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GAINESVILLE, FL 32609-1923
www.kooglerassociates.com
352/377-5822 ■ FAX/377-5822

KA 307-15-03
February 13, 2015
Via email only
David.Read@dep.state.fl.us

David Read
Department of Environmental Protection
Division of Air Resource Management
Office of Permitting and Compliance
2600 Blair Stone Road, MS 5505
Tallahassee, Florida 32399-2400

**RE: *Application for Installation of a Lime Injection System
Kiln No. 1 System, Brooksville South Cement Plant
CEMEX Construction Materials Florida, LLC; Facility ID: 0530021***

Dear David,

This cover letter serves to provide the enclosed air construction permit application for the installation of a lime injection system on the Kiln No. 1 system at the CEMEX Construction Materials Florida, LLC Brooksville South Cement Plant.

Please feel free to contact me at (352) 377-5822 or mlee@kooglerassociates.com or George Townsend at (352) 799-7881 or george.townsend@cemex.com if you have any questions regarding this submittal. I sincerely appreciate your time and consideration for this project.

Regards,

Max Lee, PhD., P.E.
KOOGLER AND ASSOCIATES, INC.

Via email only copy:

George Townsend, CEMEX Construction Materials Florida, LLC, George.townsend@cemex.com
James Daniel, CEMEX Construction Materials Florida, LLC, james.daniel@cemex.com
Lillian Deprimo, CEMEX Construction Materials Florida, LLC, lillianf.deprimo@cemex.com
Shelley Huskey, CEMEX Construction Materials Florida, LLC, shelleyk.huskey@cemex.com



Department of Environmental Protection

Division of Air Resource Management

APPLICATION FOR AIR PERMIT - LONG FORM

I. APPLICATION INFORMATION

Air Construction Permit – Use this form to apply for an air construction permit:

- For any required purpose at a facility operating under a federally enforceable state air operation permit (FESOP) or Title V air operation permit;
- For a proposed project subject to prevention of significant deterioration (PSD) review, nonattainment new source review, or maximum achievable control technology (MACT);
- To assume a restriction on the potential emissions of one or more pollutants to escape a requirement such as PSD review, nonattainment new source review, MACT, or Title V; or
- To establish, revise, or renew a plantwide applicability limit (PAL).

Air Operation Permit – Use this form to apply for:

- An initial federally enforceable state air operation permit (FESOP); or
- An initial, revised, or renewal Title V air operation permit.

To ensure accuracy, please see form instructions.

Identification of Facility

1. Facility Owner/Company Name: CEMEX Construction Materials Florida, LLC	
2. Site Name: Brooksville South Cement and Power Plant	
3. Facility Identification Number: 0530021	
4. Facility Location... Street Address or Other Locator: 10311 Cement Plant Road City: Brooksville County: Hernando Zip Code: 34601	
5. Relocatable Facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6. Existing Title V Permitted Facility? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Application Contact

1. Application Contact Name: Maxwell R. Lee, Ph. D, P. E.	
2. Application Contact Mailing Address... Organization/Firm: Koogler and Associates, Inc Street Address: 4014 NW 13th Street City: Gainesville State: Florida Zip Code: 32609	
3. Application Contact Telephone Numbers... Telephone: (352) 377 - 5822 ext. 13 Fax: (352) 377 - 7158	
4. Application Contact E-mail Address: mlee@kooglerassociates.com	

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	3. PSD Number (if applicable):
2. Project Number(s):	4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

This application for air permit is being submitted to obtain: (Check one)

Air Construction Permit

- Air construction permit.
- Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).
- Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL), and separate air construction permit to authorize construction or modification of one or more emissions units covered by the PAL.

Air Operation Permit

- Initial Title V air operation permit.
- Title V air operation permit revision.
- Title V air operation permit renewal.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.
- Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit (Concurrent Processing)

- Air construction permit and Title V permit revision, incorporating the proposed project.
- Air construction permit and Title V permit renewal, incorporating the proposed project.

Note: By checking one of the above two boxes, you, the applicant, are requesting concurrent processing pursuant to Rule 62-213.405, F.A.C. In such case, you must also check the following box:

- I hereby request that the department waive the processing time requirements of the air construction permit to accommodate the processing time frames of the Title V air operation permit.

Application Comment

This application is for installation and shakedown of equipment for the injection of hydrated lime for the Kiln 1 system. The lime injections system will be installed to meet the requirements of NESHAP LLL.

The regulatory analysis and the project description are detailed in Appendix 1.

APPLICATION INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Proc. Fee
020	Cement Kiln 1, In-line Kiln/Raw Mill and Clinker Cooler 1 with Baghouse	N/A	N/A

Application Processing Fee

Check one: Attached - Amount: \$_____ Not Applicable

APPLICATION INFORMATION

Owner/Authorized Representative Statement

Complete if applying for an air construction permit or an initial FESOP.

1. Owner/Authorized Representative Name : Mr. Jim Daniel, Plant Manager
2. Owner/Authorized Representative Mailing Address... Organization/Firm: CEMEX Construction Materials Florida, LLC Street Address: 10311 Cement Plant Road City: Brooksville State: Florida Zip Code: 34601
3. Owner/Authorized Representative Telephone Numbers... Telephone: (352) 799 -7881 Fax: (352) 540 -4794
4. Owner/Authorized Representative E-mail Address: jdaniel@cemexusa.com
5. Owner/Authorized Representative Statement: <i>I, the undersigned, am the owner or authorized representative of the corporation, partnership, or other legal entity submitting this air permit application. To the best of my knowledge, the statements made in this application are true, accurate and complete, and any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department.</i>  _____ Signature February 13, 2015 _____ Date

APPLICATION INFORMATION

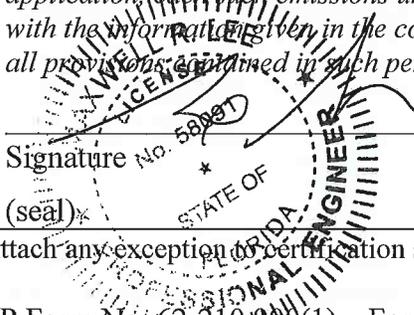
Application Responsible Official Certification

Complete if applying for an initial, revised, or renewal Title V air operation permit or concurrent processing of an air construction permit and revised or renewal Title V air operation permit. If there are multiple responsible officials, the “application responsible official” need not be the “primary responsible official.”

1. Application Responsible Official Name:
2. Application Responsible Official Qualification (Check one or more of the following options, as applicable): <input type="checkbox"/> For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C. <input type="checkbox"/> For a partnership or sole proprietorship, a general partner or the proprietor, respectively. <input type="checkbox"/> For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official. <input type="checkbox"/> The designated representative at an Acid Rain source, CAIR source, or Hg Budget source.
3. Application Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
4. Application Responsible Official Telephone Numbers... Telephone: () ext. Fax: ()
5. Application Responsible Official E-mail Address:
6. Application Responsible Official Certification: <i>I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject, except as identified in compliance plan(s) submitted with this application.</i> _____ Signature _____ Date

APPLICATION INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: Maxwell R. Lee, Ph. D, P. E. Registration Number: 58091
2. Professional Engineer Mailing Address... Organization/Firm: Koogler and Associates, Inc. Street Address: 4014 NW 13th Street City: Gainesville State: Florida Zip Code: 32609
3. Professional Engineer Telephone Numbers... Telephone: (352) 377-5822 ext.13 Fax: (352) 377-7158
4. Professional Engineer E-mail Address: mlee@kooglerassociates.com
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i> <i>(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/> , if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.</i> <i>(4) If the purpose of this application is to obtain an air construction permit (check here <input checked="" type="checkbox"/> , if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here <input type="checkbox"/> , if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.</i> <i>(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here <input type="checkbox"/> if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.</i> Signature No. 58091 * (seal) *  February 13, 2015 Date

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone 17 360.0 East (km) 3162.5 North (km)		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
3. Governmental Facility Code: 0	4. Facility Status Code: A	5. Facility Major Group SIC Code: 32	6. Facility SIC(s): 3241
7. Facility Comment : None			

Facility Contact

1. Facility Contact Name: George Townsend - Environmental Manager
2. Facility Contact Mailing Address... Organization/Firm: CEMEX Construction Materials Florida, LLC Street Address: 10311 Cement Plant Road City: Brooksville State: Florida Zip Code: 34601
3. Facility Contact Telephone Numbers: Telephone: 352-799-7881 Fax: 352-799-6088
4. Facility Contact E-mail Address: gtownsend@cemexusa.com

Facility Primary Responsible Official

Complete if an “application responsible official” is identified in Section I that is not the facility “primary responsible official.”

