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

KA 624-09-12
April 26, 2010

Ms. Christy Devore
Bureau of Air Regulation
Florida Dept. of Environmental Regulation
2600 Blair Stone Road, MS 5500
Tallahassee, Florida 32399-2400

RE: ***AC Permit Application: Short Term Trial Test of Specific Recovered Materials in Kiln Suwannee American Cement; Facility ID: 1210465***
File No: 1210465 - 020 - AC

Dear Ms. Devore:

Enclosed please find four (4) copies of an application for short term trial testing of specific recovered materials at the Suwannee American Cement, Branford cement plant. These recovered materials are requested similar to other recent applications for materials that can supplant conventional fossil fuel and raw materials. These materials, while new to the experience of the cement plants in Florida, are used in other cement kilns throughout the U.S. and the world. Suwannee American Cement is proud to be a leader in innovative and environmentally progressive techniques to bring forth and establish the value to reduce, re-use, and recycle recovered materials from conventional wastes. We look forward to working with you to move this proposed project to a reality.

Please feel free to contact me at (352) 377-5822 or mlee@koooglerassociates.com or Krishna Cole, Suwannee American Cement at (386) 935-5023 or krishnac@suwanneecement.com, if you have any questions regarding this submittal. I sincerely appreciate your time and consideration for this innovative project.

Regards,

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

cc: Krishna Cole, SAC

SUWANNEE AMERICAN CEMENT

BRANFORD CEMENT PLANT

FACILITY ID: 1210465

AIR CONSTRUCTION PERMIT APPLICATION

SHORT-TERM TRIAL TESTING OF SPECIFIC RECOVERED MATERIALS

SUBMITTED April 26, 2010

KOOGLER & ASSOCIATES, INC.
ENVIRONMENTAL SERVICES

4014 NW 13th STREET
GAINESVILLE, FL 32609-1923
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Department of Environmental Protection

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BUREAU OF AIR REGULATION

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: **Suwannee American Cement, LLC**	
2. Site Name: **Branford Cement Plant**	
3. Facility Identification Number: **1210465**	
4. Facility Location... Street Address or Other Locator: **5117 US Hwy 27, near intersection of CR 49** City: **Branford** County: **Suwannee** Zip Code: **32008**	
5. Relocatable Facility? ☐ Yes ☒ No	6. Existing Title V Permitted Facility? ☒ Yes ☐ No

Application Contact

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

Application Processing Information (DEP Use)

1. Date of Receipt of Application: 4/28/10	3. PSD Number (if applicable):
2. Project Number(s): 1210465-020-AC	4. Siting Number (if applicable):

APPLICATION INFORMATION

Purpose of Application

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

Air Construction Permit

☒ Air construction permit.

☐ Air construction permit to establish, revise, or renew a plantwide applicability limit (PAL).

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

***Air Operation* Permit**

☐ Initial Title V air operation permit.

☐ Title V air operation permit revision.

☐ Title V air operation permit renewal.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is required.

☐ Initial federally enforceable state air operation permit (FESOP) where professional engineer (PE) certification is not required.

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

☐ Air construction permit and Title V permit +revision, incorporating the proposed project.

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

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

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

Application Comment

Application is for short-term feasibility studies of alternate fuel materials for transport on-site, storage, and injection into the kiln system. The specific materials and the project description are detailed in Appendix 1.

No on-site processing of materials is requested.

Scope of Application

Emissions Unit ID Number	Description of Emissions Unit	Air Permit Type	Air Permit Processing Fee
004	In-Line Kiln/Raw Mill	N/A	N/A

Application Processing Fee

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

Owner/Authorized Representative Statement

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

1. Owner/Authorized Representative Name :
   Mr. Tom Messer, Plant Manager
2. Owner/Authorized Representative Mailing Address...
   Organization/Firm: **Suwannee American Cement, LLC**
   Street Address: **5117 US Hwy 27**
   City: **Branford** State: **Florida** Zip Code: **32008**
3. Owner/Authorized Representative Telephone Numbers...
   Telephone: **(386) 935 –5000** ext. Fax: **(386) 935 -5080**
4. Owner/Authorized Representative E-mail Address: **tomm@suwanneecement.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

   4·20·10
   Date

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

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.**13** 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.

Signature 4/26/10 Date

(seal)

* Attach any exception to certification statement.

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates... Zone **17** East (km) **321.40** North (km) **3315.9**		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 :			

Facility Contact

1. Facility Contact Name: **Krishna Cole, Environmental Engineer**
2. Facility Contact Mailing Address Organization/Firm: **Suwannee American Cement, LLC** Street Address: **P.O. Box 410** City: **Branford** State: **FL** Zip Code: **32008**
3. Facility Contact Telephone Numbers: Telephone: **(386) 935-5023** ext. Fax: **(386) 935-5080**
4. Facility Contact E-mail Address: **krishnac@suwaneecement.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:	
The SAC Branford Cement Plant, is subject to 40 CFR 60, Subpart F: Standards of Performance for Portland Cement Plants (superceded by 40 CFR 63, Subpart LLL); 40 CFR 60, Subpart Y: Standards of Performance for Coal Preparation Plants; 40 CFR 60, Subpart OOO: Standards of Performance for Nonmetallic Mineral Processing Plants; 40 CFR 63, Subpart LLL: National Emission Standards for Hazardous Air Pollutants from Portland Cement Industry.	

FACILITY INFORMATION

List of Pollutants Emitted by Facility

1. Pollutant Emitted	2. Pollutant Classification	3. Emissions Cap [Y or N]?
Particulate Matter – PM	**A**	**N**
Particulate Matter – PM_{10}	**A**	**N**
SO_2	**A**	**N**
NO_x	**A**	**N**
CO	**A**	**N**
VOC	**B**	**N**
SAM	**B**	**N**
H114 (Mercury)	**B**	**N**
PB	**B**	**N**
DIOX (Dioxins/Furans)	**B**	**N**
HAPs – Total	**A**	**N**
H106 (hydrochloric acid)	**A**	**N**

B. EMISSIONS CAPS

Facility-Wide or Multi-Unit Emissions Caps N/A

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

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: 2010 **-019-AV**
   (TV permit renewal application in progress)
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:_____ ☒ Previously Submitted, Date: 2010 **-019-AV**
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:_____ ☒ Previously Submitted, Date: 2010 **-019-AV**

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:**1**
3. Rule Applicability Analysis:
   ☒ Attached, Document ID:**1**
4. List of Exempt Emissions Units:
   ☐ Attached, Document ID:_____ ☒ Not Applicable
5. Fugitive Emissions Identification:
   ☒ Attached, Document ID:**1** ☐ 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 N/A

1. List of Exempt Emissions Units:
   ☐ Attached, Document ID:_____ ☐ Not Applicable (no exempt units at facility)

Additional Requirements for Title V Air Operation Permit Applications N/A

1. List of Insignificant Activities: (Required for initial/renewal applications only)
   ☐ Attached, Document ID:_____ ☐ Not Applicable (revision application)
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.)

☐ 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: **In-Line Kiln/Raw Mill**

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

4. Emissions Unit Status Code:	5. Commence Construction Date:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code: **32**
A		2/17/2003	

8. Federal Program Applicability: (Check all that apply) **N/A**

☐ Acid Rain Unit

☐ CAIR Unit

☐ Hg Budget Unit

9. Package Unit:
Manufacturer: **Polysius** Model Number:

10. Generator Nameplate Rating: MW

11. Emissions Unit Comment: **Emissions unit is the In-Line Kiln/Raw Mill (E-21). Waste heat from the kiln is used to provide heat to the raw mill and kiln preheater, which is used to drive off moisture from the materials used for making clinker**

Emissions Unit Control Equipment/Method: Control **1** of **4**

1. Control Equipment/Method Description: **Baghouse – High Temperature**
2. Control Device or Method Code: **016**

Emissions Unit Control Equipment/Method: Control **2** of **4**

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

Emissions Unit Control Equipment/Method: Control **3** of **4**

1. Control Equipment/Method Description: **Hydrated Lime Injection (injected at kiln feed with Poldos)**
2. Control Device or Method Code: **041**

Emissions Unit Control Equipment/Method: Control **4** of **4**

1. Control Equipment/Method Description: **Multistaged Combustion**
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: **210 TPH (1-hr) dry preheater feed rate, 1,684,578 tons/consecutive 12-mo.**
2. Maximum Production Rate: **120 TPH (1-hr) clinker; 965,425 tons/consecutive 12-mo.**
3. Maximum Heat Input Rate: **458 million Btu/hr (24-hr) (kiln and calciner)** **32 million Btu/hr (air heater)**
4. Maximum Incineration Rate: pounds/hr tons/day
5. Requested Maximum Operating Schedule: **24** hours/day **7** days/week **52** weeks/year **8,760** hours/year
6. Operating Capacity/Schedule Comment:

C. EMISSION POINT (STACK/VENT) INFORMATION

(Optional for unregulated emissions units.)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Kiln/Raw Mill**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking:		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:		
5. Discharge Type Code: **V**	6. Stack Height: **250** feet	7. Exit Diameter: **9.42** feet
8. Exit Temperature: **205°F (mill operating)**	9. Actual Volumetric Flow Rate: **194,000 acfm (mill operating)**	10. Water Vapor: **6.5 %**
11. Maximum Dry Standard Flow Rate: **144,000 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: **Common baghouse for raw mill and kiln**		

D. SEGMENT (PROCESS/FUEL) INFORMATION

Segment Description and Rate: Segment 1 of 6

1. Segment Description (Process/Fuel Type): **Industrial Processes; Mineral Products; Cement Manufacturing (Dry Process); Preheater Kiln**		
2. Source Classification Code (SCC): **3-05-006-23**	3. SCC Units: **Tons Clinker**	
4. Maximum Hourly Rate: **120**	5. Maximum Annual Rate: **965,425**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment: **Based on Permit No. 1210465-006-AV. The Kiln is limited to 210 TPH and 1,684,578 tons/consecutive 12-mos. of dry flyash or dry preheater feed.** **Clinker production is calculated by:** **Clinker production = [(Feed)(Kiln feed LOI factor) + (Fly Ash Injection) + (Fly Ash LOI Factor)]** **Where,** **-Kiln feed is determined by the Poldos control system** **-Flyash is determined from the rotary feed system or equivalent** **-LOI for the kiln feed and flyash is based on a 30 operating-day block average of daily measurements. (For purposes of this requirement, an operating day is any day that the kiln produces clinker or fires fuel.)**		

Segment Description and Rate: Segment 2 of 6

1. Segment Description (Process/Fuel Type): **Industrial Processes; In-Process Fuel Use; Bituminous Coal; Cement Kiln/Dryer – Kiln and Precalciner**		
2. Source Classification Code (SCC): **3-90-002-01**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **18.3**	5. Maximum Annual Rate: **160,300**	6. Estimated Annual Activity Factor:
7. ~~Maximum~~ Typical % Sulfur: **0.7**	8. ~~Maximum~~ Typical % Ash: **7.9**	9. Million Btu per SCC Unit: **26**
10. Segment Comment: **Hourly rate based 458 mmbtu/hr @ 26 mmbtu/ton. Annual rate based on the hourly rate and 8,760 hr/yr. Typical % sulfur, % ash, and MMBtu/ton burned based on typical fuel analysis data.**		

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

Segment Description and Rate: Segment 3 of 6

1. Segment Description (Process/Fuel Type): **Industrial Processes; In-Process Fuel Use; Natural Gas; Cement Kiln/Dryer – Kiln and Precalciner**		
2. Source Classification Code (SCC): **3-90-006-02**	3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate: **0.436**	5. Maximum Annual Rate: **3,854**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **negligible**	8. Maximum % Ash: **negligible**	9. Million Btu per SCC Unit: **1,050**
10. Segment Comment: **Hourly rate based on 458 mmbtu/hr @ 1,050 mmbtu/mmcf. 458 MMBtu/hr x MMcf/1,050 MMBtu = 0.44 MMcf/hr 0.44 MMcf x 8,760 hr/yr = 3,854 MMcf/yr**		

Segment Description and Rate: Segment 4 of 6

1. Segment Description (Process/Fuel Type): **Industrial Processes; In-Process Fuel Use; Coke – Petroleum Coke in Kiln and Precalciner**		
2. Source Classification Code (SCC): **3-90-008-99**	3. SCC Units: **Tons Burned**	
4. Maximum Hourly Rate: **16.4**	5. Maximum Annual Rate: **143,664**	6. Estimated Annual Activity Factor:
7. ~~Maximum~~ Typical % Sulfur: **0.5 – 1.0**	8. ~~Maximum~~ Typical % Ash: **0.5 – 5.0**	9. Million Btu per SCC Unit: **28**
10. Segment Comment: **Hourly rate based 458 mmbtu/hr @ 28 mmbtu/ton. Annual rate based on the hourly rate and 8,760 hr/yr. Typical % sulfur, % ash. burned based on AP-42 Appendix A.**		

CURRENT SEGMENTS

Segment Description and Rate: Segment 5 of 6

1. Segment Description (Process/Fuel Type): **Industrial Processes; In-Process Fuel Use; Natural Gas; Raw Mill**		
2. Source Classification Code (SCC): **3-99-900-03**	3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate: **0.03**	5. Maximum Annual Rate: **262.8**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur: **negligible**	8. Maximum % Ash: **negligible**	9. Million Btu per SCC Unit: **1,050**
10. Segment Comment: **Segment represents natural gas usage for the raw mill air heater.** **Based on 32 MMBtu/hr (Permit No. 1210465-006-AV):** **32 MMBtu/hr x MMcf/1,050 MMBtu = 0.03 MMcf/hr** **0.03 MMcf x 8,760 hr/yr = 262.8 MMcf/yr**		

Segment Description and Rate: Segment 6 of 6 **NEW SEGMENT**

1. Segment Description (Process/Fuel Type) : **Industrial Processes ; In-Process Fuel Use ; Solid Waste – 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: **N/A-short term trial only**	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 fuels.**		

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: 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: 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 **March 2010**

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 **March 2010**
   ☐ 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 N/A

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

APPENDIX 1

SUWANNEE AMERICAL CEMENT
BRANFORD CEMENT PLANT

AIR CONSTRUCTION PERMIT APPLICATION

SHORT-TERM TRIAL TESTING OF SPECIFIC RECOVERED MATERIALS

DESCRIPTION OF PROPOSED PROJECT

DESCRIPTION OF PROPOSED PROJECT

INTRODUCTION

Suwannee American Cement (SAC) operates a cement plant located in Branford, Florida. The cement plant consists of a dry-process kiln with preheater, precalciner, and clinker cooler capable of producing up to 965,425 tons per year of clinker. The cement kiln is permitted to operate using coal, natural gas, and petroleum coke as fuels.

SAC is requesting a permitted 24-month period for a first-stage air construction permit to conduct feasibility studies of specific processed recovered materials as alternative fuels and raw materials for the kiln system. It should be stressed that this permit is requesting to only allow short-term trials of these materials to evaluate the feasibility to use these materials. This request is similar to the approved short-term testing of autofluff (1210465-017-AC) of which the trial was recently completed. During these requested trials no permit limit will be exceeded. During these trials no production limits or other current limitations are requested to be increased. SAC shall operate under and at all times within the limits specified by its existing operating permit. If the co-firing of any material results in any emissions that are not allowed by current permits, co-firing shall cease immediately. If a trial testing material is evaluated and determined to be feasible and acceptable by the Department, a long-term construction permit will be submitted to establish long-term testing limitations and to construct a more permanent system.

The following specific recovered materials are requested to be allowed for short-term trial testing.

1) agricultural film (a non-chlorinated plastic) (see Appendix 2)
2) tire-derived fuel
3) manufacturer reject roofing shingle
4) used roofing shingle
5) clean woody biomass

6) agricultural fibrous organic byproducts (i.e., peanut hulls, rice hulls, corn husks, citrus peels, cotton gin byproducts, and animal bedding)
7) pre-consumer reject paper
8) post-consumer waste paper
9) carpet derived fuel

SAC proposes that any material that is approved for trial testing will be tested for a maximum of 21 kiln-operation days test and will be evaluated at varying rates of consumption. A proposed schedule of testing each material for three heat input loads of 10, 20, and 29.5 percent is included in Table 1. Each material test will require a minimum 7 days prior notification to the Department and submittal of the anticipated testing schedule containing test start date and end date, list of material supplier(s)-facility contact person, address and phone number, specific target material feed rates (e.g., 10, 20, 29.5 % heat input replacement), and initial material analysis. Initial material analysis will include at a minimum, ultimate and proximate analysis, and content analysis of RCRA 8 metals. Additional initial material analysis components will be completed as requested by the Department. Any changes to the testing schedule shall be communicated in writing to the Department's Northeast District within 24 hours of the change. Each material type will be tested individually at targeted heat input rates to the kiln (see Table 1). The proposed rate of coal substitution at less than 30% heat replacement is to assure that any anticipated changes in regulation regarding the definition of waste and waste incinerator rules should not impact this project.

For these short-term trials, no material will be processed on-site.

Estimated emissions from each material are provided in the following sections discussing each material.

SAC believes this project is beneficial to SAC and the State of Florida. The benefits of the project include:

1) Promote a more diverse energy supply,
2) Increase the availability and stability of energy sources through use of a locally-generated, processed and transported energy source in comparison to coal (transported from the Appalachia mountains),
3) Reduce greenhouse gas emissions by re-using and reducing landfilled material,
4) Create more demand for recovered materials which encourages an increase in processing operations versus landfilling. This increased supply matches the goals of the State efforts to increase waste diversion for re-use or recycling:

   http://www.dep.state.fl.us/waste/recyclinggoal75/default.htm,
5) Promote the goals of SAC in coordination with the World Business Council for Sustainable Development [1], and
6) Promote related recycling business activities (i.e., employment) in the State.

While these recovered materials may be considered recovered or byproduct material, they contain significant heating value. Therefore, efficient thermal combustion of a cement kiln can provide an alternative use of the material heat content, and re-use of the raw material to the kiln for cement product. Use of these recovered materials in cement production should eliminate a substantial amount of landfilled waste. The oxidation of this material as fuel and incorporation of the recovered noncombustible material to cement versus landfilling will also effectively reduce greenhouse gas emissions by the reduced mining, transport, and use of fossil fuels, and the avoided anaerobic decomposition in a landfill. Anaerobic decomposition generates methane versus combustion which generates carbon dioxide. The greenhouse gas potential of methane is 21 times greater than carbon dioxide. A significant recent study indicates the benefits of waste combustion compared to landfilling with gas reclamation[2]. SAC views its effort to promote the beneficial use of these recovered materials in cement production to be in concert with the guidance of the EPA[3] and European IPPC Bureau[4].

Table 1. Proposed Schedule of Trial Testing.

Suwannee American Cement, Branford cement plant

Proposed Trial Test Schedule: Specific Recovered Materials

Fuel/material*	heat values (wet basis) btu/lb	heat values (wet basis) mmbtu/ton	Moisture %	References	
coal	13264	26.5	6.0	- based on 2008 monthly analyses	
Alternative materials					
1) agricultural film	18600	37	0.5	agricultural film	(5), (6)
2) tire-derived fuels	15688	31	0.6	TDF	(7), (8)
3) manufacturer reject roofing shingles	5842	12	3.1	reject shingles	Appendix 3, St. Marys Cement material analysis
4) used roofing shingles	4674	9	3.1	used shingles	Appendix 3, St. Marys Cement material analysis
5) clean woody biomass	5200	10.4	40	woody biomass	(9), (10)
6a) agricultural fibrous organic byproducts - max. btu/lb	8000	16	10	agricult byproducts	
6b) agricultural fibrous organic byproducts -min. but/lb	1500	3	50	peanut hulls	(11)
				rice hulls	(12)
				corn husks	(13), (14)
				citrus peel	(15)
				cotton gin material	(16)
				animal bedding	(17), (18)
7) pre-consumer reject paper	6500	13	16	pre-consumer paper	(19)
8) post-consumer waste paper	6500	13	16	post-consumer paper	(19)
9) carpet derived fuels	9194	18	0.5	carpet derived fuel	(20)

estimated dates: 1-Jul (24 months) → 1-Jul

	estimated trial time days	heat input replaced %	heat rate of firing: total mmbtu/hr	heat rate of firing: coal mmbtu/hr	heat rate of firing: Alt Fuel mmbtu/hr	mass rate of firing: coal ton/hr	mass rate of firing: coal ton/period
coal-only firing for 21 days			458	458	0	17.3	8,701
	7	10	458	412.2	45.8	15.5	2,610
	7	20	458	366.4	91.6	13.8	2,320
	7	29.5	458	322.9	135.1	12.2	2,045
Coal replaced for each trial test							1,726

days / %	agricultural film 1) ton/hr	agricultural film 1) ton/period	TDF 2) ton/hr	TDF 2) ton/period	reject shingle 3) ton/hr	reject shingle 3) ton/period	used shingle 4) ton/hr	used shingle 4) ton/period	wood biomass 5) ton/hr	wood biomass 5) ton/period
coal-only	17.3		17.3		17.3		17.3		17.3	
7 / 10	1.2	207	1.5	245	3.9	659	4.9	823	4.4	740
7 / 20	2.5	414	2.9	490	7.8	1,317	9.8	1,646	8.8	1,480
7 / 29.5	3.6	610	4.3	723	11.6	1,943	14.5	2,428	13.0	2,183
Total mass (tons)		1,231		1,459		3,918		4,898		4,402

days / %	agricult. Min usage 6) ton/hr	agricult. Min usage 6) ton/period	agricult. Max usage 6) ton/hr	agricult. Max usage 6) ton/period	preconsum paper 7) ton/hr	preconsum paper 7) ton/period	postconsum paper 8) ton/hr	postconsum paper 8) ton/period	carpet derived fuel 9) ton/hr	carpet derived fuel 9) ton/period
coal-only	17.3		17.3		17.3		17.3		17.3	
7 / 10	2.9	481	15.3	2,565	3.5	592	3.5	592	2.5	418
7 / 20	5.7	962	30.5	5,130	7.0	1,184	7.0	1,184	5.0	837
7 / 29.5	8.4	1,419	45.0	7,566	10.4	1,746	10.4	1,746	7.3	1,234
Total mass (tons)		2,861		15,261		3,522		3,522		2,490

TOTAL AMOUNT OF RECOVERED MATERIALS REQUESTED **50750 tons**

Requested amounts: agricultural film **1250**; TDF **1500**; reject shingle **4000**; used shingle **5000**; wood biomass **4500**; agricultural *(agicultural amount requested will be limited to total of 25,000 tons)*; preconsum paper **3500**; postconsum paper **3500**; carpet derived fuel **2500**

Monitoring and Testing

Emissions monitoring for each material tested shall consist of the following monitoring and stack testing:

- NOx – CEM data
- SO2 – CEM data
- VOC (as THC) – CEM data
- Opacity – CEM data
- PM – EPA Method 5
- CO – EPA Method 10
- Hg analysis, required by the current Title V permit, will be performed on the material.

