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

KA 690-07-02
June 28, 2007

Mr. Al Linero
FDEP
Twin Towers Office Bldg
2600 Blair Stone Road, MS 5500
Tallahassee, FL 32399-2400

RE: American Cement Company
FDEP Permit 1190042-001-AC
Change in Kiln/Raw Mill/Cooler Stack Diameter

Dear Al,

In accordance with my telephone conversations with you and Teresa Heron, I have attached a copy of my letter of June 8, 2007 to Cary Cohrs that is sealed with my Florida Professional Engineering Seal. The letter was forwarded to you at an earlier date under cover of a letter from Mr. Cohrs.

In the letter, I present information that demonstrates that an increase in the kiln/raw mill/cooler stack diameter from 10.2 feet (as originally permitted) to a nominal 11 foot diameter will have no significant effect on ambient air quality.

Also enclosed is a check in the amount of $250.00 made payable to the Florida Department of Environmental Protection to cover the processing fee of a minor air construction permit amendment.

If there are any questions or further information is required, please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.
Florida PE Registration No. 12925

JBK/lt

Encl:

cc: Teresa Heron
Cary Cohrs
George Townsend

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KA 690-07-02
June 8, 2007

Mr. Cary Cohrs
American Cement Company
PO Box 445
Sumterville, Florida 33585

RE: FDEP Permit 1190042-001-AC
Change in Kiln/Raw Mill/Clinker Cooler Stack Diameter

Dear Cary,

At your request, we've looked into the effect of changing the diameter of the kiln/raw mill/clinker cooler stack on ambient air quality. To summarize, we determined through the use of air quality modeling, that an increase in the diameter of the stack from 10.2 feet to a nominal 11 feet will have no significant effect on ambient air quality. As a result, there is no technical reason that would prevent FDEP from changing the above captioned permit to allow a larger diameter stack.

The above captioned permit in Section III.C.-*Pyroprocessing System*, at Specific Condition 3 states:

> *The exhaust stack [of the kiln/raw mill/cooler] shall be no more than 10.2 feet in diameter and no less than 350 feet tall.*

This requirement was based on the fact that these parameters were used in the air quality modeling presented to the Department in support of the application for the above captioned permit. The condition was included in the permit to provide assurance that

significant changes in the stack diameter and/or stack height would not be made if the changes could significantly and adversely affect ambient air quality.

During the engineering and design of your plant, Polysius has determined that a stack diameter of 10.2 would not provide for the proper operation of the pyroprocessing system and that a larger diameter stack would be required. The design changes will not affect the stack height, the stack gas flow rate or the stack gas temperature. As a result, we conducted air quality modeling to assess the impact of the change in diameter using emissions from the kiln/raw mill/cooler stack only as this was the only stack to change. To be consistent with the original modeling, the modeling was conducted with the ISC model. Also, as with the original modeling, meteorological data for 1987-1991 were used. The modeling was similar to that described in the report submitted with the original application for the *Area of Significant Impact* modeling.

The results of the modeling are summarized in the attached table. Emissions of carbon monoxide, PM10, nitrogen oxides and sulfur dioxide were modeled for each of the five years at 1) the emission rate and stack diameter (10.2 feet) used in the application, 2) the permitted emission rate and the 10.2 foot stack diameter, and 3) the permitted emission rate with a nominal 11 foot diameter stack. The modeling shows the change in diameter has very little effect on the ambient air quality impacts and most importantly, the modeling shows that all of the air quality impacts are much less than significant (as defined at 62-210.200(279), F.A.C.). Even if the change in stack diameter did have a more pronounced effect on ambient concentrations, the ambient concentrations in the range investigated are not significant and any changes in the concentrations are therefore not relevant from a permitting standpoint.

These modeling results are not unexpected as the change in stack diameter affects only the discharge velocity of the stack gas. The stack gas velocity plays a role in the

way the air quality models calculate plume rise, but the most dominant factor by far in this calculation is the buoyancy of the plume (a function of the volumetric stack gas discharge rate and the stack gas temperature). As neither the stack gas flow rate nor the stack gas temperature changed, the buoyancy factor remains unchanged and model calculated ambient concentrations are only slightly affected.