1. Facility Primary Responsible Official Name:
2. Facility Primary Responsible Official Mailing Address... Organization/Firm: Street Address: City: State: Zip Code:
3. Facility Primary Responsible Official Telephone Numbers... Telephone: () - ext. Fax: () -
4. Facility Primary Responsible Official E-mail Address:

FACILITY INFORMATION

Facility Regulatory Classifications

Check all that would apply *following* completion of all projects and implementation of all other changes proposed in this application for air permit. Refer to instructions to distinguish between a “major source” and a “synthetic minor source.”

1. <input type="checkbox"/> Small Business Stationary Source	<input checked="" type="checkbox"/> Unknown
2. <input type="checkbox"/> Synthetic Non-Title V Source	
3. <input checked="" type="checkbox"/> Title V Source	
4. <input checked="" type="checkbox"/> Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. <input type="checkbox"/> Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. <input checked="" type="checkbox"/> Major Source of Hazardous Air Pollutants (HAPs)	
7. <input type="checkbox"/> Synthetic Minor Source of HAPs	
8. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. <input checked="" type="checkbox"/> One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. <input checked="" type="checkbox"/> One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. <input type="checkbox"/> Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment:	
 See Appendix	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
PM	A	N
PM₁₀	A	N
SO₂	A	N
NO_x	A	N
CO	A	N
HAPs	A	N
D/F	B	N
H114	B	N

FACILITY INFORMATION

C. FACILITY ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Facility Plot Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>TV Renewal</u>
2. Process Flow Diagram(s): (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>TV Renewal</u>
3. Precautions to Prevent Emissions of Unconfined Particulate Matter: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date: <u>TV Renewal</u>

Additional Requirements for Air Construction Permit Applications

1. Area Map Showing Facility Location: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (existing permitted facility)
2. Description of Proposed Construction, Modification, or Plantwide Applicability Limit (PAL): <input checked="" type="checkbox"/> Attached, Document ID: <u>Appendix 1</u> <input type="checkbox"/> Not Applicable (existing permitted facility)
3. Rule Applicability Analysis: <input checked="" type="checkbox"/> Attached, Document ID: <u>Appendix 1</u> <input type="checkbox"/> Not Applicable (existing permitted facility)
4. List of Exempt Emissions Units: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
5. Fugitive Emissions Identification: <input checked="" type="checkbox"/> Attached, Document ID: <u>Appendix 1</u> <input type="checkbox"/> Not Applicable
6. Air Quality Analysis (Rule 62-212.400(7), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
7. Source Impact Analysis (Rule 62-212.400(5), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
8. Air Quality Impact since 1977 (Rule 62-212.400(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
9. Additional Impact Analyses (Rules 62-212.400(8) and 62-212.500(4)(e), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
10. Alternative Analysis Requirement (Rule 62-212.500(4)(g), F.A.C.): <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

FACILITY INFORMATION

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
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Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities: (Required for initial/renewal applications only) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

2. Identification of Applicable Requirements: (Required for initial/renewal applications, and for revision applications if this information would be changed as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable (revision application with no change in applicable requirements)
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3. Compliance Report and Plan: (Required for all initial/revision/renewal applications) <input type="checkbox"/> Attached, Document ID: _____ Note: A compliance plan must be submitted for each emissions unit that is not in compliance with all applicable requirements at the time of application and/or at any time during application processing. The department must be notified of any changes in compliance status during application processing.
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4. List of Equipment/Activities Regulated under Title VI: (If applicable, required for initial/renewal applications only) <input type="checkbox"/> Attached, Document ID: _____ <input type="checkbox"/> Equipment/Activities Onsite but Not Required to be Individually Listed <input checked="" type="checkbox"/> Not Applicable

5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable
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6. Requested Changes to Current Title V Air Operation Permit: <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Not Applicable

EMISSIONS UNIT INFORMATION

Section [1] of [2]

Cement Kiln 1, In-line Kiln/Raw Mill and
Clinker Cooler 1 with Baghouse

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an “unregulated emissions unit” does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION

Section [1] of [2]

**Cement Kiln 1, In-line Kiln/Raw Mill and
Clinker Cooler 1 with Baghouse**

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)
- The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.
- The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)
- This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).
- This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.
- This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: **Cement Kiln 1, In-line Kiln/Raw Mill and Clinker Cooler 1 with Baghouse**

3. Emissions Unit Identification Number: **020**

4. Emissions Unit Status Code: A	5. Commence Construction Date: NA	6. Initial Startup Date: NA	7. Emissions Unit Major Group SIC Code: 32
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8. Federal Program Applicability: (Check all that apply) **N/A**
- Acid Rain Unit
- CAIR Unit
- Hg Budget Unit

9. Package Unit:
 Manufacturer: _____ Model Number: _____

10. Generator Nameplate Rating: **MW**

11. Emissions Unit Comment:

This AC permit application will only modify the conditions of this emissions unit for compliance to NESHAP Subpart LLL. A new lime injection system will allow this emission unit to use an alternative method to demonstrate compliance to the upcoming HCl limit by use of the SO₂ CMS as SO₂ surrogate for HCl. No other changes are requested by this permit application. While the lime injection system will control emissions from EU020, emissions from the lime injection equipment (e.g., fugitive dust) is not part of the kiln but is subject to NESHAP Subpart LLL standards. The vented emissions from the lime injection equipment will be subject to NESHAP Subpart LLL standards as a storage bin of raw material. The equipment emissions are requested to be regulated under EU004 for raw material handling.

EMISSIONS UNIT INFORMATION

Section [1] of [2]

**Cement Kiln 1, In-line Kiln/Raw Mill and
Clinker Cooler 1 with Baghouse**

Emissions Unit Control Equipment/Method: Control 1 of 1

1. Control Equipment/Method Description:
Baghouse – High Temperature

2. Control Device or Method Code: **016**

Emissions Unit Control Equipment/Method: Control NEW

1. Control Equipment/Method Description:
Lime injection System (dry)

Note that the process inherently provide dry scrubbing in the preheater tower. This injector will supplement that control.

2. Control Device or Method Code: **041**

EMISSIONS UNIT INFORMATION

Section [1] of [2]

**Cement Kiln 1, In-line Kiln/Raw Mill and
Clinker Cooler 1 with Baghouse**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: See below
2. Maximum Production Rate: See below
3. Maximum Heat Input Rate: million Btu/hr
4. Maximum Incineration Rate: pounds/hr tons/day
5. Requested Maximum Operating Schedule: 24 hours/day 7 days/week 52 weeks/year 8,760 hours/year
6. Operating Capacity/Schedule Comment: See 0530021-047-AV permit condition C.2 Clinker production rates 83 TPH 727,800 TPY

EMISSIONS UNIT INFORMATION

Section [1] of [2]

**Cement Kiln 1, In-line Kiln/Raw Mill and
Clinker Cooler 1 with Baghouse**

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: Kiln No. 1		2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code: V	6. Stack Height: 322 feet	7. Exit Diameter: 18.65 feet	
8. Exit Temperature: 220°F	9. Actual Volumetric Flow Rate: 530,000* acfm	10. Water Vapor: %	
11. Maximum Dry Standard Flow Rate: 376,796* dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (28°/35'/00'') Longitude (82°/25'/54'')	
15. Emission Point Comment: *Estimated based on prior operation as a co-generation operation. Upon Kiln 1 startup in next several weeks, revised flow rates will be determined.			

