0.03%	0.09%
24-HR	0.000067	0.000160	0.12	0.06%	0.13%
ANNUAL	0.000005	0.000016	5.6E-04	0.89%	2.86%
Chromium (Cr)					
8-HR	0.00063	0.00186	5	0.01%	0.04%
24-HR	0.00028	0.00066	1.2	0.02%	0.06%
ANNUAL	0.00002	0.00007	8.3E-04[a]	2.41%	8.43%

[a]Calculated from hexavalent chromium annual HAP based on the standard assumption that 10% of the total chromium emitted is in hexavalent form.

TABLE B (Concluded)
HAP IMPACTS COMPARED TO NO THREAT LEVELS

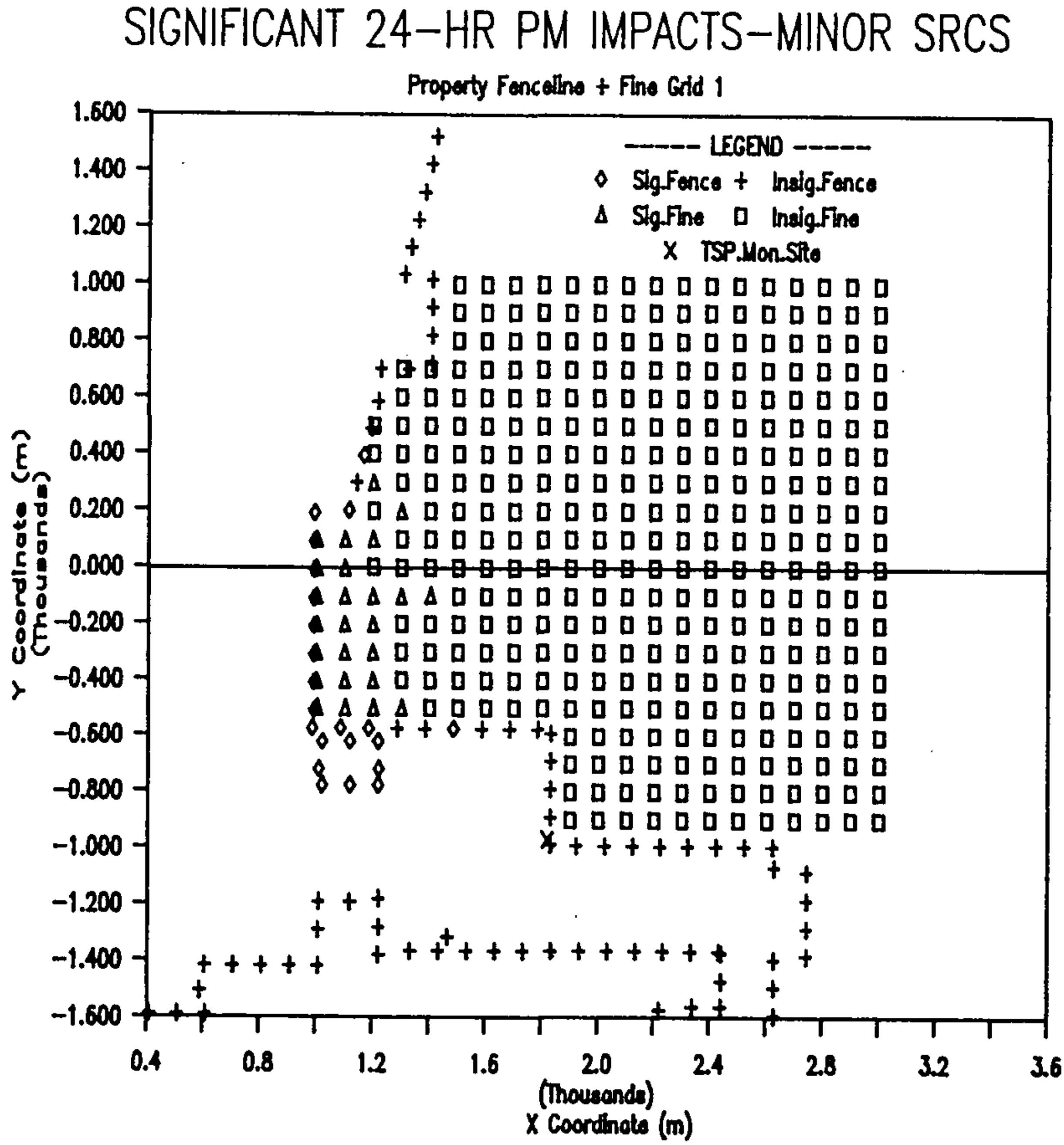
Pollutant/ Avg.Time	Facility Increase (ug/m^3)	Total Facility Impact (ug/m^3)	NTL (ug/m^3)	---Percent of NTLs---- Facility Increase	Total Facility
Cobalt (Co)					
8-HR	0.00015	0.00045	0.5	0.03%	0.09%
24-HR	0.00007	0.00016	0.12	0.06%	0.13%
Lead (Pb)					
8-HR	0.00400	0.01193	0.5	0.80%	2.39%
24-HR	0.00178	0.00425	0.12	1.48%	3.54%
ANNUAL	0.00013	0.00044	9.0E-02	0.14%	0.49%
Manganese (Mn)					
8-HR	0.00275	0.00820	50	0.01%	0.02%
24-HR	0.00122	0.00292	12	0.01%	0.02%
ANNUAL	0.00009	0.00030	4.0E-01	0.02%	0.07%
Mercury (Hg)					
8-HR	0.00120	0.00358	0.1	1.20%	3.58%
24-HR	0.00053	0.00128	0.024	2.21%	5.33%
ANNUAL	0.00004	0.00013	3.0E-01	0.01%	0.04%
Nickel (Ni)					
8-HR	0.00060	0.00179	1	0.06%	0.18%
24-HR	0.00027	0.00064	0.24	0.11%	0.27%
ANNUAL	0.00002	0.00007	4.2E-03	0.48%	1.67%
Selenium (Se)					
8-HR	0.00065	0.00194	2	0.03%	0.10%
24-HR	0.00029	0.00069	0.48	0.06%	0.14%

