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: **Argos Cement LLC**	
2. Site Name: **Argos Newberry Cement Plant**	
3. Facility Identification Number: **0010087**	
4. Facility Location... Street Address or Other Locator: **4000 NW CR 235** City: **Newberry** County: **Alachua** Zip Code: **32669**	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

1. Application Contact Name: **Max 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. **19** 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):

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

Application is for the installation and shakedown of equipment for handling and injecting alternative fuels materials (AFM) categories. Handling includes transport on-site, storage, and processing.
The regulatory analysis and the project description are detailed in Appendix 1. Appendix 2 provides AFM research information. Appendix 3 provides PSD applicability analysis.

FACILITY INFORMATION

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Proc. Fee
003	In-Line Kiln/Raw Mill System Line 1	NA	NA
010	In-line Kiln/Raw Mill System Line 2		
No I.D.	Grinding and Screening Operations for AFM		

Application Processing Fee

Check one: ☐ Attached - Amount: $_____ ☒ Not Applicable

FACILITY INFORMATION

Owner/Authorized Representative Statement

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

1. Owner/Authorized Representative Name :
   Chris Horner, Plant Manager
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **Argos Cement, LLC.**
   Street Address: **4000 NW CR 235**
   City: **Newberry** State: **Florida** Zip Code: **32669**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(352) 472 –4722** ext. **130** Fax: **(352) 472 -2449**
4. Owner/Authorized Representative E-mail Address: **CHorner@argos-us.com**
5. Owner/Authorized Representative Statement:

   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.

   Signature

   6/25/14
   Date

FACILITY 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):

   ☐ 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.

   ☐ For a partnership or sole proprietorship, a general partner or the proprietor, respectively.

   ☐ For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official.

   ☐ 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, 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.

   _____ _____
   Signature Date

FACILITY INFORMATION

Professional Engineer Certification

1. Professional Engineer Name: **Max 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.**19** Fax: **(352) 377-7158**
4. Professional Engineer E-mail Address: **mlee@kooglerassociates.com**
5. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(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

(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.

(3) If the purpose of this application is to obtain a Title V air operation permit (check here ☐, 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.

(4) If the purpose of this application is to obtain an air construction permit (check here ☒, 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 ☐, 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.

(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 ☐ 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.

MAXWELL R. LEE LICENSE No. 58091 STATE OF FLORIDA PROFESSIONAL ENGINEER (seal)

Signature 6/26/14 Date

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **17** **346.4** East (km) **3285.7** North (km)		2. Facility Latitude/Longitude... Latitude (DD/MM/SS) **29°57'45"** Longitude (DD/MM/SS) **82°51'03"**	
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: **Henry Gotsch - Environmental Manager**
2. Facility Contact Mailing Address... Organization/Firm: **Argos Cement LLC** Street Address: **4000 NW CR 235** City: **Newberry** State: **Florida** Zip Code: **32669**
3. Facility Contact Telephone Numbers: Telephone: **352-472-4722** ext. **121** Fax: **352-472-2449**
4. Facility Contact E-mail Address: **OGotsch@argos-us.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. ☐ Small Business Stationary Source	☒ Unknown
2. ☐ Synthetic Non-Title V Source	
3. ☒ Title V Source	
4. ☒ Major Source of Air Pollutants, Other than Hazardous Air Pollutants (HAPs)	
5. ☐ Synthetic Minor Source of Air Pollutants, Other than HAPs	
6. ☒ Major Source of Hazardous Air Pollutants (HAPs)	
7. ☐ Synthetic Minor Source of HAPs	
8. ☒ One or More Emissions Units Subject to NSPS (40 CFR Part 60)	
9. ☒ One or More Emissions Units Subject to Emission Guidelines (40 CFR Part 60)	
10. ☒ One or More Emissions Units Subject to NESHAP (40 CFR Part 61 or Part 63)	
11. ☐ Title V Source Solely by EPA Designation (40 CFR 70.3(a)(5))	
12. Facility Regulatory Classifications Comment: **See Appendices 1 – 3.**	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
PM	**A**	**N**
PM_{10}	**A**	**N**
SO_2	**B**	**N**
NOx	**A**	**N**
CO	**A**	**N**
VOC	**B**	**N**
THC	**B**	**N**
H114	**B**	**N**

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps

1. Pollutant Subject to Emissions Cap	2. Facility-Wide Cap [Y or N]? (all units)	3. Emissions Unit ID's Under Cap (if not all units)	4. Hourly Cap (lb/hr)	5. Annual Cap (ton/yr)	6. Basis for Emissions Cap
N/A					

7. Facility-Wide or Multi-Unit Emissions Cap Comment:

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) ☐ Attached, Document ID: _____ ☒ Previously Submitted, Date: TV renewal
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) ☒ Attached, Document ID: **Appendix 1** ☐ Previously Submitted, Date: _____
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) ☒ Attached, Document ID: **Appendix 1** ☐ Previously Submitted, Date: _____

Additional Requirements for Air Construction Permit Applications

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

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for FESOP Applications

1. List of Exempt Emissions Units:
   ☐ Attached, Document ID:_____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. List of Insignificant Activities: (Required for initial/renewal applications only)
   ☐ Attached, Document ID: _____ ☒ 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)
   ☐ Attached, Document ID:_____
   ☒ Not Applicable (revision application with no change in applicable requirements)

3. Compliance Report and Plan: (Required for all initial/revision/renewal applications)
   ☐ 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.

4. List of Equipment/Activities Regulated under Title VI: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____
   ☐ Equipment/Activities Onsite but Not Required to be Individually Listed
   ☒ Not Applicable

5. Verification of Risk Management Plan Submission to EPA: (If applicable, required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☒ Not Applicable

6. Requested Changes to Current Title V Air Operation Permit:
   ☐ Attached, Document ID: _____ ☒ Not Applicable

C. FACILITY ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Facilities Subject to Acid Rain, CAIR, or Hg Budget Program

1. Acid Rain Program Forms:

   Acid Rain Part Application (DEP Form No. 62-210.900(1)(a)):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable (not an Acid Rain source)

   Phase II NO_X Averaging Plan (DEP Form No. 62-210.900(1)(a)1.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable

   New Unit Exemption (DEP Form No. 62-210.900(1)(a)2.):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable

2. CAIR Part (DEP Form No. 62-210.900(1)(b)):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable (not a CAIR source)

3. Hg Budget Part (DEP Form No. 62-210.900(1)(c)):
   ☐ Attached, Document ID:_____ ☐ Previously Submitted, Date:_____
   ☒ Not Applicable (not a Hg Budget unit)

Additional Requirements Comment

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.

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.)

   [X] 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)

   [X] 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: **In-line Kiln/Raw Mill System – Line 1**

3. Emissions Unit Identification Number: **003**

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:
A		**12/17/99**	**32**

8. Federal Program Applicability: (Check all that apply)

   [ ] Acid Rain Unit

   [ ] CAIR Unit

   [ ] Hg Budget Unit

9. Package Unit: **Not Applicable**
   Manufacturer: Model Number:

10. Generator Nameplate Rating: **Not Applicable** MW

11. Emissions Unit Comment **The kiln system (or pyroprocessing system) includes the 156.5-foot kiln, a four-stage preheater tower, a 25,300 cubic foot multi-stage combustion (MSC) calciner, a tire feed system, two coal burners and ancillary equipment. A high-efficiency electrostatic precipitator controls particulate emissions and SNCR system.**

Emissions Unit Control Equipment/Method: Control **1** of **2**

1. Control Equipment/Method Description: **High-efficiency Electrostatic Precipitator (ESP)**
2. Control Device or Method Code: **010**

Emissions Unit Control Equipment/Method: Control **2** of **2**

1. Control Equipment/Method Description: **SNCR**
2. Control Device or Method Code: **107**

Emissions Unit Control Equipment/Method: Control **3** of **3**

1. Control Equipment/Method Description: **Multi-Stage Combustion (MSC)**
2. Control Device or Method Code: **025**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **See Comment**	
2. Maximum Production Rate: **See Comment**	
3. Maximum Heat Input Rate: **364** million Btu/hr	
4. Maximum Incineration Rate: **Not Applicable** 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:

The preheater dry feed rate is the mass of material (on a dry basis) entering the preheater/kiln. The preheater dry feed rate is limited to 183.4 TPH on a 24-hr rolling average, 191.4 TPH (peak hourly rate), and 1,331,000 TPY.

The kiln clinker production rate shall not exceed 110.2 tons per hour (TPH) on a 24-hr rolling average, 115.0 TPH (peak hourly rate), and 2650 tons per day (TPD). On an annual basis, the clinker production rate shall not exceed 800,000 tons per year (TPY). The clinker production rate will be determined as a function of the preheater dry feed rate.

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EMISSIONS UNIT INFORMATION
Section [1] of [3] EU 003 Kiln System – Line 1
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: **E-21, Kiln**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **Not Applicable**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **Not Applicable**		
5. Discharge Type Code: **V**	6. Stack Height: **313** feet	7. Exit Diameter: **9.42** feet
8. Exit Temperature: **215**°F	9. Actual Volumetric Flow Rate: **230,000** acfm	10. Water Vapor: **15**%
11. Maximum Dry Standard Flow Rate: **153,000** dscfm	12. Nonstack Emission Point Height: **Not Applicable** feet	
13. Emission Point UTM Coordinates... **Not Determined** Zone: East (km): North (km):	14. Emission Point Latitude/Longitude… **Not Determined** Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: **None**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1** of **10**

1. Segment Description (Process/Fuel Type): **Industrial Processes; Mineral Products; Cement Manufacturing (Dry Process); Preheater/Precalciner Kiln**		
2. Source Classification Code (SCC): **3-05-006-23**	3. SCC Units: **Tons Processed**	
4. Maximum Hourly Rate: **191.4**	5. Maximum Annual Rate: **1,331,000**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **Not Applicable**	8. Maximum % Ash: **Not Applicable**	9. Million Btu per SCC Unit: **Not Applicable**
10. Segment Comment: **The max hourly rate is the peak hourly rate. The 24-hr rolling average maximum is 183.4 TPH. Represents the preheater dry feed rate.**		

Segment Description and Rate: Segment **2** of **10**

1. Segment Description (Process/Fuel Type): **Industrial Processes; Mineral Products; Cement Manufacturing (Dry Process); Preheater/Precalciner Kiln**		
2. Source Classification Code (SCC): **3-05-006-23**	3. SCC Units: **Tons Clinker**	
4. Maximum Hourly Rate: **115.0**	5. Maximum Annual Rate: **800,000**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **Not Applicable**	8. Maximum % Ash: **Not Applicable**	9. Million Btu per SCC Unit: Not Applicable
10. Segment Comment: **The max hourly rate is the peak hourly rate. The 24-hr rolling average maximum is 110.2 TPH and the daily rate is 2,650 TPD. Represents the clinker production rate.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION (CONTINUED)

Segment Description and Rate: Segment **3** of **10**

1. Segment Description (Process/Fuel Type): **Industrial Processes; In-process Fuel Use; Bituminous Coal; Cement Kiln**		
2. Source Classification Code (SCC): **3-90-002-01**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **14.0**	5. Maximum Annual Rate: **122,640**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **1.75**	8. Maximum % Ash: **Not Applicable**	9. Million Btu per SCC Unit: **26**
10. Segment Comment: **The maximum annual rate is based on the hourly rate and 8,760 hr/yr. Based on 364 MMBtu/hr maximum heat input rate.**		

Segment Description and Rate: Segment **4** of **10**

1. Segment Description (Process/Fuel Type): **Industrial Processes; In-process Fuel Use; Solid Waste (Tires); General**		
2. Source Classification Code (SCC): **3-90-012-99**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **4.2**	5. Maximum Annual Rate: **34,164**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **Not Applicable**	8. Maximum % Ash: **Not Applicable**	9. Million Btu per SCC Unit: **28**
10. Segment Comment: **The hourly rate is equivalent to approximately 400 tires/hour. Permit currently limits tires to 30 percent of heat input.**		

Segment Description and Rate: Segment **5** of **10**

1. Segment Description (Process/Fuel Type): **Industrial Processes; In-Process Fuel Use; Distillate Oil (Unused); Cement Kiln/Dryer**		
2. Source Classification Code (SCC): **3-90-005-02**	3. SCC Units: **1,000 Gallons Burned**	
4. Maximum Hourly Rate: **Not Applicable**	5. Maximum Annual Rate: **125**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **0.05**	8. Maximum % Ash: **Not Applicable**	9. Million Btu per SCC Unit: **Not Applicable**
10. Segment Comment: **The maximum annual rate is for kiln startup.**		

Segment Description and Rate: Segment **6** of **10**

1. Segment Description (Process/Fuel Type): **Industrial Processes; In-Process Fuel Use; Liquefied Petroleum Gas (Propane); General**		
2. Source Classification Code (SCC): **3-90-010-89**	3. SCC Units: **1,000 Gallons Burned**	
4. Maximum Hourly Rate: **Not Applicable**	5. Maximum Annual Rate: **Not Applicable**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **Not Applicable**	8. Maximum % Ash: **Not Applicable**	9. Million Btu per SCC Unit: **Not Applicable**
10. Segment Comment: **Propane usage is limited to startup in lieu of tires in the first stage of the multistage combustor.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **7** of 10

1. Segment Description (Process/Fuel Type): **Industrial Processes; In-process Fuel Use; Coke; General**		
2. Source Classification Code (SCC): **3-90-008-89**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **Not Applicable**	5. Maximum Annual Rate: **Not Applicable**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **Not Applicable**	8. Maximum % Ash: **Not Applicable**	9. Million Btu per SCC Unit: **Not Applicable**
10. Segment Comment: **The maximum petroleum coke rate will not exceed 91 MMBtu/hr nor 25% of total kiln heat input.**		

Segment Description and Rate: Segment **8** of 10

1. Segment Description (Process/Fuel Type): **Industrial Processes; In-process Fuel Use; Solid Waste (Fly Ash); General**		
2. Source Classification Code (SCC): **3-90-012-89**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **Not Applicable**	5. Maximum Annual Rate: **Not Applicable**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **Not Applicable**	8. Maximum % Ash: **Not Applicable**	9. Million Btu per SCC Unit: **Not Applicable**
10. Segment Comment: **The maximum flyash feed rate will not exceed 19 MMBtu/hr nor 5% of total kiln heat input.**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **9** of **10**

1. Segment Description (Process/Fuel Type): **Industrial Processes; In-process Fuel Use; Natural Gas; Cement Kiln/Dryer**		
2. Source Classification Code (SCC): **3-90-006-02**	3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate: **Not Applicable**	5. Maximum Annual Rate: **Not Applicable**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **Not Applicable**	8. Maximum % Ash: **Not Applicable**	9. Million Btu per SCC Unit: **Not Applicable**
10. Segment Comment: **The maximum natural gas feed rate will not exceed 364 MMBtu/hr which is design capacity of kiln.**		

Segment Description and Rate: Segment **10** of **10** **NEW SEGMENT**

1. Segment Description (Process/Fuel Type): **Industrial Processes; In-Process Fuel Use; AFM – Kiln and Precalciner**		
2. Source Classification Code (SCC): **3-90-012-89**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **See Appendix 1**	5. Maximum Annual Rate: **See Appendix 1**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **See Appendix 1**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **See Appendix 1**
10. Segment Comment: **Segment represent non-hazardous fuel materials: See Appendix 1 for list of AFM categories.**		

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	**010**	**Not Applicable**	**EL**
PM_{10}	**010**	**Not Applicable**	**EL**
Hg	**Not Applicable**	**Not Applicable**	**EL**
SO2	**Not Applicable**	**Not Applicable**	**EL**
NOx	**107,025**	**Not Applicable**	**EL**
CO	**Not Applicable**	**Not Applicable**	**EL**
VOC	**Not Applicable**	**Not Applicable**	**EL**
SAM	**Not Applicable**	**Not Applicable**	**EL**

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:	
3. Potential Emissions: **See Appendix 3** lb/hour tons/year		4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year		
6. Emission Factor: Reference:		7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years	
10. Calculation of Emissions: **See Appendix 3**		
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:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **As currently required, annual compliance testing using EPA Method 5.**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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_{10}**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	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: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Appendix 3**	
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:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **Annual compliance testing using EPA Method 5 (assuming all PM measured is PM_{10}).**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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: **SO_2**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	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: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Appendix 3**	
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:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **As currently required, continuous emissions monitor and annual RATA.**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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: **NO_x**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Appendix 3**	
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 **3**

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: **As currently required, continuous emissions monitor and annual RATA.**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions **2** of **3**

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):	

Allowable Emissions Allowable Emissions **3** of **3**

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):	

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: **CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Appendix 3**	
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:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **As currently required, compliance test using EPA Method 10.**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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: **VOC (as NMHC)**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Appendix 3**	
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:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **As currently required, continuous THC emissions monitor. For compliance purposes, monitor results (THC as propane) are considered to be VOC (VOC as propane).**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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: **THC**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Appendix 3**	
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:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **As currently required, continuous THC emissions monitor. For compliance purposes, monitor results (THC as propane) are considered to be VOC (VOC as propane).**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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: **H114 (Mercury)**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Appendix 3**	
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:	2. Future Effective Date of Allowable Emissions:
3. Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance: **As currently required, material balance by sampling and analysis of raw materials and fuels.**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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 **2**

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **10%** Exceptional Conditions: **10%** Maximum Period of Excess Opacity Allowed: **Not Applicable** min/hour	
4. Method of Compliance: **Not Applicable**	
5. Visible Emissions Comment: **Based on Permit No. 0010087-041-AV**	

Visible Emissions Limitation: Visible Emissions Limitation **2** of **2**

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions: **20%** Exceptional Conditions: **20** % Maximum Period of Excess Opacity Allowed: **Not Applicable** min/hour	
4. Method of Compliance: **Not Applicable**	
5. Visible Emissions Comment: **Based on Permit No. 0010087-041-AV**	

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 **7**

1. Parameter Code: **FLOW**	2. Pollutant(s): **Not Applicable**
3. CMS Requirement: ☐ Rule ☒ Other	
4. Monitor Information... Manufacturer: **SICK AG Environmental Monitoring** Model Number: **FLSE160-350** Serial Number: **7042096**	
5. Installation Date: **Prior to 2001**	6. Performance Specification Test Date: **1/17/01**
7. Continuous Monitor Comment: **Continuous flow monitor based on Permit No. 0010087-043-AV.**	

Continuous Monitoring System: Continuous Monitor **2** of **7**

1. Parameter Code: **EM**	2. Pollutant(s): **NO_x**
3. CMS Requirement: ☐ Rule ☒ Other	
4. Monitor Information... Manufacturer: **SICK AG Environmental Monitoring** Model Number: **GM31-3** Serial Number: **8040 8002**	
5. Installation Date: **Prior to 2001**	6. Performance Specification Test Date: **1/17/01**
7. Continuous Monitor Comment: **NOx CEMS based on Permit No. 0010087-043-AV.**	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor **3** of **7**

1. Parameter Code: **EM**	2. Pollutant(s): **SO_2**
3. CMS Requirement: ☐ Rule ☒ Other	
4. Monitor Information... Manufacturer: **SICK AG Environmental Monitoring** Model Number: **GM31-3** Serial Number: **8040 8002**	
5. Installation Date: **Prior to 2001**	6. Performance Specification Test Date: **1/07/01**
7. Continuous Monitor Comment: **SO_2 CEMS based on Permit No. 0010087-043-AV.**	

Continuous Monitoring System: Continuous Monitor **4** of **7**

1. Parameter Code: **TEMP**	2. Pollutant(s):
3. CMS Requirement: Rule ☒ Other	
4. Monitor Information... Manufacturer: **SICK AG Environmental Monitoring** Model Number: **GM31-3** Serial Number: **8040 8002**	
5. Installation Date: **Prior to 2001**	6. Performance Specification Test Date: **1/17/01**
7. Continuous Monitor Comment: **Continuous temperature monitor to record temperature of the exhaust gases from kiln, in-line kiln/raw mill.**	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor **5** of **7**

1. Parameter Code: **VE**	2. Pollutant(s):
3. CMS Requirement: ☒ Rule ☐ Other	
4. Monitor Information... Manufacturer: **SICK AG Environmental Monitoring** Model Number: **OMD41** Serial Number: **0035 8008**	
5. Installation Date: **Prior to 2001**	6. Performance Specification Test Date: **1/22/01**
7. Continuous Monitor Comment: **COM operates at stack of ESP and is based on Permit No. 0010087-043-AV**	

Continuous Monitoring System: Continuous Monitor **6** of **7**

1. Parameter Code: **EM**	2. Pollutant(s): **THC**
3. CMS Requirement: ☐ Rule ☒ Other	
4. Monitor Information... Manufacturer: **SICK AG Environmental Monitoring** Model Number: **BA-3010** Serial Number: **4387**	
5. Installation Date: **Prior to 7/2001**	6. Performance Specification Test Date: **7/30/01**
7. Continuous Monitor Comment: **THC CEMS for reasonable assurance that facility can meet VOC emission limit. Based on Permit No. 0010087-041-AV and Rule 62-4.070, F.A.C.**	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor **7** of **7**

1. Parameter Code: **EM**	2. Pollutant(s): **CO2**
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: **SICK AG Environmental Monitoring** Model Number: **GM35-04214** Serial Number: **1002 8012**	
5. Installation Date: **03/02/2010**	6. Performance Specification Test Date: **03/29/2010**
7. Continuous Monitor Comment: **Based on 40 CFR 98.83.**	

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)
   ☒ Attached, Document ID: **Appendix 1** ☐ Previously Submitted, Date _____

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)
   ☒ Attached, Document ID: **Appendix 1** ☐ 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)
   ☐ Attached, Document ID:_____ ☒ Previously Submitted, Date **On file with DEP**

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)
   ☐ Attached, Document ID_____ ☐ Previously Submitted, Date _____
   ☒ 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)
   ☐ Attached, Document ID: _____ ☒ Previously Submitted, Date **On file with DEP**
   ☐ Not Applicable

6. Compliance Demonstration Reports/Records:
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested:_____
   _____
   ☐ To be Submitted, Date (if known):_____
   Test Date(s)/Pollutant(s) Tested: _____
   _____
   ☒ 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: _____ ☒ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ ☒ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: ☐ Attached, Document ID: _____
2. Compliance Assurance Monitoring: ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☒ Not Applicable
4. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements Comment

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.