A monitoring/testing protocol will be submitted for approval prior to emissions testing. Submittal of all stack test reports in a summary report of the trial period will be submitted within 90 days after completion of the trial testing.

Summary Report Information

The following minimum records will be obtained for all tests:

- Recovered Material Analysis Results
- Emissions Monitoring Results
- Average Fuel Feed Rates [tons/hour]
- Average Kiln Feed Rates [tons/hour]
- Average Clinker Production [tons/hour]
- Total Recovered Materials Consumption [tons]
- Number of stops during testing
- Reason of stops during testing

Transport, Handling, Storage, and Injection

All materials will be transported to the facility by covered truck and stored under cover and on top of a paved or compacted clay surface similar to autofluff (see Figure 3). Materials will be stored in separate piles and visibly marked. Based on the estimated energy content of materials, a maximum amount of material tonnage is shown in Table 1. The table lists all the materials and the respective requested amounts for each material. Typical heat contents were determine for each material and based on the amount of material needed to conduct 7 day trials at each load (10, 20 and 29.5 %) a total amount of material was determine for each material. The agricultural byproducts material were reviewed and found to have a high variability of heat content per the various types of material. Due to the variability of material heat content, a maximum and minimum range of heat contents were used to demonstrate the expected range of quantities of agricultural byproducts that could be selected and a maximum tonnage of agricultural byproducts of 25,000 tons was set for these test trials to ensure limitations of transported/stored/handled material was established. Tonnage limitations for other materials are specified in the table. No more than 5000 tons of all recovered materials will be stored at any one time. For this test trial, the materials will be supplied to the plant in a manner suitable for pneumatic injection into the pyroprocessing system through the temporary feeding system which is connected to the existing flyash injection system. The materials will be transported by front end loader from the storage area to a live bottom hopper which feed the temporary injection system. The injection system will be similar to the system used for injection of autofluff - recently permitted (1210465-017-AC) and tested temporary autofluff injection system (see Figure 1). Dust suppression will consist of water sprays. Any stored material having nuisance odors will be removed from the site. A review of solid waste rule requirements will be conducted and addressed for temporary storage. Emissions from on-site material transport, storage, and handling are provided in Table 2.

The materials will be injected via a 8" diameter pipe into the calciner combustion chamber. Figures 2 and 3 show the layout and the location of the temporary storage and processing area, alternative fuel injection system, the kiln, and the piping from the injection system to the calciner combustion chamber. The materials will be transported pneumatically via the existing flyash

piping system; therefore, for the duration of each test trial the use of injection flyash will be suspended.

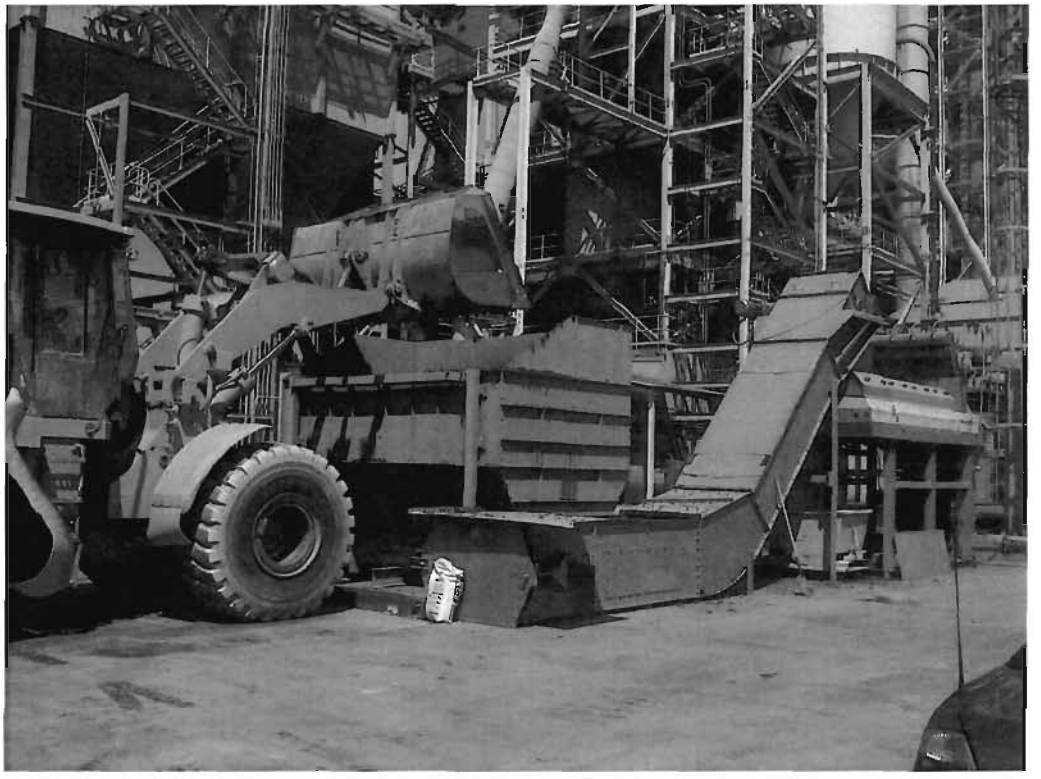


Figure 1. Typical Injection System.

Table 2. Emissions Estimate of Recovered Materials – Transport, Storage, and Handling.

Suwannee American Cement, Branford cement plant

Emissions Estimate of Recovered Materials - Transport/Storage/Handling

STEP	Action/Tasks	generic description	miles traveled	% of Total Throughput	PM Emission Factor	PM_{10} Emission Factor	PM Emissions tons	PM_{10} Emissions tons
1	Receive materials by covered truck. Fugitive emission parameters: 1.4 mile/trip (0.7 mile x 2 (route - plant entrance to storage area)) x 100,000 tons/23 tons/trip = 6086 miles. Coal: 1.5 mile x (1831 tons of coal replaced per trial test x 10 trials)/23 tons/trip = 1034 miles. (Difference of miles: 6086 - 1034 = 5051 miles). Assume PM10 = PM. EF = 0.524 lb/VMT (see next page)	transporting	5051	100	0.524 lb/VMT		1.323	1.323
2	Store under cover (to prevent stormwater runoff and fugitives).			*negligible when stored under cover (West Hall building)*				
3	material transported to flyash injection system area. 0.1 mile /trip x 100,000 tons/23 tons/trip = 435 miles EF = 0.524 lb/VMT (see next page)	transporting	435	100	0.524 lb/VMT		0.114	0.114
4	Prepared material loaded by frontend loader into the pneumatic feed hopper. a	loading without cover		100	0.0001 lb/ton	0.0001 lb/ton	0.005	0.005
6	Pneumatic feeder system emissions	electric engine		*negligible*				
						Total =	**1.442**	**1.442**
				Based on conservative estimate amount of:		***total =***	**100,000**	tons material

Notes:

a Emission factors of screening, crushing, and conveying based on AP-42 Table 11.19.2-2. Alternate fuel PM factors assumed to have similar emissions as aggregate operation. Uncontrolled emission factors are used.

Best Management Practices for Recovered Materials

The following best management practices are proposed for the trial tests of recovered materials at the SAC, Branford Miami Cement Plant.

BEST MANAGEMENT PRACTICES (BMP) PLAN FOR MINIMIZATION OF FUGITIVE DUST, PILE MANAGEMENT AND FIRE PREVENTION

Practice	Description
Minimization of Fugitive Dust	1) Drop points to storage areas shall be designed to minimize the overall exposed (or exposed to atmosphere) drop height. 2) Periodic equipment maintenance shall be performed to maintain offloading locations and associated drop point integrity. Appropriate plant records shall be maintained on transportation equipment maintenance performed. 3) Daily observations of the off/up-loading and transportation and associated drop point integrity to identify any equipment abnormalities. 4) Plant personnel shall be trained on identification of warning signs for potential equipment malfunction. 5) Signs shall be posted identifying potential warning signs of equipment malfunction. 6) Plant personnel shall visually observe truck offloading operations and if excessive fugitive dust is detected appropriate fugitive dust minimization techniques shall be implemented including water spray. Plant personnel shall be trained on procedures for defining and minimizing excessive dust from the truck unloading operations.
Storage Pile Management	1) Storage areas shall be managed to avoid excessive wind erosion. The material will be stored in the Proposed storage area, only, which is covered and protected from wind. 2) Mechanical moving by front end loaders and other supporting equipment shall be minimized on high wind event days. 4) Daily visual observations of the storage area shall be performed and if conditions are right for fugitive dust formation, procedures from the fugitive dust plan shall be implemented including water spray.

Fire Prevention /Spontaneous Combustion Minimization	1) The current Emergency Response Plan includes: a) requirement to train onsite personnel to handle incipient fires and training on the identification of potential fire hazards; and, b) install and maintain equipment for plant personnel to handle incipient fires. 2) Daily observations of the storage area shall be performed by plant personnel to identify potential fire hazards. Plant personnel shall be trained on identification of potential fire hazards. 4) Compaction of recovered materials in the storage areas shall be minimized.
Quality Assurance of Received Materials	1) The materials will be delivered to the Plant in vehicles designed to prevent release. 2) For each shipment of material, the permittee shall record the date, quantity and a description of the material received as described in the Quality Assurance Plan. 3) The permittee shall inspect each shipment of material. If the permittee identifies any such material that is not the expected material, the material shall be rejected and returned to the supplier. Rejected materials shall be moved off site in a logistically reasonable time period. 4) The permittee shall maintain records of rejected shipments and disposition thereof. Such records shall be made available to the Department upon request.

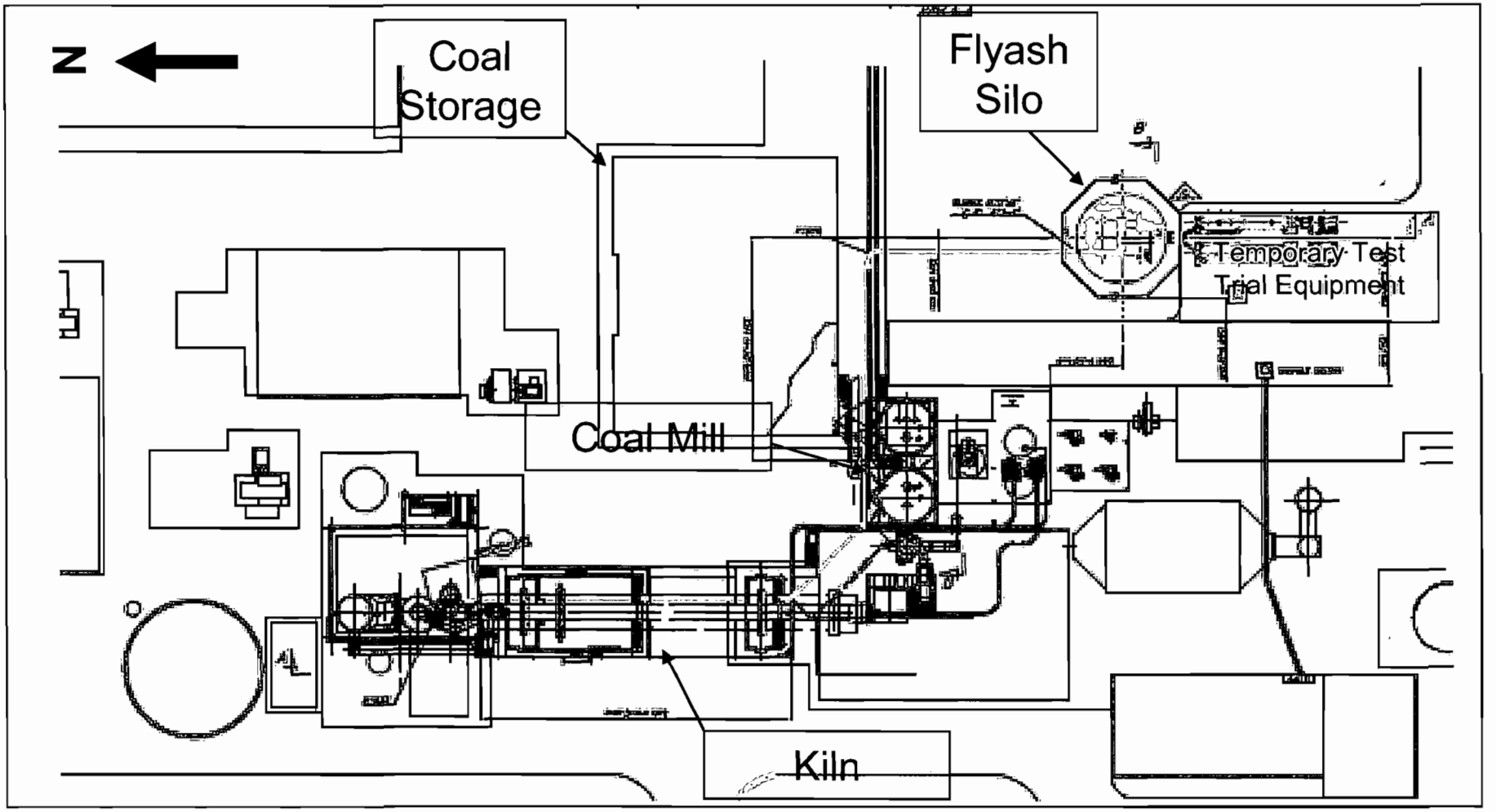


Figure 2. Overview layout of SAC facility and proposed location of test trial equipment.

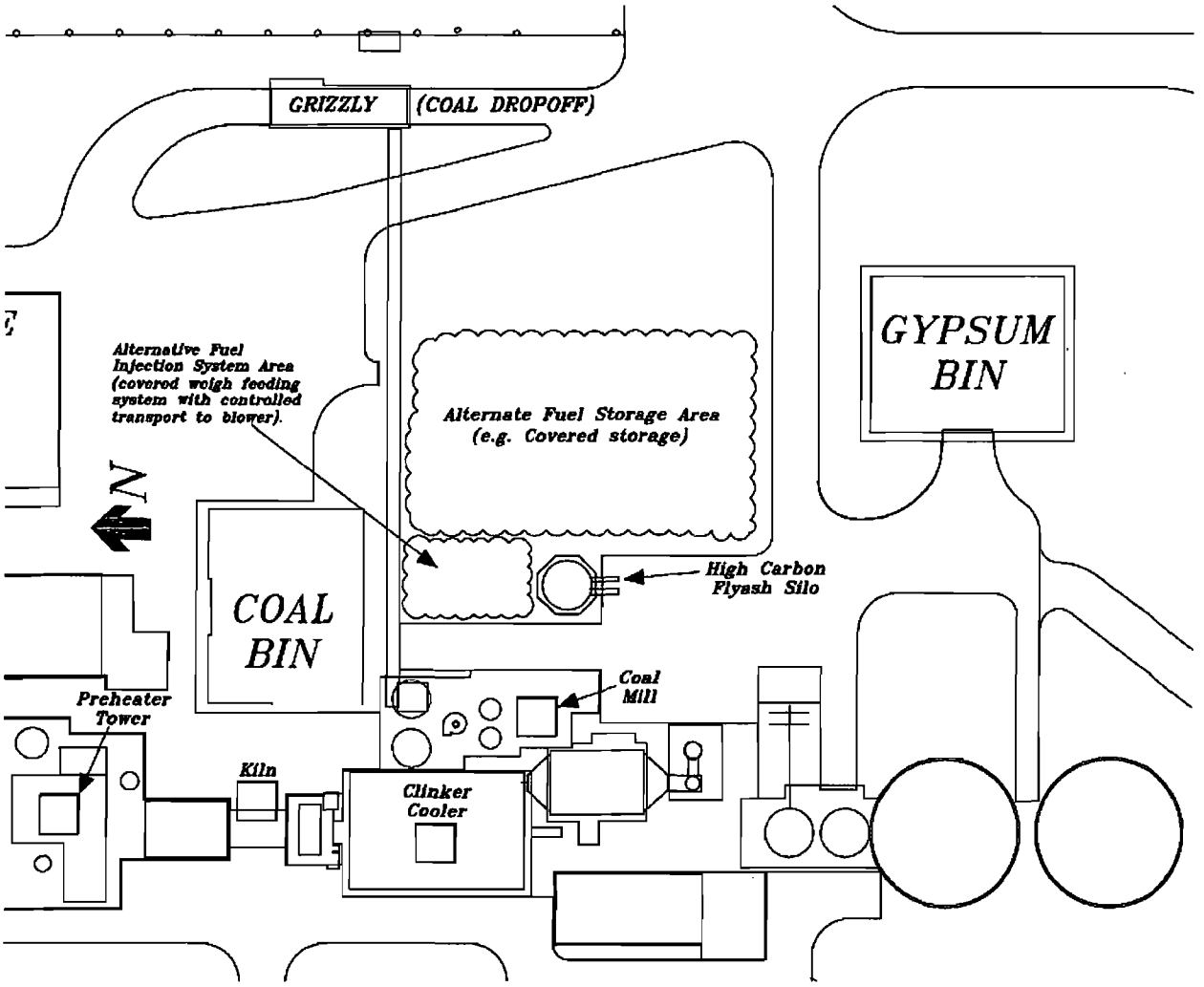


Figure 3. Layout of alternative fuels storage, handling and input to system.

RECOVERED MATERIALS FEASIBILITY STUDIES QUALITY PLAN

The Quality Plan described below will be followed for sampling collection and analysis of all recovered materials received, stored and used at SAC; the Plan establishes the following:

a) Sampling Location(s)
b) Sample size
c) Minimum frequency
d) Who collects
e) Sample preparation
f) Who analyzes (external/internal)
g) Type of analysis
h) Material Traceability

During the proposed test trials SAC proposes the following minimum material testing:

- A minimum of three source material samples will be collected and analyzed; and results will be provided by the supplier to SAC prior to material acceptance (this data will be shared with the Department as part of the 7 day test notification).
- Each delivery received at SAC will be sampled.
- A daily composite sample will be made from samples collected from material being fed to the kiln at a minimum of every 4 hours.

Specific requirements:

a) Sampling Location – Onsite sampling will occur between storage and prior to introduction to the alternative fuel feeding system.

b) Sample Size – One Gallon Container (approximate)

c) Minimum Frequency – A sample shall be collected from material delivered on any day that material is delivered. During test trial operation SAC shall collect grab samples from material being loaded into the hopper at least every four hours that a recovered material is injected into the pyroprocessing system. All samples collected during each day of operation (12 am to 12 am) will be composited and analyzed.

d) Who will collect the samples – Shift Lab Technician or Trained Designee

e) Sample Preparation – as necessary per specific lab analysis requirements

f) Who will analyze the samples –

- Internal Lab Analysis (if possible, otherwise conducted by an external lab) will analyze for Calorific Value [Btu/lb], Volatility [%], %Ash, %Sulfur, %Moisture, Particle Size.
- External Lab Analysis will analyze for total RCRA metals and thallium, and PCB concentrations. Due to the physical properties of some alternate fuels, the samples may have to be sent to external laboratories for analysis. This means that results may not be available for up to several weeks after samples were taken.

g) Type of Analysis –

Analysis of the samples will at a minimum consist of the following:

- Internal Lab Analysis (if possible, otherwise conducted by an external lab). Internal Lab Analysis will use established methods that are traceable to NIST or ASTM standards or other approved methods.
- Calorific Value [Btu/lb]
- Volatiles [%]
- Ash [%]
- Sulfur [%]
- Moisture [%]
- Particle Size

- External Lab Analysis will use SW-846 EPA methods as stated below or other approved methods by the Department. Written approval from the Department will be required prior to use of other methods.
- Total Metal Content (EPA SW-846, 6010b), including mercury (7471a) and thallium (EPA SW-846, 7471a). The analysis and material usage will be used to determine the amount of mercury and thallium input to the system by material balance. All mercury and thallium inputs are assumed to be emitted.
- Used roofing shingle material: asbestos concentration (polarized light method, 40 CFR 763, App. E)

h) Traceability - the material has identification and the traceability is by date of production or receiving. For suppliers of used shingles, manifesting will be required by supplier source material (see section "Used Roofing Shingles")

Project Estimated Emissions

Estimated emissions are addressed in the following sections of this report for each material. Baseline emissions are calculated in detail in Appendix 3 for coal using the hierarchy of data per of 62-210.370, F.A.C. The coal emission factors for NOx, SO2, and VOC are based on 2008 CEMs data. Emission factors of PM and CO are based the average of emission tests over the last five years. Mercury emissions are based on material analysis and assumed to all be emitted. Lead emissions are based on EPA Toxic Release Inventory guidance documents for metal content and 90 percent control.

It should be stressed that while emission estimates are addressed, SAC will not exceed any current permit limit and these short-term trials will allow SAC to determine if these materials are such that emissions are reasonably well controlled given the properties of the material and its behavior in the kiln system. As discussed above, if a trial testing material is evaluated and determined to be feasible and acceptable to the Department, a long-term construction permit will be submitted to establish long-term testing limitations and to construct a more permanent system.

Based on the details in the following sections the following table summarizes the estimated emissions from these materials. While these short-term tests are for feasibility determination for recovered materials, the summary indicates that estimated emissions for any or all tests should not exceed the values of PSD thresholds.

Notwithstanding the calculation of estimated emissions, the following discussion is provided on current methods to control pollutant emissions applied at SAC.

Carbon Monoxide Emissions

CO emissions are not expected to increase since they can be controlled. In order to control CO emissions, SAC will closely monitor the combustion of all fuel materials to ensure there is no partial combustion which could create constituents of partial combustion such as CO emissions. The SAC preheater/calciner is designed for the use of alternate fuels with reduced volatile content and large partial sizing by having the addition of a separate calciner chamber. This

separate calciner chamber is referred to as a Combustion Chamber (see Image 1 below). This Combustion Chamber allows for the introduction of alternative fuels 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 alternate fuel.