TABLE C
MINOR SOURCE PARTICULATE IMPACTS

	Fenceline Rec Grid		Radial Receptor Grid		Fine Receptor Grid	
Year/Avg.Time	Impact (ug/m^3)	Location X,Y(m)	Impact (ug/m^3)	Location X,Y(m)	Impact (ug/m^3)	Location X,Y(m)
82 Annual	0.42522	991, -307	0.38987	1000, 0	0.41932	1000,-300
24-Hour Max	6.19627	991, -107	4.86525	1000, 0	5.94182	1000,-100
24-Hour H2H	5.47358	991, -507	3.54241	1000, 0	5.53024	1000,-500
83 Annual	0.46680	991, -307	0.41378	1000, 0	0.46513	1000,-300
24-Hour Max	6.80201	985, -574	4.94602	1000, 0	6.68231	1000,-400
24-Hour H2H	5.37118	1020, -621	4.41248	1000, 0	4.85226	1000,-300
84 Annual	0.55561	991, -207	0.42057	1000, 0	0.54816	1000,-200
24-Hour Max	7.08755	1020, -779	4.50820	1000, 0	6.69893	1000,-200
24-Hour H2H	6.59860	991, -207	4.34662	1000, 0	<u>6.68680</u>	<u>1000,-200</u>
85 Annual	0.57819	991, -207	0.50738	1000, 0	0.56864	1000,-200
24-Hour Max	<u>8.36054</u>	<u>1020, -621</u>	6.53240	1000, 0	6.60654	1000, 100
24-Hour H2H	6.12899	991, -7	6.03319	1000, 0	6.03319	1000, 0
86 Annual	<u>0.66725</u>	<u>991, -207</u>	0.57579	1000, 0	0.65826	1000,-200
24-Hour Max	7.21513	991, -507	6.54482	1000, 0	6.74158	1000,-500
24-Hour H2H	5.92100	991, 93	4.76763	1000, 0	5.69617	1000, 100

Maximum impacts from all grids are underlined.