EMISSIONS UNIT INFORMATION

Section [1] of [2]

**Cement Kiln 1, In-line Kiln/Raw Mill and
Clinker Cooler 1 with Baghouse****D. SEGMENT (PROCESS/FUEL) INFORMATION****Segment Description and Rate: Segment 1 of X – only include for new lime injection**

1. Segment Description (Process/Fuel Type): Industrial Processes; Mineral Products: Bulk Material Storage Bins: Lime		
2. Source Classification Code (SCC): 3-05-102-05		3. SCC Units: Tons stored
4. Maximum Hourly Rate: 0.025	5. Maximum Annual Rate: 43.8	6. Estimated Annual Activity Factor: 1
7. Maximum % Sulfur: Negligible	8. Maximum % Ash: Negligible	9. Million Btu per SCC Unit: NA
10. Segment Comment: Based on estimate of needed injection at 50 lb/hr max and a 8760 hr/yr usage at average of 10 lb/hr		

EMISSIONS UNIT INFORMATION

Section [1] of [2]

**Cement Kiln 1, In-line Kiln/Raw Mill and
Clinker Cooler 1 with Baghouse**

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	016		EL
PM₁₀	016		NS
SO₂	041		EL
NO_x			EL
CO			NS
VOC/THC			NS
H114 (Hg)			NS
GHG			NS
H106 HCl	041		EL (9/9/15)
Note that b/c the only regulated pollutant affected by this permit is HCl and SO₂, only those two are modified in the details below. All other information should be as currently permitted.			

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**
 (Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: SO₂		2. Total Percent Efficiency of Control: 99+*	
3. Potential Emissions: 50.0 lb/hour 325 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.60 lb / ton - f Reference: Permit No. 0530021-047-AV		7. Emissions Method Code: 0	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: 83 ton/hr x 0.60 lb/ton-f = 50.0 lb/hr * The production process is inherently and very efficiently controlled for SO₂ emissions by the alkaline scrubbing by raw materials in the preheater tower. The lime proposed injection system will provide further control.			
11. Potential, Fugitive, and Actual Emissions Comment:			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: OTHER	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units: 0.60 lb/ton-f, 50.0 lb/hr	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: See below	
6. Allowable Emissions Comment (Description of Operating Method): While the upcoming NESHAP LLL applicable amendments/changes do not directly limit SO₂ emissions, CEMEX plans to use SO₂ CMS as a surrogate for monitoring for HCl emissions. Per NESHAP (40 CFR 63.1348(b)(8)(iv), the SO₂ concentration monitor will be used along with HCl stack testing by Method 321 to develop an SO₂ “operating” limit. This allowance and the operating limit is further explained in the Appendix.	

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
 POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS**

(Optional for unregulated emissions units.)

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: H106 (Hydrochloric Acid)		2. Total Percent Efficiency of Control:	
3. Potential Emissions: 6.42 lb/hour 28.1 tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 3 ppmvd @ 7%O2 Reference: NESHAP LLL emission limit starting 9/9/15		7. Emissions Method Code: 0	
8.a. Baseline Actual Emissions (if required): tons/year	8.b. Baseline 24-month Period: From: To:		
9.a. Projected Actual Emissions (if required): tons/year	9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years		
10. Calculation of Emissions: NESHAP emissions limit as of 9/9/15 = 3 ppmvd @ 7% O2. Potential emissions are based on an estimated maximum airflow rate of 376,796 dscfm. Maximum airflow based on previous operation. $376,796 \text{ dscfm} \times 3/10^6 \times 1\text{lbmol}/385 \text{ dscf} \times 36.46 \text{ lb/lbmol} \times 60 \text{ min/hr} = 6.42 \text{ lb/hr}$ $8760 \text{ hr} \times 6.42 \text{ lb/hr} / 2000 \text{ lb/ton} = 28.13 \text{ ton/yr}$			
11. Potential, Fugitive, and Actual Emissions Comment:			

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
 ALLOWABLE EMISSIONS**

Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.

Allowable Emissions Allowable Emissions **1** of **1**

1. Basis for Allowable Emissions Code: RULE	2. Future Effective Date of Allowable Emissions: 9/9/15*
3. Allowable Emissions and Units: 3 ppmvd 7% O2	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: Two options, HCL CMS or SO2 CMS as a surrogate	
6. Allowable Emissions Comment (Description of Operating Method): Per NESHAP LLL, 40 CFR 63.1348(b)(8)(iv)	

EMISSIONS UNIT INFORMATION

Section [1] of [2]

**Cement Kiln 1, In-line Kiln/Raw Mill and
Clinker Cooler 1 with Baghouse**

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation **1** of **1**

1. Visible Emissions Subtype: VE10	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: 10% Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: Continuous Opacity Monitor; 6-minutes	
5. Visible Emissions Comment: Based on Permit No. 0530021-047-AV, C.5.	

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

EMISSIONS UNIT INFORMATION

Section [1] of [2]

**Cement Kiln 1, In-line Kiln/Raw Mill and
Clinker Cooler 1 with Baghouse****H. CONTINUOUS MONITOR INFORMATION****Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.****Continuous Monitoring System: Continuous Monitor 1 of 1**

1. Parameter Code: EM	2. Pollutant(s): SO₂
3. CMS Requirement: <input type="checkbox"/> Rule <input checked="" type="checkbox"/> Other	
4. Monitor Information... TBD Manufacturer: Model Number: Serial Number:	
5. Installation Date: Pre 9/9/2015	6. Performance Specification Test Date: Pre 9/9/2015
7. Continuous Monitor Comment: required by BACT. Per 40 CFR 63.1350(l) provision, the SO₂ monitor will be used in conjunction with HCl stack testing to develop an “operating limit” that will serve as a surrogate monitoring for HCl. The NESHAP requires that an emissions monitoring plan be developed. The proposed emissions monitoring plan has been developed. If Cemex elects to use SO₂ monitoring as a surrogate, then SO₂ CMS will also be required by NESHAP <u>rule</u> in addition to BACT. Per the NESHAP, compliance for HCL by SO2 CMS will not cause the SO2 monitor to be used for any NESHAP SO2 emissions limit but only a surrogate for HCl emissions.	

EMISSIONS UNIT INFORMATION

Section [1] of [2]

**Cement Kiln 1, In-line Kiln/Raw Mill and
Clinker Cooler 1 with Baghouse**

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>On file with DEP</u>
2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: : _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>On file with DEP</u>
3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>On file with DEP</u>
4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date <u>On file with DEP</u> <input type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute: Attached, Document ID:

EMISSIONS UNIT INFORMATION

Section [2] of [2]

Lime Injection System

III. EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Application - For Title V air operation permitting only, emissions units are classified as regulated, unregulated, or insignificant. If this is an application for an initial, revised or renewal Title V air operation permit, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each regulated and unregulated emissions unit addressed in this application. Some of the subsections comprising the Emissions Unit Information Section of the form are optional for unregulated emissions units. Each such subsection is appropriately marked. Insignificant emissions units are required to be listed at Section II, Subsection C.

Air Construction Permit or FESOP Application - For air construction permitting or federally enforceable state air operation permitting, emissions units are classified as either subject to air permitting or exempt from air permitting. The concept of an “unregulated emissions unit” does not apply. If this is an application for an air construction permit or FESOP, a separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit subject to air permitting addressed in this application for air permit. Emissions units exempt from air permitting are required to be listed at Section II, Subsection C.

Air Construction Permit and Revised/Renewal Title V Air Operation Permit Application – Where this application is used to apply for both an air construction permit and a revised or renewal Title V air operation permit, each emissions unit is classified as either subject to air permitting or exempt from air permitting for air construction permitting purposes, and as regulated, unregulated, or insignificant for Title V air operation permitting purposes. A separate Emissions Unit Information Section (including subsections A through I as required) must be completed for each emissions unit addressed in this application that is subject to air construction permitting and for each such emissions unit that is a regulated or unregulated unit for purposes of Title V permitting. (An emissions unit may be exempt from air construction permitting but still be classified as an unregulated unit for Title V purposes.) Emissions units classified as insignificant for Title V purposes are required to be listed at Section II, Subsection C.

If submitting the application form in hard copy, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application must be indicated in the space provided at the top of each page.