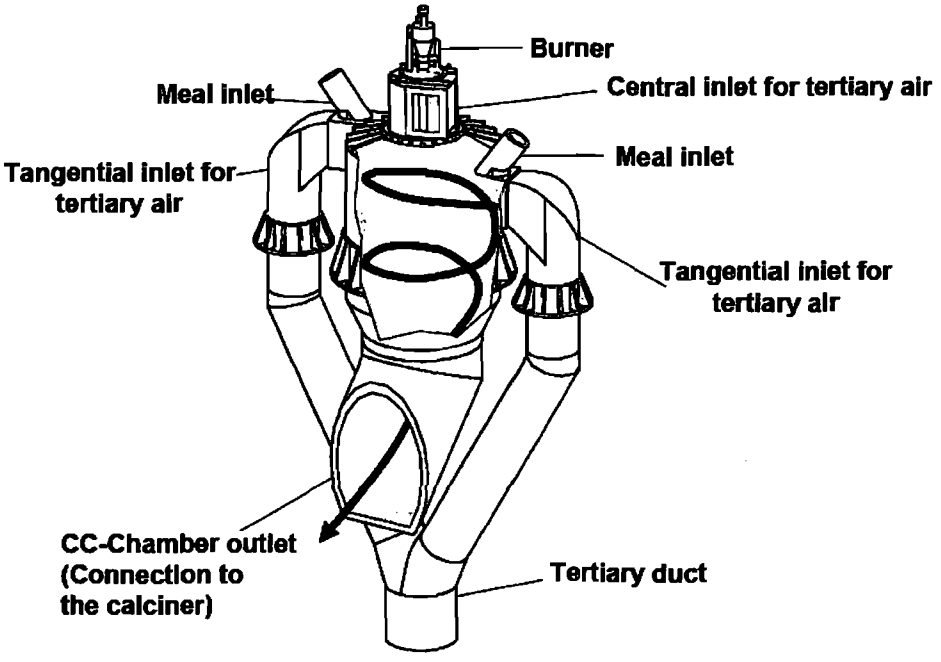


Image 1: Calciner Combustion Chamber

In addition, the preheater is designed to extend retention time to provide long residence time at high temperatures to complete the combustion process. In addition, SAC will closely monitor the volatile content and particle sizing of the processed fuels along with the combustion characteristics of the preheater/calciner to insure proper combustion of all fuel. Currently, SAC operates with an oxygen rich combustion environment through the calciner and preheater assisting in the combustion process. In addition, to this SAC monitors CO with process monitors in various stages of the preheater (CO Process Monitor at Kiln Inlet and 3rd Stage) and exit of the preheater (CO Process Monitor at ID Fan) to insure proper combustion. SAC will control the proper combustion through process controls such as changes in the location of the introduction of tertiary air, increase process draft and oxygen content through the process, changes in fine coal feed rates into the Combustion Chamber and/or changes in the kiln feed rates.

Through testing and monitoring of the recovered materials prior to introduction and with combustion characteristics monitoring and process adjustments, SAC will be able to ensure proper and complete combustion of the alternate fuel with no generation of constituents of partial combustion such as CO.

NOx Emissions

Nitrogen Oxide (NOx) emissions are not expected to change since they can be controlled by adjustments to the multistage combustion system timing, fuel input rates, and the selective non-catalytic reduction (SNCR) system.

Dioxin/Furans Emissions

Emission of dioxin/furans (D/F) are not expected to change when using these fuels due to formation of D/F is a function of the exhaust gas residence time when at a temperature range of 700 to 400 °F which is independent of the fuel type.

Table 3. Summary of Estimated Emissions for Recovered Materials Tests.

Suwannee American Cement, Branford cement plant

Emissions Comparison - Summary for Total Emissions of Trial Periods

		Material Firing										
	Transport/Handling	Agricultural Film	TDF	Manu. Reject Shingles	Used Shingles	Clean Woody Biomass	Agricultural Byproducts min. tonnage	Preconsum. Reject Paper	Postconsum. Reject Paper	carpet derived fuel	Total	
	Incr./Dec. tons	Incr./Dec. tons	Incr./Dec. tons	Incr./Dec. tons	Incr./Dec. tons	Incr./Dec. tons	Incr./Dec. tons	Incr./Dec. tons	Incr./Dec. tons	Incr./Dec. tons	Increase/Decrease TRIAL PERIOD tons	PSD Threshold tons
Sulfur Dioxide	**0.00**	**0.0**	**0.0**	**0.1**	**0.1**	**0.4**	**0.7**	**0.4**	**0.4**	**0.0**	**2.0**	**40**
Nitrogen Oxides	**0.00**	**0.0**	**0.0**	**-8.2**	**-8.2**	**-3.8**	**-6.9**	**-4.2**	**-4.2**	**0.0**	**-35.6**	**40**
Carbon Monoxide	**0.00**	**0.0**	**0.0**	**0.0**	**0.0**	**-1.7**	**-3.0**	**-1.8**	**-1.8**	**0.0**	**-8.4**	**100**
Volatile Organic Compounds	**0.00**	**0.0**	**0.0**	**0.5**	**0.5**	**0.4**	**0.8**	**0.5**	**0.5**	**0.0**	**3.3**	**40**
Particulate matter (PM/PM10)	**1.44**	**0.0**	**0.0**	**0.0**	**0.0**	**1.8**	**3.2**	**2.0**	**2.0**	**0.0**	**10.4**	**25/15**
Hg (pounds)	negligible	**-0.4**	**-1.4**	**-0.5**	**-0.5**	**-0.9**	**-0.3**	**-1.3**	**-1.3**	**0.6**	**-6.1**	**120 lbs**

AGRICULTURAL FILM

This material is well described in the EPA RCCG Program Proposal (see Appendix 2) submitted on behalf of SAC by SWIX (www.swix.ws). In summary, the plastic film is used in agriculture and silviculture to prevent weed growth, control soil erosion and moisture exposure. The film is a combination of LDPE and HDPE, non-chlorinated plastics. The material can be readily obtained in the surrounding community to SAC. The energy content per ton for these films (polyethylene) is more than 50 percent higher than coal. The high temperatures, long residence times, and inherent scrubbing that take place within a cement kiln calciner provides an environment conducive to the efficient combustion of this film. Currently, agricultural film is disposed in landfills or open burned in fields.

Material Source

The film will be supplied by suppliers such as Marpan Recycling, a C&D processor in Tallahassee. Similar suppliers are available to provide source material.

Estimated emissions

The purpose of this test trial is to determine the feasibility to test this material. Emissions in excess of current standards are not expected during the trial period, and no modification to existing permitted emission limits are being requested for this test trial. If the co-firing of this material results in any emissions that are not allowed by current permits, co-firing shall cease immediately.

Agricultural film emission data are not available for cement kiln system combustion. EPA AP-42, Tables 2.5-7 and 2.5-8 provide emission factors for open burning of agricultural film. Other studies have been performed for silviculture [21]. These factors are not comparable to kiln combustion. The EPA review of alternative fuels and materials drafted in 2008 does not indicate other cement plants trial testing agricultural film [22]. Plastics are considered by EPA as an emerging fuel material. As well, use of plastics as fuel in Europe has increased in recent years [4](Table 4.21 of reference). Agricultural film has all of the benefits and minimal barriers or technical drawbacks of most waste plastics[4] (see Table ES-5 of reference). Though several

U.S. cement plants (Lafarge/Systech, Sugar Creek, MO; Lehigh Cement, York PA; TXI, New Braunfels TX) have tested plastics, estimated emissions from this film (polyethylene) are not available. Material analysis of polyethylene is provided below:

Polyethylene – Chemical Composition and Physical Properties [21]

Volatiles (wt.%)	100
Ash (wt.%)	0
Carbon (wt.%)	85.4 – 86.4
Hydrogen (wt.%)	13.5 - 14.3
Sulfur (wt.%)	0 - 0.08
Nitrogen (wt.%)	0
Oxygen (wt.%)	0 - 0.2
Chlorine (wt.%)	0
Heat Value (MJ/kg)	40.5
Density (g/cm3)	0.910 - 0.940
Degree of Crystallinity (%)	45 - 55
Melting Point Range (oC)	105 – 115

The high volatility and purity of this material should result in air pollution emissions comparable to or lower than that of coal. Thus, emissions are estimated to be similar or less than coal emissions. Baseline emission factors from SAC are provided in the following table based on the hierarchy of data per of 62-210.370, F.A.C (see details in Appendix 3). Agricultural film emissions are estimated in the following table to the same as baseline emissions from coal. Emissions of mercury, or other metals should be no more than that of coal given that feedstock material to polyethylene is purified petroleum materials, similar to tires.

Table 3. Estimated Emissions Comparison Coal and Agricultural Film

Suwannee American Cement, Branford cement plant

Potential Emissions from Kiln - Coal and Recovered Material: Agricultural Film

	coal (wet)	Material (wet)	
moisture content =	5.98	0.5	percent
heat content =	13264	18600	btu/lb
heat content =	26.53	37.20	mmbtu/ton
maximum heat input =	458	137.4	mmbtu/hr
maximum fuel input =	17.3		ton/hr
30% of max. fuel input =	5.18	3.69	ton/hr
Trial amount =		1250	tons

* coal based on monthly analyses for 2008

pollutant	fuel type	Emission Factor COMMENTS	Estimated Trial Testing Emissions: Fuel Quantity Test Material (tons)	equivalent coal (tons)	Coal Emission Factor (lb/mmbtu)	Effective Ag Film Emission Factor (lb/mmbtu)	Estimated Emissions (tons)	Difference of Emissions (tons)
SO2	coal	*based on 2008 CEM data and material usage (see attached data sheet- "Emiss. Factor Data")*		1753	0.008		0.18	0.00
	test material	*Estimated to be no greater than coal*	1250			0.008	0.18	
NOx	coal	*based on 2008 CEM data and material usage (see attached data sheet- "Emiss. Factor Data")*		1753	0.675		15.69	0.00
	test material	*Estimated to be no greater than coal*	1250			0.675	15.69	
CO	coal	*based on 2008 CEM data and material usage (see attached data sheet- "Emiss. Factor Data")*		1753	0.681		15.82	0.00
	test material	*Estimated to be no greater than coal*	1250			0.681	15.82	
VOC (as NMHC)	coal	*based on 2008 CEM data and material usage (see attached data sheet- "Emiss. Factor Data")*		1753	0.018		0.42	0.00
	test material	*Estimated to be no greater than coal*	1250			0.018	0.42	
PM/PM10	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1753	0.013		0.31	0.00
	test material	*Estimated to be no greater than coal*	1250			0.013	0.31	

METALS		comments	metal concentration (ppm)	percent captured (percent*)	Estimated Trial Testing Emissions: Fuel Quantity Test Material (tons)	equivalent coal (tons)	Estimated Emissions (lbs)	Difference of Emissions (lbs)
Mercury	coal	*Conc. based on coal analysis for 2008. Assume all Hg emitted.*	0.4	0		1753	1.4	-0.40
	test material	*Metals analysis*	0.4		1250		1.0	
Lead	coal	*EPA 745-B-00-04, TRI Guidance*	24.51	99		1753	0.9	-0.25
	test material	*Metals analysis*	24.51		1250		0.6	

*Percent capture based on reference (Trace metal report, VDZ) and estimated the same for both fuels.
** conservatively assume same metal content as coal

TIRE DERIVED FUEL

Tires are readily available and have a higher heating value than bituminous coal. The high temperatures, long residence times, and inherent scrubbing that take place within a cement kiln provide an environment conducive to the efficient combustion of tires. For these reasons, firing tire-derived fuels (TDF) in cement kilns has become relatively common practice in Florida. Combustion of TDF alleviates problems associated with the stockpiling or landfilling of waste tires. Use of TDF at cement kilns in Florida is approved at the following cement production facilities: Florida Rock Industries - Newberry , Cemex - Miami, Cemex - Brooksville South and North, and American Cement Company - Sumter.

Material Source

TDF source material will be obtained from permitted waste tire collection companies.

Estimated emissions

The purpose of this test trial is to determine the feasibility to test this material. Emissions in excess of current standards are not expected during the trial period, and no modification to existing permitted emission limits are being requested for this test trial. If the co-firing of this material results in any emissions that are not allowed by current permits, co-firing shall cease immediately. The following information was provided in the FDEP Technical Evaluation for permit number 0530010-022-AC.

- **Table 2. General Expected Effects of TDF On Emissions**

Pollutant	Expected Effect of TDF/Scrap Tire
CO	None
SO2	None
NOx	Decrease
PM	None
Total Hydrocarbons	None
Zinc	Increase
Other Metals	None or Decrease
Dioxins/Furans	None
Benzene	Decrease
Formaldehyde	Decrease
Semi-volatiles	Decrease

The above results are consistent with a USEPA report citing that "with the exception of zinc emissions, potential emissions from TDF are not expected to be very much different from other conventional fossil fuels, as long as combustion occurs in a well-designed, well-operated, and well-maintained combustion device".[Emphasis added.] The data above is also consistent with claims of NO_x reductions as a result of firing TDF. [0530010-022-AC]

Based on the above information, the emissions from tires are estimated to be the same as coal. Emissions are provided in Table 4 showing a comparison of coal and TDF. Baseline emissions of coal from SAC are provided in the following table based on the hierarchy of data per of 62-210.370, F.A.C. The coal emission factors for NOx, SO2, and VOC are based on 2008 CEMs data. Emission factors of PM and CO are based the average of emission tests over the last five years. Mercury emissions are based on material analysis and assumed to all be emitted. Lead emissions are based on EPA Toxic Release Inventory guidance documents for metal content and 90 percent control. The calculation of baseline emissions factors are provided in Appendix 3.

Table 4. Estimated Emissions Comparison Coal and TDF.

Suwannee American Cement, Branford cement plant

Potential Emissions from Kiln - Coal and Recovered Material: Tire-Derived Fuel

	coal (wet)	Material (wet)	
moisture content =	5.98	0.62	percent
heat content =	13264	15688	btu/lb
heat content =	26.53	31.38	mmbtu/ton
maximum heat input =	458	137.4	mmbtu/hr
maximum fuel input =	17.3		ton/hr
30% of max. fuel input =	5.18	4.38	ton/hr
Trial Burn amount =		1500	tons

* coal based on monthly analyses for 2008

pollutant	fuel type	Emission Factor COMMENTS	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Coal Emission Factor	Effective Tire Emission Factor	Estimated Emissions	Difference of Emissions
			tons	tons	lb/mmbtu	lb/mmbtu	tons	tons
SO2	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1774	0.008		0.18	0.00
	test material	*Use coal factors*	1500			0.008	0.18	
NOx	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1774	0.675		15.88	0.00
	test material	*Use coal factors*	1500			0.675	15.88	
CO	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1774	0.681		16.02	0.00
	test material	*Use coal factors*	1500			0.681	16.02	
VOC (as NMHC)	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1774	0.018		0.42	0.00
	test material	*Use coal factors*	1500			0.018	0.42	
PM/PM10	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1774	0.013		0.32	0.00
	test material	*Use coal factors*	1500			0.013	0.32	

METALS		comments	metal concentration	percent captured	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Estimated Emissions	Difference of Emissions
			ppm	percent*	tons	tons	lbs	lbs
Mercury	coal	*Conc. based on Cemex Miami plant, coal monthly analysis for 2008. Assume all Hg emitted.*	0.4	0		1774	1.4	-1.41
	test material	*based on 2009 monthly tire analysis data from Cemex Miami cement (all non detect)*	0.0039		1500		0.0	
Lead	coal	*EPA 745-B-00-04, TRI Guidance*	24.51	99		1774	0.9	-0.13
	test material	*Use coal factors*	24.51		1500		0.7	

*Percent capture based on reference (Trace metal report, VDZ) and estimated the same for both fuels.
** see appendix 3, metals analysis

MANUFACTURER REJECT ROOFING SHINGLES

Manufacturers of asphalt roofing shingles reject a certain fraction of roofing shingle product. This product contains valuable heat content and raw materials of a very consistent composition. This material is an excellent source of raw material and heat content for cement production. Shingles are no longer manufactured with asbestos and the manufacturer will provide written certification of this assertion.

Roofing shingles are produced by impregnating either organic felt produced from cellulose fibers, or glass felt produced from glass fibers, with a hot saturant asphalt, which is subsequently coated on both sides with more asphalt and finally surfaced with mineral granules.

The largest component of roofing shingles (60 to 70 percent by mass) is the mineral material. There are several different types in each shingle. This fraction of mineral content is evident in the shingle material analysis in Appendix 3 (ash content of 70 percent). They can include ceramic granules (comprising crushed rock particles, typically trap rock, coated with colored, ceramic oxides), lap granules (coal slag ground to roughly the same size as the ceramic granules), backsurfacer sand (washed, natural sand used in small quantities to keep packaged shingles from sticking together), and asphalt stabilizer (powdered limestone that is mixed into the asphalt).

Table 5. Components of asphalt shingles[23]

Component	Approximate Amount by Weight	Notes
Asphalt Cement	25-35	Generally of two types (saturant and coating)
Granular Material	60-70	Ceramic granules, headlap granules, backsurfacer sand, and asphalt stabilizer
Backing	5-15	Cellulose only or glass felt

Material Source

The source of new shingle material will be shingle manufacturers. Certification of asbestos free materials by the manufacturer will be provided to SAC prior to entering into a supplier relationship with any manufacturer and records of such certification shall be stored onsite for Department review.

Estimated emissions

The content of shingles is provided in Table 6. Analysis of shingles is provided in Appendix 3. The sulfur content of shingles is 0.79 percent. Given the amount of sulfur in coal used at SAC averages (2007-2009 monthly analyses average) 1.08 percent, the emissions from shingles (assuming similar combustion efficiency) can be broadly estimated by the ratio of 0.79/1.08 = 0.73 to that of coal on a mass basis and 13,264/5,842 = 2.27 on a heat content basis. For estimated SO2 emissions, a factor of (0.73 x 2.27) 1.65 times the coal SO2 emission factor (0.126 lb/mmbtu) is applied. The fraction of nitrogen in shingles in 0.27% in comparison to that typical of coal at 1.27% (see appendix 3, coal analysis). NOx formation from fuel in the precalciner should be less for shingles given the lower nitrogen content. Furthermore, most NOx is generated by thermal NOx in the main kiln combustion chamber versus the precalciner. The precalciner maximum temperature peaks near 2000 °F while the kiln peaks near 3500 °F. The NOx formation is conservatively to be less for shingles than that of coal using the ratio of nitrogen content (0.27/1.28). A NOx emission factor of (0.27/1.28 x 13,264/5,842 x 0.675 lb/mmbtu) 0.323 lb/mmbtu is applied for shingles. CO emissions should be similar to coal as CO is based on operation of the tertiary air system as discussed in the Project Estimated Emissions section. The carbon content of coal and shingles is similar (approximate 25-30 percent). If coal and shingle have the same combustion efficiency, the formation of VOCs could be suggested to vary by the ratio volatile content and heat content. Based on these assumptions, the VOC emission factor is estimated to be (13,264/5,842 x 0.018 lb/mmbtu-coal) 0.41 lb/mmbtu. While PM emission factors for shingles do not exist, studies of alternate fuels in German cement plants have been shown to not significantly increase PM emissions, in part, based on the logic that uncontrolled PM emissions from fuels in cement kiln are less than 1/10 the fraction of the PM emissions controlled from cement raw materials[4]. Thus PM emissions

are not expected to significantly increase. Therefore, PM emissions are not expected to increase. The factor for coal emissions is applied for shingles.

Table 6. Estimated Emissions Comparison Coal and Manufacturer Reject Shingles.

Suwannee American Cement, Branford cement plant

Potential Emissions from Kiln - Coal and Recovered Material: Manufacturer Reject Shingles

	coal (wet)	Material (wet)	* coal based on monthly analyses for 2008
moisture content =	5.98	3.14	percent
heat content =	13264	5842	btu/lb
heat content =	26.53	11.68	mmbtu/ton
maximum heat input =	458	137.4	mmbtu/hr
maximum fuel input =	17.3		ton/hr
30% of max. fuel input =	5.18	11.76	ton/hr
Trial Burn amount =		4000	tons

pollutant	fuel type	Emission Factor COMMENTS	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Coal Emission Factor	Effective test material Emission Factor	Estimated Emissions	Difference of Emissions
			tons	tons	lb/mmbtu	lb/mmbtu	tons	tons
SO2	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1762	0.008		0.18	0.12
	test material	*AP-42, Table 1.3-1, No. 6 oil, >100 mmbtu/hr,0.79%sulfur (see Appendix 3 analysis), 95+% control*	4000			0.0126	0.30	
NOx	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1762	0.675		15.77	-8.22
	test material	*see Section "Manufacturer eject Shingles" discussion on nitrogen fraction in shingles versus coal*	4000			0.323	7.55	
CO	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1762	0.681		15.90	0.00
	test material	*see Estimated Emissions discussion of control of CO*	4000			0.681	15.90	
VOC (as NMHC)	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1762	0.018		0.42	0.53
	test material	*see Estimated Emissions section for VOC factor*	4000			0.041	0.95	
PM/PM10	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1762	0.013		0.32	0.00
	test material	*similar to coal*	4000			0.013	0.32	

METALS		comments	metal concentration	percent captured	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Estimated Emissions	Difference of Emissions
			ppm	percent*	tons	tons	lbs	lbs
Mercury	coal	*Conc. based on Cemex Miami plant, coal monthly analysis for 2008. Assume all Hg emitted.*	0.4	0		1762	1.4	-0.53
	test material	*see Appendix 3*	0.11		4000		0.9	
Lead	coal	*EPA 745-B-00-04, TRI Guidance*	24.51	99		1762	0.9	0.82
	test material	*see Appendix 3*	21		4000		1.7	

*Percent capture based on reference (Trace metal report, VDZ) and estimated the same for both fuels.
** see Appendix 3, metals analysis

USED ROOFING SHINGLES

Approximately 10 million metric tons (11 million tons) of asphalt roofing shingle scrap is generated each year in the United States. It is estimated that 90 to 95 percent of this material is from residential roof replacement ("tear-offs"), with the remainder being leftover material from shingle production ("roofing shingle tabs")[23].

Roofing shingles are unlike other by-products or secondary materials in that they contain components of fine aggregate, mineral filler, and asphalt cement. Tear-off roofing shingle scrap typically contains small percentages of foreign materials, including nails, felt underlayment, metal flashings, and wood, as well as waterproofing and insulation materials. The asphalt cement binder component of roofing shingle is generally old, severely weathered and oxidized. Asphalt cement in old roofing shingles undergoes oxidative age hardening and stearic hardening (a hardening process in which solid compounds separate from volatile oils in the asphalt cement). Consequently, the asphalt cement in old tear-off roofing shingles is somewhat harder than new asphalt.

Material Source

SAC proposes to obtain tear-off roofing shingles from either permitted Florida recycling facilities or from contractors that prescribe to the manifesting procedures in Appendix 4.

