KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 NW THIRTEENTH STREET
GAINESVILLE, FLORIDA 32609
352/377-5822 • FAX 377-7158

March 24, 1997

Mr. Al Linero
Administrator, NSR Section
FDEP -- Division of Air Resources
2600 Blair Stone Road
Tallahassee, FL 32399-2400

SUBJECT: Rinker Materials Corporation -- Miami Cement Plant
FDEP File No. 0250014-002-AC
Response to Request for Additional Information of December 31, 1996

Dear Mr. Linero:

This letter shall respond to the referenced Request for Additional Information. Also, please find enclosed a disk which contains the permit application in ELSA.

GENERAL

1. Pursuant to Rule 62-212.400(2)(e), F.A.C., please recalculate the net emission increases (sum of all 5 year contemporaneous creditable increases and decreases in the actual emissions of the facility) for all affected PSD pollutants listed in Table 62-212.400-2, F.A.C., to determine PSD applicability.

Response: The net emissions increase for all the PSD pollutants are calculated below, using the methodology presented in the EPA document *New Source Review Workshop Manual* (October 1990).

Step 1: Determine the emissions increases from the proposed project.

Pollutant	Increase (TPY)	PSD Threshold (TPY)
Carbon Monoxide =	1807	100
Nitrogen Oxides =	3350	40
Sulfur Dioxide =	1531	40
Particulate Matter (PM) =	353	25
Particulate Matter (PM10) =	285	15
Volatile Organics (VOC) =	72	40
Lead =	0.045	0.6
Asbestos =	Not Applicable	0.007
Beryllium =	0.000396	0.0004
Mercury =	0.014	0.1
Vinyl Chloride =	Not Applicable	1
Fluorides =	0.54	3
Sulfuric Acid Mist =	8.4 as SO_3	7
Hydrogen Sulfide/TRS =	Not Applicable	10

Therefore, further review is necessary for CO, NOX, SO2, PM, PM10, VOC and SAM.

Step 2: Determine the beginning and ending dates of the contemporaneous period as it relates to the proposed modification.

The application to construct was received by the Department on December 4, 1996, and deemed incomplete on December 31, 1996. As of this writing (March 24, 1997) the application is still incomplete. Rule 62-212.400(2)(e)3., FAC, states that the contemporaneous period is:

"...the period beginning five years prior to the date on which the owner or operator of the of the facility submits a complete application for a permit to modify the facility and ending on the date on which the owner or operator of the modified facility projects the new or modified emissions unit(s) to begin operation."

Therefore the contemporaneous window is defined by:

Beginning Date ~March 24, 1992
Ending Date ~April 1, 2000

Step 3: Determine which emissions units at the source have experienced an increase or decrease in emissions during the contemporaneous period.

Increases

Emissions Unit 014: Stone Dryer/Soil Thermal Treatment Unit
Certification of Completion of Construction for AC13-187599A = June 25, 1993
Compliance testing: November 18-19, 1992
Nature of Modification: To allow processing of contaminated soils in existing stone dryer.

Pollutant	PTE (TPY)	ACTUAL 1992 (TPY)	Δ
Carbon Monoxide =	9.2	0.85	8.4
Nitrogen Oxides =	27.8	4.73	23.1
Sulfur Dioxide =	40.2	5.47	34.7
Particulate Matter (PM) =	4.4	1.64	2.8
Particulate Matter (PM10) =	4.4	1.64	2.8
Volatile Organics (VOC) =	24.0	6.13	17.9

Emissions Unit 008: Kiln #1
AC13-213153 issued June 9, 1993 and AO13-233208 issued July 29, 1993

Nature of Modification: To allow the burning of tires in Kiln #1.
Comments: FDEP Final Determination states:

"...there was no demonstrated increase in actual pollutant emissions..."

No contemporaneous creditable increases or decreases are associated with this permit amendment.

Emissions Unit (No Corresponding ID): Portable Crushing Unit
Compliance testing for completion of construction for 7770250-001/002-AC = April 12, 1996.
Nature of Modification: The construction and operation of a new portable crushing unit for use at this facility and other Rinker facilities.

Pollutant	PTE (TPY)
Carbon Monoxide =	7.0
Nitrogen Oxides =	32.6
Sulfur Dioxide =	2.1
Particulate Matter (PM) =	20.7
Particulate Matter (PM10) =	5.5
Volatile Organics (VOC) =	2.6

Decreases

Emissions Units 008 & 009: Kilns #1 & #2
Nature of Decrease: The issuance of the AC for the proposed project will shutdown the existing kilns in a federally-enforceable manner.

Pollutant	1995	1996	Average
Carbon Monoxide =	1739.78	1789.84	1764.81
Nitrogen Oxides =	4827.29	4966.17	4896.73*
Sulfur Dioxide =	1459.04	1510.65	1484.84
Particulate Matter (PM) =	126.6	118.73	122.66
Particulate Matter (PM10) =	107.6	100.92	104.26
Volatile Organics (VOC) =	46.97	48.32	47.64
Sulfuric Acid Mist =	21.65	21.88	21.77

*NOTE: See Step 4 for discussion of creditable decrease for NOX.

Emissions Units 010 & 011: Clinker Coolers #1 and #2
Nature of Decrease: The issuance of the AC for the proposed project will shutdown the clinker conveyor and clinker box in a federally-enforceable manner.

Pollutant	1995	1996	Average
Particulate Matter (PM) =	50.4	50.4	50.4
Particulate Matter (PM10) =	42.8	42.8	42.8

Emissions Units (No Corresponding ID): Clinker Conveyor/Clinker Box
Nature of Decrease: The issuance of the AC for the proposed project will shutdown the clinker conveyor and clinker box in a federally-enforceable manner.

Pollutant	1995	1996	Average
Particulate Matter (PM) =	8.96	9.22	9.09
Particulate Matter (PM10) =	7.61	7.83	7.72

Emissions Units (No Corresponding ID): Fugitive Emissions from Unpaved Roads
Nature of Decrease: The issuance of the AC for the proposed project will allow the construction of an in-pit crusher with belt conveying system. This will drastically reduce emissions from unpaved haul roads, as rock from the pit is currently hauled to the primary crusher at the plant by haul trucks.

This discussion uses an emissions inventory prepared for the 1992-1993 production period, and scaled with relation to clinker production.

Clinker Production for 1992-1993 = 534309 TPY
[PM = 377.51 TPY & PM10 = 135.9 TPY]
Clinker Production for 1995-1996 = 506166 TPY

Pollutant	Average, 1995-1996
Particulate Matter (PM) =	357.63
Particulate Matter (PM10) =	128.74

Step 4: Determine which emissions changes are creditable.

All of the above emissions changes are creditable, except some portion of the NOX decrease associated with the existing kilns. The RACT rule required compliance with the standard by May 31, 1995.

Fuel Type	1994 MMBtu	1995 MMBtu	1996 MMBtu
Coal	2126020	1119898	0
Coke	376038	770661	1850572
Tires	13994	40794	1805
Tot. Solid	2516052	1931353	1852378
Waste Oil	372695	486701	624672
Tot. Liquid	372695	486701	624672
Natural Gas	60730	50267	48862
TOTAL MMBTU	2949477	2468321	2525911

NOX was limited for 7/12 of 1995 (June - December):

5/12 x 4827.12 = 2011.3 TPY
2,468,321 MMBtu x 7/12 x 2.0 lb/MMBtu = 1439.9 TPY

Therefore, creditable NOX decrease for 1995 = 2011.3 + 1439.9 = 3451.2 TPY.

NOX was limited to 2.0 lb/MMBtu by the RACT rule for 8/12 of 1996 (January - August); and to 4.5 lb/MMBtu by the Consent Order (OGC 96-1751) for 4/12 of 1996 (September - December).

Creditable NOX decrease for 1996 = (8/12 x 2,525,911 MMBtu x 2.0 lb/MMBtu) + (4/12 x 2,525,911 MMBtu x 4.5 lb/MMBtu) = 1683.9 + 1894.4 = 3578.3 TPY.

Dade County Code 24-17 contains limits on SO2 emissions while burning solid fuels (1.5 lb/MMBtu) and liquid fuels (1.1 lb/MMBtu).

For 1995, allowable SO2 emissions would be:

[(1931353 MMBtu x 1.5 lb/MMBtu)/2000] + [(486701 MMBtu x 1.1 lb/MMBtu)/2000] = 1449 + 268 = 1717 TPY

As actual emissions were 1459 TPY, the entire decrease is creditable.

For 1996, allowable SO2 emissions would be:

[(1852378 MMBtu x 1.5 lb/MMBtu)/2000] + [(624672 MMBtu x 1.1 lb/MMBtu)/2000] = 1389 + 344 = 1733 TPY

As actual emissions were 1511 TPY, the entire decrease is creditable.

Step 5: Determine, on a pollutant-by-pollutant basis, the amount of each contemporaneous and creditable emissions increase and decrease.

Pollutant Increases (TPY)
Carbon Monoxide = 8.4 + 7.0 = 15.4
Nitrogen Oxides = 23.1 + 32.6 = 55.7
Sulfur Dioxide = 34.7 + 2.1 = 36.8
Particulate Matter (PM) = 2.8 + 20.7 = 23.5
Particulate Matter (PM10) = 2.8 + 5.5 = 8.3
Volatile Organics (VOC) = 17.9 + 2.6 = 20.5
Sulfuric Acid Mist = 0 + 0 = 0

Pollutant Decreases (TPY)
Carbon Monoxide = 1764.8
Nitrogen Oxides = 3578.3
Sulfur Dioxide = 1484.8
Particulate Matter (PM) = 122.7 + 50.4 + 9.1 + 357.6 = 539.8
Particulate Matter (PM10) = 104.3 + 42.8 + 7.7 + 128.74 = 283.5
Volatile Organics (VOC) = 47.6
Sulfuric Acid Mist = 21.8

Step 6: Sum all contemporaneous and creditable increases and decreases with the increase from the proposed modification to determine if a significant net emissions increase will occur.

Sum of Contemporaneous Creditable Changes (TPY)	PSD Threshold (TPY)
Example = Modification + Increases - Decreases = Total	
Carbon Monoxide = 1807 + 15.4 - 1764.8 = 57.6	100
Nitrogen Oxides = 3350 + 55.7 - 3578.3 = -172.6	40
Sulfur Dioxide = 1531 + 36.8 - 1484.8 = 83	40
Particulate Matter (PM) = 353 + 23.5 - 539.8 = -163.3	25
Particulate Matter (PM10) = 285 + 8.3 - 283.5 = 9.8	15
Volatile Organics (VOC) = 72 + 20.5 - 47.6 = 44.9	40
Sulfuric Acid Mist = 8.4 + 0 - 21.8 = -13.4	7

The detailed analysis above shows that there will be significant net emissions increases for SO2 and VOC. In order to avoid PSD applicability, the requested allowable emission rates for SO2 and VOC from the proposed modification are reduced as follows:

SO2: 0.7 lb/MMBtu, 305.9 lb/hr, 1339.8 TPY; net emissions change = -108.2 TPY
VOC: 0.1 lb/ton clinker, 13.7 lb/hr, 60 TPY; net emissions increase = 32.9 TPY

Replacement pages for the application are included as Attachment 1.

2. Pursuant to Rule 62-212.400(2)(d)4.(ii), F.A.C., if the facility to be modified is within 10 km of a Class I area and if the proposed modification results in a net emission increase (as set forth in Rule 62-212.400(2)(e)1., F.A.C.) of any pollutant regulated under the Act, which increase would have an impact on the affected *Class I area* equal to or greater than 1.0 microgram per cubic meter (24-hour average), this modification shall be subject to the preconstruction review requirements of the PSD

regulations. Calculate the impact of any emission increase on the Everglades National Park.

Response: The USGS Hialeah SW quadrangle map , and a map of the Everglades National Park (obtained from Park staff 2/11/1997) were reviewed. The northeast corner of the Park, bounded by U.S. 41 to the north and Levee No. 31N to the east, is the nearest point to the Rinker facility. The distance between the Rinker facility and the Park was determined to be 8.2 kilometers.

It is noted that the main stack height (other parameters are unchanged) has been changed from 130 feet to approximately 330 feet, as this main stack will be alongside the preheater tower. However, the GEP stack height of 65 meters (213 feet) was used in the dispersion modeling. This is a conservative analysis, because the increased stack height will effectively reduce ambient concentrations.

The net emissions increases for CO, PM10, and VOC were used for the emission rate parameter in dispersion modeling runs using the SCREEN2 model. The impacts resulting from the net emissions increases were determined to be less than 1.0 microgram per cubic meter (24-hour average) at the Park boundary, as follows:

CO concentration at 8.2 km = 0.58 $\mu g/m^3$, 24-hour average
VOC concentration at 8.2 km = 0.33 $\mu g/m^3$, 24-hour average
PM10 concentration at 8.2 km = 0.10 $\mu g/m^3$, 24-hour average

Therefore, no PSD review is required for these pollutants or for this project.

3. Does this facility comply with the Dade County air pollution control regulations?

Response: This facility complies with the Dade County air pollution control regulations found at Chapter 24 of the Code of Metropolitan Dade County ("Code"). Specifically, the Code limits SO2 emissions from solid and liquid fuels, as follows:

SO2 emission standard for solid fuels = 1.5 lb/MMBtu
SO2 emission standard for liquid fuels = 1.1 lb/MMBtu

See the discussion of SO2 in Step 4 of the Response to question 1, above.

EMISSION UNIT NO. 1

4. Explain the proposed reasonable precautions taken to minimize proposed fugitive emissions from unpaved roads (357.43 TPY (actual) vs. 31.91 TPY (proposed)). Please refer to Appendix 2 of application.

Response: The reduction in unconfined particulate matter ("UPM") emissions from unpaved roads will result from physical modifications to the configuration of the limerock delivery system. The majority of the reduction will be from the elimination of certain haul road segments and the corresponding reduction in annual vehicle-miles traveled.

As currently configured, uncrushed rock is hauled, via haul truck, from the quarry to the primary crusher located at the cement plant. As proposed, the primary crusher will be located in the quarry pit, with crushed rock delivered to the cement plant via overland belt conveyor; this physical change will greatly reduce UPM by significantly reducing the use of internal haul roads by haul truck traffic.