FIGURE A


SIGNIFICANT 24-HR PM IMPACTS-MINOR SRCS
Property Fenceline + Fine Grid 1
------ LEGEND ------
◊ Sig.Fence + Insig.Fence
Δ Sig.Fine □ Insig.Fine
X TSP.Mon.Site
Y Coordinate (m) (Thousands)
1.600
1.400
1.200
1.000
0.800
0.600
0.400
0.200
0.000
-0.200
-0.400
-0.600
-0.800
-1.000
-1.200
-1.400
-1.600
0.4
0.8
1.2
1.6
2.0
2.4
2.8
3.2
3.6
(Thousands)
X Coordinate (m)

ADDITIONAL ATTACHMENTS

REVISED TABLES AND TEXT FOR AIR PERMIT APPLICATION

<u>TABLE 2-1</u>
PSD POLLUTANT APPLICABILITY[a]

POLLUTANT	POTENTIAL INCREASE IN FACILITY EMISSIONS (tons/year)	PSD SIGNIFICANT EMISSION RATES (tons)	SUBJECT TO PSD REVIEW
SO_2	198.5	40	YES
NO_x	1581.2	40	YES
CO	569.4	100	YES
TSP	300.9	25	YES
PM_{10}	300.9	15	YES
O_3 (VOC emissions)	31.21	40	NO
Pb	0.04	0.6	NO
Hg	0.009	0.1	NO
Be	0.0003	0.0004	NO
H_2SO_4	5.1	7	NO

[a]Revised to include fugitive emissions and emissions from minor particulate sources.

TABLE 3-2

MINOR SOURCES AND EMISSIONS

MISSION UNIT DESCRIPTION	PLOT PLAN E7-150.000.10-327618 EMISSION UNIT LEGEND NUMBER	EMISSION UNIT EQUIPMENT NUMBER	DUST COLLECTOR EQUIPMENT NUMBER	PROCESS RATE	GRAIN LOADING	FLOWRATE	EMISSIONS	
				(tons/hr)	(grains/acf)	(ACFM)	lbs/hr	tons/yr
Dre Bin	53	2D-61[a]	2D-63[a]	2.0	0.01	3000	0.26	1.13
sh Bin	56	2D-64[c]	2D-67[c]	7.0	0.01	3400	0.29	1.28
Dust Bin	55	2D-72[c]	2D-75[c]	25.0	0.01	4500	0.39	1.69
Meal Transport	62	2F-03[c]	2F-14[c]	160.0	0.01	1000	0.09	0.38
Silo Storage	75	2F-21[c]	2F-30[c]	300.0	0.01	4000	0.34	1.50
Meal Storage & Homogenizing Silos	63	2G-01[c]	2G-12[c]	160.0	0.01	17,000	1.5	6.40
Feed System	64	2H-05, 2E-66[c]	2H-15[c]	130.0	0.01	7200	0.62	2.70
um Storage Bin	72	2L-14[d]	2L-08[d]	150.0	0.01	2000	0.17	0.75
er Transport	71	2L-03[d]	2L-16[d]	75.0	0.01	2000	0.17	0.75
Conveyor	34	2M-08[d]	2M-08[d]	120.0	0.01	4500	0.39	1.69
Mill Discharge Vent	73	2N-02[e]	2N-13[e]	15.0	0.01	40,000	3.43	15.0
Mill Sepol Separator	73	2N-08[e]	2N-20[e]	120.0	0.01	115,000	9.86	43.20
nt Storage Silo A	74	2Q-01, 2Q-20[e]	2Q-15A[e]	120.0	0.01	4620	0.40	1.70
nt Storage Silo B	74	2Q-01, 2Q-20[e]	2Q-15B[e]	120.0	0.01	4620	0.40	1.70
nt Silo Discharge Hopper	74	2Q-01, 2Q-20[e]	2Q-17[e]	540.0	0.01	3000	0.26	1.13
Transport Conveyor	68	2S-03[d]	2S-04[d]	100.0	0.01	2000	0.17	0.75
Storage Bin	69	2S-10[d]	2S-07[d]	100.0	0.01	2000	0.17	0.75
	TOTAL							82.50