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: **Kiln/Raw Mill – Line 2**

3. Emissions Unit Identification Number: **010**

4. Emissions Unit Status Code **A**	5. Commence Construction Date: **July 25, 2005**	6. Initial Startup Date: **March 10, 2010**	7. Emissions Unit Major Group SIC Code: **32**

8. Federal Program Applicability: (Check all that apply) **Not Applicable**

☐ Acid Rain Unit

☐ CAIR Unit

☐ Hg Budget Unit

9. Package Unit: **Not Applicable**
Manufacturer: Model Number:

10. Generator Nameplate Rating: **Not Applicable** MW

11. Emissions Unit Comment: **Kiln/Raw Mill from the preheater to the clinker cooler. Emissions unit 010 has one emission point, the stack of the in-line kiln/raw mill, designated 2E21. Particulate matter emissions from this emissions unit are controlled by an ESP. The kiln system includes a tire feed system, two (front and calciner) burner systems. The front end burner includes an multi-channel burner to use for AFM.**

Emissions Unit Control Equipment/Method: Control **1** of **3**

1. Control Equipment/Method Description: **High-Efficiency Electrostatic Precipitator (ESP)**
2. Control Device or Method Code: **010**

Emissions Unit Control Equipment/Method: Control **2** of **3**

1. Control Equipment/Method Description: **Selective Non-Catalytic Reduction (SNCR)**
2. Control Device or Method Code: **107**

Emissions Unit Control Equipment/Method: Control **3** of **3**

1. Control Equipment/Method Description: **Multi-Stage Combustion (MSC)**
2. Control Device or Method Code: **025**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **See Comment**
2. Maximum Production Rate: **See Comment**
3. Maximum Heat Input Rate: **400** million Btu/hr
4. Maximum Incineration Rate: **Not Applicable** pounds/hr tons/day
5. Requested Maximum Operating Schedule: **24** hours/day **7** days/week **52** weeks/year **8670** hours/year
6. Operating Capacity/Schedule Comment: **The kiln shall not process more than 212 tons of dry preheater feed and dry flyash per hour (24-hour average) and shall not produce more than 125 tons of clinker per hour (24-hour average). The facility shall not produce more than 156 tons of Portland cement, masonry cement and other specialty products per hour (30 day average). Process and production rates shall be further limited to 1,857,120 tons of dry preheater feed and dry flyash in any consecutive 12-month period, 1,095,000 tons of clinker in any consecutive 12-month period, and 1,366,560 tons of Portland cement in any consecutive 12-month period.**

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: **2E21, Kiln**	2. Emission Point Type Code:	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **Not Applicable**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **Note that the air heater of the Line 1 - raw mill system also exhausts through this ESP.**		
5. Discharge Type Code: **V**	6. Stack Height: **313** feet	7. Exit Diameter: **9.42** feet
8. Exit Temperature: **215**°F	9. Actual Volumetric Flow Rate: **220,000** acfm	10. Water Vapor: **20**%
11. Maximum Dry Standard Flow Rate: **114,640** dscfm	12. Nonstack Emission Point Height: **Not Applicable** feet	
13. Emission Point UTM Coordinates... **Not Determined** Zone: East (km): North (km):	14. Emission Point Latitude/Longitude… **Not Determined** Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment:		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1 of 9**

1. Segment Description (Process/Fuel Type): **Mineral Products: Cement Manufacturing: Dry Process: Preheater/Precalciner Kiln**		
2. Source Classification Code (SCC): **3-05-006-23**	3. SCC Units: **Tons Clinker**	
4. Maximum Hourly Rate: **125**	5. Maximum Annual Rate: **1,095,000**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **Not Applicable**	8. Maximum % Ash: **Not Applicable**	9. Million Btu per SCC Unit: **Not Applicable**
10. Segment Comment: **None**		

Segment Description and Rate: Segment **2 of 9**

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use: Coal : Cement Kiln**		
2. Source Classification Code (SCC): **3-90-002-01**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **15.4**	5. Maximum Annual Rate: **134,769**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **No limit requested**	8. Maximum % Ash: **No limit requested**	9. Million Btu per SCC Unit: **26**
10. Segment Comment: **Coal heat value: 13,000 Btu/lb = 26 MMBtu/ton** **400 MMBtu/hr ÷ 26 MMBtu/ton = 15.4 tons/hr** **@8760 hr/year = 134,769 tons/year**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **3 of 9**

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use: Natural Gas : Cement Kiln**		
2. Source Classification Code (SCC): **3-90-006-02**	3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate: **0.381**	5. Maximum Annual Rate: **3337.1**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **Not Applicable**	8. Maximum % Ash: **Not Applicable**	9. Million Btu per SCC Unit: **1050**
10. Segment Comment: **Natural gas heat value: 1050 Btu/cf = 1050 MMBtu/MMCF** **400 MMBtu/hr ÷ 1050 MMBtu/MMCF = 0.381 MMCF/hr** **@8760 hr/year = 3337.1 MMCF/year**		

Segment Description and Rate: Segment **4 of 9**

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use: Distillate Oil : Cement Kiln**		
2. Source Classification Code (SCC): **3-90-005-02**	3. SCC Units: **Thousand Gallons Burned**	
4. Maximum Hourly Rate: **2.857**	5. Maximum Annual Rate: **25,028**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **1.0**	8. Maximum % Ash: **Not Applicable**	9. Million Btu per SCC Unit: **140**
10. Segment Comment: **This segment is for No. 2 or No. 4 oil** **Distillate oil heat value: 140,000 Btu/gal = 140 MMBtu/10^3 gal** **400 MMBtu/hr ÷ 140 MMBtu/10^3 gal = 2.857 (10^3 gal)/hr = 2857 gallons/hour** **@8760 hr/year = 25028 (10^3 gal)/year**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **5 of 9**

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use: Propane : Cement Kiln**		
2. Source Classification Code (SCC): **3-90-010-99**	3. SCC Units: **Thousand Gallons Burned**	
4. Maximum Hourly Rate: **4.255**	5. Maximum Annual Rate: **37,277**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **Not Applicable**	8. Maximum % Ash: **Not Applicable**	9. Million Btu per SCC Unit: **94**
10. Segment Comment: **Propane heat value: 94,000 Btu/gal = 94 MMBtu/10^3 gal** **400 MMBtu/hr ÷ 94 MMBtu/10^3 gal = 4.255 (10^3 gal)/hr = 4255 gallons/hour** **For startup only**		

Segment Description and Rate: Segment **6 of 9**

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use: Coke: Cement Kiln**		
2. Source Classification Code (SCC): **3-90-008-99**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **15.04**	5. Maximum Annual Rate: **131,729**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **No limit requested**	8. Maximum % Ash: **No limit requested**	9. Million Btu per SCC Unit: **26.6**
10. Segment Comment: **Coke heat value: 13,300 Btu/lb = 26.6 MMBtu/ton** **400 MMBtu/hr ÷ 26.6 MMBtu/ton = 15.04 tons/hr** **@8760 hr/year = 131,729 tons/year**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **7 of 9**

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use: Tires** **Supplemental Fuel at up to 30% of heat value (120 MMBtu/hour)**		
2. Source Classification Code (SCC): **3-90-012-99**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **5**	5. Maximum Annual Rate: **53,800**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **No limit requested**	8. Maximum % Ash: **No limit requested**	9. Million Btu per SCC Unit: **24**
10. Segment Comment: **Tires heat value: 12,000 Btu/lb = 24 MMBtu/ton** **120 MMBtu/hr ÷ 24 MMBtu/ton = 5 tons/hr** **@8760 hr/year = 53800 tons/year**		

Segment Description and Rate: Segment **8 of 9**

1. Segment Description (Process/Fuel Type): **In-Process Fuel Use: High carbon fly ash** **Supplemental Fuel at up to 10% of dry preheater feed, at up to 65% carbon (LOI)**		
2. Source Classification Code (SCC): **3-90-012-99**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **14**	5. Maximum Annual Rate: **122,421**	6. Estimated Annual Activity Factor: **Not Applicable**
7. Maximum % Sulfur: **No limit requested**	8. Maximum % Ash: **No limit requested**	9. Million Btu per SCC Unit: **12**

Segment Description and Rate: Segment **9** of **9** **NEW SEGMENT**

1. Segment Description (Process/Fuel Type): **Industrial Processes; In-Process Fuel Use; AFM – Kiln and Precalciner**		
2. Source Classification Code (SCC): **3-90-012-89**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **See Appendix 1**	5. Maximum Annual Rate: **See Appendix 1**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **See Appendix 1**	8. Maximum % Ash:	9. Million Btu per SCC Unit: **See Appendix 1**
10. Segment Comment: **Segment represent non-hazardous fuels: See Appendix 1 for list of AFM categories.**		

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	**010**	**Not Applicable**	**EL**
PM_{10}	**010**	**Not Applicable**	**EL**
Hg	**Not Applicable**	**Not Applicable**	**EL**
SO2	**Not Applicable**	**Not Applicable**	**EL**
NOx	**107, 025**	**Not Applicable**	**EL**
CO	**Not Applicable**	**Not Applicable**	**EL**
VOC	**Not Applicable**	**Not Applicable**	**EL**

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:	
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year		
6. Emission Factor: Reference:		7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years	
10. Calculation of Emissions: **See Appendix 3**		

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 ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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: **As currently required, annual compliance testing using EPA Method 5.**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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: **PM10**	2. Total Percent Efficiency of Control:	
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year		
6. Emission Factor: Reference:		7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years	
10. Calculation of Emissions: **See Appendix 3**		

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 ___

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: **Annual compliance testing using EPA Method 5 (assuming all PM measured is PM_{10}).**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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: **H114 (Mercury)**	2. Total Percent Efficiency of Control:	
3. Potential Emissions: **See Appendix 3** lb/hour tons/year		4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year		
6. Emission Factor: Reference:		7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years	
10. Calculation of Emissions: **See Appendix 3**		

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 ___

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: **As currently required, material balance by sampling and analysis of raw materials and fuels.**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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:	
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year		
6. Emission Factor: Reference:		7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years	
10. Calculation of Emissions: **See Appendix 3**		

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 ___

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: **As currently required, continuous emissions monitor and annual RATA.**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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: **NOx**	2. Total Percent Efficiency of Control:	
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year		
6. Emission Factor: Reference:		7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years	
10. Calculation of Emissions: **See Appendix 3**		

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 ___

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: **As currently required, continuous emissions monitor and annual RATA.**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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: **CO**	2. Total Percent Efficiency of Control:	
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year		
6. Emission Factor: Reference:		7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years	
10. Calculation of Emissions: **See Appendix 3**		

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 ___

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: **As currently required, continuous emissions monitor and annual RATA.**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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: **VOC (as NMHC)**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years
10. Calculation of Emissions: **See Appendix 3**	

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 ___

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: **For compliance purposes, monitor results (THC as propane) are considered to be VOC (VOC as propane).**	
6. Allowable Emissions Comment (Description of Operating Method):	

Allowable Emissions Allowable Emissions __ of ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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 **2**

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: ☒ Rule ☐ Other
3. Allowable Opacity: Normal Conditions:**Not Applicable** Exceptional Conditions: **Not Applicable** % Maximum Period of Excess Opacity Allowed: **Not Applicable** min/hour	
4. Method of Compliance: **Not Applicable**	
5. Visible Emissions Comment: **Based on Permit No. 0010087-043-AV**	

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 **8**

1. Parameter Code: **FLOW**	2. Pollutant(s): **Not Applicable**
3. CMS Requirement: ☐ Rule ☒ Other	
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Based on Permit No. 0010087-043-AV.**	

Continuous Monitoring System: Continuous Monitor **2** of **8**

1. Parameter Code: **EM**	2. Pollutant(s): **NO_x**
3. CMS Requirement: ☐ Rule ☒ Other	
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **NOx CEMS based on Permit No. 0010087-043-AV.**	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor **3** of **8**

1. Parameter Code: **EM**	2. Pollutant(s): **SO_2**
3. CMS Requirement: ☐ Rule ☒ Other	
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **SO_2 CEMS based on Permit No. 0010087-043-AV.**	

Continuous Monitoring System: Continuous Monitor **4** of **8**

1. Parameter Code: **TEMP**	2. Pollutant(s): **Not Applicable**
3. CMS Requirement: Rule ☒ Other	
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Continuous temperature monitor to record temperature of the exhaust gases.**	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor **5** of **8**

1. Parameter Code: **VE**	2. Pollutant(s): **Not Applicable**
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **COM operates at stack of ESP and is based on Permit No. 0010087-041-AV and 40 CFR 63.1350(c)(1).**	

Continuous Monitoring System: Continuous Monitor **6** of **8**

1. Parameter Code: **EM**	2. Pollutant(s): **THC**
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

H. CONTINUOUS MONITOR INFORMATION

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

Continuous Monitoring System: Continuous Monitor **7** of **8**

1. Parameter Code: **EM**	2. Pollutant(s): **CO**
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Based on Permit No. 0010087-041-AV.**	

Continuous Monitoring System: Continuous Monitor **8** of **8**

1. Parameter Code: **EM**	2. Pollutant(s): **CO2**
3. CMS Requirement:	☒ Rule ☐ Other
4. Monitor Information... Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment: **Based on 40 CFR 98.83.**	

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)
   ☒ Attached, Document ID: **Appendix 1** ☐ Previously Submitted, Date _____

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)
   ☐ Attached, Document ID: **N/A** ☐ 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)
   ☐ Attached, Document ID: **N/A** ☐ 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)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable

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)
   ☒ Attached, Document ID: **Appendix 1** ☐ Previously Submitted, Date _____
   ☐ Not Applicable

6. Compliance Demonstration Reports/Records:
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☒ 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: _____ ☒ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ ☒ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: ☐ Attached, Document ID: App. 1_____ ☐ Not Applicable
2. Compliance Assurance Monitoring: ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☐ Not Applicable

Additional Requirements Comment

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.

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: **Grinding and Screening Operations for AFM**

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

4. Emissions Unit Status Code **C**	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: **32**

8. Federal Program Applicability: (Check all that apply)

☐ Acid Rain Unit

☐ CAIR Unit

☐ Hg Budget Unit

9. Package Unit:
Manufacturer: Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment: **Emission unit consists of equipment for alternative fuel material (see Appendix 1) processing.**

Emissions Unit Control Equipment/Method: Control 1 of 1

1. Control Equipment/Method Description: **Water Spray as needed**
2. Control Device or Method Code: **016**

B. EMISSIONS UNIT CAPACITY INFORMATION

(Optional for unregulated emissions units.)

Emissions Unit Operating Capacity and Schedule

1. Maximum Process or Throughput Rate: **175, 000** tons per year
2. Maximum Production Rate:
3. Maximum Heat Input Rate: million Btu/hr
4. Maximum Incineration Rate: pounds/hr tons/day
5. Requested Maximum Operating Schedule: hours/day days/week weeks/year **8670** hours/year
6. Operating Capacity/Schedule Comment: **The processing equipment is expected to handle a nominal 20 ton/hr or 175,000 ton of AFM per year. The amount will depend on density and other material factors. Although a continuous (8760 hours/yr) operating schedule is being requested, the processing equipment will not run 8760 hours/yr due to the semi-batch processing nature of alternative fuel materials.**

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:	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking: **See Appendix 1, Table 1, 2 shredders and 2 screens, for more details.** **This processing equipment will be located in the raw materials storage building.**		
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: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates... Zone: East (km): North (km):	14. Emission Point Latitude/Longitude… Latitude (DD/MM/SS) Longitude (DD/MM/SS)	
15. Emission Point Comment: To be completed		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment **1** of **1**

1. Segment Description (Process/Fuel Type): **Industrial Processes; Mineral Products; Cement Manufacturing (Dry Process); Other Not Classified** **(Alternate Fuel Material Preparation)**		
2. Source Classification Code (SCC): **3-05-006-99**	3. SCC Units: **Tons Fuel Material**	
4. Maximum Hourly Rate:	5. Maximum Annual Rate: **175,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: **See Appendix 1, Table 1, Grinder and screen, for more details**		

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			**NS**
PM_{10}			**NS**

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:	
3. Potential Emissions: **See Appendix 3** lb/hour tons/year	4. Synthetically Limited? ☐ Yes ☒ No	
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year		
6. Emission Factor: Reference:		7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years	
10. Calculation of Emissions: **See Appendix 3**		

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 ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

Allowable Emissions Allowable Emissions __ of ___

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):	

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: **PM10**	2. Total Percent Efficiency of Control:	
3. Potential Emissions: **See Appendix 3** lb/hour tons/year		4. Synthetically Limited? ☐ Yes ☒ No
5. Range of Estimated Fugitive Emissions (as applicable): to tons/year		
6. Emission Factor: Reference:		7. Emissions Method Code:
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: ☐ 5 years ☐ 10 years	
10. Calculation of Emissions: **See Appendix 3**		

EMISSIONS UNIT INFORMATION
Section [3] of [3] Grinding and Screening Operations for AFM

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: **VE20**	2. Basis for Allowable Opacity: [X] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **Annual VE testing**	
5. Visible Emissions Comment: **Request per FDEP Guidance Memoranda DARM-PER-33 that VE testing not be required.**	

Visible Emissions Limitation: Visible Emissions Limitation _ of _

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment:	

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___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement: ☐ Rule ☐ Other	
4. Monitor Information... Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment:	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement: ☐ Rule ☐ 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 [3] of [3] Grinding and Screening Operations for AFM

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)
   ☒ Attached, Document ID: **Appendix 1** ☐ Previously Submitted, Date _____

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)
   ☐ Attached, Document ID: **N/A** ☐ 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)
   ☐ Attached, Document ID: **N/A** ☐ 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)
   ☐ Attached, Document ID: _____ ☐ Previously Submitted, Date _____
   ☒ Not Applicable

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)
   ☒ Attached, Document ID: **Appendix 1** ☐ Previously Submitted, Date _____
   ☐ Not Applicable

6. Compliance Demonstration Reports/Records:
   ☐ Attached, Document ID: _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ Previously Submitted, Date: _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☐ To be Submitted, Date (if known): _____
   Test Date(s)/Pollutant(s) Tested: _____
   ☒ 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: _____ ☒ Not Applicable

I. EMISSIONS UNIT ADDITIONAL INFORMATION (CONTINUED)

Additional Requirements for Air Construction Permit Applications

1. Control Technology Review and Analysis (Rules 62-212.400(10) and 62-212.500(7), F.A.C.; 40 CFR 63.43(d) and (e)): ☐ Attached, Document ID: _____ ☒ Not Applicable
2. Good Engineering Practice Stack Height Analysis (Rules 62-212.400(4)(d) and 62-212.500(4)(f), F.A.C.): ☐ Attached, Document ID: _____ ☒ Not Applicable
3. Description of Stack Sampling Facilities: (Required for proposed new stack sampling facilities only) ☐ Attached, Document ID: _____ ☒ Not Applicable

Additional Requirements for Title V Air Operation Permit Applications

1. Identification of Applicable Requirements: ☐ Attached, Document ID: App. 1_____ ☐ Not Applicable
2. Compliance Assurance Monitoring: ☐ Attached, Document ID: _____ ☐ Not Applicable
3. Alternative Methods of Operation: ☐ Attached, Document ID: _____ ☐ Not Applicable
4. Alternative Modes of Operation (Emissions Trading): ☐ Attached, Document ID: _____ ☐ Not Applicable

Additional Requirements Comment

1. **Application Description**
2. **Alternative Fuel Materials Research**
3. **PSD Applicability Analysis**

APPENDIX

187-14-02

KOOGLER & ASSOCIATES, INC.
ENVIRONMENTAL SERVICES

1. **Application Description**

Description

187-14-02

KOOGLER & ASSOCIATES, INC.
ENVIRONMENTAL SERVICES

APPENDIX 1

ARGOS CEMENT LLC

FACILITY ID: 0010087

APPLICATION FOR AIR CONSTRUCTION PERMIT AUTHORIZING ALTERNATIVE FUEL MATERIALS

Description

APPENDIX 1

TABLE OF CONTENTS

APPENDIX 1

ARGOS CEMENT LLC

FACILITY ID: 0010087

APPLICATION FOR AIR CONSTRUCTION PERMIT AUTHORIZING ALTERNATIVE FUEL MATERIALS

Description

1. INTRODUCTION

Argos Cement LLC (Argos) owns and operates a cement plant located in Newberry, Florida, designated as the Argos Newberry Cement Plant. The cement plant consists of two dry-process in-line kiln/raw mill systems (Line 1 and Line 2) each kiln has a preheater tower/precalciner burner and clinker cooler. Line 1 is permitted to produce 800,000 tons of clinker per calendar year and Line 2 is permitted to produce 1,095,000 tons of clinker per 12-month rolling total. The Department of Environmental Protection (DEP) issued an air construction permit for Line 1 in 1996 and the initial construction began in 1997 and operation in 1999. DEP issued an AC permit construction for line 2 in which construction began in July 2005 and operation in March 2010.

As discussed in the regulatory analysis, below the requested permit will assure compliance with all federal, state, and local regulations. This application does not request any increase in air emission limits, production limits, or any other form of operation limits.

Argos requests authorization for the installation of equipment for receiving, processing, and injecting of AFM categories into the pyroprocessing system. The facility is currently authorized through prior construction permits and its Title V air operation permit to process and inject the following fuels.

Currently Permitted Fuels	
Kiln No. 1	**Kiln No. 2**
• Natural Gas • Coal • No. 2 fuel oil (unused) • Petroleum coke • Fly ash • Whole tires • Propane	• Natural gas • Coal • Distillate oil • Petroleum coke • Flyash • Whole tires • Propane (during startup/shutdown only)

The new equipment would expand the categories of fuel materials that may be used in both kiln systems. Argos requests authority to install equipment to prepare and inject the following AFM categories, alone or in any combination:

Requested Additional Fuel Material Categories
Kiln Nos. 1 and 2
1. Engineered fuel
2. Tire-derived fuel
3. Roofing materials
4. Plastics
5. Agricultural biogenic materials
6. Cellulosic biomass - untreated
7. Cellulosic biomass - treated
8. Carpet-derived fuel
9. Petroleum Byproducts

FDEP has authorized the use of these AFMs for every other operating cement plant in Florida and Argos requests the same authorization for the Argos Newberry Cement plant. These other cement plants in Florida are all similarly designed, modern precalciner kilns (none is a wet kiln or dry long kiln or preheater kiln). Modern kilns are designed to maximize heat input efficiency and minimize energy input per ton of product. All of these precalciner kilns began operation after 1997 and have similar air emission limits. FDEP has issued the following AC permits for AFM use in cement kilns.

