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KA 187-04-10
June 29, 2005

Via Email and USPS

Mr. Bobby Bull
Florida Department of
Environmental Protection
111 S. Magnolia Drive
Tallahassee, FL 32399-2400

RE: Florida Rock Industries
FDEP File No. 0010087-013-AC, PSD-FL-350
Comments on Draft Permit

Dear Bobby:

We appreciated the opportunity to meet with you, Trina, and Jim on Friday, June 24, 2005 to discuss our comments on the draft permit for Kiln No. 2 at the Florida Rock Industries Thompson S. Baker Cement Plant.

Attached are our comments on five of the major issues we discussed during our meeting, including the matter that you and I discussed by telephone on June 28, 2005. Our comments address the following:

- D/F and PM retest requirements,
- Deletion of the mass/volume limits on fuel use,
- Heat input from tire derived fuel
- Carbon monoxide emission monitoring, and
- Process rate averaging times.

The other comments that we have discussed appear to be pretty well agreed upon and resolved. If there are any issues with any of the other matters we discussed, please give me a call.

The following are our comments on the five major issues that we discussed.

Dioxin/Furan (D/F) and/or Particulate Matter (PM) Retesting

Page 18, Section III, Condition 11

Suggested Language:

> *Performance Testing: The owner or operator shall notify the Department at least 60 days prior to initiating a change in feed or fuel from that used in the most recent performance test for D/F or PM, if such change may adversely affect compliance with D/F or PM emission limiting standards, or as soon as practical thereafter where 60 days advance notice is not feasible. For purposes of this condition, such change may include, but is not limited to, the use of a raw material or fuel not previously used, a significant change in the physical or chemical properties of a raw material or fuel or a change in flyash from flyash generated during normal operation of a power plant (typically 10-15 percent carbon/LOI) to processed, high-carbon flyash (typically 30-50 percent carbon/LOI). Based on the information provided, the Department will determine if performance testing pursuant to 40 CFR 63.1349 will be required for the new raw material or fuel.*

Rationale: The advance notification of 60 days is consistent with requirement 40 CFR 63.1349 as is the requirement to notify as soon as possible thereafter if a 60 day prior notice is not feasible or possible. The language of Condition 11 in the draft permit requiring 90 days prior notice is not practical, and in most cases it is probably not possible. Changes in raw materials or fuels can occur on relatively short notice so some leeway must be granted to allow Florida Rock to procure raw materials and fuel that are available in the market and that are competitively priced.

The language of 40 CFR 63.1349 requires notification only of changes that "may adversely affect compliance with D/F or PM emission limiting standards". Given situations that have occurred within Florida, it is understandable that if DEP is requiring

permit language more definitive than "may.. affect". As stated in previous comments, a change in "supplier" is not indicative of a change in the characteristics of a raw material or fuel as multiple suppliers can supply materials that are substantially the same in character.

To account for "changes" that will not adversely affect D/F or PM compliance. It is suggested that the permit language be written to require prior notice only if there is a change in raw materials to a raw material not previously used. Examples would be the use of iron ore in lieu of mill scale to provide iron or the use of bauxite to provide aluminum in place of flyash and/or clay, if iron ore or bauxite have not been previously used and approved by the Department. Another example would be a change from the use of 100 percent coal as a pyroprocessing fuel to a coal/pet coke blend if a coal/pet coke blend has not been previously approved and used. To ease the operating burden on FRI, the Department should waive notification and/or the approval process if FRI changes, for example, from 100 percent coal to coal/pet coke if both fuels have previously been approved by the Department. The same applies to change in raw materials.

It should be noted that FRI conducted D/F performance tests while using processed, high-carbon flyash (injected directly into the calciner) while simultaneously firing a coal/pet coke blend during a Department approved production test. The D/F testing demonstrated compliance, so there is evidence that changes in D/F emissions are not extremely sensitive to material and fuel changes in modern preheater/precalciner cement plants.

Regarding changes in the LOI of flyash, flyash produced by power plants and obtained directly from power plants typically has a carbon content (or LOI) of 10-15 percent. On the other hand, the high-carbon flyash being considered by FRI and other companies is flyash that has been processed (by companies such as Separation Technologies, Inc.) resulting in an LOI of 30-50 percent. It is reasonable for FRI to provide the Department notice prior to changing from normally produced flyash to processed, high-carbon flyash

if such a change has not been previously noticed and approved. Changes in the LOI of the normally produced flyash (within the typical range of 10-15 percent) or changes in the characteristic of ash from one power plant to ash from another power plant should not require prior notice.

Limitations on Heat Input

Page 16, Section III, Condition 2 and Page 17, Section III, Condition 5:

As discussed with the Department, FRI is requesting that fuel use expressed as mass (tons per hour for coal and pet coke) and volume (cubic feet per hour for natural gas and gallons per hour for oil) be deleted. The permit already limits the heat input to the raw mill heater and to the pyroprocessing system to 40 million BTU per hour and 400 million BTU per hour, respectively. Placing an additional mass or volume restriction on fuel input is unnecessary and can be overly restrictive because of changes in heating value of a fuel; in particular coal and pet coke.

During the discussion of this matter, the effect of a reduced heating value (i.e., a higher mass input) in a fuel such as coal on mercury emissions was discussed. The permit requires that the mercury input to the plant be determined monthly by sampling all raw materials and fuels used during the month, analyzing each raw material and fuel for mercury (ppm or mg/kg) and then multiplying the mercury concentration of each raw material and fuel by the actual amount of that raw material and fuel used during the month.

Using coal as an example, if the heating value of coal (mmBTU per hour per pound) decreased so that it required 18 tons per hour of coal, rather than 15.4 tons per hour, to provide a heat input of 400 mmBTU per hour, the mercury input from coal would be determined by multiplying the mercury concentration of the coal (ppm or mg/kg) by the actual tonnage used in the month. At 15.4 tons of coal per hour, the monthly mercury input would be determined by multiplying the concentration of mercury in coal by

approximately 11,100 tons per month. With coal having a lower heating value and requiring 18 tons per hour, the mercury input would be determined by multiplying the mercury concentration of the low heating value coal by approximately 13,000 tons per month.

As a result, the deletion of the mass and volume limits on fuels will have no impact on the determination of mercury emissions or on any other permit condition.

Use of Tire Derived Fuel (TDF)

Page 16, Section III, Condition 2:

As discussed with the Department, FRI requests a maximum heat input from TDF of 30 percent, not to exceed 120 mmBTU per hour rather than the 15 percent limit in the draft permit. As discussed with the Department, this is to allow FRI the flexibility to determine the maximum practical and feasible TDF firing rate when SNCR is incorporated into a MSC plant. Once FRI has made this determination, the Department and FRI can jointly revisit this condition and place a reasonable and practical TDF firing rate limit in the permit if necessary.

Carbon Monoxide Monitoring

Page 22-23, Section III, Condition 20:

As discussed with the Department, there is considerable variation in the carbon monoxide emissions from a modern Portland cement plant. Data prepared by the Department and included in the Technical Evaluation and Preliminary Determination for a project undertaken by Rinker Materials Corporation (Miami Cement Plant) and dated December 14, 2004, was used as an example of the variability of carbon monoxide emissions during our recent discussion. These data show the carbon monoxide concentration in the down comer of the plant varying from approximately 400 ppm to approximately 1200 ppm (hourly average), with an average of approximately 700 ppm over a six-month period. Because of this demonstrated variability and the fact that no long-term CO monitoring

data (pounds per ton of clinker) exist for any cement plant in Florida (or probably in the U.S.), the following conceptual conditions related to carbon monoxide monitoring were discussed during our meeting of June 24, 2005:

For the first nine months of operation following the start-up of the kiln/raw mill system, carbon monoxide emissions will be limited to 3.6 pounds per ton of clinker with compliance demonstrated by a compliance test (using EPA Method 10). The compliance test is to be conducted during the initial compliance testing of the kiln/raw mill system within 180 days of start-up of the kiln/raw mill.

During the initial compliance test period, FRI will also calibrate and certify a CO CEMS that will be installed in the kiln/raw mill stack. The CO CEMS will be calibrated and certified in accordance with Performance Specification 4 (40 CFR 60, Appendix B).

Following the certification of the CO CEMS, FRI will generate carbon monoxide emission data over at least a three-month period (expressed as pounds per ton of clinker). These data will include only data that are representative of the normal operation of the kiln/raw mill system. Data that are affected by abnormal operation of the plant will be removed from the data set. These data will be provided to the Department to be reviewed for purposes of establishing a final CO emission limit (pounds per ton of clinker) and averaging time.

