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RECEIVED
JUL 03 2007
BUREAU OF AIR REGULATION

Al Linero, FDEP
Division of Air Resource Management
2600 Blair Stone Road MS 5500
Tallahassee, Florida 32399-2400

June 28, 2007

SUBJECT: Response to RAI Letter dated March 1, 2007
DEP File No. 0530010-30-AC
BART for Kiln No. 1

Dear Mr. Linero,

Enclosed is the response to your request for additional information (RAI) per your letter dated March 1, 2007 to Michael Gonzales regarding the air construction permit application to incorporate Best Achievable Retrofit Technology (BART) requirements for the above facility. The responses are provided below as answers in the format of the questions within your letter.

PARTICULATE MATTER (PM/PM10)

1. Please provide more specific details about the baghouses controlling the Kiln No. 1 operation. Pursuant to Rules 62.296.340 (2), propose a BART emission limit for each baghouse and provide more specific details about their function. The application lists a total of 13 baghouses controlling the whole cement process from Kiln No. 1. Please confirm that this represents the number of actual baghouses (or possibly baghouse systems) as recent applications suggest many more are typically used in a modern kiln.

Response: The emission units determined to be subject to BART requirements are emission units 002, 003, 004, 005, 006, 008 (ep E36), 009, and 011(ep C-11, C11A). These emission units were in "existence" on August 7, 1977 as defined in 40 CFR 51 App. Y, Section II.A.2. Emission units 008 (emission point F17 only), 024 and 025 are not subject to BART. Please note it is clear in the existing permitting files that emission units 24 (AC27-129972 issued 07/29/87) and 25 (AC27-131359 issued 07/29/87) received all necessary air permits after August 7, 1977, per the definition of existence as reiterated below from 40 CFR 51. Emission point F17 of EU 008 was added to the north silo No. 1 when Kiln No. 2 was built in the late 1980s in order to handle the increased throughput and transfer from the silos to Kiln No. 2. Prior to Kiln No. 2, emission point

E36 alone handled all transfer of Silos No.1 and No. 2 to Kiln No. 1. Thus emission units 24 and 25 and emission point F17 are not subject to BART.

2. The Rule defines "in existence" to mean that:

"the owner or operator has obtained all necessary preconstruction approvals or permits required by Federal, State, or local air pollution emissions and air quality laws or regulations and either has (1) begun, or caused to begin, a continuous program of physical on-site construction of the facility or (2) entered into binding agreements or contractual obligations, which cannot be canceled or modified without substantial loss to the owner or operator, to undertake a program of construction of the facility to be completed in a reasonable time." *App. Y of Part 51 II.A.2.*

Attachment 1 and 2 are a plot plan and process flow diagram, respectively, that show the location and function of the subject baghouses. The following table summarizes the proposed PM limits and also provides requested detailed baghouse information.

Table 1. Baghouse details

	CEMEX-Brooksville Cement Plant-BART Subject Units	PROCESS	Baghouse Manufacturer	model No.	EPN No.	Equip. Code	Bag diam.	Bag length	No. of Bags	Area	Total Area	A/C Ratio
							in.	in.		ft2/bag	ft2	X:1
011	RAW MAT'L STORAGE SILOS W/BAGHOUSES (C-11)	Raw Materials Handling	Western Precipitation	PF-6012-60	EPN11	222	6.0	144.0	120	18.85	2261.9	6.63
011	TRANSFER BELT W/BAGHOUSES (C-11A)	Raw Materials Handling	American Air	12-48-70	EPN11A	235	5.0	140.5	60	15.33	919.6	10.87
002	NO. 1 KILN FEED SYSTEM (BAGHOUSE D-31)	Pyroprocessing/Raw Mill System	Western Precipitation	PF-6012-90	EPN02	517						
003	CEMENT KILN NO. 1 BAGHOUSE(E-55);REVISED OIL CONCENTRATIONS	Pyroprocessing/Raw Mill System	Fuller-Draco Custom Baghouse		EPN03	1001	3.0	127.0	9984	8.31	82988.3	3.01
004	CEMENT PLANT CLINKER COOLER NO. 1 (BAGHOUSE F-18)	Clinker Handling System	Western Precipitation	PF-6012-300	EPN04	1041	6.0	144.0	900	18.85	16964.6	5.19
006	CLINKER STORAGE SILO NOS. 1&2 (BAGHOUSE F-31)	Clinker Handling System	Western Precipitation	PF-6012-150	EPN06	1132	6.0	144.0	150	18.85	2827.4	3.89
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)	Finish Mill System	Western Precipitation	PF-6012-150	EPN05	1245	6.0	145.0	150	18.98	2847.1	5.27
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)	Finish Mill System	Western Precipitation	PF-6012-150	EPN05	1246	6.0	145.0	210	18.98	3985.9	3.76
008	NO. 1 KILN BLENDING SILOS (BAGHOUSE NOS. (E-36) (silo 2)	Cement Products	Western Precipitation	PF-6012-90	EPN08	2577	5.8	100.5	80	12.61	1008.6	14.87
009	CEMENT PLT STG SILOS DUST UNIT (H-3)	Cement Products	Western Precipitation	PF-6012-120	EPN09	1355	6.0	144.0	120	18.85	2261.9	3.09

Table 2. PM limits.

EU	CEMEX-Brooksville Cement Plant-BART Subject Units	Current PM limit	Post-BART proposed PM limit
		lb/hr	lb/hr
011	RAW MAT'L STORAGE SILOS W/BAGHOUSES (C-11)	1.29	1.29
011	TRANSFER BELT W/BAGHOUSES (C-11A)	0.86	0.86
002	NO. 1 KILN FEED SYSTEM (BAGHOUSE D-31)	1.02	1.02
003	CEMENT KILN NO. 1 BAGHOUSE(E-55);REVISED OIL CONCENTRATIONS	29.70	29.70
004	CEMENT PLANT CLINKER COOLER NO. 1 (BAGHOUSE F-18)	14.90	14.90
006	CLINKER STORAGE SILO NOS. 1&2 (BAGHOUSE F-31)	1.45	1.45
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)	18.00	9.00
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)	18.00	9.00
008	NO. 1 KILN BLENDING SILOS (BAGHOUSE NOS. (E-36) (silo 2)	1.45	1.45
009	CEMENT PLT STG SILOS DUST UNIT (H-3)	36.05	36.05

2. For ease of understanding, please categorize the existing baghouses under the process system that they control (i.e. Raw Materials Handling, Pyroprocessing and Raw Mill System, Clinker Handling System, Finish Mill System, Cement Products, Packaging/Loadout System).

Response: See Table 1 above for the categories.

3. Provide a Table showing visible emissions and measured or estimated PM/PM_{10} (lb/hr and TPY) data for the last 5 years for each baghouse associated with Kiln No. 1.

Response: The following table summarizes the last 6 years of test data for units tested.

Table 3. Compliance test data for BART-subject units.

STACK TEST DATA

	CEMEX-Brooksville Cement Plant-BART Subject Units	2001-2006 maximum			2001					2002					2003				
		PM	SO2	NOX	PM	SO2	NOX	VE	hours	PM	SO2	NOX	VE	hours	PM	SO2	NOX	VE	hours
		lb/hr*	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	%		lb/hr	lb/hr	lb/hr	%		lb/hr	lb/hr	lb/hr	%	
011	RAW MAT'L STORAGE SILOS W/BAGHOUSES (C-11)							0	8760				0	7296				0	8760
011	TRANSFER BELT W/BAGHOUSES (C-11A)							0	8760				0	7296				3.1	8760
002	NO. 1 KILN FEED SYSTEM (BAGHOUSE D-31)							0	7771				0	6493				0	5293
003	CEMENT KILN NO. 1 BAGHOUSE(E-55);REVISED OIL CONCENTRATIONS	9.58	3.49	261	9.6	1.3	184	7.5	7771	5.8	1.4	173	0.8	6493	7	3.5	172	0	5293
004	CEMENT PLANT CLINKER COOLER NO. 1 (BAGHOUSE F-18)	8.60			8.6			0.2	7771	4.6			2.5	6493	7.8			5.1	5293
006	CLINKER STORAGE SILO NOS. 1&2 (BAGHOUSE F-31)	0.37			0.4			0	7771				0	6493				0	5293
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)							0	8077				0	6853				0	6507
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)							0	8077				0	6853				0	6507
008	NO. 1 KILN BLENDING SILOS (BAGHOUSE NOS. (E-36) (silo 2)							0	6330				0	5756				0	4761
009	CEMENT PLT STG SILOS DUST UNIT (H-3)	0.07						0	8760				0	6853	0.1			0	8760

	CEMEX-Brooksville Cement Plant-BART Subject Units	2004					2005					2006				
		PM	SO2	NOX	VE	hours	PM	SO2	NOX	VE	hours	PM	SO2	NOX	VE	hours
		lb/hr	lb/hr	lb/hr	%		lb/hr	lb/hr	lb/hr	%		lb/hr	lb/hr	lb/hr	%	
011	RAW MAT'L STORAGE SILOS W/BAGHOUSES (C-11)				0	8760				0	8760				0	8760
011	TRANSFER BELT W/BAGHOUSES (C-11A)				0	8760				0	8760				0	8760
002	NO. 1 KILN FEED SYSTEM (BAGHOUSE D-31)				0	6956				4.2	7597				0	8200
003	CEMENT KILN NO. 1 BAGHOUSE(E-55);REVISED OIL CONCENTRATIONS	6.8	0.1	261	5.6	6956	4.2	2.3	190	4.9	7597	9.1	0.6	191	0.2	8200
004	CEMENT PLANT CLINKER COOLER NO. 1 (BAGHOUSE F-18)	2.3			2.7	6956	3.3			3.3	7597	6.2			0.5	8200
006	CLINKER STORAGE SILO NOS. 1&2 (BAGHOUSE F-31)				0	6956				0.3	7597				0	8200
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)				0	5867	0.9			0	7114	1			0	7989
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)				0	5867				0	7114				0	7989
008	NO. 1 KILN BLENDING SILOS (BAGHOUSE NOS. (E-36) (silo 2)				0	6328				0	7080				0	7780
009	CEMENT PLT STG SILOS DUST UNIT (H-3)				0	8760				0	8760				0.4	8760

4. Submit the Top/Down cost assessments to lower PM/PM_{10} emissions and/or exhaust visible emissions from the baghouse systems at the plant. This could include upgrades in the baghouse systems; use of different bags; implementation of baghouse maintenance and replacement programs; fan improvements to support same, etc.

Response: Previously submitted BART analysis for all units has determined baghouse control to be the most stringent feasible control technology. These emissions units qualify for a streamlined BART determination since they are subject to a post-1990 MACT determination (subpart LLL) in which PM was assessed as a surrogate for HAP emissions. As there have not been any new control technologies utilized for these types of units, further analysis is not required.

A cost assessment of the annual operation costs of the subject baghouses indicates that over $2.3 million per year is spent in energy, operations and maintenance expense. These costs do not include the amortized capital costs of the baghouse system and the many system upgrades since units came into existence. The baghouse filter materials are the same used in newly constructed kiln systems, such as the proposed Kiln No. 3, and the Air/Cloth ratios (see Table 1) are in the range of baghouse currently being permitted both in Florida and elsewhere.