1. Titan Florida LLC: 0250020-031-AC
2. Cemex Miami: 0250014-045-AC
3. Cemex Brooksville South: 0530021-039-AC
4. American Cement Company: 1190042-009-AC
5. Suwannee American Cement: 1210465-023-AC

Currently, most of these kilns regularly use AFM to replace traditional fuels (e.g.,coal) and substitute for virgin raw materials (e.g., silica/sand) with the ash resulting from AFM. As discussed below, numerous groups (see Appendix 2) have studied AFM behavior in modern precalciner kilns and shown with proper kiln operation that AFM have negligible impacts on emissions compared to traditional fuels.

Potential impacts of AFM categories are discussed in detail in Appendix 2 for three areas of concern.

1) Air Emissions Impacts
2) Kiln Structure Impacts
3) Clinker Quality Impacts

Of greatest importance for this permit application is the effect of AFM use on air emissions from the kiln system. The section addressing potential air emissions details the pollutants of concern to FDEP and EPA. For a broader perspective, this section includes European Union emission data demonstrating the relative independence of these pollutant emissions from fuel type.

This permit application reviews the above listed nine AFM categories for the purposes of determining PSD applicability. Subsequent to construction and shakedown of the AFM injection system and processing equipment, Argos will annually review kiln emissions per, Rule 62-212.300(1)(e), F.A.C.

1.2 ALTERNATIVE FUEL MATERIAL (AFM) BENEFITS

The practice of using AFM in cement kilns is well documented and has been tried and tested for over 40 years. Both the U.S. EPA and European Union continue to promote the use of AFM for cement kilns over fossil fuels.[1,2] Argos believes this is a beneficial project for the following reasons:

1. Increased recovery of materials for use as a fuel is a form if recycling which reduces landfilling. This matches the goals of the State of Florida efforts to increase waste diversion for re-use or recycling,[3] Efficient thermal combustion of AFMs in a cement kiln not only utilizes the heat content of the materials that would otherwise have been landfilled, the generated ash also supplies essential ingredients (silica, aluminum, calcium, iron, etc.) and becomes a component of the final product (cement).

2. Reduction of greenhouse gas emissions by reducing source material transportation, and reducing methane emissions from landfilled materials. The use of AFM in cement production can safely eliminate a substantial amount of landfilled waste, as well as reduce environmental impacts associated with mining and transport of fossil fuels. Similarly, greenhouse gas emissions are reduced by eliminating landfilling, which generates methane gas as a byproduct of anaerobic decomposition. The greenhouse gas potential of methane is 25 times greater than that of the carbon dioxide produced during combustion. A significant EPA-funded study indicates that there are significant and quantifiable overall environmental air emissions benefits to waste combustion compared to landfilling with gas reclamation[4].

3. Increase availability and stability of energy sources through the use of locally generated, processed, and transported energy sources in comparison to conventional fuels (i.e., coal which is transported from around the world).

4. Promotion of related recycling and recovery business activities (i.e., employment, taxable income) in the State.

Argos views its effort to promote the beneficial reuse of these recovered materials in cement production to be in concert with the guidance of the EPA[2] and European IPPC Bureau[5]. The World Business Council for Sustainable Development ranks the United States as 13th in the list of countries replacing conventional fuels with alternative fuel materials including countries such as Germany and

[1] EPA Cement Sector Report, Trends in Beneficial Use of Alternative Fuels and Raw Materials. October 2008.
[2] Cement, Lime and Magnesium Oxide Manufacturing Facilities, (last visited June 26, 2014) http://eippcb.jrc.ec.europa.eu/reference/BREF/CLM_Published_def.pdf
[3] Florida Statute Section 366.91 and http://www.dep.state.fl.us/waste/recyclinggoal75/default.htm (last visited June 26, 2014)
[4] Rosenthal, E. *Europe Finds Clean Energy in Trash, but U.S. Lags*. 2011 [cited 2011 3/10/2011]; Available from: http://www.nytimes.com/2010/04/13/science/earth/13trash.html?_r=1
[5] Cement, Lime and Magnesium Oxide Manufacturing Facilities, May 2010, Table 4.16, http://eippcb.jrc.ec.europa.eu

Switzerland[6]. In 2012, German cement plants replaced conventional fuels with AFM by 60 percent[7] of heat input on average.

In this permitting application, Argos requests authority for the construction of gravimetric and pneumatic AFM processing, handling, and injection systems for input to the precalciner chamber and main kiln burner.

1.3 AFM - BASIS FOR PSD APPLICABILITY ANALYSIS

This analysis compares baseline actual emissions with projected actual PSD pollutant emissions and establishes whether the requirements of subsection 62-212.400(4) through (12), F.A.C. are applicable. Based on the requirements of Rule 62-212.300(1)(e), F.A.C., Argos proposes the following monitoring, reporting and recordkeeping provisions for the requested AC permit.

a. The permittee shall monitor the emissions of any PSD pollutant that the Department identifies could increase as a result of the construction or modification and that is emitted by any emissions unit that could be affected; and, using the most reliable information available, calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change. Emissions shall be computed in accordance with the provisions in Rule 62-210.370, F.A.C.

Note that in other similar AC permits, the PSD pollutants reviewed have varied. For this permit, Argos requests that NOx, SO2, CO and PM be reviewed.

b. The permittee shall report to the Department within 60 days after the end of each calendar year following one calendar year after the calendar year of completing equipment shakedown and one AFM category assessment period. The report will set out the unit's future actual annual emissions during the calendar year that preceded submission of the report. The report shall contain the following:

   1) The name, address and telephone number of the owner or operator of the major stationary source;

   2) The actual emissions calculations pursuant to the provisions of 62-210.370, F.A.C., which are provided in Appendix C of this permit;

   3) If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and

[6] Development, W.B.C.f.S., *Guidelines for the Selection and Use of Fuels and Raw Materials in the Cement Manufacturing Process*, 2005, http://www.wbcsd.org/DocRoot/Vjft3qGjo1v6HREH7jM6/tf2-guidelines.pdf (last visited April 2, 2011)

[7] Verein Deutsche Zementindustrie, Environmental Data of the German Cement Industry 2009 http://www.vdz-online.de/fileadmin/gruppen/vdz/3LiteraturRecherche/Umweltdaten/Umweltdaten_2012_DE_GB.pdf (last visited June 26, 2014)

4) Any other information that the owner or operator wishes to include in the report.

c. The information required to be documented and maintained pursuant to subparagraphs 62-212.300(1)(e)1 and 2, F.A.C., shall be submitted to the Department, which shall make it available for review to the general public.

Note that the item b. above is written to clarify the timing of when PSD reports should be submitted relative to completing the construction permitted activities. Similar to the other AFM permits, Argos proposes specific acceptance criteria of AFM categories that are not based on a specific fuel vendor or geographic location but on the merits of individual AFM categories compliance with air permitting regulations has been demonstrated. These criteria are addressed below in Section 3.

2. REGULATORY APPLICABILITY ANALYSIS

2.1 FEDERAL

Greenhouse Gas Tailoring Rule for PSD Analysis, Rule 62-210.200 and 400, F.A.C.
– Applicable

FDP adopted EPA criteria for determination of whether PSD applies to greenhouse gas emissions. EPA Tailoring Rule was published in the Federal Register on June 3, 2010. A proposed project at an existing major stationary source is considered "subject to regulation" if the construction project causes an increase and a net increase of GHG emissions by 75,000 tpy CO2e or more.

The PSD applicability analysis described in this application determines if the proposed project is subject to regulation for GHG. Note that if the project is determined to not have an increase or a net increase of 75,000 tpy CO2e from this construction, the project is not subject to regulation of GHG regardless of other determinations of PSD pollutants.

NSPS Subpart CCCC (New Units), 40 CFR 60.2000-60.2265
– Not Applicable

The 2011 version of Subpart CCCC (as amended and finalized February 7, 2013) applies only to new units (constructed after June 2010). The two Newberry Cement Plant kilns were both constructed before June 2010 and therefore "existing" units and not "new" units for purposes of Subpart CCCC. The only exception would be if the kilns were to be "modified" or "reconstructed." This project does not cause a modification or reconstruction.

NSPS Subpart DDDD (Existing Units), 40 CFR 60.2500-60.2875 adopted in 62-204.800, F.A.C.
– Applicable to Kiln 1: EU002/003 and Kiln 2: EU009/010

NSPS Subpart DDDD establishes "emission guidelines" for states and Florida has adopted those rules and established compliance schedules for the control of emissions from existing units. On December 20, 2013, the Department proposed a state plan to implement Subpart DDDD which was then submitted to EPA on February 6, 2014 for approval. The plan is under EPA review. The rules are currently enforceable by the state, however. Argos has notified the Department that the use of discarded whole tires

requires the Argos kiln systems to be subject to Subpart DDDD. The kilns are "existing" units under DDDD and this project does not cause a modification under NSPS.

Argos does not believe that the use of AFM does not affect the existing unit status per subpart DDDD. Subpart DDDD, a modification is defined as "any physical change in the unit or change in the method of operating it that increases the amount of any section 129 or Section 111, as applicable, air pollutant emitted." EPA states in the response to comments on this rule;

"Regarding compliance demonstrations for fuel switches, consistent with the preamble to the proposed rule (76 FR 80459), an existing source will not be considered a new source solely due to a combustion material switch. Assuming new source applicability is not triggered, existing sources that change fuels or materials are considered existing sources and, as such, they must be in compliance on the date they begin combusting the new fuel or material."[8]

NESHAP 63 Subpart LLL (Cement MACT), 40 CFR 63.1340-63.1358
– Applicable to EU002, 004, 005, 006, 007, 008, 009, 011, 012, 013

40 CFR 63 Subpart LLL (commonly referred to as the Cement MACT) currently applies to individual equipment and emission units at the Newberry Cement Plant other than to the cement kilns and in-line raw mills. Because the cement kilns and raw mills use waste tires as a fuel, they are subject to NSPS Subpart DDDD standards, the federal Cement MACT does not apply to those units. The Cement MACT does apply to all other applicable equipment and units at the plant.

NESHAP 63 Subpart EEE, 40 CFR 63.1200-63.1218
– Not Applicable

If the kiln were to burn hazardous waste, it would be subject to and regulated under Subpart EEE. The Argos kilns have not in the past and there is absolutely no intention in the future for the kilns to use "hazardous waste" as a fuel.

NSPS Subpart Eb (Large MWCs), 40 CFR 60.50b-60.59b
– Not Applicable

[8] Summary of Public Comments and Responses for Commercial and Industrial Solid Waste Incineration Units: Reconsideration and Final Amendments; Non-hazardous Secondary Materials that are solid waste: Final Rule Volume 1: CISWI

NSPS Subpart Eb regulating large municipal waste combustors does not apply to cement kilns. The federal rules specifically provide as follows: “Cement kilns firing municipal solid waste are not subject to this subpart.” 40 CFR 60.50b(p).

2.2 STATE

Rule 62-296.407, F.A.C., has been repealed. Other emission limits, however, ensures that these repealed emission limits are achieved.

3. AFM INFRASTRUCTURE AND OPERATIONS

3.1 AFM ACCEPTANCE

Argos is currently authorized to fire the following fuels: coal, whole tires, oil, petroleum coke, flyash, propane, and natural gas. Argos requests that the Department clarify that the pyro-processing kilns are capable of firing various types of coals (e.g. bituminous, sub-bituminous). Argos requests that the Department expressly prohibit firing the following materials in the pyroprocessing systems as part of the permit: hazardous waste as defined in 40 CFR 261, nuclear waste, and radioactive waste. Argos will take all precautions and complete any required documentation to assure that it will not knowingly fire biomedical waste or asbestos-containing materials (ACM) per 40 CFR 61 subpart M. If Argos identifies delivered material that is not allowed to be used as a fuel material under its air permit, Argos will contact the supplier and shall return, or properly dispose the material. Argos will store its records regarding AFM onsite for at least five years and available for inspection upon request.

3.2 DESCRIPTION OF AFM

1) **Engineered Fuel (EF)** engineered to have targeted, consistent fuel properties such as: calorific value, moisture, particle size, ash content, and volatility. The specific targeted properties are established based on available alternative fuel material supply and are carefully controlled through blending of nonhazardous combustible materials or through separation of non-hazardous incombustible materials from combustible materials (mixes of any alternative fuels where the blending and processing may also include the addition of on-specification and off-specification used oils or other non-hazardous liquids to ensure consistent and predictable fuel properties).

2) **Tire-Derived Fuel (TDF)** includes whole and shredded tires with or without steel belt material including portions of tires such as tirefluff.

3) **Roofing materials** consists of roofing shingles and related roofing materials when the bulk of the incombustible grit material has been separated and when the material is not subject to regulations as an asbestos-containing material per 40 CFR 61 subpart M.

4) **Plastics** includes materials such as polyethylene plastic used in agricultural and silvicultural operations. This “plastics” category may include incidental amounts of chlorinated plastics. *See Appendix 3 where Argos addresses the negative impact of chlorinated plastics on the kiln system and cement product which further ensures plastics will include only limited amounts of chlorinated plastics.*

5) **Agricultural Biogenic Materials** includes materials such as peanut hulls, rice hulls, corn husks, citrus peels, cotton gin byproducts, animal bedding, and other similar types of materials.

6) **Cellulosic Biomass-untreated** includes materials such as untreated lumber, tree stumps, tree limbs, slash, bark, sawdust, sander dust, wood chips scraps, wood scraps, wood slabs, wood millings, wood shavings, and processed pellets made from wood or other forest residues.
7) **Cellulosic Biomass-treated** includes preservative-treated wood that may contain treatments such as creosote, copper-chromium-arsenic (CCA), or AQC, painted wood, or resinated woods (plywood, particle board, medium density fiberboard, oriented strand board, laminated beams, finger-jointed trim and other sheet goods).
8) **Carpet-Derived Fuel** includes shredded new, reject or used carpet. Note that the material may contain incidental related materials (e.g., tack-down strips, nails, etc.).
9) **Petroleum Byproducts** includes used oil (on-spec and off-spec) as regulated per 40 CFR 279. In addition, this category includes coal tar sludge and carbon black residue (commonly known as charcoal).
10) **AFM Mix** a blended combination of two or more of any of the above materials.

3.3 AFM Receiving, Processing, Transport, Handling, and Storage

3.3.1 Receiving

All AFM categories will be transported within the facility by vehicle which will be covered as needed to prevent fugitive emissions. Most materials such as carpet, plastic, paper or oils will likely be delivered in large containers, but other materials such as roofing shingles, peanut hulls, engineered fuels, sawdust, wood shavings, etc. may be delivered loose.

Upon initial shipment of each AFM category, Argos will sample and analyze in a manner consistent with industry standards for quality assurance and quality control to ensure that representative data is collected. All records and results of analyses will be maintained at the facility as required for currently permitted fuels. Additional details of the proposed sampling and analysis are described in Section 3.7.

3.3.2 PROCESSING

The raw materials storage building will serve to prepare materials prior to injection. AFM, other than AFM categories 5 and 6, will be stored under cover to keep dry and to prevent rain/storm water contact. Dust suppression in storage areas will consist of water sprays, as needed. Any stored material causing nuisance odors will be removed from the facility. Materials will normally arrive ready for injection.

As needed to ensure the AFM is appropriately sized and sorted, Argos may further process the AFM in the raw materials storage building. The equipment consists of two shredders and a screen. Over-sized materials which require size reduction to combust, as needed, can be passed through either of two shredders; primary and secondary. The secondary shredder may be used in line to further reduce the size with the feeding system (see Figure 2.). Depending on the material, the material may also be screened to ensure uniform particle size and/or dirt removal and passed through a belt magnet for metal removal. The proposed processing equipment has a design capacity of a nominal 20 ton/hr, depending on material characteristics.

After processing is complete, materials will be moved by mobile equipment (e.g., front loader, truck and trailer, etc.) from storage to a hopper and injection system into the pyro processing system at either the main burner or the precalciner burner (see Figures 3-5). Each kiln is proposed to have two injection systems; one at the precalciner and one at the main burner. Materials may be injected pneumatically or gravimetrically into the pyro processing system.

Estimates of emissions from on-site material transport, storage, handling, and processing are provided in Table 1. Figure 2. Shows the AFM processing system flow sheet.

As noted above, Argos requests that the permit identify the processing equipment in the Raw material storage building as a separate emissions unit, “Grinding and Screening Operations for AFM.” This unit is expected to use electric engines.

As a conservative measure, Argos has assumed proposed primary and secondary shredders, screens and transportation of AFM is assumed to apply to all materials (20 ton/hr x 8760 hr/yr = 175,200 tpy, rounded to 175,000 tpy) and therefore each piece of equipment will have a design annual capacity of 175,000 ton/yr. Based on the experience of other Florida cement plants and the reality of operating

separate injection systems, the systems will have logistics slowdowns and down time periods, and are not expected to operate 24/7.

3.3.3 Transport, Handling, and Storage at the Plant

Table 1, steps 1-8, includes fugitive emissions from vehicle transport on-site which is not a regulated portion of any facility emissions unit. However, fugitive emissions at a Portland cement plant must be accounted for purposes of determining whether PSD applies. Argos will transport and store AFM in covered vehicles or containers as needed to control fugitive emissions. Some materials such as virgin biomass (typically 15 to 30 percent moisture) contain enough moisture that cover is not required while in transport. Figure 1 shows the transport route to be taken by trucks delivering AFM. Vehicles will enter through the front gate to the raw materials storage building. This route is 0.65 miles each way for a total trip of 1.3 miles. Argos plans to store the AFM in either the raw materials storage building, covered piles or in silos.

3.4 AFM Injection Equipment Description

The design throughput capacity of each of four potential injection systems is expected to be a nominal 10-15 tons/hour based on experience of the vendor (Schenk Feeder or equivalent) and Argos personnel. These systems will vent primarily to the kiln. Fugitive emissions from the loading are accounted for in the estimate of emissions in Table 1. The capacity is dependent on various factors such as density, flowability, or bulk surface tension. The rate of input is determined by weigh scales or parameters coorelated to input rate (e.g., screw conveyor revolving rate).

Argos is investing significant capital into the AFM processing and injection systems. The injection systems each have an expected design heat input capacity to replace nearly all fossil fuels. In terms of rate of heat input, this amounts to 364 mmbtu/hr for line 1 and 400 mmbtu/hr for line 2, with approximately 60 percent of heat input going to the precalciner and 40 percent going to the main burner system. The injection system may have multiple entry points to the precalciner, which are needed to handle a broad range of AFM. The main burner systems were originally installed on both kilns with multi-port holes to provide opportunity for total replacement of fossil fuel. These tonnages are dependent on the material properties and dosages to the systems and will be determined through injection system assessments. Conservatively assuming all injection systems running at full operation

for 8760 hours per year would require more material than that projected 175,000 tons to be processed, and therefore all of the equipment is not expected to be operated at maximum rates continuously.

Argos estimates that the time frame for completing equipment installation (following issuance of the air construction permit) will take approximately twelve to twenty-four months. Following completion of equipment installation, Argos will begin to introduce each category of the requested AFM and will need time to complete the shakedown of the equipment. Argos therefore requests a five-year construction permit for this project.

TABLE 1. FUGITIVE EMISSIONS ESTIMATE – TRANSPORT, STORAGE, HANDLING, AND PROCESSING

New Unit "Grinding and Screening Operations for AFM" - 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	AFM Transport to Piles[a]	10,341 miles	100%	0.556 lb/VMT	0.453 lb/VMT	0.111 lb/VMT	2.87 tons/yr	2.34 tons/yr	0.58 tons/yr
2	Store in raw material building/Covered Pile or Silos	175,000 tons	100%	*negligible, stored under cover*					
3	Loader[b]	175,000 tons	100%	1.40E-04 lb/ton	4.60E-05 lb/ton	1.30E-05 lb/ton	1.23E-02 tons/yr	4.03E-03 tons/yr	1.14E-03 tons/yr
4a	Primary Shredder/tertiary crushing[b]	10,341 tons	100%	1.20E-03 lb/ton	5.40E-04 lb/ton	1.00E-04 lb/ton	6.20E-03 tons/yr	2.79E-03 tons/yr	5.17E-04 tons/yr
4b	Secondary shredder/tertiary crushing[b]	10,341 tons	100%	1.20E-03 lb/ton	5.40E-04 lb/ton	1.00E-04 lb/ton	6.20E-03 tons/yr	2.79E-03 tons/yr	5.17E-04 tons/yr
5a	Screen 1[b]	10,341 tons	100%	1.40E-04 lb/ton	4.60E-05 lb/ton	1.30E-05 lb/ton	7.24E-04 tons/yr	2.38E-04 tons/yr	6.72E-05 tons/yr
5b	Screen 2[b]	10,341 tons	100%	1.40E-04 lb/ton	4.60E-05 lb/ton	1.30E-05 lb/ton	7.24E-04 tons/yr	2.38E-04 tons/yr	6.72E-05 tons/yr
6	Material Transport to a Injection System[a]	795 miles	100%	0.556 lb/VMT	0.453 lb/VMT	0.111 lb/VMT	0.22 tons/yr	0.18 tons/yr	0.04 tons/yr
7	Material Loaded into Hopper[b]	175,000 tons	100%	1.40E-04 lb/ton	4.60E-05 lb/ton	1.30E-05 lb/ton	1.23E-02 tons/yr	4.03E-03 tons/yr	1.14E-03 tons/yr
8	Transport to Calciner	175,000 tons	100%	*negligible, fully enclosed*					
					Total:		3.13 tons/yr	2.54 tons/yr	0.62 tons/yr

Sample Calculations:

Step 1 $\frac{1.3\ miles}{trip^d} \times \frac{trip^d}{22\ tons} \times 175{,}000\ tons\ alt\ fuel = 10{,}341\ miles$

Step 6 $\frac{0.1\ miles}{trip} \times \frac{trip}{22\ tons} \times 175{,}000\ tons = 795\ miles$

a. $E = [k(sL)^{0.91}(W)^{1.02}]x\ (1 - \frac{P}{4N})$ *where from AP-42 and references, k=0.0027 (PM), k=0.0022 (PM10), k=0.00054 (PM2.5) sL=12, W=22,* $E = [0.0027(12)^{0.91}(22)^{1.02}]x\ (1 - \frac{120}{4(365)}) = 0.556$

a. Potential PM 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. Emission factors of screening, crushing, and conveying based on AP-42 Table 11.19.2-2. AFM PM factors assumed to have similar emissions to aggregate operation. Controlled emission factors are used given the moisture content of AFM is greater than 5% which is considered "wet".

FIGURE 1. AFM VEHICLE TRANSPORT ROUTE (0.65 MILES EACH WAY).

