

**Golder Associates Inc.**

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December 19, 2002

BUREAU OF AIR REGULATION

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Florida Department of Environmental Protection  
Division of Air Resources Management, New Source Review Section  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Attention: Mr. A. A. Linero, P. E., Administrator

RE: APPLICATION TO REVISE FUEL OIL SULFUR CONTENT IN BOILERS 1, 2 AND 3  
AT THE BRYANT SUGAR MILL - REVISED MODELING ANALYSIS  
FDEP PROJECT NO. 0990061-007-AC

Dear Mr. Linero:

An Application to Revise Fuel Oil Sulfur Content for the United States Sugar Corporation (USSC) Bryant Mill was submitted to the Department in September 2002. This letter is in response to the Department's subsequent request for additional information (RAI) addressed to Mr. William R. Raiola, dated October 11, 2002. Responses to each of the Department's questions are provided below.

1. On October 22, 2002, USSC added approximately 25,000 gallons of No. 6 fuel oil to the common tank at Bryant. Prior to this, the last time fuel oil was added to the tank was May 2, 2002. As of October 16, 2002, the amount of inventory in the tank was approximately 118,000 gallons (does not include the fuel added on Oct. 22).

The sulfur content in the common tank were as follows:

March 9, 2001: 1.6 percent  
April 2, 2001: 1.3 percent  
Oct. 28, 2002: 0.9 percent

2. Boiler No. 4 at Clewiston was recently issued a PSD permit for a maximum SO<sub>2</sub> emission rate from bagasse of 0.06 pounds per million British thermal units (lb/MMBtu). This value has been demonstrated through industry testing to represent a nominal worst-case emission rate. No SO<sub>2</sub> testing has been conducted at Bryant, but testing at Clewiston show SO<sub>2</sub> emission rates less than 0.02 lb/MMBtu for boilers that have wet scrubbers for particulate control. We believe it is an appropriate short-term factor.
3. Upon reviewing the stack and building locations for the Bryant Mill used in the September modeling analysis versus the latest aerial photo, several building coordinates were refined and building heights were confirmed. Most of the changes were minor. However, one significant change was that the No 5 Boiler Building was determined to be only 67 feet above grade, instead of 82 feet as previously modeled. The previous height was actually the elevation above mean sea level. As a result of these changes, the following information is being provided.

- 1) Aerial photo of the Bryant Mill.

- 2) Transparency and hard copy of the revised building and stack locations over a 50-meter grid. The origin of the analysis is the No 5 Boiler stack location. Both the aerial photo and transparency have been sent to you under a separate cover.
- 3) Revised tables and text from the September 2002 document (attached).
- 4) Revised air modeling files - to be electronically transferred.

As shown in the revised modeling results, compliance with the ambient air quality standards and PSD increments for SO<sub>2</sub> has been demonstrated, based on the operating and fuel restrictions presented in the application.

Please contact me at 352-336-5600, ext 545, or Steve Marks, at ext 539, if you have any questions about this information.

Sincerely,

GOLDER ASSOCIATES INC.



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



Steven R. Marks, C.C.M.  
Associate

Enclosures:

cc: Don Griffin, USSC  
Peter Briggs, USSC  
*R. Blackburn, SD*  
*Q. Stinner, PBC*  
*M. Walgren*