All of the baghouses are subject to the cement MACT. As such an O&M Plan as required by the MACT is in use. All baghouses are subject to quarterly preventative maintenance tasks.

Regarding assessment of visible emissions: neither state or Federal rule, nor VISTA protocol suggest that visible emissions from an emission unit are to be assessed, evaluated or reviewed.

However, BART-subject baghouses other than the kiln and cooler baghouses currently have visible emission limits of 5 percent (in lieu of PM stack test). As these units have current emissions limits that do not allow any visible emissions (i.e., five percent or less), it can be argued that these sources are at most stringent limitation as the sources will not have visible emissions off-site since they do not have visible emissions on-site. However, BART does not address visible emissions at the source.

5. Please reassess the 20% opacity limit for the main particulate matter control device (PMCD), i.e. the main kiln baghouse.

Response: Neither state or Federal rule, nor VISTA protocol suggest that visible emissions at the emission unit are to be assessed, evaluated or reviewed. The main kiln baghouse visible emissions is limited to 20%. However, visible emissions from Kiln No. 1 results from combustion, calcination of mineral materials and other processes both physical (e.g., pulverizing) and chemical (e.g., condensation resulting in aerosol formation). These many physical and chemical interactions involve pollutants addressed in BART regulation, PM10, SO2, NOx, and other non-BART regulated pollutants sulfur compounds, volatile organic compounds, nitrogen compounds (including but not limited to ammonia and ammonia compounds), particulate matter greater than PM10, and many other pollutants. Rule 62-296.340(2)2, F.A.C. specifically includes pollutants PM10, SO2, and NOx and excludes volatile organic compounds, ammonia and ammonia compounds from regulation by the regional haze rule. Cemex is required to assess Best Achievable Retrofit Technology for these old existing subject units for impacts to Class I areas defined in 62-2966.340(2)3 for emissions of PM10, SO2, and NOx. Thus the assessment of visible emissions immediately at the kiln source that emits both combustion and related mineral product compounds is not an accurate method to assess regional haze impact and is not a requirement of BART assessment. Neither state or Federal rule, nor VISTA protocol suggest that visible emissions at the emission unit are to be assessed, evaluated or reviewed. It is respectively requested that only the subject pollutants be addressed for BART in accordance with 62-296.340(3)(a)2, F.A.C.

Also, it should be noted that the kiln baghouse was originally designed and constructed with 14 compartments. Six additional compartments have been added to the baghouse as permitted by FDEP in 1998. Permit -028-AC allows installation of new dual poppet dampers to reduce problems with the older twin disk design.

NITROGEN OXIDES (NOx)

6. What NOx emission limit was considered in the modeling? Did the modeling for NOx consider the new permitted emission limit of 1.21 lb/ton of preheater feed (2.02 lb/ton ofclinker) stated in Permit 0530010-026-AC?

Response: Pre-BART control modeling of emissions include NOx emission measures for the highest-24-hr period in the last 3-5 years. Post-BART control modeling is based on a value of the new permitted rate of 1.21 lb/ton of dry feed. The modeled emission rate is selected from review of the NOx CEM data (provided below). Modeling results are attached in the modeling report.

7. Consider the effect of the proposed new Kiln 3 project on visibility when assessing the possible reductions and mitigation due to potential reductions at the existing kilns.

Response: The Kiln No.3 project will impact visibility in Class I areas; and clearly the highest impact will be Chassowitzka. However, the new kiln impacts are addressed in separate permitting procedures. While the new kiln will impact visibility, the regional haze rule, as implemented under rule 62-296.340, F.A.C., does not require, nor is it suggested in state or federal rule, that other sources which are clearly not subject to BART, existing or proposed, be evaluated in conjunction with a source that is subject to BART. The possible emissions reductions and mitigation for the BART-subject units are addressed through pre- and post-BART visibility modeling as attached.

8. Submit NOx continuous emission monitoring systems (CEMS) data for the last two years and stack test results for the last 5 years. Include ammonia (NH_3) injection rates.

Note the time during which the CEMS had not yet been calibrated in accordance with the respective performance standards.

Response: Attachment 3 provides Kiln No. 1 NOx CEM data from the date of certification by EPA performance specifications, October 16, 2006. CEM data prior to this period are not certified and therefore have no validity for purposes addressed herein. The data are provided in tabular format of 24-hr average emissions of NOx (lb/ton feed) and NH3 injection rates from October 16, 2006 to April 30, 2007. These data have been provided previously to the department at various recent meetings.

9. The control technology proposed is selective non catalytic reduction (SNCR) and Low NOx burners (LNB). How this technology compare in terms of efficiency (%) with the other technologies presented (refer to Table in page 28 of application).

Response: The referenced table on Page 28 of the original application indicates that SCR has a range of control efficiencies from 70-90 percent. The performance of SCR for controlling NOx from cement plants was re-evaluated in light of the BACT analysis recently submitted for the Department for Kiln No. 3. Based on information reported in the Kiln No. 3 BACT report, SCR control efficiency, based on long-term operating records from the Solnhofen Germany plant ranges from approximately 35 percent to 75 percent between NH_3/NOx molar ratios of 0.4-1.0. Above a molar ratio of 1.0, the SCR efficiency remains flat between 70-75 percent.

Compared with this SCR efficiency, the SNCR efficiency achieved on Kiln No. 1 at CEMEX has been in the range of 80 percent at molar ratio averaging 1.1. At this efficiency, CEMEX has been able to meet the recently permitted NOx emission limit of 1.21 pounds of NOx per ton of kiln feed (equivalent to 2.0 pounds of NOx per ton of clinker). To put this emission limit into perspective, you (Linero) have stated that this is the lowest permitted NOx limit for preheater kilns in the U.S.

In addition to a NOx control efficiency between 35-75 percent, the SCR systems suffer from excessive maintenance demands. Information in the Kiln No. 3 BACT report indicates that the Solnhofen SCR system was down for catalyst cleaning one day every 7 to 14 days and was routinely down for other maintenance requirements. Data from the Solnhofen annual reports showed that although Solnhofen had a goal of operating at 200 mg NOx/Nm^3 (1.5 pounds NOx per ton of preheater feed). The plant achieved its permitted emission limit of 500 mg/ Nm^3 (3.8 pounds per ton of feed) only 72.3 percent of the time in calendar year 2004 and 90.8 percent of the time in calendar year 2005. In early 2006 the Solnhofen SCR system was taken off-line for evaluation and during the year as a whole, the NOx emission limit was achieved 96.4 percent of the time while operating on SNCR. It is interesting to note that as of this date, the Solnhofen SCR system remains off-line and it has been reported that there are no plans to bring it back on-line.

In comparison, SNCR maintenance is typically limited to pump repairs and injection system cleaning. No kiln downtime attributable to SNCR has been recorded in two years of SNCR systems in continuous operations for one cement plant in Florida.[1] As well, operation of the existing NH3 injection system on Kiln No. 1 at Cemex has caused no downtime since its installation and initial operation.

Furthermore, the seven kilns most recently permitted (five in Florida, one in Texas, and one in Arizona) have had BACT determined NOx emission limits near 2.0 lb of NOx/ton of clinker. The current NOx limit for Kiln No.1 fo 2.02 lb/tn clinker is only 3.5 percent higher than these recent BACT limits that apply to state-of-the-art kilns. The current control of NOx on this older kiln is within 3.5 percent of the most recent BACT determinations in the country and according to you, is the most stringent permitted NOx emission limit on any U.S. preheater kiln.

The existing SCNR and LNB NOx control system is the most stringent retrofit control technology.

10. Please evaluate and submit information about selective control reduction (SCR) technology application for this kiln including: BART limit; analysis of the cost of compliance; the energy and non-air quality environmental impacts (including NH_3 emissions); and the degree of visibility improvement in affected Class I areas resulting from the use of this control technology.

Response: While the technology of SCR is typically listed in recent cement plant BACT determinations and this BART determination, the revised efficiency of SCR, as discussed above, of 35-75 percent places the control efficiencies of SCR and SNCR in the same range. With emphasis on the fact the recent real-world data indicates that SCR control of new cement kilns is, at best, comparable to SNCR on a lb per ton of product basis, SCR is not the most cost-effective technology.

Furthermore retrofit costs to install SCR reduce even further consideration of SCR over the existing SNCR. In addition to the structural SCR system retrofit costs, costs associated with retrofitting other related systems due to a retrofitted SCR housing are additional reasons to negate SCR as a technology option. Such additional costs expected to include the replacement of the kiln I.D. fan with a larger fan to overcome the pressure drop across the catalyst, the increased energy to operate the fan, the energy to continuously operate the high-pressure cleaning system for the catalyst and the continuous on-going maintenance on the catalyst. In addition to these energy and cost considerations, there is the limited on-line availability of SRC systems which based on Solnhofen experience is only about 80-85% of the time.

Consideration of retrofit SCR technology to the existing Kiln No. 1 is beyond the intent of BART rules. FDEP workshop presentation bolstered the rule language of EPA, "The BART analysis can be streamlined for sources that are already well controlled because they are subject to post-1990 MACT or BACT or MWC NSPS limits. "

It should be noted that VISTA modeling protocol states,

"The modeling evaluation is a unit-by-unit evaluation and can be conducted on a pollutant specific basis. Modeling results are used with the other four statutory factors mentioned in Section 2.1 to decide which control technology, if any, is appropriate. Finally, if a source decides to use the most stringent control technology available, the BART control analysis, including modeling, is not necessary."*pg 36 of VISTA modeling Protocol, revision 3.2*

As the selected BART technology is the most stringent technology available, BART analysis and modeling is not necessary. However, in good faith, post-BART modeling does include NOx emissions from the kiln.

Regarding ammonia emissions, as stated in Rule, 62-296.340, F.A.C. ammonia and ammonia compounds are not regulated by BART.

SULFUR DIOXIDE (SO_2)

11. Submit a Table showing sulfur dioxide emissions (lb/hr and TPY) for the last 5 years.

Response: See Table 6 in the modeling report.

MODELING

12. The BART application concludes that visibility impacts are greater then 0.5 deciview (with the older IMPROVE equation). The conclusion states that additional modeling will be submitted with the newer IMPROVE equation to re-evaluate the modeling modifications. The use of the new IMPROVE versus the use of the older IMPROVE equation should not provide a result that is much different since you are comparing changes from one control strategy to another. Regardless, please submit the modeling as stated in the application and please verify that the same IMPROVE equation was used for the modeling before and after BART.

Response: CALPUFF modeling is provided in the attached report. As you stated above, the new IMPROVE equation was evaluated and determined to have minimal impact on results. As such, the original CALPUFF modeling methodology, as approved in the BART modeling protocol, was applied to assess the pre and post-BART visibility.

13. Please verify that all modeling done showing visibility impacts prior to BART was done with the highest actual emission rates, not permitted limits.