5. Estimate fugitive emissions from emission unit No. 1, Raw Materials Handling, (unloading of produced and purchased materials from truck and conveyor systems)

Response: Particulate emissions generated by drop operations were estimated using AP-42, fifth edition, Section 13.2.4, *Aggregate Handling and Storage Piles*, Equation (1).

$$E = \frac{k \times (0.0032) \times [U/5]^{1.3}}{[M/2]^{1.4}}$$

where:

E = emission factor, lb/ton
k = particle size multiplier, 1.0 for PM and 0.35 for PM10
U = mean wind speed, mph; 9.3 mph for Miami per TANKS 3.0
M = material moisture content, %; assumed as 10% for this facility

Therefore,

$$E_{PM} = \frac{1.0 \times (0.0032) \times [9.3/5]^{1.3}}{[10/2]^{1.4}} = 0.0007 \text{ lb/ton}$$

$$E_{PM10} = \frac{0.35 \times (0.0032) \times [9.3/5]^{1.3}}{[10/2]^{1.4}} = 0.0003 \text{ lb/ton}$$

Raw material for the cement plant is required at 220 tons/hour and 8760 hours/year, which equals 1,927,200 TPY of raw material handled. Using the above emission factors, the unconfined particulate matter emissions resulting from drop operations are calculated as:

PM = 0.0007 lb/ton x 1,927,200 TPY = **0.7 TPY**
PM10 = 0.0003 lb/ton x 1,927,200 TPY = **0.3 TPY**

This information supports the contention on pages 28 and 31 of the application that fugitive PM/PM10 emissions will be "negligible due to material moisture".

6. What are the components (metals, halogens, PCBs) of the waste soil listed in page 20 of the application?

Response: The waste soil listed in page 20 is soil that has been thermally processed in the facility's soil thermal treatment facility, which is operating in compliance with Department permit AO13-234126, under Rule 62-775, FAC.

The metal concentrations in the soil accepted by the facility cannot exceed the limits of Specific Condition 11 of Permit AO13-234126 and Table I of Rule 62-775.400(3), FAC, as follows:

Table I, Rule 62-775.400(3)		
Metals	**TCLP*, mg/l**	**Total, mg/kg**
Arsenic	5.0	10
Barium	100.0	4940
Cadmium	1.0	37
Chromium	5.0	50
Lead	5.0	108
Mercury	0.2	23
Selenium	1.0	389
Silver	5.0	353

The halogen content (as Volatile Organic Halocarbons, VOH) of the treated soil is limited to 50 µg/mg (50 ppb) by Rule 62-775.400(2)(b).

The PCB content of the pretreatment soil is limited to 10 ppm by Rule 62-775.410(6)(a), FAC. PCB emissions from the soil thermal treatment facility are further limited to 154 pounds/year by Specific Condition 13 of Permit AO13-234126.

7. Provide documentation to ensure that materials proposed for use in the industrial process are non-hazardous.

Response: None of the materials proposed for use as raw materials or fuels in the cement manufacturing process are hazardous wastes per 40 CFR 261, *Identification and Listing of Hazardous Waste*. A characterization of a given material as a hazardous waste requires that the material be a solid waste, also defined in 40 CFR 261. The solid waste materials proposed for use at this facility include the following:

- Soil (post-treatment) from the soil thermal treatment facility. Rule 62-775.410(4), FAC, prohibits the thermal treatment of soil classified as hazardous waste.
- Fly (and bottom) ash, slag, staurolite, mill scale, gypsum and similar materials for use as raw materials, are certified by their generators to be non-hazardous.
- Used oil for use as fuel is regulated by 40 CFR 279, which exempts it from regulation under 40 CFR 261. Hence, used oil is not considered a hazardous waste.
- Other materials proposed for use as fuels (see Page 54 of the Application) are certified by their generators/suppliers, as applicable, to be non-hazardous.

8. Submit a detailed analysis of the components of all feedstreams. Indicate the precise mix proportion for the raw mill feed.

Response: The following table provides detailed analyses of typical raw materials for use at the facility, as well as ranges and typical mix proportions for the raw mill feed.

	RAW MATERIAL TYPE			
%	Limestone	Waste Soil	Mill Scale	Fly Ash
Carbon*	40.61	13.98	2.95	2.87
SiO_2	7.23	66.14	5.36	49.54
Al_2O_3	0.35	0.74	1.62	23.47
TiO_2	0.04	0.07	0.17	1.13
Fe_2O_3	0.23	0.47	84.12	15.58
Mn_2O_3	0.02	0.04	0.3	0.07
CaO	50.56	17.82	3.9	4.47
MgO	0.56	0.21	0.92	1.19
SO_3	0.07	0.15	0.14	0.14
P_2O_5	0.03	0.08	0.23	0.44
Na_2O	0.06	0.06	0.05	0.81
K_2O	0.06	0.09	0.09	2.04
Cl	0.01	0.08	0	0.02
*Carbon expressed as Loss on Ignition (LOI)				
% of Mix for Raw Mill Feed				
Range	83 - 91%	0 - 7%	0 - 2%	0 - 17%
Typical	86%	3%	1%	10%

PROCESS EVALUATION AND EMISSION UNIT NO. 2

9. Provide a manufacturer's certification that will confirm that the maximum design capacity of the kiln is 220 tons per hour of dry kiln feed.

Response: Equipment vendor and plant component selection has not yet been finalized. The requested certification will be provided when available, if required.

10. Please state the different operating rates that this facility will be use.

Response: The following table shows the different operating rates anticipated at this facility.

Process Description	Material Handled	Rate, TPH
Primary Crushing	Limestone, Overburden	1200
Raw Milling	Raw Materials	250
Preheater Feed	Raw Meal	220
Clinker Production	Clinker	137
Cement Production	Clinker, Gypsum, Limestone, Slag	204
Coal Milling	Coal, Petroleum Coke	20
Kiln Fuel Use	Coal, Pet. Coke, Fuel Oil, Tires, Other	437 mmBtu/hr

11. What is the "dry kiln feed rate" (40 CFR 60, Subpart F) and the "dry preheater feed".

Response: For the purposes of this application, dry kiln feed rate per 40 CFR 60, Subpart F, and dry preheater feed rate are considered equivalent; and equal to 220 TPH.

12. Explain how the fuels listed on pages 47 through 54 are going to be used (start up, main, supplementary or emergency fuels) and the proposed annual heat input usage (20%, 40%, etc.). If these fuels have been permitted before, list the permit number and state the specific condition that restricted fuel usage (rate, sulfur content, etc.).

Response: The following table provides the requested information.

FUEL	USE	% HEAT		PERMIT	RESTRICTIONS
		Prop.	1993-1996	AO13-233208	
Natural Gas	Startup, Supplemental	100	2 - 10%	Description a), SC 8	None
Coal	Main	100	0 - 74%	Description a), SC 8	None
Pet. Coke	Main	100	0 - 73%		
Propane	Supplemental	100	0%	Description a), SC 8	None
No. 2 Fuel Oil	Startup, Supplemental	100	0%	Description a), SC 8	Virgin Oil
Residual Oil	Supplemental	100	0%	Description a), SC 8	Virgin Oil
Used Oil	Supplemental	100	13 - 25%	Description a), SC 8	On or Off-Spec.
Tires, Other	Supplemental	40	1 - 2%	Description b), SC 8	Whole Tires, 40% of Heat

13. Provide reasonable assurance that the emissions of hazardous air pollutants (HAPs) will decrease. Refer to Page 1 of the REPORT.

Response: Reasonable assurance for the statement, *"There will be a reduction in the emissions of...most hazardous air pollutants (HAPs)..."* is derived from the anticipated reduction in fuel (coal, in particular) usage. It is expected that most of the

HAP emitted from the cement manufacturing process are a result of fuel combustion.

The permitted coal usage rate will decrease from 20 tons per hour (524 mmBtu/hr) to 17 tons per hour (437 mmBtu/hr).

14. a. Estimate the net increase or decrease pursuant to Rule 62-212.400(2)(e), F.A.C., for the non-criteria PSD pollutants (lead, mercury, beryllium, etc.) in tons per year. Show basis of calculations.

Response: See also Response #1.

Lead
Proposed Plant: AP-42, Table 11.6-9 Emission Factor = 7.5×10^{-5} lb/ton clinker
7.5×10^{-5} lb/ton x 1.2×10^{6} tons/yr x 1.0 ton/2000 lb = 0.045 TPY

Existing Plant: AP-42, Table 11.6-9 Emission Factor = 0.00071 lb/ton clinker
0.00071 lb/ton x 506,166 tons/yr x 1.0 ton/2000 lb = 0.18 TPY

Net Decrease = 0.135 TPY

Beryllium
Proposed Plant: AP-42, Table 11.6-9 Emission Factor = 6.6×10^{-7} lb/ton clinker
6.6×10^{-7} lb/ton x 1.2×10^{6} tons/yr x 1.0 ton/2000 lb = 0.0004 TPY

Existing Plant: AP-42, Table 11.6-9 Emission Factor = 6.6×10^{-7} lb/ton clinker
6.6×10^{-7} lb/ton x 506,166 tons/yr x 1.0 ton/2000 lb = 0.0002 TPY

Net Increase = 0.0002 TPY

Mercury
Proposed Plant: AP-42, Table 11.6-9 Emission Factor = 2.4×10^{-5} lb/ton clinker
2.4×10^{-5} lb/ton x 1.2×10^{6} tons/yr x 1.0 ton/2000 lb = 0.014 TPY

Existing Plant: AP-42, Table 11.6-9 Emission Factor = 0.00022 lb/ton clinker
0.00022 lb/ton x 506,166 tons/yr x 1.0 ton/2000 lb = 0.056 TPY

Net Decrease = 0.042 TPY

Fluorides
Proposed Plant: AP-42, Table 11.6-9 Emission Factor = 0.0009 lb/ton clinker
0.0009 lb/ton x 1.2×10^{6} tons/yr x 1.0 ton/2000 lb = 0.54 TPY

Existing Plant: AP-42, Table 11.6-9 Emission Factor = 0.0009 lb/ton clinker

0.0009 lb/ton x 506,166 tons/yr x 1.0 ton/2000 lb = 0.23 TPY

Net Increase = 0.31 TPY

Sulfuric Acid Mist
Proposed Plant: AP-42, Table 11.6-9 Emission Factor = 0.014 lb/ton clinker
0.014 lb/ton x 1.2 x 10^6 tons/yr x 1.0 ton/2000 lb = 8.4 TPY (as SO_3)

Existing Plant: AP-42, Table 11.6-9 Emission Factor = 0.086 lb/ton clinker
0.086 lb/ton x 506,166 tons/yr x 1.0 ton/2000 lb = 21.8 TPY (as SO_3)

Net Decrease = 13.4 TPY

b. No calculations were provided for the pollutants (VOC, HAPs, H106, PB, H017, and H150) mentioned on page 14 of the application.

Response: The pollutants were listed as facility pollutants according to the instructions for the Long Form. Please note that this section includes pollutant emissions from all facility emissions units. No calculations are required in this section of the form. In order to be responsive to your query, calculations for these pollutants are provided below.

VOC
Listed as a major pollutant (>100 TPY). The emissions are from the soil thermal treatment facility (Emissions Unit 14).

See AO13-234126, SC 12: Potential VOC emissions ≤ 22.8 lb/hr
@ 8760 hr/yr = 99.9 TPY

HAPS
Listed as a major pollutant (>25 TPY). The emissions are from the soil thermal treatment facility (Emissions Unit 14) and the cement kilns. See discussions for individual HAP above and below.

H106 = Hydrochloric Acid
Listed as a major pollutant (>10 TPY). The emissions are from the proposed project.
Proposed Plant: AP-42, Table 11.6-9 Emission Factor = 0.14 lb/ton clinker
0.14 lb/ton x 1.2 x 10^6 tons/yr x 1.0 ton/2000 lb = 84.0 TPY

H017 = Benzene
Listed as a major pollutant (>10 TPY). The emissions are from the proposed project.
Proposed Plant: AP-42, Table 11.6-9 Emission Factor = 0.016 lb/ton clinker
0.016 lb/ton x 1.2 x 10^6 tons/yr x 1.0 ton/2000 lb = 9.6 TPY

It is expected that the VOC emissions from the soil thermal treatment facility contain some amount of benzene; which would make this pollutant major.

Lead (PB)
Listed as a regulated pollutant, not major or synthetic minor. The lead emissions from the soil thermal treatment facility (Emissions Unit 14) are limited by permit condition. See AO13-234126, SC 4(D): Lead emissions ≤ 0.13 lb/hr @ 8760 hr/yr = 0.57 TPY

H150 = PCB
Listed as a regulated pollutant, not major or synthetic minor. The emissions from the soil thermal treatment facility (Emissions Unit 14) are limited by permit condition. See AO13-234126, SC 13: PCB emissions ≤ 154 lb/yr = 0.08 TPY

15. Submit any existing data for all other HAPs pollutants that have been tested at this facility in the past five years. Include dates, baseline conditions, production rates, and fuel burned.

Response: Please see Attachment 3: *Summary of Emission Rates: Baseline and Coal/TDF Firing Conditions,* January 1993.

16. Estimate fugitive emissions from petroleum storage activities.

Response: Rinker has in existence (2) 600,000 gallon tanks and (6) 25,000 gallon tanks for the storage of fuel oil (distillate, residual, or waste oil). The TANKS 3.0 model was used to estimate the fugitive VOC emissions from these tanks. The usage rate of waste oil in the kilns and in the soil thermal treatment facility for 1996 (5,330,901 gallons) was used as the throughput rate, and a single 1,350,000 gallon tank was input to the model. No. 2 fuel oil was selected as the product type with the greatest vapor pressure.

The model output is included as Attachment 4, and shows an expected VOC emission rate of 190 lb/year (0.1 TPY).

17. Are the proposed emissions based on the worst case scenario? What is the worst case scenario?

Response: The proposed emissions are based on the worst case scenario. The worst case scenario is defined by the *New Source Review Workshop Manual* as:

> *The worst case...emissions rate, which is based on the dirtiest fuels, and/or the highest emitting materials and operating conditions that the source is or will be permitted to use under federally-enforceable requirements.*

For this project, the highest emission fuels are coal and petroleum coke. The worst case operation scenario is the production of 137 tons/hour of clinker for 8760 hours/year.

18. Low pollutants rates are more typical a dry process kilns with a preheater and a precalciner. However, the proposed emission rates do not reflect the efficiency of this dry process. Please reevaluate your proposal and submit a more realistic pollutant emission rates that will reflect the efficiency of the proposed dry process.

Response: This project is not subject to PSD review or the application of BACT for any pollutant. The proposed heat input rate is reflective of the efficiency of the preheater/precalciner pyroprocessing system.

The emission rate for PM from the kiln is based on 0.2 lb/ton of dry feed. This rate is more stringent than NSPS, and is unrelated to kiln efficiency.

The emission rate for SO2, revised above in response to Question 1, is 0.7 lb/MMBtu. This equates to 2.2 lb/ton clinker. This is equivalent to the result obtained when a reasonable factor of safety of 2.0 is applied to the emission factor provided in AP-42, Table 11.6-8. This proposed emission rate is justifiable because of this plant's use of petroleum coke, which typically contains greater amounts of sulfur than does coal.