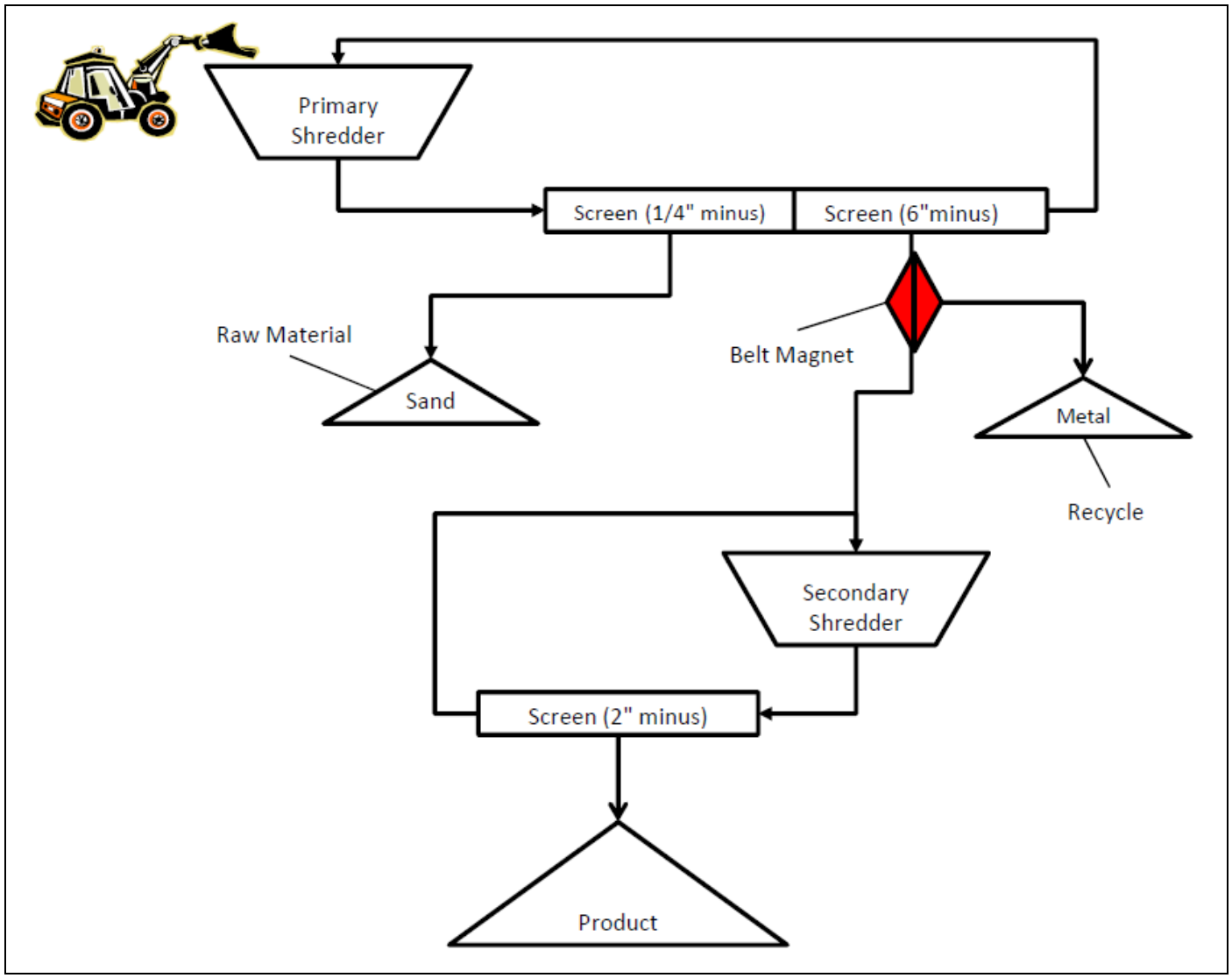

FIGURE 2. ALTERNATIVE FUEL MATERIAL PROCESSING FLOW SHEET

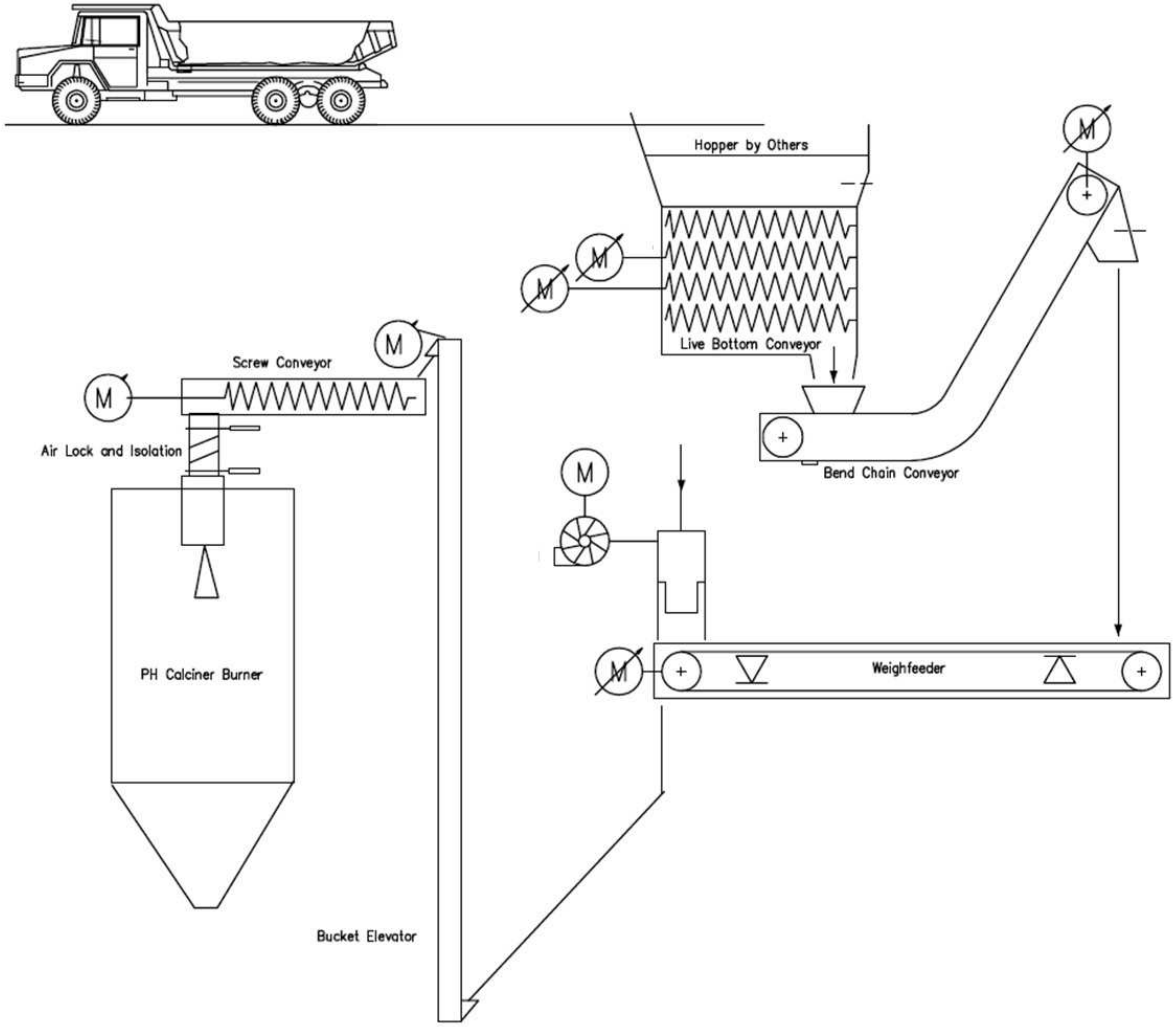

FIGURE 3. PROPOSED MECHANICAL INJECTION SYSTEM FOR TRANSPORT TO CALCINER BURNER.

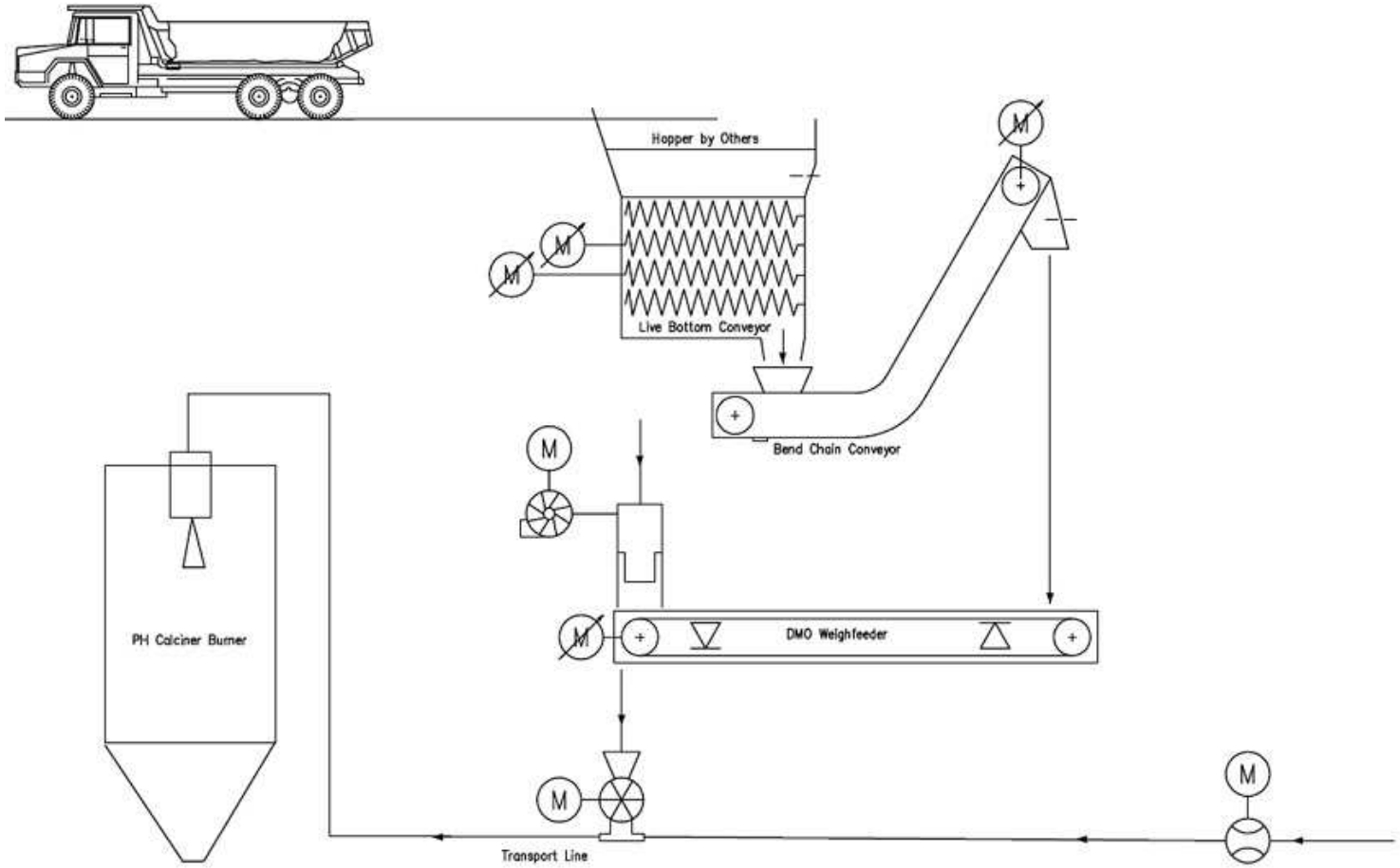

FIGURE 4. PROPOSED PNEUMATIC INJECTION SYSTEM FOR TRANSPORT TO CALCINER BURNER.

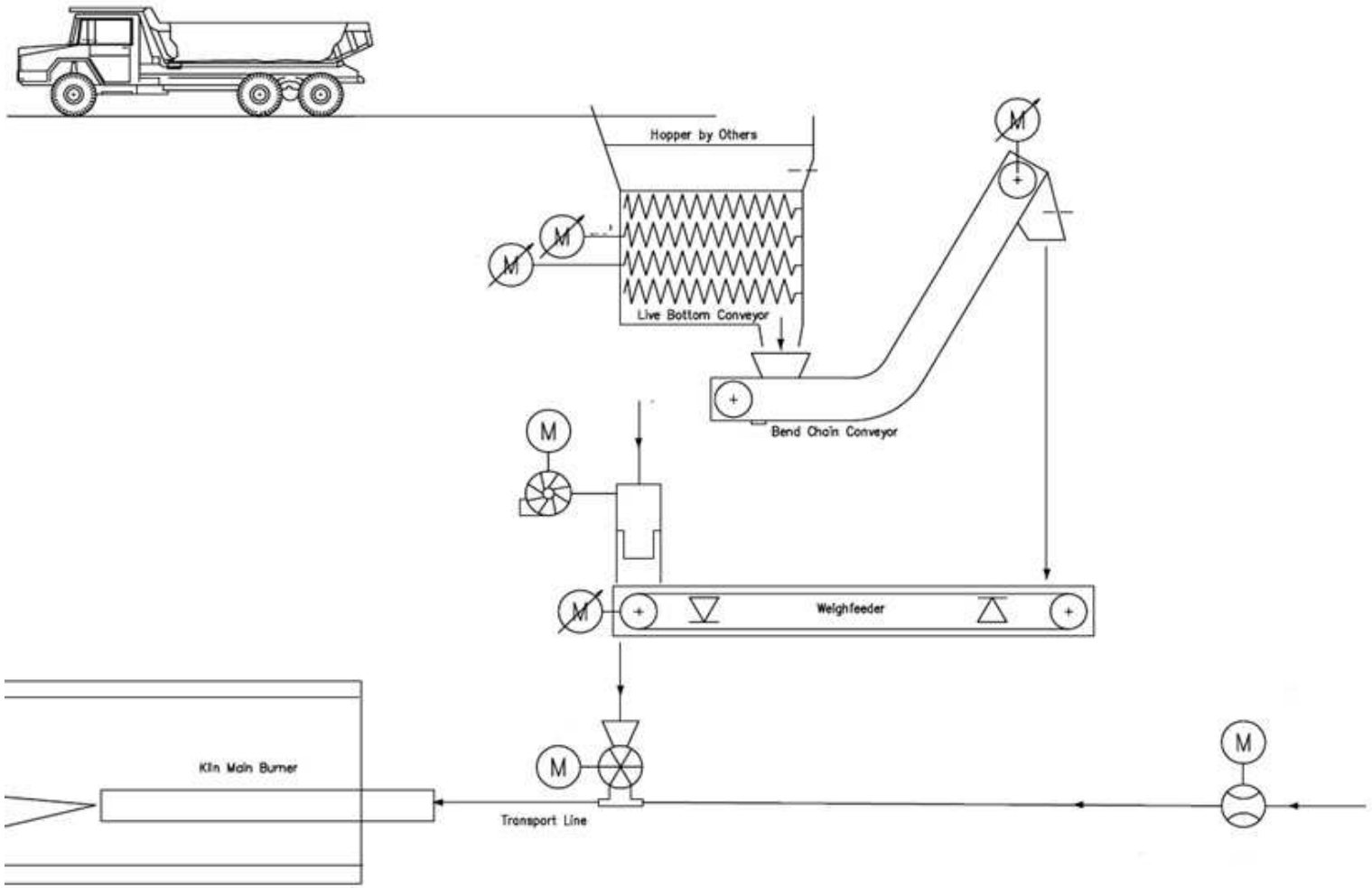

FIGURE 5. PROPOSED PNEUMATIC INJECTION SYSTEM FOR TRANSPORT TO MULTICHANNEL MAIN BURNER.

3.5 AFM BEST MANAGEMENT PRACTICES

The following best management practices are proposed for use at the Argos Newberry Cement Plant.

DRAFT - BEST MANAGEMENT PRACTICES (BMP) PLAN FOR MINIMIZATION OF FUGITIVE DUST, FIRE PREVENTION, AND QUALITY ASSURANCE.

Practice	Description
Minimization of Fugitive Dust	1) Drop points to storage areas shall be designed to minimize the overall exposed (or exposed to the atmosphere) drop height for materials that have the potential to create air born dust particles. 2) Periodic maintenance shall be performed to maintain offloading locations and associated drop point integrity as necessary. 3) Periodic visual observation of operations shall be performed by personnel trained on EPA Visible Emissions Method 22 and/or Method 9. If fugitive dust is detected appropriate fugitive dust minimization techniques shall be implemented.
Fire Prevention/ Spontaneous Combustion Minimization	1) The Emergency Response Plan includes: a. Annual training of onsite personnel on how to properly respond to fires and training on the identification and prevention of potential fire hazards; and b. All buildings and mobile equipment are equipped with fire fighting equipment as required by all county, state, and federal codes and regulations. 2) Proper storage of recovered materials to ensure that heat generated from pile compaction does not result in spontaneous combustion. 3) All fuel areas must display appropriate signage (fire hazard warnings, no smoking, etc.) to notify personnel and visitors of any potential fire hazards to prevent accidental combustion of fuel materials. 4) All onsite welding activities require a “Hot Work Permit” to adequately prepare for and prevent fires as a result of welding.

Practice	Description
Quality Assurance	1) The materials will be delivered to the Plant with all loads properly secured, contained, and covered if needed to minimize fugitive emissions. 2) For each shipment of material, the permittee will record the date, quantity and a description of the material received and keep a record of the Bill of Lading for a minimum of two years. 3) The permittee will inspect and sample shipments of material to ensure that delivered materials meet the respective expected selection criteria. If the permittee identifies off specification material, the permittee will contact the supplier and the material will be returned, disposed of, or blended, or any other appropriate legal method of handling the material. 4) The permittee will maintain records of off-specification deliveries and actions taken to correct such abnormalities. Such records will be stored onsite for at least two years and available for inspection upon request.

3.6 MONITORING AND TESTING

Emissions monitoring and testing for these PSD applicability purposes consist of the following:

- NO_x – CEM Data
- SO_2 – CEM Data
- VOC (as THC) – CEM Data
- CO_2 – CEM Data
- CO – CEM Data (Kiln 2) & EPA Method 10 (Kiln 1)
- PM – annual EPA Method 5 Data

3.7 INFRASTRUCTURE-FUEL SHAKEDOWN AND AFM ASSESSMENT PERIODS

The air construction permit should provide for a shakedown period for newly installed equipment to have a shakedown period and similarly each new AFM category to have an assessment period. A similar provision has been included in the other AFM permits. These periods provide the necessary time for Argos to adjust equipment and operations in order to find the optimal fuel feed rate, particle size, raw material blend, etc. so that testing can be conducted under normal operations. Any process information or emissions data collected during such startup and upset conditions do not represent normal operations. Therefore prior AFM permits excluded that data when determining PSD applicability. Therefore, like other cement plants, Argos requests recognition of these periods in its permit to help ensure a common understanding that data collected during the shakedown period (proposed for 90 days) after equipment installation/ initial operation and during an assessment period (proposed for 60 days) for each new AFM category that is introduced, is not expected to be representative of normal operation and requires a period of time to work the kinks of the new system and new AFM categories.

3.71 SHAKEDOWN PERIOD OF NEW EQUIPMENT

Argos requests a 90-operating day shakedown period, irrespective of the AFM fired. The AFM injection and handling equipment is requested to allow Argos to ensure proper installation as well as develop good operating practices for normal kiln system operation with the new equipment. An operational day, for purposes of the 90-operating day shakedown period, is any day in which any AFM category is fed to the pyro processing systems. Such shakedown periods are common for newly constructed equipment and allow operators a time period to learn how to operate such equipment without emissions during that period being applied to calculation of emissions for PSD applicability analysis. As stated above, Argos will comply with current permit limits.

3.7.2 Assessment Periods per AFM category

A per-category AFM assessment is separate from the injection equipment system shakedown period described above. Each category of AFM will be assessed in the new equipment. The AFM assessment periods are necessary since material handling, separations, resizing, and feeder operations will be impacted by the varying physical properties of each fuel material (moisture, density, viscosity, hardness, ash content, calorific value, etc.). An operational day, for purposes of the AFM assessment period, shall be defined as any day in which that AFM category is fed through each injection system. These periods will be called, "AFM assessments" and will similarly allow a period for the operators to develop good operating practices for each AFM category resulting in normal kiln system operation applying to PSD analysis. As stated above, Argos will comply with all permitted limits of emissions.

3.7.3 Sample Analysis for Assessment Period

For assessment of each AFM category, Argos proposes to take a representative as-fired sample of the AFM and have it analyzed for parameters listed below. The parameters listed in the table below are proposed to be measured for each AFM category assessed. Also included in the table below are target levels based on data collected by the USGS for coal. Target levels listed below are not enforceable, but are listed for purposes of reference of AFM to typical coal parameters. The target levels selected are based on the range of values of coal in the United States Geological Survey (USGS) database.[9] Argos views the target values to be a range of values similar to coal. Note that this database does not include the range of fossil fuels that Argos is currently authorized to burn. This information provides information of the similarity of AFM categories to common coal categories.

Parameter*	Target Levels*
Higher Heating Value	> 5000 Btu/lb
Arsenic	< 2200 ppm by weight
Cadmium	< 160 ppm by weight
Chromium	< 200 ppm by weight
Lead	< 1900 ppm by weight

Parameter*	Target Levels*
Mercury	< 0.3 ppm by weight
Chlorine	< 0.88 % by weight
Sulfur	< 3.1% by weight

[9] http://pubs.usgs.gov/of/2010/1196/

* Heating value is on dry basis. Concentration values are wet basis.
* Target levels are based on USGS data of coal samples.

The impact of AFM content on air emissions, kiln structure and clinker quality are addressed in the Appendix 2. The research discussed in the Air emissions section in Appendix 2 provides specific detailed information of the impact of AFM compared to fossil fuels. The research shows that the combined impact of fuels and raw materials in a Portland cement kiln must be clearly understood to interpret the impact of alternative fuel materials. In concert with this understanding, the EPA states on May 17, 2011 in the Federal Register, "...burning alternative fuels (whether classified as solid wastes or not) does not appreciably affect cement kiln HAP's [air] emissions."[10]

[10] Fed. Reg. Vol 76. No. 95, page 28322

2. Alternative Fuel Materials Research

Alternative Fuel Materials Research

187-14-02

KOOGLER & ASSOCIATES, INC.
ENVIRONMENTAL SERVICES

APPENDIX 2

ALTERNATIVE FUEL MATERIALS RESEARCH

APPENDIX 2

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1. IMPACTS OF ALTERNATIVE FUEL MATERIALS

A kiln functions to make clinker, not to burn fuel. Coal and pet coke comprise over 85 percent of the fuels used currently in the U.S. cement industry[1]. Coal and pet coke are historically the fuels of choice primarily for predictable fuel combustion properties, predictable availability, and able to be transported long distances and and stored for long periods. Alternative fuel materials (AFM) can have a wide range of physical and chemical properties. Due to such exacting thermochemistry of a precalciner kiln system AFM must be chosen carefully to prevent unacceptable product and damage to the kiln (see Section on Thermostress on Kiln System). For example, AFM that have highly variable heat content and cause fuel mass flow variations can result in local overheating and redox reactions in the kiln system. The potential for increased thermal stresses in the kiln can damage the system (e.g. shell anchors and furnace shell lining and brickwork). Highly variable alkali, chlorine, or sulfur content of a fuel can cause kiln refractory damage and possibly alkali bursting. As well, the mechanical behavior of particle size of fuels plays an important role in thermal kinetics and distribution that must be considered when producing cement. Clearly, as the percent of fuel substitution increases, the specifications of the fuel material must be well controlled and predictable. If the fuel material has highly variably properties, the cement product can be ruined and the value of both cement and fuel material can be worthless.