Prevention of Asbestos-contaminated shingles

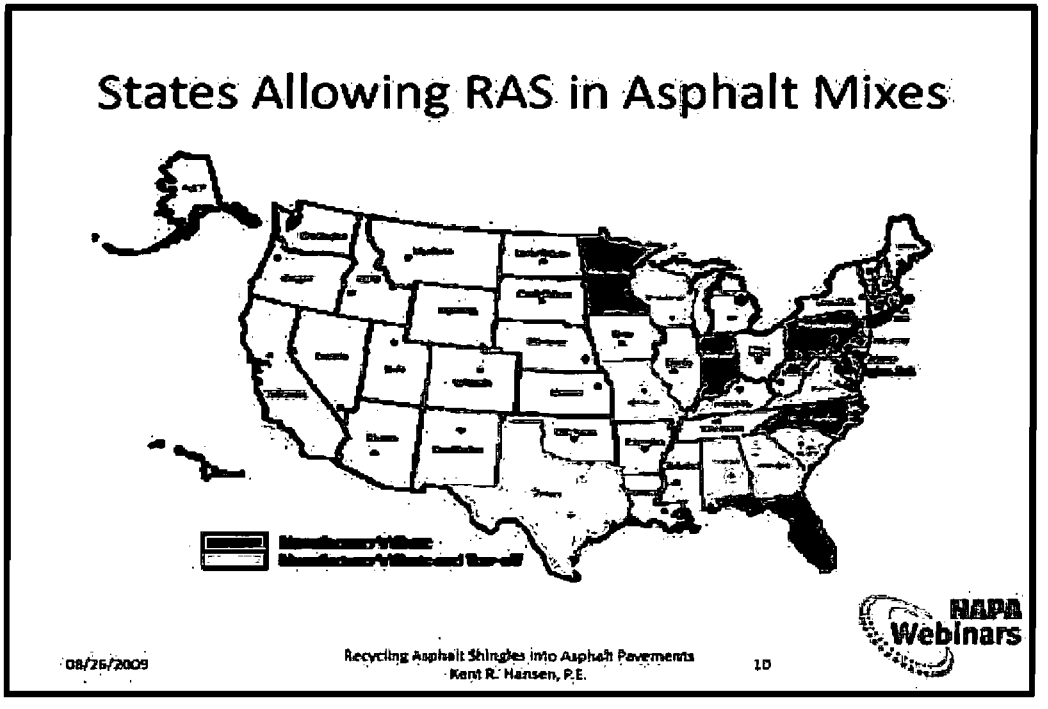
Asbestos has been effectively eliminated from roofing shingles since the early 1980s and is estimated to be present in less than 0.0016 percent of roofing shingles discarded today[24]. Although the risk of contamination is low, SAC shall forbid glass felt shingles as part of its source material; and in addition, SAC shall take reasonable assurance measures to sample and test incoming shingle material for friable asbestos contamination (as defined in 40 CFR 61.141) according to the written protocol of sampling and testing provided in Appendix 4; and shall require suppliers to provide certification to SAC that all materials received are asbestos free prior to entering into a supplier relationship. Key to ensuring this certification is financial incentive to

suppliers. A supplier that is found to have any material with asbestos containing material will required to remove the material at cost and will not be allowed to provide material for tests.

Tear-off roofing shingles that are determined to be clean are defined as "industrial byproducts", defined also in 62-701.200(57) F.A.C. Industrial byproducts should be applicable to permitting under 62-701.220(2)(d), F.A.C. C & D recycling facilities are not allowed to receive asbestos-containing shingles. For shingle materials that are not received from C& D recycling facilities, SAC proposes to follow recordkeeping manifests **"TEAR-OFF ROOF SHINGLE SUPPLY CERTIFICATION FORM"**(Appendix 4) to provide reasonable assurance that clean shingle materials are received at the facility.

More information regarding shingle recycling is available from the California Integrated Waste Management Board[24].

The following states are allowing either new reject shingles or new reject shingles and tear-off shingles in asphalt mix.



reference: National Status and Trends in Shingles Recycling: Environmental Issues. 2009 Asphalt Recycling Shingle Forum(25)

Estimated emissions

The emissions from used shingles are expected to be very similar to that of manufacturer reject shingles. The heat content of used shingles may be less than that of new shingles due to erosion of organic content in the shingles. For this analysis the shingles are estimated to have similar properties to new shingles. The following table provides estimated emissions identical to that for new shingles.

Table 7. Estimated Emissions Comparison Coal and Used Shingles.

Suwannee American Cement, Branford cement plant

Potential Emissions from Kiln - Coal and Recovered Material: Used Shingles

	coal (wet)	Material (wet)	* coal based on monthly analyses for 2008
moisture content =	5.98	3.14	percent
heat content =	13264	5842	btu/lb
heat content =	26.53	11.68	mmbtu/ton
maximum heat input =	458	137.4	mmbtu/hr
maximum fuel input =	17.3		ton/hr
30% of max. fuel input =	5.18	11.76	ton/hr
Trial Burn amount =		4000	tons

pollutant	fuel type	Emission Factor COMMENTS	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Coal Emission Factor	Effective test material Emission Factor	Estimated Emissions	Difference of Emissions
			tons	tons	lb/mmbtu	lb/mmbtu	tons	tons
SO2	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1762	0.008		0.18	0.12
	test material	*AP-42, Table 1.3-1, No. 6 oil, >100 mmbtu/hr,0.79%sulfur (see Appendix 3 analysis), 95+% control*	4000			0.0126	0.30	
NOx	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1762	0.675		15.77	-8.22
	test material	*see Section "Manufacturer eject Shingles" discussion on nitrogen fraction in shingles versus coal*	4000			0.323	7.55	
CO	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1762	0.681		15.90	0.00
	test material	*see Estimated Emissions discussion of control of CO*	4000			0.681	15.90	
VOC (as NMHC)	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1762	0.018		0.42	0.53
	test material	*see Estimated Emissions section for VOC factor*	4000			0.041	0.95	
PM/PM10	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1762	0.013		0.32	0.00
	test material	*similar to coal*	4000			0.013	0.32	

METALS		comments	metal concentration	percent captured	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Estimated Emissions	Difference of Emissions
			ppm	percent*	tons	tons	lbs	lbs
Mercury	coal	*Conc. based on Cemex Miami plant, coal monthly analysis for 2008. Assume all Hg emitted.*	0.4	0		1762	1.4	-0.53
	test material	*see Appendix 3*	0.11		4000		0.9	
Lead	coal	*EPA 745-B-00-04, TRI Guidance*	24.51	99		1762	0.9	0.82
	test material	*see Appendix 3*	21		4000		1.7	

*Percent capture based on reference (Trace metal report, VDZ) and estimated the same for both fuels.
** see Appendix 3, metals analysis

CLEAN WOODY BIOMASS

SAC is located in a rural area which has a plentiful supply of clean woody biomass. SAC will only use clean woody biomass. The clean woody biomass will include: clean untreated lumber; tree stumps; tree limbs; slash; wood residue, bark; sawdust; sander dust; wood chips; scraps; slabs; millings; shavings; and processed pellets made from wood or other forest residues. SAC specifically clarifies that clean wood excludes secondary residues, such as plywood, particle board, medium density fiberboard (MDF), oriented strand board (OSB), laminated beams, finger jointed trim, sheet goods. These secondary residues and other materials not on the list cannot be used as fuel without prior approval of the Department.

Material Source

The source material of woody biomass will come from permitted recycling facilities or contracted companies that service tree trimming operations.

Table 8 - Summary of Woody Biomass Fuel Types

Descriptions Fuel Group	**Description**
Field residuals and slash	Tops, limbs and whole tree soft or hardwoods that result from harvest and/or thinning as well as the residue
Understory	Forest understory including smaller trees and saplings
Land clearing and storm debris	Tree parts and/or branches that have been cut down for land development or line clearing purposes or that have been gathered after storms.
Production residuals	Butts, sticks, pole ends and tree surgeon material
Saw mill waste	Saw dust and kerf waste from cutting/milling whole green trees
Planer mill shavings	Fines from planing kiln-dried lumber
Source separated construction wood waste	Clean construction wood waste that was a primary mill product and has not been treated in any way such as pallets, dimensional lumber, clean wood trim, clean milled lumber

Estimated emissions

Data of emissions from wood testing in kilns is expected to be approved soon for the Cemex Miami cement kiln. These data should show comparable emissions impacts for clean wody biomass. For this comparison, AP-42 factors for boiler combustion of wood are used in comparison to boiler combustion of coal. These emissions are provided in the following table of emissions. While significant differences exist for these factors, these factors are applied as a measure to assess estimated emissions from wood burning. Metal content was evaluated based on recent measures taken on biomass for the Cemex Miami biomass permit application, 0250014-031-AC. Mercury was measured at 0.04 ppm, and lead at 0.05 ppm.

It should be noted that SAC emissions are relatively low compared to AP-42 factors for coal combustion in cement plants, Chapter 11.6. For example, PM emissions at SAC are on average 14 percent of AP-42 factor of 0.21 lb/ton clinker. Thus, it is expected that emissions from woody biomass will also be comparitively lower than AP-42 factors. Testing of emissions will determine the actual emissions from clean woody biomass.

Table 9. Estimated Emissions Comparison Coal and Clean Woody Biomass.

Suwannee American Cement, Branford cement plant

Potential Emissions from Kiln - Coal and Recovered Material: Clean Woody Biomass

	coal (wet)	Material (wet)	* coal based on monthly analyses for 2008
moisture content =	5.98	40	percent
heat content =	13264	5200	btu/lb
heat content =	26.53	10.40	mmbtu/ton
maximum heat input =	458	137.4	mmbtu/hr
maximum fuel input =	17.3		ton/hr
30% of max. fuel input =	5.18	13.21	ton/hr
Trial Burn amount =		4000	tons

pollutant	fuel type	Emission Factor COMMENTS	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Coal Emission Factor	Effective test material Emission Factor	Estimated Emissions	Difference of Emissions
			tons	tons	lb/mmbtu	lb/mmbtu	tons	tons
SO2	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1568	0.008		0.16	0.36
	test material	*Ap-42, Table 1.6-2, majority of biomass is wood*	4000			0.0250	0.52	
NOx	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1568	0.675		14.04	-3.85
	test material	*Ap-42, Table 1.6-2, majority of biomass is wood*	4000			0.490	10.19	
CO	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1568	0.681		14.16	-1.68
	test material	*Ap-42, Table 1.6-2, majority of biomass is wood*	4000			0.600	12.48	
VOC (as NMHC)	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1568	0.018		0.37	0.44
	test material	*Ap-42, Table 1.6-3, TOC*	4000			0.039	0.81	
PM/PM10	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1568	0.013		0.28	1.80
	test material	*AP-42, Table 1.6-1, (all fuels - 0.1 lb/mmbtu)*	4000			0.100	2.08	

METALS		comments	metal concentration	percent captured	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Estimated Emissions	Difference of Emissions
			ppm	percent*	tons	tons	lbs	lbs
Mercury	coal	*Conc. besed on Cemex Miami plant, coal monthly analysis for 2008. Assume all Hg emitted.*	0.4	0		1568	1.3	-0.93
	test material	**	0.04		4000		0.3	
Lead	coal	*EPA 745-B-00-04, TRI Guidance*	24.51	99		1568	0.8	-0.76
	test material	**	0.050		4000		0.0	

*Percent capture based on reference (Trace metal report, VDZ) and estimated the same for both fuels.

** Permit application: Cemex Miami 0250014-031-AC. Three samples of biomass, all analyses < detection limit. Apply 1/2 DL. Att. C.

AGRICULTURAL BYPRODUCTS

Agricultural byproducts for this application will be defined as any fibrous organic waste materials:

- Peanut hulls
- Rice hulls
- Corn husks
- Citrus peels
- Cotton gin byproducts
- Animal bedding

SAC requests the allowance to request FDEP to allow similar agricultural (e.g., grapefruit peels) if a supply is determined viable for these trials.

These materials range extensively in physical and chemical properties. For example, orange peel has a heat content of near 1500 btu/lb and 50% moisture, while dried corn husks has a heat content of 8000 btu/lb and 15% moisture. In order to ensure the Department of a limit of agricultural material to be trial tested, the total amount of agricultural material is limited to 25,000 tons. SAC believes that the range of materials can be tested for feasibility using this amount given the reality of material supply availability and costs. It should be noted that this method to remove agricultural material from fields will potentially reduce the nutrient loading to surrounding water bodies which of significant concern and recent regulatory activity.

Material Source

Suwannee American Cement is located within the lower Suwannee River Basin and is in the heart of farm country. Suwannee American Cement will work with farms, distributors, and processors to develop a supply of agricultural byproducts suitable for use in its cement manufacturing process. Although many agricultural byproducts are biodegradable and useable as fertilizer, often wastes that are fibrous in nature do not readily biodegrade but contain significant energy content. Many research programs today are geared towards developing bioreactors capable of breaking down this plentiful waste material, but a low cost readily available alternative is already presented by use in cement kilns. The design and operation of cement kilns make it possible to feed many different types of fuel into the system for energy recovery at low cost to farmers.

Expected emissions

The expected emissions agricultural byproducts are expected to be similar to that of woody biomass. Assuming the greatest material usage of 25,000 tons estimates are made for emissions. Similarly the metals content of agricultural byproducts is expected to be low. In line with this reasoning, the ash from other processes that combust agricultural waste is regularly used fertilizer, in part, given the assumed low concentration of metals.

Table 10. Estimated Emissions Comparison Coal and Agricultural Byproducts

Suwannee American Cement, Branford cement plant

Potential Emissions from Kiln - Coal and Recovered Material: Agricultural Byproducts

	coal (wet)	Material (wet)	
moisture content =	5.98	50	percent
heat content =	13264	1500	btu/lb
heat content =	26.53	3.00	mmbtu/ton
maximum heat input =	458	137.4	mmbtu/hr
maximum fuel input =	17.3		ton/hr
30% of max. fuel input =	5.18	45.80	ton/hr
Trial Burn amount =		25000	tons

* coal based on monthly analyses for 2008

pollutant	fuel type	Emission Factor COMMENTS	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Coal Emission Factor	Effective test material Emission Factor	Estimated Emissions	Difference of Emissions
			tons	tons	lb/mmbtu	lb/mmbtu	tons	tons
SO2	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		2827	0.008		0.29	0.65
	test material	*Ap-42, Table 1.6-2, apply factors for biomass*	25000			0.0250	0.94	
NOx	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		2827	0.675		25.31	-6.93
	test material	*Ap-42, Table 1.6-2, apply factors for biomass*	25000			0.490	18.38	
CO	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		2827	0.681		25.52	-3.02
	test material	*Ap-42, Table 1.6-2, apply factors for biomass*	25000			0.600	22.50	
VOC (as NMHC)	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		2827	0.018		0.67	0.79
	test material	*Ap-42, Table 1.6-3, TOC*	25000			0.039	1.46	
PM/PM10	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		2827	0.013		0.51	3.24
	test material	*AP-42, Table 1.6-1, (all fuels - 0.1 lb/mmbtu)*	25000			0.100	3.75	

METALS		comments	metal concentration	percent captured	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Estimated Emissions	Difference of Emissions
			ppm	percent*	tons	tons	lbs	lbs
Mercury	coal	*Conc. based on Cemex Miami plant, coal monthly analysis for 2008. Assume all Hg emitted.*	0.4	0		2827	2.3	-0.26
	test material	**	0.04		25000		2.0	
Lead	coal	*EPA 745-B-00-04, TRI Guidance*	24.51	99		2827	1.4	-1.36
	test material	**	0.050		25000		0.0	

*Percent capture based on reference (Trace metal report, VDZ) and estimated the same for both fuels.

** Permit application: Cemex Miami 0250014-031-AC. Three samples of biomass, all analyses < detection limit. Apply 1/2 DL. Att. C.

PRE-CONSUMER REJECT PAPER

SAC requests to transport, store, process, and pre-consumer reject paper that is produced by companies specifically marketing such a products (e.g., International Paper Products Corp (IPP), enviro-fuelcubes) or waste handlers that certify and manifest to only supply pre-consumer reject paper. Typical sources of such paper are manufacturers having a supply of outdated paper printings (e.g., calendars) that must dispose of the material in some manner. Example material sources are listed below. The obvious benefit of these materials is that consumers have not been able to potentially contaminate the paper. As such the quality of the product is much more reliable and the potential to contamination (e.g., mercury containing materials) is essentially negated.

These materials contain high amounts of energy and are relatively slow to biodegrade in landfills and have been successfully used at cement facilities in the US and around the world.

Material source

SAC shall accept only uniform supplies of these materials from manufacturers, permitted Florida recycling facilities, or from contractors that prescribe to certify the manufacturing source(s) of the materials.

Typical sources of materials:

FEEDSTOCK MATERIAL & EXAMPLES	TYPICAL SOURCES
PAPER	
Printing &Writing Paper	Original Article Manufacturers
Pre-Consumer Household & Sanitary Paper	Paper Goods Manufacturers and Converters
Wrapping & Packaging Paper and Paper Board	Game/Novelty Manufacturers/Distributors
Linerboard (chipboard)	Packaging Operations
Kraft Liner	Commercial and Retail Packaging Discards
Fluting (corrugated interiors)	Institutional Discards
Kraft Wrapping & Packaging	References www.fao.org/ http://www.fao.org/docrep/w5622t/w5622t4o.htm
Other Wrapping and Packaging Paper	

Folding Boxboard	
Other Paper Board (NES) (Box Liners, Laminated Surfaces)	
FABRICS - TEXTILES - NATURAL FIBERS	
Dyed/Finished Natural Fiber (Cotton, Linen, Rayon, Wool) Curtains	Original Article Manufacturers (Curtain/Clothing Makers)
Dyed/Finished Natural Fiber Woven scrap/trim	Game/Novelty Manufacturers/Distributors
Polymer Fiber (nylon, polyester) Woven scrap/trim	Commercial and Retail Discards and Scrap, and Packaging Media
Undyed/Unfinished Natural or Synthetic Fiber scrap/trim	Secondary Manufacturer Discards and Scrap (Fabric added to article)
COATED PAPER	
General Note: Most papers have a coating. It is usually clay or other inert material and can also include polymer/rubber or latex compounds. Coated papers in this category are those to which a second coating has been added in the form of a polymer film, additional paper laminate, metalized foils (Aluminum) and other similar applications. These materials are primarily at least one more process or down stream manufacturer from the retail market.	
Polymer Laminated Wrapping Paper (Printed sandwich wrap)	Original Article Manufacturers
Game Boards and Boxes (Printed Kraft glued to boxboard)	Paper Goods Manufacturers and Converters
Foilized Wrapping Paper (Gift Wrap, Specialty Finished Coverings)	Game/Novelty Manufacturers/Distributors
Thermal Papers (Gas Station Receipts)	Packaging Operations
NCR Forms (No Carbon Multiple Copy Forms)	Commercial and Retail Packaging Discards
Specialty Papers for Filtration or Hygienic Applications (Diapers)	Institutional Discards
Adhesive Labels (Retail Beverage Containers, Ski Lift Tickets)	
Waxed Corrugated Cardboard (Watermelon Cartons)	
Other Specialty Coatings (Lottery Ticket Stock, Instant Oatmeal Pouches)	

Expected emissions

The emissions from processed paper injected to the precalciner should be similar to that of woody biomass. The burning of shredded paper should be more efficient than biomass as paper is a two-dimensional fuel source with maximum surface area to combust. Similarly the metals emissions should be low in reject paper. Analytical results from IPP are included in Appendix 3 showing mercury averaging 0.01 ppm and lead averaging 8.5 ppb. These values for metal concentration are applied in the estimated emissions. The emissions for paper are provided below.

Table 11. Estimated Emissions Comparison Coal and Pre-Consumer Paper.

Suwannee American Cement, Branford cement plant

Potential Emissions from Kiln - Coal and Recovered Material: Reject Manufacturer Paper

	coal (wet)	Material (wet)	
moisture content =	5.98	16	percent
heat content =	13264	6500	btu/lb
heat content =	26.53	13.00	mmbtu/ton
maximum heat input =	458	137.4	mmbtu/hr
maximum fuel input =	17.3		ton/hr
30% of max. fuel input =	5.18	10.57	ton/hr
Trial Burn amount =		3500	tons

* coal based on monthly analyses for 2008

pollutant	fuel type	Emission Factor COMMENTS	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Coal Emission Factor	Effective test material Emission Factor	Estimated Emissions	Difference of Emissions
			tons	tons	lb/mmbtu	lb/mmbtu	tons	tons
SO2	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1715	0.008		0.17	0.39
	test material	*Use Ap-42, Table 1.8-2*	3500			0.0250	0.57	
NOx	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1715	0.675		15.35	-4.21
	test material	*Use Ap-42, Table 1.6-2*	3500			0.490	11.15	
CO	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1715	0.681		15.48	-1.83
	test material	*Use Ap-42, Table 1.6-2*	3500			0.600	13.65	
VOC (as NMHC)	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1715	0.018		0.41	0.48
	test material	*Use AP-42, Table 1.6-3, TOC*	3500			0.039	0.89	
PM/PM10	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1715	0.013		0.31	1.97
	test material	*Use AP-42, Table 1.6-1, (all fuels - 0.1 lb/mmbtu)*	3500			0.100	2.28	

METALS		comments	metal concentration	percent captured	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Estimated Emissions	Difference of Emissions
			ppm	percent*	tons	tons	lbs	lbs
Mercury	coal	*Conc. based on Cemex Miami plant, coal monthly analysis for 2008. Assume all Hg emitted.*	0.4	0		1715	1.4	-1.30
	test material	**	0.01		3500		0.1	
Lead	coal	*EPA 745-B-00-04, TRI Guidence*	24.51	99		1715	0.8	-0.25
	test material	**	8.5		3500		0.6	

*Percent capture based on reference (Trace metal report, VDZ) and estimated the same for both fuels.

** Permit application: Cemex Miami 0250014-031-AC. Three samples of biomass, all analyses < detection limit. Apply 1/2 DL. Att. C.