The proposed emission rate for NOX of 1.75 lb/MMBtu is based on Rinker's Consent Order commitment. This equates to 5.6 lb/ton of clinker. This is consistent with the range of NOX emissions for a preheater/precalciner kiln presented in *Alternative Control Techniques Document -- NOx Emissions from Cement Manufacturing,* of 0.9 lb/ton clinker to 7.0 lb/ton clinker.

The proposed emission rate for CO is 3.01 lb/ton of clinker. This is less than the emission factor of 3.7 lb/ton clinker for a preheater/precalciner kiln presented in AP-42, Table 11.6-8.

The emission rate for VOC, revised above in response to Question 1, is 0.1 lb/ton clinker. This is consistent with the emission factor provided in AP-42, Table 11.6-8, of 0.12 lb/ton of clinker.

19. Provide a detailed process flow diagram of the facility.

Response: Please see Attachment 5: Process Flow Diagram.

20. Describe good combustion practices that will be used to minimize NOx, CO and VOC emissions.

Response: The VOC emissions are expected in large part from naturally occurring organic material in the raw meal fed to the preheater. Very limited VOC emissions are expected from the combustion of fuels.

In the cement kiln environment, CO and NOX emissions are considered to be inversely related. NOX emissions from this plant will be minimized through indirect firing of coal and coke, and by the multiple firing points provided by the precalciner burner and the use of whole tires.

CO emissions will be minimized by the availability of excess oxygen in the combustion system.

21. Submit a detailed analysis of specifications and quantities of the different fuels to be burned at each combustion source at this facility. Discuss any blending of fuel types.

Response: Please see the response to Question 12 above. Typical specifications for coal, petroleum coke, waste oil, and fuel oil are included as Attachment 6. No blending of fuel types is proposed.

22. Describe how captured dust from the baghouse (kiln) is removed and disposed from the system (CKD handling system equipment). What precautions are used to minimize unconfined emissions while handling the dust?

Response: The collected dust is removed from the baghouse collection hopper by a screw conveyor and discharged through a rotary valve to a screw conveyor. This screw conveyor discharges into an airslide [F], through which the dust is transferred to a bucket elevator. The bucket elevator discharges through a flop gate with two outlets:

Outlet 1: To a 160-ton surge bin, then through a rotary valve to the airslide [F], and back to the bucket elevator.

Outlet 2: Through an airslide into the raw meal silo.

All of the material handling equipment is enclosed, and baghouses control particulate emissions from the transfer points.

23. Describe procedures used to startup and shutdown of the process equipment to minimize excess emissions.

Response: The air pollution control devices are operating prior to equipment startup, and remain operating for a short time after equipment shutdown.

Excess emissions from the pyroprocessing system during startup are minimized by kiln "warmup" procedures. Fuel oil is ignited and burned at the discharge end burner until the kiln operating temperature is reached, at which time fuel flow is started to the precalciner burner.

CONTROL EQUIPMENT AND EMISSIONS UNITS 3 AND 4

24. It is not clear from the description of the project if the baghouses to be used in the modernized plant are part of the existing operation. Are the baghouses described in page 24 of the application new?

Response: The application provided information only on proposed plant changes associated with this project.

The baghouses described in page 24 of the application are proposed for this project -- they are new, not part of the existing operation.

25. Are the proposed baghouses' particulate matter emissions calculated using a 0.01 gr/dscf emission rate (refer to last page of the application)? Calculate the flow (dscfm) for each baghouse. Show any estimates used in these calculations. Specify, if possible, the stack location in the process flow diagram.

Response: The proposed baghouses' (except the kiln/cooler/raw mill baghouse) particulate matter emissions are calculated using 0.01 grains per <u>actual</u> cubic foot -- not per dry standard cubic foot.

Temperature and moisture are assumed to approach standard conditions (20°C and 0% H_2O) for these process baghouses, therefore dry standard flow rate is approximately equivalent to actual flow rate.

It is expected that only the kiln/cooler/raw mill baghouse, the coal mill baghouse, and the new finish mill baghouse, will have typical stacks. These stacks are shown on the process flow diagram. The remaining baghouses will have vents with weather caps.

26. Emissions from proposed baghouses do not relate to that provided for plant components.

Response: Emissions Unit 1 includes 16 baghouses with a total flow rate of 157,500 acfm. These baghouses are identified in the table of baghouses as: 1, 2, 3, 4, 5, 7, 21, 22, 23, 24, 25, 26, 27, 28, 29, and 30. At the specified flow rate and 0.01 gr/acf, the annual PM emission is 59.1 TPY.

Emissions Unit 2 includes one baghouse -- the kiln/cooler/raw mill baghouse. Emissions from this baghouse are based on 0.2 lb/ton of dry feed, not a grain loading. In the table, this is baghouse 6. At the proposed feed rate, the annual PM emission is 192.7 TPY.

Emissions Unit 3 includes 13 baghouses with a total flow rate of 158,600 acfm. These baghouses are identified in the table of baghouses as: 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, and 20. At the specified flow rate and 0.01 gr/acf, the annual PM emission is 59.5 TPY.

Emissions Unit 4 includes 2 baghouses with a total flow rate of 26,700 acfm. These baghouses are identified in the table of baghouses as: 31 and 32. At the specified flow rate and 0.01 gr/acf, the annual PM emission is 10.0 TPY.

The application is consistent with the report, showing 32 baghouses and total process PM emissions of 321.4 TPY. Please see Attachment 7: Baghouse Table, to clarify this information.

27. Submit design specifications for the kiln and cooler stack transmissometers.

Response: The vendor for the kiln and cooler stack transmissometers has not yet been selected. The requested information will be supplied when available.

28. The detailed description of the control equipment (page 70 of the application) was not included. Include a detailed engineering design specification of the control devices (baghouses) used at this facility. Please include for each baghouse, as a minimum, the following information:

- Design emission rate for particulate matter (before and after proposed controls)
- Baghouse operation temperature (F) range
- Number of separate baghouses
- Number of isolated compartments per baghouses
- Design criteria for air to cloth ratio or range of acceptable ratios
- Cloth description
- Type of bag cleaning under consideration and subsequent cleaning controls
- Strategy for detecting and replacing faulty bags
- Description of ash handling and disposal system
- Nature and terms of performance guarantee

Response: The vendors for the baghouses have not yet been selected. The requested information will be supplied when available.

The flow rates are expected to be as described, and the design emission rate for 31 of the 32 baghouses will be 0.01 gr/acf. The number of separate baghouses is 32. The requested emission rates and operating conditions are not unusual -- it is expected that a number of qualified vendors with various baghouse designs will be involved with this project.

I trust that this letter is responsive to your request. If further information is required, please do not hesitate to contact me at (352) 377-5822.

Sincerely,

Steven C. Cullen, P.E.
Koogler & Associates

copies to: Mike Vardeman -- Rinker
Richard Donelan -- Carlton, Fields et al

Attachment 1: Replacement Application Pages for SO2
Attachment 2: SCREEN2 Modeling for CO, PM10, and VOC
Attachment 3: *Summary of Emission Rates: Baseline and Coal/TDF,* January 1993
Attachment 4: TANKS 3.0 Model Output
Attachment 5: Process Flow Diagram
Attachment 6: Typical Fuel Specifications
Attachment 7: Baghouse Table and Application Pages

ATTACHMENT 1

REPLACEMENT APPLICATION PAGES FOR SO2

Emissions Unit Information Section 2 of 4 [Kiln, Cooler, Raw Mill]

Pollutant Detail Information: Pollutant 4 of 5

1. Pollutant Emitted: **SO2**		
2. Total Percent Efficiency of Control: **NA**		%
3. Potential Emissions:	**305.90** lb/hour	**1339.8** tons/year
4. Synthetically Limited? [ ] Yes [**X**] No		
5. Range of Estimated Fugitive/Other Emissions: **NA** [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year		
6. Emission Factor: **0.7 lb/MMBtu** Reference: **Process Knowledge**		
7. Emissions Method Code: **[X]** 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5		
8. Calculation of Emissions (limit to 600 characters): **0.7 lb/MMBtu x 437 MMBtu hr = 305.90 lb/hr** **@ 8760 hrs/yr = 1339.8 tons/yr**		
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):		

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **ESCPSD**		
2. Future Effective Date of Allowable Emissions: **NA**		
3. Requested Allowable Emissions and Units: **0.7 lb/MMBtu**		
4. Equivalent Allowable Emissions:	**305.90** lb/hour	**1339.8** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 6**		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **This limit is more stringent than that contained in the Dade County Code**		

B.

1. Basis for Allowable Emissions Code: **RULE** **Section 24-17(2)(a)(ii), Dade County Code**		
2. Future Effective Date of Allowable Emissions: **NA**		
3. Requested Allowable Emissions and Units: **Solid Fuels 1.5 lb/MMBtu** **Liquid Fuels 1.1 lb/MMBtu**		
4. Equivalent Allowable Emissions: **Solid**	**655.50** lb/hour	**2871.1** tons/year
Liquid	**480.70** lb/hour	**2105.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 6**		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

Emissions Unit Information Section 2 **of** 4 **[Kiln, Cooler, Raw Mill]**

Pollutant Detail Information: Pollutant 5 **of** 5

1. Pollutant Emitted: **CO**		
2. Total Percent Efficiency of Control: **NA**		%
3. Potential Emissions:	**412.49** lb/hour	**1806.7** tons/year
4. Synthetically Limited? [ ] Yes [**X**] No		
5. Range of Estimated Fugitive/Other Emissions: **NA** [ ] 1 [ ] 2 [ ] 3	_____ to _____	tons/year
6. Emission Factor: **3.01 lb/ton clinker** Reference: **Process Knowledge**		
7. Emissions Method Code: [ ] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [**X**] 5		
8. Calculation of Emissions (limit to 600 characters): **3.011 lb/ton clinker x 137 tph clinker = 412.49 lb/hr** **@ 8760 hrs/yr = 1806.7 tons/yr**		
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):		

ATTACHMENT 2

SCREEN2 MODELING FOR CO, PM10, and VOC

03/04/97
17:48:23

*** SCREEN2 MODEL RUN ***
*** VERSION DATED 95121 ***

RINKER CO, GEP, MILL ON, NET+ = 57.6 TPY

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	1.66000
STACK HEIGHT (M)	=	65.0000
STK INSIDE DIAM (M)	=	2.4400
STK EXIT VELOCITY (M/S)	=	27.2513
STK GAS EXIT TEMP (K)	=	363.0000
AMBIENT AIR TEMP (K)	=	293.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	.0000
MIN HORIZ BLDG DIM (M)	=	.0000
MAX HORIZ BLDG DIM (M)	=	.0000

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 270000.00 (ACFM)

BUOY. FLUX = 76.700 M**4/S**3; MOM. FLUX = 892.188 M**4/S**2.

*** FULL METEOROLOGY ***

ANEMOMETER HEIGHT IS: 10.0 METERS

****
*** SCREEN AUTOMATED DISTANCES ***
****

BRODE OPTION 2 WAS EXERCISED. RESULTS ARE ASSUMED TO
BE MORE CONSERVATIVE WITH RESPECT TO ISCST2 RESULTS.

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.1	529.2	523.98	7.00	6.99	NO
100.	.2109E-09	5	1.0	1.9	10000.0	166.51	22.58	22.02	NO
200.	.4271E-04	5	1.0	1.9	10000.0	166.51	31.25	29.67	NO
300.	.1037E-01	1	3.0	3.4	300.0	217.99	76.14	53.84	NO
400.	.3926	1	3.0	3.4	300.0	217.99	97.70	77.56	NO
500.	1.719	1	3.0	3.4	300.0	217.99	118.56	110.60	NO
600.	3.696	1	2.0	2.3	300.4	294.49	146.04	165.44	NO
700.	5.068	1	2.0	2.3	300.4	294.49	165.82	223.18	NO
800.	5.165	1	2.0	2.3	300.4	294.49	183.51	290.50	NO
900.	4.837	1	1.5	1.7	376.6	370.99	209.32	373.51	NO
1000.	4.540	1	1.5	1.7	376.6	370.99	226.28	462.19	NO
1100.	4.228	1	1.5	1.7	376.6	370.99	243.25	562.14	NO
1200.	3.953	1	1.5	1.7	376.6	370.99	260.19	673.29	NO
1300.	3.736	1	1.0	1.1	529.2	523.98	293.82	801.63	NO
1400.	3.544	1	1.0	1.1	529.2	523.98	309.76	934.39	NO
1500.	3.370	1	1.0	1.1	529.2	523.98	325.72	1078.60	NO
1600.	3.253	2	3.0	3.4	231.1	217.99	238.43	188.19	NO

1700.	3.176	2	3.0	3.4	231.1	217.99	251.21	200.46	NO
1800.	3.118	2	2.5	2.8	261.0	248.59	265.50	214.80	NO
1900.	3.051	2	2.5	2.8	261.0	248.59	278.07	227.16	NO
2000.	2.969	2	2.5	2.8	261.0	248.59	290.57	239.63	NO
2100.	2.904	2	2.0	2.3	306.3	294.49	305.56	255.24	NO
2200.	2.847	2	2.0	2.3	306.3	294.49	317.85	267.75	NO
2300.	2.782	2	2.0	2.3	306.3	294.49	330.08	280.34	NO
2400.	2.711	2	2.0	2.3	306.3	294.49	342.27	293.02	NO
2500.	2.637	2	2.0	2.3	306.3	294.49	354.42	305.79	NO
2600.	2.590	3	3.5	4.2	208.8	188.98	247.76	150.74	NO
2700.	2.573	3	3.5	4.2	208.8	188.98	256.17	155.74	NO
2800.	2.549	3	3.5	4.2	208.8	188.98	264.55	160.74	NO
2900.	2.523	3	3.0	3.6	228.5	209.64	273.74	167.10	NO
3000.	2.506	3	3.0	3.6	228.5	209.64	282.05	172.04	NO
3500.	2.373	3	2.5	3.0	256.5	238.57	324.37	198.59	NO
4000.	2.237	3	2.5	3.0	256.5	238.57	364.85	222.86	NO
4500.	2.118	3	2.0	2.4	298.9	281.96	406.56	249.80	NO
5000.	1.995	3	2.0	2.4	298.9	281.96	445.97	273.58	NO
5500.	1.877	3	1.5	1.8	370.2	354.28	488.06	302.26	NO
6000.	1.796	3	1.5	1.8	370.2	354.28	526.51	325.49	NO
6500.	1.708	3	1.5	1.8	370.2	354.28	564.65	348.68	NO
7000.	1.619	3	1.5	1.8	370.2	354.28	602.51	371.80	NO
7500.	1.534	3	1.5	1.8	370.2	354.28	640.08	394.85	NO
8000.	1.462	3	1.0	1.2	513.9	498.92	683.68	427.94	NO
8500.	1.417	3	1.0	1.2	513.9	498.92	720.42	450.34	NO
9000.	1.369	3	1.0	1.2	513.9	498.92	756.96	472.72	NO
9500.	1.320	3	1.0	1.2	513.9	498.92	793.30	495.07	NO
10000.	1.271	3	1.0	1.2	513.9	498.92	829.45	517.40	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

757.	5.226	1	2.0	2.3	300.4	294.49	176.08	260.85	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
8200.	1.444	3	1.0	1.2	513.9	498.92	698.40	436.90	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION	MAX CONC	DIST TO	TERRAIN

24-hour averaging time multiplying factor = 0.4; max. concentration = 0.58 ug/m^3

03/04/97
17:44:09

*** SCREEN2 MODEL RUN ***
*** VERSION DATED 95121 ***

RINKER PM10, GEP, MILL ON, NET+ = 9.8 TPY

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.280000
STACK HEIGHT (M)	=	65.0000
STK INSIDE DIAM (M)	=	2.4400
STK EXIT VELOCITY (M/S)	=	27.2513
STK GAS EXIT TEMP (K)	=	363.0000
AMBIENT AIR TEMP (K)	=	293.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	.0000
MIN HORIZ BLDG DIM (M)	=	.0000
MAX HORIZ BLDG DIM (M)	=	.0000

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 270000.00 (ACFM)

BUOY. FLUX = 76.700 M**4/S**3; MOM. FLUX = 892.188 M**4/S**2.