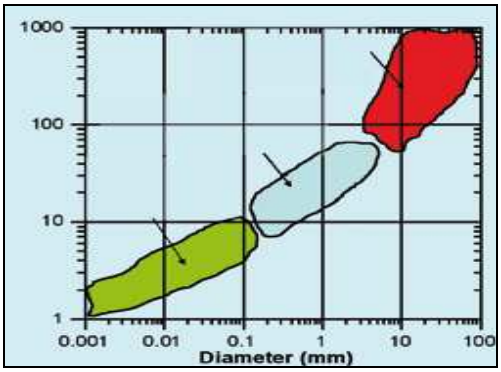

FIGURE 1. BURNOUT TIME (SECONDS) VERSUS FUEL PARTICLE SIZE (MM)

(Source: FLSmidth, 2011)

[1] International, I. *Trends in Beneficial Use of Alternative Fuels and Raw Materials*. 2008; Available from: http://www.epa.gov/sectors/pdf/cement-sector-report.pdf.

The above diagram explains that the particle size will affect the rate of combustion (i.e., burnout time) such that fluctuations of particle size of a given material will change the combustion time and the thermochemistry in the kiln. The red area, indicative of wood chips, are larger size particles that can take order of magnitudes longer to burnout compared to the green area indicative of powderized coal. Note that this concept of thermochemistry impact includes changes to the physical location of the heat distribution within the kiln. Thus, using a fuel material with unpredictable and highly variable particle size will quickly change the burnout time and the location of the flame combustion in the kiln. This shift of flame combustion can severely impact the chemistry of the raw material conversion to clinker. The discussion above of the optimum burning regime and the effect of particle size clearly shows the need to use a AFM that have constant and controllable composition and characteristics.

Understanding the potential impacts (as discussed above) that AFM can have on a kiln system demonstrates that a cement kiln is put under significant risks with its equipment and product if it does not properly control the consistency and quality of its fuels. This is a very important distinction that indicates that cement kiln are taking select materials that are in their existing state and processing them sufficiently to make a valuable and useful material out of them. The fuel material ash must also must be considered as it is blended with limestone, clay, sand, iron ore, and fly ash which is thermally reacted into clinker and ground into cement.

1.1 AIR EMISSION IMPACTS

The main constituents of the exhaust gases from a cement kiln are nitrogen (N_2), CO_2 from calcination of $CaCO_3$ and combustion of fuel, water vapor from the combustion process and from the raw materials, and excess oxygen. The pollutants of concern for non-hazardous fuel materials are as follows:[2]

- Volatile Organic Compounds
- Nitrogen Oxides
- Sulfur Dioxide
- Carbon Monoxide
- Particulate matter
- Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD and PCDFs)
- Metals and their compounds
- Hydrogen fluoride
- Hydrogen chloride

[2] Cement, Lime and Magnesium Oxide Manufacturing Facilities, May 2010 http://eippcb.jrc.ec.europa.eu

- Greenhouse Gases

It should be stressed that while emission estimates are addressed, the Argos Newberry Cement Plant will not exceed any current permit limit and emissions of these pollutants are equally controlled whether the fuel source is from AFM or traditional fuels. In contrast to combustion for waste disposal or power production, Argos must create a salable product using the intimacy of a controlled combustion process. As such, the combustion must be well controlled and predictable. Upsets or erratic behavior in combustion not only affect emissions, which are of concern to Argos, but can damage the kiln and most important create worthless cement product.

Emissions and operational assessments in cement manufacture at precalciner kilns are addressed in the following sections for each pollutant of concern.

1.1.1 VOLATILE ORGANIC COMPOUNDS

The main source of organic compound emissions in the cement manufacturing process comes from the raw materials as compounds are volatilized in the preheater tower at relatively low temperatures (rather than immediately destroyed when fired in the precalciner or main burner). The nominal temperatures ranging from 1600°F to 3000 °F achieved in the combustion areas of a cement kiln and preheater tower are necessary to produce consistent clinker quality. These extreme temperatures lead to the effective destruction of organic compounds that are present in fuels when they are combusted. For comparison of the efficiency of combustion in a cement kiln, EPA requires incinerators specifically designed to destroy non-halogenated compounds (e.g., military clean up) to be 99.99+% or greater that a temperature in excess of 1830 °F for two seconds and an oxygen concentration of 2 percent or more are required.[3] The thermal characteristics of a precalciner cement kiln like the ones at Argos, as reported in numerous documents, well exceed these temperatures and residence times. The Argos kiln systems clearly have these attributes: [4, 5, 6, 7]

- Gas residence times in the kiln on the order of 10 seconds at temperatures ranging from 1800 to 3000°F; in the calciner for approximately 3 seconds at temperatures ranging from 1600°F to 1800°F; in the preheater for 10 seconds at steadily changing temperatures from 1800 to 800°F
- Combustion that takes place under oxidizing conditions, meaning that oxygen concentration in gasses leaving the kiln is typically in the range of 2 – 3 percent
- Residence time of materials introduced at the feed end of the kiln being approximately 30 minutes
- The presence of extreme turbulence in the kiln, assuring complete mixing of combustible material and gases

[3] Mantus, E.K.; Kelly, K.E.; Pascoe, G.A.; *All Fired Up – Burning Hazardous Waste in Cement Kilns*, Environmental Toxicology International, December, 1992.
[4] EPA Cement Sector Report, Trends in Beneficial Use of Alternative Fuels and Raw Materials. October 2008.
[5] Cement, Lime and Magnesium Oxide Manufacturing Facilities, May 2010 http://eippcb.jrc.ec.europa.eu
[6] National Policy on High Temperature Thermal Waste Treatment and Cement Kiln Alternative Use, Cement Production Technology, Report No. 66011-02; Issue 2, Dr. Kare Helge Karestensen
[7] Karstensen, K.H., et. Al., "Environmentally Sound Destruction of Obsolete Pesticides in Developing Countries Using Cement Kilns." Environmental Science and Policy. 2006. Pg. 577-586.

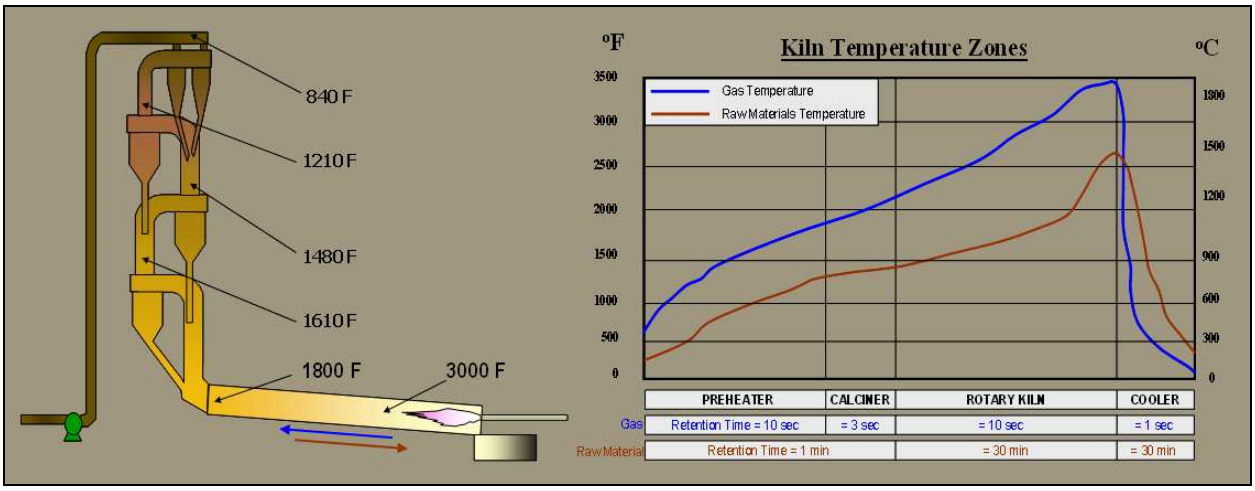

FIGURE 2. TEMPERATURE PROFILE IN PREHEATER CEMENT KILNS

1.1.2 NITROGEN OXIDES

Nitrogen Oxide (NO_x) emissions are not expected to change since they can be controlled by adjustments to the multistage combustion system timing, fuel input rates, and the use of selective non-catalytic reduction (SNCR). The SNCR system is a post-combustion control system that injects ammonia into the exhaust gas stream and converts NOx to N_2 and H_2O. The SNCR allows NOx emissions to be accurately controlled regardless of the NOx outlet concentration. Due to the generally inverse relationship of NOx and carbon monoxide (CO) emissions, the NOx control by SNCR can also control CO emissions.

Primarily, NO_x can be generated in two ways during combustion. These include thermal NO_x and fuel NO_x. Thermal NO_x is generated when molecular nitrogen and oxygen dissociate at high temperatures (above 2,370 °F) and react. This form of NO_x generation is the most pronounced in the cement industry and is reduced with a lower peak flame temperature. Fuel NO_x is generated when ionized nitrogen in the fuel is released during combustion. This is dependent on fuel type and input rate, and will vary with operating parameters. Contributions of this type, fuel -NO_x, generation are minor when compared to thermal NO_x generation[8].

[8] Neuffer, Bill, and Mike Laney. Alternative Control Techniques Document Update: NOx Emissions from New Cement Kilns. Research Triangle Park, N.C., U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards., Sector Policies and Programs Division, 2007. Print.

1.1.3 SULFUR DIOXIDE

Sulfur compounds in raw materials are present mainly as sulfates (i.e. calcium sulfate, $CaSO_4$) or sulfides (i.e. pyrite or marcasite, FeS_2). Sulfates introduced to the kiln through either raw material and/or fuels are thermally stable up to temperatures of 1,200 °C. This means that they will persist until the sintering zone of the rotary kiln where they are thermally decomposed and oxidized to produce sulfur dioxide (SO_2). SO_2 generated at the sintering zone will react with alkalis or calcium oxide and immediately be incorporated into the clinker. It will not give rise to gaseous SO_2 emissions. On the other hand, sulfides (and also other organic sulfur compounds) found in the raw materials enter the preheater tower and are readily decomposed and oxidized between 400 and 600 °C to produce SO_2 as the raw materials are heated by the exhaust gasses in the preheater tower. At these temperatures, not enough calcium oxide has been thermally generated to react with the sulfide-generated SO_2 to absorb the sulfur. Up to 30% of the total sulfide input in the raw materials may leave the preheater section as gaseous SO_2.[9] This means that SO_2 emissions are to predominately determined by the sulfide content of the raw materials, not by the fuel composition. The fuel sulfur content for both traditional and AFM has been shown to not significantly impact SO_2 emissions.[18, 10, 11, 12] This understanding of the limited impact of fuel sulfur is further evidenced by the current Best Available Control Technology applied to all Florida cement kilns, which relies solely on the inherent natural alkali scrubbing of sulfur by the alkaline raw material input to the kiln and not on limits of fuel content sulfur.

Although very little effect in SO_2 emissions is seen from fuel input, typical sulfur levels in alternative fuel materials indicate a reduction in SO_2 emissions. Sulfur content in the alternative fuel material is normally less than that of coal (or the equivalent conventional fuel). Coal sulfur content averages 2243 ppm according to the USGS coal database[13]. Petroleum coke which is an allowed fossil fuel under the current Title V operating permit, can contain up to 70,000 ppm sulfur.

The following chart shows an analysis of the amount of SO2 emissions from Florida cement kilns in comparison to the amount sulfur in the fuel which is primarily coal and fuel oil.

[9] National Policy on High Temperature Thermal Waste Treatment and Cement Kiln Alternative Use, Cement Production Technology, Report No. 66011-02; Issue 2, Dr. Kare Helge Karestensen
[10] EPA Report No. 600/R-97-115 entitled “Air Emissions From Scrap Tire Combustion”
[11] Cement, Lime and Magnesium Oxide Manufacturing Facilities, May 2010, Figures 1.32, http://eippcb.jrc.ec.europa.eu
[12] 76 Fed. Reg. 28318, 28322 (May 17, 2011)
[13] US Coal Quality Database. USGS, 4 Apr. 2004. Web. 17 Oct. 2011. <http://energy.er.usgs.gov/coalqual.htm>.

Table 1. Efficiency of SO2 capture in Florida cement kilns.

	Year	Florida Rock Industries, Newberry, FL, Line 1	Cemex, Brooksville south, FL, Line 2	Cemex, Miami, FL	Tarmac, Miami, FL	Suwannee American Cement, Branford, FL
Coal Burned (ton/yr)	2011	44,509	48,501	59,100	86,534	40,639
	2010	49,698	55,090	60,841	75,224	52,932
	2009	53,872	53,726	73,851	91,322	45,892
	2008	75,680	not operating	94,045	143,763	76,214
SO2 CEMs Emissions (ton/yr)	2011	1.8	4.4	29.1	10.0	3.2
	2010	2.9	1.6	8.4	3.6	2.4
	2009	1.8	1.6	13.9	4.8	5.5
	2008	4.4	--	9.9	5.1	7.8
SO2 Potential from fuel (ton/yr) *assume coal composition of 1.0% S	2011	889.2	969.0	1180.8	1728.9	811.9
	2010	992.9	1100.6	1215.5	1502.9	1057.5
	2009	1076.3	1073.4	1475.5	1824.5	916.9
	2008	1512.0		1878.9	2872.3	1522.7
Percent reduction of SO2 from coal	2011	99.80%	99.55%	97.54%	99.42%	99.71%
	2010	99.71%	99.85%	99.31%	99.76%	99.48%
	2009	99.84%	99.85%	99.06%	99.74%	99.15%
	2008	99.71%	--	99.47%	99.82%	99.49%

In contrast, a precalciner kiln using raw material with high sulfur can have SO2 emissions in the thousands of tons. The above calculated efficiencies conservatively assume that all SO2 emissions are only from coal sulfur. So the sulfur conversion to SO2 reduction efficiencies are even greater if the amount of SO2 generated from sulfur in raw material were to be included.

1.1.4 CARBON MONOXIDE

Carbon Monoxide (CO) emissions are not expected to increase since emissions can be controlled through the process of complete combustion using multistage combustion (MSC) and through the use of selective non-catalytic reduction (SNCR). SNCR controls NOx emissions. NOx control by SNCR also allows indirect control of CO due to the inverse relation of NOx to CO. Argos closely monitors the combustion process of all fuel materials through numerous process monitors (e.g. NOx, CO, temperature and pressure) to ensure there is no partial combustion which could create CO emissions, as well as other constituents. The Argos Newberry Precalciner kilns are designed for the use of AFM that are challenging (e.g., reduced volatile content and large partial size) by having a separate calciner chamber. This separate calciner chamber is referred to as a combustion chamber. The combustion chamber allows for the controlled introduction and blending of AFM along with kiln feed, tertiary air (ambient air/combustion air) and mixing with other fuels (fine coal) to insure proper ignition with retention in a high temperature atmosphere to initiate combustion of the AFM. Characteristics of the AFM, such as particle size, can affect the combustion efficiency which can impact CO emissions. Impacts on CO emissions from AFM are a function of improper system operations and not the fuel type which is the basis for the request for AFM assessment periods.

Preheater towers are designed to extend retention time which provide long residence time at high temperatures to complete the combustion process. On Kiln 2, Argos monitors CO by a CO CEMS for compliance at the stack. On Kiln 1 Argos uses CO quarterly testing by Method 10 at the stack. Both kilns have CO process monitoring in the system to assure proper combustion is maintained through process controls such as changes in the introduction of tertiary air, increases in process draft and oxygen content through the process, changes in fine coal feed rates into the precalciner, and/or changes in the kiln feed rates. Argos closely monitors the carbon monoxide from post- combustion in the precalciner chamber as a matter of process control. The Argos Newberry Cement Plant operates with an oxygen rich combustion environment through the calciner and preheater assisting in the combustion process.

1.1.5 PARTICULATE MATTER

The impact on particulate matter loading from fuel ash content is comparatively minimal (typically less than 10 percent of the total mass loading to the electrostatic precipitator (ESP)) given most of the particulate matter originates from the raw materials blowback. As such the impact of PM emissions from higher ash content fuels is expected to be limited. For example, the raw material particulate loading to the kiln 1 ESP is typically 8 percent of the raw material input (210 tons 183.4 maximum preheater feed rate (8% =14.78 tons of blowback dust per hour). For example, coal typically has 5 to 10 percent ash. The kiln 1 coal input maximum is 14 tons per hour or (7.5% average ash) 1.05 tons of coal ash. Most ash will not travel from the site of combustion through the entire kiln system to the ESP but instead will be solidified and incorporated into the clinker. Conservatively assuming all of the coal ash was blowback to the ESP, the fraction of coal ash to total dust is 6.6 percent of the total. Assuming a scenario in which an AFM replaces half the coal input, and the AFM having half the heat content and twice the ash content, the portion of fuel ash could increase to (0.525 tons from coal ash + 2.1 tons of AFM ash) 15.0 percent. This assumed increase in blowback is hypothetical and conservative whereas many studies show that fuel material (e.g., fuel sulfur) is immediately incorporated into the clinker at the point of combustion and does not significantly contribute to blow back into the particulate control device. Furthermore, the assumed increase is within the range of emissions monitoring measurement accuracy.

Collaborative studies by EPA show that with competent test teams, the within-team Relative Standard Deviation (RSD) of a Method 5 test was 10.4 percent and the between-team RSD was 12.1 percent[14]. More recently, ASME reported that the RSD is from 5 to 11% and the accuracy of a Method 5 test (the departure of the average of three test runs from the true stack gas concentration) should be less than 14.7 percent[15].

Given that the precision and accuracy of one standard deviation of Method 5 test results are in the range of approximately 10-15 percent of the emission rate being measured, the hypothetical and conservative estimate of PM increase noted above for a low btu/high ash content AFM (estimate increase of fuel ash contribution to blowback PM to ESP; 8.4 percent (from 6.6 to 15) blowback to ESP)

[14] Quality Assurance Handbook for Air Pollution Measurement Systems: Volume III. Stationary sources Specific Methods. Section 3.16 EPA/600/4-77/027b.

[15] Lanier, S.; Hendricks, C. Reference Method Accuracy and Precision (ReMAP): Phase I. February 2001. ASME International.

should be within the measurement error of Method 5 and not result in a statistically measurable increase. As noted above, the fuel ash should be quickly incorporated into clinker.

Particulate matter (PM) testing is used to show compliance by Method 5 and a continuous monitor under 40 CFR 60 Subpart DDDD in the near future. For either compliance method, the measurement errors of these methods are statistically in the range of 20 percent.

1.1.6 POLYCHLORINATED DIBENZO-P-DIOXINS AND DIBENZOFURANS (PCDD AND PCDFS)

EPA has long recognized that the predominate factor affecting D/F emissions from a cement kiln is the temperature of gases at the inlet to the control device.[16] Emissions of dioxin/furans (D/F) are not expected to change when using these AFM due to the dependence of the formation of D/F on exhaust gas residence time within the kiln and particulate matter loading when at a temperature range of 700°F to 400°F, which is independent of the fuel type. Research has shown that there are no statistical significant differences in PCDD/PCDF emissions when comparing the use of conventional fuels and secondary fuel sources[17]. Moreover, as EPA found when establishing the MACT floor for hazardous waste burning kilns, fuel type does not have an impact on D/F formation because D/F is formed post-combustion.[18] This is consistent with EPA's statement that "burning alternative fuels . . . does not appreciably affect cement kilns' HAP emissions."[19],[20] as well, review of U.S, European and Australian kiln emissions of D/F shows no difference in D/F emissions in comparing conventional and alternative fuel materials.[21],[22], [23] Even the burning of hazardous wastes has been shown to not influence the formation of PCDD/PCDF emissions[24].

FDEP states in the technical evaluation for permit 0530021-031-AC (Cemex Brooksville South AC permit for use of AFM);

> "At high temperatures and sufficient residence times, dioxins/furans can be destroyed. Pre-heater/pre-calciner kilns like that at the Brooksville South Cement Plant have high temperatures and sufficient retention times to destroy these organic compounds. The preheater/calciner design rapidly cools the exhaust gases, which prevents dioxin/furans from reforming."

[16] 63 Fed. Reg. 14182, 14196 (Mar. 24, 1998)
[17] Abad, E., Martinez, K., Caixach, J., Rivera, J., "Polychlorinated Dibenzo-p-dioxin/Polychlorinated Dibenzofuran Releases into the Atmosphere from the Use of Secondary Fuels in Cement Kilns during Clinker Formation." Environmental Science Technology. 2004. Pg. 4734-4738.
[18] 64 Fed. Reg. 52828, 52876 (Sep. 30, 1999)
[19] 76 Fed. Reg. 28318, 28322 (May 17, 2011)
[20] FDEP technical Evaluation, 0530021-031-AC draft permit.
[21] "Air Emissions Summary for Portland Cement Pyroprocessing". Portland Cement Association.R&D SN3048
[22] Cement, Lime and Magnesium Oxide Manufacturing Facilities, May 2010, Table 1.38, http://eippcb.jrc.ec.europa.eu
[23] Dioxin and The Cement Industry in Australia. Technical Note. Cement Industry Federation. July 2002.
[24] Karstensen, K.H., "Formation, release and control of dioxins in cement kilns" Chemosphere. 2008. Pg. 543-560.

Argos operates a pre-heater/pre-calciner kiln. Through the Portland cement federal rules (40 CFR 60 Subpart DDDD and 40 CFR 63 subpart LLL), D/F emissions are regularly tested and must be within a limit. Argos has shown compliance to the D/F limit which should not change when using AFM.