In reviewing recent permits issued by the Department and in applications to the Department, it is evident that there is an awareness of the fact that stack diameters may change with final engineering/design. As a result, stack diameters are now stated as "nominal" diameters.

If there are any questions regarding the information contained herein, please do not hesitate to contact me.

Very truly yours,

KOOGLER & ASSOCIATES

John B. Koogler, Ph.D., P.E.
Florida PE Registration No. 12925

JBK/lt

Attachment: Table

Pollutant[1]	Emission Rate (lb/ton clk)	Averaging Time	Ambient Pollutant Concentration (ug/m3)						Ratio of Permitted@~11 ft to Application	Fraction of Significant Impact
			Significant Impact	Meteorological Data						
				1987	1988	1989	1990	1991		
Carbon monoxide										
(1) From Application	3.2	1-hr	**2000**	39.3	49.3	52.2	37.8	43.0		
		8-hr	**500**	11.5	12.1	13.8	10.5	11.7		
(2) Permitted @ 10.2 ft.	2.9	1-hr	**2000**	35.6	44.7	47.3	34.2	38.9		
		8-hr	**500**	10.4	11.0	12.5	9.5	10.6		
(3) Permitted @ ~11 ft.	2.9	1-hr	**2000**	35.6	44.6	47.3	34.1	38.9	91%	2.4%
		8-hr	**500**	10.5	10.9	11.2	10.8	10.5	81%	2.2%
PM10[2]										
(1) From Application	0.153	24-hr	**5**	0.18	0.20	0.24	0.19	0.21		
		annual	**1**	0.01	0.01	0.01	0.01	0.01		
(2) Permitted @ 10.2 ft.	0.153	24-hr	**5**	0.18	0.20	0.24	0.19	0.21		
		annual	**1**	0.01	0.01	0.01	0.01	0.01		
(3) Permitted @ ~11 ft.	0.153	24-hr	**5**	0.18	0.21	0.24	0.19	0.21	100%	4.9%
		annual	**1**	0.01	0.01	0.01	0.01	0.01	106%	1.5%
Nitrogen Oxides										
(1) From Application	1.95	annual	**1**	0.13	0.15	0.17	0.16	0.18		
(2) Permitted @ 10.2 ft.	1.95	annual	**1**	0.13	0.15	0.17	0.16	0.18		
(3) Permitted @ ~11 ft.	1.95	annual	**1**	0.14	0.15	0.18	0.16	0.19	106%	18.8%
Sulfur Dioxide										
(1) From Application	0.23	3-hr	**25**	1.5	1.6	1.9	1.5	1.6		
		24-hr	**5**	0.3	0.4	0.4	0.3	0.4		
		annual	**1**	0.02	0.02	0.02	0.02	0.02		
(2) Permitted @ 10.2 ft.	0.20	3-hr	**25**	1.3	1.4	1.7	1.3	1.4		
		24-hr	**5**	0.2	0.4	0.3	0.3	0.4		
		annual	**1**	0.01	0.02	0.02	0.02	0.02		
(3) Permitted @ ~11 ft.	0.20	3-hr	**25**	1.3	1.4	1.3	1.3	1.4	73%	5.7%
		24-hr	**5**	0.2	0.4	0.3	0.3	0.4	95%	7.9%
		annual	**1**	0.01	0.02	0.02	0.02	0.02	92%	1.9%

(1) - Modeling conducted for (1) Application with 10.2 ft diameter stack and noted emission rate; (2) for Permitted emission rate and 10.2 ft diameter stack; and (3) for Permitted emission rate and a nominal 11 ft diameter stack. Impact comparison is made between (3) and (1).

(2) - PM10 emissions from Kiln/Raw Mill/Cooler stack only. Parameters of other emission points are unchanged.