POST-CONSUMER PAPER

SAC requests to transport, store, process, and post-consumer reject paper that is provided by Materials Recovery and Recycling Facilities (MRRF). Some mixed papers are of significantly less value due to mixing of various paper types and too costly to sort. Thus, these papers are of little value to marketing and are considered near waste items that must be sold at a loss or landfilled. While the material has been handled by the consumer, many source of waste paper are well segregated through MRRF agreements with business that supply the paper. This segregation help improve the quality of paper for the MRRF or related brokers in the waste paper market. Typically this material has little contamination based on the paper handler knowledge of the sources and the grades/uses of the paper. For example, office copy paper is typically segregated at offices which provides an initial method of preventing contamination. The paper hauler will visually segregate or reject paper loads based on observations of contamination. The processor of the material will visually inspect as well. These levels of inspection, prior to supplying material to SAC will help to prevent contamination. Of course, SAC will implement the quality assurance plan sampling for contaminants to provide assurance of the material is not contaminated with unwanted materials.

These materials contain high amounts of energy and are relatively slow to biodegrade in landfills and have been successfully used at cement facilities in the US and around the world.

Material source

SAC shall accept only uniform supplies of these materials from waste paper haulers.

Expected emissions

The emissions from processed waste paper injected to the precalciner should be similar to that of woody biomass. The burning of shredded paper should be much more efficient as paper is a two-dimensional fuel source with maximum surface area to combust in comparison to other bulk fuels. Similarly the metals emissions should be low in reject paper. Analytical results from IPP are included in Appendix 3 showing mercury averaging 0.01 ppm and lead averaging 8.5 ppb.

These values for metal concentration are applied in the estimated emissions. The emissions for paper are provided below.

Table 12. Estimated Emissions Comparison Coal and Post-Consumer Paper.

Suwannee American Cement, Branford cement plant

Potential Emissions from Kiln - Coal and Recovered Material: Post-Consumer Paper

	coal (wet)	Material (wet)	* coal based on monthly analyses for 2008
moisture content =	5.98	16	percent
heat content =	13264	6500	btu/lb
heat content =	26.53	13.00	mmbtu/ton
maximum heat input =	458	137.4	mmbtu/hr
maximum fuel input =	17.3		ton/hr
30% of max. fuel input =	5.18	10.57	ton/hr
Trial Burn amount =		3500	tons

pollutant	fuel type	Emission Factor COMMENTS	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Coal Emission Factor	Effective test material Emission Factor	Estimated Emissions	Difference of Emissions
			tons	tons	lb/mmbtu	lb/mmbtu	tons	tons
SO2	coal	based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")		1715	0.008		0.17	0.39
	test material	use value of that of Pre consumer reject paper	3500			0.0250	0.57	
NOx	coal	based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")		1715	0.675		15.35	-4.21
	test material	use value of that of Pre consumer reject paper	3500			0.490	11.15	
CO	coal	based on 2005-2009 last data and coal usage (see attached data sheet- "Emiss. Factor Data")		1715	0.681		15.48	-1.83
	test material	use value of that of Pre consumer reject paper	3500			0.600	13.65	
VOC (as NMHC)	coal	based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")		1715	0.018		0.41	0.48
	test material	use value of that of Pre consumer reject paper	3500			0.039	0.89	
PM/PM10	coal	based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")		1715	0.013		0.31	1.97
	test material	use value of that of Pre consumer reject paper	3500			0.100	2.28	

METALS	comments	metal concentration	percent captured	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Estimated Emissions	Difference of Emissions
		ppm	percent*	tons	tons	lbs	lbs
Mercury	coal: Conc. based on Cemex Miami plant, coal monthly analysis for 2008. Assume all Hg emitted.	0.4	0		1715	1.4	-1.30
	test material: use value of that of Pre consumer reject paper	0.01		3500		0.1	
Lead	coal: EPA 745-B-00-04, TRI Guidance	24.51	99		1715	0.8	-0.25
	test material: use value of that of Pre consumer reject paper	8.5		3500		0.6	

*Percent capture based on reference (Trace metal report, VDZ) and estimated the same for both fuels.
** Permit application: Cemex Miami 0250014-031-AC. Three samples of biomass, all analyses < detection limit. Apply 1/2 DL. Att. C.

CARPET DERIVED FUEL

In the US, approximately 2 million tons of carpet is replaced annually. Most carpet is disposed of in landfills. Carpet has a heating value similar to that of coal, and carpet contains a significant fraction (≈ 30 % by weight) of $CaCO_3$ in the backing material which is a beneficial component of cement production[20].

Typical analysis of CDF is shown in the following table.

Table 13. Carpet Derived Fuel Analysis.[20]

Table IV. Ultimate and proximate analysis results for various carpet types tested and a typical medium-volatile bituminous Pennsylvania coal (12). All values are as received.

	polypropylene	nylon 6	nylon 6,6	coal
Carbon (% mass)	56.93	42.25	45.59	81.6
Hydrogen (% mass)	8.47	5.47	6.13	5.0
Nitrogen (% mass)	< 0.05	4.46	4.74	1.4
Sulfur (% mass)	0.07	0.11	0.11	1.0
Ash (% mass)	21.17	25.42	23.96	6.1
Oxygen (% mass, by difference)	13.36	22.28	19.46	4.9
Chlorine (ppm mass)	77	64	52	NA
Moisture (% mass)	0.21	0.85	0.58	2.1
Volatile matter (% mass)	69.11	61.90	65.57	24.4
Ash (% mass)	21.17	25.42	23.96	6.1
Fixed carbon (% mass, by difference)	9.51	11.83	9.89	67.4
Heat of combustion (MJ/kg)	28.10	17.17	18.81	33.26

Material Source

Materials will be supplied by certified waste haulers for processed CDF. Carpet materials is available from manufacturers of carpet in surrounding areas to MRRFs.

Estimated emissions

This material has been tested at the Lehigh cement plant in Evansville, PA. However, this testing was conducted with the CDF injected directly through an auxillary burner to the front of the kiln. The results at the Lehigh Evansville PA facility showed insignificant changes for PM, CO and NOx and an incongruent significant increase of SO2 (the sulfur in carpet is typically 0.1 %, while

the coal is one percent). The results of CDF are not expected to be different or greater than that of coal.

The purpose of this test trial is to determine the feasibility to burn CDF. Emissions in excess of current standards are not expected during the trial period, and no modification to existing permitted emission limits are being requested for this test trial. If the co-firing of CDF results in any emissions that are not allowed by current permits, co-firing shall cease immediately.

Estimated emissions are provided in the following table.

Table 14. Estimated Emissions Comparison Coal and Carpet Derived Fuel.

Suwannee American Cement, Branford cement plant

Potential Emissions from Kiln - Coal and Recovered Material: Carpet Derived Fuel

	coal (wet)	Material (wet)	
moisture content =	5.98	0.55	percent
heat content =	13264	9194	btu/lb
heat content =	26.53	18.39	mmbtu/ton
maximum heat input =	458	137.4	mmbtu/hr
maximum fuel input =	17.3		ton/hr
30% of max. fuel input =	5.18	7.47	ton/hr
Trial Burn amount =		2500	tons

* coal based on monthly analyses for 2008

pollutant	fuel type	Emission Factor COMMENTS	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Coal Emission Factor	Effective test material Emission Factor	Estimated Emissions	Difference of Emissions
			tons	tons	lb/mmbtu	lb/mmbtu	tons	tons
SO2	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1733	0.008		0.18	0.00
	test material	*use value of that of coal*	2500			0.008	0.18	
NOx	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1733	0.675		15.51	0.00
	test material	*use value of that of coal*	2500			0.675	15.51	
CO	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1733	0.681		15.64	0.00
	test material	*use value of that of coal*	2500			0.681	15.64	
VOC (as NMHC)	coal	*based on 2008 CEM data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1733	0.018		0.41	0.00
	test material	*use value of that of coal*	2500			0.018	0.41	
PM/PM10	coal	*based on 2005-2009 test data and coal usage (see attached data sheet- "Emiss. Factor Data")*		1733	0.013		0.31	0.00
	test material	*use value of that of coal*	2500			0.013	0.31	

METALS		comments	metal concentration	percent captured	Estimated Trial Testing Emissions: Fuel Quantity Test Material	equivalent coal	Estimated Emissions	Difference of Emissions
			ppm	percent*	tons	tons	lbs	lbs
Mercury	coal	*Conc. based on Cemex Miami plant, coal monthly analysis for 2008. Assume all Hg emitted.*	0.4	0		1733	1.4	0.61
	test material	*use value of that of coal*	0.4		2500		2.0	
Lead	coal	*EPA 745-B-00-04, TRI Guidance*	24.51	99		1733	0.8	0.38
	test material	*use value of that of coal*	24.5		2500		1.2	

*Percent capture based on reference (Trace metal report, VDZ) and estimated the same for both fuels.

** Permit application: Cemex Miami 0250014-031-AC. Three samples of biomass, all analyses < detection limit. Apply 1/2 DL. Att. C.

APPENDIX 2

SUWANNEE AMERICAN CEMENT

AGRICULTURAL FILM

EPA RESOURCE CONSERVATION CHALLENGE GRANT PROGRAM

Resource Conservation Challenge (RCC) Grant Program

RFP NO: EPA-R4-RCRAPMMB-10-09

Proposal

Submitted to:

United States Environmental Protection Agency (EPA), Region 4

Submitted by:

Southern Waste Information eXchange, Inc. (SWIX)
A 501(c)(3) Non-Profit Organization
Post Office Box 960
Tallahassee, FL 32302

Summary Page

a)	Project Title:	Waste Agricultural Plastic Film Mulch Research & Beneficial Use Demonstration Project
b)	Project Location:	All Region 4 States
c)	Applicant Information:	Southern Waste Information eXchange, Inc. (SWIX) P.O. Box 960 Tallahassee, FL 32302 Contact Person: Ray Moreau 850-386-6280 (office phone) 850-386-4321 (fax) ray@swix.ws (email)
d)	Funding Requested:	$42,830.15
e)	Total Project Cost:	$56,330.15
f)	Project Period:	October 2010 to September 2011

Work Plan

Project Summary/Approach

Plastic film mulch (polyethylene film) is a product used to suppress weeds and conserve water in crop production and landscaping. Certain plastic mulches also act as a barrier to keep methyl bromide, both a powerful fumigant and ozone depleter, in the soil. Crops, such as tomatoes, grow through slits or holes in thin plastic sheeting (see Figure 1). Plastic mulch is often used in conjunction with drip irrigation. This method is predominant in large-scale vegetable growing, with millions of acres cultivated under plastic mulch worldwide each year. In the case of tomatoes farms here in the southeast region of the US, the waste stream is usually generated bi-annually for crop production.

Figure 1

As stated by Wikipedia, the idea of using polyethylene film as mulch in plant production saw its beginnings in the mid 1950's. Dr. Emery M. Emmert of the University of Kentucky was one of the first to recognize the benefits of using LDPE (low density polyethylene) and HDPE (high density polyethylene) film as mulch in vegetable production. His work in this area was done at the University of Kentucky. Approximately, 2,500 square miles of agricultural land utilize polyethylene mulch and similar row covers for crop production in the world.

While agricultural film plastic waste does not represent a large fraction of total solid wastes disposed of, it is a problematic and voluminous waste stream within all of the 8 states contained in US EPA Region 4. Presently, this waste stream is either:

- buried in Class 1 or 3 landfills,
- being stock piled onsite at various farms, or
- being legally burned (via open burning) in small piles within agricultural fields.

Figure 2

Figure 2 contains a representative stockpile of waste film. Landfilling this material takes up large volumes of precious landfill space. In addition, this material in landfills does not biodegrade for extremely long periods of time. It is important to note that burning via "open burning" of this waste stream in fields

could present nuisance problems and potential environmental health effects for residents/businesses that are located downwind from burning locations.

This project is presented as a follow-up to an existing pilot project the Southern Waste Information eXchange, Inc, (SWIX) is doing for the Florida Department of Environmental Protection (FDEP). That particular project is determining the economic and technical feasibility of collecting the plastic film in the fields, processing it to meet end use market specifications and acceptability, and recycling the material into new products and/or back into plastic mulch. FDEP has agreed to be a Project Partner in the event this project is funded (see Attachment 1).

Initial results from this pilot project indicate that though there are potential recycling options for this material, due to the dirt and vegetation contamination contained in the film at the end of the growing season other market development is warranted, namely the research of using this material as an energy feed stock, for example, in the cement kiln industry. A benefit of polyethylene film is its highly consistent heat content of 20,500 Btu/lb[1] which is comparable or exceeds conventional fuels used in the cement industry (e.g., coal or fuel oil).

This project could significantly expand the end use market for this problematic waste stream by researching the viability of the material as a supplemental fuel in a cement kiln. Suwannee American Cement, LLC operates a state-of-the art, ISO14001 certified facility located in Branford, Florida having a precalciner dry-process cement kiln with maximum heat input of 485 mmbtu/hr. SAC has expressed an interest in participating in this project (see Attachment 1 for letter of interest). SAC is willing to help experiment with the material as a fuel source and help on the identification and processing of the waste stream to a state that the material could be feed into their system.

The project proposes to utilize agricultural film plastic that has already been collected and stored temporarily by SWIX in the North Florida and South Georgia region (see Figure 3). SWIX has already estimated that just in Florida, approximately 80,000,000 lbs of waste ag film is produced annually. This project will also research and determine the estimated total number of pounds being generated annually throughout the rest of the states in Region 4.

Figure 3

Ag Film Fuel Assessment

As part of the feed stock specification research, the agricultural film plastic already collected by SWIX (as well as any additional material needed for the project) will be processed (e.g., ground to various sizes) by one of the project's partners (Marpan Recycling, a C&D processor located in Tallahassee, Florida). Representative samples of processed material will be collected by ASTM sampling methods and

[1] Richard N. Walters, Stacey M. Hackett and Richard E. Lyon, HEATS OF COMBUSTION OF HIGH TEMPERATURE POLYMERS, Federal Aviation Administration, http://www.fire.tc.faa.gov/pdf/chemlab/hoc.pdf

analyzed by a NELAC-certified laboratory to determine, at a minimum, the following material composition/properties.

Material Analyses

Metals content

Mercury
Lead
Thallium
Chromium
Cadmium
Arsenic

Bromine
Chlorine
Sulfur

Moisture
Heat content
Ash content
Volatile content

Pesticides

EPA methods from SW-846 or equivalent will be applied for laboratory analyses.

The results of the analyses will be applied, in part, for an assessment of expected emissions of air pollutant. In addition, material safety data sheets from ag film manufacturers as well as literature searching will be used by Koogler & Associates, Inc. to develop an assessment of expected air pollutant emissions from ag film used as a cement kiln fuel. It should be noted that Koogler & Associates has extensive experience in air permitting and emissions measurements of alternative fuels at various combustion sources, including cement kilns.

Depending on the results of this assessment, SAC will seek a modification to their current air permit allowances to demonstrate the prepared agricultural film plastic's use as a supplemental fuel in their kiln(s). SAC has experience in processing and firing alternative fuels in the Branford, Florida cement kiln, such as automobile shredder residue. Clearly, this experience of SAC will assist in this alternative fuel project.

This project as proposed will have the following beneficial effects/impacts:

Table 1. Project Benefits

- Reduced open field burning of agricultural plastics
- Reduced landfilling of agricultural plastics and space savings at landfills
- Reduced air pollution from currently unregulated open field burning of plastic by farmers
- Savings to farmers for any landfill disposal costs they currently incur
- Demonstration of a potential beneficial reuse option/alternative that could enhance the market infrastructure for reuse of this material

- Energy savings and resource conservation through using a waste material instead of virgin sources (e.g., coal) as a supplemental fuel in cement industry

- Potentially reduced air pollutant emissions from cement kilns by substituting waste plastic for coal.

- Reduced greenhouse gas emissions through the use of a locally-generated waste product instead of mined, processed, and transported coal from Appalachia or overseas (i.e., 1000+ mile distance) as fuel.

- Reduced greenhouse gas emissions by reducing landfilled agricultural plastics which generates methane instead of combustion that generates carbon dioxide. Methane is a greenhouse gas that is twenty times stronger than carbon dioxide.

- Educate and promote to cement industry leaders the beneficial use of agricultural plastic as a supplemental fuel at their facilities

EPA Region 4 Priorities Addressed by Project

This project supports several of EPA Region 4's priorities for proposals seeking grants from this offering. These include the reuse and recycling of agricultural materials *[see, under REQUEST FOR GRANT PROPOSALS: RESOURCE CONSERVATION CHALLENGE (RCC) EPA-R4-RCRAPMMB-10-09, Advancing Increased Material Recovery, Reuse, and Recycling in the Southeast, Agriculture) Proposals should focus on: projects that demonstrate a reduction, recycling or reuse of agricultural film the cross cutting issues of energy conservation, air pollution reductions, water protection, farming community assistance, and effective materials management."].*

Specifically, this project directly demonstrates the reuse of agricultural materials (in this case, agricultural film plastic), the reduction of potentially toxic and priority chemicals from open field burning (air quality) of the material, and reduced landfill disposal (land).

The project directly addresses 3 of EPA's 4 focal areas of interest under this grant proposal offering, including:

- *Supporting state and local government programs to strengthen recycling collection and processing infrastructure and enhancing efficient use of materials through continued development of recycling markets;*

- *Establishing and expanding partnerships with businesses, industries, states, communities and consumers;*

- *Assisting businesses, government, institutions, and consumers reduce waste generation and increase recycling through articulating and communicating the benefits of*

sustainable materials, and advocating innovative and economically sustainable approaches.

This project, as described in the Work Plan, also supports one of EPA's Strategic Plan goals and objectives:

- *Goal 3 (Land Preservation and Restoration), Objective 3.1 (Preserve Land), Subobjective 3.1.1 (Reduce Waste Generation and Increase Recycling) of EPA's 2006-2011 Strategic Plan, which states, "by 2011...[EPA will]...reduce materials use through product design, and increase materials and energy recovery from wastes otherwise requiring disposal"* **(Note: if this project is implemented, waste agricultural film plastics will be tested and analyzed for beneficial reuse as cement kiln fuel thereby increasing use of this material as an energy source rather than being landfilled or burned in open fields).**

Work Products

Associated work products from this project will include:

- Listing of project partners and their tasks (including farms that contribute waste agricultural film plastic, collection and transportation agents, processing company(s), and end use partner.
- Quarterly and Final Reports on the project, tracking progress, performance, problems, and results of demonstration.
- Life Cycle Assessment on energy conservation (other fuels displaced as a result of using agricultural plastic as supplemental fuel) including comparison of costs of collection /processing/burning of the conventional and alternative fuel in a cement kiln.
- Assessment of expected impact of agricultural plastic on air pollutant emissions, including greenhouse gases.
- Weight data, as applicable, on pounds/tons of material collected, processed and burned as a fuel at end use facility.
- Summary feasibility analysis (in Final Report) for this beneficial reuse of agricultural plastics in cement kilns for transferability of this project approach to other communities throughout the Southeast.

Benefits to the Public

The public will benefit from the all the items listed in Table 1.

Roles of Project Partners

SWIX, the grant applicant, will be responsible for overall project management and administration, including the transportation of existing and new sources agricultural film plastic to its processing partner. Marpan Recycling will be the project partner responsible for processing the material provided by SWIX to specifications necessary for laboratory analysis and for demonstrating its use as a supplemental fuel at an existing cement manufacturing plant. Koogler and Associates, Inc., will be responsible for administration, review, and analysis of an independent laboratory's materials analysis results and gathering other data to assess expected air pollution emissions. Project Team Members will also retain legal council and a toxicologist from Hazardous Substance & Waste Management Research, Inc. to review key analytical data for report purposes. SAC will be the partner responsible for demonstrating the use of the prepared agricultural film plastic as a supplemental fuel in its existing kiln and acquiring necessary permitting to do so depending on results of the project assessment.

Staff Experience and Knowledge

The biographies of key staff members from SWIX and Koogler & Associates are provided in Attachment 2 of this proposal.

Budget and Funding Amounts by Task

The total project budget for this proposal is $56,330.15 of which $42,830.15 is requested in the form of Federal Assistance from US EPA Region 4. In-kind contributions are estimated to be $13,500 from project partners. See Form SF-424A for a breakdown of project expenses.

ENVIRONMENTAL RESULTS – OUTCOMES AND OUTPUTS

Outputs

- Potential new end use market for agricultural film plastic generated by farmers throughout US EPA Region 4
- Research data on feasibility of using agricultural film plastic as a fuel in cement plants, including, estimation on the amount of agricultural film plastic available for such use in the region and a laboratory analysis of the chemical make-up of processed agricultural film waste materials.

Outcomes

- Amount of agricultural film plastic beneficially reused
- Amount of agricultural film plastic not disposed of in landfills and corresponding savings of landfill space by cubic yards
- Amount of money saved by cement industry and farmers through using agricultural film plastic as fuel rather than coal
- Amount of air pollutant emissions, including greenhouse gases, reduced through avoiding burning agricultural film plastic in open fields or landfilling.

PROGRAMMATIC CAPABILITY AND PAST PERFORMANCE

SWIX has administered and completed numerous projects on behalf of EPA Region 4 in the past, including:

- ✓ Computer and Electronic Recycling and Management Workshop **(X1984741-99-0)**
  August 2000, Atlanta, Georgia

- ✓ National Electronic Management & Compliance Assistance Workshops **(X 1974331010)**
  July, 2002, Denver, Colorado
  September 2002, Atlanta, Georgia

- ✓ EPA Construction and Demolition Debris Recycling and Management Workshop **(X1-97400600-0)**
  August, 2001, Atlanta, Georgia

- ✓ Southeast Industrial Byproducts Beneficial Use Summit **(X1-97484003)**
  November, 2003, Atlanta, Georgia

- ✓ Electronic Equipment Collection Workshop and Hands-On-Training Event **(X 197442702-0)**
  EPA and Mobile, Alabama
  November, 2002, Mobile, Alabama

- ✓ School Chemicals & Materials Exchange Marketing Project **(PI – 96442505-1)**
  EPA / Leon County, Florida
  November, 2008, Tallahassee, Florida

- ✓ EPA Traveler's Reimbursement Administration **(X1-96524901-0)**
  EPA Region 5 and EPA Region 4
  Solid Waste and P2 Programs, 2004-2007

- ✓ EPA Southeast Recycling Alliance (SRA) Project **(MM- 96403704)**
  EPA Region 4, Meetings and Workshops, 2006-2008

In addition, SWIX has completed the following innovative grant projects supported by grants from the Florida Department of Environmental Protection:

- ✓ Agricultural film plastic collection
- ✓ Cathode Ray Tube glass processing and use in pre-cast concrete products
- ✓ Florescent tub glass in precast concrete products
- ✓ Waste glass cutlet processing and use in pre-cast concrete products
- ✓ Expanded Polystyrene (EPS) collection, processing and densification
- ✓ iPET collection, processing and densification
- ✓ PET collection, processing and densification

PERFORMANCE EVALUATION

This project will obtain data on the amounts of agricultural film plastic generated in Region 4. In addition this project will document the analysis of this material and determine the potential use of this waste stream as a potential fuel source for the cement kiln industry. Environmental data will be collected and reviewed by leading experts in environmental and human health toxicology. Legal experts will also address environmental laws pertaining to permitting and use of this material in cement kilns. All of these data will be reported in the form of outcomes of the project and reported in the quarterly and final reports.

