December 6, 2010

Project 0111910000.0004.0

Mr. Scott Lutz
Bay Area Air Quality Management District
939 Ellis Street
San Francisco, California 94109

Subject: Revised Protocol for Revisions to Mercury Emissions and Development of a 2013 Production Scenario
Lehigh Southwest Cement Company
Cupertino, California

Dear Mr. Lutz:

On behalf of Lehigh Southwest Cement Company (Permit No. A0017), AMEC Geomatrix Inc. (AMEC) is submitting this revised protocol to document revisions to the mercury emissions from the Lehigh Southwest Cement Company (Lehigh) facility (the facility) in Cupertino, California and to present a maximum production scenario for 2013 once National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements and other planned changes at the facility have been implemented. The original protocol was submitted on November 12, 2010. Based on discussions during a conference call held on December 1, 2010 between you and representatives of Lehigh and AMEC, the November 12, 2010 protocol is being revised to calculate maximum hourly emissions of mercury based on maximum hourly production rather than average hourly production. Once we have received your comments to this revised protocol and any additional comments you may have to the AB2588 Health Risk Assessment (HRA), we will prepare the revised AB2588 HRA as we discussed at our October 12, 2010 meeting between representatives of the Bay Area Air Quality Management District (BAAQMD) and Lehigh and during the December 1, 2010 conference call. Based on the schedule we discussed, the revised AB2588 HRA will be submitted to you by January 7, 2011 assuming the revised protocol is submitted and approved by next week.

REVISIONS TO MERCURY EMISSIONS

As discussed at the October 12, 2010 meeting, the mercury emissions summarized in the 2009 Addendum to the 2008 Comprehensive Emission Inventory Report (CEIR) were reviewed. Previous mercury emissions reported in the 2008 CEIR used source test data. As reported in the 2009 CEIR Addendum, the mercury emissions were consistent with the mass balance based reported for the Toxics Release Inventory (TRI) for 2008, but did not reflect higher production rates from 2005 used as the basis for the 2008 CEIR. The facility's 2005 production was the highest in the last 10 years. Additionally, historical mercury concentration data in pre-blend stone (limestone) was used in the mass balance presented in the 2009 CEIR Addendum. Since that historical data was collected, mercury has been sampled and measured in the pre-blend stone for the purpose of the 2008 CEIR and over a 30-day period in 2009 utilizing a

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sampling protocol from a 2007 EPA 114 request.[1] The results of the two sampling programs were the same. The concentration of mercury in the pre-blend stone was 0.31 parts per million (ppm) in the 2008 CEIR samples as was the average concentration over 30-days of sampling in 2009, excluding two outlier samples as shown in Table 1.

Table 2 presents a comparison of the average mercury concentrations from Table 1 to concentrations used originally in the 2008 CEIR and in the 2009 Addendum to the CEIR. As shown in Table 2, average concentrations in the historical pre-blend limestone were 0.24 ppm as reported in the 2009 Addendum, whereas current data from two separate sampling events report the average concentration of mercury as 0.31 parts per million. The 0.31 ppm average mercury concentration for the pre-blend limestone was used in the mass balance calculations herein to estimate emissions from the kiln assuming all mercury present in the raw materials was emitted. This is the same mass balance approach used in the 2009 Addendum. Table 3 presents the results of these calculations for annual average and maximum hourly conditions for the 2005 production year (2008 CEIR), the current low production scenario from the AB2588 HRA (for 2008/2009 production), 2010 emissions reflecting implementation of a kiln mill dust collector (KMDC) dust shuttling modification that reduced mercury emissions by at least 25 percent, and the projected 2013 scenario (discussed further below). This information regarding the revisions to the mercury emissions will be included in an Appendix to the AB2588 HRA.