Response: Pre-BART modeled emission rates were applied per the approved modeling protocol using the highest emission rates for those units stack tested in the last 3-5 years. For units that were not tested, permitted emissions were applied.

In the FDEP workshops and conversations, the priority of applied emissions were: CEM data (24-hr max.), stack test data for the past 3-5 year period or permit limits. Thus, the modeling report shows the emission rates applied which are from stack testing or permit limits applied for pre-BART modeling. As instructed by Tom Rogers of FDEP, Method 5 data were increased to include un-collected condensable PM. As well, AP-42 factors were applied to apportion PM10 from PM.

VISTA Protocol states:

"For CALPUFF modeling, source emissions should be defined using the maximum 24-hour actual emission rate during normal operation for the most recent 3 or 5 years. If maximum 24-hr actual emissions are not available, continuous emissions data, permit allowable emissions, potential emissions, and emissions factors from AP-42 source profiles may be used as available." Pg S-3, revision 3.2

14. The BART application includes one table of the modeling results showing the visibility impact rankings at the Chassahowitzka. Which pollutant is this table representing? Please submit tables showing results of all BART analyses, including visibility impacts before and after BART for all pollutants subject to BART for all control strategies.

Response: The modeling report includes tables of pre and post-BART SO2, NOx and PM10 modeling impacts.

15. Please verify the BKSOIL concentration that should be used for the Chassahowitzka with the Department. The application states that 14.61 micrograms per cubic meter was used. According to Appendix B of the Haze Guidance document, it should be 11.45.

Response: The BKSOIL concentration of 14.61 ug/m3 (SOIL, ext. coeff. = 1) was determined from Appendix B for the 10% best days, 3.79 dv. As confirmed with Tom Rogers, the value of 11.45 ug/m3 is used in the attached modeling.

16. The modeling disk submitted to the Department has no input files for CALPUFF. Please submit all files regarding the modeling analyses for this BART application. This includes files for all pollutants subject to BART, exemption and determination files.

Response: All modeling files applied for the BART determination are attached.

If you have any questions regarding this information or any related matter, please contact me (352) 377-5822.

Sincerely,

Micheal Gonzales, Plant Manager

July 1, 2007
Date

and

Max Lee, Ph.D., P.E. 6/29/07

Date

P.E. Seal: 58091

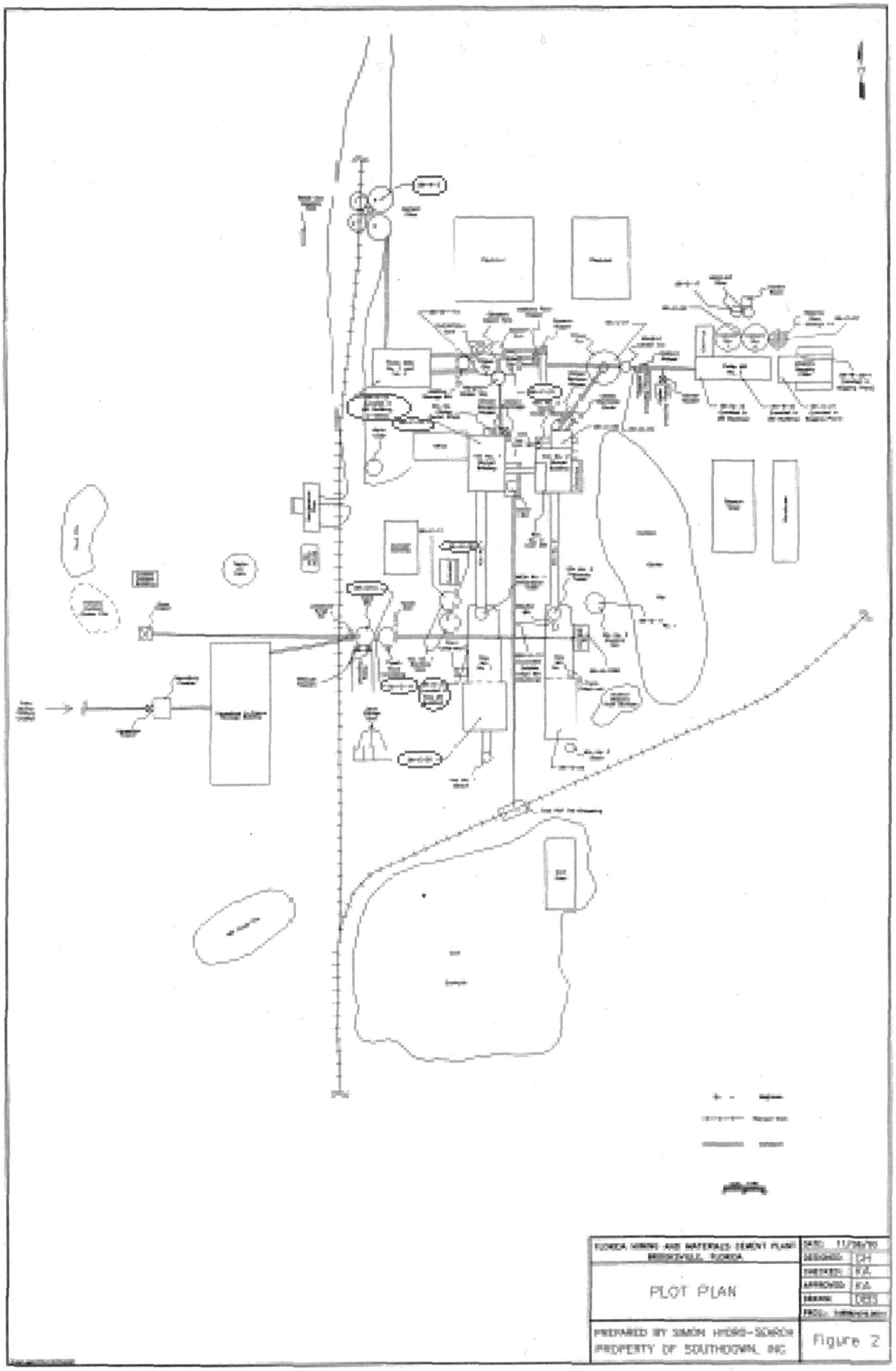
Enc:

Cc: Charles Walz, Cemex

KOOGLER & ASSOCIATES, INC.
ENVIRONMENTAL SERVICES

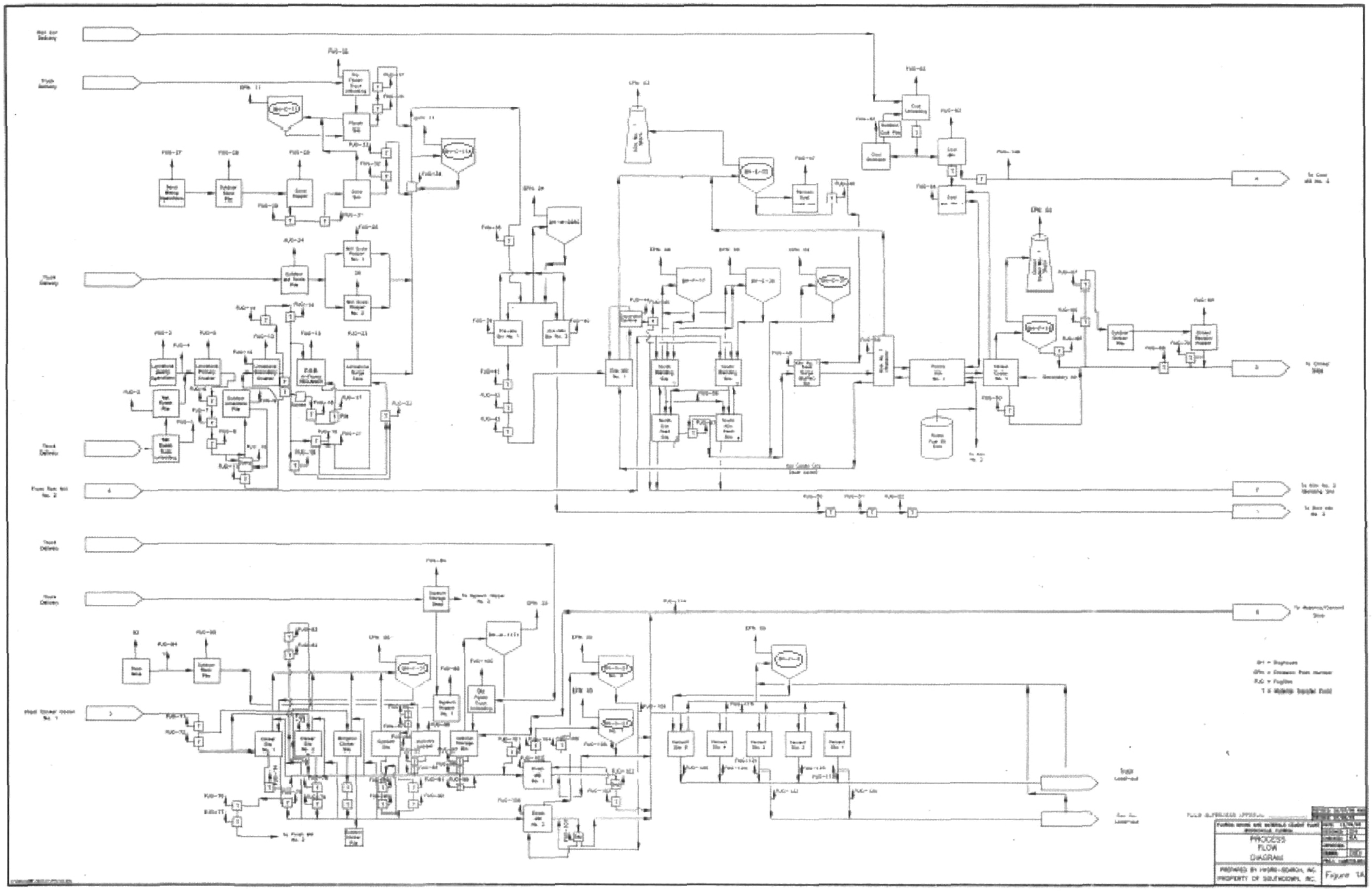
ATTACHMENT 1

Plot Plan of BART-subject Units


PLOT PLAN
PREPARED BY SIMON HYDRO-SEARCH
PROPERTY OF SOUTHDOWN, INC
Figure 2

ATTACHMENT 2

Process Flow Diagram of BART-subject Units


PROCESS
FLOW
DIAGRAM
Figure 1A

ATTACHMENT 3

Kiln No. 1 – NOx CEM and NH3 injection Data

Kiln #1

Date	NOx 30day Roll lb/ton feed	Avg NH3 gpm	
10/6/06	1.24	2.83	
10/7/06	1.23	3.35	
10/8/06	1.22	3.88	
10/9/06	1.23	3.39	
10/10/06	1.22	3.46	
10/11/06	1.21	3.41	
10/12/06	1.19	3.81	
10/13/06	1.2	4.03	
10/14/06	1.19	3.94	
10/15/06	1.18	3.87	
10/16/06	1.16	3.43	
10/17/06	1.15	3.29	
10/18/06	1.14	3.09	
10/19/06	1.13	3.70	
10/20/06	1.13	3.99	
10/21/06	1.14	4.09	
10/22/06	1.13	3.72	
10/23/06	1.14	2.84	
10/24/06	1.15	3.46	
10/25/06	1.14	2.74	
10/26/06	1.15	2.01	
10/27/06	1.16	1.81	
10/28/06	1.14	3.22	
10/29/06	1.13	3.69	
10/29/06	1.13	4.06	
10/30/06	1.14	3.19	
10/31/06	1.13	2.66	
11/1/06	1.14	2.42	
11/2/06	1.15	2.65	
11/3/06	1.15	2.87	
11/4/06	1.16	2.12	
11/5/06	1.16	3.42	
11/6/06	1.15	1.89	
11/7/06	1.16	1.93	
11/8/06	1.17	1.89	
11/9/06	1.17	1.48	
11/10/06	1.18	1.65	
11/11/06	1.19	3.13	
11/12/06	1.18	2.07	
11/13/06	1.18	2.28	
11/14/06	1.19	1.67	
11/15/06	1.2	2.44	
11/16/06	1.2	2.72	
11/17/06	1.21	2.47	
11/18/06	1.2	2.21	
11/19/06	1.21	3.49	
11/20/06	1.22	3.19	
11/21/06	1.22	2.35	
11/22/06	1.23	2.50	
11/23/06	1.22	2.60	
11/24/06	1.24	2.34	
11/25/06	1.25	3.14	
11/26/06	1.25	1.11	
11/27/06	1.24	1.38	
11/28/06	1.25	1.95	
11/29/06	1.26	0.69	
11/30/06	1.25	0.00	**Kiln down**
12/1/06	1.25	0.00	**Kiln down**
12/2/06	1.25	0.00	**Kiln down**
12/3/06	1.26	0.71	
12/4/06	1.27	1.92	
12/5/06	1.28	1.18	
12/6/06	1.27	2.15	
12/7/06	1.26	3.87	
12/8/06	1.27	3.23	
12/9/06	1.28	3.46	
12/10/06	1.27	4.56	
12/11/06	1.25	3.69	
12/12/06	1.24	1.58	
12/13/06	1.24	1.78	
12/14/06	1.23	3.14	

Kiln #1

Date	NOx 30day Roll lb/ton feed	Avg NH3 gpm	
12/15/06	1.22	5.04	
12/16/06	1.23	3.27	
12/17/06	1.22	4.58	
12/18/06	1.22	3.06	
12/19/06	1.22	3.40	
12/20/06	1.21	3.70	
12/21/06	1.21	3.62	
12/22/06	1.22	3.09	
12/23/06	1.22	3.45	
12/24/06	1.22	1.99	
12/25/06	1.23	2.76	
12/26/06	1.23	3.07	
12/27/06	1.23	1.32	
12/28/06	1.23	1.75	
12/29/06	1.23	1.09	
12/30/06	1.22	1.28	
12/31/06	1.21	2.27	
1/1/07	1.22	2.36	
1/2/07	1.21	3.76	
1/3/07	1.2	4.17	
1/4/07	1.19	2.89	
1/5/07	1.19	3.33	
1/6/07	1.19	3.88	
1/7/07	1.19	2.66	
1/8/07	1.16	2.88	
1/9/07	1.17	4.30	
1/10/07	1.19	5.35	
1/11/07	1.18	4.76	
1/12/07	1.16	3.91	
1/13/07	1.16	3.25	
1/14/07	1.17	3.86	
1/15/07	1.16	3.29	
1/16/07	1.15	2.59	
1/17/07	1.15	2.47	
1/18/07	1.15	2.54	
1/19/07	1.15	3.21	
1/20/07	1.15	2.07	
1/21/07	1.15	3.35	
1/22/07	1.15	3.91	
1/23/07	1.15	2.44	
1/24/07	1.15	2.84	
1/25/07	1.16	2.46	
1/26/07	1.17	4.35	
1/27/07	1.17	2.33	
1/28/07	1.19	4.67	
1/29/07	1.2	4.10	
1/30/07	1.21	2.23	
1/31/07	1.21	1.85	
2/1/07	1.2	1.72	
2/2/07	1.21	1.40	
2/3/07	1.22	1.85	
2/4/07	1.23	1.69	
2/5/07	1.23	0.00	**Kiln Down**
2/6/07	1.23	0.00	**Kiln Down**
2/7/07	1.23	0.00	**Kiln Down**
2/8/07	1.23	0.00	**Kiln Down**
2/9/07	1.23	0.00	**Kiln Down**
2/10/07	1.23	0.00	**Kiln Down**
2/11/07	1.23	0.00	**Kiln Down**
2/12/07	1.23	0.00	**Kiln Down**
2/13/07	1.23	0.00	**Kiln Down**
2/14/07	1.23	0.00	**Kiln Down**
2/15/07	1.23	0.00	**Kiln Down**
2/16/07	1.22	0.00	
2/17/07	1.19	0.02	
2/18/07	1.2	2.78	
2/19/07	1.22	3.01	
2/20/07	1.22	3.17	
2/21/07	1.22	3.73	
2/22/07	1.23	2.06	
2/23/07	1.24	2.76	

Kiln #1

Date	NOx 30day Roll lb/ton feed	Avg NH3 gpm
2/24/07	1.24	1.35
2/25/07	1.26	2.09
2/26/07	1.27	1.47
2/27/07	1.28	1.50
2/28/07	1.29	1.97
3/1/07	1.31	2.26
3/2/07	1.32	2.44
3/3/07	1.34	2.32
3/4/07	1.36	3.29
3/5/07	1.37	1.85
3/6/07	1.38	1.85
3/7/07	1.37	1.42
3/8/07	1.37	2.78
3/9/07	1.37	2.04
3/10/07	1.37	1.62
3/11/07	1.39	2.12
3/12/07	1.4	2.80
3/13/07	1.41	2.30
3/14/07	1.42	1.89
3/15/07	1.42	2.62
3/16/07	1.44	3.13
3/17/07	1.44	1.85
3/18/07	1.46	2.07
3/19/07	1.52	2.91
3/20/07	1.52	1.98
3/21/07	1.51	3.76
3/22/07	1.5	3.00
3/23/07	1.49	3.47
3/24/07	1.48	2.44
3/25/07	1.48	4.10
3/26/07	1.48	2.77
3/27/07	1.47	1.45
3/28/07	1.48	3.78
3/29/07	1.48	1.28
3/30/07	1.49	2.32
3/31/07	1.48	2.15
4/1/07	1.48	0.90
4/2/07	1.48	0.00
4/3/07	1.43	0.64
4/4/07	1.42	1.96
4/5/07	1.41	2.33
4/6/07	1.4	2.11
4/7/07	1.39	2.60
4/8/07	1.38	2.74
4/9/07	1.37	2.87
4/10/07	1.38	2.36
4/11/07	1.36	2.08
4/12/07	1.33	2.41
4/13/07	1.31	1.98
4/14/07	1.3	1.37
4/15/07	1.29	2.93
4/16/07	1.29	1.76
4/17/07	1.29	2.02
4/18/07	1.28	1.76
4/19/07	1.26	1.79
4/20/07	1.25	2.45
4/21/07	1.24	3.91
4/22/07	1.22	3.71
4/23/07	1.22	3.15
4/24/07	1.21	1.12
4/25/07	1.2	1.12
4/26/07	1.19	1.05
4/27/07	1.19	1.30
4/28/07	1.2	2.38
4/29/07	1.18	2.02
4/30/07	1.19	2.84

ATTACHMENT 4

BART Modeling Report

END NOTES

1. Conversations with Suwannee American Cement- Branford Plant personnel, Krishna Cole. May 2007.

ADDENDUM
REPORT IN SUPPORT OF
AN APPLICATION FOR A
CONSTRUCTION PERMIT

BEST ACHIEVABLE
RETROFIT TECHNOLOGY

CEMEX
BROOKSVILLE CEMENT PLANT
FACILITY ID: 0530010
HERNANDO COUNTY, FLORIDA

June 29, 2007

KOOGLER & ASSOCIATES, INC.
ENVIRONMENTAL SERVICES
4014 NW 13th STREET
GAINESVILLE FL 32609-1923
352/377-5822 • FAX/377-7158

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1. Introduction

This addendum report is in support of an application for an air construction permit for the Cemex Cement Plant, Facility ID: 0350010 to incorporate requirements of Best Achievable Retrofit Technology (BART) per 62-296.340(3)(b), F.A.C. An initial report was submitted January 31, 2007 with an air construction permit application. The report was reviewed and a Request for Additional Information (RAI) was received March 13, 2007. This report accompanies a letter in response to the RAI. This report provides additional information requested in the RAI for visibility modeling impacts on Class I areas of pre- and post-BART control of subject emission units impact on Class I areas.

The applicable units listed below were existence between August 7, 1962 to August 7, 1977 and potential emissions of one or more of the pollutants NOx, SO2, or PM exceeds 250 tons per year. Information was recently revealed on the permitting history of the Kiln No. 1 system emission units. The history of permitting indicates that emission units 24, 25 and emission point F17 of EU008 were not in existence for the subject period of BART (8/7/1962 to 8/7/1977) and thus are not addressed in this report.

Table 1. BART-subject Emissions Units of Cemex, Brooksville cement plant.

EU	CEMEX-Brooksville Cement Plant-BART Subject Units
011	RAW MAT'L STORAGE SILOS W/BAGHOUSES (C-11)
011	TRANSFER BELT W/BAGHOUSES (C-11A)
002	NO. 1 KILN FEED SYSTEM (BAGHOUSE D-31)
003	CEMENT KILN NO. 1 BAGHOUSE(E-55);REVISED OIL CONCENTRATIONS
004	CEMENT PLANT CLINKER COOLER NO. 1 (BAGHOUSE F-18)
006	*CLINKER STORAGE SILO NOS. 1&2 (BAGHOUSE F-31)*
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)
008	NO. 1 KILN BLENDING SILOS (BAGHOUSE NOS. (E-36) (silo 2)
009	CEMENT PLT STG SILOS DUST UNIT (H-3)

The VISTAS group provided initial BART exemption modeling using data supplied to FDEP for 2001-2003 average stack test emissions data for sources tested and permit limit data of units for sources not tested. The modeling results were provided to FDEP in the report, "BART Exemption Modeling of Sources in Florida" in January of 2007. The following summary is copied from the report.

Table 2. Earthtech exemption modeling results.

Summary of Visibility Results for CEMEX Brooksville – Refined Run (4-km grid)

Class I Area	2001	2002	2003	Annual average background b_{ext}
	Maximum delta-deciview, (# days>0.5 dv, # days >1 dv)			(Mm^{-1})
Chassahowitzka	**1.084 (49 1)**	**0.967 (52 0)**	**1.348 (46 3)**	21.46
Okefenokee	0.039 (0 0)	0.050 (0 0)	0.044 (1 0)	21.41
St Marks	0.130 (0 0)	0.084 (0 0)	0.065 (0 0)	21.54

The results indicated the subject emission units resulted in significant visibility impacts (>0.5 deciview) in the Chassahowitzka Class I area. Despite the reduced number of emission units, the pre-BART modeling indicates the emission units still have a significant visibility impact.

