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May 3, 2000

0037504

Florida Department of Environmental Protection
New Source Review Section
2600 Blair Stone Road
Tallahassee, FL

Attention : Jeffery Koerner, P.E.

RE: UNITED STATES SUGAR CORPORATION (U.S. SUGAR) – PSD PERMIT APPLICATION FOR BOILER NO. 4 AND THE SUGAR REFINERY AT THE CLEWISTON MILL
REVISED ISC-PRIME MODELING SCENARIO
REQUEST FOR ADDITIONAL INFORMATION NO. 1

Dear Mr. Koerner:

United States Sugar Corporation (U.S. Sugar) has received the Department's letter dated February 4, 1999 (should read February 4, 2000), requesting additional information in regards to the revised ISC-PRIME modeling scenario. The results of the revised modeling scenario were submitted to the Department in a letter from Golder Associates Inc. dated December 17, 1999. The purpose of this letter is to address the questions in the Department's letter, as well as comments from the U.S. EPA in their February 4, 2000, letter. The comments are addressed below, in the same order as they appear in the comment letters. Note that U.S. Sugar has performed dispersion modeling for all pollutants for an "off-season" operating scenario, as described below. Note that a complete set of Section 6.0 tables (from the PSD report) are attached, revised to be consistent with the current modeling.

FDEP No. 1 and EPA No. 1

Boilers No. 1, 2 and 3 are operating today and have not changed short-term (24 hours or less) operation or emissions since the baseline year (1974). The only changes to these boilers are increases in the stack heights for each of the three boilers, and operation beyond the normal sugar cane processing season.

For SO_2, emission rates have not changed since the baseline period. The boilers burned fuel oil up to their maximum capacity at times during the baseline period, with the same fuel oil sulfur content as now allowed. Therefore, these sources were modeled with the same emission rates in the baseline and in the future operating scenario. To do otherwise would inappropriately show increment consumption from these sources.

For PM emissions, the baseline emission rates are different than (i.e., lower than) the future emission rates, based on previous modeling analysis performed for the Clewiston Mill.

Boiler Nos. 1, 2 and 3 are currently not restricted on annual operating hours, and are not restricted to operating only during the crop season. Due to recent startup of the sugar refinery, these boilers may now operate during the sugar cane processing off-season. As a result, these boilers were re-modeled as operating year around in the future for all pollutants, and for 5 months only during the baseline. Thus, during the off-season, these boilers are totally increment consuming.

FDEP No. 2 and EPA No. 2

The stack locations as presented in Table 10 of the December 17, 1999 submittal are incorrect. The Section 6.0 table, which is correct, is attached, along with all Section 6.0 tables.

FDEP No. 3 and EPA No. 4

The stack exit temperatures, velocities and diameters for Boiler Nos. 1, 2 and 3 do not change as a result of raising the stack heights from 165 feet to 182 feet.

FDEP No. 4 and EPA No. 5

Refined SO_2 modeling has been performed and results are attached in the Section 6.0 tables.

FDEP No. 5

No response necessary.

EPA No. 3

No response necessary; however, the revised modeling utilizes the 8-hour CO emissions for the 8-hour modeling.

Revised Air Quality Impact Assessment

Based upon the above model related comments, Golder Associates has performed additional modeling analysis in order to bring the project impacts up to date. All model runs have been re-executed using the ISC-PRIME model. All modeling was performed with the final selected control option of raising the existing stacks on Boiler Nos. 1, 2 and 3 from the current 165 feet to a height of 182 feet. Note that a complete set of tables from Section 6.0 are being provided, including additional tables reflecting crop-season emissions and impacts.

Separate model runs were executed for crop season operation and off-season operation. The following forms the basis of the modeling analysis for the crop season operation.

Crop season operation:

- All boilers (Nos. 1, 2, 3, 4, and 7) operating at maximum capacity.
- Boiler Nos. 1, 2 and 3 are restricted to burning fuel oil with no greater than 2.5% sulfur.
- Boiler No. 4 is restricted to burning fuel oil with no greater than 0.7% sulfur (with a separate fuel oil tank).
- Boiler No. 7 is restricted to burning fuel oil with no greater than 0.05% sulfur (with a separate fuel oil tank).

- The worst case for SO_2 emissions occur with Boiler Nos. 1, 2, 3 and 4 burning the maximum amount of fuel oil, with the remainder of heat input due to bagasse burning. The worst case SO_2 emissions for Boiler No. 7 are when burning 100 percent bagasse.
- Maximum 3-hour No. 6 fuel oil consumption (total of Boiler Nos. 1, 2, 3 and 4) is limited to 16,200 gallons per 3-hour period.
- Maximum 24-hour No. 6 fuel oil consumption is limited to 88,800 gallons per 24-hour period.

The following forms the basis of the modeling analysis for the off-season operation.

Off-season operation:

1-, 3- and 8-Hour Operation:

- Total steam generation from all boilers (Nos. 1, 2, 3, 4, and 7) is limited to 1,062,800 lb/hr steam.
- Boiler Nos. 1, 2 and 3 are restricted to burning fuel oil with no greater than 1.6% sulfur during the off-season. U.S. Sugar will comply with this requirement by minimizing the amount of No. 6 fuel oil contained in the fuel oil tank for Boiler Nos. 1, 2 and 3 at the end of each crop season, and purchasing only No. 6 oil with a maximum sulfur content of 1.6% during the off-season. (Note: a separate tank provides these boilers with fuel oil)
- Boiler No. 4 continues to be restricted to burning fuel oil with no greater than 0.7% sulfur (with a separate fuel oil tank).
- Boiler No. 7 continues to be restricted to burning fuel oil with no greater than 0.05% sulfur (with a separate fuel oil tank).
- The worst case for SO_2 emissions occurs with Boiler Nos. 1, 2, and 3 operating at maximum steaming rate, burning the maximum amount of fuel oil, with the remainder of heat input due to bagasse burning. Boiler No. 4 or Boiler No. 7 could also be operated burning the maximum amount of fuel oil, up to a total steaming rate of 1,062,,800 lb/hr for all boilers.
- Total No. 6 fuel oil consumption (total of Boiler Nos. 1, 2, 3 and 4) is limited to 11,700 gallons per 3-hour period.

24-Hour Operation:

- Total steam generation from all boilers (Nos. 1, 2, 3, 4, and 7) is limited to 744,000 lb/hr steam (24-hr average). Boiler Nos. 1, 2 and 3 are limited to generating 250,000 lb/hr steam solely from No. 6 fuel oil firing (24-hr average). Boiler Nos. 4 or 7 can be used at maximum capacity, burning fuel oil or bagasse, as long as total steam generation from all boilers is limited to 744,000 lb/hr (24-hr average).
- Boiler Nos. 1, 2 and 3 are restricted to burning fuel oil with no greater than 1.6% sulfur during the off-season. U.S. Sugar will comply with this requirement by minimizing the amount of No. 6 fuel oil contained in the fuel oil tank for Boiler Nos. 1, 2 and 3 at the end of each crop season, and

purchasing only No. 6 oil with a maximum sulfur content of 1.6% during the off-season. (Note: a separate tank provides these boilers with fuel oil)

- Boiler No. 4 continues to be restricted to burning fuel oil with no greater than 0.7% sulfur (with a separate fuel oil tank).
- Boiler No. 7 continues to be restricted to burning fuel oil with no greater than 0.05% sulfur (with a separate fuel oil tank).
- The worst case for SO_2 emissions occurs with Boiler Nos. 3 burning the maximum amount of fuel oil, with the remainder of heat input to Boiler No. 3 due to bagasse burning (past dispersion modeling has shown Boiler No. 3 to be critical due to its lower plume rise compared to Boiler Nos. 1 and 2). Boiler No. 2 then supplies the remaining steam due to No. 6 fuel oil firing. Boiler No. 4 or Boiler No. 7 could also be operated burning the maximum amount of fuel oil, up to a total steaming rate of 744,000 lb/hr (24-hr average) from all boilers.
- Total No. 6 fuel oil consumption (total of Boiler Nos. 1, 2, 3 and 4) is limited to 54,546 gallons per 24 period.

Maximum PM and CO emissions occur under 100 percent bagasse firing in all boilers. Two PM_{10} modeling scenarios were performed to evaluate the off-season operation options.

A shown in the attached Section 6.0 tables, compliance with all standards and increments is predicted with the ISC-PRIME model. All model input and output files have been placed on Golder's FTP site for access by FDEP and EPA at ftp.golder.com/gville/srm/cleve/USSCLEW.

Thank you for consideration of this information. Please call or e-mail me if you have any additional questions.

Sincerely,

Golder Associates Inc.

David A. Buff

David A. Buff, P.E., Q.E.P.
Principal Engineer
Florida P.E. #19011

DB/jkw

Attachments
cc: Don Griffin
Bill Wehrum
Stan Krivo, EPA Region IV
National Park Service
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CC: File
C. Holladay, BAR

Table 2-1. Short Term Emissions of Regulated Pollutants for Boiler No. 4 (Revised 05/05/00)

Regulated Pollutant	Emission Factor (lb/MMBtu)	Ref	Activity Factor 1-Hour Max. (MMBtu/hr)(a)	Activity Factor 24-Hour Avg. (MMBtu/hr)(a)	Maximum Hourly Emissions (lb/hr)	Maximum 24-Hour Emissions (lb/hr)
			Carbonaceuos Fuel			
Particulate Matter (PM)	0.15	1	633	600	95.0	90.0
Particulate Matter (PM10)	0.14	2	633	600	88.3	83.7
Sulfur dioxide	0.06	1	633	600	38.0	36.0
Nitrogen oxides	0.20	1	633	600	126.6	120.0
Carbon monoxide	6.5	1	633	600	4,114.5	3,900.0
VOC	0.5	1	633	600	316.5	300.0
Sulfuric Acid Mist	0.0037	3	633	600	2.3	2.2
Lead	4.45E-04	4	633	600	0.28	0.27
Mercury	3.8E-05	5	633	600	0.0241	0.0228
Beryllium	--	4	633	600	--	--
			No. 6 Fuel Oil			
Particulate Matter (PM)	0.10	1	225	--	22.5	22.5
Particulate Matter (PM10)	0.10	6	225	--	22.5	22.5
Sulfur dioxide (b)	0.72	7	225	--	162.0	162.0
Nitrogen oxides	0.31	8	225	--	69.8	69.8
Carbon monoxide	0.033	8	225	--	7.5	7.5
VOC	0.0019	8	225	--	0.4	0.4
Sulfuric Acid Mist	0.044	3	225	--	9.9	9.9
Lead	1.01E-05	8	225	--	2.27E-03	2.27E-03
Mercury	7.53E-07	8	225	--	1.70E-04	1.70E-04
Beryllium	1.85E-07	8	225	--	4.17E-05	4.17E-05
			Maximum No. 6 Fuel Oil/ Remainder Bagasse			
Particulate Matter (PM)			530	499	68.3	63.6
Particulate Matter (PM10)			530	499	65.1	60.7
Sulfur dioxide			530	499	180.3	178.4
Nitrogen oxides			530	499	130.9	124.5
Carbon monoxide			530	499	1,993.3	1,787.2
VOC			530	499	153.2	137.3
Sulfuric Acid Mist			530	499	11.0	10.9
Lead			530	499	0.14	0.12
Mercury			530	499	0.012	0.011
Beryllium			530	499	4.17E-05	4.17E-05
			Maximum Any Combination			
Particulate Matter (PM)					95.0	90.0
Particulate Matter (PM10)					88.3	83.7
Sulfur dioxide					180.3	178.4
Nitrogen oxides					130.9	124.5
Carbon monoxide					4,114.5	3,900.0
VOC					316.5	300.0
Sulfuric Acid Mist					11.0	10.9
Lead					0.28	0.27
Mercury					0.0241	0.0228
Beryllium					4.17E-05	4.17E-05

Table 2-2. Future Maximum Annual Emissions, Clewiston Boiler No. 4, U.S. Sugar Corp. (Revised 04/27/00)

Pollutant	Bagasse Firing			Fuel Oil Firing			Total Emissions (TPY)
	Emission Factor	Heat Input (a) (MMBtu/yr)	Emissions (TPY)	Emission Factor	Heat Input (a) (MMBtu/yr)	Emissions (TPY)	
Particulate Matter (PM)	0.15 lb/MMBtu	2,880,000	216.0	0.1 lb/MMBtu	0	0.0	216.0
PM10	0.14 lb/MMBtu	2,880,000	201.6	0.1 lb/MMBtu	0	0.0	201.6
Sulfur Dioxide	0.06 lb/MMBtu	2,805,000	84.15	0.72 lb/MMBtu (b)	75,000	27.0	111.2
Nitrogen Oxides	0.2 lb/MMBtu	2,805,000	280.5	0.31 lb/MMBtu	75,000	11.6	292.1
Carbon Monoxide	6.5 lb/MMBtu	2,880,000	9,360.0	0.033 lb/MMBtu	0	0.0	9,360
Volatile Organic Compounds	0.5 lb/MMBtu	2,880,000	720.0	0.0019 lb/MMBtu	0	0.0	720
Sulfuric Acid Mist	0.0037 lb/MMBtu	2,805,000	5.19	0.044 lb/MMBtu	75,000	1.65	6.84
Lead	4.45E-04 lb/MMBtu	2,880,000	0.6	1.01E-05 lb/MMBtu	0	0.0	0.64
Mercury	3.80E-05 lb/MMBtu	2,880,000	0.1	7.53E-07 lb/MMBtu	0	0.0	0.055
Beryllium	--	2,805,000	0.0	1.85E-07 lb/MMBtu	75,000	6.94E-06	6.94E-06

(a) Total heat input based on total steam production of 1.368E+09 lb steam/yr, 1,160 Btu/lb steam and 55% thermal efficiency.
Fuel oil considered where worst case emission factor is due to oil burning. Maximum fuel oil burning is 500,000 gal/yr, equivalent to 75,000 MMBtu/yr.

(b) Represents maximum sulfur content of 0.7 percent for fuel oil.