Projected 2013 Scenario

As we discussed at the October 12, 2010 meeting, a third emission scenario will be added to the AB2588 HRA to reflect expected conditions in 2013 once planned facility changes are completed. Table 4 presents a summary of NESHAPs requirements and where those requirements will change emission rates relevant to the AB2588 HRA by 2013. As noted in Table 4, the NESHAPs requirements will specifically affect emissions of hydrochloric acid and mercury. In addition, the kiln at the facility will be reconfigured to emit from a single 300 foot stack rather than the 32 rooftop stacks currently in place. The previous and projected source parameters for the kiln stack(s) are as follows:

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[1] In 2007, EPA issued a 114 requirement to the major Portland Cement manufacturers to sample raw material for mercury content. At that time, the Hanson Permanente Cement Company was not part of that sampling requirement, but performed a similar test for informational purposes after being acquired by the Heidelberg Cement Group (Lehigh).

Parameter	2008 CEIR (1 of 30 individual stacks)*	Projected 2013 Scenario
Base elevation (meters)	199.03	199.03
Release Height (meters)	18.29	91.44
Exit Temp (degrees Fahrenheit)	320	320
Stack Diameter (feet)	2.198	19
Exit Velocity (meters/second)	16.063	9.406
Flow Rate (cubic feet/minute)	12000	525000

* There are a total of 32 roof-top stacks on the kiln but only 30 are in operation at any given time.

Revisions will be made to the AB2588 HRA following your concurrence with these proposed changes. Please call either of the undersigned if you have any questions.

Sincerely yours,
AMEC Geomatrix, Inc.

Caryn Kelly
Senior Toxicologist

Ann Holbrow Verwiel
Senior Toxicologist

Attachments:
Table 1 Summary of Mercury Analysis in 2009
Table 2 Revisions to Mercury Concentrations Based on 2009 Sampling
Table 3 Revisions to Mercury Emissions - Mass Balance Based on 2009 Sampling
Table 4 Revisions to Emissions for Projected 2013 Scenario Based on NESHAPS Requirements

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cc: Scott A. Renfrew, Lehigh Southwest Cement Company
Henrik Wesseling, Lehigh Southwest Cement Company
Robert Hull, Bay Area Air Quality Management District
Brian Bateman, Bay Area Air Quality Management District
Shane Alesi, HTC - Heidelberg Technology Center
Tim Matz, Lehigh Hanson

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TABLE 1

SUMMARY OF MERCURY ANALYSIS IN 2009
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations in micrograms per gram (μg/g)

Date	Run	Pre-Blend Stone	Iron Ore	Bauxite
3/25/2009	1	0.394	0.087	0.034
	2	0.396	0.087	0.034
3/26/2009	1	0.774[1]	0.205	0.045
	2	0.780	0.202	0.045
3/27/2009	1	1.44	0.156	0.032
	2	1.42	0.455	0.033
3/28/2009	1	0.401	0.172	0.040
	2	0.397	0.173	0.040
3/29/2009	1	0.302	0.158	0.039
	2	0.306	0.157	0.040
3/30/2009	1	0.298	0.236	0.037
	2	0.296	0.236	0.037
3/31/2009	1	0.328	0.458	0.031
	2	0.328	0.455	0.030
4/1/2009	1	0.483	0.197	0.030
	2	0.480	0.195	0.031
4/2/2009	1	0.272	0.185	0.034
	2	0.271	0.185	0.036
4/3/2009	1	0.346	<0.02	0.039
	2	0.342	<0.02	0.039
4/4/2009	1	0.384	0.2208	0.032
	2	0.384	0.208	0.032
4/5/2009	1	0.263	<0.02	0.030
	2	0.264	<0.02	0.031
4/6/2009	1	0.279	<0.02	0.040
	2	0.283	<0.02	0.040
4/7/2009	1	0.340	0.196	0.030
	2	0.341	0.196	0.030
4/8/2009	1	0.382	0.149	0.035
	2	0.384	0.15	0.035
4/10/2009	1	0.243	0.137	0.033
	2	0.243	0.135	0.034
4/11/2009	1	0.253	0.126	0.032
	2	0.255	0.127	0.033
4/12/2009	1	0.446	0.187	0.058
	2	0.446	0.187	0.058
4/13/2009	1	0.261	0.150	0.033
	2	0.261	0.151	0.033
4/14/2009	1	0.263	0.151	0.035
	2	0.262	0.152	0.034
4/15/2009	1	0.247	0.155	0.033
	2	0.249	0.156	0.033