EMISSIONS UNIT INFORMATION

Section [2] of [2]

Lime Injection System

A. GENERAL EMISSIONS UNIT INFORMATION

Title V Air Operation Permit Emissions Unit Classification

1. Regulated or Unregulated Emissions Unit? (Check one, if applying for an initial, revised or renewal Title V air operation permit. Skip this item if applying for an air construction permit or FESOP only.)

The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in this Section: (Check one)

This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Description of Emissions Unit Addressed in this Section: **Lime Injection System**

3. Emissions Unit Identification Number: **004-Lime**

4. Emissions Unit Status Code: A	5. Commence Construction Date: TBD	6. Initial Startup Date: TBD	7. Emissions Unit Major Group SIC Code:
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8. Federal Program Applicability: (Check all that apply) **N/A**

Acid Rain Unit

CAIR Unit

Hg Budget Unit

9. Package Unit:
Manufacturer: _____ Model Number: _____

10. Generator Nameplate Rating: **MW**

11. Emissions Unit Comment:
This new lime injection system will allow the kiln unit to use an alternative method to demonstrate compliance to the upcoming HCl limit by use of the SO₂ CMS as SO₂ surrogate for HCl. No other changes are requested by this permit application.

EMISSIONS UNIT INFORMATION

Section [2] of [2]

Lime Injection System

Emissions Unit Control Equipment/Method: Control 1 of 1

1. Control Equipment/Method Description:
Baghouse – Low Temperature

2. Control Device or Method Code: **018**

EMISSIONS UNIT INFORMATION

Section [2] of [2]

Lime Injection System

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram:		2. Emission Point Type Code: 1	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:			
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:			
5. Discharge Type Code:	6. Stack Height: feet	7. Exit Diameter: feet	
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %	
11. Maximum Dry Standard Flow Rate: 390 dscfm		12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):		14. Emission Point Latitude/Longitude... Latitude (28°/34'/57'') Longitude (82°/25'/52'')	
15. Emission Point Comment:			

EMISSIONS UNIT INFORMATION

Section [2] of [2]

Lime Injection System

D. SEGMENT (PROCESS/FUEL) INFORMATION**Segment Description and Rate:** Segment **1** of **X** – **only include for new lime injection**

1. Segment Description (Process/Fuel Type): Industrial Processes; Mineral Products: Bulk Material Storage Bins: Lime		
2. Source Classification Code (SCC): 3-05-102-05	3. SCC Units: Tons stored	
4. Maximum Hourly Rate: 0.025	5. Maximum Annual Rate: 43.8	6. Estimated Annual Activity Factor: 1
7. Maximum % Sulfur: Negligible	8. Maximum % Ash: Negligible	9. Million Btu per SCC Unit: NA
10. Segment Comment: Based on estimate of needed injection at 50 lb/hr max and a 8760 hr/yr usage at average of 10 lb/hr		

EMISSIONS UNIT INFORMATION

Section [2] of [2]

Lime Injection System

E. EMISSIONS UNIT POLLUTANTS

List of Pollutants Emitted by Emissions Unit

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
PM	018		NS

EMISSIONS UNIT INFORMATION

Section [2] of [2]

Lime Injection System

POLLUTANT DETAIL INFORMATION

Page [1] of [1]

Particulate Matter (PM)

**F1. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION –
POTENTIAL, FUGITIVE, AND ACTUAL EMISSIONS
(Optional for unregulated emissions units.)**

Complete a Subsection F1 for each pollutant identified in Subsection E if applying for an air construction permit or concurrent processing of an air construction permit and a revised or renewal Title V operation permit. Complete for each emissions-limited pollutant identified in Subsection E if applying for an air operation permit.

Potential, Estimated Fugitive, and Baseline & Projected Actual Emissions

1. Pollutant Emitted: PM		2. Total Percent Efficiency of Control: 99+	
3. Potential Emissions: 0.0167 lb/hour 0.073 TPY tons/year		4. Synthetically Limited? <input type="checkbox"/> Yes <input type="checkbox"/> No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year			
6. Emission Factor: 0.005 gr/dscf Reference: Manufacturer specification		7. Emissions Method Code: 0	
8.a. Baseline Actual Emissions (if required): tons/year		8.b. Baseline 24-month Period: From: To:	
9.a. Projected Actual Emissions (if required): tons/year		9.b. Projected Monitoring Period: <input type="checkbox"/> 5 years <input type="checkbox"/> 10 years	
10. Calculation of Emissions: $390 \text{ dscf/min} \times 0.005 \text{ gr/dscf} \times 60 \text{ min/hr} \times 1 \text{ lb} / 7,000 \text{ gr} = 0.0167 \text{ lb/hr}$ $0.0167 \text{ lb/hr} \times 8760 \text{ hr/yr} \times 1 \text{ ton}/2000 \text{ lb} = 0.073 \text{ TPY}$			
11. Potential, Fugitive, and Actual Emissions Comment:			

EMISSIONS UNIT INFORMATION

Section [2] of [2]

Lime Injection System

POLLUTANT DETAIL INFORMATION

Page [1] of [1]

Particulate Matter (PM)

**F2. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION -
ALLOWABLE EMISSIONS****Complete Subsection F2 if the pollutant identified in Subsection F1 is or would be subject to a numerical emissions limitation.****Allowable Emissions** Allowable Emissions of **NA**

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance:	
6. Allowable Emissions Comment (Description of Operating Method):	

EMISSIONS UNIT INFORMATION

Section [2] of [2]

Lime Injection System

G. VISIBLE EMISSIONS INFORMATION

Complete Subsection G if this emissions unit is or would be subject to a unit-specific visible emissions limitation.

Visible Emissions Limitation: Visible Emissions Limitation 1 of 1

1. Visible Emissions Subtype: VE10	2. Basis for Allowable Opacity: <input checked="" type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: 10% Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

Visible Emissions Limitation: Visible Emissions Limitation __ of ____

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: <input type="checkbox"/> Rule <input type="checkbox"/> Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

EMISSIONS UNIT INFORMATION

Section [2] of [2]

Lime Injection System

H. CONTINUOUS MONITOR INFORMATION

Complete Subsection H if this emissions unit is or would be subject to continuous monitoring.

Continuous Monitoring System: Continuous Monitor NA

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	<input type="checkbox"/> Rule <input checked="" type="checkbox"/> Other
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

EMISSIONS UNIT INFORMATION

Section [2] of [2]

Lime Injection System

I. EMISSIONS UNIT ADDITIONAL INFORMATION

Additional Requirements for All Applications, Except as Otherwise Stated

1. Process Flow Diagram: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: _____ <input checked="" type="checkbox"/> Previously Submitted, Date On file with DEP
2. Fuel Analysis or Specification: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID: : N/A <input checked="" type="checkbox"/> Previously Submitted, Date
3. Detailed Description of Control Equipment: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input checked="" type="checkbox"/> Attached, Document ID: Appendix 1 <input checked="" type="checkbox"/> Previously Submitted, Date
4. Procedures for Startup and Shutdown: (Required for all operation permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input type="checkbox"/> Attached, Document ID _____ <input type="checkbox"/> Previously Submitted, Date _____ <input checked="" type="checkbox"/> Not Applicable (construction application)
5. Operation and Maintenance Plan: (Required for all permit applications, except Title V air operation permit revision applications if this information was submitted to the department within the previous five years and would not be altered as a result of the revision being sought) <input checked="" type="checkbox"/> Attached, Document ID: Appendix 1 <input checked="" type="checkbox"/> Previously Submitted, Date <input type="checkbox"/> Not Applicable
6. Compliance Demonstration Reports/Records: <input type="checkbox"/> Attached, Document ID: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> Previously Submitted, Date: _____ Test Date(s)/Pollutant(s) Tested: _____ <input type="checkbox"/> To be Submitted, Date (if known): _____ Test Date(s)/Pollutant(s) Tested: _____ <input checked="" type="checkbox"/> Not Applicable Note: For FESOP applications, all required compliance demonstration records/reports must be submitted at the time of application. For Title V air operation permit applications, all required compliance demonstration reports/records must be submitted at the time of application, or a compliance plan must be submitted at the time of application.
7. Other Information Required by Rule or Statute: Attached, Document ID:

APPENDIX 1

CEMEX CONSTRUCTION MATERIALS FLORIDA, LLC

FACILITY ID: 0530021

**APPLICATION FOR AIR CONSTRUCTION PERMIT AUTHORIZING CONSTRUCTION OF LIME INJECTION SYSTEM
ON KILN 1**

APPENDIX 1

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APPENDIX 1

CEMEX CONSTRUCTION MATERIALS FLORIDA, LLC

FACILITY ID: 0530021

APPLICATION FOR AIR CONSTRUCTION PERMIT AUTHORIZING CONSTRUCTION OF LIME INJECTION SYSTEM ON KILN 1

Description

1. INTRODUCTION

CEMEX Construction Materials Florida, LLC (CEMEX) owns and operates a cement plant located in Brooksville, Florida, designated as the Brooksville South Cement Plant in the current Title V permit (0530021-047-AV). The cement plant consists of two dry-process in-line kiln/raw mill systems (Line 1 and Line 2). Line 1 is permitted to produce 1,277,500 tons of cement and Line 2 is permitted to produce 1,800,000 tons of cement in any consecutive 12-month period.