itled "*Raw Material Storage and Handling*", permit application Attachment B.
itled "*Raw Mill System*", permit application Attachment B.
itled "*Raw Material, Storage, Homogenizing Silo, and Kiln Feed*", permit application Attachment B.
[d]Plate #4 titled "*Preheater, Kiln, Cooler, and Coal System*", permit application Attachment B.
[e]Plate #5 titled "*Finish Grinding System*", permit application Attachment B.

Data regarding the Pb, Hg, and Be content of fuels used currently by FCS is not available. In addition, emissions test data for Pb, Hg, Be, and H_2SO_4 mist are not available. The draft emission factor documentation for AP-42, Section 11.6 provided emission factors for Pb, Hg, Be, and H_2SO_4 mist from a similar cement production facility utilizing similar technology and burning similar fuel. These values are:

1) Pb - 7.5×10^{-5} pounds Pb per ton clinker
2) Hg - 2.4×10^{-5} pounds Hg per ton clinker
3) Be - 6.6×10^{-7} pounds Be per ton clinker
4) H_2SO_4 - 0.014 pounds H_2SO_4 per ton clinker

Also, the existing Unit I permit limits the Pb content of on-specification used oils to 100 ppm by weight. Estimated worst-case emissions for Pb, Hg, and Be are based on the assumption that the proposed Unit II kiln can operate up to 8688 hours fueled on coal or a mix of coal and TDF, and utilize approximately 294,100 gallons per year (gal/yr) of a fuel oil/used oil mix (85% to 15% mix maximum) for start-up. Estimated worst-case emissions for H_2SO_4 are based on full year operation (8760 hours) at the AP-42 emission rate listed above. Estimated maximum emissions (i.e., increase in facility emissions) calculate to be 0.043 tpy of Pb; 0.009 tpy of Hg; 0.0003 tpy of Be; and 5.1 tpy H_2SO_4.

The significant emission increase level for Pb is 0.6 tons, for Hg it is 0.1 tons, for Be it is 0.0004 tons and for H_2SO_4 it is 7 tons. As can be seen, worst-case facility emissions are less than the significant emission increase criteria for all four pollutants. Thus, for this application, Pb, Hg, Be, and H_2SO_4 are not subject to PSD review.