1.1.7 METALS AND THEIR COMPOUNDS

It should be stressed that metals are naturally present in raw materials, traditional fuels and alternative fuel materials. When burning AFM, the concentrations of metals pollutants measured in the stack-gas fall within the variability of traditional fuel emission values.[25,26] To explore this trend further, it is important to first define the possible outlets of such pollutants in the cement processing system. Metals that enter a kiln, either through the raw materials or through the fuel, have the capability of exiting the system through three separate routes; they can enter and become part of the raw clinker, bind to the cement dust or exit through the stack, if volatile[27]. In turn, the metals species that enter the clinker are, in fact, captured and the metals in the cement dust are treated by the air pollution control system. Previous studies have indicated that non-volatile metals, such as arsenic, chromium, nickel and zinc are primarily captured by the clinker in the kiln[28].

As noted in the permit application metal emissions are similarly emitted from traditional fuels compared to other fuel types. The following discussion is provided only for illustrative purposed for comparison of emissions of conventional fuels to hazardous waste fuels. As mentioned previously, Argos is not requesting to use hazardous wastes or materials for fuel. A comprehensive review was conducted for such comparative emissions data. This study provides in depth information on comparative emissions for a broad range of pollutants. For example, the following table shows comparison of metal emissions.

[25] Zemba, S., Ames, M., Green, L., Botelho, M.J., Gossman, D., Linkov, I., Palma-Oliveira, J., "Emissions of metals and polychlorinated dibenxo(p)dioxins and furans (PCDD/Fs) from Portland cement manufacturing plants: Inter-kiln variability and dependence on fuel-types" Science of the Total Environment. 2011. Pg. 4198-4205.

[26] International Cement Review, *Burning Issues*, February, 2000.

[27] Conesa, J.A., Galvez, A., Mateos, F., Martin-Gullon, I., Font, R., "Organic and inorganic pollutants from cement kiln stack feeding alternative fuels" Journal of Hazardous Materials. 2008. Pg. 585-592.

[28] Richards, J., Goshaw, D., Speer, D., Holder, T., "Air Emissions Data Summary for Portland Cement Pyroprocessing Operations Firing Tire-Derived Fuels." Environmental Science Technology. 2004. Pg. 4734-4738. PCA R&D Serial No. 3050. 2008

This table shows that there is no significant difference in metal emissions when burning hazardous waste compared to conventional fuels except for lead and mercury. As explained below, lead emissions are not expected to increase based on the alternative fuel materials. Mercury emissions are monitored through material balance and must remain below permit limits to remain compliant to the air Title V permit.

TABLE 2. COMPARISON OF KILNS METAL EMISSIONS – CONVENTIONAL AND HAZARDOUS WASTE

METAL	CK/HWF [b] vs. CK/CF [c]
Antimony	No significant difference
Arsenic	No significant difference
Barium	No significant difference
Beryllium	No significant difference
Cadmium	No significant difference
Chromium	No significant difference
Lead	CK/HWF > CK/CF [d]
Mercury	CK/HWF > CK/CF [d]
Nickel	No significant difference
Selenium	No significant difference [e]
Silver	No significant difference
Thallium	No significant difference
Vanadium	No significant difference
Zinc	No significant difference

[a] Conclusions based on a 95% confidence level (i.e., 95% confidence that the results were not obtained by random chance).
[b] CK/HWF = cement kiln burning hazardous waste fuel.
[c] CK/CF = cement kiln burning only conventional fuel (e.g., coal).
[d] CK/HWF > CK/CF = emissions from cement kiln burning hazardous waste greater than emissions from cement kiln burning only conventional fuel.
[e] Statistical trends suggest CK/HWF < CK/CF.

Metals other than lead and mercury are inherently less volatile and readily captured and incorporated into clinker. A summary of the two metals that are subject to PSD thresholds in the cement manufacturing process are discussed below.

MERCURY

The current permitted limit of mercury for the Argos Newberry Kilns 1 and 2 are 200 lb/yr and 122 lb/yr, respectively. Annual emissions of mercury determined by material balance are in the range of 25 to 50 lb/yr per kiln. Because of the volatile nature of this metal, it is assumed that 100% of all input mercury is emitted from the cement making process. Mercury input is required in the Title V permit to be limited regardless of the type of fuel used. This requirement will apply to alternative fuel materials used at the facility and will ensure that Argos does not emit excessive amounts of mercury.

As shown in Figure 7 below, most AFM contain concentrations of mercury that are far less than coal.

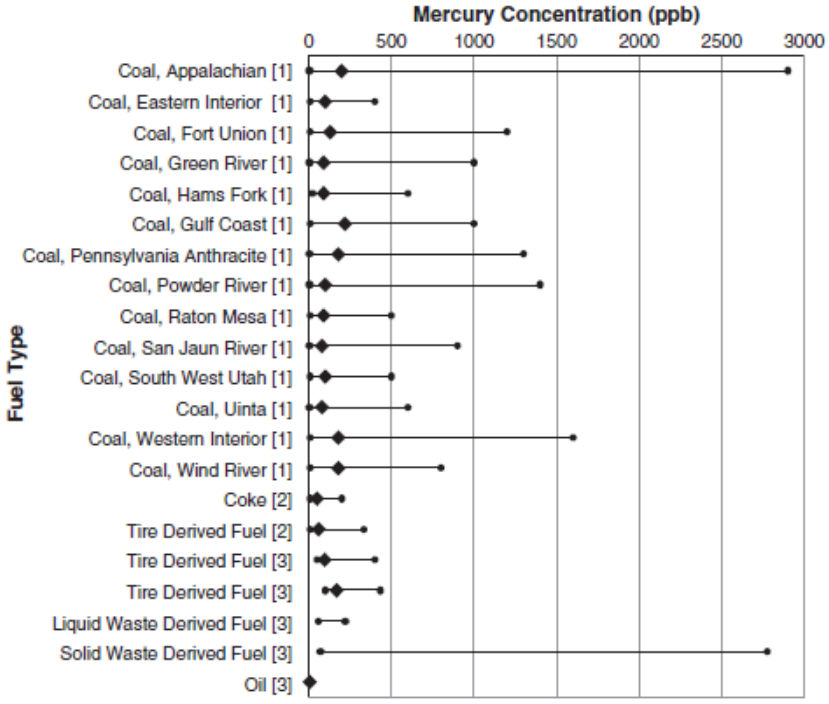

FIGURE 3. COMPARISON OF MERCURY CONCENTRATIONS IN VARIOUS FUELS. [29]

[29] Sikkema, J.K., Alleman, J.E., Ong, S.K., Wheelock, T.D., "Mercury regulation, fate, transport, transformation, and abatement within cement manufacturing facilities: Review." Science of the Total Environment. 2011. Pg. 4167-4178.

LEAD

Stack testing in response to an EPA Section 114 request was conducted at the Suwannee American Cement plant in Branford, Florida in 2010 showed lead emissions to be 2.34 pounds per year for production of 683,403 tons of kiln feed (i.e., 3.42 X 10^{-6} lb/ton kiln feed). The SAC precalciner kiln is similar in design and emissions to the Newberry kilns. Lead emissions are from raw materials and fuels. The lead content of limestone (85 percent or more of raw materials) is typically 3 ppm[30]and the typical content of coal is 10 ppm (Kentucky coal)[31]. Assuming equal fractions of lead emissions from raw materials and fuel, fuel represents approximately 10% of the input to a cement kiln, compared to approximately 90% raw material input. Thus, any fuel contribution increase should be far below the PSD threshold of 1200 pounds per year. Therefore the PSD analysis does not include lead.

[30] Hill, L; Stevenson, R., Mercury and lead Content in Raw Materials. Portland Cement *Association, R&D serial No. 288.*
[31] http://kgs.uky.edu/kgsweb/DataSearching/Coal/Quality/QualitySearch.asp (last visited April 18, 2011)

1.1.8 HYDROGEN CHLORIDE

The ratio of sulfates and chlorides to alkalis (namely sodium and potassium) must be maintained for proper operation of the kiln (this is discussed further in the following sections). The bulk of alkali input to the kiln comes from raw materials, and alkali levels are low in the limestone from the Newberry quarry. Because of the low levels, excessive chlorine can condense in the preheater tower and/or foul clinker and thus the amount of chlorine in all fuels and raw materials used must be monitored.

As mentioned above, the chlorine content of the fuels used in the kiln is process-limited to ensure acceptable clinker quality and limit kiln degradation. Indeed, preheater tower buildup and clogs are primarily and directly related to the amount of chlorine in the gas stream. Extended periods of chlorine at levels above 0.2 to 0.3 percent in fuels are expected to cause build up in the preheater tower. See further information in Section, “Blockage and Buildup”. Many AFM, such as tires, carpet-derived fuel, paper, roofing materials, have far less chlorine than coal and are desirable for this reason. For these reasons, the Department has assurance that Argos will not use AFM in a manner that causes chlorine input to deviate from the existing range. Upcoming 40 CFR 60 Subpart DDDDD limits on HCl emissions will require additional monitoring and regulatory assurance that HCl will remain low.

1.1.9 GREENHOUSE GASES

Emissions of greenhouse gases (GHG) from the pyroprocessing of carbonaceous raw materials (namely limestone) in a cement kiln are inherent to cement production. Thus, both the raw material calcination and the combustion of fuels results in GHG emissions. The majority of GHGs originate from limestone (CaCo3) decomposed to CaO (solid) and CO2 (gas). In addition to limestone decomposition, fuel combustion generates GHG emissions in the form of CO2, methane (CH4) and nitrous oxide (N2O). A primary means to control and reduced GHG emissions in cement production has been the use of AFM and/or efficient operations. In fact, a GHG PSD determination for a cement plant reviewed and recommended a wide range of AFM for GHG reductions.[32] However, the "biogenic CO2" deferral that was issued by EPA July 21, 2011 will expire at the federal level on July 21, 2014. In fact, FDEP did not include the biogenic CO2 deferral when it recently incorporated GHG PSD permitting. Thus, at the state level, the biogenic CO2 deferral for purposed of PSD has already expired.

EPA now requires continuous monitoring of CO2 from the Argos kilns and annual reporting of GHG emissions per 40 CFR 98. This rule requires that the cement plant report the fraction of GHG emissions from biogenic sources. Furthermore, EPA stipulates specific biogenic fractions for certain materials. For example, 40 CFR 98.34(e) establishes a default value of 20 percent biogenic CO2 for the biogenic portion of tires. Of the many reasons that Argos is pursuing an AFM program, reduction of GHG emissions is a major consideration. The PSD evaluation addresses GHGs with a breakout of the biogenic portion. The results of the PSD analysis regardless of the biogenic portion indicate the GHG emissions are below PSD thresholds (see Appendix 3).

[32] NYDEC Permit ID: 4-0124-00001/00112 Facility DEC ID: 40124000, issued 05/27/2011

1.1.11 Other Emissions - PCB

Polychlorinated biphenyls (PCBs) are a type of organic compound with 2 to 10 chlorine atoms attached to a biphenyl, or two joined benzene rings. These compounds are environmentally persistent and toxic. They had many uses, including, but not limited to, coolants and insulating fluids, plasticizers, pesticide extenders, sealants, and adhesives. PCBs today are restricted in use and not commonly found in non-hazardous waste materials. The historical usage of these materials should be addressed as a possible contaminant. Argos has no intention of knowingly using waste that have PCB materials. The following information provides reasonable assurance that any de minimis amounts of these materials will be effectively destroyed in the cement kiln.

The EPA Toxic Substance Control Act (TSCA) specifies that for the incineration of PCBs (99.9999% destruction), a temperature of 2200°F at a residence time of two seconds and an oxygen concentration of 2-3 percent is required.[33] Further related to the thermal destruction of PCBs, laboratory data from the University of Dayton Research Institute[34] demonstrates that PCB-type compounds are 99.99+ percent destroyed at temperatures in excess of 1830°F with a residence time of two seconds and an oxygen concentration of 2-3 percent. The temperature, residence time and oxygen concentration in these kiln systems well exceed these conditions required for effective destruction of PCBs and should provide DEP assurance of any possible air emissions concerns of PCBs.

[33] Karstensen, K.H., *Can Cement Kilns be used for PCB Disposal?,* SINTEF (undated)
[34] Rubey, W.A.; Dellinger, B., et al, *High-Temperature Gas – Phase Formation and Destruction of Polychlorinated Dibenzofurans,* Chemosphere, Vol. 14, No. 10, pp 1483-94, 1985.

1.1.12 EMISSIONS DATA FROM CEMENT PLANTS USING AFM

Comprehensive data of European cement kilns show that firing of AFM does not increase emissions of air pollutants.[35] The following example of emissions summary data shows these general trends.

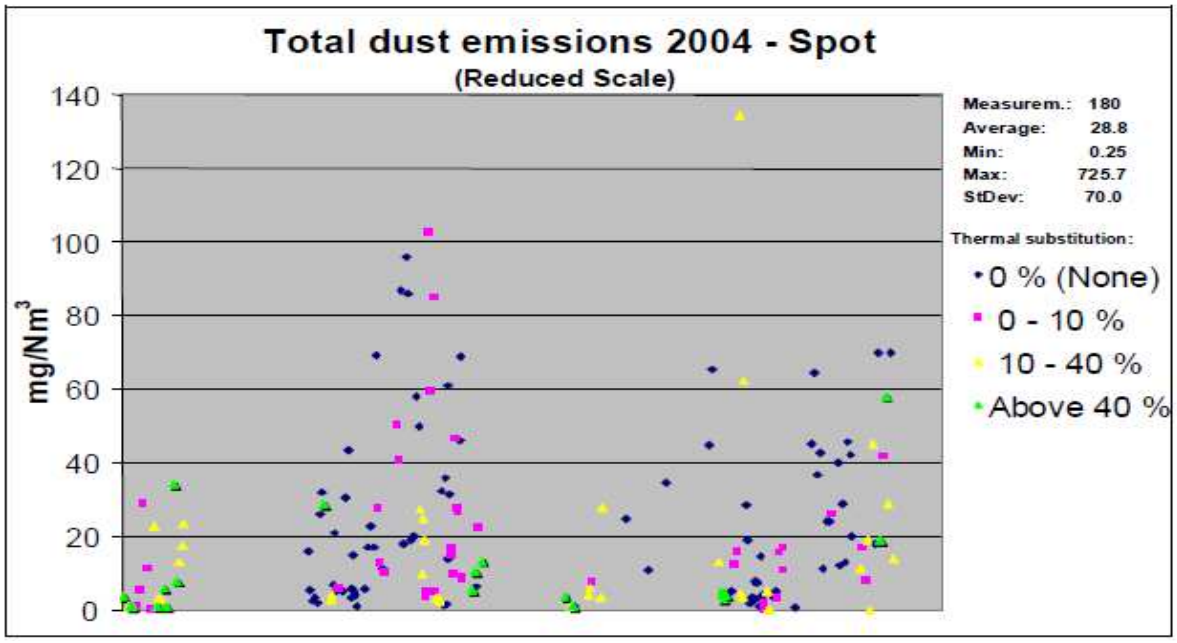

FIGURE 4. DUST EMISSION VALUES FROM 180 SPOT DUST MEASUREMENTS IN THE CLEAN GAS OF ROTARY KILNS IN THE EU-27 AND EU-23+ COUNTRIES.

[35] Cement, Lime and Magnesium Oxide Manufacturing Facilities, (last visited June 25, 2014) http://eippcb.jrc.ec.europa.eu/reference/BREF/CLM_Published_def.pdf

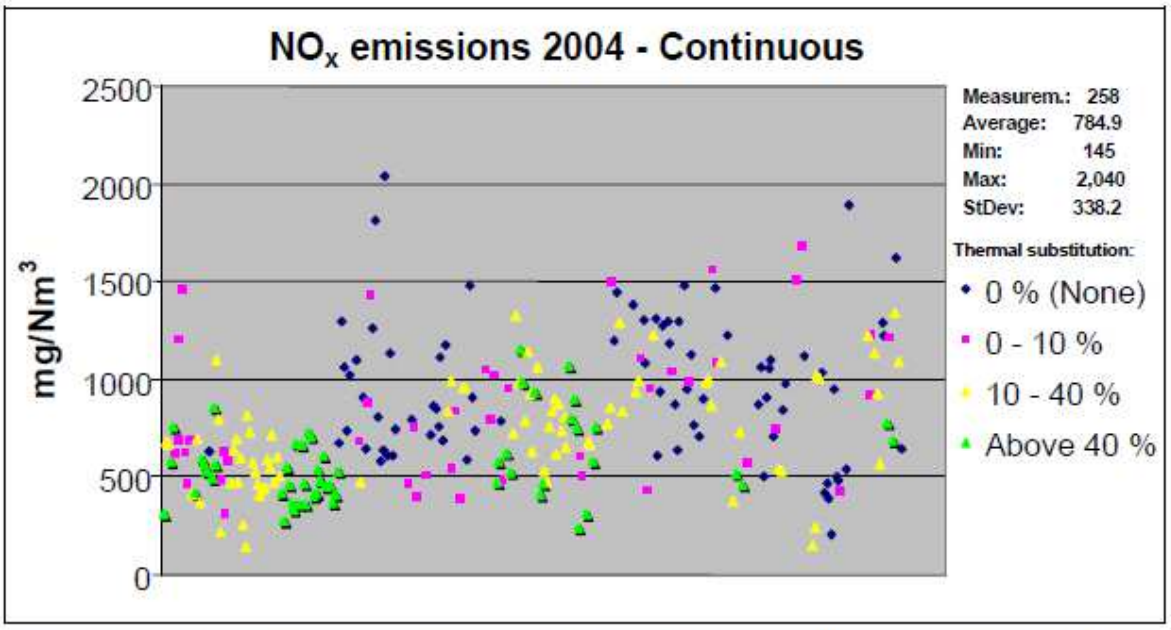

FIGURE 5. NOX EMISSIONS (EXPRESSED AS NO2) FROM CEMENT KILNS IN THE EU-27 AND EU-23+ COUNTRIES IN 2004 CATEGORIZED BY SUBSTITUTION RATE

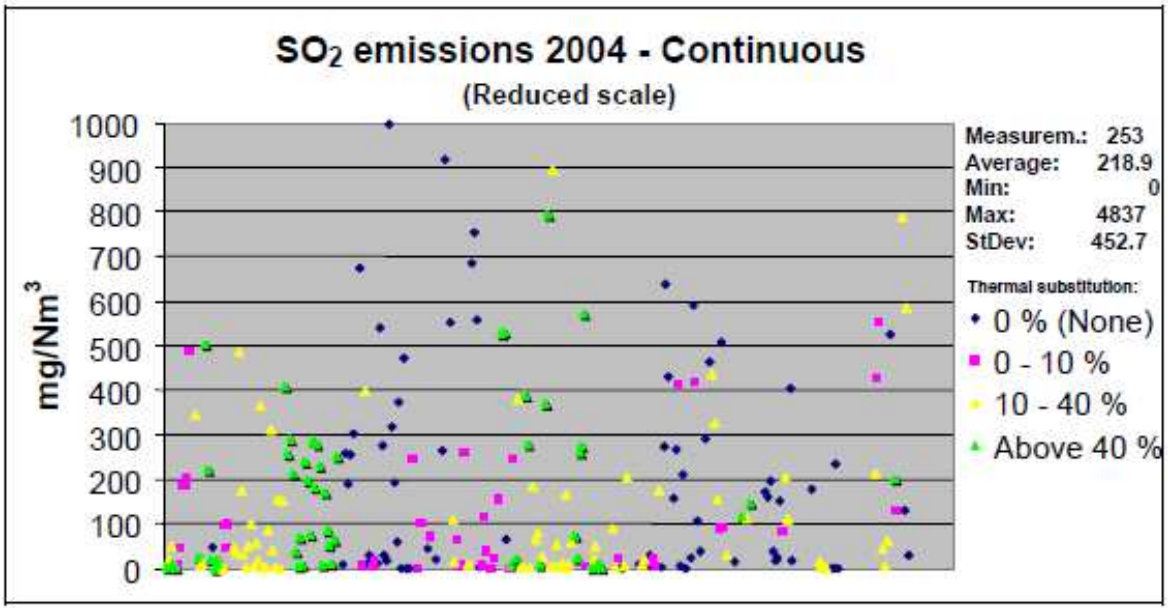

FIGURE 6. VALUES OF SO2 MEASUREMENTS IN THE CLEAN GAS FROM CEMENT PLANTS IN THE EU-27 AND EU-23+ COUNTRIES

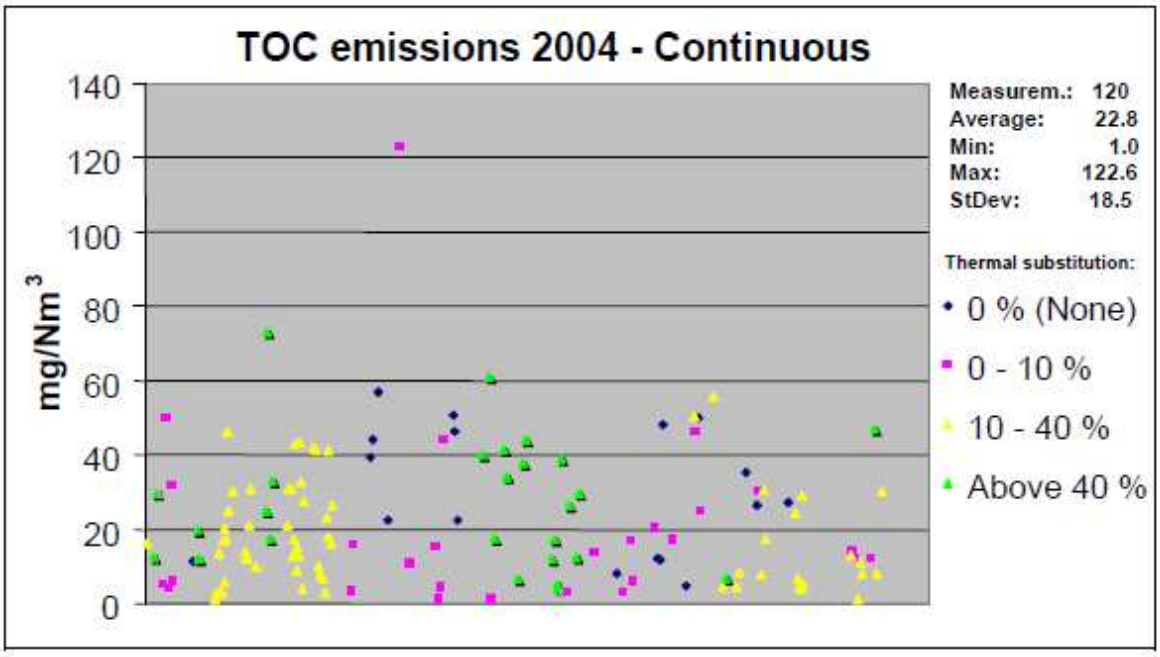

FIGURE 7. TOC EMISSION VALUES FROM CONTINUOUS MEASUREMENTS IN THE CLEAN GAS OF CEMENT KILNS IN THE EU-27 AND EU-23+ COUNTRIES