*** FULL METEOROLOGY ***

ANEMOMETER HEIGHT IS: 10.0 METERS

****
*** SCREEN AUTOMATED DISTANCES ***
****

BRODE OPTION 2 WAS EXERCISED. RESULTS ARE ASSUMED TO
BE MORE CONSERVATIVE WITH RESPECT TO ISCST2 RESULTS.

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.1	529.2	523.98	7.00	6.99	NO
100.	.3558E-10	5	1.0	1.9	10000.0	166.51	22.58	22.02	NO
200.	.7204E-05	5	1.0	1.9	10000.0	166.51	31.25	29.67	NO
300.	.1750E-02	1	3.0	3.4	300.0	217.99	76.14	53.84	NO
400.	.6622E-01	1	3.0	3.4	300.0	217.99	97.70	77.56	NO
500.	.2900	1	3.0	3.4	300.0	217.99	118.56	110.60	NO
600.	.6234	1	2.0	2.3	300.4	294.49	146.04	165.44	NO
700.	.8548	1	2.0	2.3	300.4	294.49	165.82	223.18	NO
800.	.8712	1	2.0	2.3	300.4	294.49	183.51	290.50	NO
900.	.8159	1	1.5	1.7	376.6	370.99	209.32	373.51	NO
1000.	.7658	1	1.5	1.7	376.6	370.99	226.28	462.19	NO
1100.	.7132	1	1.5	1.7	376.6	370.99	243.25	562.14	NO
1200.	.6667	1	1.5	1.7	376.6	370.99	260.19	673.29	NO
1300.	.6301	1	1.0	1.1	529.2	523.98	293.82	801.63	NO
1400.	.5977	1	1.0	1.1	529.2	523.98	309.76	934.39	NO
1500.	.5684	1	1.0	1.1	529.2	523.98	325.72	1078.60	NO
1600.	.5486	2	3.0	3.4	231.1	217.99	238.43	188.19	NO

1700.	.5357	2	3.0	3.4	231.1	217.99	251.21	200.46	NO
1800.	.5260	2	2.5	2.8	261.0	248.59	265.50	214.80	NO
1900.	.5146	2	2.5	2.8	261.0	248.59	278.07	227.16	NO
2000.	.5008	2	2.5	2.8	261.0	248.59	290.57	239.63	NO
2100.	.4898	2	2.0	2.3	306.3	294.49	305.56	255.24	NO
2200.	.4803	2	2.0	2.3	306.3	294.49	317.85	267.75	NO
2300.	.4692	2	2.0	2.3	306.3	294.49	330.08	280.34	NO
2400.	.4572	2	2.0	2.3	306.3	294.49	342.27	293.02	NO
2500.	.4448	2	2.0	2.3	306.3	294.49	354.42	305.79	NO
2600.	.4369	3	3.5	4.2	208.8	188.98	247.76	150.74	NO
2700.	.4340	3	3.5	4.2	208.8	188.98	256.17	155.74	NO
2800.	.4299	3	3.5	4.2	208.8	188.98	264.55	160.74	NO
2900.	.4255	3	3.0	3.6	228.5	209.64	273.74	167.10	NO
3000.	.4226	3	3.0	3.6	228.5	209.64	282.05	172.04	NO
3500.	.4003	3	2.5	3.0	256.5	238.57	324.37	198.59	NO
4000.	.3774	3	2.5	3.0	256.5	238.57	364.85	222.86	NO
4500.	.3573	3	2.0	2.4	298.9	281.96	406.56	249.80	NO
5000.	.3365	3	2.0	2.4	298.9	281.96	445.97	273.58	NO
5500.	.3165	3	1.5	1.8	370.2	354.28	488.06	302.26	NO
6000.	.3030	3	1.5	1.8	370.2	354.28	526.51	325.49	NO
6500.	.2881	3	1.5	1.8	370.2	354.28	564.65	348.68	NO
7000.	.2731	3	1.5	1.8	370.2	354.28	602.51	371.80	NO
7500.	.2587	3	1.5	1.8	370.2	354.28	640.08	394.85	NO
8000.	.2465	3	1.0	1.2	513.9	498.92	683.68	427.94	NO
8500.	.2390	3	1.0	1.2	513.9	498.92	720.42	450.34	NO
9000.	.2309	3	1.0	1.2	513.9	498.92	756.96	472.72	NO
9500.	.2226	3	1.0	1.2	513.9	498.92	793.30	495.07	NO
10000.	.2144	3	1.0	1.2	513.9	498.92	829.45	517.40	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

757.	.8816	1	2.0	2.3	300.4	294.49	176.08	260.85	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
8200.	.2436	3	1.0	1.2	513.9	498.92	698.40	436.90	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION	MAX CONC	DIST TO	TERRAIN

24-hour averaging time multiplying factor = 0.4; max concentration = 0.10 ug/m^3

03/07/97
11:38:39

*** SCREEN2 MODEL RUN ***
*** VERSION DATED 95121 ***

RINKER VOC, GEP, MILL ON, NET+ = 32.9 TPY

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	.950000
STACK HEIGHT (M)	=	65.0000
STK INSIDE DIAM (M)	=	2.4400
STK EXIT VELOCITY (M/S)	=	27.2513
STK GAS EXIT TEMP (K)	=	363.0000
AMBIENT AIR TEMP (K)	=	293.0000
RECEPTOR HEIGHT (M)	=	.0000
URBAN/RURAL OPTION	=	RURAL
BUILDING HEIGHT (M)	=	.0000
MIN HORIZ BLDG DIM (M)	=	.0000
MAX HORIZ BLDG DIM (M)	=	.0000

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 270000.00 (ACFM)

BUOY. FLUX = 76.700 M**4/S**3; MOM. FLUX = 892.188 M**4/S**2.

*** FULL METEOROLOGY ***

ANEMOMETER HEIGHT IS: 10.0 METERS

****
*** SCREEN AUTOMATED DISTANCES ***
****

BRODE OPTION 2 WAS EXERCISED. RESULTS ARE ASSUMED TO
BE MORE CONSERVATIVE WITH RESPECT TO ISCST2 RESULTS.

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	.0000	1	1.0	1.1	529.2	523.98	7.00	6.99	NO
100.	.1207E-09	5	1.0	1.9	10000.0	166.51	22.58	22.02	NO
200.	.2444E-04	5	1.0	1.9	10000.0	166.51	31.25	29.67	NO
300.	.5936E-02	1	3.0	3.4	300.0	217.99	76.14	53.84	NO
400.	.2247	1	3.0	3.4	300.0	217.99	97.70	77.56	NO
500.	.9838	1	3.0	3.4	300.0	217.99	118.56	110.60	NO
600.	2.115	1	2.0	2.3	300.4	294.49	146.04	165.44	NO
700.	2.900	1	2.0	2.3	300.4	294.49	165.82	223.18	NO
800.	2.956	1	2.0	2.3	300.4	294.49	183.51	290.50	NO
900.	2.768	1	1.5	1.7	376.6	370.99	209.32	373.51	NO
1000.	2.598	1	1.5	1.7	376.6	370.99	226.28	462.19	NO
1100.	2.420	1	1.5	1.7	376.6	370.99	243.25	562.14	NO
1200.	2.262	1	1.5	1.7	376.6	370.99	260.19	673.29	NO
1300.	2.138	1	1.0	1.1	529.2	523.98	293.82	801.63	NO
1400.	2.028	1	1.0	1.1	529.2	523.98	309.76	934.39	NO
1500.	1.929	1	1.0	1.1	529.2	523.98	325.72	1078.60	NO
1600.	1.861	2	3.0	3.4	231.1	217.99	238.43	188.19	NO

1700.	1.817	2	3.0	3.4	231.1	217.99	251.21	200.46	NO
1800.	1.785	2	2.5	2.8	261.0	248.59	265.50	214.80	NO
1900.	1.746	2	2.5	2.8	261.0	248.59	278.07	227.16	NO
2000.	1.699	2	2.5	2.8	261.0	248.59	290.57	239.63	NO
2100.	1.662	2	2.0	2.3	306.3	294.49	305.56	255.24	NO
2200.	1.630	2	2.0	2.3	306.3	294.49	317.85	267.75	NO
2300.	1.592	2	2.0	2.3	306.3	294.49	330.08	280.34	NO
2400.	1.551	2	2.0	2.3	306.3	294.49	342.27	293.02	NO
2500.	1.509	2	2.0	2.3	306.3	294.49	354.42	305.79	NO
2600.	1.482	3	3.5	4.2	208.8	188.98	247.76	150.74	NO
2700.	1.473	3	3.5	4.2	208.8	188.98	256.17	155.74	NO
2800.	1.459	3	3.5	4.2	208.8	188.98	264.55	160.74	NO
2900.	1.444	3	3.0	3.6	228.5	209.64	273.74	167.10	NO
3000.	1.434	3	3.0	3.6	228.5	209.64	282.05	172.04	NO
3500.	1.358	3	2.5	3.0	256.5	238.57	324.37	198.59	NO
4000.	1.280	3	2.5	3.0	256.5	238.57	364.85	222.86	NO
4500.	1.212	3	2.0	2.4	298.9	281.96	406.56	249.80	NO
5000.	1.142	3	2.0	2.4	298.9	281.96	445.97	273.58	NO
5500.	1.074	3	1.5	1.8	370.2	354.28	488.06	302.26	NO
6000.	1.028	3	1.5	1.8	370.2	354.28	526.51	325.49	NO
6500.	.9774	3	1.5	1.8	370.2	354.28	564.65	348.68	NO
7000.	.9265	3	1.5	1.8	370.2	354.28	602.51	371.80	NO
7500.	.8778	3	1.5	1.8	370.2	354.28	640.08	394.85	NO
8000.	.8364	3	1.0	1.2	513.9	498.92	683.68	427.94	NO
8500.	.8107	3	1.0	1.2	513.9	498.92	720.42	450.34	NO
9000.	.7833	3	1.0	1.2	513.9	498.92	756.96	472.72	NO
9500.	.7552	3	1.0	1.2	513.9	498.92	793.30	495.07	NO
10000.	.7275	3	1.0	1.2	513.9	498.92	829.45	517.40	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

757.	2.991	1	2.0	2.3	300.4	294.49	176.08	260.85	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SCREEN DISCRETE DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
8200.	.8265	3	1.0	1.2	513.9	498.92	698.40	436.90	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION	MAX CONC	DIST TO	TERRAIN

24-hour averaging time multiplying factor = 0.4; max concentration = 0.33 ug/m^3

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Kiln, Cooler and Raw Mill Baghouse Stack**	
2. Emission Point Type Code: [X] 1 [ ] 2 [ ] 3 [ ] 4	
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **NA**	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **NA**	
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [X] V [ ] W	
6. Stack Height:	**330** feet
7. Exit Diameter:	**8** feet

ATTACHMENT 3

SUMMARY OF EMISSION RATES: BASELINE and COAL/TDF, JANUARY 1993

SUMMARY OF PARTICULATE MATTER, SULFUR DIOXIDE, TOTAL HYDROCARBONS, CARBON MONOXIDE, NITROGEN OXIDES, METALS AND BENZENE EMISSION RATES

BASELINE AND COAL/TDF FIRING CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 27-29, 1993

KOOGLER & ASSOCIATES
ENVIRONMENTAL SERVICES
4014 N.W. 13TH STREET
GAINESVILLE, FL 32609
(904) 377-5822

TABLE OF CONTENTS

1.0 INTRODUCTION

Rinker Materials Corporation (Rinker) operates two wet process Portland cement kilns in Miami, Dade County, Florida. The cement plant was originally constructed in the mid-1950s. Presently, both kilns are permitted under permit A013-172954 at a feed rate of 55 tons per hour each. Each kiln is normally fired with coal at a heat input rate of approximately 200 MMBTU per hour.

Rinker applied to FDER requesting approval to burn tire derived fuel (TDF) as a supplemental heat source in Kiln No. 1 of the cement plant. On July 6, 1992, FDER issued an amendment to the referenced permit authorizing performance tests to evaluate plant performance while using TDF to supply up to 40 percent of the heat input to the kiln. During the period January 27-29, 1993, tests were conducted to measure air pollutant emissions from the stack common to both Kiln 1 and Kiln 2 while the plant was operating with whole TDF supplying up to 40 percent of the heat input to Kiln No. 1 and under baseline conditions. During the test period, Kiln No. 2 operated under normal conditions with coal providing 100 percent of the heat input.

During the two test periods, the operations of the two kilns were consistent. Kiln oxygen levels, kiln temperatures and gas flow rates were within ranges normally encountered. Overall the combined emission rate of particulate matter, total hydrocarbons, nitrogen oxides, sulfur dioxide and carbon monoxide decreased from 1959 pounds per hour under baseline

conditions to 1464 pounds per hour under coal/TDF conditions. The major reduction was in nitrogen oxides emissions.