Table 2-1. Short Term Emissions of Regulated Pollutants for Boiler No. 4 (Revised 05/05/00)

Footnotes

(a) Maximum 1-hour activity factor is based on a steam production of 300,000 lb/hr at 600 psig, 750 F.
Maximum 6-hour average activity factor based on steam production rate of 285,000 lb/hr at 600 psig, 750 F.
Enthalpy of steam = 1,378 Btu/lb. Enthalpy of feedwater = 218 Btu/lb. Net enthalpy = 1,160 Btu/lb.
Boiler efficiency = 80% on fuel oil and 55% on bagasse.
Derivation of heat input for No. 6 Fuel oil/Bagasse combination firing:
Max 1-hr case: Max oil = 225 MMBtu/hr x 80% eff. = 180 MMBtu/hr into steam.
Remainder needed into steam = (300,000 lb/hr steam x 1,160 Btu/lb) - 180 MMBtu/hr = 168 MMBtu/hr
Required heat input to boiler from bagasse = 168 MMBtu/hr / 55% eff. = 305.5 MMBtu/hr
Total heat input required = 225 + 305.5 = 530 MMBtu/hr
Max 24-hr case: Max oil = 225 MMBtu/hr x 80% eff. = 180 MMBtu/hr into steam.
Remainder needed into steam = (285,000 lb/hr steam x 1,160 Btu/lb) - 180 MMBtu/hr = 150.6 MMBtu/hr
Required heat input to boiler from bagasse = 150.6 MMBtu/hr / 55% eff. = 273.8 MMBtu/hr
Total heat input required = 225 + 274 = 499 MMBtu/hr

(b) The SO2 emission factor reflects the maximum sulfur content (0.7%).

References

1. Limit contained in Permit No. 0510003-009-AC (PSD-FL-272).
2. Based on limited source testing of bagasse boiler which indicated 93% of PM was PM10.
3. Based on assuming 5% of SO2 emissions are equal to SO3, based on AP-42 Section 1.3, Fuel Oil Combustion. Conversion of SO3 to H2SO4 (SO3 x 98/80).
4. Based on AP-42, Section 1.6, Wood Waste Combustion. Represents controlled emissions.
5. Based on stack testing of 5 bagasse boilers in Florida (refer to appendices).
6. Assumed as 100% of PM emissions.
7. Based on 0.7% S fuel oil; 142,000 Btu/gal; 7.3 lb/gal; assumes 100% conversion of sulfur to SO2.
8. Based on AP-42, Section 1.3, Fuel Oil Combustion.
   NOx - 47 lb/1000 gal; CO - 5 lb/1000 gal; VOC - 0.28 lb/1000 gal;
   Lead - 1.51E-03 lb/1000 gal; Mercury - 1.13E-04 lb/1000 gal; Beryllium - 2.85E-05 lb/1000 gal

Example Calculations

Single Fuel Combustion:
Hourly Emission Rate = Emission Factor X Activity Factor (1-hour maximum)

Multiple Fuel Combustion:
= {(Bagasse Activity Factor - Fuel Oil Activity Factor) x Bagasse Emission Factor}
+ (Fuel Oil Activity Factor x Fuel Oil Emission Factor)

Table 2-3. Summary of PM/PM10 Emissions from the Baghouses Associated With the Sugar Refinery, U.S. Sugar Corporation

Source / Vent Name	Stack Number	Control Type	Manufacturer/Model	Design Capacity	Control Efficiency (percent)	Operating Hours	PM/PM10 Emission Rate gr/dscf	lb/hr	TPY
Existing Sources									
Screening & Distribution Vacuum	S-1	Baghouse	Hoffman	990 dscfm	99.9	8,760	0.00754 [a]	0.064 [b]	0.280
100 lb Bagging Vacuum System	S-2	Baghouse	Hoffman	872 dscfm	99.9	8,760	0.00856 [a]	0.064 [b]	0.280
5 lb Bagging Vacuum System	S-3	Baghouse	Hoffman	984 dscfm	99.9	8,760	0.00759 [a]	0.064 [b]	0.280
Packaging Dust Collector	S-4	Baghouse	Hosokawa Mikropul	9,589 dscfm	99.9	8,760	0.0025	0.205	0.900
Screening and Distribution #1	S-5	Baghouse	Hosokawa Mikropul	2,668 dscfm	99.9	8,760	0.0025	0.057	0.250
Screening and Distribution #2	S-6	Baghouse	Hosokawa Mikropul	8,755 dscfm	99.9	8,760	0.0025	0.188	0.822
Conditioning Silo No. 2	S-7	Baghouse	Hosokawa Mikropul	2,641 dscfm	99.9	8,760	0.0025	0.057	0.248
Conditioning Silo No. 4	S-8	Baghouse	Hosokawa Mikropul	2,641 dscfm	99.9	8,760	0.0025	0.057	0.248
Conditioning Silo No. 6	S-9	Baghouse	Hosokawa Mikropul	2,641 dscfm	99.9	8,760	0.0025	0.057	0.248
White Sugar Dryer	S-10	Baghouse	BACT Engineering	94,488 dscfm	99.9	8,760	0.00177 [a]	1.436 [b]	6.29
V.H.P. Sugar Dryer	S-11	Baghouse	BACT Engineering	110,042 dscfm	99.9	8,760	0.00172 [a]	1.625 [b]	7.12
Granular Carbon Furnace	S-12	None	–	–	–	8,760	–	0.650	2.85
Proposed Sources									
Conditioning Silo No. 1	S-13	Baghouse	Hosokawa Mikropul	2,641 dscfm	99.9	8,760	0.0025	0.057	0.248
Conditioning Silo No. 3	S-14	Baghouse	Hosokawa Mikropul	2,641 dscfm	99.9	8,760	0.0025	0.057	0.248
Conditioning Silo No. 5	S-15	Baghouse	Hosokawa Mikropul	2,641 dscfm	99.9	8,760	0.0025	0.057	0.248
Powdered Sugar / Starch Bins	S-16	Baghouse	Hosokawa Mikropul	6,128 dscfm	99.9	8,760	0.0025	0.131	0.575
							Total =	4.82	21.13

Footnotes:

[a] Back calculated from guaranteed emission rate and design flow rate.

[b] Manufacturer's guaranteed emission rate.

Notes: dscfm = dry standard cubic foot per minute.
gr/dscf = grains per dry standard cubic foot
lb/hr = pounds per hour
TPY = tons per year

Table 2-4. Emissions From Granular Carbon Regeneration Furnace,
USSC Clewiston Mill Expansion

Pollutant	Manufacturer's Design[a] (lb/hr)		Maximum Estimated Emissions lb/hr	TPY[b]
PM / PM10	0.65	[c]	0.65	2.85
NO_x	3.0		3.0	13.1
SO_2	0.49	[d]	0.49	2.15
CO	3.0		3.0	13.1
VOC	1.0		1.0	4.4

Footnotes:

[a] Estimated emissions obtained from design information provided by BSP Thermal Sytems, Inc.

[b] Based on 8,760 hours per year of operation.

[c] Based on uncontrolled emissions of 32.5 lb/hr and 98% control efficiency with wet scrubber system.

[d] Based on No. 2 fuel oil combustion only. Calculation based on manufacuter's data for the Granular Carbon Furnace is shown below.

Hourly SO_2 Emission Rate = 120 gal oil/hr * 0.03% * 6.83 lb sulfur/gal oil
* 2 lb SO_2/ 1 lb sulfur
= 0.49176 lb SO_2/hr

Annual SO_2 Emission Rate = 0.49176 lb SO_2/hr
* 8,760 hr/yr * 1 Ton/2000 lb
= 2.15 TPY SO_2

Scrubber control of SO_2 emissions was not considered.

Table 2-5. Potential Emissions of VOC from Alcohol Usage, USSC Clewiston Mill Expansion

Material	VOC Content	Maximum Sugar Production (TPY)	Annual Pounds of Material Used	Potential VOC Emissions (TPY)
Isopropyl Alcohol (a)	100%	704,000	29,216	14.61

(a) Isopropyl alcohol (IPA) usage based on 1 quart IPA per 100,000 lb of sugar.

Table 2-6. Estimated Emissions from Two Sock Dryers Due to Propane Combustion, USSC Mill Expansion

Parameter	Sock Dryer No. 1	Sock Dryer No. 2
OPERATING DATA		
Maximum Operating Hours (hr/yr)	8,760	8,760
Heat Input Rate (MMBtu/hr)	0.165	0.165
Propane (gal/hr) [a]	1.7	1.7
Propane (gal/yr)	15,295	15,295
Propane (scf/hr) [a]	64.7	64.7
Propane (scf/yr)	566,824	566,824

Pollutant	Emission Factor [b]	Emissions Sock Dryer No. 1		Emissions Sock Dryer No. 2		Total Emissions	
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
EMISSIONS DATA							
SO2: Propane	0.018 lb/Mgal [c]	0.000031	0.00014	0.000031	0.00014	0.000062	0.000280
NOx: Propane	14 lb/Mgal	0.024	0.11	0.024	0.11	0.048	0.22
PM/PM10: Propane	0.4 lb/Mgal	0.00074	0.0031	0.00074	0.0031	0.00148	0.0062
CO: Propane	1.9 lb/Mgal	0.0033	0.015	0.0033	0.015	0.0066	0.030
NMVOC: Propane	0.5 lb/Mgal	0.00087	0.0038	0.00087	0.0038	0.0017	0.0076

Note: NA = not applicable.

[a] Based on 94,500 Btu/gal and 2,550 Btu/scf for propane.

[b] Emission factors based on AP-42.

[c] Formula is 0.10*S where "S" denotes the sulfur content in gr/100 ft³ gas vapor. S equals 0.18 gr/100 ft³.

Table 2-7. Stack Parameters for Existing and Modified Boiler No. 4

Scenario	Steam Production Rate (lb/hr)	Stack Height (ft)	Stack Diameter (ft)	Gas Flow Rate (acfm)	Gas Velocity (fps)	Gas Temperature (°F)
Existing Conditions[a]						
Boiler No. 4	250,000	150	8.2	234,000	73.85	160
Future Conditions[b]						
Boiler No. 4	285,000	150	8.2	266,800	84.20	160

Note: acfm = actual cubic feet per minute.
°F = degrees Fahrenheit.
fps = feet per second.
ft = feet.
lb/hr = pounds per hour.

[a]Represents conditions during latest compliance testing.
[b]Represents maximum 24-hour-average operating conditions.

Table 2-8. Stack and Vent Geometry and Operating Data for U.S. Sugar Refinery, U.S. Sugar Corporation, Clewiston Florida

Source / Vent Name	Stack/Vent Release Height (ft)	Stack/Vent Diameter (ft)	Exhaust Flow (acfm)	Exit Velocity* (ft/sec)	Gas Exit Temperature (°F)
Existing Sources					
Screening & Distribution Vacuum	65	0.50	1,705	0.29	68
100 lb Bagging Vacuum System	65	0.50	1,564	0.29	90
5 lb Bagging Vacuum System	65	0.50	1,585	0.29	90
Packaging Dust Collector	60	1.94	11,500	0.29	125
Screening and Distribution #1	72	0.95	3,200	0.29	125
Screening and Distribution #2	72	1.94	10,500	0.29	125
Conditioning Silo No. 2	130	1.37	3,000	0.29	110
Conditioning Silo No. 4	130	1.37	3,000	0.29	110
Conditioning Silo No. 6	130	1.37	3,000	0.29	110
White Sugar Dryer	75	7.31	113,000	0.29	115
V.H.P. Sugar Dryer	10	4.79	127,000	0.29	115
Granular Carbon Furnace	30	2.00	4,300	22.8	160
Proposed Sources					
Conditioning Silo No. 1	130	1.37	3,000	0.29	110
Conditioning Silo No. 3	130	1.37	3,000	0.29	110
Conditioning Silo No. 5	130	1.37	3,000	0.29	110
Powdered Sugar / Starch Bins	55	2.00	6,500	34.5	100

Footnotes:

* All sources but the Granular Carbon Furnance and the Powdered Sugar/Starch Bins have horizontal discharge.

Table 3-3. Baseline Emissions for Clewiston Boiler No. 4, U.S. Sugar Corp. (Revised 04/27/00)

Pollutant	Bagasse Firing				Fuel Oil Firing				TOTAL EMISSIONS (TPY)
	Emission Factor	Ref.	Heat Input (a) (MMBtu/yr)	Emissions (TPY)	Emission Factor	Ref.	Heat Input (b) (MMBtu/yr)	Emissions (TPY)	
Particulate Matter (PM)	0.12 lb/MMBtu	1	1,661,913	99.7	0.1 lb/MMBtu	4	15,816	0.79	100.5
PM10	0.112 lb/MMBtu	2	1,661,913	93.1	0.1 lb/MMBtu	9	15,816	0.79	93.9
Sulfur Dioxide	0.008 lb/MMBtu	1	1,661,913	6.6	1.67 lb/MMBtu	5	15,816	13.21	19.9
Nitrogen Oxides	0.082 lb/MMBtu	1	1,661,913	68.1	0.31 lb/MMBtu	10	15,816	2.45	70.6
Carbon Monoxide	6.36 lb/MMBtu	1	1,661,913	5,284.9	0.033 lb/MMBtu	10	15,816	0.26	5,285.1
Volatile Organic Compounds	0.25 lb/MMBtu	3	1,661,913	207.7	0.0019 lb/MMBtu	10	15,816	0.015	207.8
Sulfuric Acid Mist	0.00049 lb/MMBtu	6	1,661,913	0.41	0.085 lb/MMBtu	6	15,816	0.67	1.08
Lead	4.45E-04 lb/MMBtu	7	1,661,913	0.37	1.01E-05 lb/MMBtu	10	15,816	7.99E-05	0.37
Mercury	8.00E-06 lb/MMBtu	8	1,661,913	6.65E-03	7.53E-07 lb/MMBtu	10	15,816	5.95E-06	6.65E-03
Beryllium	--	7	1,661,913	0.0	1.85E-07 lb/MMBtu	10	15,816	1.46E-06	1.46E-06

(a) Based on actual steam production during 1997 and 1998, and actual steam enthalpies during stack tests.
(b) Based on average fuel oil usage during last two crop seasons of 90,686 gal (1997) and 119,395 gal (1998) and 151,000 Btu/gal