The specific language suggested for Condition 20 is as follows:

20. Continuous Emission Monitoring Systems: The owner... every minute. Initial compliance with the 3-hour emission limit for CO shall be demonstrated with a compliance test conducted in accordance with EPA Method 10 within 180 days after startup of the kiln/raw mill. Once calibrated and certified within 180 days of kiln/raw mill startup, the CEMS for CO shall be used to generate data to be submitted to the

Department nine months after startup. The Department will evaluate the CEMS data and may reopen the permit to set an appropriate CO emission limit using the CEMS for CO for compliance. Compliance with the ~~3-hour~~ emission limit for ~~CO and~~ VOC shall be based on a 30-day block average that shall be computed from a minimum of one measurement every minute. The CEMS system shall... BACT.

Process Rate Averaging Times
Page 12, Section III, Condition 2,
Page 17, Section III, Condition 4, and
Page 50, Section III, Condition 2:

Raw Material Handling and Storage. It is our understanding that the raw material handling and storage rate (Subsection A, Condition 2) of 510 tons per hour is an annual average rate, with a maximum hourly rate permitted at 1330 tons per hour.

Kiln Feed Rate and Clinker Production Rate. It is our understanding that the kiln feed rate (preheater feed rate plus the flyash injection rate to the calciner) is limited to 212 tons per hour, 24-hour average and that the clinker production rate (determined as a function of kiln feed rate) is limited to 125 tons per hour, 24-hour average.

The convention for designating the capacity of a cement plant is tons of clinker per day. In the case of the FRI Kiln No. 2, the capacity is 3000 tons of clinker per day (125 tons per hour multiplied by 24-hours). To limit the production rate of clinker to 125 tons per hour, not to be exceeded (corresponding to a kiln feed rate of 212 tons per hour, not to be exceeded), the Department is effectively restricting the design capacity of the plant. There are hourly fluctuations in the kiln feed rate and clinker production rate and these must be averaged over a reasonable period of time in order for FRI to achieve the production of 3000 tons of clinker per day. If the maximum limit for clinker production is set to 125 tons per hour, not to be exceeded, the design production rate of 3000 tons per

day could never be achieved because of the normal plant production fluctuations. Typical production fluctuations are within 10 percent of the design rate; i.e., from 112.5-137.5 tons per hour for a design rate of 125 tons per hour of clinker.

The permit also limits the annual kiln feed rate to 1,857,120 tons per year and the annual clinker production to 1,095,000 tons per year. In both cases, these rates are a product of the 24-hour average rate (tons per hour) times 8760 hours a year. By limiting the maximum hourly kiln feed rate and the production rate to 212 tons per hour and 125 tons per hour, respectively, the permitted annual rates could also never be achieved.

The matter of permitting so that the 24-hour design rate of a plant is achievable was addressed in a permit modification for the FRI Kiln No. 1 (September 2004) and in permit modifications to the two Cemex Brooksville cement kilns. In both cases, maximum hourly rates are permitted in addition to the 24-hour average rates. This same end could be achieved in the current FRI permit by simply stating that the permitted kiln feed rate and clinker production rate are 24-hour average rates.

The establishment of a kiln feed rate and clinker production rate as 24-hour average limits will have no effect on permitted emissions. The particulate matter emission limit is based on a 3-hour average emission rate. Compliance testing for particulate matter further requires that the testing be conducted within 90-100 percent of the permitted operating rate of the emission unit. Considering the fact that the fluctuation in kiln feed and clinker production will be within ten percent of the 24-hour average rates, particulate matter testing at the daily average process rates will be adequate to demonstrate compliance at the peak hourly rates.

With SO_2, NOx, VOC, and CO, compliance will be demonstrated by CEMSs with permitted averaging times ranging from 24-hours to 30-days. [The 30-day average for CO is the limit that may be established nine months after the start-up of the kiln/raw mill

system]. As the averaging times for these four pollutants are all 24-hour averages or longer, establishing a 24-hour average kiln feed rate and clinker production rate will not compromise compliance.

Cement Production Rate. The cement production rate limit of 156 tons per hour (Subsection B, Condition 4) is a 30-day average limit. The 156 ton per hour permitted production rate corresponds to a clinker production rate of 125 tons per hour. Thus, if the 156 ton per hour limit is an hourly average or a 24-hour average limit not to be exceeded, the finish mill would be required to operate the same number of hours per year as the kiln system to utilize all clinker produced. This is not practical and it is not consistent with cement plant design.

Finish mills are typically designed and constructed with an hourly capacity considerably greater than the clinker production rate. This allows for the scheduled downtime necessary to maintain a finish mill without restricting clinker production rate below design capacity. For this reason, FRI requests that the cement production rate be established as a 30-day average rate. This is also consistent with the annual permitted cement production rate of 1,356,560 tons per year.

By establishing the cement production rate as a 30-day average rate, permitted particulate matter emissions will not be affected. The particulate matter emissions from the finish mill and ancillary equipment are a function of the air flow through the mill and the particulate matter concentrations in the air streams is discharged from the fabric filter collectors. The air flows through the finish mill and ancillary equipment are functions of the fans drafting each piece of equipment. Thus, even if there are daily fluctuations in the finished cement throughput, the air flow rates will remain constant as will the particulate matter concentrations in the discharges from the fabric filter. As a result, particulate matter emissions will not be effected by fluctuations in the grinding rate.

Coal and Coke Grinding Rates. The grinding rate of coal and/or pet coke of 15.4 tons per hour is a 30-day average. This rate corresponds to the permitted annual rate of 134,769 tons per year of solid fuel. As with the finish mill, the coal mill is designed with a capacity greater than that required to meet the average fuel firing rate of the pyroprocessing system. This allows solid fuel to be ground and an inventory to be established in a fuel bin. From this bin, the fuel is indirectly fired to the kiln and calciner.

If it were not for the excess capacity of the coal mill and the ability to establish an inventory, any shutdown of the coal mill would automatically trigger a shutdown of the kiln/raw mill system. This would create an untenable operating condition.

As with the finish mill, the particulate matter emissions from the coal mill are limited by the coal mill fan and the particulate matter concentration in the air stream discharged from the fabric filter collector associated with the coal mill. Thus, fluctuations in the throughput of the coal mill will not affect particulate matter emissions from the mill.

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Again, we appreciate the opportunity to provide you with these comments. If there are questions or comments regarding the information we provided, please contact me immediately.

Very truly yours,

KOOGLER & ASSOCIATES, INC.

John B. Koogler, Ph.D., P.E.

JBK/lt

cc: Ms. Trina Vielhauer, FDEP
Mr. Jim Pennington, FDEP
Mr. Gary Sauer, FRI
Mr. Chris Horner, FRI
Mr. Henry Gotsch, FRI
Mr. Segundo Fernandez, OHFC
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March 24, 2005

Mr. James K. Penningtonn
Mr. Bobby Bull
Department of Environmental Protection
North Permitting Section
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Via facsimile to (850) 921-9533 and First Class Mail

RE: Florida Rock Expansion Permit

Dear Mr. Pennington and Mr. Bull:

Enclosed please find the review of Florida Rock Industries, Inc. Permit Application, which was prepared by Schreiber, Yonley & Associates. Said review is being submitted for your consideration prior to the issuance of a draft permit.

Should you have any questions or concerns regarding this matter, please do not hesitate to contact my office.

Thanking you for your cooperation and assistance, I remain

Yours very truly,

FOLDS & WALKER, LLC

S. Scott Walker, Esquire
City Attorney for
The City of Newberry, Fl

Cc: Tim Atkinson, Esquire
Ralph Moon, HAS Environmental

SCHREIBER & YONLEY ASSOCIATES
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March 22, 2005

Mr. Scott Walker
Folds and Walker, L.L.C.
City Attorney, City of Newberry
527 East University Avenue
Gainesville, FL 32602

RE: Review of Florida Rock Industries, Inc. Permit Application
SYA Project No. 050002

Dear Mr. Walker:

Enclosed with this letter is Schreiber, Yonley & Associates (SYA) review of the Florida Rock Industries, Inc. (Florida Rock) Air Construction Permit Application for a new cement manufacturing line near Newberry, Alachua County, Florida.

If you have any questions or require additional information, please contact me at (573) 657-0639 or Chuck Kellett in our St. Louis office at (636) 349-8399.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

Robert J. Schreiber, Jr., P.E.
President

RJS:bah
Enclosure

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REVIEW OF FLORIDA ROCK INDUSTRIES, INC. PERMIT APPLICATION

Schreiber, Yonley & Associates (SYA) has reviewed the following material associated with the Florida Rock Industries, Inc. (Florida Rock) Air Construction Permit Application for a new cement manufacturing line near Newberry, Alachua County, Florida:

1. *Report in Support of an Application for a PSD Construction Permit Review*, dated November 8, 2004;
2. Official application forms associated with the above report titled *Florida Department of Environmental Protection, Division of Air Resource Management, Application for Air Permit – Long Form*;
3. *Request for Additional Information* letter dated December 3, 2004 from James K. Pennington of the Florida Department of Environmental Protection (FDEP) to Mr. Gary Sauer of Florida Rock; and
4. *Response to Request for Additional Information* letter dated January 14, 2005 from Steven C. Cullen of Koogler & Associates to James K. Pennington.