As part of the BART assessment of control technology, these modeling results are provided to evaluate the visibility impact of the revised list of emission units pre- and post-BART controls on the Chassahowitzka Class I area.

BART CONTROL ASSESSMENT

FDEP workshop presentations bolstered the rule language of EPA, "The BART analysis can be streamlined for sources that are already well controlled because they are subject to post-1990 MACT or BACT or MWC NSPS limits."

It should be noted that VISTA modeling protocol states,

"The modeling evaluation is a unit-by-unit evaluation and can be conducted on a pollutant specific basis. Modeling results are used with the other four statutory factors mentioned in Section 2.1 to decide which control technology, if any, is appropriate. Finally, if a source decides to use the most stringent control technology available, the BART control analysis, including modeling, is not necessary." *pg 36 of VISTA modeling Protocol, revision 3.2*

Particulate Matter

All emission units: Control of PM by baghouse technology was determined to be the most stringent technology available for all emission units. Given the units apply the most stringent technology, the existing limitations are proposed for BART limitations.

Sulfur Dioxide

Kiln No. 1: Control of SO2 at kiln No. 1 is inherent adsorption by alkaline materials which is equivalent to most recent BACT determinations made here in Florida as discussed in the initial report. In addition, the current effective limit of 0.1 lb/ton clinker is on the low-end of recent dry-process cement kiln BACT determinations.

Nitrogen Oxides

Kiln No. 1: Control of NOx from Kiln No. 1 is SNCR and LNB which is equivalent to the seven most recent BACT technologies in the U.S. (five in Florida, one in Texas, and one in Arizona). The existing limit is only 3.5 percent above the recent BACT determinations of new preheater/precalciner kilns permitted in Florida.

The accompanying letter provides more information on the BART technology evaluation.

BART analysis can be streamlined as the kiln is already well controlled. Hence modeling of the individual unit emissions may not be required for these units that are already well controlled, as cited above from BART guidance. However, PM, SO2 and NOx emissions are included in a comprehensive modeling of the subject emission units for pre and post- BART control modeling.

2. Modeling

This CALPUFF modeling is provided to Florida Dept. of Environmental Protection (FDEP) for applicable emission units at the CEMEX Inc., Brooksville Cement plant subject to the Regional Haze Rule (40 CFR 51.300). This modeling is consistent with Appendices W and Y of 40 CFR 51. These procedures follow the VISTAS common protocol. The visibility impact of the CEMEX units on Class I areas is modeled to assist in determining applicable Best Achievable Retrofit Technology (BART).

Location of Source vs. Relevant Class I Areas

Table 3 provides the locations of CEMEX, Inc., Brooksville cement plant subject emission unit locations. Figure 1 shows the location of the plant and surrounding Class I areas within 350 km.

Table 3. CEMEX emission units subject to Regional Haze Rule

	CEMEX-Brooksville Cement Plant-BART Subject Units	Location LCC (converted from UTM based on proj. 40N,97W,33Lat1,45Lat2)			
		LLC east	LCC north	Datum	PROCESS
		km	km		
011	RAW MAT'L STORAGE SILOS W/BAGHOUSES (C-11)	1426.657	-1148.532	NWS-84	Raw Materials Handling
011	TRANSFER BELT W/BAGHOUSES (C-11A)	1426.657	-1148.532	NWS-84	Raw Materials Handling
002	NO. 1 KILN FEED SYSTEM (BAGHOUSE D-31)	1426.589	-1148.554	NWS-84	Pyroprocessing/Raw Mill System
003	CEMENT KILN NO. 1 BAGHOUSE(E-55);REVISED OIL CONCENTRATIONS	1426.611	-1148.623	NWS-84	Pyroprocessing/Raw Mill System
004	CEMENT PLANT CLINKER COOLER NO. 1 (BAGHOUSE F-18)	1426.578	-1148.433	NWS-84	Clinker Handling System
006	CLINKER STORAGE SILO NOS. 1&2 (BAGHOUSE F-31)	1426.581	-1148.391	NWS-84	Clinker Handling System
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)	1426.522	-1148.402	NWS-84	Finish Mill System
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)	1426.522	-1148.402	NWS-84	Finish Mill System
008	NO. 1 KILN BLENDING SILOS (BAGHOUSE NOS. (E-36) (silo 2)	1426.574	-1148.527	NWS-84	Cement Products
009	CEMENT PLT STG SILOS DUST UNIT (H-3)	1426.494	-1148.303	NWS-84	Cement Products

Figure 1. Regional map of Cemex , Brooksville cement plant.

The Class I areas within a 350 km area of the cement plant are as follows:

1) Chassahowitzka- Distance to site: 10 kilometers (only area of significant impact)
2) Okefenokee: 245 kilometers
3) St. Marks: 230 kilometers
4) Everglades: 310 kilometers

Air Quality Modeling Methodology

Overview of Steps

(1) Obtain CALMET data from FDEP.
(2) Run CALPUFF to model the sample point source impact.
(3) Run POSTUTIL to get the new components Elemental Carbon (EC), Soil, Organic Carbon (SOA) and PMC from the six PM categories.

(4) Run CALPOST for each Class I area using visibility Method 6. Make a table and analyze the results.

Modeling Products

- CALMET - Version 5.724
- CALPUFF - Version 5.756
- CALPOST, Version 5.6393

Modeling Domain Configuration

The modeling domain is in LCC units. The ranges of Domain 2 (see Figure 2) are as follows:

```
Projection:
PMAP = LCC
FEAST  = 0.000
FNORTH = 0.000
RLAT0 =  40N
RLON0 =  97W
XLAT1 =  33N
XLAT2 =  45N
DATUM = NWS-84
```

Domain No. 2 LCC Range ---

X(km) Easting : 700.000000 1800.00000

Y(km) Northing: -1600.00000 -750.000000

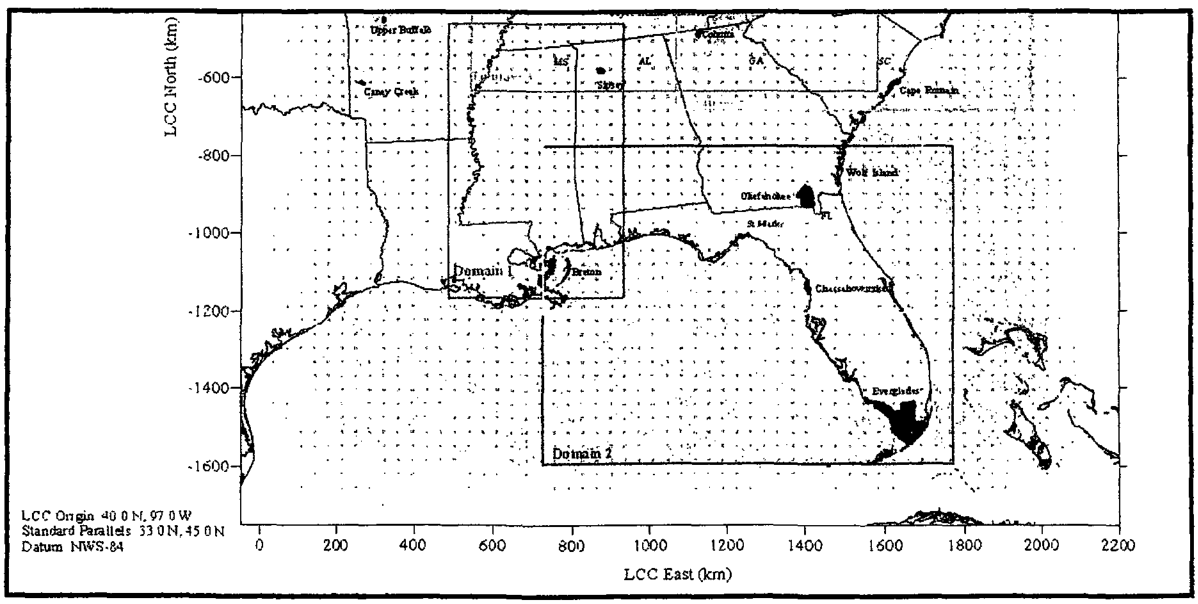

Figure 2. Domain 2 for 4-km CALMET modeling.

CALMET Meteorological Modeling

FDEP provided 4-km grid "CALPUFF-ready" Calmet data for the period of 2001-2003. The data were copied to an external hard drive by FDEP and provided to KA.

CALPUFF Modeling Configuration

The VISTAS common protocol, version 3.2, is the source of the modeling configuration. In accordance with the protocol, default IWAQM values were used except for noted differences below.

Ozone Concentrations

Ozone concentrations were provided in file format for this project by Timothy Plander, FDEP, via email on 7/6/2006.

Ammonia Concentrations

Ammonia concentrations were set at 0.5 ppb for all CALPUFF modeling. In POSTUTIL CMAQ ambient NH3 data can be used for each Class I area to repartition HNO3 and NO3 (not performed).

Major Relevant Features of Calpuff

The VISTAS common protocol, version 3.2, is the source of the modeling configuration. The default IWAQM values (EPA-454/R-98-019, App. B) were provided in the modeling protocol approved by FDEP December 11, 2006. The CALPUFF configuration follows the IWAQM guidance (EPA, 1998; pg B-1 through B-8) except as noted below.

-Domain includes source and Class I area within 350 km (Class I areas are noted above).

-Chemical mechanism: MESOPUFF II module, using integrated puff sampling methodology.
- The IWAQM/FLAG procedures can be used for the Ammonia Limiting Method.
-Use turbulence-based dispersion coefficients and P-G dispersion.

-Class I receptors locations were obtained from NPS http://www2.nature.nps.gov/air/Maps/Receptors/index.cfm. The ranges of subdomains for use with CALPUFF were assessed from a plot of the source and the receptors. The maximum and minimum locations of the Class I areas were determined and plotted. Based on these locations, the subdomain grid extended at least 50 km. An example table and charts are provided below as quality assurance to review grid ranges and source/receptor locations. Only Chassahowitzka Class I area was assessed as exemption modeling indicated that only Chassahowitzka is significantly impacted.

Table 4. Class I area LCC coordinate determination.