121902/L121902

### **3.0 SO<sub>2</sub> IMPACT ANALYSIS RESULTS**

#### **3.1 AAQS ANALYSIS**

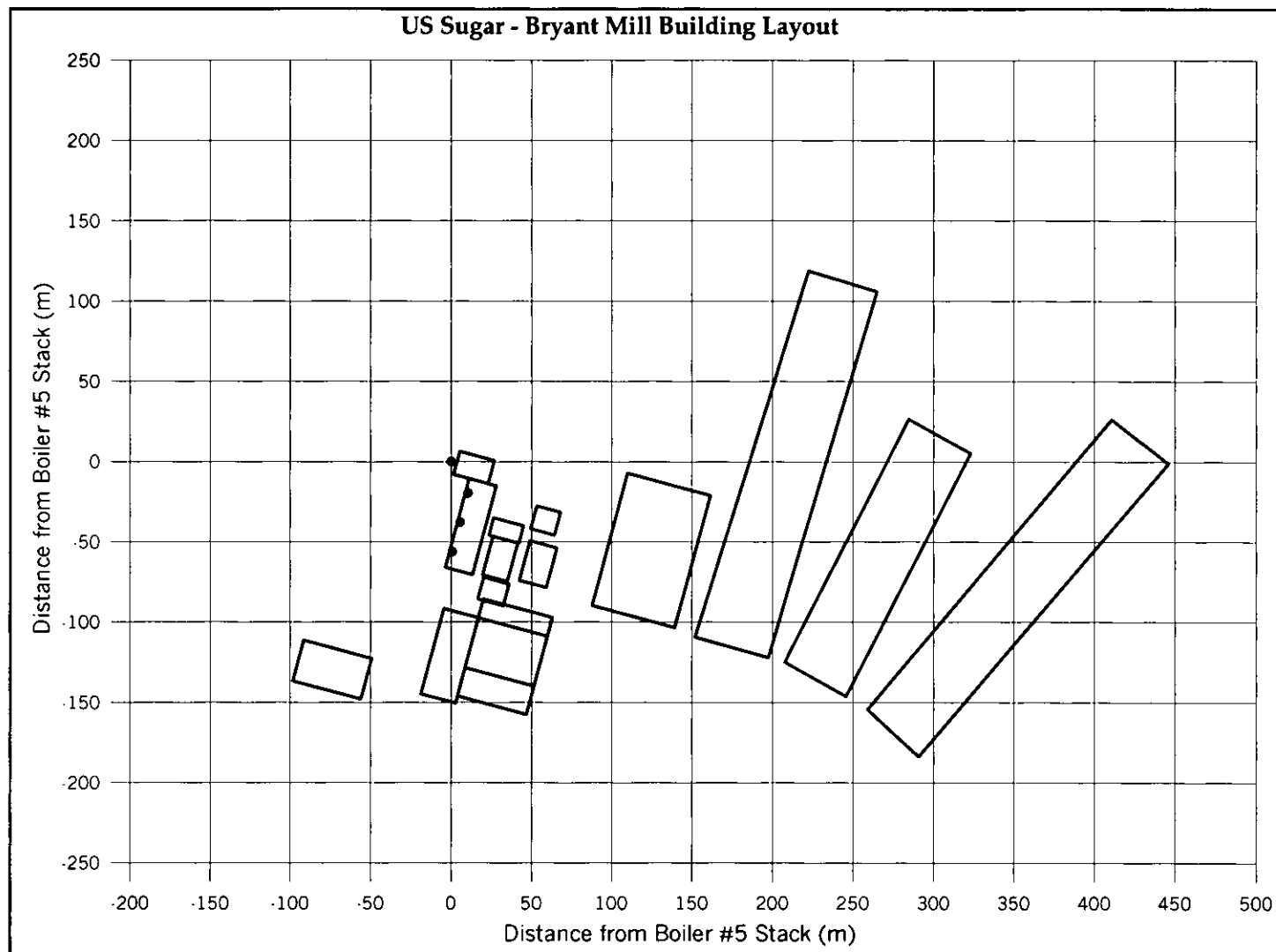
The maximum predicted annual, HSH 24-hour, and HSH 3-hour average SO<sub>2</sub> concentrations predicted for all sources is presented in Table 3-1. Because the maximum predicted concentrations occurred at the U.S. Sugar Bryant mill property boundary, additional modeling refinements were not necessary.

The air modeling results are added to a background concentration and compared with the AAQS in Table 3-2. The maximum predicted annual and HSH 24- and 3-hour SO<sub>2</sub> concentrations are 32.3, 234.4, and 960.1 µg/m<sup>3</sup>, respectively. These concentrations are all below the Florida AAQS of 60, 260, and 1,300 µg/m<sup>3</sup>, respectively.

#### **3.2 PSD CLASS II ANALYSIS**

A summary of the maximum SO<sub>2</sub> PSD Class II increment consumption predicted for all sources from the screening analysis is presented in Table 3-3. Because the maximum predicted concentrations occurred at the Bryant mill property boundary, additional modeling refinements were not necessary.

The air modeling results are compared with the allowable PSD Class II increments in Table 3-4. The maximum predicted annual and HSH 24- and 3-hour SO<sub>2</sub> increment consumption concentrations are 0.8, 35.7, and 300.2 µg/m<sup>3</sup>, respectively. These concentrations are well below the allowable PSD Class II increments of 20, 91, and 512 µ /m<sup>3</sup>, respectively.



**Figure B-1**  
**U.S. Sugar – Bryant Mill Building Layout**

Source: Golder, 2002.



Table 2-3. Summary of Stack Parameters for Sources Used in Modeling of U.S. Sugar Bryant Mill

Emission Unit	Modeling ID	Stack Height		Stack Diameter		Temperature		Flow Rate	Velocity		Relative Location (a)			
		(ft)	(m)	(ft)	(m)	(F)	(K)	(acfm)	(ft/s)	(m/s)	X		Y	
											(ft)	(m)	(ft)	(m)
Boiler 1	USSBRY1	65	19.8	5.40	1.65	160	344.3	156,000	113.5	34.6	2.5	0.76	-183.9	-56.06
Boiler 2	USSBRY2	65	19.8	5.40	1.65	160	344.3	156,000	113.5	34.6	18.5	5.65	-124.0	-37.80
Boiler 3	USSBRY3	65	19.8	5.40	1.65	160	344.3	156,000	113.5	34.6	34.6	10.54	-64.1	-19.55
Boiler 5	USSBRY5	150	45.7	9.50	2.90	142	334.3	206,000	48.4	14.8	0	0	0	0

(a) Relative to Boiler No. 5 stack location.