Some appendices associated with items 1 and 4, above, were not available to SYA for our review. The most notable appendices were the ones containing the dispersion modeling information.

The report (item 1) was reviewed for information on the proposed new emissions units and changes to existing emissions units. A detailed listing of all emissions sources, along with their corresponding emission factors and potential emissions was not provided in the report. However, a summary of the modified emission rates was provided in Table 3 and compared to the significant emission rates for PSD review.

Emissions calculations for most of the pollutants noted in Table 3 of the report were found in the official application forms (item 2). A point-by-point summary and evaluation of the emissions levels proposed by Florida Rock in the application is included as Attachment 1 to this review. The missing calculations included those for sulfuric acid mist, fluorides and lead. Emission factors for fluorides and lead are found in Table 11.6-9 of the USEPA document AP-42. Using these emission factors, the potential emission rates found in Table 3 were verified. Table 11.6-9 also provides an emission factor for SO_3, which can be used to estimate emissions of H_2SO_4. However, this emission factor could not be used to verify the sulfuric acid emission rate found in Table 3 of the report. The basis for or methodology for determining the new line sulfuric acid mist emission rate should be provided by Florida Rock.

Florida Rock has calculated potential mercury emissions to be less than 175 pounds per year using a material balance approach. In their request for additional information (item 3), FDEP asked that Florida Rock "provide reasonable assurance that the 175 lb/yr of mercury emissions will not be exceeded." In their response (item 4), Florida Rock stated that they currently sample fuels and raw materials on a monthly basis. Laboratory results have indicated that the mercury content in the kiln feed is consistently low. In order to insure that materials fed to the kiln will continue to contain sufficiently low concentrations of mercury, it is recommended that a

condition be included in the final permit that would require Florida Rock to test for mercury emissions from the new line. The testing should be done under representative worst-case conditions with respect to the fuel and feed material mercury concentration. The mercury concentrations determined from the monthly fuel and raw material sampling could then be used to verify that the operating parameters determined from the representative worst-case testing are being adhered to. As an option, Florida Rock could agree to limit the total mercury input to the new kiln system to not more than 175 pounds per year from all feed streams. This option, however, does not afford Florida Rock the benefit of accounting for the kiln system removal efficiency for mercury.

The emission factors used for Raw Materials Handling and Storage equipment (primary crushing, raw materials unloading and transfer operations) were obtained from the June 2003 draft of AP-42 Section 11.19.2 (crushed stone processing). Only a few minor changes were made to the draft before the final version was published in August 2004. The differences will not significantly affect potential emissions from Florida Rock's proposed modifications.

It was not apparent from the report whether or not Florida Rock appropriately accounted for emissions related to the increase in quarrying activities due to the proposed expansion. It would be expected that additional rock would be mined from the on-site quarry, which may result in increased emissions from drilling, blasting, truck loading, and quarry haul roads. Also, increased traffic should be accounted for since additional raw materials and additives will be delivered to the plant.

Particulate matter emissions for the remainder of the plant are controlled using fabric filter dust collectors (baghouses) or electrostatic precipitators (ESPs). Florida Rock originally proposed grain loading based emission factors of 0.01 and 0.008 grains per dry standard cubic foot (gr/dscf) for PM and PM_{10} , respectively, as BACT for all of the new baghouses, except for those associated with the proposed coal mill. In response to comments made by FDEP (items 3 and 4), Florida Rock lowered the PM_{10} outlet grain loading emission factor for two of the baghouses to 0.007 gr/dscf. In addition, Florida Rock lowered the PM_{10} outlet grain loading emission factor for two baghouses associated with the existing production line to 0.007 gr/dscf. Florida Rock did not indicate why these specific new baghouses will be capable of achieving a BACT emission limit of 0.007 gr/dscf, while the other new ones will not. Additionally, by proposing an emission limit of 0.007 gr/dscf on the two existing baghouses, Florida Rock raises the question as to whether BACT for PM_{10} for most, if not all, of the new collectors for the new line should be set at 0.007 gr/dscf. Also, it is not clear why the coal handling baghouses will not be able to achieve the same BACT emission rate as the other new baghouses at the plant.

The BACT analysis for particulate matter did not address or include the most recent technological advancements in available fabric filter media. Membrane coated fabric filter media (i.e., e-PTFE membrane bags) should be included and evaluated in the BACT analysis. Membrane bags typically exhibit increased performance over the standard bags discussed in the current BACT evaluation and have comparable economic impacts. Membrane bags reportedly cost about twice as much as standard media bags, but typically last twice as long. BACT determinations for several recently permitted cement plants have included e-PTFE membrane bags, or equivalent, as being used on the kiln/raw mill system exhaust and finish mill system

exhaust. The proposed BACT particulate matter emission limits for the kiln/raw mill and cooler should also be listed in gr/dscf to compare to other sources at the plant as well as with other recently permitted facilities.

The fugitive particulate matter BACT analysis does not conform to the USEPA's top-down approach. Florida Rock very briefly presents a few options to control fugitive emissions and then proclaims one as BACT. Following USEPA's approach, the available control technologies should be identified, evaluated for technical feasibility, and ranked according to decreasing effectiveness. If the top control technology is selected by Florida Rock for a given source, the top-down analysis is done for that source. Otherwise, the most effective technology must be evaluated on the basis of energy, environmental and economic impacts. If the control technology can be eliminated as BACT on the basis of these impacts, the next most effective technology is either selected as BACT or eliminated in a similar fashion. The selected BACT technology and corresponding emission limit or level of control to achieve for each type of fugitive emission source would then be included in Section 6.6, Proposed BACT.

The analysis of impairment to visibility, soils, and vegetation presented in Section 5.1 of the report (item 1) should encompass much more than a simple air quality comparison between modeled ambient impacts and the NAAQS and PSD increments. At a minimum, the analysis should follow the USEPA document *A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals*, EPA 450/2-81-078, December 12, 1980. The screening procedure document outlines a two-phase approach to determine possible adverse affects on soils, vegetation, and animals from pollutants. The first phase is for vegetation exposure to airborne pollutants and the second phase considers the possible affects on soils, vegetation, and animals due to trace element deposition.

Several issues are apparent after review the BACT analysis for SO_2. First, the analysis should incorporate additional control alternatives that are both in use and have been proposed or determined as BACT within the cement industry. Specifically, the analysis should include an evaluation of dry scrubbing systems (i.e., dry lime scrubber) and sorbent injection systems (i.e., hydrated lime injection) as add-on control technologies.

Second, "Alkali/Sulfur Balance" is inherent to the cement manufacturing process and is typically represented as the base case level of emissions. "Alkali/Sulfur Balance" is often referred to as *inherent dry scrubbing*. As discussed in Section 11.6 of the USEPA document AP-42, inherent dry scrubbing typically results in a 75-95% reduction in emissions from the theoretical uncontrolled rates. Although the actual level of reduction achieved is both process and site specific, the reduction demonstrated by Florida Rock's existing kiln/raw mill system should be representative of that achievable with the new line. This base case level of emissions, however, does not need to represent an overly-optimized system with respect to the alkali/sulfur balance in terms of optional raw materials and/or selective quarrying. The feasibility of using optional raw materials and/or selective quarrying can and should be evaluated in the BACT process along with the aforementioned add-on control technologies. The technically feasible BACT options would then be ranked in terms of the level of control achieved above and beyond the "Alkali/Sulfur Balance" baseline that is inherent to the process.

Third, the baseline emission/control level presented in Table 19 is not technically achievable in a cement manufacturing process as some level of inherent dry scrubbing will naturally occur. The inclusion of this unrealistic and unachievable baseline results in a flawed SO_2 BACT cost analysis that effectively skews the results in favor of add-on control. Process enhancements and add-on control devices can be more accurately accounted for in the BACT analysis by: 1)establishing the base case level of emissions as that which would result from utilizing only the inherent dry scrubbing achieved with the kiln/raw mill system; and 2)separately evaluating the additional emissions reductions achieved with each technically feasible SO_2 BACT option.

Fourth, the level of control claimed by Florida Rock as achievable with a wet scrubber and the associated costs used in the economic analysis should be supported and/or justified. Wet scrubbing systems, such as wet lime scrubbers, are well documented to achieve higher levels of control from a general perspective (i.e., higher than 85%). As a general rule, the level of control achieved by a wet scrubbing system should correspond to reducing the SO_2 exhaust gas concentration to about 10 ppm_v.