Footnotes:
(1) Based on average of stack tests from last 5 years.
(2) Based on 93 percent of PM emissions for bagasse burning based on limited testing of a bagasse boiler.
(3) Test data not available; assumed equal to permit limit of 1.7 lb/ton wet bagasse.
(4) Based on permit limit.
(5) Based on stoichiometric calculation of sulfur content (1.5 percent) and density of No. 6 fuel oil (8.22 lb/gal).
(6) Based on assuming 5 percent of SO_2 emissions are equal to SO_3, based on AP-42 Section 1.3, Fuel Oil Combustion. Conversion of SO3 to H2SO4 (SO3 x 98/80).
(7) Based on AP-42, Section 1.6, Wood Waste Combustion. Represents controlled emissions.
(8) Based on average emission factor from stack testing of 5 bagasse boilers in Florida (refer to appendices).
(9) Assumed as 100 percent of PM emissions.
(10) Based on AP-42, Section 1.3, Fuel Oil Combustion.
NOx - 47 lb/1000 gal; CO - 5 lb/1000 gal; VOC - 0.28 lb/1000 gal;
Lead - 1.51E-03 lb/1000 gal; Mercury - 1.13E-04 lb/1000 gal; Beryllium - 2.85E-05 lb/1000 gal

Table 3-4. Net Emissions Increase for Clewiston Boiler No. 4, U.S. Sugar Corp. (Revised 04/27/00)

Pollutant	PSD Baseline Emissions (TPY)	Future Maximum Emissions (TPY)	Net Increase in Emissions (TPY)	PSD Significant Emission Rate (TPY)	PSD Review Applies?
Particulate Matter (PM)	100.5	216.0	115.5	25	Yes
PM_{10}	93.9	201.6	107.7	15	Yes
Sulfur Dioxide	17.7	111.2	93.5	40	Yes
Nitrogen Oxides	70.6	292.1	221.5	40	Yes
Carbon Monoxide	5,285.1	9,360.0	4,074.9	100	Yes
Volatile Organic Compound	207.8	720.0	512.2	40	Yes
Sulfuric Acid Mist	1.09	6.84	5.75	7	Yes
Lead	0.37	0.64	0.27	0.6	No
Mercury	0.007	0.055	0.048	0.1	No
Beryllium	1.46E-06	6.94E-06	5.47E-06	4.00E-04	No

Table 3-5. Predicted Net Increase in Impacts Due To the Proposed Project

Pollutant	Concentration ($\mu g/m^3$)	
	Predicted Net Increase in Impacts[a]	*De Minimis* Monitoring Concentration
Sulfur Dioxide	33	13, 24-hour
Particulate Matter (PM_{10})	14	10, 24-hour
Nitrogen Dioxide	0.8	14, annual
Carbon Monoxide	1,109	575, 8-hour
Ozone [b]	512 TPY VOC	100 TPY VOC

Note: NA = not applicable; NM = no monitoring technique; TYP = tons per year

[a] Section 6.0 for air dispersion modeling results.
[b] Preconstruction monitoring analysis requred for ozone, if increase in VOC emissions are greater than 100 TPY.

Table 6-1. Major Features of the ISCST3 Model, Version 99155

ISCST3 Model Features
• Polar or Cartesian coordinate systems for receptor locations
• Rural or one of three urban options which affect wind speed profile exponent, dispersion rates, and mixing height calculations
• Plume rise due to momentum and buoyancy as a function of downwind distance for stack emissions (Briggs, 1969, 1971, 1972, and 1975; Bowers, et al., 1979).
• Procedures suggested by Huber and Snyder (1976); Huber (1977); and Schulman and Scire (1980) for evaluating building wake effects
• Procedures suggested by Briggs (1974) for evaluating stack-tip downwash
• Separation of multiple emission sources
• Consideration of the effects of gravitational settling and dry deposition on ambient particulate concentrations
• Capability of simulating point, line, volume, area, and open pit sources
• Capability to calculate dry and wet deposition, including both gaseous and particulate precipitation scavenging for wet deposition
• Variation of wind speed with height (wind speed-profile exponent law)
• Concentration estimates for 1-hour to annual average times
• Terrain-adjustment procedures for elevated terrain including a terrain truncation algorithm for ISCST3; a built-in algorithm for predicting concentrations in complex terrain
• Consideration of time-dependent exponential decay of pollutants
• The method of Pasquill (1976) to account for buoyancy-induced dispersion
• A regulatory default option to set various model options and parameters to EPA recommended values (see text for regulatory options used)
• Procedure for calm-wind processing including setting wind speeds less than 1 m/s to 1 m/s.

Note: ISCST3 = Industrial Source Complex Short-Term.
Source: EPA, 1999.

Table 6-2. Summary of Stack Parameters for Future Sources Used in Modeling of U.S. Sugar Clewiston Mill

Emission Unit	Modeling ID	Stack Height		Stack Diameter		Temperature		Flow Rate		Velocity (a)		Relative Location (b)			
												X		Y	
		(ft)	(m)	(ft)	(m)	(F)	(K)	(dscfm)	(acfm)	(ft/s)	(m/s)	(ft)	(m)	(ft)	(m)
BOILERS															
Boiler 1	USSBLR1	182	55.5	8.00	2.44	165	347.0	--	190,000	63.0	19.2	185	56.39	-5	-1.52
Boiler 2	USSBLR2	182	55.5	8.00	2.44	150	338.7	--	190,000	63.0	19.2	143	43.59	-5	-1.52
Boiler 3	USSBLR3	182	55.5	8.00	2.44	140	333.2	--	108,000	35.8	10.9	95	28.96	18	5.49
Boiler 4	USSBLR4	150	45.7	8.25	2.51	160	344.3	--	266,800	83.2	25.4	0	0.00	0	0.00
Boiler 7	USSBLR7	225	68.6	8.50	2.59	270	405.4	--	290,000	85.2	26.0	-58	-17.68	65	19.81
REFINERY SOURCES															
Screening & Distribution Vacuum	S1	65	19.8	0.50	0.15	68	293.2	990	1,705	0.29	0.01	664.79	202.63	-155.17	-47.30
100 lb Bagging Vacuum System	S2	65	19.8	0.50	0.15	90	305.4	872	1,564	0.29	0.01	700.98	213.66	-147.48	-44.95
5 lb Bagging Vacuum System	S3	65	19.8	0.50	0.15	90	305.4	984	1,585	0.29	0.01	700.98	213.66	-147.48	-44.95
Packaging Dust Collector	S4	60	18.3	1.94	0.59	125	324.8	9,589	11,500	0.29	0.01	774.34	236.02	-131.89	-40.20
Screening and Distribution #1	S5	72	21.9	0.95	0.29	125	324.8	2,668	3,200	0.29	0.01	700.98	213.66	-147.48	-44.95
Screening and Distribution #2	S6	72	21.9	1.94	0.59	125	324.8	8,755	10,500	0.29	0.01	700.98	213.66	-147.48	-44.95
Conditioning Silo No. 2	S7	130	39.6	1.37	0.42	110	316.5	2,641	3,000	0.29	0.01	637.28	194.24	-150.8	-45.96
Conditioning Silo No. 4	S8	130	39.6	1.37	0.42	110	316.5	2,641	3,000	0.29	0.01	602.07	183.51	-158.28	-48.24
Conditioning Silo No. 6	S9	130	39.6	1.37	0.42	110	316.5	2,641	3,000	0.29	0.01	566.85	172.78	-165.77	-50.53
White Sugar Dryer Baghouse	S10	75	22.9	7.31	2.23	115	319.3	94,488	113,000	0.29	0.01	695.66	212.04	-194.62	-59.32
V. H. P. Sugar Dryer Baghouse	S11	10	3.0	4.79	1.46	115	319.3	110,042	127,000	0.29	0.01	2045.01	623.32	214.88	65.50
Granular Carbon Furnace	S12	30	9.1	2.00	0.61	160	344.3	--	4,300	22.8	6.9	603.97	184.09	-398.13	-121.35
Conditioning Silo No. 1	S13	130	39.6	1.37	0.42	110	316.5	2,641	3,000	0.29	0.01	622.85	189.84	-92.52	-28.20
Conditioning Silo No. 3	S14	130	39.6	1.37	0.42	110	316.5	2,641	3,000	0.29	0.01	588.61	179.41	-99.8	-30.42
Conditioning Silo No. 5	S15	130	39.6	1.37	0.42	110	316.5	2,641	3,000	0.29	0.01	549.49	167.48	-108.12	-32.95
Powdered Sugar Starch Bins	S16	55	16.8	2.00	0.61	100	310.9	6,128	--	34.5	10.50	767.14	233.82	-266.32	-81.17

(a) All refinery sources except granular carbon furnace have horizontal discharge: velocity set at 0.01 m/s for modeling purposes.

(b) Relative to Boiler No. 4 stack location.

Table 6-3. U.S. Sugar Clewiston Mill Maximum Fuel Oil Burning And SO_2 Emissions - Future Crop Season Operation:
(12/17/99)

Boilers 1-3 @ 2.5% sulfur fuel oil; 182 ft stack height
Boiler 4 @ 0.7% sulfur fuel oil; 150 ft stack height

Boiler	Total Maximum Heat Input (MMBtu/hr)	Maximum Heat Input From Fuel Oil (MMBtu/hr)	Rates Used For Modeling Purposes: Fuel Oil gal/hr [a]	Fuel Oil MMBtu/hr	Bagasse MMBtu/hr	Bagasse lb/hr(dry)	Modeled SO_2 Emissions: Fuel Oil (lb/hr)	Bagasse [b] (lb/hr)	Total (lb/hr)	Total (g/s)
					MAXIMUM 3-HOUR CASE					
1	495.6 [c]	225.1	1,500	225.0	270.6	37,583	615.0	18.8	633.8	79.86
2	495.6 [c]	225.1	1,500	225.0	270.6	37,583	615.0	18.8	633.8	79.86
3	342.0 [c]	135.1	900	135.0	207.0	28,750	369.0	14.4	383.4	48.31
4	633.0	225.1	1,500	213.0	420.0	58,333	153.3	42.0 [d]	195.3	24.61
7	812.0	249.0	0	0.0	812.0	112,778	0.0	138.0 [d]	138.0	17.39
Totals	2,778.2		5,400 (16,200 gallons per 3-hour period)	798.0	1,980.2	275,028	1,752.3	232.0	1,984.3	250.0
					MAXIMUM 24-HOUR CASE					
1	495.6	225.1	1,400	210.0	285.6	39,667	574.0	19.8	593.8	74.82
2	495.6	225.1	1,400	210.0	285.6	39,667	574.0	19.8	593.8	74.82
3	342.0	135.1	900	135.0	207.0	28,750	369.0	14.4	383.4	48.31
4	600.0	225.1	0	0.0	600.0	83,333	0.0	60.0 [d]	60.0	7.56
7	738.0	249.0	0	0.0	738.0	102,500	0.0	125.5 [d]	125.5	15.81
Totals	2,671.2		3,700 (88,800 gallons per 24-hour period)	555.0	2,116.2	293,917	1,517.0	239.5	1,756.5	221.3

[a] Total fuel usage for all boilers based on current permit limits. Individual boiler rates selected to maximize SO_2 emissions, i.e., Boiler Nos. 1, 2 and 3 burning 2.5% sulfur oil, and Boiler No.4 burning 0.7% sulfur oil. Boiler Nos. 1, 2 and 3 have 182 ft stacks, and Boiler No. 4 has a 150 ft stack.

[b] Assumes 75% removal of SO_2 due to bagasse firing, based on industry test data.

[c] Permit limit for 24-hour average.

[d] Based on proposed permit limit for Boiler No. 4 of 0.1 lb/MMBtu, and current permit limit of 0.17 lb/MMBtu for Boiler No. 7.

Note: Fuel Oil - 2.5% sulfur
18,300 Btu/lb; 150,000 Btu/gal
2 8.2 lb/gal

0.7% sulfur
19,450 Btu/lb; 142,000 Btu/gal
7.3 lb/gal

Bagasse - 7,200 Btu/lb (dry); 3,600 Btu/lb (wet)
0.1% sulfur average, dry basis

Table 6-4a. U.S. Sugar Clewiston Boiler Maximum PM_{10} and CO Emissions - Future Crop Season Operation

Source	Maximum Heat Input (MMBtu/hr)	Emission Factor		Emissions (lb/hr)	Emissions (g/s)
		MAXIMUM 24-HOUR CASE - PM10 EMISSIONS			
Boilers		PM Emission Factor	PM10 Emission Factor		
Boiler 1	495.6	0.25 lb/MMBtu	93% of PM	115.2	14.52
Boiler 2	495.6	0.25 lb/MMBtu	93% of PM	115.2	14.52
Boiler 3	342.0	0.30 lb/MMBtu	93% of PM	95.4	12.02
Boiler 4	600.0	0.15 lb/MMBtu	93% of PM	83.7	10.55
Boiler 7	738.0	0.03 lb/MMBtu	100% of PM	22.1	2.79
		MAXIMUM 1-HOUR CASE - CO EMISSIONS			
Boilers					
Boiler 1	495.6	13.0 lb/MMBtu		6,442.80	811.79
Boiler 2	495.6	13.0 lb/MMBtu		6,442.80	811.79
Boiler 3	342.0	10.0 lb/MMBtu		3,420.00	430.92
Boiler 4	633.0	6.5 lb/MMBtu		4,114.50	518.43
Boiler 7	812.0	0.7 lb/MMBtu		568.40	71.62
		MAXIMUM 8-HOUR CASE - CO EMISSIONS			
Boilers					
Boiler 1	495.6	9.2 lb/MMBtu		4,559.52	574.50
Boiler 2	495.6	12.5 lb/MMBtu		6,195.00	780.57
Boiler 3	342.0	9.1 lb/MMBtu		3,112.20	392.14
Boiler 4	633.0	6.5 lb/MMBtu		4,114.50	518.43
Boiler 7	812.0	0.7 lb/MMBtu		568.40	71.62

Table 6-4b. U.S. Sugar Clewiston Mill Maximum SO_2 Emissions - Future Off-Season Operation (04/25/00)