The coal/TDF tests were conducted during the period 1041-1730 on January 27, 1993. During the coal/TDF test period:

a. Coal was fed to Kiln No. 1 at an average rate of 5.56 tons per hour; providing 70.1 percent of the heat input or approximately 141.4 MMBTU per hour. TDF provided 29.9 percent of the heat input to Kiln No. 1; or approximately 60.3 MMBTU per hour. The total heat input to Kiln No. 1 averaged 201.7 MMBTU per hour. The Kiln No. 1 feed rate averaged 55.6 tons per hour and the clinker production rate averaged 33.9 tons per hour (Table 1).

b. The Kiln No. 2 feed rate averaged 55.4 tons per hour and the clinker production rate averaged 33.9 tons per hour. Coal provided 100 percent of the heat input (193.1 MMBTU/hr) at an average feed rate of 7.59 tons per hour (Table 1).

c. The particulate matter emission rate from the stack common to both kilns averaged 39.32 pounds per hour (Table 3). The allowable emission rate from the two kilns combined is 66 pounds per hour.

d. The total hydrocarbon emission rate averaged 14.1 pounds per hour as propane measured by EPA Method 25A. The emission rate of benzene averaged 0.0698 pounds per hour (Table 4).

e. The nitrogen oxides emission rate averaged 926 pounds per hour (Table 5) as measured by EPA Method 7E.

f. The carbon monoxide emission rate averaged 235 pounds per hour (Table 6) as measured by EPA Method 10.

g. The sulfur dioxide emission rate averaged 326 pounds per hour (Table 7A) as measured by EPA Method 6 and 249 pounds per hour as measured by EPA Method 6C (Table 7B).

h. The emission rates of metals ranged from 0.33 pounds per hour for zinc to less than detectable for antimony, arsenic, beryllium, cadmium, selenium and silver (Table 8).

i. All the stack gas characteristics such as flow, temperature, moisture, oxygen and CO_2 are reported in Table 9.

The baseline tests were conducted during the period 1352-1904 on January 29, 1993, after Kiln No. 1 had approximately 44 hours to equilibrate on 100 percent coal. During the baseline test period:

a. Coal was feed to Kiln No. 1 at an average rate of 6.55 tons per hour and provided 100 percent of the heat input; or approximately 177.9 MMBTU per hour. The kiln feed rate averaged 58.8 tons per hour and the clinker production rate averaged 35.8 tons per hour (Table 2).

b. Kiln No. 2 operated at an average feed rate of 58.4 tons per hour and a clinker production rate of 35.6 tons per hour. Coal provided 100 percent of the heat input; or 174.5 MMBTU/hr (Table 2). The coal feed rate for this kiln averaged 6.43 tons per hour.

c. The particulate matter emission rate from the stack common to both kilns averaged 19.37 pounds per hour (Table 10).

d. The total hydrocarbon emission rate averaged 11.5 pounds per hour as propane measured by EPA Method 25A. The emission rate of benzene averaged 0.0196 pounds per hour (Table 4).

e. The nitrogen oxides emission rate averaged 1182 pounds per hour (Table 5) as measured by EPA Method 7E.

f. The carbon monoxide emission rate averaged 426 pounds per hour (Table 6) as measured by EPA Method 10.

g. The sulfur dioxide emission rate averaged 380 pounds per hour (Table 7A) as measured by EPA Method 6 and 320 pounds per hour as measured by EPA Method 6C (Table 7B).

h. The emission rates of metals ranged from 0.74 pounds per hour for zinc to less than detectable for antimony, arsenic, beryllium, cadmium, selenium and silver (Table 11).

i. All the stack gas characteristics such as flow, temperature, moisture, oxygen and CO_2 are reported in Table 12.

2.0 PROCESS DESCRIPTION

The Rinker Materials Corporation plant consists of two wet process Portland cement kilns. Each of the two kilns has a permitted feed rate of 55 tons per hour (dry). There is no permit limit on either the clinker production or the heat input. Both kilns are normally fired with coal at an average rate of 6.5-7.0 tons per hour, each resulting in an average heat input rate of about 200 MMBTU per hour each. During the TDF test period, the coal feed rate to Kiln No. 1 averaged 5.57 tons per hour (at 12882 BTU per pound) for an average heat input rate of 141.4 MMBTU per hour. The TDF feed rate to the kiln averaged 1.84 tons per hour (at 16379 BTU per pound) for an average heat input rate of 60.3 MMBTU per hour. The total heat input to Kiln No. 1 averaged 201.7 MMBTU per hour, with coal providing 70.1 percent of the thermal energy and TDF providing 29.9 percent of the energy. The Kiln No. 2 coal feed rate averaged 7.59 tons per hour (at 12571 BTU/pound) for an average heat input of 193.1 MMBTU per hour.

During the TDF test period, the Kiln No. 1 feed rate averaged 55.6 tons per hour and the clinker production rate averaged approximately 33.9 tons per hour. The Kiln No. 2 feed rate averaged 55.4 tons per hour and the clinker production rate averaged 33.9 tons per hour.

During the baseline test period, the Kiln No. 1 feed rate averaged 58.8 tons per hour and the clinker production rate averaged approximately 35.8 tons per hour. The Kiln No. 1 coal feed rate averaged 6.55 tons per hour

(177.9 MMBTU per hour). The Kiln No. 2 feed rate averaged 58.4 tons per hour and the clinker production rate averaged 35.6 tons per hour. The Kiln No. 2 coal feed rate averaged 6.43 tons per hour for an average heat input of 174.5 MMBTU per hour.

3.0 LOCATION OF SAMPLING PORTS

The location of the sampling points are shown in Figure 1. Stack gas flow rate measurements and sample collection for particulate matter, metals, sulfur dioxide (Method 6), and speciated volatile organic compounds (benzene) emission measurements were made through four sampling ports located at about the 85-foot level of the stack. Samples for determining the nitrogen oxides, carbon monoxide, sulfur dioxide (Method 6C) and total hydrocarbon concentrations of the stack gas were made at a single point near the center of the stack (Figure 1).

The four sampling ports at the 85 foot level of the stack are located at 90 degrees to one another in the 15-foot diameter stack; 65 feet above the point where the stack gases are introduced to the stack and approximately 30 feet below the top of the stack. A total of 24 sampling points were used for the velocity and sampling traverses. The sampling points were located in accordance with criteria established by EPA test Method 1 (40CFR60, Appendix A).

Measurements of the nitrogen oxides, carbon monoxide, total hydrocarbons, benzene and sulfur dioxide (Method 6C) concentrations in the stack gas were also made at the 85 foot level but at a single point near the center of the stack.

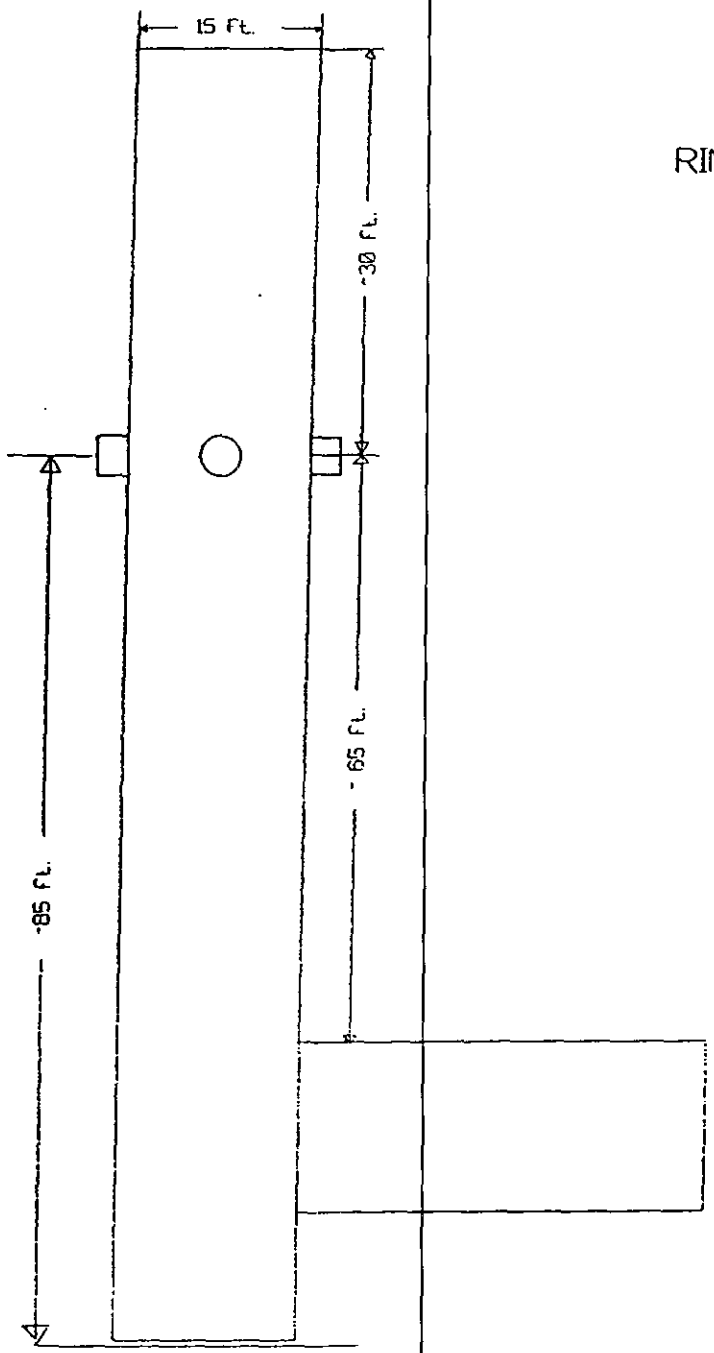


FIGURE 1

CEMENT PLANT

RINKER MATERIALS CORPORATION

MIAMI, FLORIDA

Distance from Stock Wall to Sampling Points

Point	Distance (in)
1	3.8
2	12.1
3	21.2
4	31.9
5	45.0
6	63.9

KOOGLER & ASSOCIATES

4.0 TEST METHODS

The nitrogen oxides concentrations were continuously measured in accordance with EPA Test Method 7E, carbon monoxide concentrations were continuously measured in accordance with EPA Test Method 10, sulfur dioxide was continuously measured in accordance with EPA Method 6C, and total hydrocarbon concentrations were continuously measured in accordance with EPA Test Method 25A. All test methods are described in 40CFR60, Appendix A. The sample of stack gas for these continuous analyzers was collected from a single point in the middle of the stack and transported to a heated manifold through a heated teflon sample line. The sample gas stream was then split with the fraction for NOx and SO_2 analyses passing through a cold trap to remove water vapor before the gas stream was introduced to the NOx and SO_2 analyzers. The gas sample for carbon monoxide was passed through as ascarite column to remove moisture and CO_2 and the sample for total hydrocarbons was transferred directly to the analyzer through another heated teflon line.

Moisture, stack gas flow rate, oxygen and CO_2 were measured in accordance with EPA Methods 1, 2, 3 and 4, 40CFR60, Appendix A. Benzene emission rates were measured at the 85 foot level of the stack with EPA Method M-0300 using the volatile organic sampling train (VOST). Sulfur dioxide samples were also collected in the EPA Method 6 sampling train (40CFR60, Appendix A). Particulate matter was determined from the probe and filter of the Multi-Metals sampling train as described in EPA SW846-0012.

5.0 SUMMARY OF RESULTS

The results of the TDF tests conducted during the period January 27, 1993, are summarized in Tables 1, 3 and 13-14. During the TDF tests:

a. The particulate matter emission rate from the stack common to both kilns averaged 39.32 pounds per hour (Table 3). The allowable emission rate from the two kilns combined is 66 pounds per hour.

b. Kiln No. 1 was fired with low-sulfur coal at a rate of 5.56 tons per hour (141.4 MMBTU/hr) and whole TDF at a rate of 1.84 tons per hour (60.3 MMBTU/hr). The total heat input rate to Kiln No. 1 averaged 201.7 MMBTU per hour (Table 1). Kiln No. 2 was fired with low sulfur coal only at a rate of 7.59 tons per hour providing 100 percent of the total heat input to the kiln of 193.1 MMBTU per hour.

   The feed rate to Kiln No. 1 averaged 55.6 tons per hour and the clinker production rate averaged 33.9 tons per hour. The feed rate to Kiln No. 2 averaged 55.4 tons per hour and the clinker production rate averaged 33.9 tons per hour.

c. The nitrogen oxides emission rate averaged 926 pounds per hour (Table 5) as measured by EPA Method 7E.

d. The carbon monoxide emission rate averaged 235 pounds per hour (Table 6) as measured by EPA Method 10.

e. The total hydrocarbon emission rate 14.1 pounds per hour as propane. The emission rate of benzene averaged 0.0698 pound per hour (Table 4).

f. The sulfur dioxide emission rate averaged 326 pounds per hour as measured by EPA Method 6 and 249 pounds per hour as measured by EPA Method 6C. A summary of these data is presented in Tables 7A and 7B, respectively.

g. Stack gas flow, temperature, moisture, oxygen and CO_2 contents are summarized in Table 9. The gas flow rate averaged 130,376 dscfm at 395°F and 32.1 percent moisture. The oxygen concentration averaged 7.4 percent and the carbon dioxide concentration averaged 17.21 percent.

h. The analyses of coal and the TDF burned in each kiln are summarized in Table 14. Analyses of feed, clinker and precipitator dust are summarized in Table 13.

i. The emission rates of metals ranged from 0.33 pounds per hour for zinc to less than detectable for antimony, arsenic, beryllium, cadmium, selenium and silver (Table 8).

The results of the baseline tests conducted during the period January 29, 1993, are summarized in Tables 2, 4-7 and 10-14. During the baseline tests:

a. The particulate matter emission rate from the stack common to both kilns averaged 19.37 pounds per hour (Table 10).

b. Kiln No. 1 was fired with low-sulfur coal at a rate of 6.55 tons per hour (177.9 MMBTU/hr). Kiln No. 2 was fired with low-sulfur coal at a rate of 6.43 tons per hour (174.5 MMBTU/hr) (Table 2).

The feed rate to the Kiln No. 1 averaged 58.8 tons per hour and the clinker production rate averaged 35.8 tons per hour. The feed rate to Kiln No. 2 averaged 58.4 tons per hour and the clinker production rate averaged 35.6 tons per hour.

c. The nitrogen oxides emission rate averaged 1182 pounds per hour (Table 5) as measured by EPA Method 7E.

d. The carbon monoxide emission rate averaged 426 pounds per hour (Table 6) as measured by EPA Method 10.

e. The total hydrocarbon emission rate averaged 11.5 pounds per hour as propane measured by EPA Method 25A. Emission rates of benzene averaged 0.0196 pound per hour (Table 4).

f. The sulfur dioxide emission rate averaged 380 pounds per hour as measured by EPA Method 6 and 320 pounds per hour as measured by EPA Method 6C. A summary of these data is presented in Table 7A and 7B, respectively.

g. Stack gas flow, temperature, moisture, oxygen and CO_2 contents are summarized in Table 12. The gas flow rate averaged 120,109 dscfm at 274°F and 31.9 percent moisture. The oxygen concentration averaged 6.38 percent and the carbon dioxide concentration averaged 20.31 percent.

h. The analyses of coal burned in each kiln are summarized in Table 14. Analyses of feed, clinker and precipitation dust are summarized in Table 15.

i. The emission rates of metals ranged from 0.74 pounds per hour for zinc to less than detectable for antimony, arsenic, beryllium, cadmium, selenium and silver (Table 11).