Fifth, to more fully account for the environmental impacts of a wet scrubber, the fact that synthetic gypsum will be generated as a by-product should be included under Section 6.2.4. The on-site generated synthetic gypsum could be used as a partial replacement for the naturally occurring and/or synthetic gypsum transported to the facility from off-site. Similarly, the beneficial impacts of other add-on SO_2 control technologies should be considered along with the detrimental impacts in their respective sections of the application report. An additional example is the secondary, or detached, plume control often achieved with sorbent injection systems.

Lastly, the incremental cost effectiveness presented in Section 6.2.4 is not typically used in a BACT economic evaluation unless two or more control technologies are being evaluated that have close, or comparable, control efficiencies and the average cost effectiveness is in the "gray area" for the reviewing agency. Note that the term "gray area" is used to describe BACT costs that are close to the economic threshold used by the reviewing agency in the control technology selection process.

The BACT analyses presented by Florida Rock for CO and VOC conclude that no add-on controls have been demonstrated for cement plants. However, add-on controls for CO and VOC are available and have been installed at two cement manufacturing facilities. Although not done as the result of a BACT determination, both facilities installed regenerative thermal oxidation systems that serve to reduce both CO and VOC emissions in addition to other objectives. Both installations have been in operation for a few years. Considering that regenerative thermal oxidation systems are currently being used within the cement industry, the systems should be included and evaluated in the BACT analyses for CO and VOC.

ATTACHMENT 1

Florida Rock Industries Inc
PSD Application for New Kiln
Review of Particular Matter Emissions

Section	Process or Throughput Rate				Control	PM EF	Units	Ref.	PM_{10} EF	Units	Ref	PM Emis lb/hr	PM Emis tpy	PM_{10} Emis lb/hr	PM_{10} Emis tpy	Comments
	Max	Units	Other	Units												
Raw Materials Handling & Storage	1,330	tph	4,467,600	tpy												No quarry haul road traffic increase shown
Primary Crushing	1,330	tph	4,467,600	tpy	Wet Suppression	0.0012	lb/ton	a	0.00054	lb/ton	a	1.5960	2.6806	0.7182	1.2063	Annual emissions are not based on MHDR
Raw Material Transfer	1,330	tph	4,467,600	tpy	Wet Suppression	*0.00013*	lb/ton	a	*0.000045*	lb/ton	a	0.1729	0.2904	0.0599	0.1005	Annual emissions are not based on MHDR
Raw Materials Unloading	1,330	tph	4,467,600	tpy		*0.0000016*	lb/ton	a, b	*0.0000016*	lb/ton	a	0.0021	0.0036	0.0021	0.0036	Annual emissions are not based on MHDR
Total Raw Materials Handling & Storage												1.8	3.0	0.8	1.3	No raw material traffic increase shown
Raw Mill System - Line 2	255	tph	2,233,800		Dust Collector											
BH D33 Transfer D32-34 Belts	2,893	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.2480	1.0861	0.1984	0.8689	
BH D35 Transfer D34-36 Belts	2,893	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.2480	1.0861	0.1984	0.8689	
BH D37 Transfer D36-39 Belts and Bins	4,821	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.4132	1.8099	0.3306	1.4480	
BH D49 D Bins Unloading to Belts	4,821	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.4132	1.8099	0.3306	1.4480	
BH 2D37, Transfer D36-2D39 Belts and Bins	4,821	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.4132	1.8099	0.3306	1.4480	
BH 2D49 2D Bins Unloading to Belts	4,821	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.4132	1.8099	0.3306	1.4480	
BH 2E28 Airslides and Bottom of Airlift	2,043	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.1751	0.7670	0.1401	0.6136	
BH 2E34 Bin 2E30	1,362	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.1167	0.5113	0.0934	0.4091	
BH 2G07, Top of Airlift and Homogenizing Silo	11,766	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	1.0085	4.4173	0.8068	3.5338	
BH 2H08 Homogenizing Silo to Preheater Feed	1,569	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.1345	0.5890	0.1076	0.4712	
Total Dust Collectors												3.56	15.7	2.87	12.6	
Kiln/Raw Mill - Line 2	125	tph clinker														
Preheater/Precalciner Kiln	125	tph clinker	1,095,000	tpy	ESP	0.23	lb/ton clinker	BACT	0.2	lb/ton clinker	BACT	28.75	125.9	25.0	109.5	
Clinker Handling System - Line 2	125	tph clinker														
ESP 2K15 Clinker Cooler	125	tph clinker	1,096,000	tpy	ESP	0.1	lb/ton clinker	BACT	0.06	lb/ton clinker	BACT	12.5	54.8	10.0	43.8	
BH 2L03 Cooler Discharge	2,043	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.2	0.9	0.1	0.6	
BH 2L13 Clinker Transport (2L20 2L08)	2,043	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.2	0.8	0.1	0.6	
BH 2L15 Clinker Transport (2L20, 2L01, 2L08, 2L09)	4,087	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.4	1.5	0.3	1.2	
BH 2L16 Clinker Transport (2L01, 2L20)	2,725	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.2	1.0	0.2	0.8	
BH 2L18 Clinker into Quadrated Silo	3,062	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.3	1.2	0.2	0.9	
Total ESP and Dust Collectors												13.70	60.0	10.98	46.0	
Finish Grinding Operations - Line 2	156	tph cement	1,366,560	tpy												
BH 2M07 Clinker from Quadrated Silo	3,062	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.3	1.2	0.2	0.9	
BH M08 Clinker/Additives to Mill #2	3,062	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.3	1.2	0.2	0.9	
BH 2N93 Finish Mill #2 Air Separator	107,229	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	9.2	40.3	7.4	32.2	
BH 2N94 Finish Mill #2	27,329	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	2.3	10.3	1.9	8.2	
BH 2N91; Airlift to Separator	4,706	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.4	1.8	0.3	1.4	
BH 2N38 Cement to Fringe Silo	3,510	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.3	1.3	0.2	1.1	
BH 2Q25 Cement to Silo #6	10,185	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.9	3.8	0.7	3.1	
BH 2Q26 Cement to Silo #7	10,185	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.9	3.8	0.7	3.1	
Total Dust Collectors												14.51	63.6	11.61	50.9	
Cement Loadout - Silos 6 & 7	500	tph loadout	1,366,560	tpy												
BH 2Q14 Loadout from Silos 6/7	2,546	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.006	gr/dscf	BACT	0.22	1.0	0.17	0.8	
Coal/Coke Handling & Grinding Operations - Mill 2	15.4	tph coal/coke	134,769	tpy												
BH 2S17 Coal/Coke Mill #2	19,434	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.01	gr/dscf	BACT	1.7	7.3	1.7	7.3	PM10 BACT for other collectors is lower
BH 2S21 Pulverized Coal Bin	1,697	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.01	gr/dscf	BACT	0.1	0.6	0.1	0.6	PM10 BACT for other collectors is lower
Total Dust Collectors												1.81	7.9	1.81	7.9	
Paved Road Emissions - Line 2	156	tph cement	1,366,560	tpy												
Paved Entrance Road for Hauling Cement	5.8	VMT/hr	51,061	VMT/yr	Vacuum/Sweeper Truck	0.374	lb/VMT	c	0.073	lb/VMT	c	2.18	9.6	0.4	1.9	Silt loading is only 0.14 g/m^2 (this was addressed in FRI's response to comments)
Total Emissions												66.5	288.6	53.6	232.8	

a AP-42 Table 11.19.2-2 (DRAFT 6/03)
b No PM factor available, used PM10 factor
c AP-42 13.2.1 Equation 1 (12/03)

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of SO_2 Emissions

Section	Process or Throughput Rate				Control	SO_2 EF	Units	Ref.	SO_2 Emis lb/hr	SO_2 Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		0.28	lb/ton clinker	BACT	35.0	153.3	

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of NO_x Emissions

Section	Process or Throughput Rate				Control	NO_x EF	Units	Ref.	NO_x Emis lb/hr	NO_x Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy	SNCR	2.6	lb/ton clinker	BACT	325.0	1,423.5	For one year after start-up
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy	SNCR	2	lb/ton clinker	BACT	250 0	1,095.0	After one year

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of CO Emissions

Section	Process or Throughput Rate				Control	CO EF	Units	Ref.	CO Emis lb/hr	CO Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		3.6	lb/ton clinker	BACT	450.0	1,971.0	

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of VOC Emissions

Section	Process or Throughput Rate				Control	VOC EF	Units	Ref.	VOC Emis lb/hr	VOC Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		0.12	lb/ton clinker	BACT	15.0	65.7	