Revised 05/10/95

TABLE 7-2.
LEVEL-2 VISIBILITY SCREENING ANALYSES

Stab Class	WS Class (m/s)	Avg. WS (m/s)	$u\sigma_y\sigma_z$ (m^3/s)	Transport Time (hrs)	Freq.	Cumul Freq.	VISCREEN RESULTS -Power+2 Kilns- ΔE	Contrast	-Power+1 Kiln- ΔE	Contrast
F	1-2	1.5	4.51E+04	3.7	0.50%	0.50%	22.893*	-.160*	19.233*	-.126*
F	2-3	2.5	7.52E+04	2.2	1.51%	2.01%	16.175*	-.108*	13.204*	-.085*
F	3-4	3.5	1.05E+05	1.6	0.44%	2.45%	12.521*	-.082*	10.069*	-.063*
E	1-2	1.5	1.23E+05	3.7	0.09%	2.54%	15.128*	-.100*	12.286*	-.079*
F	4-5	4.5	1.35E+05	1.2	0.00%	2.54%	10.206*	-.065*	8.122*	-.049
E	2-3	2.5	2.05E+05	2.2	0.69%	3.23%	10.077*	-.064*	8.014*	-.049
E	3-4	3.5	2.87E+05	1.6	0.63%	3.86%	7.539*	-.046	5.934*	-.035
D	1-2	1.5	3.02E+05	3.7	0.05%	3.91%	8.999*	-.056*	7.125*	-.043
E	4-5	4.5	3.69E+05	1.2	0.41%	4.32%	6.017*	-.036	4.708*	-.028
E	5-6	5.5	4.51E+05	1.0	0.13%	4.45%	5.005*	-.030	3.901*	-.023
D	2-3	2.5	5.03E+05	2.2	0.43%	4.88%	5.715*	-.035	4.467*	-.026
E	7-8	7.5	6.15E+05	0.7	0.00%	4.88%	3.743*	-.022	2.905*	-.017
D	3-4	3.5	7.04E+05	1.6	0.59%	5.47%	4.183*	-.025	3.251*	-.019
D	4-5	4.5	9.05E+05	1.2	0.46%	5.93%	3.298*	-.020	2.555	-.015
D	5-6	5.5	1.11E+06	1.0	0.35%	6.28%	2.722	-.016	2.105	-.012
D	6-7	6.5	1.31E+06	0.9	0.26%	6.54%	2.317	-.014	1.789	-.010
D	7-8	7.5	1.51E+06	0.7	0.07%	6.61%	2.017	-.012	1.556	-.009
D	8-9	8.5	1.71E+06	0.7	0.01%	6.62%	1.785	-.010	1.376	-.008
D	9-10	9.5	1.91E+06	0.6	0.00%	6.62%	1.602	-.009	1.234	-.007
D	>10	10.5	2.11E+06	0.5	0.01%	6.63%	1.452	-.008	1.118	-.006
C	1-2	1.5	2.15E+06	3.7	0.03%	6.66%	1.928	-.011	1.487	-.008
C	2-3	2.5	3.59E+06	2.2	0.14%	6.80%	1.170	-.007	0.900	-.005
C	3-4	3.5	5.02E+06	1.6	0.28%	7.08%	0.839	-.005	0.645	-.004
C	4-5	4.5	6.46E+06	1.2	0.41%	7.49%	0.655	-.004	0.503	-.003
C	5-6	5.5	7.89E+06	1.0	0.20%	7.69%	N/C	N/C	N/C	N/C
C	6-7	6.5	9.33E+06	0.9	0.02%	7.71%	N/C	N/C	N/C	N/C
B	1-2	1.5	9.36E+06	3.7	0.02%	7.73%	N/C	N/C	N/C	N/C
C	7-8	7.5	1.08E+07	0.7	0.01%	7.74%	N/C	N/C	N/C	N/C
B	2-3	2.5	1.56E+07	2.2	0.13%	7.87%	N/C	N/C	N/C	N/C
A	1-2	1.5	2.08E+07	3.7	0.01%	7.88%	N/C	N/C	N/C	N/C
B	3-4	3.5	2.18E+07	1.6	0.38%	8.26%	N/C	N/C	N/C	N/C
B	4-5	4.5	2.81E+07	1.2	0.08%	8.34%	N/C	N/C	N/C	N/C
A	2-3	2.5	3.46E+07	2.2	0.06%	8.40%	N/C	N/C	N/C	N/C

σ_y and σ_z dispersion coefficients at 20.0 km based on Tables 1-1 and 1-2 of ISCST2 User's Manual Vol.II and are (A through F stabilities): σ_y = 2769, 2133, 1515, 1005, 752, and 501 meters and σ_z = 5000, 2924, 947, 200, 109, and 60 meters. Values identified by VISCREEN as exceeding the visibility screening criteria are starred "*". Due to limited probability for significant results, VISCREEN runs were not performed for those cases noted as "N/C".