DETAILED BUDGET NARRATIVE

Project task will include the development and implementation and the establishment of an organizational meeting of project team/partners; material collection, processing and research, including researching the amount of agricultural film plastics currently generated throughout Region 4, collecting and transporting material to processor, processing collected materials to cement industry specifications, taking samples of processed material to a laboratory, conducting laboratory analyses, revising permit for sample burning of material in cement kiln and taking representative load(s) of material from processor to cement plant for burning as supplemental fuel (depending on material analyses), conducting analysis of use of supplemental fuel at cement plant; providing data collection and report preparation for quarterly and final report; and, providing technology transfer activities in the form of presenting results at selected conference/workshops and or meetings and developing a press release for the cement industry.

See Form SF-424A for a breakdown of project expenses.

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 0348-0044

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Project Task		$ 42,830.15	$ 13,500.00	$	$	$ 56,330.15
2.						0.00
3.						0.00
4.						0.00
5. Totals		$ 42,830.15	$ 13,500.00	$ 0.00	$ 0.00	$ 56,330.15

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total
	(1)	(2)	(3)	(4)	(5)
a. Personnel	$ 15,813.40	$	$	$	$ 15,813.40
b. Fringe Benefits	4,310.55				4,310.55
c. Travel	1,250.00				1,250.00
d. Equipment					0.00
e. Supplies	500.00				500.00
f. Contractual	19,950.00				19,950.00
g. Construction					0.00
h. Other					0.00
i. Total Direct Charges *(sum of 6a-6h)*	41,823.95	0.00	0.00	0.00	41,823.95
j. Indirect Charges	1,006.20				1,006.20
k. TOTALS *(sum of 6i and 6j)*	$ 42,830.15	$ 0.00	$ 0.00	$ 0.00	$ 42,830.15
7. Program Income	$	$	$	$	$ 0.00

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SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8. SWIX	$ 2,500.00	$	$ 11,000.00	$ 13,500.00
9.				0.00
10.				0.00
11.				0.00
12. TOTAL *(sum of lines 8-11)*	$ 2,500.00	$ 0.00	$ 11,000.00	$ 13,500.00

SECTION D - FORECASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 42,830.15	$ 10,000.00	$ 25,830.15	$ 4,500.00	$ 2,500.00
14. Non-Federal	13,500.00	3,000.00	5,500.00	5,000.00	
15. TOTAL *(sum of lines 13 and 14)*	$ 56,330.15	$ 13,000.00	$ 31,330.15	$ 9,500.00	$ 2,500.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

(a) Grant Program	FUTURE FUNDING PERIODS (Years)			
	(b) First	(c) Second	(d) Third	(e) Fourth
16. SWIX	$	$	$	$
17.				
18.				
19.				
20. TOTAL *(sum of lines 16-19)*	$ 0.00	$ 0.00	$ 0.00	$ 0.00

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges:	22. Indirect Charges: Indirect Charges are 5% of Salary and Fringe
23. Remarks:	

ATTACHMENTS

Attachment 1: Letter of Support
Attachment 2: Resumes of Key Project Members

Attachment 1:
Letter of Support

Florida Department of
Environmental Protection

Bob Martinez Center
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

March 4, 2010

Mr. Gene Jones
Southern Waste Information Exchange, Inc.
Post Office Box 960
Tallahassee, Florida 32302

Dear Mr. Jones:

The Waste Reduction Section of the Florida Department of Environmental Protection would like to offer this letter in support of your proposal entitled: *Waste Agricultural Plastic Film Mulch Research & Beneficial Use Demonstration Project* for the US EPA Resource Conservation Challenge (RCC) Grant Program RFP NO: EPA-R4-RCRAPMMB-10-09.

While we cannot commit to financial resources at this time, we feel this project would help address one potential solution to the management of a problematic waste stream that is abundant in Florida and other agricultural states that use plastic film during the growing season. We would be happy to provide a Partnership Role in this project should it be awarded.

If you or anyone in EPA should have any questions or need additional information please contact me at the letterhead address (Mail Station 4555), by phone at 850-245-8750 or by e-mail at raoul.clarke@dep.state.fl.us.

Sincerely,

Raoul Clarke

Raoul Clarke, Administrator
Waste Reduction Section

Suwannee American Cement, LLC
5117 US Hwy. 27
P.O. Box 410
Branford, FL 32008-0410
(386) 935-5000 • Fax (386) 935-5080

Gene Jones
Post Office Box 960
Tallahassee, FL 32302

Mr. Jones:

This is to inform you that Suwannee American Cement is very interested in and supportive of the Southern Waste Information Exchange's (SWIX) proposal to demonstrate and research the use of agricultural film plastic for use as a supplemental fuel in our kiln system using a grant from EPA Region 4's Resource Conservation Challenge program (EPA-R4-RCRAPMMB-10-09).

Should the analyses proposed in SWIX's grant application indicate the feasibility of utilizing prepared/processed agricultural film plastic as a fuel for burning at our Branford, Florida facility, Suwannee American Cement would seriously consider obtaining an amended air permit from the Florida Department of Environmental Protection in order for us to utilize this material and offset our use of coal.

Should you have any questions, please contact me at:
385-935 5000
tomm@suwanneecement.com

Sincerely,

Tom Messer,
Plant Manager
Suwannee American Cement

Attachment 2:
Resumes of Key Project Members

BIOSKETCH FOR RAYMOND L. MOREAU

Name/Address: Raymond L. Moreau
Southern Waste Information Exchange, Inc. (SWIX)
P.O. Box 960
Tallahassee, Florida 32302

Date of Birth: May 21, 1948

Place of Birth: Lewiston, Maine

Present Position: Associate Director, Southern Waste Information Exchange, Inc.

Education: Providence College, B.A., 1970 (Liberal Arts)
Florida State University, M.S., 1974 (Urban Planning)

Experience:

Mr. Moreau has 30 years of experience in solid and hazardous waste management in both the public and private sectors. From 1994-98, he served as the Environmental Manager for the Florida Department of Environmental Protection's statewide recycling program.

He was a Principal with Camp, Dresser & McKee, an international environmental engineering firm, served as the City of Jacksonville's Refuse to Energy Project Director, and was an associate with the former Florida Resource Recovery Council (an advisory body to the Governor and Legislature on recycling and resource recovery). He also served as staff with the Florida House of Representatives' Environmental Protection Committee.

Since 1998, he has served as SWIX's Associate Director and is responsible for project development, grants writing and administration, workshop/conference development and administration, technical assistance to the waste management and recycling industry, waste assessments, and administrative assistance to the Executive Director.

BIOSKETCH FOR EUGENE B. JONES

NAME/ADDRESS: Eugene (Gene) B. Jones
Southern Waste
Information eXchange, Inc.
Post Office Box 960
Tallahassee, Florida 32302
Phone: (850) 386-6280
Fax: (850) 386-4321
Email: gene@swix.ws

DATE OF BIRTH: November 16, 1961

PLACE OF BIRTH: Tampa, Florida

PRESENT POSITION: Executive Director
Southern Waste Information eXchange, Inc.

EDUCATION: Florida State University, B.S., 1984
Marketing and Sales Management

EXPERIENCE:

Mr. Jones is the Executive Director, of the Southern Waste Information Exchange (SWIX), which is a Non-profit 501(c)(3) Florida corporation that assists businesses and municipalities with waste management issues. Mr. Jones has been with SWIX since 1981. Mr. Jones has worked with local, state, and federal agencies, legislative and congressional committee staff, trade associations, and with industries regulated under RCRA, CERCLA, and OSHA. Mr. Jones has organized and managed various conferences for agencies and organizations such as the Waste-to-Fuels Conference, Florida Biofuels Association, Inc., Recycle Florida Today, Inc., the Florida Brownfields Association, Inc., the Florida Environmental Assessors Association, Inc., the Florida Hospital Association, Inc., the Florida Department of Environmental Protection, the Florida Department of Health and Rehabilitative Services, the Florida Department of Education, the Florida Chamber of Commerce, the International Society of Technical & Environmental Professionals, Inc., the National Conference on Waste Exchange and Resource Reuse, the U.S. Department of Energy, and the U.S. Environmental Protection Agency.

Professional Resume of:

MAXWELL R. LEE, Ph.D., P.E.

Areas of Specialization

Air Resource Management; Air Pollution Source Permitting; Air Quality Modeling and Impact Analysis; Control Strategy Development; Environmental Impact Assessment; and Emission Measurements. Safety and Environmental Compliance; Storm Water and Industrial Wastewater Management; Environmental Resource Permitting;

Experience

Principal, Koogler & Associates, Inc. Gainesville, Florida 1999 to present.

Dr. Lee joined Koogler & Associates in January 1999 as a Project Engineer. Prior to joining the firm he completed his Doctoral thesis, entitled "Solid Sorbent Control of Nitrogen Oxides (NOx)."

Typical project experience includes:

- Comprehensive Environmental Compliance Plan development for power and cement industry. Electronic plan designed to encompass and apply quality assurance auditing to address all requirements to environmental permitting per facility.

- Air Pollution Source Permitting including State Permit Applications, PSD Applications, and Title V Applications. Permitting has involved assessment of control technology (BACT, PSD/LAER, MACT, BART, RPCT), Process Modifications, Air Quality Issues and Regulatory Issues.

- Air Quality Dispersion Studies. Dispersion and Plume Behavior Evaluation in the vicinity of buildings, Air Quality Modeling for permitting (Air Quality Standards and PSD Increment Consumption), Long-range Pollutant Transport Modeling and Accidental Release Modeling.

- Air Pollutant Emissions Measurements and Method Development for Compliance and Process Evaluation for various industries. Application of FTIR for various source emissions. Development of emissions database for NESHAP rulemaking.

- Ambient Air Quality Monitoring Studies for cement industry.

- NPDES Stormwater Permitting and Plan development. Various raw material/mineral industry permitting, plan development and implementation training.

- Industrial Wastewater permitting. Various industries permitting development.

- Solid Waste Permitting. Thermal treatment facility development including ground and surface monitoring well plan development.

Education

Ph.D., Environmental Engineering, University of Florida, 1999
B.S. in Environmental Engineering, University of Florida, 1994

Registrations and Professional Associations

Air & Waste Management Association
Registered Professional Engineer, State of Florida

Publications

Lee, M. R.,; Allen, E. R.; Wolan, J.T.; Hoflund, G.B. NO_2 and NO Properties of KOH-treated Alumina. Ind. Eng. Chem. Res. 1998, *37*(8), 3375.

Lee, M. R.,; Allen, E. R.; Wolan, J.T.; Hoflund, G.B. Adsorption of NOx on (-Alumina Treated with Alkali Carbonates or Hydroxides. Ind. Eng. Chem. Res. *Accepted.*

DR. CHRISTOPHER M. TEAF

PRESENT POSITIONS:

Associate Director
Center for Biomedical & Toxicological Res.
Florida State University
2035 East Dirac Drive, Suite 226 HMB
Tallahassee, FL 32303
(850) 644-3453

President & Director of Toxicology
HSWMR, Inc.
2976 Wellington Circle West
Tallahassee, FL 32308
(850) 681-6894

EDUCATION:

Ph.D.	Toxicology	(*1985, University of Arkansas for Medical Sciences*)
M.S.	Biological Science	(*1980, Florida State University*)
B.S.	Biology,	(*1975, Pennsylvania State University*)

CERTIFICATION: Fellow, Academy of Toxicological Sciences

SUMMARY OF ACTIVITIES:

Dr. Teaf is a toxicologist with extensive experience in the evaluation of potential adverse effects from chemical exposures. His principal areas of interest include performance and evaluation of risk assessments under the requirements of CERCLA, SARA, RCRA, TSCA and related legislation; potential human health impacts of exposure to environmental contaminants; and development of appropriate risk-based targets to guide remedial decisions. For over 30 years, he has directed or conducted research in the area of environmental toxicology projects for agencies such as the U.S. Environmental Protection Agency (U.S. EPA), U.S. Air Force, U.S. Department of Agriculture (U.S. DOA), Florida Department of Environmental Protection, Florida Department of Health and Rehabilitative Services, Florida Department of Community Affairs, and Agency for Toxic Substances & Disease Registry (ATSDR). He served as toxicologist to the Florida Governor's Financial and Technical Advisory Committee from 1986 to 1992, and served as Toxicologist for the state Landfill Technical Advisory Group and Petroleum Technical Advisory Committee. He serves as Chairman of the Toxic Substances Advisory Council for the Florida Department of Labor and Employment Security, which oversees implementation of the Florida Right-to-Know Law.

Chris has organized and participated in conventional courses and focused technical seminars for presentation to U.S EPA, ATSDR, U.S. DOA, Florida Department of Health and Rehabilitative Services, Florida Engineering Society, Florida Department of Environmental Protection, Florida Department of Education, State Fire Marshal's Office, Florida State University, University of Florida, Florida A & M University, and Georgia Institute of Technology. He serves as a peer reviewer for Environmental Toxicology and Chemistry, Bulletin of Marine Science, Ohio Journal of Science, and Environmental Biology of Fishes.

Dr. Teaf has provided research and advisory services to environmental agencies and private sector firms regarding toxicology, environmental and human health risk assessment, hazardous waste and resource management, recycling, water quality, and occupational health and safety, particularly regarding the OSHA Hazard Communication Standard, the Florida Right-to-Know, the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and the Toxic Substances Control Act (TSCA). He has provided advisory services for environmental and toxicological issues to the U.S. Attorney and Attorneys General of Florida, Oklahoma, and Washington, and the Florida State Attorney's Office.

Chris has been qualified to testify in federal and state courts on numerous occasions in Florida and many other states regarding toxicology, health risk assessment and environmental chemistry.

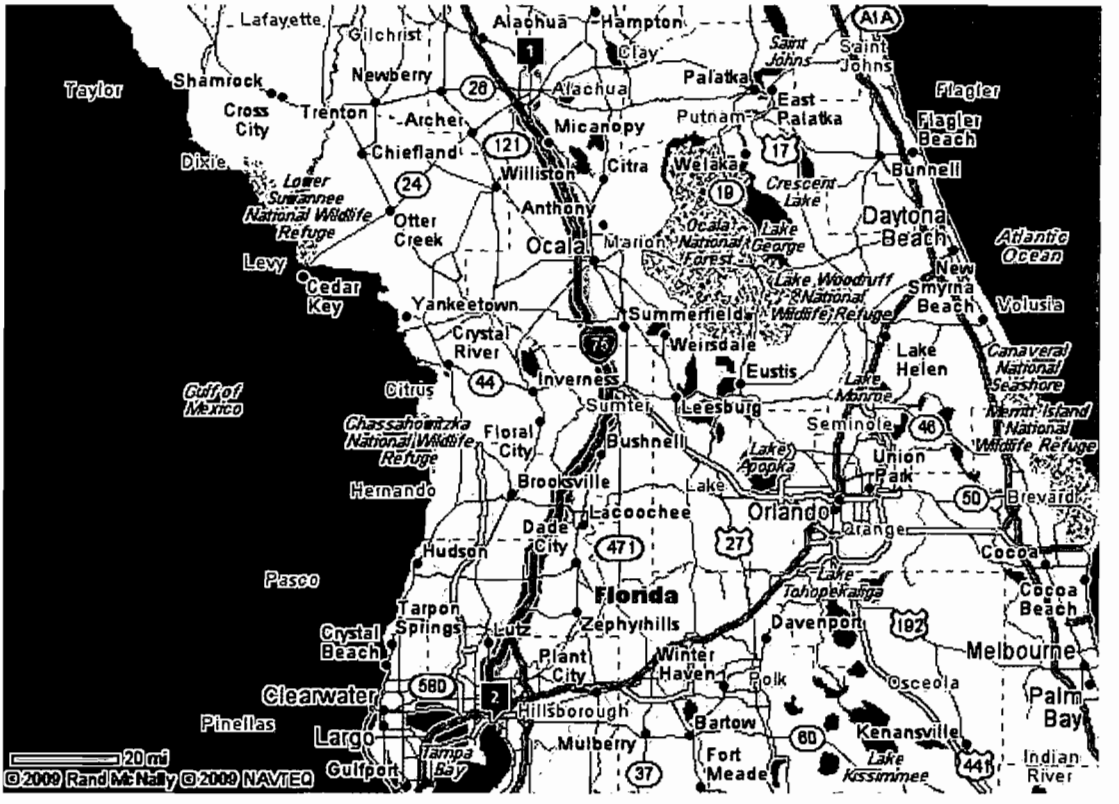
RAND McNALLY

Driving Directions

ROUTE SUMMARY

1. **4014 NW 13th St, Gainesville, FL 32609-1923**
2. **2001 Maritime Blvd, Tampa, FL 33605-6760**

STEPS: 15 **EST DRIVE TIME:** 2 hours, 15 minutes **EST. DISTANCE:** 136 miles



RAND McNALLY

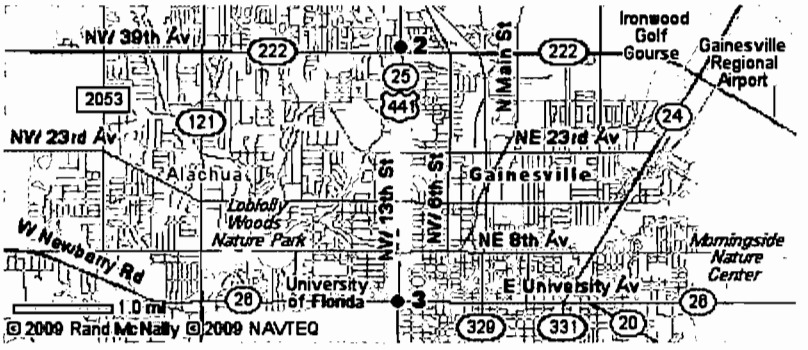
Driving Directions

From : 4014 NW 13th St
Gainesville , FL 32609-1923

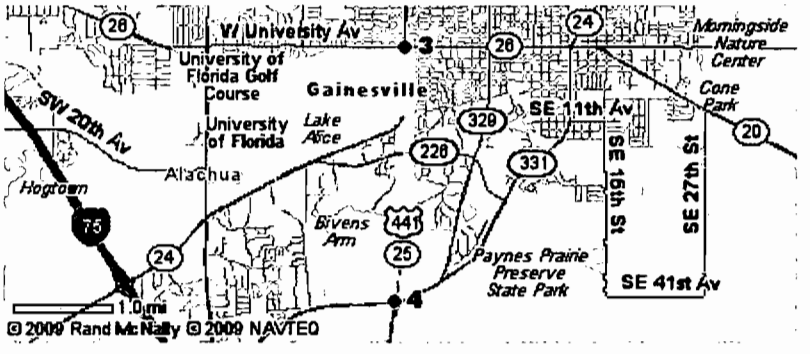
To : 2001 Maritime Blvd
Tampa , FL 33605-6760

1. You are at 4014 NW 13th St, Gainesville, FL 32609-1923

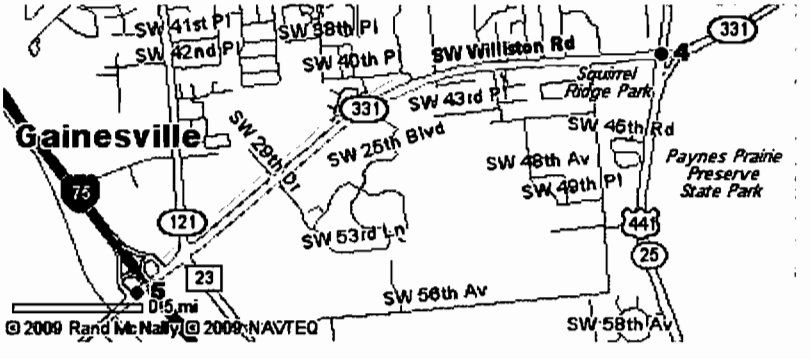
2. Go South on US-441 S (SR-25 S, NW 13th St, Dr Martin Luther King 2.6 miles



3. Continue onto US-441 S (SR-25 S, Dr Martin Luther King Jr Hwy) 2.6 miles



4. Turn right onto SR-331 S (SW Williston Rd) 2.3 miles



5. Take I-75 S (Tampa) ramp on right 109.0 miles

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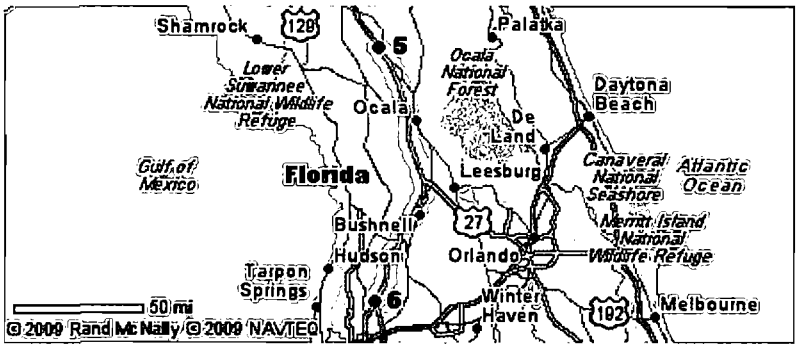
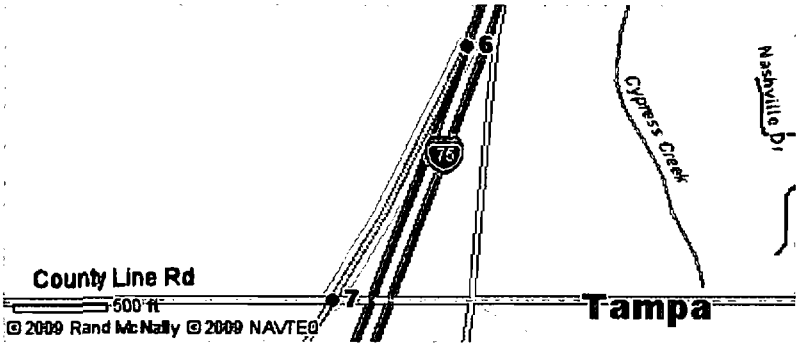
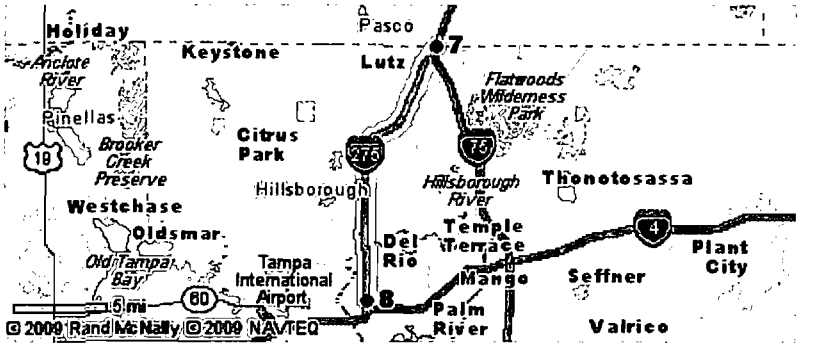
Driving Directions