TABLE 1

PLANT OPERATING PARAMETERS

TDF TEST CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 27, 1993

	Run 1	Run 2	Run 3
Kiln No. 1			
Process weight, TPH	56.2	55.2	55.4
Coal rate, TPH	5.60	5.52	5.55
Coal heat input, MMBTU/hr	144.28	143.25	142.99
Tire feed rate, TPH	1.85	1.83	1.84
Tire heat input, MMBTU/hr	60.60	60.01	60.34
Total heat Input, MMBTU/hr	204.88	203.26	203.33
Clinker rate, TPH	34.3	33.7	33.8
Feed end temperature	415	425	425
Feed end oxygen	2.4	2.5	3.1
Kiln No. 2			
Process weight, TPH	55.5	55.7	55.1
Coal rate, TPH	7.59	7.45	7.72
Coal heat input, MMBTU/hr	190.83	187.31	194.10
Clinker rate, TPH	34.0	34.1	33.7
Feed end temperature	390	396	388
Feed end oxygen	2.3	2.1	1.8

TABLE 2

PLANT OPERATING PARAMETERS

BASELINE TEST CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 29, 1993

	Run 1	Run 2	Run 3
Kiln No. 1			
Process weight, TPH	59.2	58.2	58.9
Coal rate, TPH	6.55	6.57	6.53
Coal heat input, MMBTU/hr	177.41	177.96	176.87
Clinker rate, TPH	36.1	35.5	35.9
Feed end temperature	270	272	280
Feed end oxygen	0.4	0.3	0.4
Kiln No. 2			
Process weight, TPH	59.1	58.2	57.9
Coal rate, TPH	6.47	6.41	6.40
Coal heat input, MMBTU/hr	176.20	174.57	174.30
Clinker rate, TPH	36.0	35.5	35.3
Feed end temperature	385	373	375
Feed end oxygen	2.5	2.6	2.6

Table 3

SUMMARY OF SOURCE EMISSION TEST DATA

Rinker Material Corporation
Cement Kiln - TDF
January 27, 1993

Run No.	Process Weight Rate (Tons/Hr)	Stack Flow Rate (SCFMD)	Stack Gas Temp. (Deg F)	Stack Gas Moisture (%)	Particulate Matter Conc. (gr/dscf)	Particulate Matter Conc. at 7% O2 (gr/dscf)	Particulate Matter Emission Rate (Lbs/Hr)
1	(1)	124926	340.2	31.7	0.0378	0.0408	40.50
2	(1)	134250	332.1	31.7	0.0339	0.0351	38.96
3	(1)	131954	314.8	32.1	0.0341	0.0367	38.51
Avg.	(1)	130377	329.0	31.8	0.0352	0.0375	39.32

(1) See Table 1

TABLE 4

SUMMARY OF TOTAL HYDROCARBON EMISSION MEASUREMENTS
BASELINE AND TDF TEST CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 27-29, 1993

METHOD 25A

	Total Hydrocarbon Emissions (1)			
	Baseline		TDF	
Run	PPM	lbs/hr	PPM	lbs/hr
1	13.9	11.3	11.9	10.2
2	14.5	12.2	15.6	14.4
3	13.5	11.0	19.7	17.8
Avg		11.5		14.1

(1) as propane

TABLE 5

SUMMARY OF NITROGEN OXIDES EMISSION MEASUREMENTS
BASELINE AND TDF TEST CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 27-29, 1993

METHOD 7E

	Nitrogen Oxides Emissions (1)			
	Baseline		TDF	
Run	PPM	lbs/hr	PPM	lbs/hr
1	1042	883	1153	1033
2	1401	1233	949	913
3	1672	1431	880	832
Avg		1182		926

(1) as NO_2

TABLE 6

SUMMARY OF CARBON MONOXIDE EMISSION MEASUREMENTS
BASELINE AND TDF TEST CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 27-29, 1993

METHOD 10

Run	Carbon Monoxide Emissions			
	Baseline		TDF	
	PPM	lbs/hr	PPM	lbs/hr
1	889	464	364	198
2	811	435	421	247
3	727	379	450	259
Avg		426		235

TABLE 7A

SUMMARY OF SULFUR DIOXIDE EMISSION MEASUREMENTS
BASELINE AND TDF TEST CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 27-29, 1993

METHOD 6

Run	Sulfur Dioxide Emissions			
	Baseline		TDF	
	PPM at Stack Conditions	lbs/hr	PPM at Stack Conditions	lbs/hr
1	324.36	378.21	215.32	248.64
2	301.86	395.74	212.25	276.66
3	286.55	365.18	345.98	452.43
Avg	304.26	379.71	257.85	325.91

TABLE 7B

SUMMARY OF SULFUR DIOXIDE EMISSION MEASUREMENTS
BASELINE AND TDF TEST CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 27-29, 1993

METHOD 6C

	Sulfur Dioxide Emissions			
	Baseline		TDF	
Run	PPM	lbs/hr	PPM	lbs/hr
1	243	286	148.7	186
2	279	342	137.1	183
3	280	333	287.3	378
Avg		320		249

TABLE 8

SUMMARY OF METALS EMISSION MEASUREMENTS
TDF CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 27, 1993

Metal	Metals Emissions						
	Run 1		Run 2		Run 3		Average
	Sample Mass (μg)	Emission Rate (lbs/hr)	Sample Mass (μg)	Emission Rate (lbs/hr)	Sample Mass (μg)	Emission Rate (lbs/hr)	Emission Rate (lbs/hr)
Antimony	<13	<0.0043	<13	<0.0046	<13	<0.0041	<0.00433
Arsenic	<3	<0.0010	<3	<0.0011	<3	<0.0009	<0.00100
Beryllium	<3	<0.0010	<3	<0.0011	<3	<0.0009	<0.00100
Cadmium	<9	<0.0030	<9	<0.0032	<9	<0.0028	<0.00300
Chromium	25	0.0084	30	0.0106	17	0.0053	0.00809
Copper	24	0.0080	21	0.0074	12	0.0038	0.00639
Lead	91	0.0304	76	0.0268	96	0.0301	0.02911
Mercury	34.1	0.0114	38.6	0.0136	23.2	0.0073	0.01076
Nickel	14	0.0047	12	0.0042	6	0.0019	0.00359
Selenium	<200	<0.0668	<200	<0.0706	<200	<0.0627	<0.06672
Silver	<4	<0.0013	<4	<0.0014	<4	<0.0013	<0.00133
Zinc	160	0.0535	1380	0.4871	1430	0.4485	0.32969

TABLE 9

SUMMARY OF STACK GAS CHARACTERISTICS
TDF CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 27, 1993

Run No.	Stack Gas Flow Rate (dscfm)	Stack Gas Temp. (^{o}F)	Stack Gas Moisture (%)	Meter Volume (dscf)	Stack Gas O_2 Conc (%)	Stack Gas CO_2 Conc (%)
1	124,926	340.2	31.7	49.440	8.0	15.6
2	134,250	332.1	31.7	50.310	7.5	17.5
3	131,954	314.8	32.1	55.649	6.8	18.5
Avg	130,376	329.0	32.1	51.800	7.4	17.2

Table 10

SUMMARY OF SOURCE EMISSION TEST DATA

Rinker Material Corporation
Cement Kiln - BASELINE
January 29, 1993

Run No.	Process Weight Rate (Tons/Hr)	Stack Flow Rate (SCFMD)	Stack Gas Temp. (Deg F)	Stack Gas Moisture (%)	Particulate Matter Conc. (gr/dscf)	Particulate Matter Conc. at 7% O2 (gr/dscf)	Particulate Matter Emission Rate (Lbs/Hr)
1	(1)	118174	271.9	32.1	0.0193	0.0195	19.54
2	(1)	122790	272.6	31.4	0.0184	0.0172	19.41
3	(1)	119363	278.5	32.2	0.0187	0.0175	19.16
Avg.	(1)	120109	274.3	31.9	0.0188	0.0181	19.37

(1) See Table 2

TABLE 11

SUMMARY OF METALS EMISSION MEASUREMENTS
BASELINE CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 29, 1993

Metal	Metals Emissions						
	Run 1		Run 2		Run 3		Average
	Sample Mass (μg)	Emission Rate (lbs/hr)	Sample Mass (μg)	Emission Rate (lbs/hr)	Sample Mass (μg)	Emission Rate (lbs/hr)	Emission Rate (lbs/hr)
Antimony	<13	<0.0056	<13	<0.0053	<13	<0.0052	<0.00540
Arsenic	<3	<0.0013	<3	<0.0012	<3	<0.0012	<0.00124
Beryllium	<3	<0.0013	<3	<0.0012	<3	<0.0012	<0.00124
Cadmium	<9	<0.0039	<9	<0.0037	<9	<0.0036	<0.00374
Chromium	8	0.0035	33	0.0136	40	0.0161	0.01105
Copper	2	0.0009	2	0.0008	7	0.0028	0.00150
Lead	36	0.0156	43	0.0177	45	0.0181	0.01714
Mercury	39.6	0.0172	13.5	0.0056	11.6	0.0047	0.00914
Nickel	2	0.0009	7	0.0029	10	0.0040	0.00259
Selenium	<200	<0.0869	<200	<0.0823	<200	<0.0805	<0.08322
Silver	<4	<0.0017	<4	<0.0016	<4	<0.0016	<0.00166
Zinc	2050	0.8902	1460	0.6006	1780	0.7168	0.73587

TABLE 12

SUMMARY OF STACK GAS CHARACTERISTICS
BASELINE CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 29, 1993

Run No.	Stack Gas Flow Rate (dscfm)	Stack Gas Temp. (^{o}F)	Stack Gas Moisture (%)	Meter Volume (dscf)	Stack Gas O_2 Conc (%)	Stack Gas CO_2 Conc (%)
1	118,174	271.9	32.1	35.995	7.13	19.92
2	122,790	272.6	31.4	39.482	6.00	20.50
3	119,363	278.5	32.2	39.210	6.00	20.50
Avg	120,109	274.3	31.9	38.229	6.38	20.31

TABLE 13

RAW MATERIAL AND PRODUCT ANALYSIS

TDF TEST CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 27, 1993

Metal	UNIT	PRODUCT CLINKER	RAW MEAL SLURRY	KILN 1 COAL	KILN 2 COAL	TDF FUEL	KILN 1 ESP DUST	KILN 2 ESP DUST
Antimony	(ug/g)	<40	<40	******	******	******	<40	<40
Arsenic	(ug/g)	8	<4	17	17	<1	<4	4
Barium	(ug/g)	89.0	49.0	******	******	******	8.0	89.0
Beryllium	(ug/g)	<2	<2	******	******	******	<2	<2
Cadmium	(ug/g)	6.0	5.0	******	******	******	5.0	10.0
Copper	(ug/g)	52.0	26.0	******	******	******	36.0	42.0
Chromium	(ug/g)	54.0	19.0	69.0	69.0	73.0	27.0	27.0
Lead	(ug/g)	70.0	32.0	65.0	65.0	29.0	88.0	255.0
Manganese	(ug/g)	837.0	170.0	******	******	******	177.0	170.0
Mercury	(ug/g)	<0.02	0.08	0.12	0.14	0.07	0.03	0.07
Nickel	(ug/g)	50.0	31.0	******	******	******	38.0	38.0
Selenium	(ug/g)	<4	<4	******	******	******	5	15
Sodium	(ug/g)	742	594	******	******	******	445	890
Potassium	(ug/g)	2656	2076	******	******	******	7306	27812
Chlorine	(% Wt)	0.08	0.02	******	******	******	0.11	0.67
Sulfur trioxide	(% Wt)	0.32	0.02	******	******	******	3.32	6.40

TABLE 14

FUEL ULTIMATE ANALYSIS

BASELINE AND TDF TEST CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 27-29, 1993

Parameter	UNIT	Baseline KILN 1 COAL	Baseline KILN 2 COAL	TDF KILN 1 COAL	TDF KILN 2 COAL	TIRE COMPOSITE
Moisture	(%)	1.11	0.98	1.64	1.79	1.09
Carbon	(%)	74.74	75.03	71.39	70.29	82.16
Hydrogen	(%)	5.21	5.11	4.68	4.64	7.65
Nitrogen	(%)	1.42	1.46	1.38	1.38	0.53
Sulfur	(%)	1.33	1.32	1.36	1.41	1.56
Ash	(%)	9.54	9.55	12.11	13.18	3.06
Oxygen	(%)	6.65	6.55	7.44	7.31	3.95
Heating Value	(Btu/lb)	13543	13617	12882	12571	16379

TABLE 15

RAW MATERIAL AND PRODUCT ANALYSIS

BASELINE TEST CONDITIONS

RINKER MATERIALS CORPORATION
MIAMI, FLORIDA

JANUARY 29, 1993

Metal	UNIT	PRODUCT CLINKER	RAW MEAL SLURRY	KILN 1 COAL	KILN 2 COAL	KILN 1 ESP DUST	KILN 2 ESP DUST
Antimony	(ug/g)	<40	<40	******	******	<40	<40
Arsenic	(ug/g)	4	<4	10	11	6	<4
Barium	(ug/g)	89.0	8.0	******	******	28.0	89.0
Beryllium	(ug/g)	<2	<2	******	******	<2	<2
Cadmium	(ug/g)	6.0	5.0	******	******	12.0	9.0
Copper	(ug/g)	58.0	26.0	******	******	39.0	45.0
Chromium	(ug/g)	46.0	19.0	88.0	85.0	19.0	19.0
Lead	(ug/g)	70.0	51.0	65.0	84.0	330.0	274.0
Manganese	(ug/g)	289.0	167.0	******	******	160.0	170.0
Mercury	(ug/g)	<0.02	<0.02	0.09	0.09	0.20	0.09
Nickel	(ug/g)	50.0	38.0	******	******	31.0	44.0
Selenium	(ug/g)	<4	4	******	******	13	18
Sodium	(ug/g)	890	594	******	******	890	964
Potassium	(ug/g)	3321	2076	******	******	27397	32212
Chlorine	(% Wt)	0.01	0.03	******	******	0.93	0.94
Sulfur trioxide	(% Wt)	0.50	0.81	******	******	3.72	6.08