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **Other**
2. Future Effective Date of Allowable Emissions: **Date of Permit Approval**
3. Requested Allowable Emissions and Units: **4.33 lbs/ton clinker**
4. Equivalent Allowable Emissions: **359.0** lb/hour **1572.0** tons/year
5. Method of Compliance: **Installation of a continuous emission monitor following promulgation of final regulations in 40 CFR 64.**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **Potential emissions at maximum operating capacity = allowable emissions**

B. NO OTHER EMISSION LIMITATION APPLICABLE

1. Basis for Allowable Emissions Code:
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:
4. Equivalent Allowable Emissions: lb/hr tons/year
5. Method of Compliance:
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **Other**
2. Future Effective Date of Allowable Emissions: **Date of Air Permit approval**
3. Requested Allowable Emissions and Units: **0.54 lbs/ton clinker**
4. Equivalent Allowable Emissions: **45.0** lb/hour **197.1** tons/year
5. Method of Compliance: **Installation of a continuous emission monitor following promulgation of final regulations in 40 CFR 64**
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **Potential emissions at maximum operating capacity = allowable emissions**

B. NO OTHER EMISSION LIMITATION APPLICABLE

1. Basis for Allowable Emissions Code:
2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:
4. Equivalent Allowable Emissions: lb/hr tons/year
5. Method of Compliance:
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode):

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **Other**	
2. Future Effective Date of Allowable Emissions: **Date of Air Permit approval**	
3. Requested Allowable Emissions and Units: **0.60 lb/ton clinker**	
4. Equivalent Allowable Emissions: **49.5** lb/hour	**216.0** tons/year
5. Method of Compliance: **Compliance Emission Test**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **Potential emissions at maximum operating capacity = allowable emissions**	

B.

1. Basis for Allowable Emissions Code: **Rule**	
2. Future Effective Date of Allowable Emissions: **Date of Air permit approval**	
3. Requested Allowable Emissions and Units: **0.6 lb/ton clinker**	
4. Equivalent Allowable Emissions: **49.5** lb/hr	**216.0** tons/year
5. Method of Compliance: **Compliance Emission Test**	
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **Rule = 40 CFR 60, Subpart F**	

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **Other**		
2. Future Effective Date of Allowable Emissions: **Date of Air Permit approval**		
3. Requested Allowable Emissions and Units: **0.60 lb/ton clinker**		
4. Equivalent Allowable Emissions:	**49.5** lb/hour	**216.0** tons/year
5. Method of Compliance: **Compliance Emission Test**		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **Potential emissions at maximum operating capacity = allowable emissions**		

B.

1. Basis for Allowable Emissions Code: **Rule**		
2. Future Effective Date of Allowable Emissions: **Date of Air Permit approval**		
3. Requested Allowable Emissions and Units: **0.6 lb/ton clinker**		
4. Equivalent Allowable Emissions:	**49.5** lb/hr	**216.0** tons/year
5. Method of Compliance: **Compliance Emission Test**		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode): **Rule = 40 CFR 60, Subpart F**		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number: 2D-63

Emission Unit Description: Iron Ore Bin

Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	500
Bag Fabric:	Polyester	**Flowrate (ACFM):**	3000
Air To Cloth Ratio:	6:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	100	**Inlet Moisture Content:**	Ambient
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number:	2D-67		
Emission Unit Description:	Fly Ash Bin		
Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	567
Bag Fabric:	Polyester	**Flowrate (ACFM):**	3400
Air To Cloth Ratio:	6:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	100	**Inlet Moisture Content:**	Ambient
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number:	2D-75		
Emission Unit Description:	Filter Dust Bin		
Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	750
Bag Fabric:	Polyester	**Flowrate (ACFM):**	4500
Air To Cloth Ratio:	6:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	200	**Inlet Moisture Content:**	<1%
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number: 2F-14

Emission Unit Description: Raw Meal Transport

Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	167
Bag Fabric:	Polyester	**Flowrate (ACFM):**	1000
Air To Cloth Ratio:	6:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	180	**Inlet Moisture Content:**	<1%
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number:	2F-30		
Emission Unit Description:	Lime Silo Storage		
Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	667
Bag Fabric:	Polyester	**Flowrate (ACFM):**	4000
Air To Cloth Ratio:	6:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	200	**Inlet Moisture Content:**	10%
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number:	2G-12		
Emission Unit Description:	Raw Meal Storage and Homogenizing Silo		
Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	2833
Bag Fabric:	Polyester	**Flowrate (ACFM):**	17000
Air To Cloth Ratio:	6:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	180	**Inlet Moisture Content:**	<1%
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number: 2H-15