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of Hg Emissions

Section	Process or Throughput Rate				Control	Hg EF	Units	Ref.	Hg Emis lb/hr	Hg Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		0 02	lb/hr	Mat'l Balance	0.02	0.088	

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of D/F Emissions

Section	Process or Throughput Rate				Control	D/F EF	Units	Ref.	D/F Emis lb/hr	D/F Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	114,640	dscfm @ 13% O_2		0.4	ng/dscm TEQ @ 7% O_2	40 CFR 63.1343(c)(3)	9.7E-08	4.3E-07	Minor difference in estimated emissions

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of Fluorides Emissions

Section	Process or Throughput Rate				Control	Fluoride EF	Units	Ref.	Fluoride Emis lb/hr	Fluoride Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		0.0009	lb/ton	Table	0.11	0.5	

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of Lead Emissions

Section	Process or Throughput Rate				Control	Lead EF	Units	Ref.	Lead Emis lb/hr	Lead Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		0.00071	lb/ton	AP-42 Table 11.6-9	0.09	0.389	

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of H_2SO_4 Emissions

Section	Process or Throughput Rate				Control	SO_3 EF	H_2SO_4 EF	Units	Ref.	H_2SO_4 Emis lb/hr	H_2SO_4 Emis tpy	Comments
	Max	Units	Other	Units								
Kiln/Raw Mill - Line 2												
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		0.086	0.105	lb/ton	AP-42 Table 11.6-9	13.17	57.7	

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS
271 Wolfner Drive • Fenton, Missouri 63026
636/349-8399 • Fax 636/349-8384

May 11, 2005

Mr. Lowell Garrett
City of Newberry
P.O. Box 369
Newberry, FL 32669

Mr. James K. Pennington, P.E.,
Florida DEP
Department's Bureau of Air Regulation
2600 Blair Stone Road
Mail Station #5505
Tallahassee, FL 32399-2400

RE: Summary of Conference Call with Florida DEP Regarding
Florida Rock Industries, Inc. Permit Application & Draft Permit
Draft Air Construction Permit No.: 0010087-013-AC; PSD-FL-350

Gentlemen:

On April 19, a conference call was held with staff of Schreiber, Yonley & Associates (SYA), Florida Department of Environmental Protection (DEP) representatives, and the City of Newberry to discuss the Florida Rock Industries, Inc. permit application and draft air construction permit. Attending this call were the following:

Lowell Garrett, City of Newberry
James Pennington, Florida DEP
Bobby Bull, Florida DEP
Robert Schreiber, SYA
Dan Carney, SYA
Chuck Kellett, SYA

SYA was contracted by the City of Newberry's counsel to assist in the technical review of the air emissions from Florida Rock Industry's new kiln line with emphasis on the various air pollution control technologies and methodologies proposed in the air permit application. In our review, we paid particular attention to the technical evaluation of Best Available Control Technology (BACT) proposed for PM, PM_{10}, SO_2, NO_x, CO, and VOC. SYA completed the review of the Florida Rock Industries, Inc. permit application and submitted a summary report to the City of Newberry prior to the issuance of the draft air construction permit by Florida DEP.

Prior to this conference call, SYA was asked to review the draft air construction permit. During the conference call, questions were raised regarding certain issues in the draft permit. The following summarizes SYA's comments regarding the draft permit and the result of conversations with Florida DEP.

Mercury

SYA discussed the options of how to control the total amount of mercury input to the new kiln system. DEP responded that the permit will contain a limit on total mercury that must be monitored by sampling the inputs.

SO_2

SYA noted that Florida Rock's BACT analysis for SO_2 contains some flaws. Cement kilns have a naturally occurring scrubbing capability for SO_2 that was not accounted for properly. This natural scrubbing is inherent to the cement manufacturing process and is typically represented as the base case level of emissions. When not considering this, the analysis results in unrealistic and unachievable baseline results due to a flawed SO_2 BACT cost analysis that effectively skews the results in favor of add-on control. However, the draft permit effectively reaches the same and correct conclusion that no additional controls are necessary for a facility with naturally low SO_2 emissions such as those at Florida Rock.

NO_x

SYA reviewed the draft application and BACT analysis for NO_x and agree that SNCR is an appropriate control for this facility.

PM and PM_{10}

SYA reviewed the Florida Rock BACT analysis and noted an inconsistency in emission limits for similar control sources. Specifically, the PM and PM_{10} BACT limits for the kiln and clinker cooler should be expressed in units of grains per dry standard cubic feet (gr/dscf) to facilitate comparison with other recently permitted facilities. In addition, it is SYA's opinion that for control of PM, other technologies for the capture of particulates should have been evaluated. More specifically, fabric filter baghouses equipped with e-PTFE membrane bags (such as Teflon®) should have been evaluated for BACT. Our understanding is that DEP will address these issues in the response to comments made to the draft permit.

Other than the above topics, no other issues were noted with the draft permit. If you have any questions regarding the above, please contact me at (573) 657-0639 or Chuck Kellett in our St. Louis office at (636) 349-8399.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

Robert J. Schreiber, Jr./CDK

Robert J. Schreiber, Jr., P.E.
President

CDK:bah
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PLEASE DELIVER TO:	**Mr. Bobby Bull** **Mr. James Pennington**
FAX NUMBER:	**850-921-9533**
FROM:	**Samantha Walters,** **Legal Assistant to** **S. Scott Walker, Esquire**
RE:	***City of Newberry/Florida Rock Expansion***
COMMENTS:	
DATE:	**3-24-05**

SCHREIBER & YONLEY ASSOCIATES
ENVIRONMENTAL ENGINEERS
271 Wolfner Drive • Fenton, Missouri 63026
636/349-8399 • Fax 636/349-8384

March 22, 2005

Mr. Scott Walker
Folds and Walker, L.L.C.
City Attorney, City of Newberry
527 East University Avenue
Gainesville, FL 32602

RE: Review of Florida Rock Industries, Inc. Permit Application
SYA Project No. 050002

Dear Mr. Walker:

Enclosed with this letter is Schreiber, Yonley & Associates (SYA) review of the Florida Rock Industries, Inc. (Florida Rock) Air Construction Permit Application for a new cement manufacturing line near Newberry, Alachua County, Florida.

If you have any questions or require additional information, please contact me at (573) 657-0639 or Chuck Kellett in our St. Louis office at (636) 349-8399.

Sincerely,

SCHREIBER, YONLEY & ASSOCIATES

Robert J. Schreiber, Jr., P.E. /for
President

RJS:bah
Enclosure

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REVIEW OF FLORIDA ROCK INDUSTRIES, INC. PERMIT APPLICATION

Schreiber, Yonley & Associates (SYA) has reviewed the following material associated with the Florida Rock Industries, Inc. (Florida Rock) Air Construction Permit Application for a new cement manufacturing line near Newberry, Alachua County, Florida:

1. *Report in Support of an Application for a PSD Construction Permit Review*, dated November 8, 2004;
2. Official application forms associated with the above report titled *Florida Department of Environmental Protection, Division of Air Resource Management, Application for Air Permit – Long Form*;
3. *Request for Additional Information* letter dated December 3, 2004 from James K. Pennington of the Florida Department of Environmental Protection (FDEP) to Mr. Gary Sauer of Florida Rock; and
4. *Response to Request for Additional Information* letter dated January 14, 2005 from Steven C. Cullen of Koogler & Associates to James K. Pennington.

Some appendices associated with items 1 and 4. above, were not available to SYA for our review. The most notable appendices were the ones containing the dispersion modeling information.

The report (item 1) was reviewed for information on the proposed new emissions units and changes to existing emissions units. A detailed listing of all emissions sources, along with their corresponding emission factors and potential emissions was not provided in the report. However, a summary of the modified emission rates was provided in Table 3 and compared to the significant emission rates for PSD review.

Emissions calculations for most of the pollutants noted in Table 3 of the report were found in the official application forms (item 2). A point-by-point summary and evaluation of the emissions levels proposed by Florida Rock in the application is included as Attachment 1 to this review. The missing calculations included those for sulfuric acid mist, fluorides and lead. Emission factors for fluorides and lead are found in Table 11.6-9 of the USEPA document AP-42. Using these emission factors, the potential emission rates found in Table 3 were verified. Table 11.6-9 also provides an emission factor for SO_3, which can be used to estimate emissions of H_2SO_4. However, this emission factor could not be used to verify the sulfuric acid emission rate found in Table 3 of the report. The basis for or methodology for determining the new line sulfuric acid mist emission rate should be provided by Florida Rock.