ATTACHMENT 4

TANKS 3.0 MODEL OUTPUT

nnual Emissions Report
LL Vertical Fixed Roof

Components	Emissions (lbs.)
Distillate fuel oil no. 2	190.42
Total:	190.42

TANK IDENTIFICATION AND PHYSICAL CHARACTERISTICS

dentification
- Identification No.: ALL
- City: Miami
- State: FL
- Company: RINKER
- Type of Tank: Vertical Fixed Roof
- Description: ALL TANKS

ank Dimensions
- Shell Height (ft): 64.0
- Diameter (ft): 60.0
- Liquid Height (ft): 64.0
- Avg. Liquid Height (ft): 64.0
- Volume (gallons): 1353784
- Turnovers: 4.0
- Net Throughput (gal/yr): 5415136

aint Characteristics
- Shell Color/Shade: White/White
- Shell Condition: Good
- Roof Color/Shade: White/White
- Roof Condition: Good

oof Characteristics
- Type: Cone
- Height (ft): 0.00
- Radius (ft) (Dome Roof): 0.00
- Slope (ft/ft) (Cone Roof): 0.0000

reather Vent Settings
- Vacuum Setting (psig): 0.00
- Pressure Setting (psig): 0.00

eteorological Data Used in Emission Calculations: Miami, Florida (Avg Atmospheric Pressure = 14.7 psia)

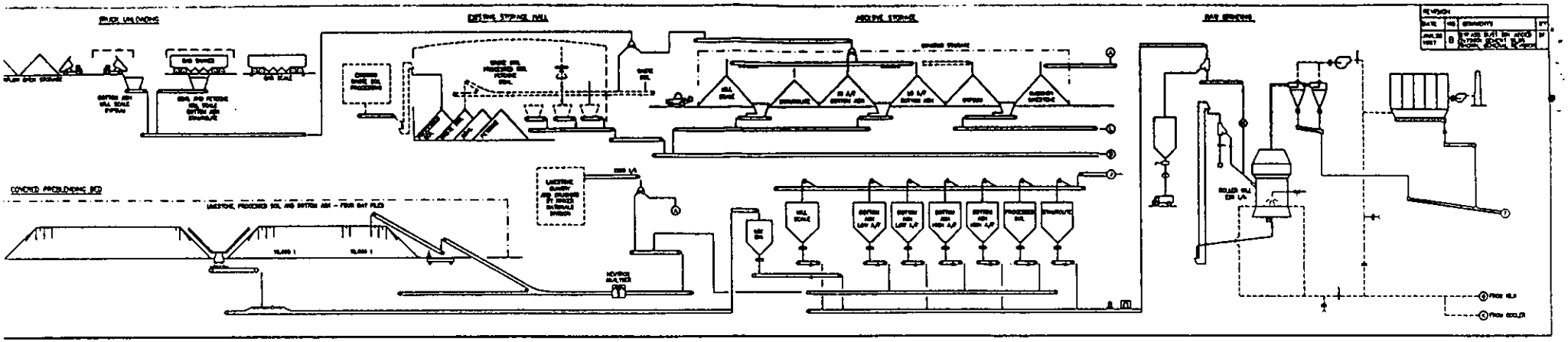
Mixture/Component	Month	Daily Liquid Surf. Temperatures (deg F) Avg.	Min.	Max.	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia) Avg.	Min.	Max.	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Distillate fuel oil no. 2	All	77.59	73.34	81.84	75.62	0.0114	0.0100	0.0129	130.000			130.00	Option 3: A=12.1010, B=8907.0

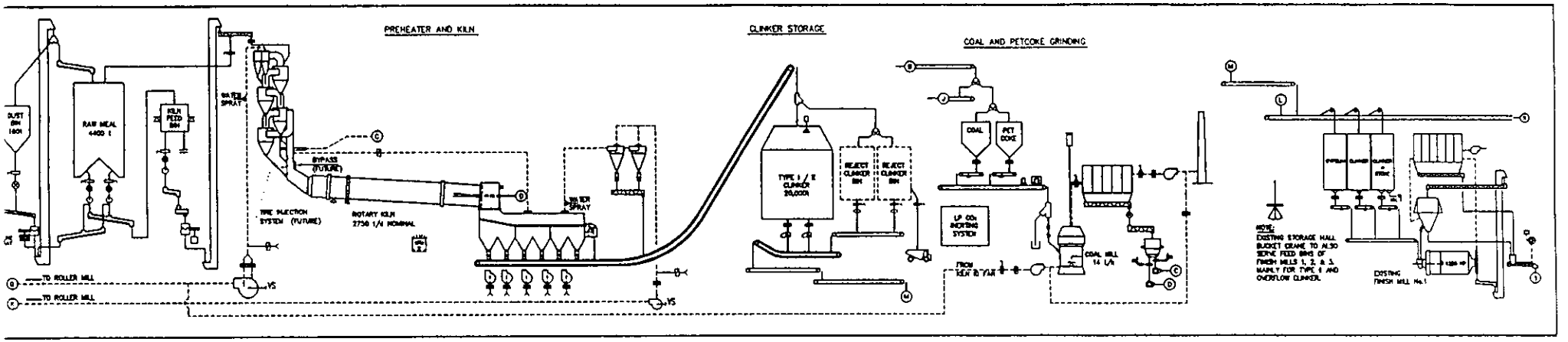
Annual Emissions Report

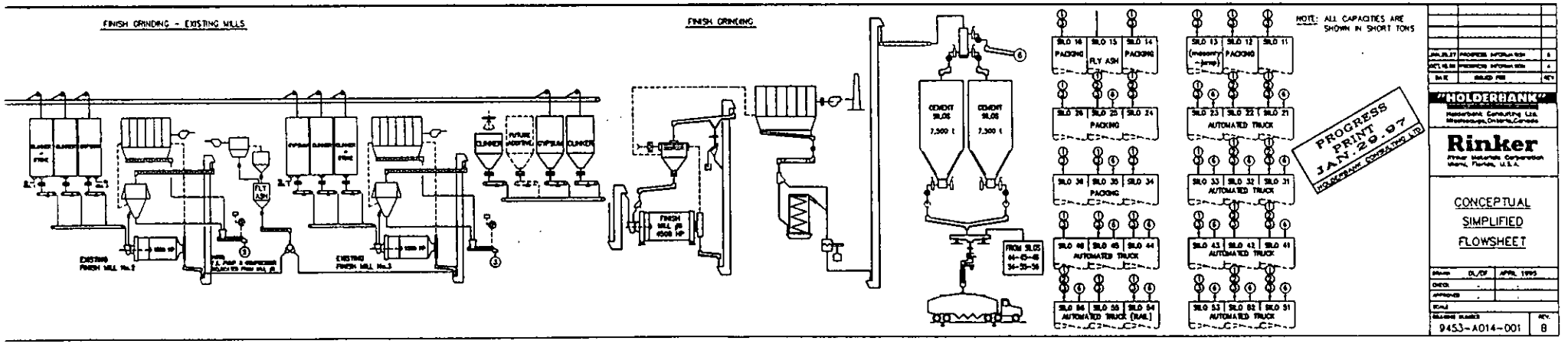
Liquid Contents	Losses (lbs.): Standing	Working	Total
Distillate fuel oil no. 2	0.00	190.42	190.42
Total:	0.00	190.42	190.42

ATTACHMENT 5

PROCESS FLOW DIAGRAM







HOLDERBANK
Holderbank Consulting Ltd.
Montmagny, Ontario, Canada

Rinker
Rinker Materials Corporation
Miami, Florida, U.S.A.

CONCEPTUAL SIMPLIFIED FLOWSHEET

DRAWN	DL/DF	APRIL 1995
CHECK		
APPROVED		
SCALE		
DRAWING NUMBER	9453-A014-001	REV. 8

ATTACHMENT 6

TYPICAL FUEL SPECIFICATIONS

TYPICAL FUEL SPECS

e	No. 1 Fuel Oil	No. 2 Fuel Oil	No. 4 Fuel Oil	No. 5 Fuel Oil	No. 6 Fuel Oil
	Distillate (Kerosene)	Distillate	Very Light Residual	Light Residual	Residual
r	Light	Amber	Black	Black	Black
gravity, 60 F	40	32	21	17	13
ific gravity, 60/60 F	0.8251	0.8654	0.9279	0.9529	0.9861
or U.S. gallon, 60 F	6.870	7.206	7.727	7 935	8.212
os., Centistokes, 100 F	1.6	2.68	15.0	50.0	360.0
os., Saybolt Univ., 100 F	31	35	77	232	—
os., Saybolt Furol, 122 F	—	—	—	—	170
r point, F	Below zero	Below zero	10	30	65
ıp. for pumping, F	Atmospheric	Atmospheric	15 min.	35 min.	100
ıp, for atomizing, F	Atmospheric	Atmospheric	25 min.	130	200
bon residue, per cent	Trace	Trace	2.5	5.0	12.0
fur, per cent	0.1	0.4–0.7	0.4–1.5	2.0 max.	2.8 max.
ygen and nitrogen, per cent	0.2	0.2	0.48	0.70	0.92
drogen, per cent	13.2	12.7	11.9	11.7	10.5
rbon, per cent	86.5	86.4	86.10	85.55	85.70
diment and water, per cent	Trace	Trace	0.5 max.	1.0 max.	2.0 max.
h, per cent	Trace	Trace	0.02	0.05	0.08
per gallon	137,000	141,000	146,000	148,000	150,000

Technical information from Humble Oil & Refining Company.

EPA 450/2-80-063

TYPICAL PARAMETERS OF VARIOUS FUELS[a]

Type of Fuel	Heating Value		Sulfur	Ash
	kcal	BTU	% (by weight)	% (by weight)
Solid Fuels				
Bituminous Coal	7,200/kg	13,000/lb	0.6-5.4	4-20
Anthracite Coal	6,810/kg	12,300/lb	0.5-1.0	7.0-16.0
Lignite (@ 35% moisture)	3,990/kg	7,200/lb	0.7	6.2
Wood (@ 40% moisture)	2,880/kg	5,200/lb	N	1-3
Bagasse (@ 50% moisture)	2,220/kg	4,000/lb	N	1-2
Bark (@ 50% moisture)	2,492/kg	4,500/lb	N	1-3[b]
Coke, Byproduct	7,380/kg	13,300/lb	0.5-1.0	0.5-5.0
Liquid Fuels				
Residual Oil	$9.98 \times 10^6/m^3$	150,000/gal	0.5-4.0	0.05-0.1
Distillate Oil	$9.30 \times 10^6/m^3$	140,000/gal	0.2-1.0	N
~~Diesel~~	~~$9.12 \times 10^6/m^3$~~	~~137,000/gal~~	~~0.4~~	N
Gasoline	$8.62 \times 10^6/m^3$	130,000/gal	0.03-0.04	N
Kerosene	$8.32 \times 10^6/m^3$	135,000/gal	0.02-0.05	N
Liquid Petroleum Gas	$6.25 \times 10^6/m^3$	94,000/gal	N	N
Gaseous Fuels				
Natural Gas	$9,341/nm^3$	1,050/SCF	N	N
Coke Oven Gas	$5,249/nm^3$	590/SCF	0.5-2.0	N
Blast Furnace Gas	$890/nm^3$	100/SCF	N	N

[a]N = negligible.
[b]Ash content may be considerably higher when sand, dirt, etc. are present.

INCOMING COAL ORDERS

FROM: UNITED COAL

SHIPPED: FEBRUARY 15 1995

NUMBER ON RAIL CAR:

365330	///
806292	///
347749	///
803056	///
350111	///
365287	///
348502	///
813377	///
804238	//
350894	//

SEIVE ANALYSIS:

+3" =	
+2" =	
+1" =	
+3/4" =	
+1/2" =	
+1/4" =	
+1/8" =	
−1/2" =	
TOTAL=	

	SHIPPED ANALYSIS	RINKERS ANALYSIS
PERCENT H2O AS RECD.		4.70
BTU/LB. AS RECD.		12436
PERCENT SULFUR AS RECD.		1.69
PERCENT ASH AS RECD.		6.9

RINKER PORTLAND CEMENT

ORDER ✓

SHIP DATE: 2/21/94

SHIPPER SOUTH AMERICAN COAL

CAR INITIALS AND NUMBER.

1.		13.	
2.	5 BAGS —	14.	FROM PORT.
3.		15.	
4.		16.	
5.		17.	
6.		18.	
7.		19.	
8.		20.	
9.		21.	
10.		22.	
11.		23.	
12.		24.	

	SHIPPER ANALYSIS	OUR ANALYSIS
PERCENT H2O AS RECEIVED		3.87
BTU/LB AS RECEIVED		12494
PER CENT S AS RECD.		0.81
PER CENT ASH. AS RECD.		5.07

+ 3"	—
+ 2"	—
+ 1"	12.82
+ 3/4"	8.12
+ 1/2"	18.06
+ 1/4"	15.27
+ 1/8"	25.36
- 1/8	20.37
TOTAL	100

SIGNED

GEOCHEMICAL TESTING
a division of Energy Center, Inc.