Boilers 1-3 @ 1.6% sulfur fuel oil; 182 ft stack height

Boiler 4 @ 0.7% sulfur fuel oil; 150 ft stack height

Boiler	Boiler Design Rates: Steam Rate (lb/hr)	Boiler Design Rates: Steam Enthalpy (Btu/lb)	Boiler Design Rates: Heat Input (MMBtu/hr)	Steam Rate: Total (lb/hr)	Steam Rate: Bagasse (lb/hr)	Steam Rate: Fuel Oil (lb/hr)	Heat Input: from Bagasse [a] (MMBtu/hr)	Heat Input: From Fuel Oil [b] (MMBtu/hr)	Fuel Oil Usage (gal/hr)	Bagasse Usage (lb/hr,dry)	Modeled SO_2 Emissions: Fuel Oil (lb/hr)	Modeled SO_2 Emissions: Bagasse [b] (lb/hr)	Modeled SO_2 Emissions: Total (lb/hr)	Modeled SO_2 Emissions: Total (g/s)
							MAXIMUM 3-HOUR CASE							
1	255,100 [d]	1,068.6	495.6	255,100	86,650	168,450	168.4	225.0	1,500	23,382	393.6	11.7	405.3	51.07
2	255,100 [d]	1,068.6	495.6	255,100	86,650	168,450	168.4	225.0	1,500	23,382	393.6	11.7	405.3	51.07
3	167,600 [d]	1,122.4	342.0	167,600	71,395	96,205	145.7	135.0	900	20,236	236.1	10.1	246.2	31.03
4	300,000	1,160.0	632.7	0	0	0	0	0	0	0	0.0	0.0 [e]	0.0	0.00
7	385,000	1,160.0	812.0	385,000	385,000	0	812.0	0	0	112,778	0.0	138.0 [e]	138.0	17.39
Totals	1,362,800			1,062,800	629,695	433,105	1,294.4	585.0	3,900 (11,700 gallons per 3-hour period)	179,778	1,023.3	171.5	1,194.9	150.6
							MAXIMUM 24-HOUR CASE							
1	255,100 [d]	1,068.6	495.6	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.00
2	255,100 [d]	1,068.6	495.6	226,400	72,605	153,795	141.1	205.4	1,370	19,592	359.4	9.8	369.2	46.51
3	167,600 [d]	1,122.4	342.0	167,600	71,395	96,205	145.7	135.0	900	20,236	236.1	10.1	246.2	31.03
4	285,000	1,160.0	601.1	0	0	0	0	0	0	0	0.0	0.0 [e]	0.0	0.00
7	350,000	1,160.0	738.2	350,000	350,000	0	738.2	0	0	102,525	0.0	125.5 [e]	125.5	15.81
Totals	1,312,800			744,000	494,000	250,000	1,024.9	340.4	2,269 (54,456 gallons per 24-hour period)	142,353	595.5	145.4	740.9	93.4

[a] Based on 55% thermal efficicency.

[b] Based on 80% thermal efficiency.

[c] Assumes 75% removal of SO_2 due to bagasse firing, based on industry test data.

[d] Maximum 24-hour average.

[e] Based on new permit limit for Boiler No. 4 of 0.06 lb/MMBtu, and current permit limit of 0.17 lb/MMBtu for Boiler No. 7.

Note: Fuel Oil - 1.6% sulfur
18,300 Btu/lb; 150,000 Btu/gal
8.2 lb/gal
Bagasse - 7,200 Btu/lb (dry); 3,600 Btu/lb (wet)
0.1% sulfur average, dry basis

Table 6-4c. U.S. Sugar Clewiston Mill Maximum PM_{10} Emissions - Future Off-Season Operation (04/14/00)

Boilers 1-3 @ 1.6% sulfur fuel oil; 182 ft stack height

Boiler 4 @ 0.7% sulfur fuel oil; 150 ft stack height

Boiler	Boiler Design Rates: Steam Rate[c] (lb/hr)	Boiler Design Rates: Steam Enthalpy (Btu/lb)	Boiler Design Rates: Heat Input (MMBtu/hr)	Steam Rate: Total (lb/hr)	Steam Rate: Bagasse (lb/hr)	Steam Rate: Fuel Oil (lb/hr)	Heat Input: From Bagasse[a] (MMBtu/hr)	Heat Input: From Fuel Oil[b] (MMBtu/hr)	Modeled PM_{10} Emissions: PM (lb/MMBtu)	Modeled PM_{10} Emissions: PM_{10} Factor	Modeled PM_{10} Emissions: PM_{10} (lb/hr)	Modeled PM_{10} Emissions: PM_{10} (g/s)
							CASE A (24-hr)					
1	255,100	1,068.6	495.6	0	0	0	0.0	0.0	0.25	93%	0.0	0.00
2	255,100	1,068.6	495.6	226,400	226,400	0	439.9	0.0	0.25	93%	102.3	12.89
3	167,600	1,122.4	342.0	167,600	167,600	0	342.0	0.0	0.30	93%	95.4	12.02
4	285,000	1,160.0	601.1	0	0	0	0.0	0.0	0.15	93%	0.0	0.00
7	350,000	1,160.0	738.2	350,000	350,000	0	738.2	0.0	0.03	100%	22.1	2.79
Totals	1,312,800			744,000	744,000	0	1,520.1	0.0			219.8	27.7
							CASE B (24-hr)					
1	255,100	1,068.6	495.6	0	0	0	0.0	0.0	0.25	93%	0.0	0.00
2	255,100	1,068.6	495.6	0	0	0	0.0	0.0	0.25	93%	0.0	0.00
3	167,600	1,122.4	342.0	109,000	109,000	0	222.4	0.0	0.30	93%	62.1	7.82
4	285,000	1,160.0	601.1	285,000	285,000	0	601.1	0.0	0.15	93%	83.9	10.57
7	350,000	1,160.0	738.2	350,000	350,000	0	738.2	0.0	0.03	100%	22.1	2.79
Totals	1,312,800			744,000	744,000	0	1,561.7	0.0			168.1	21.2

[a] Based on 55% thermal efficicency.

[b] Based on 80% thermal efficiency.

[c] Maximum 24-hour average.

Table 6-4d. U.S. Sugar Clewiston Mill Maximum CO Emissions - Future Off-Season Operation (04/25/00)
Boilers 1-3 @ 1.6% sulfur fuel oil; 182 ft stack height
Boiler 4 @ 0.7% sulfur fuel oil; 150 ft stack height

Boiler	Boiler Design Rates: Steam Rate (lb/hr)	Boiler Design Rates: Steam Enthalpy (Btu/lb)	Boiler Design Rates: Heat Input (MMBtu/hr)	Steam Rate: Total (lb/hr)	Steam Rate: Bagasse (lb/hr)	Steam Rate: Fuel Oil (lb/hr)	Heat Input From: Bagasse [a] (MMBtu/hr)	Heat Input From: Fuel Oil [b] (MMBtu/hr)	CO Emission Rate [c] (lb/MMBtu)	Total CO: (lb/hr)	Total CO: (g/s)
				MAXIMUM 1-HOUR CASE							
1	255,100 [d]	1,068.6	495.6	255,100	255,100	0	495.6	0	13.0	6,443.3	811.85
2	255,100 [d]	1,068.6	495.6	255,100	255,100	0	495.6	0	13.0	6,443.3	811.85
3	167,600 [d]	1,122.4	342.0	167,600	167,600	0	342.0	0	10.0	3,420.3	430.95
4	300,000	1,160.0	632.7	300,000	300,000	0	632.7	0	6.5	4,112.7	518.20
7	385,000	1,160.0	812.0	85,000	85,000	0	179.3	0	0.7	125.5	15.81
Totals	1,362,800			1,062,800	1,062,800	0	2,145.3	0		20,545.0	2,588.7
				MAXIMUM 8-HOUR CASE							
1	255,100 [d]	1,068.6	495.6	255,100	255,100	0	495.6	0	9.2	4,559.9	574.54
2	255,100 [d]	1,068.6	495.6	255,100	255,100	0	495.6	0	12.5	6,195.5	780.63
3	167,600 [d]	1,122.6	342.1	167,600	167,600	0	342.1	0	9.1	3,113.0	392.24
4	300,000	1,160.0	632.7	300,000	300,000	0	632.7	0	6.5	4,112.7	518.20
7	385,000	1,160.0	812.0	85,000	85,000	0	179.3	0	0.7	125.5	15.81
Totals	1,362,800			1,062,800	1,062,800	0	2,145.4	0		18,106.5	2,281.4

[a] Based on 55% thermal efficicency.

[b] Based on 80% thermal efficiency.

[c] Based on actual test data from Boiler Nos. 1, 2 and 3 and permit limits for Boiler Nos. 4 and 7.

[d] Maximum 24-hour average.

Table 6-5. Summary of PM/PM_{10} Emissions from the Baghouses Associated With the Sugar Refinery, U.S. Sugar Corporation

Source / Vent Name	New Stack Number	Design Capacity	Operating Hours	PM/PM10 Emissions (gr/dscf)	(lb/hr)	(g/s)	(TPY)
Existing Sources							
Screening & Distribution Vacuum	S-1	990 dscfm	8,760	0.00754 ^a	0.064 ^b	0.00806	0.280
100 lb Bagging Vacuum System	S-2	872 dscfm	8,760	0.00856 ^a	0.064 ^b	0.00806	0.280
5 lb Bagging Vacuum System	S-3	984 dscfm	8,760	0.00759 ^a	0.064 ^b	0.00806	0.280
Packaging Dust Collector	S-4	9,589 dscfm	8,760	0.0025	0.205	0.0259	0.900
Screening and Distribution #1	S-5	2,668 dscfm	8,760	0.0025	0.057	0.00720	0.250
Screening and Distribution #2	S-6	8,755 dscfm	8,760	0.0025	0.188	0.0236	0.822
Conditioning Silo No. 2	S-7	2,641 dscfm	8,760	0.0025	0.057	0.00713	0.248
Conditioning Silo No. 4	S-8	2,641 dscfm	8,760	0.0025	0.057	0.00713	0.248
Conditioning Silo No. 6	S-9	2,641 dscfm	8,760	0.0025	0.057	0.00713	0.248
White Sugar Dryer	S-10	94,488 dscfm	8,760	0.00177 ^a	1.436 ^b	0.181	6.29
V.H.P. Sugar Dryer	S-11	110,042 dscfm	8,760	0.00172 ^a	1.625 ^b	0.205	7.12
Granular Carbon Furnace	S-12	--	8,760	--	0.650	0.0819	2.85
Proposed Sources							
Conditionsing Silo No. 1	S-13	2,641 dscfm	8,760	0.0025	0.057	0.00713	0.248
Conditionsing Silo No. 3	S-14	2,641 dscfm	8,760	0.0025	0.057	0.00713	0.248
Conditionsing Silo No. 5	S-15	2,641 dscfm	8,760	0.0025	0.057	0.00713	0.248
Powdered Sugar Bins	S-16	6,128 dscfm	8,760	0.0025	0.131	0.01655	0.575
				Total =	4.82	0.61	21.13

Footnotes:

^a Back calculated from guaranteed emission rate and design flow rate.

^b Manufacturer's guaranteed emission rate.

Note: dscfm = dry standard cubic foot per minute.
gr/dscf = grains per dry standard cubic foot
lb/hr = pounds per hour
TPY = tons per year

Table 6-6 . Summary of Competing SO_2 Facilities Considered for Inclusion in the AAQS and PSD Class II Air Modeling Analyses (Revised 9/9/99)

0037504Y/F1/WP/table6-6
5/3/00

APIS Number	Facility	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to USS Clewiston Mill X (km)	Relative to USS Clewiston Mill Y (km)	Relative to USS Clewiston Mill Distance (km)	Relative to USS Clewiston Mill Direction[a] (deg)	Maximum SO_2 Emissions (TPY)	Q, Emission Threshold (Dist -53) x 20
52FTM260001	Everglades Sugar	Hendry	509.6	2954.2	3.5	-2.7	4.4	128	607	SIA
50PMB500086	Glades Correctional Institute	Palm Beach	523.4	2955.2	17.3	-1.7	17.4	96	98	SIA
52FTM260015	Southern Gardens Citrus	Hendry	487.6	2957.6	-18.5	0.7	18.5	272	409	SIA
50PMB500332	Okeelanta	Palm Beach	525.0	2937.4	18.9	-19.5	27.2	136	939	SIA
52FTM500026	Sugar Cane Growers	Palm Beach	534.9	2953.3	28.8	-3.6	29.0	97	2,555	SIA
52FTM500061	U.S. Sugar -Bryant	Palm Beach	538.8	2968.1	32.7	11.2	34.6	71	2,698	SIA
52FTM500016	Osceola Farms	Palm Beach	544.2	2968.0	38.1	11.1	39.7	74	2,023	SIA
52FTM500016	Atlantic Sugar	Palm Beach	552.9	2945.2	46.8	-11.7	48.2	104	954	SIA
50WPB430001	FPL -Martin	Martin	543.1	2992.9	37.0	36.0	51.6	46	93,788	SIA
50WPB430102	Bechtel Indiantown	Martin	545.6	2991.5	39.5	34.6	52.5	49	2,629	SIA
50PMB500021	Pratt & Whitney	Palm Beach	559.2	2978.3	53.1	21.4	57.3	68	504	85.0
50WPB430007	Dickerson	Martin	569.5	2995.9	63.4	39.0	74.4	58	58	428.7
50WPB500234	Palm Beach Resource Recovery	Palm Beach	585.8	2960.2	79.7	3.3	79.8	88	1,533	535.4
52FTM360119	Lee County Resource Recovery	Lee	424.0	2946.0	-82.1	-10.9	82.8	262	490	596.4
52FTM36	FPL - Fort Myers	Lee	422.1	2952.9	-84.0	-4.0	84.1	267	22,702	621.9
50WPB430021	Stuart Contracting	Martin	575.2	3006.8	69.1	49.9	85.2	54	100	644.7
50PMB500045	Lake Worth Utilities	Palm Beach	592.8	2943.7	86.7	-13.2	87.7	99	2,302	694.0
50PMB500042	FPL -Riviera Beach	Palm Beach	594.2	2960.6	88.1	3.7	88.2	88	73,475	703.6
50WPB062120	North Broward Resource Recovery	Broward	583.6	2907.6	77.5	-49.3	91.9	122	896	777.0
50WPB560003	Fort Pierce Utilities	St. Lucie	566.8	3036.3	60.7	79.4	99.9	37	2,708	938.9
50WPB062119	South Broward Resource Recovery	Broward	579.6	2883.3	73.5	-73.6	104.0	135	1,318	1020.3
50BRO060037	FPL -Lauderdale	Broward	580.1	2883.3	74.0	-73.6	104.4	135	47,858	1027.4
50BRO060036	FPL -Port Everglades	Broward	587.4	2885.3	81.3	-71.6	108.3	131	170,215	1106.7
50DAD130020	Tarmac	Dade	562.9	2861.7	56.8	-95.2	110.9	149	2,792	1157.1
50DAD130348	Dade Co. Resource Recovery	Dade	564.3	2857.4	58.2	-99.5	115.3	150	857	1245.4
30ORL310029	Vero Beach Power	St. Lucie	567.1	3056.5	61.0	99.6	116.8	31	18,496	1275.9
US Sugar Clewiston Mill Coordinates:			506.1	2956.9						

Proposed project's 24- and 3-hour emissions are significant to 53 and 60 km, respectively;
Emission imventory is limited to facilities within 103 km but includes major power plants at 104 and 108 km from the proposed project.