CEMEX requests authorization for the installation of equipment for the injection of lime to Line 1 kiln (EU 020) pyroprocessing system for the purpose of hydrochloric acid (HCl) control as allowed by the Portland Cement NESHAP (40 CFR 63, Subpart LLL). The emissions limit will be 3 ppmvd @ 7% O₂ starting 9/9/15.

As discussed in the regulatory analysis section, the requested air construction permit will assure compliance with the upcoming hydrochloric acid (HCl) emissions limit for NESHAP. Therefore, CEMEX is requesting to have the option in its permitting allowances to use an alternative continuous monitoring approach via SO₂ CMS and correspondingly required hydrated lime injection to comply with the HCl emissions limit. The lime injection system has a separate venting baghouse that emits separately from the kiln. Because the lime will be raw material to the cement production, the emission point from the lime injector is requested to be part of EU004 which is part of the process.

The regulatory requirements for the use of the injection system will be to show compliance to the NESHAP HCl emissions limit.

2. REGULATORY APPLICABILITY ANALYSIS

2.1 FEDERAL

KILN NO. 1 (EU 020)

NESHAP 63 Subpart LLL (Cement MACT), 40 CFR 63.1340-63.1358 – *Applicable*

40 CFR 63 Subpart LLL (commonly referred to as the Cement MACT) currently applies to individual equipment and emission units at the Brooksville South Cement Plant other than to the cement kilns and in-line raw mills.

Emissions Limit

The kiln No. 1 will be subject to a HCl emissions limit of 3 ppmvd @ 7%O₂ beginning September 9, 2015 per 40 CFR 63.1343(b).

§63.1348(a)(8)

(8) *HCl Compliance*. If you are subject to limitations on HCl emissions under §63.1343(b), you must demonstrate compliance using the performance test methods and procedures in §63.1349(b)(6).

(i)....

(ii) For an affected source that is equipped with a wet scrubber, tray tower or a dry sorbent injection system, you may demonstrate compliance using the monitoring methods and procedures in §63.1350(l)(2).

HCl Emissions Testing

§1349(b)(6)

(6) *HCl emissions tests*. For a source subject to limitations on HCl emissions you must conduct performance testing by one of the following methods:

(i)(A) If the source is equipped with a wet scrubber, tray tower or dry scrubber, you must conduct performance testing using Method 321 of appendix A to this part unless you have installed a CEMS that meets the requirements §63.1350(l)(1). For kilns with inline raw mills, testing should be conducted for the raw mill on and raw mill off conditions.

(B) You must establish site specific parameter limits by using the CPMS required in §63.1350(l)(1). For a wet scrubber or tray tower, measure and record the pressure drop across the scrubber and/or liquid flow rate and pH in intervals of no more than 15 minutes during the HCl test. Compute and record the 24-hour average pressure drop, pH, and average scrubber water flow rate for each sampling run in which the applicable emissions limit is met. For a dry scrubber, measure and record the sorbent injection rate in intervals of no more than 15 minutes during the HCl test. Compute and record the 24-hour average sorbent injection rate and average sorbent injection rate for each sampling run in which the applicable emissions limit is met.

(ii)(A)...

(B)...

(iii) As an alternative to paragraph (b)(6)(i)(B) of this section, you may choose to monitor SO₂ emissions using a CEMS in accordance with the requirements of §63.1350(l)(3). You must establish an SO₂ operating limit equal to the highest 1 hour average recorded during the HCl stack test. This operating limit will apply only for demonstrating HCl compliance.

(iv)....

Sorbent Injection Rate Monitoring

(9) *Mass flow rate (for sorbent injection) monitoring requirements.* If you have an operating limit that requires the use of equipment to monitor sorbent injection rate (e.g., weigh belt, weigh hopper, or hopper flow measurement device), you must meet the requirements in paragraphs (m)(9)(i) through (iii) of this section. These requirements also apply to the sorbent injection equipment of a dry scrubber.

(i) Locate the device in a position(s) that provides a representative measurement of the total sorbent injection rate.

(ii) Install and calibrate the device in accordance with manufacturer's procedures and specifications.

(iii) At least annually, calibrate the device in accordance with the manufacturer's procedures and specifications.

Establishing an SO₂ CEMs Operating Limit

§1349.(b)(8) HCl Emissions Tests with SO₂ Monitoring. If you choose to monitor SO₂ emissions using a CEMS to demonstrate HCl compliance, follow the procedures in (b)(8)(i) through (ix) of this section and in accordance with the requirements of §63.1350(l)(3). You must establish an SO₂ operating limit equal to the average of the SO₂ emissions recorded during the HCl stack test. This operating limit will apply only for demonstrating HCl compliance.

(i) Use Method 321 of appendix A to this part to determine emissions of HCl. Each performance test must consist of three separate runs under the conditions that exist when the affected source is operating at the representative performance conditions in accordance with §63.7(e). Each run must be conducted for at least one hour.

(ii) At the same time that you are conducting the performance test for HCl, you must also determine a site-specific SO₂ emissions limit by operating an SO₂ CEMS in accordance with the requirements of §63.1350(l). The duration of the performance test must be three hours and the average SO₂ concentration (as calculated from the 1-minute averages) during the 3-hour test must be calculated. You must establish your SO₂ operating limit and determine compliance with it according to paragraphs (b)(8)(vii) and (viii) of this section.

(iii) If your source has an in-line kiln/raw mill you must use the fraction of time the raw mill is on and the fraction of time that the raw mill is off and calculate this limit as a weighted average of the SO₂ levels measured during raw mill on and raw mill off testing.

(iv) Your SO₂ CEMS must be calibrated and operated according to the requirements of §60.63(f).

(v) Your SO₂ CEMS measurement scale must be capable of reading SO₂ concentrations consistent with the requirements of §60.63(f), including mill on or mill off operation.

(vi) If your kiln has an inline kiln/raw mill, you must conduct separate performance tests while the raw mill is operating (“mill on”) and while the raw mill is not operating (“mill off”). Using the fraction of time the raw mill is on and the fraction of time that the raw mill is off, calculate this limit as a weighted average of the THC levels measured during raw mill on and raw mill off compliance testing with Equation 17.

$$R = (y * t) + x * (t - 1) \quad (\text{Eq. 17})$$

[View or download PDF](#)

Where:

R = Operating limit as SO₂, ppmvw.

y = Average SO₂ CEMS value during mill on operations, ppmvw.

t = Percentage of operating time with mill on, expressed as a decimal.

x = Average SO₂ CEMS value during mill off operations, ppmvw.

t-1 = Percentage of operating time with mill off, expressed as a decimal.

(vii) To determine continuous compliance with the SO₂ operating limit, you must record the SO₂ CEMS output data for all periods when the process is operating and the SO₂ CEMS is not out-of-control. You must demonstrate continuous compliance by using all quality-assured hourly average data collected by the SO₂ CEMS for all operating hours to calculate the arithmetic average operating parameter in units of the operating limit (ppmvw) on a 30 operating day rolling average basis, updated at the end of each new kiln operating day. Use Equation 18 to determine the 30 kiln operating day average.

$$30\text{kiln operating day} = \frac{\sum_{i=1}^n H_{pvi}}{n} \quad (\text{Eq. 18})$$

[View or download PDF](#)

Where:

H_{pvi} = The hourly parameter value for hour i, ppmvw.

n = The number of valid hourly parameter values collected over 30 kiln operating days.