Florida Rock has calculated potential mercury emissions to be less than 175 pounds per year using a material balance approach. In their request for additional information (item 3), FDEP asked that Florida Rock "provide reasonable assurance that the 175 lb/yr of mercury emissions will not be exceeded." In their response (item 4), Florida Rock stated that they currently sample fuels and raw materials on a monthly basis. Laboratory results have indicated that the mercury content in the kiln feed is consistently low. In order to insure that materials fed to the kiln will continue to contain sufficiently low concentrations of mercury, it is recommended that a

condition be included in the final permit that would require Florida Rock to test for mercury emissions from the new line. The testing should be done under representative worst-case conditions with respect to the fuel and feed material mercury concentration. The mercury concentrations determined from the monthly fuel and raw material sampling could then be used to verify that the operating parameters determined from the representative worst-case testing are being adhered to. As an option, Florida Rock could agree to limit the total mercury input to the new kiln system to not more than 175 pounds per year from all feed streams. This option, however, does not afford Florida Rock the benefit of accounting for the kiln system removal efficiency for mercury.

monthly Hg

The emission factors used for Raw Materials Handling and Storage equipment (primary crushing, raw materials unloading and transfer operations) were obtained from the June 2003 draft of AP-42 Section 11.19.2 (crushed stone processing). Only a few minor changes were made to the draft before the final version was published in August 2004. The differences will not significantly affect potential emissions from Florida Rock's proposed modifications.

It was not apparent from the report whether or not Florida Rock appropriately accounted for emissions related to the increase in quarrying activities due to the proposed expansion. It would be expected that additional rock would be mined from the on-site quarry, which may result in increased emissions from drilling, blasting, truck loading, and quarry haul roads. Also, increased traffic should be accounted for since additional raw materials and additives will be delivered to the plant.

mining

Particulate matter emissions for the remainder of the plant are controlled using fabric filter dust collectors (baghouses) or electrostatic precipitators (ESPs). Florida Rock originally proposed grain loading based emission factors of 0.01 and 0.008 grains per dry standard cubic foot (gr/dscf) for PM and PM_{10}, respectively, as BACT for all of the new baghouses, except for those associated with the proposed coal mill. In response to comments made by FDEP (items 3 and 4), Florida Rock lowered the PM_{10} outlet grain loading emission factor for two of the baghouses to 0.007 gr/dscf. In addition, Florida Rock lowered the PM_{10} outlet grain loading emission factor for two baghouses associated with the existing production line to 0.007 gr/dscf. Florida Rock did not indicate why these specific new baghouses will be capable of achieving a BACT emission limit of 0.007 gr/dscf, while the other new ones will not. Additionally, by proposing an emission limit of 0.007 gr/dscf on the two existing baghouses, Florida Rock raises the question as to whether BACT for PM_{10} for most, if not all, of the new collectors for the new line should be set at 0.007 gr/dscf. Also, it is not clear why the coal handling baghouses will not be able to achieve the same BACT emission rate as the other new baghouses at the plant.

.007 PM_{10}

The BACT analysis for particulate matter did not address or include the most recent technological advancements in available fabric filter media. Membrane coated fabric filter media (i.e., e-PTFE membrane bags) should be included and evaluated in the BACT analysis. Membrane bags typically exhibit increased performance over the standard bags discussed in the current BACT evaluation and have comparable economic impacts. Membrane bags reportedly cost about twice as much as standard media bags, but typically last twice as long. BACT determinations for several recently permitted cement plants have included e-PTFE membrane bags, or equivalent, as being used on the kiln/raw mill system exhaust and finish mill system

exhaust. The proposed BACT particulate matter emission limits for the kiln/raw mill and cooler should also be listed in gr/dscf to compare to other sources at the plant as well as with other recently permitted facilities.

The fugitive particulate matter BACT analysis does not conform to the USEPA's top-down approach. Florida Rock very briefly presents a few options to control fugitive emissions and then proclaims one as BACT. Following USEPA's approach, the available control technologies should be identified, evaluated for technical feasibility, and ranked according to decreasing effectiveness. If the top control technology is selected by Florida Rock for a given source, the top-down analysis is done for that source. Otherwise, the most effective technology must be evaluated on the basis of energy, environmental and economic impacts. If the control technology can be eliminated as BACT on the basis of these impacts, the next most effective technology is either selected as BACT or eliminated in a similar fashion. The selected BACT technology and corresponding emission limit or level of control to achieve for each type of fugitive emission source would then be included in Section 6.6, Proposed BACT.

The analysis of impairment to visibility, soils, and vegetation presented in Section 5.1 of the report (item 1) should encompass much more than a simple air quality comparison between modeled ambient impacts and the NAAQS and PSD increments. At a minimum, the analysis should follow the USEPA document *A Screening Procedure for the Impacts of Air Pollution Sources on Plants, Soils, and Animals*, EPA 450/2-81-078, December 12, 1980. The screening procedure document outlines a two-phase approach to determine possible adverse affects on soils, vegetation, and animals from pollutants. The first phase is for vegetation exposure to airborne pollutants and the second phase considers the possible affects on soils, vegetation, and animals due to trace element deposition.

Several issues are apparent after review the BACT analysis for SO_2. First, the analysis should incorporate additional control alternatives that are both in use and have been proposed or determined as BACT within the cement industry. Specifically, the analysis should include an evaluation of dry scrubbing systems (i.e., dry lime scrubber) and sorbent injection systems (i.e., hydrated lime injection) as add-on control technologies.

Second, "Alkali/Sulfur Balance" is inherent to the cement manufacturing process and is typically represented as the base case level of emissions. "Alkali/Sulfur Balance" is often referred to as *inherent dry scrubbing*. As discussed in Section 11.6 of the USEPA document AP-42, inherent dry scrubbing typically results in a 75-95% reduction in emissions from the theoretical uncontrolled rates. Although the actual level of reduction achieved is both process and site specific, the reduction demonstrated by Florida Rock's existing kiln/raw mill system should be representative of that achievable with the new line. This base case level of emissions, however, does not need to represent an overly-optimized system with respect to the alkali/sulfur balance in terms of optional raw materials and/or selective quarrying. The feasibility of using optional raw materials and/or selective quarrying can and should be evaluated in the BACT process along with the aforementioned add-on control technologies. The technically feasible BACT options would then be ranked in terms of the level of control achieved above and beyond the "Alkali/Sulfur Balance" baseline that is inherent to the process.

Third, the baseline emission/control level presented in Table 19 is not technically achievable in a cement manufacturing process as some level of inherent dry scrubbing will naturally occur. The inclusion of this unrealistic and unachievable baseline results in a flawed SO_2 BACT cost analysis that effectively skews the results in favor of add-on control. Process enhancements and add-on control devices can be more accurately accounted for in the BACT analysis by: 1)establishing the base case level of emissions as that which would result from utilizing only the inherent dry scrubbing achieved with the kiln/raw mill system; and 2)separately evaluating the additional emissions reductions achieved with each technically feasible SO_2 BACT option.

Fourth, the level of control claimed by Florida Rock as achievable with a wet scrubber and the associated costs used in the economic analysis should be supported and/or justified. Wet scrubbing systems, such as wet lime scrubbers, are well documented to achieve higher levels of control from a general perspective (i.e., higher than 85%). As a general rule, the level of control achieved by a wet scrubbing system should correspond to reducing the SO_2 exhaust gas concentration to about 10 ppm_v.

Fifth, to more fully account for the environmental impacts of a wet scrubber, the fact that synthetic gypsum will be generated as a by-product should be included under Section 6.2.4. The on-site generated synthetic gypsum could be used as a partial replacement for the naturally occurring and/or synthetic gypsum transported to the facility from off-site. Similarly, the beneficial impacts of other add-on SO_2 control technologies should be considered along with the detrimental impacts in their respective sections of the application report. An additional example is the secondary, or detached, plume control often achieved with sorbent injection systems.

Lastly, the incremental cost effectiveness presented in Section 6.2.4 is not typically used in a BACT economic evaluation unless two or more control technologies are being evaluated that have close, or comparable, control efficiencies and the average cost effectiveness is in the "gray area" for the reviewing agency. Note that the term "gray area" is used to describe BACT costs that are close to the economic threshold used by the reviewing agency in the control technology selection process.

The BACT analyses presented by Florida Rock for CO and VOC conclude that no add-on controls have been demonstrated for cement plants. However, add-on controls for CO and VOC are available and have been installed at two cement manufacturing facilities. Although not done as the result of a BACT determination, both facilities installed regenerative thermal oxidation systems that serve to reduce both CO and VOC emissions in addition to other objectives. Both installations have been in operation for a few years. Considering that regenerative thermal oxidation systems are currently being used within the cement industry, the systems should be included and evaluated in the BACT analyses for CO and VOC.