6. Take Exit 274 (I-275 S, Airport, Tampa, St Petersburg) on right 0.3 miles



7. Take I-275 S ramp 15.2 miles



8. Take Exit 45B (I-4 E, Orlando) on right < 0.1 miles

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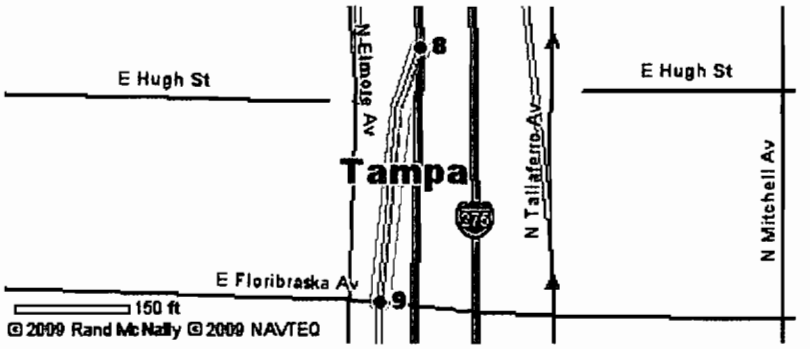
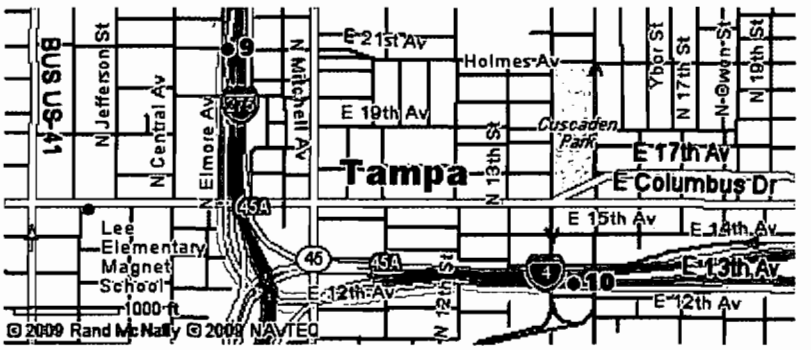
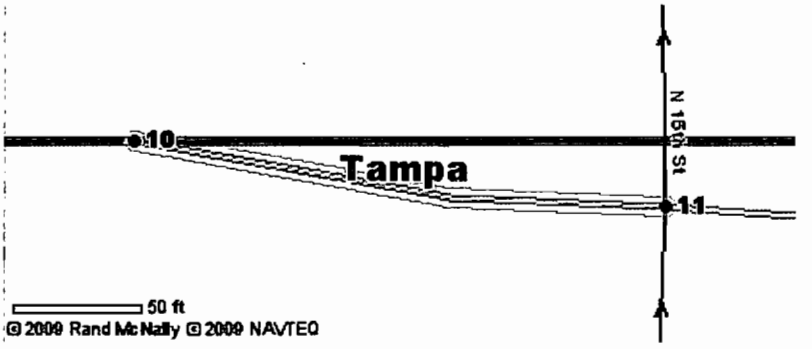
Driving Directions



9. Take I-4 E ramp 1.0 miles



10. Take Exit 1 (SR-585, 21st St, 22nd St) on right < 0.1 miles



11. Take E 13th Av ramp 0.2 miles

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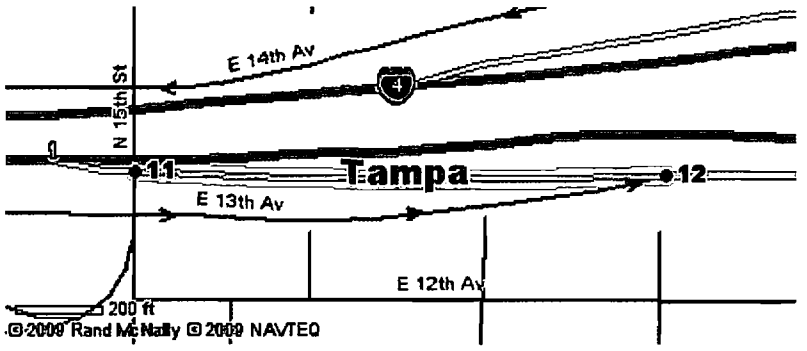
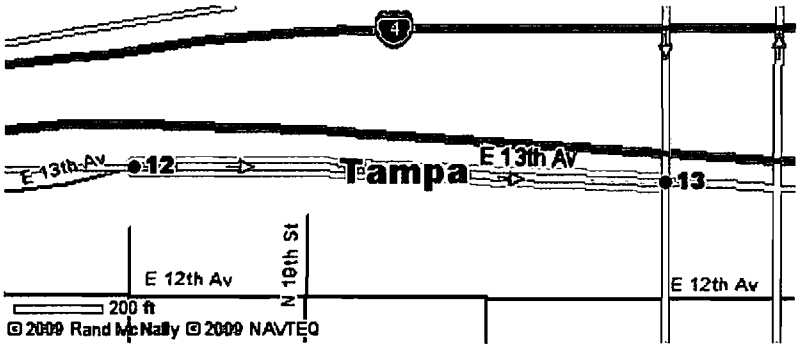
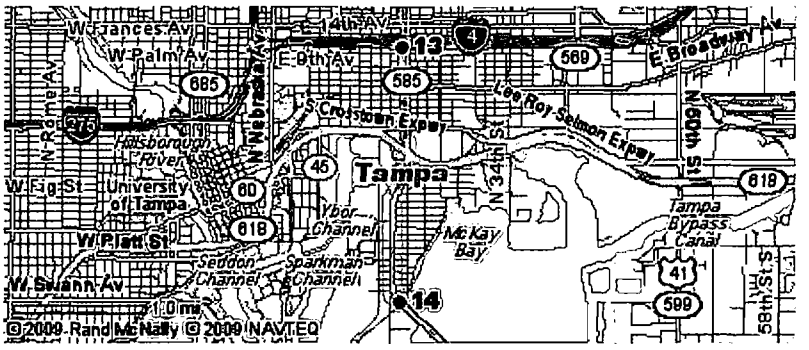
Driving Directions



12. Continue onto E 13th Av 0.2 miles



13. Turn right onto SR-585 S (N 21st St); street becomes BUS US-41 S (SR-45 S, N 22nd St) 1.9 miles



14. Turn right onto Maritime Blvd 0.1 miles

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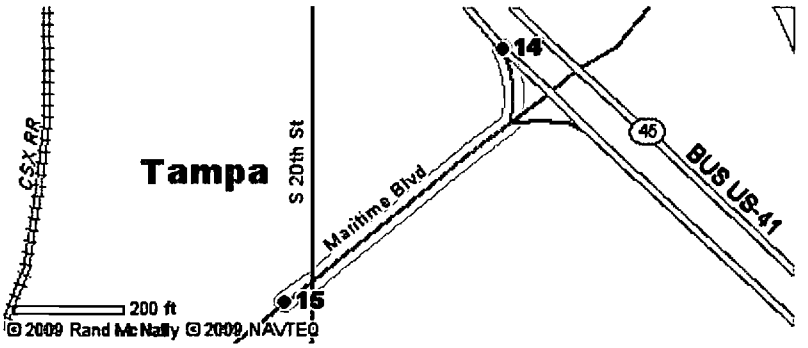
Driving Directions



15. You are at 2001 Maritime Blvd, Tampa, FL 33605-6760

EST. DRIVE TIME: 2 hours, 15 minutes **EST. DISTANCE:** 136 miles

Please note that these driving directions are suggested. No warranty is given as to their content or route usability. Rand McNally and its suppliers assume no responsibility for any loss or delay resulting from such use.

Please let us know of any errors or omissions you find in our driving directions and maps, especially the names of towns and streets that we may have been unable to locate for you.

APPENDIX 3

SUWANNEE AMERICAN CEMENT

BASELINE EMISSIONS USED FOR COAL EMISSIONS FACTORS

AND

ANALYTICAL RESULTS FOR SPECIFIC MATERIALS

Suwannee American Cement, Branford cement plant

Emissions Factor Data: COAL - CEM and stack test data

year	coal (a) ton/yr	pet coke (a) ton/yr	natural gas (a) mmcf/yr	Total heat input mmbtu/yr	Production Clinker ton/yr	Nitrogen Oxides CEM data NOx ton/yr	lbNOx/ mmbtu	lbNOx/ ton clinker	Sulfur Dioxide CEM data SO2 ton/yr	lbSO2/ mmbtu	lbSO2/ ton clinker	Volatile Organic Comp. CEM data VOC ton/yr	lbVOC/ mmbtu	lbVOC/ ton clinker
2008	76214	-	6.02	2025812	673808	683.6	**0.675**	**2.03**	7.76	**0.008**	**0.023**	18.17	**0.018**	**0.054**

(a) coal 26.5 mmbtu/ton, pet coke 28 mmbtu/ton, natural gas 1020 mmbtu/mmcf

year	Carbon Monoxide based on stack test: stack test lb/ton clinker	5-yr avg lb/ton clinker	yr 2008 clinker tons	yr 2008 fuel mmbtu	lb CO/ mmbtu	lb CO/ ton clinker	PM/PM10 based on stack test: stack test lb/ton clinker	5-yr avg lb/ton clinker	yr 2009 clinker tons	yr 2009 fuel mmbtu	lb PM/PM10/ mmbtu	lb PM/PM10/ ton clinker
2009	2.505	2.046	673,808	2,025,812	**0.681**	**2.046**	0.0379	0.0406	673,808	2,025,812	**0.013**	**0.041**
2008	1.846						0.0619					
2007	2.040						0.0284					
2006	1.566						0.0509					
2005	2.274						0.0238		PM testing for Raw Mill Up conditions			

SGS

Analysis Report

December 07, 2009

ST MARYS CEMENT COMPANY
CHARLEVIOX PLANT
16000 BELLS BAY ROAD
CHARLEVOIX MI 49720

ATTN: CORTNEY SCHMIDT

Client Sample ID:	Coal Sample	Sample ID By:	St. Mary's Cement
Date Sampled:	N/A	Sample Taken By:	Submitted
Date Received:	Oct 26, 2009	Sample Taken At:	Submitted
Product Description:	COAL		

SGS Minerals Sample ID: 491-0940311-001

		Method	As Received	Dry	DAF
Moisture, Total %		ASTM D3302	9.69		
Ash %		ASTM D3174	9.81	10.86	
Sulfur %		ASTM D4239 Method B	1.80	2.00	
Gross Calorific Value	BTU/LB	ASTM D5865	12115	13414	15048
Carbon %		ASTM D5373	26.33	29.16	
Hydrogen %		ASTM D5373	2.74	3.04	
Nitrogen %		ASTM D5373	1.28	1.42	
Oxygen %		ASTM D5373 (by diff)	48.35	53.52	
Chlorine, Cl %		ASTM D4208	0.07	0.08	
Mercury, Hg UG/G		ASTM D6722		<0.02	

Tests	Result	Unit	Method

Vanessa Chambliss

VANESSA_CHAMBLISS

SGS North America Inc. | Minerals Services Division
16130 Van Drunen Road South Holland IL 60473 t (708) 331-2900 f (708) 333-3060 www.sgs.com/minerals

SGS

Analysis Report

December 07, 2009

ST MARYS CEMENT COMPANY
CHARLEVIOX PLANT
16000 BELLS BAY ROAD
CHARLEVOIX MI 49720

ATTN: CORTNEY SCHMIDT

Client Sample ID:	Coal Sample	Sample ID By:	St. Mary's Cement
Date Sampled:	N/A	Sample Taken By:	Submitted
Date Received:	Oct 26, 2009	Sample Taken At:	Submitted
Product Description:	COAL		

SGS Minerals Sample ID: 491-0940311-001

Tests	Result	Unit	Method
ANALYSIS OF ASH			
Basis	IGNITED	---	ASTM D4326
Silicon Dioxide, SiO2	50.51	%	ASTM D4326
Aluminum Oxide, Al2O3	25.40	%	ASTM D4326
Titanium Dioxide, TiO2	1.20	%	ASTM D4326
Iron Oxide, Fe2O3	13.83	%	ASTM D4326
Calcium Oxide, CaO	2.90	%	ASTM D4326
Magnesium Oxide, MgO	0.86	%	ASTM D4326
Potassium Oxide, K2O	2.14	%	ASTM D4326
Sodium Oxide, Na2O	0.63	%	ASTM D4326
Sulfur Trioxide, SO3	1.98	%	ASTM D4326
Phosphorus Pentoxide, P2O5	0.31	%	ASTM D4326
Strontium Oxide, SrO	0.11	%	ASTM D4326
Barium Oxide, BaO	0.11	%	ASTM D4326
Manganese Oxide, MnO2	0.02	%	ASTM D4326
Undetermined	0.00	%	ASTM D4326
Sum of Oxides	100.00	%	ASTM D4326
Silica Value	74.17	%	ASTM D4326
Base Acid Ratio	0.26	---	ASTM D4326
T250 Temperature	2603	°F	ASTM D4326
Fouling Index	0.17	%	ASTM D4326
Alkalies as Na2O, Dry	0.22	%	ASTM D4326
Type of Ash	BITUMINOUS	---	ASTM D4326

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Analysis Report

December 07, 2009

ST MARYS CEMENT COMPANY
CHARLEVIOX PLANT
16000 BELLS BAY ROAD
CHARLEVOIX MI 49720

ATTN: CORTNEY SCHMIDT

Client Sample ID:	Coal Sample	Sample ID By:	St. Mary's Cement
Date Sampled:	N/A	Sample Taken By:	Submitted
Date Received:	Oct 26, 2009	Sample Taken At:	Submitted
Product Description:	COAL		

SGS Minerals Sample ID: 491-0940311-001

Tests	Result	Unit	Method
TRACE ELEMENTS - DRY BASIS			
Arsenic, As	4	µg/g	ASTM D3683
Beryllium, Be	1	µg/g	ASTM D3683 (Mod)
Cadmium, Cd	<1	µg/g	ASTM D3683 (Mod)
Chromium, Cr	16	µg/g	ASTM D3683 (Mod)
Lead, Pb	5	µg/g	ASTM D3683 (Mod)
Manganese, Mn	19	µg/g	ASTM D3683 (Mod)
Nickel, Ni	7	µg/g	ASTM D3683 (Mod)
Selenium, Se	1	µg/g	ASTM D3683
Zinc, Zn	9	µg/g	ASTM D3683 (Mod)

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Analysis Report

December 07, 2009

ST MARYS CEMENT COMPANY
CHARLEVIOX PLANT
16000 BELLS BAY ROAD
CHARLEVOIX MI 49720

ATTN: CORTNEY SCHMIDT

Client Sample ID:	Shingles Sample	Sample ID By:	St. Mary's Cement
Date Sampled:	N/A	Sample Taken At:	Submitted
Date Received:	Oct 26, 2009	Sample Taken By:	Submitted
Product Description:	RDF OR TDF		
Comments:	NOTE: OXYGEN CAN NOT BE DETERMINED DUE TO ULTIMATE TOTALING OVER 100%.		

SGS Minerals Sample ID: 491-0940311-003

		Method	As Received	Dry
Moisture, Total %		ASTM E949	3.14	
Ash %		ASTM E830	69.72	71.97
Sulfur %		ASTM D4239 Method B	0.77	0.79
Gross Calorific Value	BTU/LB	ASTM E711	5842	6032
Carbon %		ASTM D5373	27.74	28.64
Hydrogen %		ASTM D5373	3.01	3.11
Nitrogen %		ASTM D5373	0.27	0.27
Chlorine, Cl %		ASTM D4208	0.04	0.04
Mercury, Hg UG/G		ASTM D3684		0.11

Tests	Result	Unit	Method

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Analysis Report

December 07, 2009

ST MARYS CEMENT COMPANY
CHARLEVIOX PLANT
16000 BELLS BAY ROAD
CHARLEVOIX MI 49720

ATTN: CORTNEY SCHMIDT

Client Sample ID:	Shingles Sample	Sample ID By:	St. Mary's Cement
Date Sampled:	N/A	Sample Taken At:	Submitted
Date Received:	Oct 26, 2009	Sample Taken By:	Submitted
Product Description:	RDF OR TDF		
Comments:	NOTE: OXYGEN CAN NOT BE DETERMINED DUE TO ULTIMATE TOTALING OVER 100%.		

SGS Minerals Sample ID: 491-0940311-003

Tests	Result	Unit	Method
ANALYSIS OF ASH			
Basis	IGNITED	---	ASTM D4326
Silicon Dioxide, SiO2	46.96	%	ASTM D4326
Aluminum Oxide, Al2O3	12.96	%	ASTM D4326
Titanium Dioxide, TiO2	0.72	%	ASTM D4326
Iron Oxide, Fe2O3	7.74	%	ASTM D4326
Calcium Oxide, CaO	16.25	%	ASTM D4326
Magnesium Oxide, MgO	6.39	%	ASTM D4326
Potassium Oxide, K2O	1.83	%	ASTM D4326
Sodium Oxide, Na2O	2.26	%	ASTM D4326
Sulfur Trioxide, SO3	4.53	%	ASTM D4326
Phosphorus Pentoxide, P2O5	0.15	%	ASTM D4326
Strontium Oxide, SrO	0.03	%	ASTM D4326
Barium Oxide, BaO	0.09	%	ASTM D4326
Manganese Oxide, MnO2	0.09	%	ASTM D4326
Undetermined	0.00	%	ASTM D4326
Sum of Oxides	100.00	%	ASTM D4326
Silica Value	60.72	%	ASTM D4326
Base Acid Ratio	0.57	---	ASTM D4326
T250 Temperature	2264	°F	ASTM D4326
Fouling Index	2.26	%	ASTM D4326
Type of Ash	LIGNITIC	---	ASTM D4326

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Analysis Report

December 07, 2009

ST MARYS CEMENT COMPANY
CHARLEVIOX PLANT
16000 BELLS BAY ROAD
CHARLEVOIX MI 49720

ATTN: CORTNEY SCHMIDT

Client Sample ID:	Shingles Sample	Sample ID By:	St. Mary's Cement
Date Sampled:	N/A	Sample Taken At:	Submitted
Date Received:	Oct 26, 2009	Sample Taken By:	Submitted
Product Description:	RDF OR TDF		
Comments:	NOTE: OXYGEN CAN NOT BE DETERMINED DUE TO ULTIMATE TOTALING OVER 100%.		

SGS Minerals Sample ID: 491-0940311-003

Tests	Result	Unit	Method
TRACE ELEMENTS - DRY BASIS			
Arsenic, As	<1	µg/g	ASTM D3683
Beryllium, Be	<1	µg/g	ASTM D3683 (Mod)
Cadmium, Cd	<1.4	µg/g	ASTM D3683 (Mod)
Chromium, Cr	41	µg/g	ASTM D3683 (Mod)
Lead, Pb	21	µg/g	ASTM D3683 (Mod)
Manganese, Mn	273	µg/g	ASTM D3683 (Mod)
Nickel, Ni	43	µg/g	ASTM D3683 (Mod)
Selenium, Se	<1	µg/g	ASTM D3683
Zinc, Zn	115	µg/g	ASTM D3683 (Mod)

Vanessa Chambliss

VANESSA_CHAMBLISS

SGS North America Inc. | Minerals Services Division
16130 Van Drunen Road South Holland IL 60473 t (708) 331-2900 f (708) 333-3060 www.sgs.com/minerals

SGS

September 01, 2009

Rinker Materials Corp.
P.O. Box 650679
Miami, FL 33265
USA

Client Sample ID: Veolia Miami/Biomass
Date Received: 08/13/2009
Matrix: Wood
Net Sample Weight: 230.20 g

Date Sampled : 8/12/2009

SGS Sample ID: 072-40854-001

		As Received	Dry	MAF
% Moisture, Total	[ASTM D 3302]	49.39		
% Ash	[ASTM D 3174/5142]	4.31	8.51	
% Volatile Matter	[ASTM D 5142]	32.09	63.41	69.31
% Fixed Carbon	[ASTM D 3172]	14.21	28.08	30.69
Gross Calorific Value (Btu/lb)	[ASTM D 5865]	3991	7885	8618
% Sulfur	[ASTM D 4239]	0.13	0.25	
% Carbon	[ASTM D 5373]	24.01	47.44	
% Hydrogen	[ASTM D 5373]	2.82	5.57	
% Nitrogen	[ASTM D 5373]	0.23	0.45	
% Oxygen (Calc)	[ASTM D 3176]	19.11	37.78	

Analyte	Result	Method
Pounds of Ash/mm Btu	10.79 lb	
Pounds of Sulfur/mm Btu	0.32 lb	
Pounds of SO2/mm Btu	0.63 lb	

Respectfully submitted,
SGS NORTH AMERICA INC.

Tony Stryk

Denver Laboratory

SGS North America Inc. | Minerals Services Division
4665 Paris Street, Suite B-200, Denver, CO 80239 t (303) 373-4772 f (303) 373-4791 www.us.sgs.com/minerals

SGS

September 01, 2009

Rinker Materials Corp.
P.O. Box 650679
Miami, FL 33265
USA

Client Sample ID: Veolia Miami/Biomass **Date Sampled :** 8/12/2009
Date Received: 08/13/2009
Matrix: Wood
Net Sample Weight: 230.20 g

SGS Sample ID: 072-40854-001

Analyte	Result	Method
Ash Analysis Basis	Dry	ASTM D 4326
Silicon Dioxide SiO2	2.07 %	ASTM D 4326
Aluminum Oxide Al2O3	0.19 %	ASTM D 4326
Titanium Dioxide TiO2	0.05 %	ASTM D 4326
Iron Oxide Fe2O3	0.11 %	ASTM D 4326
Calcium Oxide CaO	3.42 %	ASTM D 4326
Magnesium Oxide MgO	0.31 %	ASTM D 4326
Potassium Oxide K2O	0.40 %	ASTM D 4326
Sodium Oxide Na2O	0.37 %	ASTM D 4326
Sulfur Trioxide SO3	0.49 %	ASTM D 4326
Phosphorus Pentoxide P2O5	0.23 %	ASTM D 4326
Strontium Oxide SrO	0.01 %	ASTM D 4326
Barium Oxide BaO	<0.01 %	ASTM D 4326
Manganese Oxide MnO2	<0.01 %	ASTM D 4326
Chlorine, Dry	5800 ug/g	ASTM D 6721
Loss on Ignition	92.33 %	ASTM D 3174

Respectfully submitted,
SGS NORTH AMERICA INC.