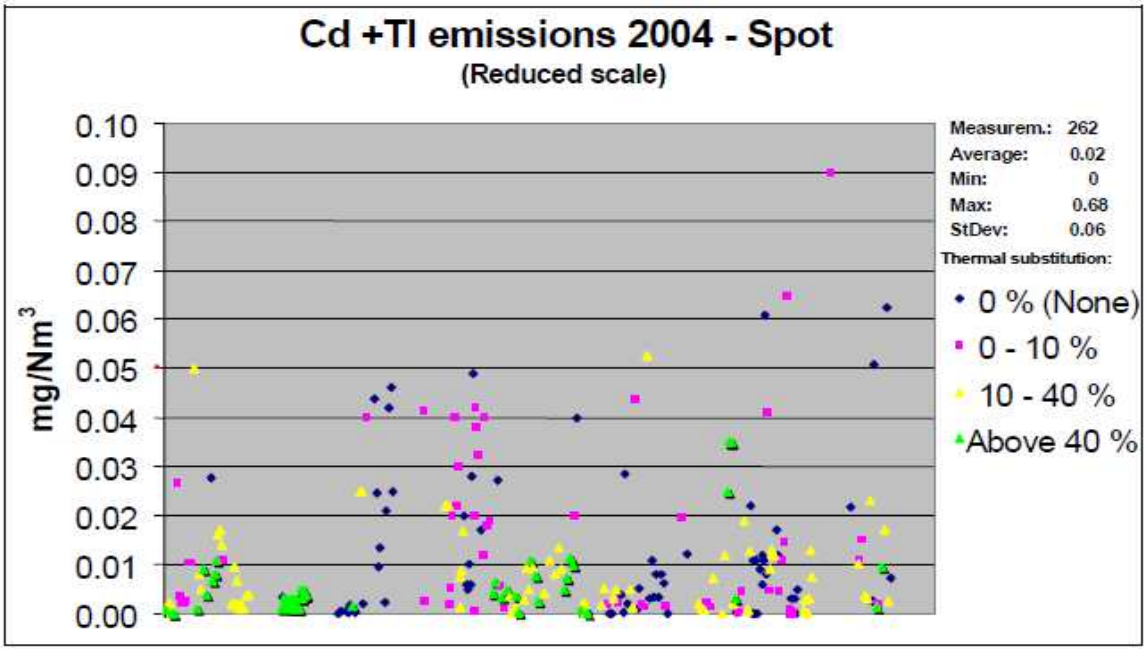

FIGURE 8. CADMIUM AND THALLIUM EMISSION VALUES FROM 262 SPOT (CD, TL) MEASUREMENTS IN THE EU-27 AND EU-23+ COUNTRIES

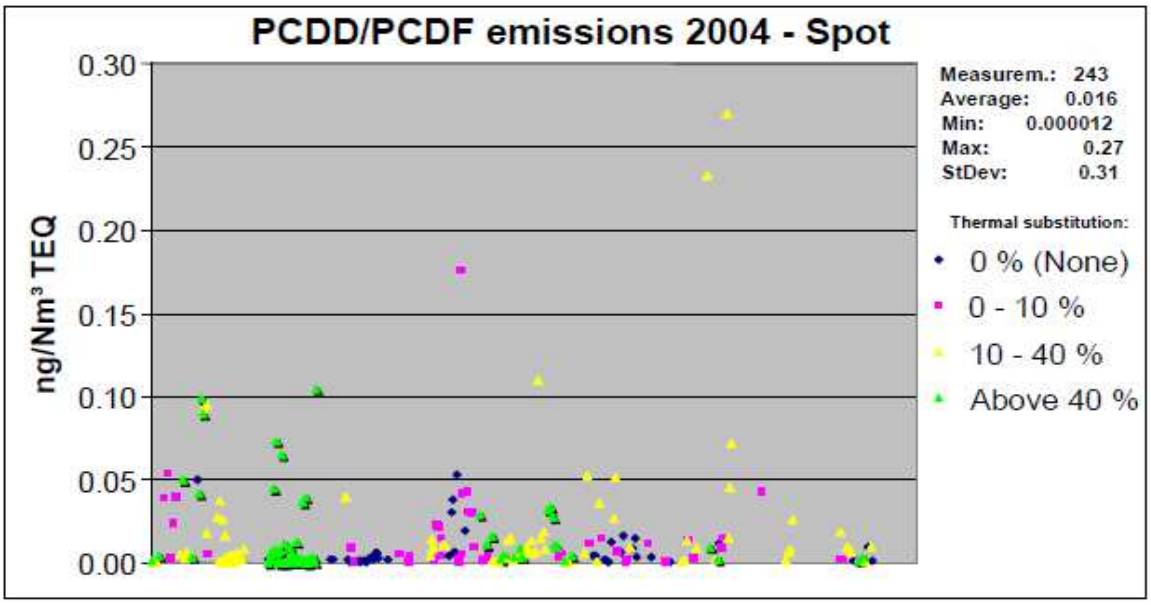

FIGURE 9. EMISSIONS OF PCDD/F IN THE EU-27 AND EU-23+ COUNTRIES IN 2004 CATEGORIZED BY THERMAL SUBSTITUTION RATE

1.2 KILN AND PROCESS IMPACTS

It is possible for the equipment involved in cement manufacture to be affected by the materials used in the process. The consequences of changes in material inputs include, but are not limited to, unexpected changes in production capacity, thermo stress on equipment, corrosion, and blockages and buildups. All of these can lead to inefficient operation and equipment malfunctions. The type of fuel used on the system can introduce material components into the process that can interfere with operation as well as the chemistry of the process. For these reasons, Argos takes extensive measures to ensure that all raw material and fuel inputs are carefully monitored and meet the necessary quality specifications for its fuel and raw material blends. In order to maintain best practice as it relates to quality control, Argos operates with strict quality control process.

1.2.1 PRODUCTION CHANGES

AFM generally contain higher moisture content than traditional fuels like coal or petroleum coke. As a result, the amount of exhaust gas produced when burning AFM may increase.[36] Clinker production is often limited by kiln induction fan capacity, so an increase of gas production can result in decreased clinker production capacity. Elevated moisture in the AFM also can decrease flame temperature, which also can similarly decrease production capacity.

1.2.2 THERMO STRESS ON KILN SYSTEM

Rotary cement kilns do not contain homogenous temperature environments on the inside. These complex chemical reactors contain several temperature zones that are imperative to the proper formation of clinker. The walls of a kiln are lined with various types of thermally insulating refractory (i.e. brick) at the different temperature regions.[37] The use of AFM can cause temperature fluctuations in the kiln. The difference in variability of heat content and particle size of these AFM compared to traditional fuels must be considered because high variability in heat content and particle size may cause the flame in the kiln to take a different shape, shifting the location where sintering and transitioning temperatures occur. When this happens, sections of the kiln's interior lining may be subject to

[36] MVW Lechtenberg & Partner. "Kiln Impact." Proc. of Workshop Alternative Fuel Project Implementation, Mülheim an Der Ruhr, Germany.

[37] Potgieter, J.H., R.H.M. Godoi, and R. van Grieken. "A case study of high-temperature corrosion in rotary cement kilns." The Journal of The South African Institute of Mining and Metallurgy (Nov. 2004): 603-606. The South African Institute of Mining and Metallurgy. Web. 19 Oct. 2011. <http://www.saimm.co.za/Journal/v104n10p603.pdf>.

temperatures if they were not designed for and cracking or spalling of the brick inside the kiln can occur.[31]

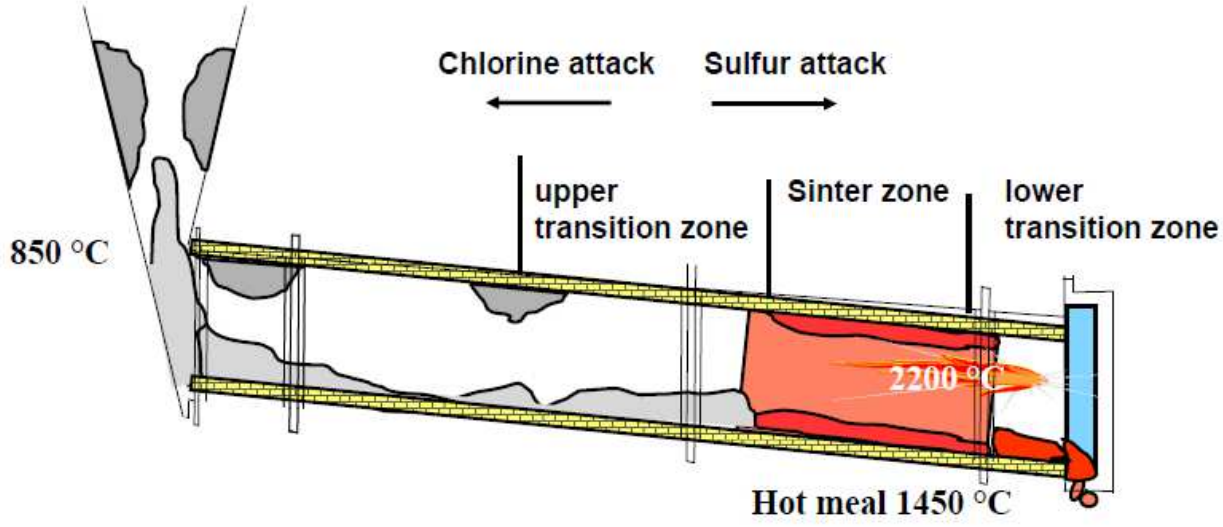

FIGURE 10. ROTARY KILN TEMPERATURE ZONES, CORROSION, AND BUILDUP[38]

1.2.3 CORROSION

Since the introduction of corrosive compounds through input materials is possible, they are closely monitored and screened to prevent damage to the kiln. The main culprits of corrosion inside of a cement kiln are sulfur and chlorine. Both of these chemicals readily form acid gasses than can penetrate the refractory lining. The environment in a cement kiln provides an opportunity for these acid gasses to act as the oxygen donors and react with iron lining of the kiln. [39] Additionally, the elevated presence of alkalis inside the kiln can penetrate the refractory lining and form alkali salt crystals in between the kiln shell and the brick. As these crystals form, they can damage the brick and even cause it to crack. [40] The zones subject to this form of corrosion may change when firing different fuel materials, so it is important for the fuel types and inputs to be carefully coordinated.

[38] Schmidl, Dr. Erwin, and Holcim. Impact of Alternative Fuels on Refractory Material. 9 Dec. 2008.

[39] Potgieter, J.H., R.H.M. Godoi, and R. van Grieken. "A case study of high-temperature corrosion in rotary cement kilns." The Journal of The South African Institute of Mining and Metallurgy (Nov. 2004): 603-606. The South African Institute of Mining and Metallurgy. Web. 19 Oct. 2011. <http://www.saimm.co.za/Journal/v104n10p603.pdf>.

[40] MVW Lechtenberg & Partner. "Kiln Impact." Proc. of Workshop Alternative Fuel Project Implementation, Mülheim an Der Ruhr, Germany.

1.2.4 BLOCKAGES AND BUILDUPS

Monitoring the input of sulfur and chlorine into the cement kiln is paramount to successfully producing cement product. As noted in the section above on chlorine, it is necessary to maintain the proper ratio of sulfur to alkalis; otherwise there is a risk of kiln buildup. Kiln buildup occurs when an excessive amount of condensed solids form in the preheater tower due to out-of-balance chemical ratios of alkalis present in the raw material (i.e. sodium and potassium), sulfur, and chlorine in combination with cooler gas temperature. If a chemical balance is not maintained, buildup deposits in the preheater tower of alkali chlorides and alkali sulfates can clog the preheater tower within minutes of a severe chemical imbalance and require the shutdown of the kiln. The following equation, known as the sulfate modulus, shows the relationship of the three primary components that affect kiln buildup.[41]

$$M = \frac{\frac{SO_3}{80}}{\frac{K_2O}{94} + \frac{Na_2O}{62} - \frac{0.5 * Cl}{35.5}} = 0.8 \; to \; 1.25$$

[41] FDEP Permit Application, from Permit No. 0250020-031-AC

1.3 CLINKER IMPACTS

When considering the effects that AFM may have on human health and the environment, it is important also to remember that Argos is manufacturing a salable product. This product must be of consistent and competitive quality; and its quality is directly affected by the raw materials and fuels used in its synthesis. Cement manufacture is unique in that it produces essentially no waste streams. In a cement kiln, there are only two mechanisms for compounds to leave the system once entered:

1. Gaseous and particle emissions through the designed emission point (from the stack)
2. Entrained in the clinker (as product)

Gaseous and particle emissions have been discussed previously in this application. This section will focus on several characteristics of clinker that can be affected by the use of alternative fuel materials, and thus the limiting factors of certain inputs. The Department can be assured that AFM will be carefully monitored by Argos in order to successfully meet the requirements to satisfactorily manufacture an acceptable clinker product while operating within its permitted air emission limits.

1.3.1 CLINKER FORMATION

Deviations in temperature can affect the formation of clinker crystals inside of a rotary kiln. If heating and cooling of raw feed is too slow, cement crystals become large and more energy is required for grinding.[42] It is important that fuel substitutions do not significantly alter temperature conditions in the kiln. Similarly, the presence of excess sulfur in the fuel will limit gypsum addition, and produce a clinker that is more difficult to grind.[43]

1.3.2 FLOWABILITY

A high sulfur fuel can have several effects on the cement product. One of these effects can be the formation of alkali oxides, which can react with the moisture in the air and decrease cement flowability, making it more difficult to transport.[37]

[42] Wellington, Mark, and Sanjiv Dhanjal. *Optimising Combustion with Alternate Fuels and Monitoring with Online XRD*. Proc. Of ACFM Technical Symposium, Jakarta. Web. <http://www.fct-actech.com/documents/20060711AFMCM%202006-FCT%20Conference%20paper.pdf>.

[43] Longman, P.A. *Chemistry in the Kiln.*

1.3.3 Setting Time

One of the more important features of a cement product is its setting time. This is the time that is required before the cement becomes hard when it is being used. Several compounds that may be present in the fuel may adversely affect cement setting time when available in high concentrations. These include, but are not limited to, lead, fluorine, phosphorus, and zinc. [4445, 46] Fuel materials used with elevated levels of these constituents that may conflict with the quality of the final product are not desirable and will not be targeted for use in the Argos Newberry Cement Plant Kiln.

1.3.4 Appearance

Some heavy metals, such as manganese, phosphorous have the ability to affect cement color significantly degrading the salability of the cement.[53]

1.3.5 Strength

Arguably the key component to a quality cement product, this aspect can be affected by several different components in fuel materials. Fluorine, present in in high concentrations, will decrease early strength, though if limited to approximately 0.2% and used in conjunction with alkalis and SO_3, strength can be maximized. Heavy metals like titanium and manganese are not volatile and will be entrained into the clinker. These metals also slightly decrease early strength. As well, zinc, copper, vanadium, and lead will slow cement hydration and reduce strength development in concentrations over 0.5%. Phosphorus will also reduce early strength. If alkalis are present in the fuel material, they can enhance early strength, but may reduce late strength.[53]

[44] Larsen, Morten Boberg, Flsmidth A/S Research and development. 2007. http://orbit.dtu.dk/fedora/objects/orbit:82337/datastreams/file_63873557-d993-41da-9b70e1a26ec94375/content

[45] Longman, P.A. *Chemistry in the Kiln.*

[46] MVW Lechtenberg & Partner. "Kiln Impact." Proc. of Workshop Alternative Fuel Project Implementation, Mülheim an Der Ruhr, Germany.

3. PSD Applicability Analysis

PSD Applicability Analysis

187-14-02

KOOGLER & ASSOCIATES, INC.
ENVIRONMENTAL SERVICES

APPENDIX 3

PSD APPLICABILITY ANALYSIS

APPENDIX 3

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PSD APPLICABILITY ANALYSIS

PSD applicability analysis in this section addresses whether this project triggers PSD review. Baseline actual emissions are calculated in detail for the existing units using the hierarchy of data per 62-210.370, F.A.C. The analysis addresses PSD applicability of NO_x, SO_2, CO, VOC, PM/PM10/PM2.5 and GHGs. Baseline emissions of NO_x, SO_2, THC (as VOC), and CO (Kiln 2) are based on 40 CFR 60 certified CEMs data. Baseline emissions for CO (Kiln 1 only) and PM are based on 5-yr averages of stack tests. Baseline emissions of CO_2 are based on 2011 to 2013 from CEMs certified through 40 CFR 98. Emissions of nitrous oxide and methane are calculated per 40 CFR 98 using emissions factors from Table C-2 in 40 CFR 98 Appendix C. The analysis indicates that the proposed project should not exceed the significance threshold values of any PSD pollutants.

It is important to note that biogenic fuels have been widely permitted by the EPA for control of Greenhouse Gases (GHG) for PSD purposes.[1] FDEP has not carried forward the EPA's biogenic CO_2 deferral program (which will expire July 21, 2014) and thus, this application does not include biogenic CO_2 deductions in the PSD applicability analysis.

BASELINE ACTUAL EMISSIONS

Pollutants analyzed include SO_2, NO_x, CO, VOCs, PM/PM10/PM2.5, and greenhouse gasses (GHG, (CO_2, N_2O and CH_4)).

A summary of operations data from the past 5 years for Kilns 1 and 2 individually and combined are provided in Table 1. Table 2 provides 2009 to 2013 calendar year emissions of PSD pollutants gathered from annual operating report submitted to FDEP. From these data, all baseline actual emissions (BAE) were chosen for 2012-2013 years. Note that PSD applicability analysis requires consideration of the same 24-month period for multiple units in a project. Because Kiln 2 has only been operating for full calendar years of 2011-2013, the range of 24-month periods is limited and therefore the 2012-2013 period was used for the baseline actual emissions. The new material handling and processing unit baseline actual emissions are zero tpy.

[1] Greenhouse Gas Best Available Control Technology Analysis for Ravena Plant Modernization Project. Prepared for Lafarge Building Materials, Inc. by Environmental Quality Management, Inc.

PROJECTED ACTUAL EMISSIONS

Based on past operations and trends in over the last couple of years in the national and state economy, the 5-yr projected actual emissions are based on production at 90 percent of permitted capacity. Table 2 shows past operations data. Kiln 1 exceeded 90 percent of annual capacity in 2009. Kiln 2 is relatively new but has already exceeded 60 percent of permitted capacity since 2011 which is during severe economic downturn. Therefore, it is reasonable to expect that without regard to this project, the two kiln systems could reach 90 percent of permitted capacity in the next 5 years. Table 3 provides the calculated projected actual emissions (PAE) for kilns 1 and 2. The new unit projected actual emissions are set equal to potential emissions.

PSD APPLICABILITY ANALYSIS RESULTS

Based on the demand growth exclusion of the projected actual emissions increase, which is projected to occur regardless of this project, this project should not cause a significant increase of PSD pollutant emissions such that PSD significant thresholds are not expected to be exceeded. This coincides with the determinations for the five other cement plants AC permit actions for use of AFM.

Based on the discussion in Appendix 2 and approved AC permits for five other cement plants in Florida PSD pollutants should not increase due to this project. In addition, the project does not increase the production capacity of the facility. Based on the PSD analysis, the Argos Newberry cement plant proposes the following monitoring, reporting and recordkeeping provisions in the AC permit.

a. The permittee shall monitor the emissions of any PSD pollutant that the Department identifies could increase as a result of the construction or modification and that is emitted by any emissions unit that could be affected; and, using the most reliable information available, calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of 5 years following resumption of regular operations after the change. Emissions shall be computed in accordance with the provisions in Rule 62-210.370, F.A.C.

b. The permittee shall report to the Department within 60 days after the end of each calendar year following one calendar year after the calendar year of completing equipment shakedown and one AFM category assessment period. The report will set out the unit's annual emissions during the calendar year that preceded submission of the report. The report shall contain the following:

    1) The name, address and telephone number of the owner or operator of the major stationary source;

2) The annual emissions calculations pursuant to the provisions of 62-210.370, F.A.C., which are provided in Appendix C of this permit;

3) If the emissions differ from the preconstruction projection, an explanation as to why there is a difference; and

4) Any other information that the owner or operator wishes to include in the report.

c. The information required to be documented and maintained pursuant to subparagraphs 62-212.300(1)(e)1 and 2, F.A.C., shall be submitted to the Department, which shall make it available for review to the general public.

Note that the item b. above is written to clarify the timing of when PSD reports should be submitted relative to completing the construction permitted activities.

TABLE 1. PAST OPERATIONS DATA (2009-2013).

Kiln 1 Past Operational Data

Year	2013
Coal[a]	46,773 ton/yr
Tires[a]	1,690 ton/yr
Natural Gas[a]	80.8 mcf/yr
Total Heat Input	1,348,304 MMBtu/yr
Preheater Feed	661,383 ton/yr
Clinker Production	396,830 ton/yr

Year	2012
Coal[a]	28,647 ton/yr
Tires[a]	712 ton/yr
Natural Gas[a]	5.2 mcf/yr
Total Heat Input	0,770,250 MMBtu/yr
Preheater Feed	420,582 ton/yr
Clinker Production	252,349 ton/yr

Year	2011
Coal[a]	16,287 ton/yr
Tires[a]	796 ton/yr
Natural Gas[a]	01.72 mcf/yr
Total Heat Input	0,447,555 MMBtu/yr
Preheater Feed	239,483 ton/yr
Clinker Production	143,690 ton/yr

Year	2010
Coal[a]	49,698 ton/yr
Tires[a]	2,666 ton/yr
Natural Gas[a]	0.4 mcf/yr
Total Heat Input	1,367,235 MMBtu/yr
Preheater Feed	681,652 ton/yr
Clinker Production	408,991 ton/yr

Year	2009
Coal[a]	53,872 ton/yr
Tires[a]	2197 ton/yr
Natural Gas[a]	5.00 mcf/yr
Total Heat Input	1,467,438 MMBtu/yr
Preheater Feed	759,388 ton/yr
Clinker Production	455,633 ton/yr

Year	2012-2013
Coal[a]	51,785 ton/yr
Tires[a]	2,432 ton/yr
Natural Gas[a]	2.7 mcf/yr
Total Heat Input	1,417,336 MMBtu/yr
Preheater Feed	720,520 ton/yr
Clinker Production	432,312 ton/yr

a. assumed actual heat content coal 26 mmbtu/ton, tires 28 mmbtu/ton, natural gas 1,050 mmbtu/mcf

b. Preheater feed estimated at a Clinker Production/Preheater Feed ratio of 0.6.