Note: Stack parameters based on last four years compliance testing, prorated to the maximum steam rate.

Table 2-6. U.S. Sugar Bryant Mill Building Dimensions Used in the Air Modeling Analysis  
(Revised 12/15/02)

Structure	Height		Length (N-S)		Width (E-W)	
	(ft)	(m)	(ft)	(m)	(ft)	(m)
Boiler 5 Building	67.0	20.4	49	14.9	73	22.3
Boilers 1, 2 & 3 Building	61.0	18.6	188	57.3	58	17.7
Power House, North Tier	60.3	18.4	37	11.3	64	19.5
Power House, South Tier	42.0	12.8	82	25.0	53	16.2
Mill Bldg	57.0	17.4	181	55.2	73	22.3
Boiling House Upper Tier	102.0	31.1	106	32.3	146	44.5
Boiling House Lower Tier	64.0	19.5	206	62.8	146	44.5
NW Tier of Boiling House	66.8	20.3	46	14.0	46	14.0
Warehouse #2	55.0	16.8	780	237.7	156	47.5
Chemical Storage (#4)	31.0	9.4	84	25.6	57	17.4
Warehouse #3	55.0	16.8	556	169.5	140	42.7
Warehouse #4	55.0	16.8	780	237.7	144	43.9
Warehouse #1	78.6	24.0	280	85.3	175	53.3
Shop	51.3	15.6	86	26.2	144	43.9
Water Treatment Plant	42.8	13.0	49	14.9	50	15.2

Table 3-1. Maximum Predicted SO<sub>2</sub> Impacts Predicted for All Future Sources,  
AAQS Screening Analysis In the Vicinity of the U.S. Sugar Bryant Mill  
(revised 12/15/02)

Averaging Time	Concentration <sup>a</sup> (µg/m <sup>3</sup> )	Receptor Location <sup>b</sup>		Time Period (YYMMDDHH)
		X (m)	Y (m)	
Annual	16.3	-900.0	-350.0	87123124
	19.2	-900.0	-350.0	88123124
	19.9	-1000.0	1060.0	89123124
	27.3	-900.0	-350.0	90123124
	20.7	-900.0	-350.0	91123124
HSH 24-Hour	213.6	-900.0	-350.0	87110824
	201.9	262.0	270.0	88041924
	178.4	-900.0	-350.0	89021624
	221.4	-900.0	-350.0	90111424
	187.2	-993.8	-350.0	91102624
HSH 3-Hour	913.1	176.0	270.0	87011018
	796.5	262.0	270.0	88112312
	734.3	-50.0	1040.0	89022724
	659.9	170.7	369.3	90022312
	840.3	25.0	990.0	91042324

<sup>a</sup> Based on 5-year meteorological record, West Palm Beach, 1987 to 1991.

<sup>b</sup> Relative to Boiler No. 5 Stack Location.

Note: YYMMDDHH = Year, Month, Day, Hour Ending

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

Table 3-2. Maximum SO<sub>2</sub> Impacts for All Future Sources as Compared with the Florida AAQS. Refined Analysis  
In the Vicinity of the U.S. Sugar Bryant Mill  
(revised 12/15/02)

Pollutant/ Averaging Time	Concentration <sup>a</sup> (µg/m <sup>3</sup> )			Receptor Location <sup>b</sup>		Time Period (YYMMDDHH)	Florida AAQS (µg/m <sup>3</sup> )
	Total	Modeled	Background	X (m)	Y (m)		
Annual	32.3	27.3	5	-900.0	-350.0	90123124	60
HSH 24-Hour	234.4	221.4	13	-900.0	-350.0	90111424	260
HSH 3-Hour	960.1	913.1	47	176.0	270	87011018	1,300

<sup>a</sup> Based on 5-year meteorological record. West Palm Beach, 1987 to 1991.

<sup>b</sup> Relative to Boiler No. 5 Stack Location.

Note: YYMMDDHH = Year, Month, Day, Hour Ending  
HSH = Highest, 2nd-Highest Concentration in 5 years.