ADD ON CO VOC + RTO

ATTACHMENT 1

Section	Process or Throughput Rate				Control	PM EF	Units	Ref.	PM_{10} EF	Units	Ref.	PM Emis	PM Emis	PM_{10} Emis	PM_{10} Emis	Comments
	Max	Units	Cover	Units								lb/hr	tpy	lb/hr	tpy	
Raw Materials Handling & Storage	1,330	tph	4,487,500	tpy												No quarry haul road traffic increase shown
Primary Crushing	1,330	tph	4,487,500	tpy	Wet Suppression	0.0012	lb/ton	a	0.00054	lb/ton	a	1.5990	2.1808	0.7192	1.2763	Annual emissions are not based on BACT
Raw Material Transfer	1,330	tph	4,487,500	tpy	Wet Suppression	0.00073	lb/ton	a	0.00034	lb/ton	a	0.1719	0.5708	0.0595	0.1305	Annual emissions are not based on BACT
Raw Materials Stacking	1,330	tph	4,487,500	tpy		0.00030718	lb/ton	a, b	0.0000018	lb/ton	a	0.0011	3.0016	0.0021	0.0799	Annual emissions are not based on BACT
Total Raw Materials Handling & Storage												1.8	3.0	0.8	1.3	No raw material traffic increase shown
Raw Mill System - Line 2	253	tph	1,233,800		Dust Collector											
BH 2D33, Transfer D33-34 Belts	2,897	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.2487	1.0881	0.1934	0.8619	
BH 2D35, Transfer D33-39 Belt	2,897	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.2487	1.0881	0.1934	0.8619	
BH 2D37, Transfer D36-39 Belts and Bins	4,821	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.4139	1.8046	0.3305	1.4450	
BH 2D49, 9 Bins Unloading to Belts	4,821	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.4139	1.8046	0.3305	1.4450	
BH 2D37, Transfer D36-2D39 Belts and Bins	4,821	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.4139	1.8046	0.3305	1.4450	
BH 2D48, 2D Ring Unloading to Belts	1,821	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.1563	0.6819	0.1248	0.5455	
BH 2E28, Air/Feed and Bottom of AWR	2,043	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.1754	0.7670	0.1401	0.6130	
BH 2E48, Bin 2E30	1,382	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.1187	0.5193	0.0634	0.4091	
BH 2G07, Top of AWR and Homogenizing Silo	11,768	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.004	gr/dscf	BACT	1.0065	4.4073	0.8668	3.8534	
BH 2H08, Homogenizing Silo to Preheater Feed	1,569	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.1345	0.5890	0.1076	0.4712	
Total Dust Collectors												3.58	15.71	2.37	12.6	
Kiln/Raw Mill - Line 2	125	tph clinker														
Preheater/Precalciner Kiln	125	tph clinker	1,094,000	tpy	ESP	0.21	lb/ton clinker	BACT	3.2	lb/ton clinker	BACT	26.75	126.5	25.9	109.5	
Clinker Handling System - Line 2	125	tph clinker														
ESP 2K19, Clinker Cooler	125	tph clinker	1,095,000	tpy	ESP	0.1	lb/ton clinker	BACT	0.08	lb/ton clinker	BACT	12.5	54.8	10.0	43.8	
BH 2L07, Cooler Discharge	2,043	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.2	0.9	0.1	0.8	
BH 2L13, Clinker Transport (2L20, 2L06)	2,043	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.2	0.9	0.1	0.8	
BH 2L15, Clinker Transport (2L20, 2L01, 2L30, 2L09)	4,086	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.4	1.5	0.3	1.2	
BH 2L16, Clinker Transport (2L01, 2L20)	2,725	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.2	1.0	0.2	0.8	
BH 2L18, Clinker into Clinker Silo	3,682	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.3	1.2	0.2	0.9	
Total ESP and Dust Collectors												13.70	63.0	10.98	48.0	
Finish Grinding Operations - Line 2	150	tph cement	1,184,550	tpy												
BH 2M07, Clinker from Oversized Silo	3,682	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.3	1.2	0.2	0.9	
BH 2M08, Clinker/Additives to Mill #2	3,682	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.3	1.2	0.2	0.9	
BH 2M30, Finish Mill #2 Air Separator	107,229	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	9.2	40.3	7.4	32.2	
BH 2M34, Finish Mill #2	27,329	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	2.3	10.3	1.9	8.2	
BH 2M31, Airlift to Separator	4,708	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.4	1.8	0.3	1.4	
BH 2M34, Cement to Finish Silo	3,510	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.008	gr/dscf	BACT	0.3	1.3	0.2	1.1	
BH 2G25, Cement to Silo #8	13,185	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.004	gr/dscf	BACT	0.5	2.3	0.7	3.1	
BH 2G26, Cement to Silo #7	13,185	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.004	gr/dscf	BACT	0.5	2.3	0.7	3.1	
Total Dust Collectors												14.51	63.9	11.41	50.9	
Cement Loadout - Silos 8 & 7	800	tph loaded	1,368,560	tpy												
BH 2G13, Loadout from Silos 6-7	2,646	dscfm			Dust Collector	2.81	gr/dscf	BACT	0.008	gr/dscf	BACT	0.22	1.0	0.17	0.8	
Coal/Coke Handling & Grinding Operations - Mill 2	15.4	tph coal/coke	134,729	tpy												
BH 2M07, Coal/Coke Mill #2	10,414	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.01	gr/dscf	BACT	1.7	7.3	1.7	7.3	PM10 BACT for other collectors is lower
BH 2M21, Pulverized Coal Bin	1,837	dscfm			Dust Collector	0.01	gr/dscf	BACT	0.01	gr/dscf	BACT	0.1	0.6	0.1	0.6	PM10 BACT for other collectors is lower
Total Dust Collectors												1.51	7.8	1.81	7.9	
Paved Road Emissions - Line 2	150	tph cement	1,338,450	tpy												
Paved Entrance Road for Hauling Cement	5.8	VMT/hr	51,081	VMT/yr	Vacuum/Sweeper Truck	0.374	lb/VMT	c	0.072	lb/VMT	c	2.18	9.6	0.4	1.8	Silo loading is only 0.14 g/m^2 (this was addressed in FRI's response to comments).
Total Emissions												56.1	244.5	53.9	212.9	

a. AP-42 Table 11.12-2 (DRAFT 8/00)
b. No PM factor available, used PM10 factor
c. AP-42 13.2.1 Equation 1 (12/03)

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of SO_2 Emissions

Section	Process or Throughput Rate				Control	SO_2 EF	Units	Ref.	SO_2 Emis lb/hr	SO_2 Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		0.28	lb/ton clinker	BACT	35.0	153.3	

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of NO_x Emissions

Section	Process or Throughput Rate				Control	NO_x EF	Units	Ref.	NO_x Emis lb/hr	NO_x Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy	SNCR	2.6	lb/ton clinker	BACT	325.0	1,423.5	For one year after start-up
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy	SNCR	2	lb/ton clinker	BACT	250.0	1,095.0	After one year

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of CO Emissions

Section	Process or Throughput Rate				Control	CO EF	Units	Ref.	CO Emis lb/hr	CO Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		3.6	lb/ton clinker	BACT	450.0	1,971.0	

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of VOC Emissions

Section	Process or Throughput Rate				Control	VOC EF	Units	Ref.	VOC Emis lb/hr	VOC Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		0.12	lb/ton clinker	BACT	15.0	65.7	

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of Hg Emissions

Section	Process or Throughput Rate				Control	Hg EF	Units	Ref.	Hg Emis lb/hr	Hg Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		0.02	lb/hr	Matl Balance	0.02	0.088	

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of D/F Emissions

Section	Process or Throughput Rate				Control	D/F EF	Units	Ref.	D/F Emis lb/hr	D/F Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	114,640	dscfm @ 13% O_2		0.4	ng/dscm TEQ @ 7% O_2	40 CFR 63.1343(c)(3)	9.7E-08	4.3E-07	Minor difference in estimated emissions

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of Fluorides Emissions

Section	Process or Throughput Rate				Control	Fluoride EF	Units	Ref.	Fluoride Emis lb/hr	Fluoride Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2											
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		0.0009	lb/ton	Table	0.11	0.5	

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of Lead Emissions

Section	Process or Throughput Rate				Control	Lead EF	Units	Ref.	Lead Emis lb/hr	Lead Emis tpy	Comments
	Max	Units	Other	Units							
Kiln/Raw Mill - Line 2	125	tph clinker									
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		0.00071	lb/ton	AP-42 Table 11.6-9	0.09	0.389	