Table 6-7. Background SO_2 Facilities That Were Included in the PSD Class I Incremental Modeling Analysis

APIS Number	Facility	County	UTM Coordinates		Relative to Everglades National Park			
			East (km)	North (km)	X (km)	Y (km)	Distance (km)	Direction[a] (deg)
50DAD130348	Dade Co. Resource Recovery	Dade	564.3	2857.4	14.0	8.8	16.5	58
50DAD130020	Tarmac	Dade	562.9	2861.7	12.6	13.1	18.2	44
50WPB062119	South Broward Resource Recovery	Broward	579.6	2883.3	29.3	34.7	45.4	40
50BRO060037	FPL -Fort Lauderdale	Broward	580.1	2883.3	29.8	34.7	45.7	41
50WPB062120	North Broward Resource Recovery	Broward	583.6	2907.6	33.3	59.0	67.7	29
52FTM360119	Lee County Resource Recovery	Lee	424.0	2946.0	-30.0	82.0	87.3 [b]	340
50PMB500332	Okeelanta	Palm Beach	525.0	2937.4	-25.3	88.8	92.3	344
52FTM36	FPL - Fort Myers	Lee	422.1	2952.9	-31.9	88.9	94.5 [b]	340
52FTM500016	Atlantic Sugar	Palm Beach	552.9	2945.2	2.6	96.6	96.6	2
52FTM500026	Sugar Cane Growers	Palm Beach	534.9	2953.3	-15.4	104.7	105.8	352
52FTM260001	Evercane Sugar	Hendry	509.6	2954.2	-40.7	105.6	113.2	339
52FTM260003	US Sugar Clewiston	Hendry	506.1	2956.9	-44.2	108.3	117.0	338
50WPB500234	Palm Beach Resource Recovery	Palm Beach	585.8	2960.2	35.5	111.6	117.1	18
52FTM500016	Osceola Farms	Palm Beach	544.2	2968.0	-6.1	119.4	119.6	357
52FTM500061	U.S. Sugar -Bryant	Palm Beach	538.8	2968.1	-11.5	119.5	120.1	355
50PMB500042	FPL -Riviera Beach	Palm Beach	594.2	2960.6	43.9	112.0	120.3	21
52FTM260015	Southern Gardens	Hendry	487.6	2957.6	-62.7	109.0	125.7	330
50PMB500021	Pratt & Whitney	Palm Beach	559.2	2978.3	8.9	129.7	130.0	4
50WPB430102	Bechtel Indiantown	Martin	545.6	2991.5	-4.7	142.9	143.0	358
50WPB430001	FPL -Martin	Martin	543.1	2992.9	-7.2	144.3	144.5	357

[a] Distance from northeastern corner UTM location =550.3 km E, 2848.6 km N

[b] Distance from northwestern corner UTM location = 454.0 km E, 2864.0 km N

Table 6-8. Summary of Competing SO_2 Sources Included in the Air Modeling Analysis (revised 04/27/00)

APIS Number	Facility	Units	Modeling ID Name	Stack Parameters: Height (m)	Diameter (m)	Temper. (K)	Velocity (m/s)	Emission Rate (g/s): 3-Hour	24-Hour	PSD Source? (EXP/CON)	Modeled in: AAQS	Class II	Class I
52FTM500016	Atlantic Sugar ^ a												
		Unit 1	ATLSUG1	27.4	1.83	346.0	17.97	10.85	10.85	CON	Yes	Yes	Yes
		Unit 2	ATLSUG2	27.4	1.83	350.0	23.36	10.85	10.85	CON	Yes	Yes	Yes
		Unit 3	ATLSUG3	27.4	1.83	350.0	21.56	10.50	10.50	CON	Yes	Yes	Yes
		Unit 4	ATLSUG4	27.4	1.83	344.0	25.16	10.76	10.76	CON	Yes	Yes	Yes
		Unit 5 PSD	ATLSUG5	27.4	1.68	339.0	19.24	11.84	11.84	CON	Yes	Yes	Yes
		Unit 1 PSD Baseline	ATLSUG1B	18.9	1.92	506.0	12.70	-17.24	-17.24	EXP	No	Yes	Yes
		Unit 2 PSD Baseline	ATLSUG2B	18.9	1.92	511.0	10.90	-22.50	-22.50	EXP	No	Yes	Yes
		Unit 3 PSD Baseline	ATLSUG3B	21.9	1.83	522.0	17.50	-16.88	-16.88	EXP	No	Yes	Yes
		Unit 4 PSD Baseline	ATLSUG4B	18.3	1.83	344.0	15.00	-10.76	-10.76	EXP	No	Yes	Yes
50WPB430102	Bechtel Indiantown PSD		BECHTIND	150.9	4.88	333.2	30.50	75.64	75.64	CON	Yes	Yes	Yes
50DAD130348	Dade County RRF PSD												
		Units 1&2	DCRRF12	76.2	3.66	405.4	15.86	26.41	12.32	CON	No	No	Yes
		Units 3&4	DCRRF34	76.2	3.66	405.4	15.86	26.41	12.32	CON	No	No	Yes
52FTM260001	Everglades Sugar ^ a Main Boiler		EVERGLAD	21.9	1.10	477.0	10.10	34.90	34.90	NO	Yes	No	No
50BRO060037	FPL - Lauderdale												
		CTs 1-4 PSD	LAUDU45	45.7	5.49	438.7	14.60	271.15	271.15	CON	Yes	No	Yes
		GT 1-12 (0.5% fuel oil)	LDGT1_12	13.7	2.37	733.2	114.31	552.80	552.80	NO	Yes	No	No
		GT 13-24 (0.5% fuel oil)	LDGT1324	13.4	4.75	733.2	28.43	552.80	552.80	NO	Yes	No	No
		4&5 PSD Baseline	FTLAU45B	46.0	4.27	422.0	14.63	-457.00	-457.00	EXP	No	No	Yes
50WPB430001	FPL Martin												
		Units 1&2	MART12	152.1	7.99	420.9	21.03	1743.79	1743.79		Yes	No	No
		Aux Blr PSD	MARTAUX	18.3	1.10	535.4	15.24	12.90	12.90	CON	Yes	Yes	Yes
		Diesl Gens PSD	MARTGEN	7.6	0.30	785.9	39.62	0.51	0.51	CON	Yes	Yes	Yes
		Units 3&4 PSD	MART34	64.9	6.10	410.9	18.90	470.40	470.40	CON	Yes	Yes	Yes
50PMB500086	Glades Corr Institute		GLADCORR	9.8	0.40	389.0	11.28	2.82	2.82	NO	No	No	No
50WPB560003	Fort Pierce Utilities												
		Units 6&7	FTPIER67	45.7	2.19	408.2	12.50	77.87	77.87	NO	Yes	No	No
52FTM360002	FPL Fort Myers												
		Unit 1	FPLFMYU1	91.8	2.90	422.0	29.90	-585.50	-585.50	EXP	No	No	Yes
		Unit 2	FPLFMYU2	121.2	5.52	408.0	19.20	1334.0	-1334.0	EXP	No	No	Yes
		GT 1-12	FPLFMGTS	9.75	4.42	797.0	35.70	5152.4	5152.4	NO	Yes	No	No
		6 CTs, PSD	FPLFM6CT	38.1	5.79	377.6	21.43	3.86	3.86	CON	Yes	No	Yes
50PMB500045	Lake Worth Utilities												
		Unit 3	LAKWTHU3	38.1	2.13	408.2	7.71	103.95	103.95	NO	Yes	No	No
		Unit 5	LAKWTHU5	22.9	0.94	450.4	18.29	11.59	11.59	NO	Yes	No	No

Table 6-8. Summary of Competing SO_2 Sources Included in the Air Modeling Analysis (revised 04/27/00)

APIS Number	Facility	Units	Modeling ID Name	Stack Parameters: Height (m)	Diameter (m)	Temper. (K)	Velocity (m/s)	Emission Rate (g/s): 3-Hour	24-Hour	PSD Source? (EXP/CON)	Modeled in: AAQS	Class II	Class I
52FTM360119	Lee County RRF PSD		LEECORRF	83.8	1.88	388.5	19.81	14.00	14.00	CON	No	No	Yes
50WPB062120	North Broward RRF PSD		NBCRRF	58.5	3.96	381.0	18.01	35.40	35.40	CON	No	No	Yes
50PMB500332	Okeelanta ^a												
		Boiler 4 PSD Baseline	OKBLR4B	22.9	2.29	333.0	7.36	-10.95	-10.95	EXP	No	Yes	Yes
		Boiler 5 PSD Baseline	OKBLR5B	22.9	2.29	333.0	12.07	-15.64	-15.64	EXP	No	Yes	Yes
		Boiler 6 PSD Baseline	OKBLR6B	22.9	2.29	334.0	8.74	-15.64	-15.64	EXP	No	Yes	Yes
		Boiler 10 PSD Baseline	OKBLR10B	22.9	2.29	334.0	10.35	-17.15	-17.15	EXP	No	Yes	Yes
		Boiler 11 PSD Baseline	OKBLR11B	22.9	2.29	342.0	9.89	-16.79	-16.79	EXP	No	Yes	Yes
		Boiler 12 PSD Baseline	OKBLR12B	22.9	2.29	330.0	8.16	-20.58	-20.58	EXP	No	Yes	Yes
		Boiler 14 PSD Baseline	OKBLR14B	22.9	2.29	333.0	8.28	-20.03	-20.03	EXP	No	Yes	Yes
		Boiler 15 PSD Baseline	OKBLR15B	22.9	2.29	332.0	10.23	-16.79	-16.79	EXP	No	Yes	Yes
		Okeelanta Power Blrs 1,2,3 ^b	OKCOGEN	68.6	3.05	438.7	17.46	27.0	27.0	CON	Yes	Yes	Yes
52FTM500019	Osceola Farms ^a												
		Unit 2	OSBLR2	27.4	1.52	339.0	18.63	17.12	17.12	CON	Yes	Yes	Yes
		Unit 3	OSBLR3	27.4	1.92	344.0	14.34	30.74	30.74	CON	Yes	Yes	Yes
		Unit 4	OSBLR4	27.4	1.83	344.0	16.53	17.12	17.12	CON	Yes	Yes	Yes
		Unit 5	OSBLR5	27.4	1.52	344.0	17.85	18.00	18.00	CON	Yes	Yes	Yes
		Unit 6	OSBLR6	27.4	1.92	339.0	18.25	33.39	33.39	CON	Yes	Yes	Yes
		Unit 1 PSD Baseline	OSBLR1B	22.0	1.52	342.0	8.18	-5.07	-5.07	EXP	No	Yes	Yes
		Unit 2 PSD Baseline	OSBLR2B	22.0	1.52	341.0	18.10	-16.32	-16.32	EXP	No	Yes	Yes
		Unit 3 PSD Baseline	OSBLR3B	22.0	1.93	341.0	14.50	-7.26	-7.26	EXP	No	Yes	Yes
		Unit 4 PSD Baseline	OSBLR4B	22.0	1.83	341.0	18.80	-13.61	-13.61	EXP	No	Yes	Yes
		Unit 5 PSD Baseline	OSBLR5B	22.0	1.52	342.0	12.12	-16.32	-16.32	EXP	No	Yes	Yes
50WPB500234	Palm Beach Co. Resource Recovery												
		1&2 PSD	PBCRRF	76.2	2.04	505.2	24.90	85.05	85.05	CON	No	No	Yes
50BR0060036	FPL Port Everglades												
		Units 1&2 at 2.5%s fuel oil	PTEVU12	104.5	4.27	415.9	26.72	1593.90	1593.90	NO	Yes	No	No
		Units 3&4 at 2.5%s fuel oil	PTEVU34	104.5	5.52	414.8	23.88	2772.00	2772.00	NO	Yes	No	No
		GT 1-12 (0.5% fuel oil)	PTEVGTS	13.4	4.75	733.2	28.43	530.70	530.70	NO	Yes	No	No
50WPB500234	Pratt & Whitney												
		Heater	PRATARCH	15.2	0.91	810.9	143.73	13.99	13.99	CON	No	No	Yes
		Boiler BO-12	PRATBO12	4.7	0.76	533.2	6.92	0.51	0.51	CON	No	No	Yes
50PMB500042	FPL Riviera												
		Units 3&4 at 2.5%s fuel oil	RIVU34	90.8	4.88	401.5	18.90	2113.65	2113.65	NO	Yes	No	No
50WPB062116	South Broward RRF PSD		SBCRRF	59.4	3.96	381.0	18.01	37.91	37.91	CON	No	No	Yes

Table 6-8. Summary of Competing SO_2 Sources Included in the Air Modeling Analysis (revised 04/27/00)