(viii) Use EPA Method 321 of appendix A to part 60 of this chapter to determine HCl emissions. For each performance test, conduct at least three separate runs under the conditions that exist when the affected source is operating at the highest load or capacity level reasonably expected to occur. If your source has an in-line kiln/raw mill you must conduct three separate test runs with the raw mill on, and three separate runs under the conditions that exist when the affected source is operating at the highest load or capacity level reasonably expected to occur with the mill off.

(ix) If the SO₂ level exceeds by 10 percent or more your site-specific SO₂ emissions limit, you must

(A) As soon as possible but no later than 30 days after the exceedance, conduct an inspection and take corrective action to return the SO₂ CEMS measurements to within the established value. and

(B) Within 90 days of the exceedance or at the time of the annual compliance test, whichever comes first, conduct another performance test to determine compliance with the HCl limit and to verify or re-establish your site-specific SO₂ emissions limit.

(c) *Performance Test Frequency.* Except as provided in §63.1348(b), performance tests are required at regular intervals for affected sources that are subject to a dioxin, organic HAP or HCl emissions limit and must be repeated every 30 months except for pollutants where that specific pollutant is monitored using CEMS. Tests for PM are repeated every 12 months.

SO₂ surrogate Monitoring Requirements

§63.1350(l)

(l) *HCl Monitoring Requirements.* If you are subject to an emissions limitation on HCl emissions in §63.1343, you must monitor HCl emissions continuously according to paragraph (l)(1) or (2) and paragraphs (m)(1) through (4) of this section or, if your kiln is controlled using a wet or dry scrubber or tray tower, you alternatively may parametrically monitor SO₂ emissions continuously according to paragraph (l)(3) of this section. You must also develop an emissions monitoring plan in accordance with paragraphs (p)(1) through (4) of this section.

(1)...

(2) Install, operate, and maintain a CMS to monitor wet scrubber or tray tower parameters, as specified in paragraphs (m)(5) and (7) of this section, and dry scrubber, as specified in paragraph (m)(9) of this section.

(3) If the source is equipped with a wet or dry scrubber or tray tower, and you choose to monitor SO₂ emissions, monitor SO₂ emissions continuously according to the requirements of §60.63(e) through (f) of part 60 subpart F of this chapter. If SO₂ levels increase above the 30-day rolling average SO₂ operating limit established during your performance test, you must:

(i) As soon as possible but no later than 48 hours after you exceed the established SO₂ value conduct an inspection and take corrective action to return the SO₂ emissions to within the operating limit; and

(ii) Within 60 days of the exceedance or at the time of the next compliance test, whichever comes first, conduct an HCl emissions compliance test to determine compliance with the HCl emissions limit and to verify or re-establish the SO₂ CEMS operating limit.

Development of emissions monitoring plan

§1350(b)(4)

Develop an emissions monitoring plan in accordance with paragraphs (p)(1) through (p)(4) of this section.

(p) *Development and submittal (upon request) of monitoring plans.* If you demonstrate compliance with any applicable emissions limit through performance stack testing or other emissions monitoring, you must develop a site-specific monitoring plan according to the requirements in paragraphs (p)(1) through (4) of this section. This requirement also applies to you if you petition the EPA Administrator for alternative monitoring parameters under paragraph (o) of this section and §63.8(f). If you use a BLDS, you must also meet the requirements specified in paragraph (p)(5) of this section.

(1) For each CMS required in this section, you must develop, and submit to the permitting authority for approval upon request, a site-specific monitoring plan that addresses paragraphs (p)(1)(i) through (iii) of this section. You must submit this site-specific monitoring plan, if requested, at least 30 days before your initial performance evaluation of your CMS.

(i) Installation of the CMS sampling probe or other interface at a measurement location relative to each affected process unit such that the measurement is representative of control of the exhaust emissions (e.g., on or downstream of the last control device);

(ii) Performance and equipment specifications for the sample interface, the pollutant concentration or parametric signal analyzer, and the data collection and reduction systems; and

(iii) Performance evaluation procedures and acceptance criteria (e.g., calibrations).

(2) In your site-specific monitoring plan, you must also address paragraphs (p)(2)(i) through (iii) of this section.

(i) Ongoing operation and maintenance procedures in accordance with the general requirements of §63.8(c)(1), (c)(3), and (c)(4)(ii);

(ii) Ongoing data quality assurance procedures in accordance with the general requirements of §63.8(d); and

(iii) Ongoing recordkeeping and reporting procedures in accordance with the general requirements of §63.10(c), (e)(1), and (e)(2)(i).

(3) You must conduct a performance evaluation of each CMS in accordance with your site-specific monitoring plan.

(4) You must operate and maintain the CMS in continuous operation according to the site-specific monitoring plan.

FDEP Rules
– **Not Applicable**

LIME INJECTION EQUIPMENT (new materials handling activities, add to EU004)

NESHAP 63 Subpart LLL (Cement MACT), 40 CFR 63.1340-63.1358
– **Applicable**

40 CFR 63 Subpart LLL (commonly referred to as the Cement MACT) currently applies to individual equipment at the Brooksville South Cement Plant other than the kiln unit.

There are dust filters (see Figure 2) on the injector system and PM emissions from the injector system will be separately regulated from the kiln but subject to NESHAP LLL for the following reasons.

- 1) The injection system has two small dust filters for PM emissions control from lime storage and injection (see Figure 2),
- 2) The lime injected will end up eventually in the cement product and thus is effectively a raw material.
- 3) NESHAP LLL listed the following subject equipment which includes raw materials storage bins.

§63.1340(b)(6) Each raw material, clinker, or finished product storage bin at any portland cement plant that is a major source;

Therefore, the materials handling activities of Emission unit 004 under Subsection B of 0530021-047-AV permit will need to be modified to incorporate this equipment after completing the AC permitting requirements. Cemex requests this equipment emission point be listed as EU004-LIME.

The calculated emissions from the dust filters are as follows. The max flowrate is based on design specs from the manufacturer. The grain loading is also from the manufacturer.

PM (lb/hr): max baghouse flowrate 390 dscfm x 0.005 gr/dscf x 60 min/hr x 1 lb/7000 grains =

0.0167 lb/hr

PM (ton/yr): 0.0167 lb/hr x 8760 hr/yr x 1 ton/2000 lb =

0.073 ton/yr

CEMEX believes that the baghouse vents are subject to NESHAP standards for opacity limit of 10% (60 CFR 63.1345) and thus requiring monthly Method 22s (40 CFR 63.1350(f)), initial and once each 5 year Method 9 testing (40 CFR 63.1348(A)(2)).

For FDEP rules, CEMEX understands the annual VE testing for 30 minutes is required, as discussed below.

§63.1345 EMISSIONS LIMITS FOR AFFECTED SOURCES OTHER THAN KILNS; CLINKER COOLERS; NEW AND RECONSTRUCTED RAW MATERIAL DRYERS.

The owner or operator of each new or existing raw material, clinker, or finished product storage bin; conveying system transfer point; bagging system; bulk loading or unloading system; raw and finish mills; and each existing raw material dryer, at a facility which is a major source subject to the provisions of this subpart must not cause to be discharged any gases from these affected sources which exhibit opacity in excess of 10 percent.

FDEP Rules

– Applicable

Based on FDEP rule 62-297.310(7)(a)4, injector baghouse emissions require annual VE testing.

4. During each federal fiscal year (October 1 – September 30), unless otherwise specified by rule, order, or permit, the owner or operator of each emissions unit shall have a formal compliance test conducted for:

- a. Visible emissions, if there is an applicable standard;

The unit is subject to a 10% opacity standard due to the NESHAP LLL 40 CFR 63.1343(b). Therefore, the baghouse will need to be VE tested annually due to the FDEP rule above. The length of the VE test will be 30 minutes based on the potential emissions calculated above and FDEP rule 62-297.310(4)(a).2.:

Opacity Compliance Tests. When either EPA Method 9 or DEP Method 9 is specified as the applicable opacity test method, the required minimum period of observation for a compliance test shall be sixty (60) minutes for emissions units which emit or have the potential to emit 100 tons per year or more of particulate matter, and thirty (30) minutes for emissions units which have potential emissions less than 100 tons per year of particulate matter and are not subject to a multiple-valued opacity standard. The opacity test observation period shall include the period during which the highest opacity emissions can reasonably be expected to occur.