			X	Y		X	Y		X	Y	
LCC coordinates		Max	1411.712	-1136.356		1422.463	-877.2871		1256.438	-1004.308	
Class I Areas			156	96		144	96		94	96	
		Min	1400.731	-1154.049		1379.768	-932.1086		1210.455.	-1028.3	
			190	127		207	190		190	173	
			Chas			Okee			Stma		
CEMEX		LCC=>	1408.318	-1154.049	0	1418.322	-931.1034	36	1212.44	-1028.3	1
1426.589	-1148.554	X=40	1409.13	-1153.92	1	1419.904	-930.8431	36	1214.04	-1028.078	1
		Y=97	1409.941	-1153.791	1	1400.612	-932.1086	27	1212.312	-1027.376	1
		lat1=33	1410.753	-1153.661	3	1402.194	-931.8516	27	1213.112	-1027.265	1
		lat2=45	1407.359	-1153.254	0	1403.777	-931.5943	30	1212.183	-1026.452	1
			1408.171	-1153.124	0	1405.36	-931.3367	36	1212.983	-1026.341	1
			1408.983	-1152.995	1	1406.942	-931.0788	36	1210.455	-1025.751	1
			1409.794	-1152.866	1	1408.525	-930.8206	36	1211.255	-1025.64	1
			1410.606	-1152.737	2	1410.108	-930.5622	37	1212 055	-1025.529	1
			1406.401	-1152.458	0	1411.69	-930.3034	36	1212.855	-1025.417	1
			1407.212	-1152.329	0	1413.272	-930.0444	36	1211 127	-1024.716	1
			1408.024	-1152.2	0	1414.855	-929.785	36	1237.268	-1013.511	1

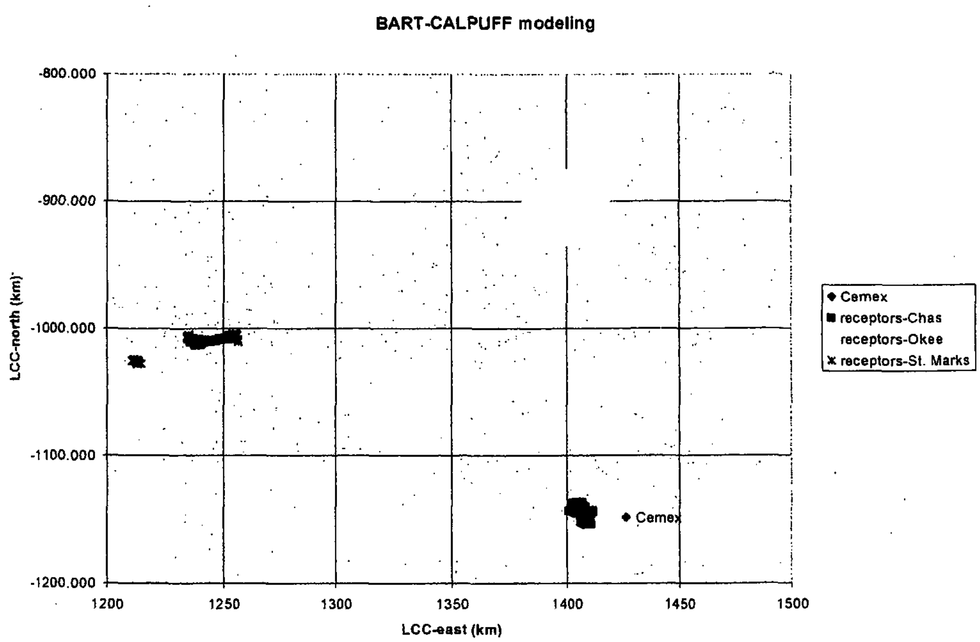

Figure 3. LCC coordinate location of source and Class I area.

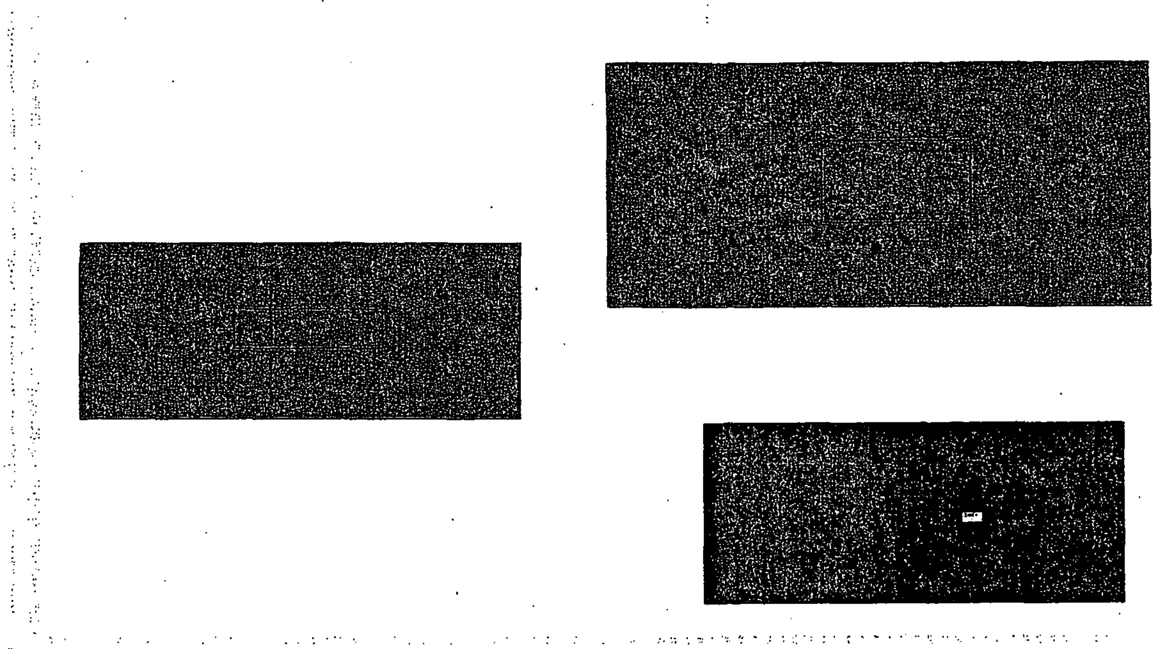

Figure 4. Graph of CALPUFF domains of source and Class I areas.

Unit-Specific Source Data

CALPUFF species modeled: SO2, SO4, NOx, HNO3, NO3 and PM/PM10. Particulate matter is speciated and size fractionated for several species (filterable coarse (PMC) (2.5-10 um), elemental carbon (EC), filterable fine (<2.5 um) inorganic (SOIL) filterable fine organic (elemental carbon (EC)), condensable organics (i.e., secondary organic aerosols (SOA), and condensable inorganics (SO4)) as shown in Table 4 Note; Check Table number. Please note that neither VOC nor ammonia emissions are required to be modeled as both pollutants were determined by VISTAS to be insignificant haze contributors in the VISTAS region.

Table 5. Emission source parameters.

	CEMEX-Brooksville Cement Plant-BART Subject Units	Stack Height	Base Elev.	Diam.	Flow	Flow	Gas Exit Veloc.	Stack Gas Moisture	Stack Gas Exit Temp.
		m	m	m	acfm	dscfm	m/s	%	K
011	RAW MAT'L STORAGE SILOS W/BAGHOUSES (C-11)	24.39	45.73	0.67	15000	14700	20.05	2.0	298.0
011	TRANSFER BELT W/BAGHOUSES (C-11A)	3.05	45.73	0.34	10000	9800	53.47	2.0	298.0
002	NO. 1 KILN FEED SYSTEM (BAGHOUSE D-31)	22.87	45.73	0.52	10000	9010	22.39	1.0	327.4
003	CEMENT KILN NO. 1 BAGHOUSE(E-55);REVISED OIL CONCENTRATIONS	45.73	45.73	3.96	250000	176971	9.57	11.0	374.7
004	CEMENT PLANT CLINKER COOLER NO. 1 (BAGHOUSE F-18)	23.48	45.73	2.29	88000	65209	10.12	2.0	394.1
006	CLINKER STORAGE SILO NOS. 1&2 (BAGHOUSE F-31)	45.73	45.73	0.82	11000	8724	9.76	2.5	366.3
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)	21.34	45.73	0.79	15000	12202	14.36		366.3
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)	21.34	45.73	0.79	15000	10738	14.36	12.00	366.3
008	NO. 1 KILN BLENDING SILOS (BAGHOUSE NOS. (E-36) (silo 2)	65.85	45.73	0.82	15000	14484	13.31	2.00	302.4
009	CEMENT PLT STG SILOS DUST UNIT (H-3)	42.68	45.73	0.67	7000	6860	9.36	2.00	298.0

PRE-BART MODELING

Emission rates were determined from either stack test data or from permit limits as shown below. Stack test results for PM were assumed equal to PM10 as a conservative measure. In addition, because stack test data for PM by Method 5 do not include a condensable fraction, the measured value was increased by a fraction from AP-42.11.6-5 (0.033/0.25-preheater/kiln and 0.017/0.33 for the cooler and EUs 4, 6, and 9). PM permit limits were adjusted based on 84 percent fraction of PM10 =PM, from AP-42, Table 11.6-5.

For example, PM measured by EPA Method 5 from the preheater/kiln is 9.58 lb/hr. The value is increased based on the ratio on condensable/filterable PM provided in AP42.11.6-5 (0.033/0.25). The resulting emission rate of PM10 is stated as 10.7 lb/hr.

Pre-BART speciation of modeled pollutants was determined as noted in the following tables/notes.

Table 6. 2001-2006 Emissions data.

	CEMEX-Brooksville Cement Plant-BART Subject Units	STACK TEST DATA 2001-2006 maximum			2001					2002					2003					2004					2005					2006				
		PM	SO2	NOX	PM	SO2	NOX	VE	hours	PM	SO2	NOX	VE	hours	PM	SO2	NOX	VE	hours	PM	SO2	NOX	VE	hours	PM	SO2	NOX	VE	hours	PM	SO2	NOX	VE	hours
		lb/hr*	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	%		lb/hr	lb/hr	lb/hr	%		lb/hr	lb/hr	lb/hr	%		lb/hr	lb/hr	lb/hr	%		lb/hr	lb/hr	lb/hr	%		lb/hr	lb/hr	lb/hr	%	
011	RAW MAT'L STORAGE SILOS W/BAGHOUSES (C-11)							0	8760				0	7296				0	8760				0	8760				0	8760				0	8760
011	TRANSFER BELT W/BAGHOUSES (C-11A)							0	8760				0	7296				3.1	8760				0	8760				0	8760				0	8760
002	NO. 1 KILN FEED SYSTEM (BAGHOUSE D-31)							0	7771				0	6493				0	5293				0	6956				4.2	7597				0	8200
003	CEMENT KILN NO. 1 BAGHOUSE(E-55);REVISED OIL CONCENTRATIONS	9.58	3.49	261	9.58	1.3	184	7.5	7771	5.8	1.4	173	0.8	6493	7.02	3.5	172	0	5293	6.8	0.1	261	5.6	6956	4.2	2.3	190	4.9	7597	9.1	0.6	191	0.2	8200
004	CEMENT PLANT CLINKER COOLER NO. 1 (BAGHOUSE F-18)	8.60			8.6			0.2	7771	4.62			2.5	6493	7.75			5.1	5293	2.3			2.7	6956	3.3			3.3	7597	6.2			0.5	8200
006	CLINKER STORAGE SILO NOS. 1&2 (BAGHOUSE F-31)	0.37			0.37			0	7771				0	6493				0	5293				0	6956				0.3	7597				0	8200
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)							0	8077				0	6853				0	6507				0	5867	0.9			0	7114	1			0	7989
005	FINISH MILLS #1 & #2 WITH TWO DUST COLLECTORS (G-23)							0	8077				0	6853				0	6507				0	5867				0	7114				0	7989
008	NO. 1 KILN BLENDING SILOS (BAGHOUSE NOS. (E-36) (silo 2)							0	6330				0	5756				0	4761				0	6328				0	7080				0	7780
009	CEMENT PLT STG SILOS DUST UNIT (H-3)	0.07						0	8760				0	6853	0.07			0	8760				0	8760				0	8760				0.4	8760

Table 7. Pre-BART modeled emissions.