APIS Number	Facility	Units	Modeling ID Name	Stack Parameters: Height (m)	Diameter (m)	Temper. (K)	Velocity (m/s)	Emission Rate (g/s): 3-Hour	24-Hour	PSD Source? (EXP/CON)	Modeled in: AAQS	Class II	Class I
50FTM260015	Southern Gardens Citrus - PSD												
		Peel Dryer	SGARDDRY	38.1	1.16	338.7	9.41	5.29	5.29	CON	Yes	Yes	Yes
		Boilers 1-3	SGARDBLR	16.8	1.22	477.6	14.23	6.48	6.48	CON	Yes	Yes	Yes
52FTM500026	Sugar Cane Growers ^ a												
		Unit 1&2	SUGCN12	45.7	1.87	339.0	21.75	41.20	41.20	CON	Yes	Yes	Yes
		Unit 3	SUGCN3	27.4	1.52	339.0	22.25	16.20	16.20	CON	Yes	Yes	Yes
		Unit 4 PSD	SUGCN4	54.9	2.44	339.0	21.73	38.20	38.20	CON	Yes	Yes	Yes
		Unit 5	SUGCN5	45.7	2.30	339.0	15.94	27.90	27.90	CON	Yes	Yes	Yes
		Unit 8 PSD	SUGCN8	47.2	2.90	339.0	13.62	23.50	23.50	CON	Yes	Yes	Yes
		Unit 1&2 PSD Baseline	SUGCN12B	24.4	1.40	344.0	11.40	-24.20	-24.20	EXP	No	Yes	Yes
		Unit 3 PSD Baseline	SUGCN3B	24.4	1.60	344.0	15.60	-4.40	-4.40	EXP	No	Yes	Yes
		Unit 4 PSD Baseline	SUGCN4B	25.9	1.63	344.0	11.20	-24.20	-24.20	EXP	No	Yes	Yes
		Unit 5 PSD Baseline	SUGCN5B	24.4	1.40	344.0	15.20	-16.20	-16.20	EXP	No	Yes	Yes
		Unit 6&7 PSD Baseline	SUGCN67B	12.2	1.52	606.0	11.20	-51.00	-51.00	EXP	No	Yes	Yes
50DAD130020	Tarmac												
		Kiln 1	TARMC1	61.0	2.44	465.0	12.80	5.67	5.67		No	No	No
		Kiln 2 PSD Baseline	TARMC2B	61.0	2.44	465.0	12.84	-5.71	-5.71	EXP	No	No	Yes
		Kiln 3 PSD Baseline	TARMC3B	61.0	4.57	472.0	10.78	-2.76	-2.76	EXP	No	No	Yes
		Kiln 2 PSD	TABMC2P	61.0	2.44	422.0	9.10	24.57	24.57	CON	No	No	Yes
		Kiln 3 PSD	TARMC3P	61.0	4.57	450.0	11.04	51.43	51.43	CON	No	No	Yes
52FTM500061	US Sugar-Bryant ^ a												
		Unit 5 PSD	USSBRY5	42.7	2.90	345.0	11.49	45.70	45.70	CON	Yes	Yes	Yes
		Unit 1,2&3	USBRY123	19.8	1.64	342.0	36.40	109.50	109.50	CON	Yes	Yes	Yes
		Unit 1 PSD Baseline	USSBRY1B	19.8	1.68	494.0	44.30	-36.50	-36.50	EXP	No	Yes	Yes
		Unit 2&3 PSD Baseline	USBRY23B	19.8	1.68	344.0	37.90	-73.00	-73.00	EXP	No	Yes	Yes
	US Sugar - Clewiston - PSD Baseline												
		Unit 1 PSD Baseline	BRL1B	23.1	1.86	344.0	30.20	-79.86	-58.21	EXP	No	Yes	Yes
		Unit 2 PSD Baseline	BLR2B	23.1	1.86	343.0	35.70	-79.86	-58.21	EXP	No	Yes	Yes
		Unit 3 PSD Baseline	BLR3B	27.4	2.29	342.0	14.70	-48.30	-33.20	EXP	No	Yes	Yes
		East Pellet Plant PSD Baseline	EPELLET	12.2	1.52	347.0	8.54	-10.30	-10.30	EXP	No	Yes	Yes
		West Pellet Plant PSD Baseline	WPELLET	15.7	1.52	347.0	8.54	-10.30	-10.30	EXP	No	Yes	Yes

[a] Facilities or sources within facilities that operate only during the November 1 through May 31 crop season

[b] Sugar mill sources that operate all year

Note: EXP = PSD expanding source.

Table 6-9. Summary of Background PM Facilities Considered for Inclusion in the AAQS and PSD Class II Air Modeling Analyses

APIS Number	Facility	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to USS Clewiston Mill X (km)	Relative to USS Clewiston Mill Y (km)	Relative to USS Clewiston Mill Distance (km)	Relative to USS Clewiston Mill Direction[a] (deg)	Maximum PM Emissions (TPY)	Q, Emission Threshold (Dist -4) x 20	Include in Modeling Analysis ?
52FTM260001	Everglades Sugar	Hendry	509.6	2954.2	3.5	-2.7	4.4	128	41	8.4	YES
50PMB500086	Glades Correctional Institute	Palm Beach	523.4	2955.2	17.3	-1.7	17.4	96	30	267.7	NO
52FTM260015	Southern Gardens Citrus	Hendry	487.6	2957.6	-18.5	0.7	18.5	272	250	290.3	NO
50PMB500332	Okeelanta	Palm Beach	525.0	2937.4	18.9	-19.5	27.2	136	283	463.1	NO
52FTM500026	Sugar Cane Growers	Palm Beach	534.9	2953.3	28.8	-3.6	29.0	97	1,032	500.5	YES
52FTM500061	U.S. Sugar -Bryant	Palm Beach	538.8	2968.1	32.7	11.2	34.6	71	979	611.3	YES
52FTM500016	Osceola Farms	Palm Beach	544.2	2968.0	38.1	11.1	39.7	74	700	713.7	NO
52FTM500016	Atlantic Sugar	Palm Beach	552.9	2945.2	46.8	-11.7	48.2	104	797	884.8	NO
50WPB430001	FPL -Martin	Martin	543.1	2992.9	37.0	36.0	51.6	46	7,578	952.5	YES
50WPB430102	Bechtel Indiantown	Martin	545.6	2991.5	39.5	34.6	52.5	49	270	970.2	NO
50PMB500021	Pratt & Whitney	Palm Beach	559.2	2978.3	53.1	21.4	57.3	68	30	1065.0	NO
US Sugar Clewiston Mill Coordinates:			506.1	2956.9							

Proposed project is significant to 4 km; Emission inventory is limited to facilities within 54 km of the proposed project.

Table 6-10. Summary of Background PM Sources Included in the Air Modeling Analysis

APIS Number	Facility	Units	ISCST3 ID Name	Stack Parameters: Height (m)	Diameter (m)	Temper. (K)	Velocity (m/s)	Emission Rate (g/s)	PSD Source (EXP/CON)	Modeled in: AAQS	Class II
52FTM260001	Everglades Sugar [a]	Main Boiler	EVERGLAD	21.9	1.10	477.0	10.10	2.37	NO	Yes	No
50WPB430001	FPL Martin										
		Units 1&2	MART12	152.1	7.99	420.9	21.03	38.92	NO	Yes	No
		Aux Blr PSD	MARTAUX	18.3	1.10	535.4	15.24	-	CON	Yes	Yes
		Diesl Gens PSD	MARTGEN	7.6	0.30	785.9	39.62	-	CON	Yes	Yes
		Units 3&4 PSD	MART34	64.9	6.10	410.9	18.90	13.33	CON	Yes	Yes
52FTM500026	Sugar Cane Growers [a]										
		Unit 1&2	SUGCN12	45.7	1.87	339.0	21.75	6.49	CON	Yes	Yes
		Unit 3	SUGCN3	27.4	1.52	339.0	22.25	12.95	CON	Yes	Yes
		Unit 4 PSD	SUGCN4	54.9	2.44	339.0	21.73	12.45	CON	Yes	Yes
		Unit 5	SUGCN5	45.7	2.30	339.0	15.94	12.45	CON	Yes	Yes
		Unit 8 PSD	SUGCN8	47.2	2.90	339.0	13.62	8.57	CON	Yes	Yes
		Unit 1&2 PSD Baseline	SUGCN12B	24.4	1.40	344.0	11.40	-18.94	EXP	No	Yes
		Unit 3 PSD Baseline	SUGCN3B	24.4	1.60	344.0	15.60	-5.70	EXP	No	Yes
		Unit 4 PSD Baseline	SUGCN4B	25.9	1.63	344.0	11.20	-10.90	EXP	No	Yes
		Unit 5 PSD Baseline	SUGCN5B	24.4	1.40	344.0	15.20	-9.10	EXP	No	Yes
		Unit 6&7 PSD Baseline	SUGCN67B	12.2	1.52	606.0	11.20	-2.50	EXP	No	Yes
52FTM500061	US Sugar-Bryant [a]										
		Unit 5 PSD	USSBRY5	42.7	2.90	345.0	11.49	12.59	CON	Yes	Yes
		Unit 1,2&3	USBRY123	19.8	1.64	342.0	36.40	43.66	CON	Yes	Yes
		Unit 1 PSD Baseline	USSBRY1B	19.8	1.68	494.0	44.30	-82.40	EXP	No	Yes
		Unit 2&3 PSD Baseline	USBRY23B	19.8	1.68	344.0	37.90	-12.04	EXP	No	Yes
	US Sugar - Clewiston - PSD Baseline										
		Unit 1 PSD Baseline	BRL1B	23.1	1.86	344.0	30.20	-7.48	EXP	No	Yes
		Unit 2 PSD Baseline	BLR2B	23.1	1.86	343.0	35.70	-7.04	EXP	No	Yes
		Unit 3 PSD Baseline	BLR3B	27.4	2.29	342.0	14.70	-4.57	EXP	No	Yes
		East Pellet Plant PSD Baseline	EPELLET	12.2	1.52	347.0	8.54	-1.69	EXP	No	Yes
		West Pellet Plant PSD Baseline	WPELLET	15.7	1.52	347.0	8.54	-0.82	EXP	No	Yes
		Units 5&6 PSD Baseline	BLR56B	23.1	1.86	494.0	44.30	-52.92	EXP	No	Yes

[a] Facilities or sources within facilities that operate only during the November 1 through May 31 crop season.

[b] Sugar mill sources that operate all year.

Note: EXP = PSD expanding source.
CON = PSD consuming source.
NO = Source does not affect PSD increment.

Table 6-11 . Summary of Background CO Facilities Considered for Inclusion in the AAQS Air Modeling Analyses

APIS Number	Facility	County	UTM Coordinates East (km)	UTM Coordinates North (km)	Relative to USS Clewiston Mill X (km)	Relative to USS Clewiston Mill Y (km)	Relative to USS Clewiston Mill Distance (km)	Relative to USS Clewiston Mill Direction[a] (deg)	Maximum CO Emissions (TPY)	Q, Emission Threshold (Dist -3) x 20	Include in Modeling Analysis ?
52FTM260001	Everglades Sugar	Hendry	509.6	2954.2	3.5	-2.7	4.4	128	15	28.4	NO
50PMB500086	Glades Correctional Institute	Palm Beach	523.4	2955.2	17.3	-1.7	17.4	96	10	287.7	NO
52FTM260015	Southern Gardens Citrus	Hendry	487.6	2957.6	-18.5	0.7	18.5	272	723	310.3	YES
50PMB500332	Okeelanta	Palm Beach	525.0	2937.4	18.9	-19.5	27.2	136	3,289	483.1	YES
52FTM500026	Sugar Cane Growers	Palm Beach	534.9	2953.3	28.8	-3.6	29.0	97	33,771	520.5	YES
52FTM500061	U.S. Sugar -Bryant	Palm Beach	538.8	2968.1	32.7	11.2	34.6	71	2,071	631.3	YES
52FTM500016	Osceola Farms	Palm Beach	544.2	2968.0	38.1	11.1	39.7	74	25,175	733.7	YES
52FTM500016	Atlantic Sugar	Palm Beach	552.9	2945.2	46.8	-11.7	48.2	104	22,577	904.8	YES
50WPB430001	FPL -Martin	Martin	543.1	2992.9	37.0	36.0	51.6	46	1,816	972.5	YES
50WPB430102	Bechtel Indiantown	Martin	545.6	2991.5	39.5	34.6	52.5	49	1,647	990.2	YES
50PMB500021	Pratt & Whitney	Palm Beach	559.2	2978.3	53.1	21.4	57.3	68	30	1085.0	NO
US Sugar Clewiston Mill Coordinates:			506.1	2956.9							

[a] Proposed project is significant to 3 km; Emission inventory is limited to facilities within 53 km of the proposed project.

Table 6-12. Summary of Background CO Sources Included in the Air Modeling Analysis

APIS Number	Facility	Units	ISCST3 ID Name	Stack Parameters: Height (m)	Diameter (m)	Temp. (K)	Velocity (m/s)	Emission Rate (g/s)
52FTM500016	Atlantic Sugar [a]							
		Unit 1	ATLSUG1	27.4	1.83	346.0	17.97	242.68
		Unit 2	ATLSUG2	27.4	1.83	350.0	23.36	242.68
		Unit 3	ATLSUG3	27.4	1.83	350.0	21.56	294.84
		Unit 4	ATLSUG4	27.4	1.83	344.0	25.16	311.85
		Unit 5 PSD	ATLSUG5	27.4	1.68	339.0	19.24	206.92
50WPB430102	Bechtel Indiantown PSD		BECHTIND	150.9	4.88	333.2	30.50	47.38
50WPB430001	FPL Martin							
		Units 1&2	MART12	152.1	7.99	420.9	21.03	38.92
		Aux Blr PSD	MARTAUX	18.3	1.10	535.4	15.24	---
		Diesl Gens PSD	MARTGEN	7.6	0.30	785.9	39.62	---
		Units 3&4 PSD	MART34	64.9	6.10	410.9	18.90	13.33
50PMB500332	Okeelanta [a]							
		Okeelanta Power Blrs 1,2,3[b]	OKCOGEN	68.6	3.05	438.7	17.46	94.61
52FTM500019	Osceola Farms [a]							
		Unit 2	OSBLR2	27.4	1.52	339.0	18.63	317.52
		Unit 3	OSBLR3	27.4	1.92	344.0	14.34	128.77
		Unit 4	OSBLR4	27.4	1.83	344.0	16.53	317.52
		Unit 5	OSBLR5	27.4	1.52	344.0	17.85	374.22
		Unit 6	OSBLR6	27.4	1.92	339.0	18.25	310.40
50FTM260015	Southern Gardens Citrus - PSD							
		Peel Dryer	SGARDDRY	38.1	1.16	338.7	9.41	20.80
		Boilers 1-3	SGARDBLR	16.8	1.22	477.6	14.23	---
52FTM500026	Sugar Cane Growers [a]							
		Unit 1&2	SUGCN12	45.7	1.87	339.0	21.75	547.09
		Unit 3	SUGCN3	27.4	1.52	339.0	22.25	187.61
		Unit 4 PSD	SUGCN4	54.9	2.44	339.0	21.73	467.71
		Unit 5	SUGCN5	45.7	2.30	339.0	15.94	359.60
		Unit 8 PSD	SUGCN8	47.2	2.90	339.0	13.62	381.02
52FTM500061	US Sugar-Bryant [a]							
		Unit 5 PSD	USSBRY5	42.7	2.90	345.0	11.49	760.91
		Unit 1,2&3	USBRY123	19.8	1.64	342.0	36.40	1309.77

[a] Facilities or sources within facilities that operate only during the November 1 through May 31 crop season.