Note that additional truck traffic is very minor (see below) and these emissions should be included as part of current truck traffic operations.

Suggested AC permit language

EU004 – new emission point, EU004-LIME. EU004 is defined as the Raw Meal Transfer with Baghouse
 Current emissions points are listed as follows.

Subsection B. Summary of Emissions Units.

<i>Brooksville South Portland Cement Line 1 - Regulated Emissions Units</i>		
EU ID No.	Facility's Internal ID No.	Brief Description
001	D-75	Filter Dust Bin (was Pre-Mix Bin) with Baghouse
002	D-67	Fly Ash/Equilibrium Catalyst Storage Silo with Baghouse
004	F-14	Raw Meal Transfer with Baghouse

Add new emissions point to EU 004 will be called EU004-LIME

NESHAP Compliance

Visible Emissions Limit. Pursuant to 40 CFR 63.1343(b), visible emissions from this conveying system baghouse emission point shall not exceed 10% opacity.

Initial Performance Test Requirements. The permittee must demonstrate compliance with the opacity standards and operating limits by using the test methods and procedures in §§63.1349(b)(2) and 63.7. The compliance date for this new source is upon startup. The facility

shall have 90 days after startup to complete initial performance testing. [Rule 62-4.070(3), F.A.C. and 40 CFR 63.1349, 63.1351(c) and 63.7] .

Opacity tests. The permittee must conduct opacity tests in accordance with Method 9 of appendix A-4 of 40 CFR Part 60. The duration of the Method 9 performance test must be 3 hours (30, 6-minute averages), except that the duration of the Method 9 performance test may be reduced to 1 hour if the following conditions in paragraphs (a) and (b) apply.

- (a) There are no individual readings greater than 10 percent opacity; and
 - (b) There are no more than three readings of 10 percent for the first 1-hour period.
- For batch processes that are not run for 3-hour periods or longer, compile observations totaling 3 hours when the unit is operating. Use the maximum 6-minute average opacity exhibited during the performance test period to determine whether the affected source is in compliance with the standard. [40 CFR 63.1348(a)(2) and 63.1349]

Opacity Monitoring Requirements.

- (a) The permittee must demonstrate compliance with this subpart on a continuous basis by meeting the requirements of this section.
- (b) Failure to comply with the continuous monitoring requirements of this section is a violation.
- (c) The permittee must conduct a monthly 10-minute visible emissions test of each affected source in accordance with Method 22 of appendix A-7 to part 60 of this chapter. The performance test must be conducted while the affected source is in operation.
 - 1. If no visible emissions are observed in six consecutive monthly tests, the permittee may decrease the frequency of performance testing from monthly to semi-annually for that affected source. If visible emissions are observed during any semi-annual test, you must resume performance testing of that affected source on a monthly basis and maintain that schedule until no visible emissions are observed in six consecutive monthly tests. Note, if transloading is not conducted each month, then this condition may be satisfied if:
 - a. There are at least six tests conducted within the 6-month period and all tests within the 6-month period indicate no visible emissions were observed; or
 - b. The first six tests are conducted over a period of 7 to 12-months and all six tests indicate no visible emissions were observed.
 - 2. If no visible emissions are observed during the semi-annual test for any affected source, the permittee may decrease the frequency of performance testing from semi-annually to annually for that affected source. If visible emissions are observed during any annual performance test, the permittee must resume performance testing of that affected source on a monthly basis and maintain that schedule until no visible emissions are observed in six consecutive monthly tests.
 - 3. If visible emissions are observed during any Method 22 performance test, of appendix A-7 to part 60 of this chapter, the permittee must conduct 30 minutes of opacity observations, recorded at 15-second intervals, in accordance with Method 9 of appendix A-4 to part 60 of this chapter. The Method 9 performance test, of appendix A-4 to part 60 of this chapter, must begin within 1 hour of any observation of visible emissions.
 - 4. The permittee must also develop an opacity monitoring plan in accordance with paragraphs (p)(1) through (4) and paragraph (o)(5), if applicable, of this section. However, 40 CFR 63.1350(p) requires the development and submittal (*upon request*) of monitoring plans. The periodic monitoring (EPA Method 22 observations) required above are deemed to be a sufficient monitoring plan.

[40 CFR 63.1350(a) and (f)]

Notifications and Reporting. In addition to the requirements listed above, the permittee shall also comply with the notification, recordkeeping and reporting requirements contained in 40 CFR 63, Subparts A and LLL found at the following links: [Link to Subpart A](#). [Link to Subpart LLL](#). [40 CFR 63.1353, 63.1354 & 63.1355]

State of Florida Rule Compliance

Annual VE Testing. During each federal fiscal year (October 1 – September 30), unless otherwise specified by rule, order, or permit, the owner or operator of each emissions unit shall have a formal compliance test conducted for visible emissions (equipment is subject to 10% opacity standard per NESHAP LLL).

[62-297.310(7)(a)4, F.A.C.]

The length of the VE test will be 30 minutes based on the potential emissions of less than 100 tpy.

[62-297.310(4)(a).2., F.A.C.]

3. LIME INFRASTRUCTURE AND OPERATIONS

3.2 LIME RECEIVING, PROCESSING, TRANSPORT, HANDLING, AND STORAGE

Delivery by truck of hydrated lime will be limited to less than 3 trucks per year based on projected usage of less than 50 tons. As a conservative measure, these fugitive PM calculations assume delivery of 20 trucks per year. See Figure 1 below for the estimated path of trucks through the facility. Also see Table 1 below for calculation of additional truck traffic from Lime delivery. The traffic PM emissions calculations are conservative and account for both a longer truck route and/or additional truck over the expected amount.

3.4 LIME INJECTION EQUIPMENT DESCRIPTION

The system will consist of one bulk bag unloading station as detailed below in Figure 2. The system will discharge bulk bags into a confinement hopper for dust collection. The confinement hopper will discharge to the gravimetric feeder. The gravimetric feeder will then discharge into a rotary airlock which creates a barrier between the feeding system and the convey line. The material will be transported into the existing duct.

CEMEX estimates that the time frame for completing equipment installation (following issuance of the air construction permit) will take approximately six to twelve months. CEMEX therefore requests a one - year construction permit for this project.