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of H_2SO_4 Emissions

Section	Process or Throughput Rate				Control	SO_3 EF	H_2SO_4 EF	Units	Ref.	H_2SO_4 Emis lb/hr	H_2SO_4 Emis tpy	Comments
	Max	Units	Other	Units								
Kiln/Raw Mill - Line 2	125	tph clinker										
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		0.086	0.105	lb/ton	AP-42 Table 11.6-9	13.17	57.7	

Florida Rock Industries, Inc.
PSD Application for New Kiln
Review of H_2SO_4 Emissions

Section	Process or Throughput Rate				Control	SO_3 EF	H_2SO_4 EF	Units	Ref.	H_2SO_4 Emis lb/hr	H_2SO_4 Emis tpy	Comments
	Max	Units	Other	Units								
Kiln/Raw Mill - Line 2	125	tph clinker										
Preheater/Precalciner Kiln (Including Raw Mill System Air Heater)	125	tph clinker	1,095,000	tpy		0.066	0.105	lb/ton	AP-42 Table 11.6-9	13.17	57.7	

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KA 187-04-10
March 21, 2005

Mr. Jim Pennington
Florida Department of
Environmental Protection
Bureau of Air Regulation
2600 Blair Stone Road
Tallahassee, FL 32399-2400

RE: Florida Rock Industries
FDEP File No. 0010087-013-AC (PSD-FL-350)
Proposed Permit Limits for Fuels and Raw Materials
Proposed Kiln No. 2

Dear Jim:

This is a follow on to the telephone conversation that you, Bobby Bull, and I had yesterday (March 15, 2005) and to the telephone conversation I had with Bobby on March 11, 2005. In these conversations, we discussed the firing rates of petroleum coke, whole tire derived fuel and natural gas, and the feed rate of flyash (a raw material) directly into the calciner of the proposed No. 2 Kiln system.

By this letter, I am proposing our suggestions for addressing these matters in the permit for the new kiln. Regarding petroleum coke, FRI recently received a permit authorizing tests to evaluate the efficacy of firing a blend of coal and petroleum coke into the kiln and calciner of the existing No. 1 Kiln system. This permit, for test purposes, limits the petroleum coke fraction of the blended fuel to 30 percent. FRI is in the process of conducting these tests, but thus far has found that a blend of 70 percent coal and 30 percent petroleum coke can be fired to the pyroprocessing system with no difficulty. Based on the preliminary test results, FRI is of the opinion that even a greater fraction of petroleum coke can be blended and fired with the coal.

For the permitting of Kiln No. 2, FRI would like to have as much flexibility as possible in the firing of petroleum coke and suggests permit language similar to that in recent permits issued to Suwannee American Cement (SAC) and Rinker Materials for their Miami cement plant.

The recent SAC permit (1210465-011-AC, PSD-FL-259F) states at Specific Condition 1:

> Fuels: Fuels fired in the pyroprocessing system (kiln and calciner) shall not exceed a total maximum heat input of 458 mmBTU per hour and shall consist only of natural gas, coal, petroleum coke, whole tires, and tire derived fuel. ...

and in Permit 0250014-016-AC, PSD-FL-324A issued to Rinker for their Miami cement plant, Specific Condition 6 states:

> Heat Input Limit: Fuels fired in the pyroprocessing system (kiln and precalciner) shall not exceed a total heat input rate of 485 mmBTU per hour and shall consist only of the fuels originally authorized in Permit No. 0250014-002-AC, as amended. The coal usage rate shall not exceed 18.7 tons per hour (tph, 24-hour average) and the petroleum coke usage rate shall not exceed 16.3 tons per hour (tph, 24-hour average). ...

In both of these recently issued permits, the use of petroleum coke as a fuel supplying up to 100 percent of the heat input to the pyroprocessing system is authorized. FRI would like this same unrestricted use of petroleum coke.

Regarding tire derived fuel, the current FRI permit for the Kiln No. 1 system limits the use of tire derived fuel to 30 percent of the heat input to the pyroprocessing system. Under present operating conditions with the No. 1 Kiln system, FRI has typically limited the tire derived fuel firing rate to 10 percent or less of the total system heat input. This, in large part, is due to the reducing conditions created by Multi-Stage Combustion (MSC) at the No. 1 Kiln inlet that are necessary to comply with the NOx emission limiting standard. With the proposed No. 2 Kiln system, SNCR will be employed to control NOx emissions. The testing of SNCR systems at FRI and Suwannee American Cement has demonstrated that with SNCR to control NOx emissions, the kiln systems can be operated without MSC, or with oxidizing conditions in the calciner.

With the potential to change the combustion conditions at the kiln exit (calciner inlet) from reducing conditions to oxidizing conditions, FRI is of the opinion that the tire derived fuel firing rate can be increased above what is presently possible in the No. 1 Kiln system. For this reason, FRI is requesting a tire derived fuel limit for the No. 2 Kiln system of 30 percent; identical to the current limit in the No. 1 Kiln permit.

Setting a limit on the feed rate of flyash directly into the calciner of the No. 2 Kiln system is difficult at the present time. FRI has received a permit from the Department authorizing tests to evaluate the introduction of flyash directly into the calciner of the existing No. 1 Kiln system, but the tests have not progressed to a point that will allow a definitive decision on the flyash feed rate to the proposed No. 2 Kiln system.

In the conventional operations of a dry process Portland cement plant, flyash constitutes approximately 10-12 percent of the raw materials that are ground in the raw mill and fed into the preheater. Typically, the flyash utilized in this manner is ash with a relatively low carbon content (a relatively low Loss on Ignition, (LOI)). One of the

reasons FRI is investigating feeding flyash directly into the calciner of the No. 1 Kiln system and is requesting the option of doing the same on the proposed No. 2 Kiln system is that firing in this manner will allow the use of a high-carbon flyash. The high-carbon flyash can have up to about 50 percent carbon; or approximately a 50 percent LOI.

Because of the fixed carbon in the high-carbon flyash, the feed rate of flyash, as a fraction of total raw materials, will be greater than the conventional 10-12 percent.

To allow FRI the maximum flexibility in the selection and use of raw materials, FRI requests permit language similar to that in the above referenced, recently issued Suwannee American Cement permit. Specific Condition 4 of the SAC permit, addressing the feed of flyash directly into the calciner, states:

> Process Rate Limitations: The kiln shall not process more than 210 tons per hour of dry preheater feed and dry flyash fed directly to the calciner and shall not produce more than 120 tons of clinker per hour. ... ...
>
> The clinker production rate identified in the above paragraph shall be determined by the following equation:
>
> Clinker Production = [(Feed) (Kiln Feed LOI Factor) + (Fly Ash Injection) (Fly Ash LOI Factor)]
>
> Where:
>
> - Kiln feed is determined by the Poldos control system.
> - Fly ash is determined from the rotary feed system or equivalent.

- LOI for the kiln feed and fly ash is based on a 30 operating-day block average of daily measurements. For purposes of this requirement, an operating day is any day that the kiln produces clinker or fires fuel.

This language in the Suwannee American Cement permit authorizes the feed of dry flyash into the calciner without a specific limit. FRI requests the same language in the permit for the proposed No. 2 Kiln system.

A matter that was discussed during our most recent telephone conversation (March 15, 2005) was the use of natural gas as a fuel in the proposed No. 2 Kiln system. FRI is currently negotiating for the installation of a gas line to the Thompson S. Baker Cement Plant and would like to include natural gas as a permitted fuel for the No. 2 Kiln system. This is already addressed in our original permit application (page 63). The application requests the use of natural gas for firing the pyroprocessing system up to a heat input rate of 400 mmBTU per hour. This is equivalent to 0.381 mmCF per hour of natural gas and 3337.1 mmCF per year.

Regarding the use of the above referenced fuels and flyash, FRI is aware of the fact that compliance must be demonstrated once the plant is constructed and begins operating. FRI is also aware of the fact that compliance must be demonstrated at the maximum usage rate permitted or the maximum rate at which fuel/raw material will be used. If the maximum use rate of a fuel or raw material is less than the permitted rate, FRI further realizes that the actual use of the fuel or material will be limited to 110 percent of the tested rate at which compliance was demonstrated until such time a compliance test is conducted demonstrating compliance while using the fuel or material at a higher rate, but not to exceed the permitted rate.

I trust that the information provided herein will adequately respond to the matters we've discussed. If there are further questions, please do not hesitate to contact me by phone at 352-377-5822 or by email at jkoogler@kooglerassociates.com.

Very truly yours,

KOOGLER & ASSOCIATES, INC.

John B. Koogler, Ph.D., P.E.

JBK/lt

cc: Mr. Bobby Bull, FDEP
Mr. Gary Sauer, FRI
Mr. Chris Horner, FRI
Mr. Henry Gotsch, FRI
Mr. Segundo Fernandez, Oertel, Fernandez and Cole