Emission Unit Description: Kiln Feed System

Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	1200
Bag Fabric:	Polyester	**Flowrate (ACFM):**	7200
Air To Cloth Ratio:	6:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	180	**Inlet Moisture Content:**	<1%
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number:	2L-08		
Emission Unit Description:	Gypsum Storage Bin		
Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	333
Bag Fabric:	Polyester	**Flowrate (ACFM):**	2000
Air To Cloth Ratio:	6:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	70	**Inlet Moisture Content:**	Ambient
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number:	2L-16		
Emission Unit Description:	Clinker Transport		
Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	333
Bag Fabric:	Polyester	**Flowrate (ACFM):**	2000
Air To Cloth Ratio:	6:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	180	**Inlet Moisture Content:**	<1%
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number:	2M-08		
Emission Unit Description:	Belt Conveyer		
Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	750
Bag Fabric:	Polyester	**Flowrate (ACFM):**	4500
Air To Cloth Ratio:	6:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	100	**Inlet Moisture Content:**	<1%
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number:	2N-13		
Emission Unit Description:	Finish Mill Discharge Vent		
Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	10000
Bag Fabric:	Polyester	**Flowrate (ACFM):**	40000
Air To Cloth Ratio:	4:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	200	**Inlet Moisture Content:**	<1%
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number: 2N-20

Emission Unit Description: Finish Mill Sepol Separator

Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	28750
Bag Fabric:	Polyester	**Flowrate (ACFM):**	115000
Air To Cloth Ratio:	4:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	160	**Inlet Moisture Content:**	<1%
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number: 2Q-15A

Emission Unit Description: Cement Storage Silo A

Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	770
Bag Fabric:	Polyester	**Flowrate (ACFM):**	4620
Air To Cloth Ratio:	6:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	200	**Inlet Moisture Content:**	<1%
Outlet Grain Loading (gr/ACF):	0.01		

SPECIFICATION DATA SHEET

Dust Collector Equipment Number: 2Q-15B

Emission Unit Description: Cement Storage Silo B

Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	770
Bag Fabric:	Polyester	**Flowrate (ACFM):**	4620
Air To Cloth Ratio:	6:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	200	**Inlet Moisture Content:**	<1%
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number: 2Q-17

Emission Unit Description: Cement Silo Discharge Hopper

Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	600
Bag Fabric:	Polyester	**Flowrate (ACFM):**	3000
Air To Cloth Ratio:	6:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	180	**Inlet Moisture Content:**	<1%
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number:	2S-04		
Emission Unit Description:	Coal Transport Conveyer		
Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	444
Bag Fabric:	Polyester	**Flowrate (ACFM):**	2000
Air To Cloth Ratio:	4.5:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	70	**Inlet Moisture Content:**	Ambient
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR SPECIFICATION DATA SHEET

Dust Collector Equipment Number:	2S-07		
Emission Unit Description:	Coal Storage Bin		
Dust Collector Type:	Pulse Jet	**Total Cloth Area (sq. ft.):**	444
Bag Fabric:	Polyester	**Flowrate (ACFM):**	2000
Air To Cloth Ratio:	4.5:1	**Control Efficiency:**	99.9%
Temperature of Outlet (deg. F):	70	**Inlet Moisture Content:**	Ambient
Outlet Grain Loading (gr/ACF):	0.01		

DUST COLLECTOR
SPECIFICATION DATA SHEET

Dust Collector Equipment Number:	2E-40		
Emission Unit Description:	Kiln Dust Collector		
Dust Collector Type:	Reverse Air	**Total Cloth Area (sq. ft.):**	221669
Bag Fabric:	Fiberglass	**Flowrate (ACFM):**	380000
Air To Cloth Ratio:	1.93:1	**Control Efficiency:**	>99.9%
Temperature of Outlet (deg. F):	430	**Outlet Moisture Content:**	12% max.
Outlet Grain Loading (gr/ACF):	0.01		