Tony Stryks

Denver Laboratory

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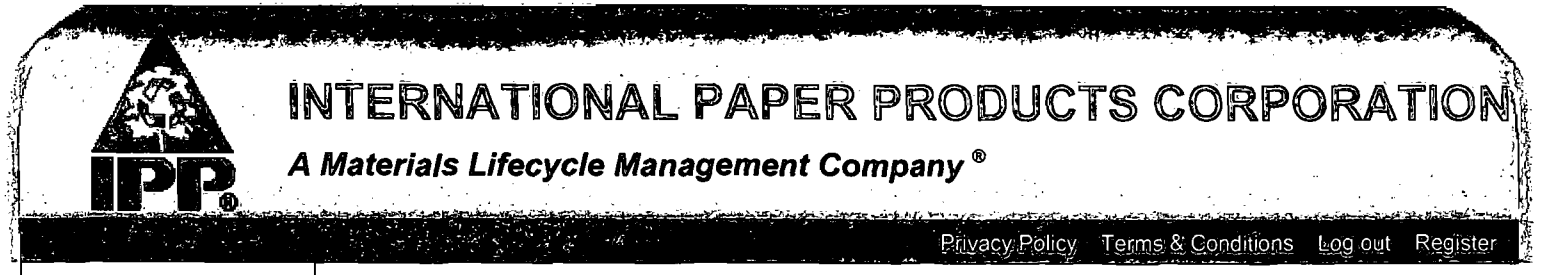
4665 Paris Street, Suite B-200, Denver, CO 80239 t (303) 373-4772 f (303) 373-4791 www.us.sgs.com/minerals



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SUBMIT A QUESTION

SPECS

ENVIRO-FUELCUBE® CHEMICAL AND PHYSICAL LIMITS

Parameter[1]	Method	Limits[2]	Notes
Al-Aluminum	5.00 SW846 6010B	Total, ≤ 2.0 Percent	Can be found in non-hazardous coatings
Sb-Antimony	SW846 6010B	Not Determined	Excluded from SRM® feedstock
As-Arsenic	0.50 SW846 7060A	Total, ≤ 41mg/kg	Can be found in untreated wood products
ASH/Inorganics (binders and other components)	0.10 ASTM D-3174	≤ 10 Percent	
Ba-Barium	1.00 SW846 6010B	Total, ≤ 420 mg/kg	Excluded from SRM® feedstock
Be-Beryllium	SW846 6010B	Not Determined	Excluded from SRM® feedstock
B-Boron	SW846 6010B	Not Determined	Excluded from SRM® feedstock
BTU	100.00 ASTM D-2015	7,000 – 12,000 BTU/lb	

Cd-Cadmium	1.00 SW846 6010B	Total, ≤ 1.0 mg/kg	Excluded from SRM® feedstock
C-Carbon	0.10 ASTM D-5373	Not Determined, Percent	
Cr-Chromium	5.00 SW846 6010B	Total, ≤ 52 mg/kg	Excluded from SRM® feedstock
Cu-Copper	SW846 EPA 6010B	Total, ≤ 100 mg/kg	Can be found in non-hazardous coatings
X-Halogens (Chlorine, Bromine, Fluorine as PVC, Teflon, etc.)	100.00 ASTM D-4208	Total, ≤1,800 mg/kg	Can be found in paper & wood products at low concentrations
H-Hydrogen	0.10 ASTM D-5373	Not Determined, Percent	
Pb-Lead	5.00 SW846 7421	Total, ≤ 13.9 mg/kg	Excluded from SRM® feedstock
Light Metals (Calcium, Magnesium)		Case by case review by IPP and Fuel Customers	Can be found in non-hazardous quantities in paper and wood products
Hg-Mercury	50.00 SW846 7471A	Total, ≤ 0.44 mg/kg	Excluded from SRM® feedstock
Moisture	ASTM D-3173	≤ 7.0 Percent	
Mo-Molybdenum	SW846 EPA 6010B	Not Determined	Excluded from SRM® feedstock
Ni-Nickel	SW846 EPA 6010B	Not Determined	Excluded from SRM® feedstock
N-Nitrogen	0.10 ASTM D-5373	≤ 0.5 Percent	

O-Oxygen	0.10 ASTM D-5373	Not Determined, Percent	
pH (Ash)	SW 846 9054C	Not Hazardous	
Se-Selenium	0.5 SW846 7740	Total, ≤8 mg/kg	Excluded from SRM® feedstock
Ag-Silver	10.00 SW846 6010D	Total, ≤0.04 mg/kg	Excluded from SRM® feedstock
S-Sulfur	0.20 ASTM D-4239	≤ 1.0 Percent	
Tl-Thallium	SW846 EPA 6010B	Not Determined	Excluded from SRM® feedstock
V-Vanadium	SW846 EPA 6010B	Not Determined	Excluded from SRM® feedstock
Volatile Matter	ASTM D-3172	Not Determined	
Zn- Zinc	1.00 SW846 6010B	Total, ≤100 mg/kg	Can be found in non-hazardous coatings

FUSION TEMPERATURES OF ASH

REDUCING ATMOSPHERE (F)		OXIDIZING ATMOSPHERE (F)	
Initial Temperature	2249	Initial Temperature	2249
Softening Temperature	2284	Softening Temperature	2272
Hemispherical Temperature	2285	Hemispherical Temperature	2282
Fluid Temperature	2291	Fluid Temperature	2286

1. Parameters are assembled from IPP's Enviro-Fuelcube® customer air and ash permits as well as from information available in the public domain.

2. Limits are derived from air and ash permits or proposals for using paper based fuels from Massachusetts and New York. **They are not derived in any way from analysis of Enviro-Fuelcubes® samples.**
3. Not Determined: IPP has not found a suitable specification/reference value or has not encountered these parameters.

ENVIRO-FUELCUBES® OVERVIEW | ENVIRO-FUELCUBES® MSDS INFORMATION

Table 1
IPP Enviro-Fuelcubes Monthly Composite Sampling Metals, Whole Fuel Cube Basis
9/06 - 12/09

Lab Name	Lab ID	IPP Sample ID	Date Sampled	Ag (silver)	Al%	As	Ba	Cd	Cr	Cu	Hg	Pb	Se	Zn	Ash %
First Light	10693	0906-1C ASH	09/30/06	0.34		1.13	115	0.12	59.50	111	0.002	3.09	0.02	125	6.70
First Light	10694	1006-1D ASH	10/31/06	0.30		0.83	49	0.03	11.76	207	0.002	1.76	0.02	79	6.00
First Light	10695	1106-1D ASH	11/30/06	0.29		1.69	12	0.03	11.52	167	0.001	1.81	0.08	76	5.79
First Light	10696	1206-1D ASH	12/31/06	0.37		0.52	14	0.04	7.71	67	0.002	2.11	0.02	119	7.49
First Light	10697	0107-1D ASH	01/31/07	0.33		0.48	267	0.03	5.59	32	0.002	2.26	0.02	94	6.59
N/A		**NO QA Sample Collected February 2007**													
First Light	10698	0307-1D ASH	03/30/07	0.40		1.00	13	0.04	6.67	247	0.002	3.03	0.02	143	8.02
First Light	10699	0407-1D ASH	04/30/07	0.37		0.48	126	0.04	8.10	17	0.002	1.92	0.02	65	7.30
First Light	10700	0507-1C ASH	05/31/07	0.40		0.68	54	0.04	4.88	36	0.002	2.76	0.02	115	8.09
First Light	10701	0607-1D ASH	06/30/07	0.36		2.05	27	0.04	4.23	46	0.002	2.17	0.23	82	7.20
First Light	10702	0707-1D ASH	07/31/07	2.27		0.41	182	0.44	5.52	176	0.002	6.64	0.02	147	7.89
First Light	10703	0807-1D ASH	08/31/07	0.34		0.39	69	0.03	4.52	31	0.002	20.36	0.02	75	6.81
N/A		**0907-1D**		**Sample split submitted to customer - unknown disposition**											
First Light	10704	1007-1D ASH	10/31/07	0.36		0.37	25	0.04	7.86	48	0.002	1.95	0.02	73	7.21
First Light	10705	1107-1D ASH	11/30/07	0.47		0.89	341	0.05	5.32	312	0.002	3.72	0.02	167	9.46
First Light	10706	1207-1D ASH	12/31/07	0.35		1.98	11	0.03	6.07	45	0.002	1.92	0.05	67	6.96
N/A		**0108-1D**		**Sample split submitted to customer - unknown disposition**											

Units in milligrams per kilogram (mg/kg) or as specified

Table 1
IPP Enviro-Fuelcubes Monthly Composite Sampling Metals, Whole Fuel Cube Basis
9/06 - 12/09

Lab Name	Lab ID	IPP Sample ID	Date Sampled	Ag (silver)	Al%	As	Ba	Cd	Cr	Cu	Hg	Pb	Se	Zn	Ash %
First Light	10707	0208-1D ASH	03/05/08	0.50		1.35	257	0.05	17.03	35	0.003	1.31	0.03	116	10.02
First Light	10708	0308-1D ASH	03/31/08	0.46		1.01	676	0.05	18.02	55	0.002	3.36	0.02	87	9.10
First Light	10709	0408-1D ASH	04/30/08	2.37		0.44	34	0.03	24.01	97	0.002	15.04	0.62	132	6.90
First Light	10710	0508-1D ASH	05/31/08	0.46		0.91	303	0.05	7.07	20	0.002	1.53	0.02	103	9.22
First Light		0608-D ASH	06/30/08	0.63		0.15	79	0.17	25.94	38	0.001	2.76	0.17	106	8.37
Hazen	H412/08	0708-1	07/30/08	0.58	1.63	0.30	41	0.10	6.10	43	0.004	5.00	0.04	80	7.89
Hazen	I398/08	0808-1	08/31/08	2.00	1.65	0.36	172	0.24	5.75	28	0.003	4.00	0.03	36	8.43
Hazen	K59/08	0908-1	09/30/08	0.10	2.04	0.31	4	0.04	8.99	56	0.015	11.45	0.03	52	7.56
Hazen	K168/08	1008-1	10/31/08	0.10	2.04	0.28	431	0.05	8.20	81	0.010	21.30	0.03	66	9.19
Hazen	L139/08	1108-1	12/08/08	0.81	2.26	0.24	0	0.20	18.15	69	0.035	19.55	0.16	133	8.45
Hazen	B144/09	1208-1	01/16/09	0.57	0.99	0.05	1	0.02	9.00	130	0.030	7.19	0.06	88	6.45
Hazen	J264/09	2009-01i	10/14/09	1.00	1.67	2.90	123	0.07	4.50	43	0.004	15.85	0.03	24	8.30
Hazen	J263/09	2009-02i	10/14/09	1.00	1.57	1.37	222	1.00	7.00	62	0.010	18.40	0.03	42	9.33
Hazen	E67/09	2009-03	04/09/09	1.11	0.88	0.31	32	0.02	6.39	16	0.035	3.73	0.03	45	6.67
Hazen	E223/09	2009-04	05/18/09	0.84	1.72	0.03	38	0.02	9.92	18	0.013	10.57	0.19	55	5.85
Hazen	F47/09	2009-05	06/02/09	1.21	1.90	0.03	203	0.10	10.50	45	0.120	9.57	0.03	38	8.29

Units in milligrams per kilogram (mg/kg) or as specified

Table 1
IPP Enviro-Fuelcubes Monthly Composite Sampling Metals, Whole Fuel Cube Basis
9/06 - 12/09

Lab Name	Lab ID	IPP Sample ID	Date Sampled	Ag (silver)	Al%	As	Ba	Cd	Cr	Cu	Hg	Pb	Se	Zn	Ash %
Hazen	G68/09	2009-06	07/06/09	0.66	2.38	0.20	370	0.05	5.74	190	0.035	15.55	0.03	86	10.06
Hazen	H33/09	2009-07	08/03/09	0.78	4.01	0.97	219	0.03	4.62	75	0.010	27.90	0.03	47	5.56
Hazen	I116/09	2009-08	09/03/09	1.02	2.51	0.51	181	0.04	6.93	118	0.055	19.10	0.03	40	7.60
Hazen	J49/09	2009-09	10/01/09	0.70	1.87	0.39	229	0.05	4.53	51	0.001	11.80	0.025	28	9.27
Hazen	K202/09	2009-10	11/03/09	1.00	1.22	0.51	18	1.00	13.85	85	0.005	14.40	0.03	29	8.44
Hazen	K22/09	2009-11	12/04/09	0.50	1.90	0.55	253	0.04	4.57	234	0.005	11.30	0.03	29	0
		Average	**N=36**	**0.70**	**1.89**	**0.72**	**144.12**	**0.12**	**10.45**	**86.93**	**0.01**	**8.50**	**0.06**	**80.21**	**7.57**
		ST Dev		**0.54**	**0.70**	**0.64**	**150.61**	**0.23**	**10.00**	**74.16**	**0.02**	**7.37**	**0.11**	**38.31**	**1.77**
		IPP Limits		**2.00**	**4.00**	**41**	**800**	**1.00**	**52**	**200**	**0.040**	**13.90**	**8.00**	**200**	**10.00**

Notes: ▷ **Values in borders <Contract Laboratory Detection Limits (ASH)- 50% Quantitation value used.**

Ag	<10 mg/kg	Pb	5.0 or 1.0 mg/kg
As	0.50 mg/kg	Hg	0.05 or 0.02 mg/kg
Cd	1.0 mg/kg	Se	0.5 mg/kg

Units in milligrams per kilogram (mg/kg) or as specified

APPENDIX 4

SUWANNEE AMERICAN CEMENT

USED ROOFING SHINGLES MANIFESTING DOCUMENTATION

Suwannee American Cement, LLC
P.O. Box 410, 5117 US Hwy 27
Branford, FL 32008
(386) 935-5000 • (386) 935-5080 fax

USED SHINGLE MATERIALS

TEAR-OFF ROOF SHINGLE SUPPLY CERTIFICATION FORM

Suwannee American Cement, LLC
P.O. Box 410, 5117 US Hwy 27
Branford, FL 32008
(386) 935-5000 • (386) 935-5080 fax

This document must be supplied to all suppliers
All suppliers must sign this form upon receipt

Shingle Supplier Name

_____ _____ _____

Shingle Supplier Name Signature Date

TEAR-OFF SHINGLE SUPPLY SPECIFICATIONS

SOURCE-SEPARATED, TEAR-OFF SHINGLES

ACCEPTABLE AND UNACCEPTABLE ITEMS

List of Roofing Waste Items Allowed

YES	NO
INCLUDE ONLY THESE ITEMS	**DO NOT INCLUDE THESE ITEMS**
SHINGLES	**WOOD**
FELT ATTACHED TO SHINGLES	**METAL FLASHING, GUTTERS, ETC.**
	NAILS (Best Effort)
	PLASTIC WRAP, BUCKETS
	PAPER WASTE
	OTHER GARBAGE, TRASH

Suwannee American Cement, LLC
P.O. Box 410, 5117 US Hwy 27
Branford, FL 32008
(386) 935-5000 • (386) 935-5080 fax

ROOF SHINGLE SUPPLY CERTIFICATION **MANIFEST FORM No. _____**

Roofing Company or Supplier of Whole Tear-Off Shingles

Delivery Company Name: _____

Address: _____

Contact: _____

Phone: _____

Email: _____

We, the undersigned, certify:

A) ☐
All tear-off shingle scraps came from residential buildings having four or fewer dwelling units (see addresses below or attached). The roofing waste material delivered consists of asphalt shingles and minimal roofing debris.

B) ☐
These materials were collected in residential buildings having more than four dwelling units or non-residential buildings.

C) ☐
These materials were collected and stored in separate roll-off containers during tear-off from other debris.

Re-roof customer address(es) where tear-off shingles originated ///estimated age of old roof/// estimated tonnage

_____ /// _____ /// _____
_____ /// _____ /// _____
_____ /// _____ /// _____
_____ /// _____ /// _____
_____ /// _____ /// _____

Please attach additional sheets as needed to record each customer address.

Shingle Supplier Name

_____ _____ _____
Shingle Supplier Name Signature Date

_____ _____ _____
SAC Receiving Person Name Signature Date

Suwannee American Cement, LLC
P.O. Box 410, 5117 US Hwy 27
Branford, FL 32008
(386) 935-5000 • (386) 935-5080 fax

USED SHINGLE MATERIALS

ASBESTOS SAMPLING AND TESTING PROTOCOL

Suwannee American Cement, LLC
P.O. Box 410, 5117 US Hwy 27
Branford, FL 32008
(386) 935-5000 • (386) 935-5080 fax

SUWANNEE AMERICAN CEMENT
BRANFORD CEMENT PLANT

USED SHINGLE MATERIALS
ASBESTOS SAMPLING AND TESTING PROTOCOL

1) One random sample of 2 pounds or more will be manually collected for every received truck that originate from non-residential buildings or residential building of more than four units. (i.e., marked B) on the ROOF SHINGLE SUPPLY CERTIFICATION forms). Source material will be isolated from other materials until asbestos analytical results are received.

> *The material tonnage amounts to determine when to collect a sample will be based on the stated tonnage on the CERTIFICATION forms. NOTE: The tonnage marked on the form, while approximate, will be near accurate values as the values are reviewed and approved by the both the supplier and Suwannee American Cement (SAC).*

2) All samples will be split into two duplicates (approximately 1 – pound each). Each sample will be labeled with date, time, sampling staff name and accompanied by the sample Asbestos Report form.

3) The attached manifest form will be completed for each sample sent to an approved PLM testing laboratory (see 40 CFR 763, Appendix E for method details).

4) Each sample will be submitted with the manifest to the asbestos testing lab. The companion duplicate sample shall be retained by SAC.

5) The sample will be analyzed using the polarized light microscopy (PLM) method.

6) If analysis indicates that a sample contains ≥ 1% asbestos containing material, the Department will be contacted and the source material will be removed from the site. The source material container will be rejected and must be disposed of by the supplier.

7) If after sample analyses of 500 tons of shingles from a supplier show no asbestos containing materials, the interval of testing will increase from each truck to each 100 tons.

Results will be kept on file by SAC for 5 years.

SAC will provide for the FDEP staff to inspect the operation, laboratory data and analyses, and collect their own samples as requested.

Suwannee American Cement, LLC
P.O. Box 410, 5117 US Hwy 27
Branford, FL 32008
(386) 935-5000 • (386) 935-5080 fax

ASBESTOS REPORT FORM

ROOF SHINGLE ASBESTOS ANALYSIS

SAMPLE ID:_____

Samples collected from materials supplied under the following manifests:

MANIFEST FORM No.s _____

MANIFEST FORM No.s _____

MANIFEST FORM No.s _____

MANIFEST FORM No.s _____

MANIFEST FORM No.s _____

MANIFEST FORM No.s _____

Date Sample Collected:_____

_____ _____ _____
SAC Sample Collecter Name Signature Date

Date Sample Shipped to Laboratory:_____

LABORATORY ANALYSES RESULTS MUST BE ATTACHED TO THIS FORM.

Attached Analyses Results: _____percent asbestos determined by polarized light microscopy (PLM)

Sample Analysis Results ID No._____

_____ _____ _____
SAC Receipt of Results Name Signature Date

List of References

1 (http://www.wbcsdcement.org)

2 (http://www.nytimes.com/2010/04/13/science/earth/13trash.html)

3 (http://www.epa.gov/ispd/publications/pubsector.html#cement)

4 (ftp://ftp.jrc.es/pub/eippcb/doc/clm_fd_0509_public.pdf)

5 Agricultural film - http://plasticulture.psu.edu/?q=node/92,ftp

6 Agricultural film - //ftp.jrc.es/pub/eippcb/doc/clm_fd_0509_public.pdf, Table 1.20

7 Tires and TDF - Rubber Manufacturers Association (http://www.rma.org/)

8 Tires and TDF - FL. DEP Technical Evaluation for Permit 0530010-022-AC

9 Biomass - http://www.epa.gov/ttn/chief/ap42/appendix/appa.pdf.

10 Biomass - http://www.fao.org/docrep/T0269E/t0269e08.htm

11 Peanut hulls - http://www.ecn.nl/phyllis

12 Rice hulls - Wright L, Boundy B, Perlack B, Davis S, Saulsbury B. 2006, Biomass Energy Data Book: Edition 1 (ORNL/TM-2006/571, Oak Ridge National Laboratory, Oak Ridge, TN).

13 Corn husks - http://www.ecn.nl/phyllis

14 Corn husks - http://www.afdc.energy.gov/biomass/progs/search3.cgi?10083

15 Orange peel - http://www.nal.usda.gov/fnic/foodcomp/search/

16 Cotton Gin - http://pubs.caes.uga.edu/caespubs/pubs/PDF/B1311.pdf

17 Animal bedding - http://www.ecn.nl/phyllis

18 Animal bedding - Wright L, Boundy B, Perlack B, Davis S, Saulsbury B. 2006, Biomass Energy Data Book: Edition 1 (ORNL/TM-2006/571, Oak Ridge National Laboratory, Oak Ridge, TN)

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[20] Carpet Derived Fuel - Emissions from Combustion of Post-consumer Carpet in a cement Kiln, P Lemieux, et al. , IT3 conference 2005. Paper for presentation at the 2005 Conference on Incineration and Thermal Treatment Technologies, Galveston, TX, May 9-13, 2005

[21] (http://www.oregon.gov/ODF/FIRE/docs/SMP/FinalPEReportOct2803.pdf)

[22] (http://www.epa.gov/ispd/pdf/cement-sector-report.pdf)

[23] http://www.tfhrc.gov/hnr20/recycle/waste/rss1.htm

[24] (http://www.ciwmb.ca.gov/condemo/Shingles/)

[25] (http://www.shinglerecycling.org/files/shingle_PDF/Roofing_Shingles_Webinar_Handouts_10-7-09.pdf)