EU	STACK TEST DATA			Current PM limit	Pre-BART modeled PM_{10}	Pre-BART modeled PM_{10}	particle speciation				organic condensable		inorganic condensable		$H_2SO_{4\ M=0.48}$ SD=2.0 µm molratio98/96 to SO4		COARSE		SOIL		Elemental Carbon (EC)	
	2001-2006 maximum						filterable PM_{10}	condensable PM_{10}	PM10 emission factor	PM2.5 emission factor	Factor	0.625-1.0 µm	Factor	0.625-1.0 µm			Factor	6-10 µm	Factor	1.25-2.5 µm	Factor	0.5-0.625 µm
	PM	SO2	NOX	lb/hr	lbs/hr	g/s	%	%	g/s	g/s	fraction	g/s	fraction	g/s	fraction	g/s	fraction	g/s	fraction	g/s	fraction	g/s
	lb/hr*	lb/hr	lb/hr								SOA	SOA		SOIL		SO4		PMC		SOIL		EC
011				1.29	1.084	0.1364	64.7	35.3	0.1364	0.0614	0.0480	0.0065	0.0055	0.0003	0.3514	0.0216	PM10-PM2.5	0.0750	0.5608	0.0344	0.0343	0.0021
011				0.86	0.722	0.0909	64.0	36.0	0.0909	0.0409	0.0480	0.0044	0.0055	0.0002	0.3514	0.0144	PM10-PM2.5	0.0500	0.5608	0.0229	0.0343	0.0014
002				1.02	0.857	0.1078	64.3	35.7	0.1078	0.0485	0.0480	0.0052	0.0055	0.0003	0.3514	0.0170	PM10-PM2.5	0.0593	0.5608	0.0272	0.0343	0.0017
003	9.58	3.49	261	29.70	10.697	1.3461	86.8	13.2	1.3461	0.7211	PM x 0.033/0.25-H2SO4	0.0312			0.0072 lb/ton x 96/98	0.1464	PM10-PM2.5	0.6250	see notes	0.2717	see notes	0.2717
004	8.60			14.90	9.021	1.1352	69.6	10.5	1.1352	0.6852	0.0196	0.0251			.1436x (1_0.017/.13)	0.1844	0.3964	0.4500	0.4241	0.4815	0.0163	0.0185
006	0.37			1.45	0.388	0.0488	46.8	14.7	0.0488	0.0295	0.0196	0.0010			0.1436	0.0070	0.3964	0.0194	0.4241	0.0207	0.0163	0.0008
005				18.0	15.120	1.9026	70.5	15.8	1.9026	1.1485	0.0196	0.0373			0.1436	0.2733	0.3964	0.7541	0.4241	0.8069	0.0163	0.0310
005				18.0	15.120	1.9026	70.5	15.8	1.9026	1.1485	0.0196	0.0373			0.1436	0.2733	0.3964	0.7541	0.4241	0.8069	0.0163	0.0310
008				1.45	1.218	0.1533	50.2	14.9	0.1533	0.0925	0.0196	0.0030			0.1436	0.0220	0.3964	0.0608	0.4241	0.0650	0.0163	0.0025
009	0.07			36.05	0.073	0.0092	45.3	14.7	0.0092	0.0056	0.0196	0.0002			0.1436	0.0013	0.3964	0.0037	0.4241	0.0039	0.0163	0.0002

Note: Permit 0530010-003-AC, issued 6/29/1997, limited NOx from Kiln No.1 to 301 lb/hr, maximum 24-hr average.

Table 8. Pre-BART Methods applied to determine PM speciation for CALPUFF.

EU	Pre-BART modeled PM10	Pre-BART modeled PM2.5
	PM10 calculation Notes	***PM2.5 calculation Notes***
011	No stack data available, use permit value x 0.84 (AP42 11.6-5) factor of PM10/PM	PM2.5 = 0.45 PM (AP-42 11.6-5) and PM2.5 speciation by SMOKE2.5 for SCC 30500613
011	No stack data available, use permit value x 0.84 (AP42 11.6-5) factor of PM10/PM	PM2.5 = 0.45 PM (AP-42 11.6-5) and PM2.5 speciation by SMOKE2.5 for SCC 30500613
002	No stack data available, use permit value x 0.84 (AP42 11.6-5) factor of PM10/PM	PM2.5 = 0.45 PM (AP-42 11.6-5) and PM2.5 speciation by SMOKE2.5 for SCC 30500613
003	Method 5 test results from max. of 2001-2006. PM10=PM, increased by 0.033/0.25 (AP42, 11.6-5, preheater kiln) to account for condensables fraction not accounted for by Meth 5. (see notes)	PM2.5 = 0.45/0.84 PM10 (AP42, 11.6-5). H2SO4 is portion of condensables, and AP42 11.6-9 EF=0.0072 lb H2SO4 /ton
004	Method 5 test results from max. of 2001-2006. Increased by 0.017/0.33 (ratio from AP42, 11.6-5) to account for condensables fraction not accounted for by Meth 5. Use ratio for clinker cooler.	Clinker Cooler PM2.5 speciation (http://www2.nature.nps.gov/air/permits/ect/index.cfm)
006	Method 5 test results from one stack test. Increased by 0.017/0.33 (ratio from AP42, 11.6-5) to account for condensables fraction not accounted for by Meth 5. Use ratio for clinker cooler.	Clinker Cooler PM2.5 speciation (http://www2.nature.nps.gov/air/permits/ect/index.cfm)
005	No stack data available, use permit value x 0.84 (AP42 11.6-5) factor of PM10/PM	Clinker Cooler PM2.5 speciation (http://www2.nature.nps.gov/air/permits/ect/index.cfm)
005	No stack data available, use permit value x 0.84 (AP42 11.6-5) factor of PM10/PM	Clinker Cooler PM2.5 speciation (http://www2.nature.nps.gov/air/permits/ect/index.cfm)
008	No stack data available, use permit value x 0.84 (AP42 11.6-5) factor of PM10/PM	Clinker Cooler PM2.5 speciation (http://www2.nature.nps.gov/air/permits/ect/index.cfm)
009	Method 5 test results from one stack test. Increased by 0.017/0.33 (ratio from AP42 11.6-5) to account for condensables fraction not accounted for by Meth 5. Use ratio for clinker cooler.	Clinker Cooler PM2.5 speciation (http://www2.nature.nps.gov/air/permits/ect/index.cfm)

Speciation of raw materials handling units (EU 011 (EPs C-11 and C-11A) and EU 002) was determined from SMOKE PM2.5 speciation suggested by VISTAS for SCC code 3-05-006-13 (raw mill w/ FF).

Table 9. VISTAS SMOKE PM2.5 speciation summary.

SCC	profile	pllt	species	CALPUFF name	mass_frac
30500613					
	22050	PM2_5	PEC	EC	0.0343
	22050	PM2_5	PMFINE	SOIL	0.5608
	22050	PM2_5	PNO3	inorg. condensable (i.e., SOIL)	0.0055
	22050	PM2_5	POA	SOA	0.048
	22050	PM2_5	PSO4	H2SO4/SO4 - mol ratio. 98/96	0.3514

Source: http://www.vistas-sesarm.org/BART/calpuff.asp

All other emission units PM10 speciation, except the preheater/kiln and raw material handling units, were modeled having similar composition to that of the clinker cooler PM10. The clinker cooler PM10 emission speciation was determined by the National Park Service (http://www2.nature.nps.gov/air/Permits/flag/flagDoc/app2b.cfm) data as shown below. The calculation of SO4 emissions from all the units, except the preheater/kiln and raw material handling units, were determined from the NPS speciation of a clinker cooler shown below.

Table 10. National Park Service PM2.5 Speciation of Clinker Cooler PM.

	Controlled PM10 Emissions															
Clinker Cooler	Total PM10 (% of Total)	Filterable (% of Total)	Coarse (% of Total)	Ext. Coef.	Fine (% of Total)	Fine Soil (% of Total)	Ext. Coef.	Fine EC (% of Total)	Ext. Coef.	Condensible (% of Total)	CPM IOR (% of Total)	Particle Type	Particle Ext.Coef.	CPM OR (% of Total)	Particle Type	Particle Ext Coef
	100%	83.7%	39.6%	0.6	44.0%	42.4%	1	2%	10	16.3%	14.4%	SO4	3	2.0%	SOA	4

Kiln No. 1, PM speciation

As described in the above notes, Kiln No. 1 maximum method 5 stack test data (i.e., 261 lb/hr Check this emission rate) was all assumed to be PM10. Kiln No. 1 PM10 emissions, as measured by Method 5, are increased by the unmeasured condensable fraction equal to 0.033/0.25 (i.e., 13.2% increase) of PM (AP-42 11.6-5) to a calculated a total PM10 emission rate of 1.3461 g/s. The condensable fraction is 0.1777 g/s. The PM2.5 fraction is 0.45PM (Ap-42, 11.6-5) and is divided into condensable and filterable fractions.

The condensable fractions include three types of species, (CALPUFF nomenclature), SO4 (sulfate primary PM), OC (organic condensables, and SOIL (condensable soil fraction)). The portion of SO4 is determined by an AP-42 factor, (AP-42.11.6-9): 0.0072 lb H2SO4/ton, S04 = 0.0072 lb/ton x 165 ton/hr x 453/3600 x 96/98 (SO4/H2SO4) =0.1464 g/s). The remaining fraction is conservatively assigned to organic condensables (OC), as OC has a greater extinction efficiency (i.e., visibility reduction) value of 6; compared with the SOIL value of 1.

The filterable fraction (PMC (coarse PM), SOIL, and EC (elemental carbon)) was apportioned. PMC is PM10 minus PM2.5. The remaining portion of filterable PM is apportioned 50:50 to EC and SOIL. The 50:50 split to SOIL and EC as a conservative measure when compared with VISTAS guidance (http://www.vistas-sesarm.org/documents/SpeciationMemo_July182006.pdf, example 5).

Table 11. Summary of pre-BART Modeled Emissions.