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TABLE 1

SUMMARY OF MERCURY ANALYSIS IN 2009
Lehigh Southwest Cement Company
Cupertino Facility

Concentrations in micrograms per gram (μg/g)

Date	Run	Pre-Blend Stone	Iron Ore	Bauxite
4/16/2009	1	0.351	0.167	0.036
	2	0.352	0.168	0.037
4/17/2009	1	0.238	0.173	0.036
	2	0.238	0.172	0.037
4/18/2009	1	0.267	0.165	0.034
	2	0.267	0.166	0.034
4/19/2009	1	0.200	0.170	0.034
	2	0.200	0.170	0.034
4/20/2009	1	0.232	0.180	0.031
	2	0.232	0.181	0.031
4/21/2009	1	0.216	0.165	0.068
	2	0.217	0.163	0.069
4/22/2009	1	0.274	0.213	0.037
	2	0.273	0.214	0.037
4/23/2009	1	0.326	0.222	0.032
	2	0.325	0.222	0.032
4/24/2009	1	0.295	0.620	0.031
	2	0.296	0.622	0.031
Minimum Detected Value		0.20	0.087	0.030
Maximum Detected Value		0.48	0.62	0.069
Average[2]		0.31	0.19	0.037

Notes:
1. Shading indicates an outlier result excluded from summary data.
2. Average based on detection limits for non-detect results.

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TABLE 2

REVISIONS TO MERCURY EMISSIONS BASED ON 2009 SAMPLING

Lehigh Southwest Cement Company
Cupertino Facility

Raw Material and Fuel	2009 30-day Sampling[1]			Previous Results		
	Minimum Mercury	Maximum Mercury (ppm)	Average Mercury (ppm)	Raw Material and Fuel	2008 CEIR Mercury (ppm)	2009 Addendum to 2008 CEIR Mercury (ppm)
Pre-Blend Stone	0.20	0.48	0.31	High Grade (HG)	0.12	--
	--	--	--	All Grade (AG)	0.56	--
	--	--	--	56%HG / 44%AG	0.31	0.24
Iron Ore	0.087	0.62	0.19	Iron Ore	0.01	0.01
Bauxite	0.030	0.069	0.037	Bauxite	0.01	0.01
Coke	--[2]	--[2]	0.01	Coke	0.01	0.01

Notes:

1. Average values to be used in mass balance calculation for Revised AB2588 HRA.
2. Petroleum coke sampling in 2009 was not representative of mercury content of raw material because samples were collected from the production process. The detection limit for the samples collected from the coke stockpile for the 2008 CEIR was used to represent the mercury content of coke.

Abbreviations:

-- = Not applicable
ppm = parts per million

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TABLE 3

REVISIONS TO MERCURY EMISSIONS - MASS BALANCE APPROACH BASED ON 2009 SAMPLING

Lehigh Southwest Cement Company
Cupertino Facility

Raw Material and Fuel	2008 Annual Consumption (short tons)	Average Mercury Concentration (ppm)	Revised Average Annual Emissions in 2008 (lb/year)	Maximum Hourly Emissions in 2005[4] (lb/hour)	Annual Average Emissions in 2005[5] (lb/year)	Maximum Hourly Emissions in 2008/2009[6] (lb/hour)	Annual Average Emissions in 2008/2009[7] (lb/year)	Maximum Hourly Emissions in 2010[8] (lb/hour)	Annual Average Emissions in 2010[8] (lb/year)	Maximum Hourly Emissions for Projected 2013 Scenario[9] (lb/hour)	Annual Average Emissions for Projected 2013 Scenario[10] (lb/year)
Preblend Stone[1]	1,228,889	0.31	762	0.19	--	--	--	--	--	--	--
Iron Ore[1]	35,346	0.19	13	0.0034	--	--	--	--	--	--	--
Bauxite[1]	55,723	0.037	4.1	0.0010	--	--	--	--	--	--	--
Coke[2]	100,731	0.01	2.0	0.00051	--	--	--	--	--	--	--
Total Clinker Production (tons/hour or tons/year)[3]	851,370			217	1,399,692	200	811,821	200	850,000	200	1,600,000
Total Mercury Emissions (lb)			781	0.20	1284	0.18	745	0.14	585	0.011	88