[b] Sugar mill sources that operate all year.

Table 6-13. A Summary of Building Structures Considered in the Air Modeling Analysis

Structure	Height		Length		Width	
	ft	m	ft	m	ft	m
Mill Expansion Buildings						
Electrical Equipment	100.0	30.5	95.6	29.1	27.6	8.4
Support Structure	133.0	40.5	95.6	29.1	76.2	23.2
Dryer Area	100.0	30.5	95.6	29.1	41.8	12.7
Screening & Distribution Towers	150.0	45.7	132.2	40.3	68.7	20.9
Specialty Packaging Facility	40.0	12.2	82.1	25.0	201.6	61.5
Packaging Facility	60.0	18.3	65.0	19.8	280.0	85.3
Warehouse	28.0	8.5	339.7	103.6	289.7	88.3
Electrical & Conditioning Equipment	24.0	7.3	59.7	18.2	52.3	15.9
Bulk Loading	40.0	12.2	84.4	25.7	53.8	16.4
Sugar Silos	136.0	41.5	111.6	34.0	68.7	20.9
Other Mill Buildings						
Pellet Warehouse	46.0	14.0	527.0	160.6	105.0	32.0
WDA	51.0	15.5	55.0	16.8	53.0	16.2
Storage and Safety Mechanic	34.8	10.6	58.0	17.7	52.0	15.8
Boiler 4 Building	87.5	26.7	78.0	23.8	66.0	20.1
Boiler 5&6 Building	56.0	17.1	118.0	36.0	66.0	20.1
Boiler 1&2 Building	67.3	20.5	115.0	35.1	103.0	31.4
Power House	34.0	10.4	119.0	36.3	65.0	19.8
Warehouse	37.0	11.3	153.0	46.6	71.0	21.6
Machine Shop	39.0	11.9	309.0	94.2	106.0	32.3
B Mill Building	68.0	20.7	81.0	24.7	81.0	24.7
A Mill Building	69.0	21.0	243.0	74.1	67.0	20.4
Boiling House	93.7	28.6	181.0	55.2	155.0	47.2
Boiler 7 ESP	87.5	26.7	55.0	16.8	33.0	10.1
Boiler 7 Building	83.0	25.3	78.0	23.8	68.0	20.7
Sugar Warehouse #1	37.0	11.3	390.5	119.0	103.8	31.6
Sugar Warehouse #3	55.0	16.8	771.3	235.1	143.4	43.7

Table 6-14. Property Boundary Receptors Used in the Air Modeling Analysis

Receptor	Direction (degrees)	Distance (m)	Receptor	Direction (degrees)	Distance (m)
1	10	463	19	190	1,135
2	20	485	20	200	1,178
3	30	527	21	210	806
4	40	595	22	220	627
5	50	709	23	230	526
6	60	912	24	240	465
7	70	1,333	25	250	429
8	80	2,048	26	260	409
9	90	2,017	27	270	403
10	100	1,785	28	280	409
11	110	906	29	290	429
12	120	675	30	300	465
13	130	764	31	310	526
14	140	910	32	320	595
15	150	1,170	33	330	527
16	160	1,190	34	340	485
17	170	1,135	35	350	463
18	180	1,118	36	360	456

Note: Distances are relative to the Boiler No. 4 stack location.

Table 6-15. Everglades National Park Receptors Utilized in the PSD Class I Modeling Analysis

Receptor	UTM Coordinates (m) East	North	Receptor	UTM Coordinates (m) East	North
1	557000	2789000	27	540000	2848600
2	556600	2792000	28	535000	2848600
3	556000	2796000	29	530000	2848600
4	553000	2796500	30	525000	2848600
5	548000	2796500	31	520000	2848600
6	542700	2796500	32	514500	2848600
7	542700	2800000	33	514500	2843000
8	542700	2805000	34	514500	2838000
9	542700	2810000	35	514500	2832500
10	542000	2811000	36	510000	2832500
11	541300	2814000	37	505000	2832500
12	542700	2816000	38	500000	2832500
13	544100	2820000	39	495000	2832500
14	543500	2824600	40	494500	2837000
15	545000	2829000	41	491500	2841000
16	545700	2832200	42	488500	2845500
17	546200	2835700	43	483000	2848500
18	548600	2837500	44	480000	2852500
19	550300	2839000	45	475000	2854000
20	545000	2839000	46	473500	2857000
21	540000	2839000	47	473500	2860000
22	550500	2844000	48	469000	2860000
23	545000	2844000	49	464000	2860000
24	540000	2844000	50	459500	2863200
25	550300	2848600	51	454000	2863200
26	545000	2848600			

Note: U.S. Sugar Clewiston coordinates are 506100E, 2956900N
m = meter.

Table 6-16. Maximum Predicted Pollutant Impacts From Proposed Project
Screening Analysis - Future Boiler No. 4 @ 0.7 % S Oil

Averaging Time	Concentration[a] (ug/m^3)	Receptor Location[b]		Time Period (YYMMDDHH)
		Direction (degree)	Distance (m)	
SO_2				
Annual				
	1.75	300	1500	87123124
	1.59	270	1500	88123124
	1.88	310	1500	89123124
	2.08	300	1500	90123124
	1.99	300	1500	91123124
High 24-Hour				
	27.9	240	900	87110124
	25.7	260	1200	88013024
	18.4	310	1500	89040424
	25.3	240	900	90042024
	24.0	290	1200	91052124
High 3-Hour				
	77	10	463	87011915
	92	360	456	88112306
	65	350	900	89022118
	60	240	900	90100812
	69	10	463	91030309
PM10				
Annual				
	0.80	120	675	87123124
	0.86	110	906	88123124
	0.81	310	1200	89123124
	0.79	300	1200	90123124
	0.86	300	1200	91123124
High 24-Hour				
	8.4	230	1200	87102324
	7.9	60	912	88041224
	8.0	310	1500	89040424
	11.5	240	900	90042024
	10.2	290	1200	91052124
NOx				
Annual				
	0.71	300	1500	87123124
	0.62	270	1500	88123124
	0.75	310	1500	89123124
	0.82	300	1500	90123124
	0.81	300	1500	91123124
CO				
High 8-Hour				
	1065	50	709	87062716
	891	350	600	88041816
	707	340	900	89060816
	795	240	900	90100816
	866	350	900	91042316
High 1-Hour				
	2097	350	1200	87071916
	2208	10	463	88090511
	2200	10	463	89062816
	1966	10	463	90071311
	1862	360	600	91080111

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

[b] Relative to Boiler Number 4 Stack Location

Legend:

YYMMDDHH = Year, Month, Day, Hour Ending

Table 6-17. Maximum Predicted Pollutant Impacts From Proposed Project for Comparison to EPA Significant Impact Levels - Refined Analyses - Future Boiler No. 4 @ 0.7 % S Oil

Averaging Time	Concentration[a] (μg/m3)	Receptor Location[b] Direction (degree)	Receptor Location[b] Distance (m)	Time Period (YYMMDDHH)	EPA Significant Impact Levels (μg/m3)
SO_2					
Annual	2.1	302	1500	90123124	1
	2.0	300	1500	91123124	
High 24-Hour	28.3	240	800	87110124	5
	25.9	260	1100	88013024	
	32.6	244	1000	90042024	
High 3-Hour	92	360	456	88112306	25
PM10					
Annual	1.54	100	800	88123124	1
	0.86	302	1200	91123124	
High 24-Hour	13.8	244	1000	90042024	5
	11.1	292	1100	91052124	
NOx					
Annual	0.75	306	1500	89123124	1
	0.82	300	1500	90123124	
	0.81	300	1500	91123124	
CO					
High 8-Hour	1,065	50	709	87062716	500
High 1-Hour	2,134	350	1100	87071916	2000
	2,200	10	463	89062816	

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

[b] Relative to Boiler Number 4 Stack Location

Note: The project's significant impact distances (km) are SO2 - 12; PM10 - 4; CO - 3; NOx = Not significant

Legend:

YYMMDDHH = Year, Month, Day, Hour Ending

EPA = Environmental Protection Agency

Table 6-18. Maximum Predicted Pollutant Impacts From Proposed Project at the Everglades National Park PSD Class I Area - Future Boiler No. 4 @ 0.7 % S Oil

Averaging Time	Concentration[a] (μg/m3)	UTM Receptor Location[b] (m)	(m)	Time Period (YYMMDDHH)	EPA Proposed Class I Significant Impact Levels ($\mu g/m^3$)
SO_2					
Annual					
	0.022	550300	2848600	87123124	0.1
	0.031	550300	2848600	88123124	
	0.031	545000	2848600	89123124	
	0.022	550300	2848600	90123124	
	0.027	545000	2848600	91123124	
High 24-Hour					
	0.49	540000	2848600	87021224	0.2
	0.50	535000	2848600	88071824	
	0.45	525000	2848600	89022824	
	0.67	545000	2844000	90082724	
	0.68	473500	2860000	91101924	
High 3-Hour					
	2.3	483000	2848500	87090706	1.0
	3.6	540000	2848600	88040603	
	3.6	525000	2848600	89022806	
	3.6	540000	2844000	90112603	
	2.9	545000	2848600	91012306	
PM10					
Annual					
	0.006	550300	2848600	87123124	0.2
	0.008	550300	2848600	88123124	
	0.008	545000	2848600	89123124	
	0.006	550300	2848600	90123124	
	0.006	550300	2848600	91123124	
High 24-Hour					
	0.18	545000	2829000	87050724	0.3
	0.22	535000	2848600	88071824	
	0.19	545000	2848600	89041924	
	0.31	545000	2844000	90082724	
	0.30	473500	2857000	91101924	
NO_x					
Annual					
	0.009	550300	2848600	87123124	0.1
	0.012	550300	2848600	88123124	
	0.012	545000	2848600	89123124	
	0.009	550300	2848600	90123124	
	0.010	545000	2848600	91123124	

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

[b] Universal Mercator Transverse coordinate system

Legend:

YYMMDDHH = Year, Month, Day, Hour Ending

PSD = Prevention of Significant Deterioration

NPS = National Park Service

EPA = Environmental Protection Agency

Table 6-18A. Maximum Predicted 24-Hour PM10 Pollutant Impacts From Proposed Project at the Everglades National Park PSD Class I Area - Refinement - Future Boiler No. 4 @ 0.7 % S Oil

Averaging Time	Concentration[a] (μg/m3)	Receptor Location[b] X (km)	Receptor Location[b] Y (km)	Time Period (YYMMDDHH)	EPA Proposed Class I Significant Impact Level ($\mu g/m^3$)
High 24-Hour					
	0.168	62.92	-80.54	87112924	0.3
	0.169	60.07	-82.68	88011224	
	0.171	-84.73	-57.15	89080224	
	0.154	44.80	-91.86	90121324	
	0.165	-82.68	60.07	91040824	

[a] Concentrations are highest predicted with CALPUFF model and 5-year meteorological record from W. Palm Beach, 1987-91

[b] Receptors are relative to the Clewiston Mill and are located on a circle of 102 km radius, and spaced at 2-degrees intervals

Legend:

YYMMDDHH = Year, Month, Day, Hour Ending

PSD = Prevention of Significant Deterioration

NPS = National Park Service

EPA = Environmental Protection Agency

Table 6-19 (Crop). Maximum Predicted Pollutant Impacts Due to All Future Sources, AAQS Screening Analyses
- Boiler Nos. 1, 2, and 3 @ 182 ft and @ 2.5 % S; Boiler No. 4 @ 0.7 % S
- Crop Season Operation

Averaging Time	Concentration[a] (ug/m^3)	Receptor Location[b]		Time Period (YYMMDDHH)
		Direction (degree)	Distance (m)	
SO_2				
Annual				
	29.9	310	1200	87123124
	31.1	270	1200	88123124
	33.9	310	1200	89123124
	35.8	310	1200	90123124
	33.2	300	1200	91123124
H2H 24-Hour				
	231	310	1200	87080724
	240	310	1200	88040324
	217	320	900	89061524
	208	320	900	90031624
	203	320	1200	91041624
H2H 3-Hour				
	552	310	900	87080715
	615	310	900	88090912
	574	310	900	89061212
	561	270	900	90092115
	728	310	900	91070615
PM_{10}				
Annual				
	5.5	310	1200	87123124
	5.7	270	1200	88123124
	6.4	310	1200	89123124
	6.8	310	1200	90123124
	6.3	300	1200	91123124
H2H 24-Hour				
	48.7	270	1200	87123124
	49.0	310	1500	88112024
	45.2	320	900	89060424
	43.9	320	1200	90020324
	44.3	290	1200	91050924
CO				
H2H 8-Hour				
	3,687	310	900	87061416
	3,957	280	1200	88032408
	3,863	310	900	89060516
	3,797	250	900	90031508
	4,191	310	900	91043016
H2H 1-Hour				
	7,822	340	900	87072410
	7,798	320	900	88040612
	7,930	320	900	89051714
	8,872	330	527	90080511
	9,124	40	600	91081212