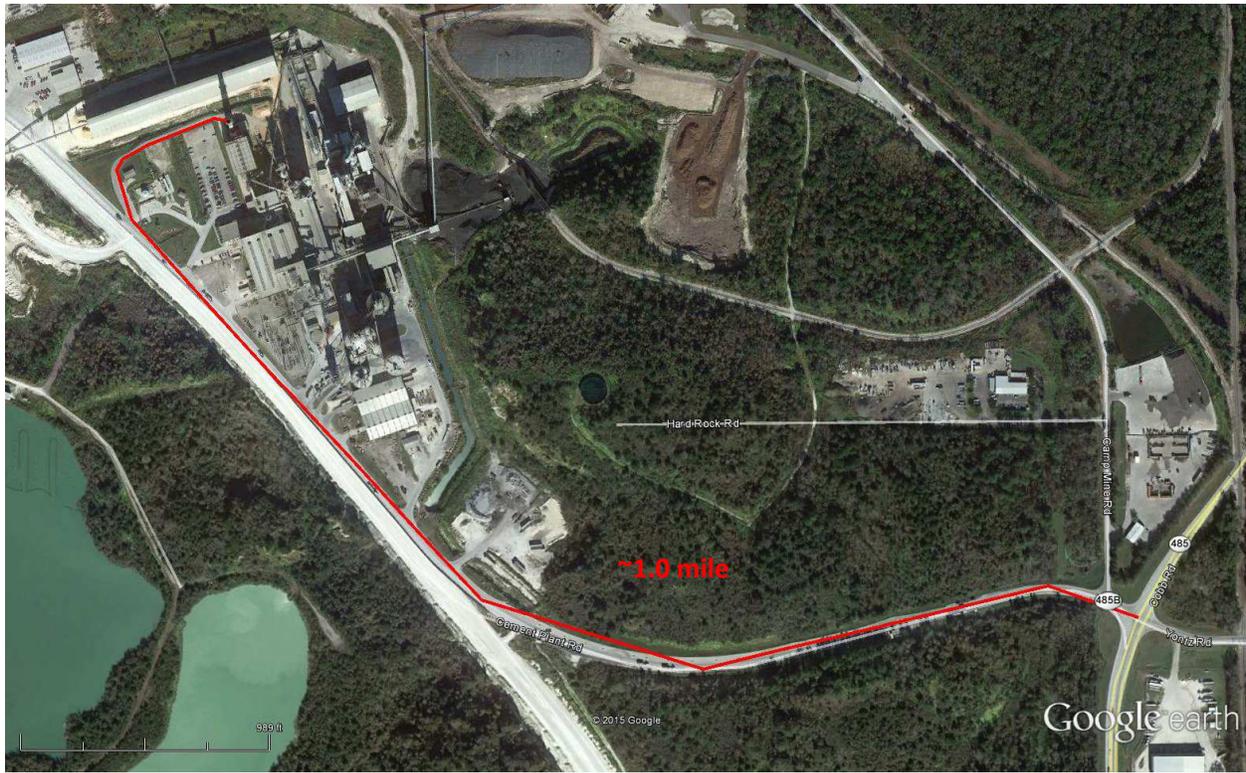


Figure 1: Path of trucks for lime delivery to Kiln 1 (~1.0 mile)

Table 1: Calculation of Lime Injection System PM Emissions.

Lime Injection System - Potential Emissions									
Step	Action/Task	Unit of Measurement	% of Total Throughput	PM Emission Factor	PM ₁₀ Emission Factor	PM _{2.5} Emission Factor	PM Emissions	PM ₁₀ Emissions	PM _{2.5} Emissions
1	Lime Transport to Silo ^a	50 miles	100%	0.556 lb/VMT	0.453 lb/VMT	0.111 lb/VMT	0.014 tons/yr	0.011 tons/yr	0.003 tons/yr
2	Lime Storage and handling ^b	500 tons	100%	<i>negligible, stored and handled in sealed silo and connectors. Emissions accounted for by baghouse filter emissions from silo.</i>					
Total:							0.01 tons/yr	0.01 tons/yr	0.00 tons/yr
Sample Calculations:									
a.	$E = [k(sL)^{0.91} (W)^{1.02}] \times (1-P/4N)$ $E = [0.0027(12)^{0.91} (22)^{1.02}] \times (1-120/(4(365))) = 0.556$			<i>where from AP-42 and references, k=0.0027 (PM), k=0.0022 (PM10), k=0.00054 (PM2.5) sL=12, W=22, p=120, N=365</i>					
b.	$(2.0 \text{ miles}) / [(trip)^d \times (20 \text{ tons}) \times 500 \text{ tons lime} = 50 \text{ miles}]$								
a. Potential PM/PM10/PM2.5 emissions from truck traffic from paved roads are calculated based on AP- 42, Chapter 13.2.1-1, Equation 2 and sample calculation a. above. b. based on a presumed maximum annual usage.									

Project Potential PM emissions increase			
Action/Task	PM Emissions	PM ₁₀ Emissions	PM _{2.5} Emissions
Lime Transport to Silo ^a	0.014 tons/yr	0.011 tons/yr	0.003 tons/yr
Lime Storage ^b	<i>negligible</i>		
Lime Silo Baghouse ^{c,d}	0.0730 tons/yr	0.0118 tons/yr	0.0044 tons/yr
Total:	0.09 tons/yr	0.02 tons/yr	0.01 tons/yr

a. See table above for calculation
 b. Accounted for by PM emissions from baghouse
 c. Based on manufacturer baghouse guarantee and design flowrate. See discussion above.
 Calculation of PM10 and PM2.5 based on AP-42, Table 11.19.2-4 ratios of product storage for PM, PM10 and P2.5

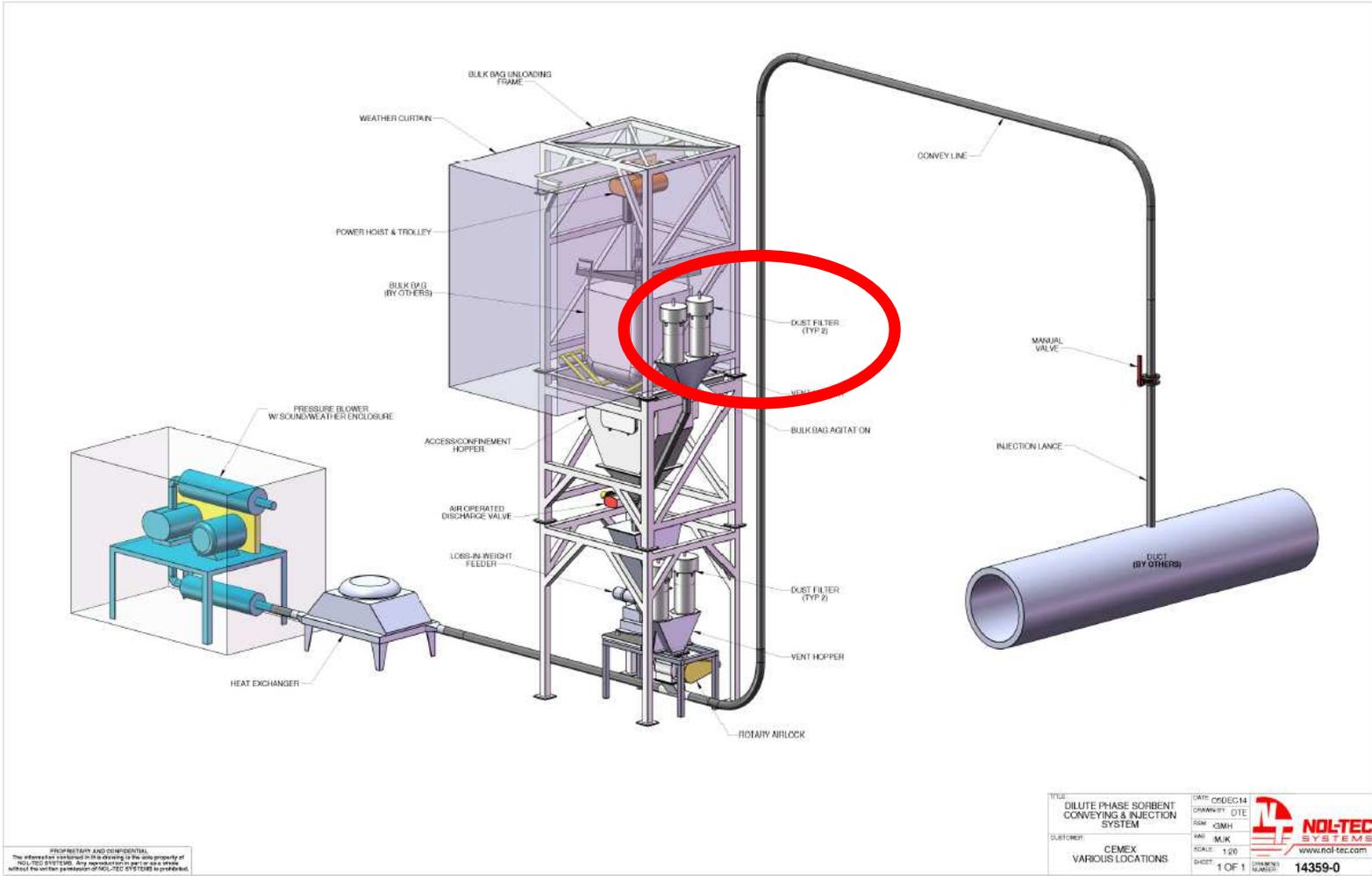


Figure 2: Lime Injection System Schematic