Table 3-3. Maximum Predicted SO<sub>2</sub> PSD Class II Increment Consumption for All PSD-Affecting Sources  
Screening Analysis In the Vicinity of the U.S. Sugar Bryant Mill  
(revised 12/15/02)

Averaging Time	Concentration <sup>a</sup> (µg/m <sup>3</sup> )	Receptor Location <sup>b</sup>		Time Period (YYMMDDHH)
		X (m)	Y (m)	
Annual	0.6	348.0	270.0	87123124
	0.6	262.0	370.0	88123124
	0.8	176.0	270.0	89123124
	0.8	90.0	270.0	90123124
	0.5	348.0	270.0	91123124
HSH 24-Hour	29.8	262.0	270.0	87022324
	27.1	262.0	270.0	88100324
	24.2	90.0	270.0	89121924
	35.7	90.0	270.0	90062424
	31.8	90.0	270.0	91030824
HSH 3-Hour	256.3	170.7	369.3	87032815
	300.2	90.0	270.0	88022012
	192.6	262.0	270.0	89040524
	220.9	170.7	369.3	90020412
	281.9	90.0	270.0	91033009

<sup>a</sup> Based on 5-year meteorological record, West Palm Beach, 1987 to 1991.

<sup>b</sup> Relative to Boiler No. 5 Stack Location.

Note: YYMMDDHH = Year, Month, Day, Hour Ending

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

Table 3-4. Maximum Predicted SO<sub>2</sub> PSD Class II Increment Consumption for All PSD-Affecting Sources  
 Refined Analysis In the Vicinity of the U.S. Sugar Bryant Mill  
 (revised 12/15/02)

Averaging Time	Concentration <sup>a</sup> (µg/m <sup>3</sup> )	Receptor Location <sup>b</sup>		Time Period (YYMMDDHH)	Allowable PSD Class II Increments (µg/m <sup>3</sup> )
		X (m)	Y (m)		
Annual	0.8	176.0	270.0	89123124	20
HSH 24-Hour	35.7	90.0	270.0	90062424	91
HSH 3-Hour	300.2	90.0	270.0	88022012	512

<sup>a</sup> Based on 5-year meteorological record, West Palm Beach, 1987 to 1991.

<sup>b</sup> Relative to Boiler No. 5 Stack Location.

Note: YYMMDDHH = Year, Month, Day, Hour Ending

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



Jeb Bush  
Governor

# Department of Environmental Protection

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

David B. Struhs  
Secretary

October 11, 2002

## CERTIFIED MAIL - RETURN RECEIPT REQUESTED

William R. Raiola, Vice President, Sugar Processing  
United States Sugar Corporation  
1731 South W.C. Owen Avenue  
Clewiston, Florida 33440

Re: **Request for Additional Information**  
Project No. 0990061-007-AC  
Application to Revise Fuel Oil Sulfur Content in Boilers 1, 2 and 3 at the Bryant Sugar Mill

Dear Mr. Raiola:

On September 12, 2002, the Department received your application to revise the fuel oil sulfur content for Boilers 1, 2 and 3 at the Bryant Sugar Mill. The application is incomplete. In order to continue processing your application, the Department will need the additional information requested below. Should your response to any of the below items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. When did U.S. Sugar last add fuel oil to the common tank? How much fuel oil is now in the common tank? What is the current fuel oil sulfur level?
2. Table 2-2 of the application shows the maximum SO<sub>2</sub> emissions from the maximum fuel oil firing scenarios. Note "c" indicates an SO<sub>2</sub> emission factor of 0.06 lb/MMBTU. Where did this factor come from and is it an appropriate short-term factor?
3. The building information contained in Attachment UB-FI-C2 and Figure B-1 is inadequate. Please provide the detailed building structure information used in the modeling to determine downwash impacts. This information should include building dimensions for all buildings used in the modeling analyses. In addition, please provide a detailed plot plan to scale of the facility showing the exact location in meters from the modeling origin of each building and stack. All stacks and buildings should be labeled. In addition, a grid with 50 meter spacing should be overlaid over this plot plan so that the information on the plot plan can be easily correlated with the information in the BPIP files.

The Department will resume processing your application after receipt of the requested information. Rule 62-4.050(3), F.A.C. requires that all applications for a Department construction permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. For any material changes to the application, please include a new certification statement by the authorized representative or responsible official. You are reminded that Rule 62-4.055(1), F.A.C. now requires applicants to respond to requests for information within 90 days or provide a written request for an additional period of time to submit the information.

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If you have any questions, please call me at 850/921-9523 or Cleve Holladay at 850/921-8986.

Sincerely,

A handwritten signature in black ink, appearing to read "A. A. Linero". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

A. A. Linero, P.E. Administrator  
New Source Review Section

AAL/ch

cc: David A. Buff, P.E. Golder  
James Stormer, Palm Beach County Health Department  
Ron Blackburn, DEP-SDO  
Ms. Jeaneanne Gettle, EPA Region 4  
Mr. John Bunyak, NPS

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1. Article Addressed to:

Mr. William R. Raiola  
Vice President, Sugar Processing  
United States Sugar Corporation  
1731 South W.C. Owen Avenue  
Clewiston, FL 33440

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Clewiston, FL 33440

PS Form 3800, January 2001

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