Notes:

1. Concentrations in raw feed material based on measurements between March 25, 2009 and April 24, 2009 presented in Table 1.
2. Concentrations in petroleum coke based on detection limits for samples from coke stockpiles collected for the 2008 CEIR. Mercury was not detected in the samples.
3. Tons of clinker production = (preblend stone + iron ore + bauxite) * 0.645. Tons per hour applies to maximum hourly production and tons per year applies to annual production.
4. Max Hourly emissions in 2005 for 2008 CEIR scenario based on a maximum daily clinker production rate of 5200 tons/day (217 tons/hour).
   Max hourly Hg emissions from materials = (tons/hr clinker/0.645 * (tons material/tons total all materials) * Conc of Hg in raw material * 2000 lbs/ton * 0.000001 kg/mg).
   Max hourly Hg emissions from coke = (tons/hr clinker production) * (tons coke /year) / (tons clinker /year) * Conc of mercury in coke * 2000 lbs/ton * 0.000001 kg/mg.
5. Annual average emissions in 2005 for 2008 CEIR scenario based on a total clinker production rate of 1,399,692 tons of clinker.
   Total annual average Hg emissions = 2005 clinker production/2008 clinker production * 2008 Hg emissions.
6. Maximum hourly emissions in 2008/2009 for current low production scenario based on maximum hourly production for 2008/2009. Maximum hourly production is limited by permit condition on use of petroleum coke set in 2007.
7. Annual average emissions in 2008/2009 for current low production scenario based on a total clinker production rate of 811,821 tons of clinker.
   Total annual average Hg emissions = 2008_2009 clinker production/2008 clinker production * 2008 Hg emissions.
8. In 2010, kiln mill dust collector (KMDC) dust shuttling modification was implemented to control mercury emissions and resulted in a reduction of at least 25 percent based on 2010 production. Production rates for 2010 are estimated based on facility's year end prediction.
9. Maximum hourly emissions were projected for the 2013 production scenario based on a maximum production rate of 200 tons per hour. Annual average mercury emissions (88 pounds per year) were divided by 8424 hours of production (assuming a two week shut down period) and then were increased by the ratio of the maximum clinker production rate (200 tons per hour) to the average production rate (189 tons per hour) for that period.
10. Annual average emissions projected for 2013 production scenario based on the NESHAP requirement of 88 pounds per year mercury emissions.

Abbreviations:
Hg = mercury
lb = pounds
NESHAP - National Emission Standards for Hazardous Air Pollutants
ppm = parts per million

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TABLE 4

REVISIONS TO EMISSIONS FOR PROJECTED 2013 SCENARIO BASED ON NESHAP REQUIREMENTS[1]

Lehigh Southwest Cement Company
Cupertino Facility

NESHAP Requirements for Kiln	Specific Requirement	2013 Scenario	2008 CEIR Emission Rates		2013 Emission Rates	
			lb/hour	lb/year	lb/hour	lb/year
Total Mercury Emissions[2]	55 lbs/million tons of clinker	88 lbs/year based on 1.6 million tons clinker production	0.20	1284	0.011	88
Total Hydrocarbon Emissions	9 ppm @ 7 % oxygen of total hazardous air pollutants[1]	No change; requirement met under current conditions	No revision made			
Hydrochloric acid emissions	3 ppm @ 7% oxygen	Assumed to be 50 percent reduction from current emissions	1.1E+05	16	5.4E+04	7.8
Particulate matter	0.04 lb/ton of clinker	No change; requirement met under current conditions	No revision made			

Notes:

1. In addition, the kiln stack parameters will be revised as discussed in the text.
2. 2008 Mercury emissions are the final 2008 CEIR emissions (based on production in 2005) as discussed in previous section of the protocol.

Abbreviations
lb(s) = pound(s)
NESHAP = National Emission Standards for Hazardous Air Pollutants
ppm = parts per million

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