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

[b] Relative to Boiler Number 4 Stack Location

Notes

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

Table 6-19 (Off). Maximum Predicted Pollutant Impacts Due to All Future Sources, AAQS Screening Analyses Off-Season Operation

table6-19off
5/3/00

Averaging Time	Concentration[a] (ug/m^3)	Receptor Location[b] Direction (degree)	Receptor Location[b] Distance (m)	Time Period (YYMMDDHH)
SO_2				
Annual				
	19.8	130	3000	87123124
	17.7	130	3000	88123124
	20.4	130	3000	89123124
	22.3	130	3000	90123124
	20.6	130	3000	91123124
H2H 24-Hour				
	138	310	1200	87080724
	123	310	1200	88090924
	104	310	900	89072124
	106	130	3000	90012024
	134	130	3000	91050624
H2H 3-Hour				
	343	310	900	87080715
	388	310	900	88090912
	363	310	900	89061212
	343	270	900	90092115
	450	310	900	91070615
PM_{10} - Emission Scenario A				
Annual				
	2.9	300	900	87123124
	2.7	310	900	88123124
	3.3	310	900	89123124
	3.2	310	900	90123124
	3.3	300	900	91123124
H2H 24-Hour				
	27.78	310	1200	87080724
	25.46	310	1200	88090924
	28.62	310	900	89072124
	24.96	300	1200	90050424
	27.63	290	1200	91050924
PM_{10} - Emission Scenario B				
Annual				
	2.2	300	1200	87123124
	2.0	270	1200	88123124
	2.5	310	900	89123124
	2.5	300	1200	90123124
	2.5	300	1200	91123124
H2H 24-Hour				
	18.0	310	1200	87080724
	16.5	310	1500	88090924
	17.8	310	900	89072124
	19.0	240	1200	90100824
	19.6	260	1200	91102424
CO				
H2H 8-Hour				
	3,330	310	900	87061416
	2,954	270	900	88080516
	3,490	320	900	89060516
	2,847	240	1200	90100816
	3,717	310	900	91043016
H2H 1-Hour				
	7,809	340	900	87072410
	7,783	320	900	88040612
	7,908	320	900	89051714
	8,850	330	527	90080511
	9,085	40	600	91061812

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

[b] Relative to Boiler Number 4 Stack Location

Notes

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

Table 6-20 (Crop). Maximum Predicted Pollutant Impacts Due to All Future Sources For Comparison to AAQS, Refined Analysis
- Boiler Nos. 1, 2, and 3 @ 182 ft and @ 2.5 % S; Boiler No. 4 @ 0.7 % S
- Crop Season Operation

Averaging Time	Concentration ($\mu g/m^3$)			Receptor Location[b]		Time Period	Florida
	Total	Modeled	Background	Direction (degree)	Distance (m)	(YYMMDDHH)	AAQS ($\mu g/m3$)
SO_2							
Annual	39.7	34.7	5	316	1100	89123124	60
	40.9	35.9	5	310	1100	90123124	
	38.2	33.2	5	300	1200	91123124	
H2H 24-Hour	258	245	13	316	1100	87032424	260
	253	240	13	310	1200	88040324	
H2H 3-Hour	775	728	47	310	900	91070615	1300
PM_{10}							
Annual	29.6	6.6	23	316	1100	89123124	50
	29.8	6.8	23	310	1100	90123124	
H2H 24-Hour	90	51	39	272	1100	87123124	150
	88	49	39	310	1500	88112024	
CO							
H2H 8-Hour	7,412	3,982	3,430	280	1100	88032408	10,000
	7,736	4,306	3,430	310	800	91043016	
H2H 1-Hour	14,839	9,124	5,715	40	600	91081212	40,000

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

[b] Relative to Boiler Number 4 Stack Location

Notes

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

Table 6-20 (Off). Maximum Predicted Pollutant Impacts Due to All Future Sources For Comparison to AAQS, Refined Analysis[a]
Off-season Operation

Averaging Time	Concentration (ug/m^3)			Receptor Location[b]		Time Period (YYMMDDHH)	Florida AAQS ($\mu g/m3$)
	Total	Modeled	Background	Direction (degree)	Distance (m)		
SO_2							
Annual	29.7	24.7	5	128	3800	87123124	60
	31.2	26.2	5	134	3900	88123124	
	31.5	26.5	5	128	3800	89123124	
	34.8	29.8	5	134	3900	90123124	
	31.9	26.9	5	130	3700	91123124	
H2H 24-Hour	151	138	13	310	1200	87080724	260
	190	177	13	134	4000	91102524	
H2H 3-Hour	467	420	47	130	900	91050624	1300
PM_{10} - Emission Scenario A							
Annual	26.4	3.4	23	314	900	89123124	50
	26.2	3.2	23	310	900	90123124	
	26.3	3.3	23	300	900	91123124	
H2H 24-Hour	67	28	39	310	1200	87080724	150
	69	30	39	314	1000	89060424	
	67	28	39	290	1200	91050924	
PM_{10} - Emission Scenario B							
Annual	25.5	2.5	23	312	1000	89123124	50
	25.5	2.5	23	300	1100	90123124	
	25.5	2.5	23	300	1100	91123124	
H2H 24-Hour	57	18	39	302	1100	87061924	150
	60	21	39	244	1000	90100924	
	59	20	39	260	1200	91102424	
CO							
H2H 8-Hour	7761	4331	3430	318	900	89060416	10000
	7681	4251	3430	310	800	91043016	
H2H 1-Hour	14800	9085	5715	40	600	91061812	40000

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

[b] Relative to Boiler Number 4 Stack Location

Notes

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

Table 6-21 (Crop). Maximum Predicted Pollutant PSD Class II Increment, Screening Analysis
- Boiler Nos. 1, 2, and 3 @ 182 ft and @ 2.5 % S; Boiler No. 4 @ 0.7 % S
- Crop Season Operation

Averaging Time	Concentration[a] (μg/m3)	Receptor Location[b]		Time Period (YYMMDDHH)
		Direction (degree)	Distance (m)	
SO_2				
Annual				
	0.1	250	11000	87123124
	0.0	0	0	88123124
	0.0	0	0	89123124
	0.1	210	11000	90123124
	0.0	0	0	91123124
H2H 24-Hour				
	7	30	11000	87030524
	9	350	11000	88060224
	12	80	11000	89040224
	11	100	11000	90042124
	8	50	11000	91040824
H2H 3-Hour				
	29	60	11000	87041324
	46	60	11000	88040521
	48	70	11000	89041303
	33	120	11000	90042203
	36	80	11000	91041121
PM_{10}				
Annual				
	<0	0	0	87123124
	<0	0	0	88123124
	<0	0	0	89123124
	<0	0	0	90123124
	<0	0	0	91123124
H2H 24-Hour				
	4.9	320	900	87100624
	6.4	330	900	88062824
	5.9	350	900	89073024
	5.4	310	900	90082924
	6.0	310	900	91083124

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

[b] Relative to Boiler Number 4 Stack Location

Notes:

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

PSD = Prevention of Significant Deterioration

Table 6-21 (Off). Maximum Predicted Pollutant PSD Class II Increments, Screening Analysis
Off-season Operation

Averaging Time	Concentration[a] (μg/m3)	Receptor Location[b] Direction (degree)	Receptor Location[b] Distance (m)	Time Period (YYMMDDHH)
SO_2				
Annual				
	7.1	300	1200	87123124
	6.0	310	1200	88123124
	7.0	310	900	89123124
	6.9	300	1200	90123124
	7.0	300	1200	91123124
H2H 24-Hour				
	70	300	1200	87061924
	59	310	1200	88100224
	81	320	900	89060424
	65	320	900	90052024
	78	290	1200	91050924
H2H 3-Hour				
	318	310	900	87080715
	343	310	900	88090912
	319	320	900	89061315
	329	270	900	90092115
	414	310	900	91070615
PM_{10} - Emission Scenario A				
Annual				
	2.4	300	900	87123124
	2.1	310	900	88123124
	2.6	310	900	89123124
	2.4	310	900	90123124
	2.5	300	900	91123124
H2H 24-Hour				
	24.2	300	1200	87061924
	20.9	270	900	88073024
	27.7	320	900	89060424
	22.3	300	1200	90050324
	27.0	290	1200	91050924
PM_{10} - Emission Scenario B				
Annual				
	1.8	300	1200	87123124
	1.6	270	1200	88123124
	1.9	310	1200	89123124
	1.9	300	1200	90123124
	1.9	300	1200	91123124
H2H 24-Hour				
	16.7	300	1200	87061924
	14.3	250	1200	88091224
	16.4	320	900	89060424
	15.6	240	900	90100924
	19.6	260	1200	91102424

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

[b] Relative to Boiler Number 4 Stack Location

Notes:

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

PSD = Prevention of Significant Deterioration

Table 6-22 (Crop). Maximum Predicted Pollutant PSD Increment Consumption For Comparision With PSD Class II Allowable Increments, Refined Analysis - Boiler Nos. 1, 2, and 3 @ 182 ft and @ 2.5 % S; Boiler No. 4 @ 0.7 % S - Crop Season Operation

Averaging Time	Concentration ($\mu g/m^3$)	Receptor Location[b]		Time Period (YYMMDDHH)	Allowable PSD Class II Increment ($\mu g/m^3$)
		Direction (degree)	Distance (m)		
SO_2					
Annual	0.1	250	11000	87123124	20
H2H 24-Hour	12.2	78	11000	89042324	91
H2H 3-Hour	47.7	70	11000	89041303	512
PM_{10}					
Annual	<0	0	0	0	17
H2H 24-Hour	7.6	332	1200	88081424	30

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

[b] Relative to Boiler Number 4 Stack Location

Notes:

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

EPA = Environmental Protection Agency

PSD = Prevention of Significant Deterioration

Table 6-22 (Off). Maximum Predicted Pollutant PSD Increment Consumption For Comparision With PSD Class II Allowable Increments, Refined Analysis
Off-season Operation

Averaging Time	Concentration (μg/m3)	Receptor Location[b]		Time Period (YYMMDDHH)	Allowable PSD Class II Increment (μg/m3)
		Direction (degree)	Distance (m)		
SO_2					
Annual	7.1	300	1200	87123124	20
	7.1	312	1000	89123124	
	7.2	298	1000	91123124	
H2H 24-Hour	89.0	318	1000	89060424	91
H2H 3-Hour	414.4	310	900	91070615	512
PM_{10} - Emission Scenario A					
Annual	2.60	314	900	89123124	17
	2.51	298	900	91123124	
H2H 24-Hour	29.9	314	1000	89060424	30
	27.0	290	1200	91050924	
PM_{10} - Emission Scenario B					
Annual	1.92	312	1000	89123124	17
	1.92	302	1200	90123124	
	1.92	300	1100	91123124	
H2H 24-Hour	19.6	260	1200	91102424	30

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

[b] Relative to Boiler Number 4 Stack Location

Notes:

YYMMDDHH = Year, Month, Day, Hour Ending

H2H = Highest, 2nd-Highest Concentration in 5 years.

EPA = Environmental Protection Agency

PSD = Prevention of Significant Deterioration

Table 6-23 (Crop). Maximum Predicted SO_2 PSD Increment at the Everglades National Park PSD Class I Area
- Boiler Nos. 1, 2, and 3 @ 182 ft and @ 2.5 % S; Boiler No. 4 @ 0.7 % S
- Crop Season Operation

Averaging Time	Concentration[a] (ug/m^3)	Receptor Location (UTM) (m)	(m)	Time Period (YYMMDDHH)	Allowable PSD Class I Increment (ug/m^3)
Annual					
	0.16	550300	2848600	87123124	2
	0.14	535000	2848600	88123124	
	0.10	540000	2848600	89123124	
	0.20	545000	2848600	90123124	
	0.09	540000	2848600	91123124	
H2H 24-Hour					
	2.3	550300	2848600	87052924	5
	3.0	545000	2848600	88060224	
	2.8	545000	2848600	89040124	
	3.2	530000	2848600	90041224	
	2.5	550300	2848600	91100924	
H2H 3-Hour					
	17.7	540000	2848600	87041303	25
	24.2	540000	2848600	88042209	
	18.1	550300	2848600	89042924	
	19.1	540000	2848600	90020706	
	14.5	530000	2848600	91100915	

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

Legend:

PSD = Prevention of Significant Deterioration
YYMMDDHH = Year, Month, Day, Hour Ending
UTM = Universal Transverse Mercator
H2H = Highest, 2nd-Highest

Table 6-23 (Off). Maximum Predicted SO_2 PSD Increment at the Everglades National Park PSD Class I Area Off-season Operation

Averaging Time	Concentration[a] (μg/m3)	Receptor Location (UTM) (m)	(m)	Time Period (YYMMDDHH)	Allowable PSD Class I Increment (μg/m3)
Annual					
	0.28	550300	2848600	87123124	2
	0.30	535000	2848600	88123124	
	0.26	550300	2848600	89123124	
	0.33	545000	2848600	90123124	
	0.23	550300	2848600	91123124	
H2H 24-Hour					
	2.4	542700	2816000	87030424	5
	3.7	540000	2848600	88042224	
	2.9	545000	2848600	89040124	
	3.3	530000	2848600	90041224	
	2.5	550300	2848600	91101924	
H2H 3-Hour					
	17.7	540000	2848600	87041303	25
	24.2	540000	2848600	88042209	
	18.1	550300	2848600	89042924	
	19.1	540000	2848600	90020706	
	14.9	540000	2848600	91082609	

[a] Based on 5-year meteorological record, West Palm Beach, 1987-91

Legend:

PSD = Prevention of Significant Deterioration

YYMMDDHH = Year, Month, Day, Hour Ending

UTM = Universal Transverse Mercator

H2H = Highest, 2nd-Highest

Table A. Baseline Emissions Used in the Significant Impact Analysis for Clewiston Boiler No. 4

Pollutant	Emission Factor (a)	Heat Input (b) (MMBtu/hr)	Emissions (lb/hr)	Emissions (g/s)
Particulate Matter (PM)	0.12 lb/MMBtu	546	65.5	8.26
PM_{10}	0.112 lb/MMBtu	546	61.2	7.71
Sulfur Dioxide	0.008 lb/MMBtu	600	4.8	0.60
Nitrogen Oxides	0.082 lb/MMBtu	(c)	16.1	2.03
Carbon Monoxide	6.36 lb/MMBtu	600	3816.0	480.82

(a) Based on source test data from Boiler No. 4.

(b) Based on maximum steam rates actually reached in operation for Boiler No. 4.

(c) Based on baseline NOx emissions of 70.6 TPY, assuming 8,760 hr/yr operation.