Projected clinker and heat input for Projected Actual Emissions (PAE)

baseline years

	clinker	heat input
Argos 5-yr projected (90%)	720,000 ton/yr	2,346,051 MMBtu/yr

Kiln 2 Past Operational Data

Year	2013
Coal[a]	43,525 ton/yr
Tires[a]	793 ton/yr
Natural Gas[a]	14.7 mcf/yr
Total Heat Input	1,169,289 MMBtu/yr
Preheater Feed	584,193 ton/yr
Clinker Production	350,516 ton/yr

Year	2012
Coal[a]	47,530 ton/yr
Tires[a]	1,386 ton/yr
Natural Gas[a]	1.8 mcf/yr
Total Heat Input	1,276,478 MMBtu/yr
Preheater Feed	689,177 ton/yr
Clinker Production	413,506 ton/yr

Year	2011
Coal[a]	44,509 ton/yr
Tires[a]	1,820 ton/yr
Natural Gas[a]	06.20 mcf/yr
Total Heat Input	1,214,704 MMBtu/yr
Preheater Feed	658,180 ton/yr
Clinker Production	394,908 ton/yr

Year	2010
Coal[a]	30,674 ton/yr
Tires[a]	1,214 ton/yr
Natural Gas[a]	2.8 mcf/yr
Total Heat Input	0,834,488 MMBtu/yr
Preheater Feed	476,487 ton/yr
Clinker Production	285,892 ton/yr

Year	2012-2013
Coal[a]	45,528 ton/yr
Tires[a]	1,090 ton/yr
Natural Gas[a]	8.3 mcf/yr
Total Heat Input	1,222,884 MMBtu/yr
Preheater Feed	636,685 ton/yr
Clinker Production	382,011 ton/yr

a. assumed actual heat content coal 26 mmbtu/ton, tires 28 mmbtu/ton, natural gas 1,050 mmbtu/mcf

b. Preheater feed estimated at a Clinker Production/Preheater Feed ratio of 0.6.

Projected clinker and heat input for Projected Actual Emissions (PAE)

	clinker	heat input
Argos 5-yr projected (90%)	985,500 ton/yr	3,065,970 MMBtu/yr

Project (Kiln 1 + 2) Past Operational Data

Year	2013
Coal[a]	90,298 ton/yr
Tires[a]	2,483 ton/yr
Natural Gas[a]	96 ton/yr
Total Heat Input	2,517,593 MMBtu/yr
Preheater Feed	1,245,577 ton/yr
Clinker Production	747,346 ton/yr

Year	2012
Coal[a]	76,177 ton/yr
Tires[a]	2,098 ton/yr
Natural Gas[a]	07 ton/yr
Total Heat Input	2,046,728 MMBtu/yr
Preheater Feed	1,109,758 ton/yr
Clinker Production	665,855 ton/yr

Year	2011
Coal[a]	60,796 ton/yr
Tires[a]	1,820 ton/yr
Natural Gas[a]	08 ton/yr
Total Heat Input	1,639,971 MMBtu/yr
Preheater Feed	897,663 ton/yr
Clinker Production	538,598 ton/yr

Year	2010
Coal[a]	75,183 ton/yr
Tires[a]	1,214 ton/yr
Natural Gas[a]	09 ton/yr
Total Heat Input	1,998,232 MMBtu/yr
Preheater Feed	1,158,138 ton/yr
Clinker Production	694,883 ton/yr

Year	2009
Coal[a]	53,872 ton/yr
Tires[a]	2,197 ton/yr
Natural Gas[a]	05 ton/yr
Total Heat Input	1,467,438 MMBtu/yr
Preheater Feed	759,388 ton/yr
Clinker Production	455,633 ton/yr

a. assumed actual heat content coal 26 mmbtu/ton, tires 28 mmbtu/ton, natural gas 1,050 mmbtu/mcf

b. Preheater feed estimated at a Clinker Production/Preheater Feed ratio of 0.6.

Projected clinker and heat input for Projected Actual Emissions (PAE)

	clinker	heat input
Argos 5-yr projected (90%)	1,705,500 ton/yr	5,315,068 MMBtu/yr

TABLE 2. PAST ACTUAL EMISSIONS DATA (2009-2013) AND BASELINE ACTUAL EMISSIONS.

Kiln 1 - Baseline Actual Emissions

Nitrogen Oxides - CEMs (2012 - 2013)	
PSD Baseline Emissions	328.8 ton/yr
	2.03 lb/ton C

Carbon Monoxide - Method10 (2012 - 2013)	
PSD Baseline Emissions	286.9 ton/yr
	1.77 lb/ton C

Sulfur Dioxide - CEMs (2012 - 2013)	
PSD Baseline Emissions	.74 ton/yr
	0.005 lb/ton C

Volatile Organic Compounds - CEMs (2012 - 2013)	
PSD Baseline Emissions	7.81 ton/yr
	0.05 lb/ton C

Particulate Matter - Stack Tests and Factors (2012 - 2013)	
PSD PM Baseline Emissions	5.7 ton/yr
	0.04 lb/ton C
PSD PM10 Baseline Emiss.	5.5 ton/yr
	0.03 lb/ton C
PSD PM2.5 Baseline Emiss.	3.3 ton/yr
	0.02 lb/ton C

Carbon Dioxide - CEMs (2012 - 2013)	
PSD Baseline Emissions	329,969 ton/yr
	2033.1 lb/ton C

Methane - Emiss Factor (2012 - 2013)	
PSD Baseline Emissions	10.9 ton/yr
	0.0670 lb/ton C

Nitrous Oxide - Emiss Factor (2012 - 2013)	
PSD Baseline Emissions	1.67 ton/yr
	0.0103 lb/ton C

Kiln 2 - Baseline Actual Emissions

Nitrogen Oxides - CEMs (2012 - 2013)	
PSD Baseline Emissions	343.5 ton/yr
	1.80 lb/ton C

Carbon Monoxide - CEMs (2012 - 2013)	
PSD Baseline Emissions	572.2 ton/yr
	3.00 lb/ton C

Sulfur Dioxide - CEMs (2012 - 2013)	
PSD Baseline Emissions	5.49 ton/yr
	0.03 lb/ton C

Volatile Organic Compounds - CEMs (2012 - 2013)	
PSD Baseline Emissions	8.4 ton/yr
	0.04 lb/ton C

Particulate Matter - Stack Tests and Factors (2012 - 2013)	
PSD PM Baseline Emissions	6.5 ton/yr
	0.03 lb/ton C
PSD PM10 Baseline Emiss.	6.3 ton/yr
	0.03 lb/ton C
PSD PM2.5 Baseline Emiss.	3.8 ton/yr
	0.02 lb/ton C

Carbon Dioxide - CEMs (2012 - 2013)	
PSD Baseline Emissions	338,960 ton/yr
	1774.6 lb/ton C

Methane - Emiss Factor (2012 - 2013)	
PSD Baseline Emissions	13.4 ton/yr
	0.0700 lb/ton C

Nitrous Oxide - Emiss Factor (2012 - 2013)	
PSD Baseline Emissions	2.16 ton/yr
	0.0113 lb/ton C

Project (Kiln 1+2) Baseline Actual Emissions

Nitrogen Oxides - CEMs	
PSD Baseline Emissions	672.3 ton/yr

Carbon Monoxide - CEMS AND Method10	
PSD Baseline Emissions	859.1 ton/yr

Sulfur Dioxide - CEMs	
PSD Baseline Emissions	6.23 ton/yr

Volatile Organic Compounds - CEMs	
PSD Baseline Emissions	16.2 ton/yr

Particulate Matter - Stack Tests and Factors	
PSD PM Baseline Emissions	12.2 ton/yr
PSD PM10 Baseline Emiss.	11.8 ton/yr
PSD PM2.5 Baseline Emiss.	7.1 ton/yr

Carbon Dioxide - CEMs	
PSD Baseline Emissions	678,899 ton/yr

Methane - Emiss Factor	
PSD Baseline Emissions	39.1 ton/yr

Nitrous Oxide - Emiss Factor	
PSD Baseline Emissions	2.16 ton/yr

Kiln 1 - Historical Emissions Data

Nitrogen Oxides (CEMs)[a]		
Calendar year data		
2013:	456.3 ton/yr	2.300 lb/ton C
2012:	201.2 ton/yr	1.595 lb/ton C
2011:	113.4 ton/yr	1.578 lb/ton C
2010:	412.7 ton/yr	2.018 lb/ton C
2009:	522.1 ton/yr	2.292 lb/ton C
5-yr avg	1.957 lb/ton C	

Carbon Monoxide (Method 10 test)		
Calendar year data		
2013:	350.8 ton/yr	1.768 lb/ton C
2012:	223.1 ton/yr	1.768 lb/ton C
2011:	127.4 ton/yr	1.774 lb/ton C
2010:	472.5 ton/yr	2.311 lb/ton C
2009:	553.7 ton/yr	2.430 lb/ton C
5-yr avg	2.010 lb/ton C	

Sulfur Dioxide (CEMs)		
Calendar year data		
2013:	0.2 ton/yr	0.001 lb/ton C
2012:	1.3 ton/yr	0.010 lb/ton C
2011:	1.8 ton/yr	0.025 lb/ton C
2010:	2.9 ton/yr	0.014 lb/ton C
2009:	1.8 ton/yr	0.008 lb/ton C
5-yr avg	0.012 lb/ton C	

Volatile Organic Compounds (CEMs)		
Calendar year data		
2013:	9.55 ton/yr	0.048 lb/ton C
2012:	6.07 ton/yr	0.048 lb/ton C
2011:	4.19 ton/yr	0.058 lb/ton C
2010:	13.80 ton/yr	0.068 lb/ton C
2009:	17.35 ton/yr	0.076 lb/ton C
5-yr avg	0.060 lb/ton C	

PM (Method 5 test)[a]		
Calendar year data		
2013:	6.95 ton/yr	0.035 lb/ton C
2012:	4.42 ton/yr	0.035 lb/ton C
2011:	2.55 ton/yr	0.036 lb/ton C
2010:	8.72 ton/yr	0.043 lb/ton C
2009:	12.83 ton/yr	0.056 lb/ton C
5-yr avg	0.041 lb/ton C	

Method 5 does not measure condensables. Condensables accounted for in summary calculations for PSD Table.

Carbon Dioxide (CEMs)[b]		
Calendar year data		
2013:	388,362 ton/yr	388,362 ton CO2e/yr
2012:	271,576 ton/yr	271,576 ton CO2e/yr
2011:		ton CO2e/yr
2010:		ton CO2e/yr
2009:		ton CO2e/yr

Carbon Dioxide Equivalent (CEMs + methane and nitrous oxide)	
Calendar year data	
2013:	389,406 ton CO2e/yr
2012:	272,071 ton CO2e/yr
2011:	ton CO2e/yr
2010:	ton CO2e/yr
2009:	ton CO2e/yr

Methane (Emission Factor)[c]		
Calendar year data		
2013:	15.4 ton/yr	385.3 ton CO2e/yr
2012:	6.3 ton/yr	158.4 ton CO2e/yr
2011:		. ton CO2e/yr
2010:		. ton CO2e/yr
2009:		. ton CO2e/yr

Nitrous Oxide (Emission Factor)[c]		
Calendar year data		
2013:	2.21 ton/yr	659.5 ton CO2e/yr
2012:	1.13 ton/yr	337.2 ton CO2e/yr
2011:		. ton CO2e/yr
2010:		. ton CO2e/yr
2009:		. ton CO2e/yr

a: Lb/ton Clinker based on annual lbs of CEMs pollutant per annual tonnage clinker.

b: CEMs data as submitted for EGGRT reports. (converted from EGGRT in metric tons)

c:CO2E values as submitted for EGGRT reports. Actual tons calculated using GWP of 25 for Ch4 and 298 for N2O.

Kiln 2 - Historical Emissions Data

Nitrogen Oxides (CEMs)[a]		
Calendar year data		
2013:	335.3 ton/yr	1.913 lb/ton C
2012:	351.7 ton/yr	1.701 lb/ton C
2011:	495.3 ton/yr	2.508 lb/ton C
2010:	453.6 ton/yr	3.173 lb/ton C
5-yr avg	2.324 lb/ton C	

Carbon Monoxide (CEMs)		
Calendar year data		
2013:	630.3 ton/yr	3.596 lb/ton C
2012:	514.1 ton/yr	2.487 lb/ton C
2011:	411.4 ton/yr	2.084 lb/ton C
2010:	305.5 ton/yr	2.137 lb/ton C
5-yr avg	2.576 lb/ton C	

Sulfur Dioxide (CEMs)		
Calendar year data		
2013:	0.1 ton/yr	0.000 lb/ton C
2012:	10.9 ton/yr	0.053 lb/ton C
2011:	0.1 ton/yr	0.001 lb/ton C
2010:	0.0 ton/yr	0.000 lb/ton C
5-yr avg	0.013 lb/ton C	

Volatile Organic Compounds (CEMs)		
Calendar year data		
2013:	10.30 ton/yr	0.059 lb/ton C
2012:	6.50 ton/yr	0.031 lb/ton C
2011:	2.69 ton/yr	0.014 lb/ton C
2010:	2.20 ton/yr	0.015 lb/ton C
5-yr avg	0.030 lb/ton C	

PM (Method 5 test)[a]		
Calendar year data		
2013:	5.95 ton/yr	0.034 lb/ton C
2012:	7.03 ton/yr	0.034 lb/ton C
2011:	6.20 ton/yr	0.031 lb/ton C
2010:	14.82 ton/yr	0.104 lb/ton C
5-yr avg	0.051 lb/ton C	

Method 5 does not measure condensables. Condesnables accounted for in summary calculations for PSD Table.

Carbon Dioxide (CEMs)[b]		
Calendar year data		
2013:	309,607 ton/yr	309,607 ton CO2e/yr
2012:	368,313 ton/yr	368,313 ton CO2e/yr
2011:		ton CO2e/yr
2010:		ton CO2e/yr

Carbon Dioxide Equivalent (CEMs + methane and nitrous oxide)	
Calendar year data	
2013:	310,506 ton CO2e/yr
2012:	369,371 ton CO2e/yr
2011:	ton CO2e/yr
2010:	ton CO2e/yr

Methane (Emission Factor)[c]		
Calendar year data		
2013:	13.2 ton/yr	330.3 ton CO2e/yr
2012:	13.5 ton/yr	338.1 ton CO2e/yr
2011:		. ton CO2e/yr
2010:		. ton CO2e/yr

Nitrous Oxide (Emission Factor)[c]		
Calendar year data		
2013:	1.91 ton/yr	569. ton CO2e/yr
2012:	2.42 ton/yr	720. ton CO2e/yr
2011:		. ton CO2e/yr
2010:		. ton CO2e/yr

a: Lb/ton Clinker based on annual lbs of CEMs pollutant per annual tonnage clinker.

b: CEMs data as submitted for EGGRT reports. (converted from EGGRT in metric tons)

c:CO2E values as submitted for EGGRT reports. Actual tons calculated using GWP of 25 for Ch4 and 298 for N2O.

Kiln 1+2 - Historical Emissions Data

Nitrogen Oxides (CEMs)[a]	
Calendar year data	
2013:	791.6 ton/yr
2012:	552.9 ton/yr
2011:	608.7 ton/yr
2010:	866.3 ton/yr
2009:	522.1 ton/yr

Carbon Monoxide (CEMs)	
Calendar year data	
2013:	981.1 ton/yr
2012:	737.2 ton/yr
2011:	538.8 ton/yr
2010:	778.0 ton/yr
2009:	553.7 ton/yr

Sulfur Dioxide (CEMs)	
Calendar year data	
2013:	0.3 ton/yr
2012:	12.2 ton/yr
2011:	1.9 ton/yr
2010:	2.9 ton/yr
2009:	1.8 ton/yr

Volatile Organic Compounds (CEMs)	
Calendar year data	
2013:	19.85 ton/yr
2012:	12.57 ton/yr
2011:	6.88 ton/yr
2010:	16.00 ton/yr
2009:	17.35 ton/yr

PM (Method 5 test)[a]	
Calendar year data	
2013:	12.90 ton/yr
2012:	11.45 ton/yr
2011:	8.75 ton/yr
2010:	23.54 ton/yr
2009:	12.83 ton/yr

Method 5 does not measure condensables. Condesnables accounted for in summary calculations for PSD Table.

Carbon Dioxide (CEMs)[b]	
Calendar year data	
2013:	620,113 ton CO2e/yr
2012:	737,684 ton CO2e/yr
2011:	ton CO2e/yr
2010:	ton CO2e/yr
2009:	

Carbon Dioxide Equivalent (CEMs + methane and nitrous oxide)	
Calendar year data	
2013:	621,582 ton CO2e/yr
2012:	739,462 ton CO2e/yr
2011:	ton CO2e/yr
2010:	ton CO2e/yr
2009:	ton CO2e/yr

Methane (Emission Factor)[c]		
Calendar year data		
2013:	36. ton/yr	899 ton CO2e/yr
2012:	42.3 ton/yr	1,058 ton CO2e/yr
2011:		. ton CO2e/yr
2010:		. ton CO2e/yr
2009:		. ton CO2e/yr

Nitrous Oxide (Emission Factor)[c]		
Calendar year data		
2013:	1.91 ton/yr	569 ton CO2e/yr
2012:	2.42 ton/yr	720 ton CO2e/yr
2011:		. ton CO2e/yr
2010:		. ton CO2e/yr
2009:		. ton CO2e/yr

a: Lb/ton Clinker based on annual lbs of CEMs pollutant per annual tonnage clinker.

b: CEMs data as submitted for EGGRT reports. (converted from EGGRT in metric tons)

c:CO2E values as submitted for EGGRT reports. Actual tons calculated using GWP of 25 for Ch4 and 298 for N2O.

TABLE 3. PSD APPLICABILITY ANALYSIS.

PSD Pollutant	SO_2	NO_x	CO	VOC/Ozone	PM	PM10[a]	PM2.5[a]	CO_2	CH_4	N_2O	CO_{2e}[b]
Baseline Actual Emissions (BAE)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)
---Existing Unit (EU003)	Baseline Actual Production =			432312	ton clinker/yr						
---Baseline Actual Emissions (2012-2013)	0.74	328.8	286.9	7.8	5.7	5.5	3.3	329969	10.9	1.7	330759
---Existing Unit (EU010)	Baseline Actual Production =			382011	ton clinker/yr						
---Baseline Actual Emissions (2012-2013)	5.5	343.5	572.2	8.4	6.5	6.3	3.8	338960	13.4	2.2	339965
New Unit (processing/handling and injection equip.).											
---Baseline (Potential) Emiss.	0	0	0	0	0	0	0	0	0	0	0
Total BAE	6.2	672.3	859.1	16.2	12.2	11.8	7.1				670723.6

PSD Pollutant	SO_2	NO_x	CO	VOC/Ozone	PM	PM10[a]	PM2.5[a]	CO_2	CH_4	N_2O	CO_{2e}[b]
Projected Actual Emissions (PAE)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)
---Existing Unit (EU003)	Projected Actual Production =			720,000	ton clinker/yr						
Baseline Emissions rate at Projected Actual Production	1.23	547.5	477.9	13.0	9.5	9.2	5.5	549,551	18.1	2.8	550,867
---Existing Unit (EU010)	Projected Actual Production =			985,500	ton clinker/yr						
Baseline Emissions rate at Projected Actual Production	14.2	886.2	1476.1	21.7	16.7	16.3	9.7	874,439	34.5	5.6	877,030
A reasonable maximum projection of production of clinker that could have been achieved during baseline is based on producing more clinker up to 90 percent of capacity, clinker/yr											
Example PAE (EU003) (720,000 ton clinker /yr permitted) / (432312 ton clinker/yr actual) x (BAE, 0.74 ton SO2/yr) = 1.23 ton SO2/yr											
New Unit (processing/handling and injection equip.).											
---Projected (Potential) Emiss.	0.0	0.0	0.0	0.0	3.1	2.5	0.62	0	0	0	0
Total PAE	15.4	1433.7	1954.0	34.7	29.3	28.0	15.9	1,423,989	52.6	8.4	1,427,897

PSD Pollutant	SO_2	NO_x	CO	VOC/Ozone	PM	PM10[a]	PM2.5[a]	CO_2	CH_4	N_2O	CO_{2e}[b]
Could have Accommodated	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)	(tons/year)
Exclude emissions from PAE that could have emitted during the baseline actual emissions and that are unrelated to the particular project.											
Could have accom. BAE (EU003)	*0.49*	*218.8*	*190.9*	*5.2*	*3.8*	*3.7*	*2.2*	*219,582*	*7.2*	*1.1*	*220,108.1*
Could have accom. BAE (EU010)	*8.7*	*542.7*	*903.9*	*13.3*	*10.3*	*10.0*	*6.0*	*535,478*	*21.1*	*3.4*	*537,065.5*
adjusted PAE	*6.2*	*672.3*	*859.1*	*16.2*	*15.3*	*14.4*	*7.7*	*668,929*	*24.2*	*3.8*	*670,723.6*
adjusted PAE - BAE	0.0	0.0	0.0	0.0	3.1	2.5	0.62				0.0
PSD Significance Level	40	40	100	40	25	15	10				
Is Sig. Level triggered?	NO	NO	NO	NO	NO	NO	NO	Are GHGs > 75,000 CO2e (Subject to Regulation)?			NO

a. PM10 calculated as 84% and PM2.5 as 45% of filterable PM based on Table 11.6-5 of AP 42 for controlled (dry process with fabric filter) emissions. AP-42 has no size ratios for ESPs.
To account for condensable PM, the amount of stack-test measured filterable PM is increased by 13.2% to account for total PM. The fraction of 13.2 % is determined by SCC 3-05-006-22 in Table 11.6.-2 for filterable (0.25 lb/ton) and inorganic condensables (0.033 lb/ton). For example, 61.8 tn/yr PM x 0.132 (condensables) + 61.8 tn/yr x 0.84 (fraction of PM10 in filterable PM) = 60.1 ton/yr PM10.
AP-42 has no breakdown for filterable/condensable data for ESPs.

b. See Table 4 for GHG calculation details