EU	CALPUFF Data					PM800	PM187	PM081	PM056	PM081
	SO2	SO4	NOx	NO3	HNO3	6-10 µm	1.25-2.5 µm	.625-1.0 µm	0.5-0.625 µm	.625-1.0 µm
						PMC	SOIL/PMF	SOIL/PMF	EC	SOA/OC
	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s
011		0.02156				0.0750	0.0344	0.0003	0.0021	0.0065
011		0.01437				0.0500	0.0229	0.0002	0.0014	0.0044
002		0.01705				0.0593	0.0272	0.0003	0.0017	0.0052
003	0.43916	0.14644	32.84250			0.6250	0.2717	0.0000	0.2717	0.0312
004		0.18436				0.4500	0.4815	0.1844	0.0185	0.0251
006		0.00701				0.0194	0.0207	0.0000	0.0008	0.0010
005		0.27326				0.7541	0.8069	0.0000	0.0310	0.0373
005		0.27326				0.7541	0.8069	0.0000	0.0310	0.0373
008		0.02201				0.0608	0.0650	0.0000	0.0025	0.0030
009		0.00133				0.0037	0.0039	0.0000	0.0002	0.0002

POST-BART MODELING

Assessment of Best Achievable Control Technology resulted in the conclusion that the current technologies represent the most stringent available technologies. While guidance from the VISTA Protocol and FDEP workshops indicates a streamlined analysis that may not include modeling, a comprehensive modeling of the subject emission units is performed. Given the stringent technology currently employed, the existing limits are proposed for BART. As such, the pre-BART conditions were applied to all emission units except for the kiln NOx emissions (set to new permit limit of 200 lb/hr, or 1.21 lb/ton feed @ 165 tph) and the finish mill PM emissions (set to limit of total of 18 lb/hr for the two mills).

Post-BART speciation of modeled pollutants was determined as noted in the following tables/notes.

Table 12. Post-BART modeled emissions, SO2 and NOx.

EU	Current SO2 limit	Post-BART proposed SO2 limit	Post-BART SO_2 model	Post-BART SO_2 model	Post-BART SO_2 model	Current NOx limit	Post-BART proposed NOx limit	Post-BART NOx model	Post-BART NOx model	Post-BART NOx model
	lbs/hr	lbs/hr	-NOTES-	lbs/hr	g/s	lb/hr	lbs/hr	-NOTES-	lbs/hr	g/s
011										
011										
002										
003	14.1	14.1	modeled pre-BART 24 hr max conditions	3.490	0.439	200	200	Use permit limit, as CEM *data of actual 24-hr avg* is near limit.	200	25.167
004										
006										
005										
005										
008										
009										

Table 13. Post-BART modeled emissions, PM.

EU	Current PM limit	Post-BART proposed PM limit	Post-BART PM10 model	Post-BART PM10 model	Post-BART modeled PM_{10}	Post-BART modeled PM_{10}	particle speciation: filterable PM_{10}	particle speciation: condensable PM_{10}	PM_{10} emission factor	$PM_{2.5}$ emission factor	condensable: organic condensable 0.625-1.0 µm	condensable: inorganic condensable 0.625-1.0 µm	condensable: H_2SO_4 M=0.48 SD=2.0 µm molratio98/96 to SO4	filterable: COARSE 6-10 µm	filterable: SOIL 1.25-2.5 µm	filterable: Elemental Carbon (EC) .5-0.625 µm
	lb/hr	lb/hr	lbs/hr	g/s	lbs/hr	g/s	%	%	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s
											SOA	SOIL	SO4	PMC	SOIL	EC
011	1.29	1.29	1.084	0.1364	1.084	0.136	79.7	20.3	0.1364	0.0614	0.0065	0.0003	0.022	0.0750	0.0344	0.0021
011	0.86	0.86	0.722	0.0909	0.722	0.091	79.7	20.3	0.0909	0.0409	0.0044	0.0002	0.014	0.0500	0.0229	0.0014
002	1.02	1.02	0.857	0.1078	0.857	0.108	79.7	20.3	0.1078	0.0485	0.0052	0.0003	0.017	0.0593	0.0272	0.0017
003	29.70	29.70	10.697	1.3461	10.697	1.346	86.8	13.2	1.3461	0.7211	0.0312		0.146	0.6250	0.2717	0.2717
004	14.90	14.90	9.021	1.1352	9.021	1.135	81.9	18.1	1.1352	0.6852	0.0251		0.1844	0.4500	0.4815	0.0185
006	1.45	1.45	0.388	0.0488	0.388	0.049	83.7	16.3	0.0488	0.0295	0.0010		0.0070	0.0194	0.0207	0.0008
005	18.00	9.00	7.56	0.9513	7.560	0.951	83.7	16.3	0.9513	0.5742	0.0186		0.1366	0.3771	0.4035	0.0155
005	18.00	9.00	7.56	0.9513	7.560	0.951	83.7	16.3	0.9513	0.5742	0.0186		0.1366	0.3771	0.4035	0.0155
008	1.45	1.45	1.218	0.1533	1.218	0.153	83.7	16.3	0.1533	0.0925	0.0030		0.0220	0.0608	0.0650	0.0025
009	36.05	36.05	0.073	0.0092	0.073	0.009	83.7	16.3	0.0092	0.0056	0.0002		0.0013	0.0037	0.0039	0.0002

Table 14. Post-BART Methods applied to determine PM speciation for CALPUFF.

EU	Post-BART PM10 model
	-NOTES-
011	No stack data available, use permit value x 0.84 (AP42 11.6-5) factor of PM10/PM. Speciate as pre-BART
011	No stack data available, use permit value x 0.84 (AP42 11.6-5) factor of PM10/PM. Speciate as pre-BART
002	No stack data available, use permit value x 0.84 (AP42 11.6-5) factor of PM10/PM. Speciate as pre-BART
003	modeled pre-BART 24-hr max conditions
004	modeled pre-BART 24-hr max conditions
006	modeled pre-BART 24-hr max conditions
005	No stack data available, use draft permit limits (9 lb/hr) x 0.84 (AP42 11.6-5) factor of PM10/PM. Speciate as pre-BART
005	No stack data available, use draft permit limits (9 lb/hr) x 0.84 (AP42 11.6-5) factor of PM10/PM. Speciate as pre-BART
008	No stack data available, use permit value x 0.84 (AP42 11.6-5) factor of PM10/PM. Speciate as pre-BART
009	modeled pre-BART 24-hr max conditions

Table 15. Summary of post-BART Modeled Emissions.

EU	CALPUFF Data					PM800	PM187	PM081	PM056	PM081
	SO2	SO4	NOx	NO3	HNO3	6-10 µm	1.25-2.5 µm	.625-1.0 µm	0.5-0.625 µm	.625-1.0 µm
						PMC	SOIL/PMF	SOIL/PMF	EC	SOA/OC
	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s	g/s
011		0.02156				0.0750	0.0344	0.0003	0.0021	0.0065
011		0.01437				0.0500	0.0229	0.0002	0.0014	0.0044
002		0.01705				0.0593	0.0272	0.0003	0.0017	0.0052
003	0.43916	0.14644	25.1667			0.6250	0.2717	0.0000	0.2717	0.0312
004		0.18436				0.4500	0.4815	0.0000	0.0185	0.0251
006		0.00701				0.0194	0.0207	0.0000	0.0008	0.0010
005		0.13663				0.3771	0.4035	0.0000	0.0155	0.0186
005		0.13663				0.3771	0.4035	0.0000	0.0155	0.0186
008		0.02201				0.0608	0.0650	0.0000	0.0025	0.0030
009		0.00133				0.0037	0.0039	0.0000	0.0002	0.0002

Major Relevant Features of POSTUTIL/CALPOST

CALPUFF results that are provided in *.CON (concentration files) were input to POSTUTIL to convert the PM size fractions into the categories of PMC, SOIL, SOA, and EC in the fractions listed in the above table.

CALPOST modeling.

Emission rates of SO_2, SO_4, and NO_X were input directly to the CALPUFF model while the six particulate species defining specific size categories were modeled as a unit emission rate (1 g/s) and then scaled source by source using the POSTUTIL program. CALPOST Method 6 was used to compute the extinction change in deciviews (dv) consistent with the procedures outlined in the VISTAS modeling protocol.

Background SOIL concentrations were determined as follows. For each Class I area, the Rayleigh scattering coefficient of 10 Mm^{-1} was subtracted from the annual average background b_{ext} and resulting values were entered in CALPOST as BKSOIL.

Table 16. CALPUFF - BKSOIL value- Chassahowitzka.

Annual average background b_{ext}	Ext coeff.	BKSOIL
(Mm^{-1})		ug/m3
21.46	1	11.46

Relative humidity factors (RHFAC) used for NO3/SO4 calculations were provided by FDEP as shown below.

Table 17. CALPUFF - RHFAC values - Chassahowitzka.

Class I area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Chassahowitzka	3.8	3.5	3.4	3.2	3.3	3.9	3.9	4.2	4.1	3.9	3.7	3.9

3. Modeling Results

Results of the visibility modeling are provided below. In addition, electronic copies of all modeling files are enclosed on CD. The table below provides the pre- and post-BART modeling results for all subject emissions units. As all of the control technologies employed are determined to be the most stringent feasible technologies, individual pollutant modeling was streamlined and a single comprehensive modeling is provided.

Table 18. Pre- and Post-BART visibility impact to Chassahowitzka

PRE-BART MODELING	2001	2002	2003
	Delta-deciview Ranks 1-8	Delta-deciview Ranks 1-8	Delta-deciview Ranks 1-8
	1.981	1.675	2.484
	1.573	1.615	2.205
	1.556	1.606	1.659
	1.55	1.594	1.547
	1.533	1.584	1.404
	1.508	1.449	1.4
	1.477	1.422	1.357
98th % ranking =	1.457	**1.341**	1.354
2001 --- Days with Delta-Deciview =>0.50	93		
2002		123	
2003			96

POST-BART MODELING		2001	2002	2003
		Delta-deciview Ranks 1-8	Delta-deciview Ranks 1-8	Delta-deciview Ranks 1-8
		1.336	1.084	1.454
		1.07	1.013	1.318
		1.042	0.986	0.971
		1.029	0.981	0.955
		0.987	0.977	0.945
		0.961	0.911	0.868
		0.956	0.891	0.86
98th % ranking =		0.933	**0.841**	0.848
2001 --- Days with Delta-Deciview =>0.50		52		
2002			60	
2003				57
		dv	dv	dv
	preBART	1.457	1.341	1.354
Visibility reduction=	postBART	0.933	0.841	0.848

4. Conclusions

The current controls for the subject emission units for particulate matter (PM), sulfur dioxide (SO_2), and nitrogen oxides (NOx) are proposed to satisfy BART based on the information provided in this determination. The current controls for the BART-subject units are comparable to currently acceptable BACT control technology. CALPUFF modeling results indicate the proposed BART limits are estimated to reduce visibility impact by 36 to 37.4 percent for 2001 to 2003 modeled years.

5. References

VISTAS, 2006: Protocol for the Application of the CALPUFF Model for Analyses of Best Available Retrofit Technology (BART). Revision 3.2, August 2006. Available from http://www.vistas-sesarm.org.

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Scire, J.S., D.G. Strimaitis, and R.J. Yamartino, 2000a: A User's Guide for the CALPUFF Dispersion Model (Version 5). TRC. Companies, Inc. Lowell, MA. Available from http://www.src.com/calpuff/download/download.htm.

ATTACHMENT 1

ELECTRONIC COPIES OF CALPUFF/CALPOST FILES