RD2, Box 124
Somerset, PA 15501

814/443-1671
814/445-6666
FAX: 814/445-6729

COAL ANALYSIS REPORT

Client: RINKER MATERIALS CORP

Sampled by: MM

Sampling Date: 02/08/96 TO 02/08/96

Analyzed on: 04/13/96

Description: Pet Coke #1

LAB NO. 96-060256

		As Received	Dry	Dry Ash-Free
Total Moisture	D2961	5.66		
Ash	D3174	3.04	3.22	
Sulfur	D4239	3.81	4.04	
BTU/LB	D1989	14292	15149	15654

Free Swelling Index D720 1.0

Lbs Sulfur/Million Btu 2.67

Forrest E. Walker
Director of Technical Services

MEMBER ACIL

Materials Analysis Report

RINKER MATERIALS SUBSTITUTION

REPORT DATE	4/18/96
SAMPLE DATE	4/12/96
SAMPLE SOURCE	CBI
REFERENCE	01657
R.E.S. ID NUMBER	1424
SAMPLE TYPE	WASTE OIL

PARAMETER	RESULT	UNITS	METHOD	D. LIMITS
Flashpoint	75	Deg. F	1010	75
Arsenic	BDL	mg/l	206.3	1
Barium	BDL	mg/l	208.2	0.1
Cadmium	BDL	mg/l	213.2	0.1
Chromium	BDL	mg/l	218.2	0.1
Mercury	BDL	mg/l	245.1	0.01
Lead	BDL	mg/l	239.2	0.1
Selenium	BDL	mg/l	270.3	0.5
Silver	BDL	mg/l	272.2	0.1
Total Halides	510	mg/l		
% Total Water	<5			
Btu's/Lbs	18336	Btu's/Lbs		
% Water (free)	<0.1	%		
Chlor D Tect	Neg.	Pos/Neg		
Density	7.676	lbs/gal		
%Solids	<1	%		
Viscosity #2	26	sec		
601's	Neg.	mg/kg	(see attached)	
API @ 60*F	22			

ATTACHMENT 7

BAGHOUSE TABLE and APPLICATION PAGES

ATTACHMENT 7

			PROPOSED BAGHOUSES						
				Emission	Exit	Emissions Estimates			
Item	E.U.	Operation	ID	Basis	Flow Rate	PM		PM10	
					(acfm)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
1	1	Soil Bin	DC	0.01 gr/cf	10000	0.86	3.75	0.73	3.19
2	1	Transfer	DC	0.01 gr/cf	7000	0.60	2.63	0.51	2.23
3	1	Add Bin	DC	0.01 gr/cf	20000	1.71	7.51	1.46	6.38
4	1	Raw Meal Silo	DC	0.01 gr/cf	12800	1.10	4.81	0.93	4.08
5	1	Raw Meal Silo	DC	0.01 gr/cf	16000	1.37	6.01	1.17	5.11
6	2	Main Kiln/Cooler/Raw Mill	BH	0.2 lb/ton	255000	44.00	192.72	37.40	163.81
7	1	Meal Transfer	DC	0.01 gr/cf	16000	1.37	6.01	1.17	5.11
8	3	Clinker Storage Silo	DC	0.01 gr/cf	4600	0.39	1.73	0.34	1.47
9	3	Clinker Pan Conveyer	DC	0.01 gr/cf	4600	0.39	1.73	0.34	1.47
10	3	Clinker Retrofit Silo	DC	0.01 gr/cf	4600	0.39	1.73	0.34	1.47
11	3	Clinker Discharge Transfer	DC	0.01 gr/cf	5700	0.49	2.14	0.42	1.82
12	3	Clinker Discharge Transfer	DC	0.01 gr/cf	5700	0.49	2.14	0.42	1.82
13	3	Feed Bin	DC	0.01 gr/cf	4600	0.39	1.73	0.34	1.47
14	3	Additional Transfer	DC	0.01 gr/cf	5700	0.49	2.14	0.42	1.82
15	3	Gypsum Bin Transfer	DC	0.01 gr/cf	5700	0.49	2.14	0.42	1.82
16	3	Flyash Bin	DC	0.01 gr/cf	7000	0.60	2.63	0.51	2.23
17	3	Clinker Mill (Pulse Type)	DC	0.01 gr/cf	27000	2.31	10.14	1.97	8.62
18	3	Separator (Pulse Type)	DC	0.01 gr/cf	72000	6.17	27.03	5.25	22.98
19	3	Mill Return Conveyer	DC	0.01 gr/cf	5700	0.49	2.14	0.42	1.82
20	3	Silo Feed Conveyer	DC	0.01 gr/cf	5700	0.49	2.14	0.42	1.82
21	1	Waste Soil	DC	0.01 gr/cf	4500	0.39	1.69	0.33	1.44
22	1	Waste Soil/Coal Transfer	DC	0.01 gr/cf	7000	0.60	2.63	0.51	2.23
23	1	Rail Transfer--rail cars	DC	0.01 gr/cf	5700	0.49	2.14	0.42	1.82
24	1	PM Transfer--Coal	DC	0.01 gr/cf	5700	0.49	2.14	0.42	1.82
25	1	PM Transfer--Gypsum	DC	0.01 gr/cf	5700	0.49	2.14	0.42	1.82
26	1	PM Feed Mill Transfer	DC	0.01 gr/cf	5700	0.49	2.14	0.42	1.82
27	1	PM Feed Mill Transfer	DC	0.01 gr/cf	5700	0.49	2.14	0.42	1.82
28	1	Coal Transfer	DC	0.01 gr/cf	5700	0.49	2.14	0.42	1.82
29	1	Coke/Coal Transfer	DC	0.01 gr/cf	10000	0.86	3.75	0.73	3.19
30	1	Soil Transfer	DC	0.01 gr/cf	20000	1.71	7.51	1.46	6.38
31	4	Coal Mill	DC	0.01 gr/cf	21000	1.80	7.88	1.53	6.70
32	4	Fuel Bin	DC	0.01 gr/cf	5700	0.49	2.14	0.42	1.82
				TOTAL	597800	73.4	321.4	62.4	273.2

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters): **Fabric Filters -- Low Temperature (T<180°F)**

Soil Bin
Waste Soil Handling
Waste Soil/Coal Transfer
Soil Transfer
Additive Bin
Additive Transfer
Rail Transfer
Coal Transfer
Coal Transfer
Gypsum Transfer
Raw Mill Transfer
Raw Mill Transfer
Raw Meal Silo
Raw Meal Silo
Raw Meal Transfer
Coke/Coal Transfer

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

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Baghouses**	
2. Emission Point Type Code: [ ] 1 [ ] 2 [X] 3 [ ] 4	
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **Baghouses for:** **Soil Bin** **Waste Soil Handling** **Waste Soil/Coal Transfer** **Soil Transfer** **Additive Bin** **Additive Transfer** **Rail Transfer** **Coal Transfer** **Coal Transfer** **Gypsum Transfer** **Raw Mill Transfer** **Raw Mill Transfer** **Raw Meal Silo** **Raw Meal Silo** **Raw Meal Transfer** **Coke/Coal Transfer**	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **NA**	
5. Discharge Type Code: [ ] D [ ] F [ ] R [ ] V	[ ] H [ ] P [X] W
6. Stack Height: **NA**	feet
7. Exit Diameter: **NA**	feet
8. Exit Temperature:	77°F

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information: Pollutant 1 of 2

1. Pollutant Emitted: **PM**		
2. Total Percent Efficiency of Control:		**99%**
3. Potential Emissions:	**13.50** lb/hour	**59.1** tons/year
4. Synthetically Limited? [ ] Yes [X] No		
5. Range of Estimated Fugitive/Other Emissions: **Negligible due to material moisture** [ ] 1 [ ] 2 [ ] 3 _____ to _____ tons/year		
6. Emission Factor: **0.01 gr/acf** Reference: **Specified performance level**		
7. Emissions Method Code: [X] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5		
8. Calculation of Emissions (limit to 600 characters): **16 baghouses = 157,500 acfm** **157,500 acfm x 0.01 gr/acf ÷7000 grains/lb x 60 min/hr = 13.50 lb/hr** **@ 8760 hr/yr = 59.1 tpy**		
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):		

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **Raw Mill, Dry Process Cement Kiln with Preheater and Precalciner, and Clinker Cooler**		
2. Emissions Unit Identification Number: [X] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code: **C**	4. Acid Rain Unit? [ ] Yes [X] No	5. Emissions Unit Major Group SIC Code: **32**
6. Emissions Unit Comment (limit to 500 characters):		

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters): **Fabric Filter - High Temperature (T > 250°F)** **Kiln, Cooler and Raw Mill Baghouse**
2. Control Device or Method Code: **016**

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Kiln, Cooler and Raw Mill Baghouse Stack**	
2. Emission Point Type Code: [X] 1 [ ] 2 [ ] 3 [ ] 4	
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **NA**	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **NA**	
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [X] V [ ] W	
6. Stack Height:	**130** feet
7. Exit Diameter:	**8** feet

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information: Pollutant 1 of 5

1. Pollutant Emitted: **PM**		
2. Total Percent Efficiency of Control:		**99%**
3. Potential Emissions:	**44.00** lb/hour	**192.7** tons/year
4. Synthetically Limited? [ ] Yes [X] No		
5. Range of Estimated Fugitive/Other Emissions: **NA** [ ] 1 [ ] 2 [ ] 3	_____ to _____	tons/year
6. Emission Factor: **0.2 lb/ton dry feed** Reference: **Process Knowledge**		
7. Emissions Method Code: [X] 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5		
8. Calculation of Emissions (limit to 600 characters): **0.2 lb/ton x 220 tph of dry kiln feed = 44.00 lb/hr** **@ 8760 hrs/yr = 192.7 tons/yr**		
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):		

Emissions Unit Information Section 2 of 4 [Kiln, Cooler, Raw Mill]

Allowable Emissions (Pollutant identified on front of page)

A.

1. Basis for Allowable Emissions Code: **ESCPSD**		
2. Future Effective Date of Allowable Emissions: **NA**		
3. Requested Allowable Emissions and Units: **0.7 lb/MMBtu**		
4. Equivalent Allowable Emissions:	**305.90** lb/hour	**1339.8** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 6**		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters): **This limit is more stringent than that contained in the Dade County Code**		

B.

1. Basis for Allowable Emissions Code: **RULE** **Section 24-17(2)(a)(ii), Dade County Code**		
2. Future Effective Date of Allowable Emissions: **NA**		
3. Requested Allowable Emissions and Units:	**Solid Fuels 1.5 lb/MMBtu** **Liquid Fuels 1.1 lb/MMBtu**	
4. Equivalent Allowable Emissions: **Solid**	**655.50** lb/hour	**2871.1** tons/year
Liquid	**480.70** lb/hour	**2105.5** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Method 6**		
6. Pollutant Allowable Emissions Comment (Desc. of Related Operating Method/Mode) (limit to 200 characters):		

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **Clinker and Cement Handling and Storage**		
2. Emissions Unit Identification Number: [X] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code: **C**	4. Acid Rain Unit? [ ] Yes [X] No	5. Emissions Unit Major Group SIC Code: **32**
6. Emissions Unit Comment (limit to 500 characters): **This emissions unit is for the handling and storage of clinker after the clinker cooler, the new finish mill, the handling and storage of cement; and the handling and storage of gypsum, limestone, and mineral aggregates for use in the finish mills.**		

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters): **Fabric Filters - High Temperature (T > 250°F)** **Clinker Pan Conveyor** **Clinker Silo** **Clinker Retrofit Silo**	
2. Control Device or Method Code: **016**	

B.

1. Description (limit to 200 characters): **Fabric Filters - Medium Temperature ($180^{\circ}F < T < 250^{\circ}F$)** **Clinker Discharge Transfer** **Clinker Discharge Transfer** **Finish Mill Feed Bin** **Additional Transfer** **Finish Mill No. 6** **Finish Mill Air Separator** **Finish Mill Return Conveyor** **Silo Feed Conveyor**
2. Control Device or Method Code: **017**

C.

1. Description (limit to 200 characters): **Fabric Filters - Low Temperature ($T < 180^{\circ}F$)** **Gypsum Bin Transfer** **Flyash Bin**
2. Control Device or Method Code: **018**

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Clinker Cooler and Finish Mill Area**	
2. Emission Point Type Code: [ ] 1 [ ] 2 [X] 3 [ ] 4	
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **Baghouses for the following activities:** **Clinker Pan Conveyor** **Clinker Silo** **Clinker Retrofit Silo** **Clinker Discharge Transfer** **Clinker Discharge Transfer** **Finish Mill Feed Bin** **Additional Transfer** **Finish Mill No. 6** **Finish Mill Air Separator** **Finish Mill Return Conveyor** **Silo Feed Conveyor** **Gypsum Bin Transfer** **Flyash Bin**	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **NA**	
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [ ] V [X] W	
6. Stack Height: **NA**	feet
7. Exit Diameter: **NA**	feet

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information: Pollutant 1 of 2

1. Pollutant Emitted: **PM**		
2. Total Percent Efficiency of Control:		**99%**
3. Potential Emissions:	**13.59** lb/hour	**59.5** tons/year
4. Synthetically Limited? [ ] Yes [**X**] No		
5. Range of Estimated Fugitive/Other Emissions: **NA** [ ] 1 [ ] 2 [ ] 3	_____ to _____	tons/year
6. Emission Factor: **0.01 gr/acf** Reference: **Specification for Baghouses**		
7. Emissions Method Code: **[X]** 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5		
8. Calculation of Emissions (limit to 600 characters): **158,600 acfm for 13 baghouses x 0.01 gr/acf x 60 min/hr x 1.0 lb/7000 gr = 13.59 lbs/hr @ 8760 hrs/yr = 59.5 TPY**		
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):		

B. GENERAL EMISSIONS UNIT INFORMATION
(Regulated and Unregulated Emissions Units)

Emissions Unit Description and Status

1. Description of Emissions Unit Addressed in This Section (limit to 60 characters): **Coal/Coke Mill & Bin**		
2. Emissions Unit Identification Number: [X] No Corresponding ID [ ] Unknown		
3. Emissions Unit Status Code: **C**	4. Acid Rain Unit? [ ] Yes [X] No	5. Emissions Unit Major Group SIC Code: **32**
6. Emissions Unit Comment (limit to 500 characters): **This emissions unit is the Coal Mill for grinding and drying coal and petroleum coke before conveying to a storage bin.**		

Emissions Unit Control Equipment

A.

1. Description (limit to 200 characters): **Fabric Filters - Low Temperature (T < 180°F)** **Coal/Coke Mill** **Coal/Coke Bin**
2. Control Device or Method Code: **018**

E. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram: **Coal Mill**	
2. Emission Point Type Code: [ ] 1 [ ] 2 [X] 3 [ ] 4	
3. Descriptions of Emissions Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **Baghouses for:** **Coal/Coke Mill** **Coal/Coke Bin**	
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **NA**	
5. Discharge Type Code: [ ] D [ ] F [ ] H [ ] P [ ] R [X] V [ ] W	
6. Stack Height:	**160** feet
7. Exit Diameter:	**3** feet
8. Exit Temperature:	**176°F**

H. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units Only - Emissions Limited Pollutants Only)

Pollutant Detail Information: Pollutant 1 of 2

1. Pollutant Emitted: **PM**		
2. Total Percent Efficiency of Control:		**99%**
3. Potential Emissions:	**2.29** lb/hour	**10.0** tons/year
4. Synthetically Limited? [ ] Yes [X] No		
5. Range of Estimated Fugitive/Other Emissions: **NA** [ ] 1 [ ] 2	[ ] 3	_____ to _____ tons/year
6. Emission Factor: **0.01 gr/acf** Reference: **Specification for Baghouses**		
7. Emissions Method Code: **[X]** 0 [ ] 1 [ ] 2 [ ] 3 [ ] 4 [ ] 5		
8. Calculation of Emissions (limit to 600 characters): **21,000 acfm for coal mill baghouse x 0.01 gr/acf x 60 min/hr x 1.0 lb/7000 gr = 1.80 lbs/hr @ 8760 hrs/yr = 7.9 TPY** **5700 acfm for coal bin baghouse x 0.01 gr/acf x 60 min/hr x 1.0 lb/7000 gr = 0.49 lbs/hr @ 8760 hrs/yr = 2.1 TPY** **TOTAL = 0.49 + 1.80 = 2.29 lb/hr @ 8760 hr/yr = 10.0 TPY**		
9. Pollutant Potential/Estimated Emissions Comment (limit to 200 characters):		