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June 1, 2007

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BUREAU OF AIR REGULATION

Florida Department of Environmental Protection  
Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, FL 32399-2400

Attention: Mr. Jeffery F. Koerner, Air Permitting North

**RE: UNITED STATES SUGAR CORPORATION - CLEWISTON MILL  
PROJECT NO. 0510003-040-AV  
HEALTH-BASED COMPLIANCE ALTERNATIVE DEMONSTRATION  
REQUEST FOR ADDITIONAL INFORMATION**

Dear Mr. Koerner:

United States Sugar Corporation (U.S. Sugar) has received the Florida Department of Environmental Protection's (FDEP) request for additional information (RAI) dated November 13, 2006 regarding the health-based compliance alternative (HBCA) Title V permit revision application. Each of the FDEP's requests is answered below, in the same order as they appear in the RAI letter.

**Comment 1. EPA has given final approval to the AERMOD air quality model. The air quality modeling analysis provided with this project is based on the ISC-Prime model, which is no longer a guideline model. Please revise the analysis by using the AERMOD model. The Department reserves the right to ask additional questions regarding the revised analysis.**

**Response:** The air quality modeling analysis has been performed using the AERMOD air quality model. All corresponding tables and figures have been revised accordingly and are included with this response.

**Comment 2. See Table 2-2, "Stack and Operating Parameters Used in the HBCA Modeling Analysis". Boiler 4 is used as a backup boiler during the off-crop season. However, Boiler 4 is not identified in any of the scenarios for the off-crop season. Please explain.**

**Response:** To obtain the worst-case annual impacts, each boiler was modeled at maximum capacity during the crop season. Boiler No. 4 is limited to 2,880,000 MMBtu/yr heat input. If this heat input is spread uniformly over the crop season (5,088 hr/yr), the resulting hourly heat input is 566 MMBtu/hr. Since this heat input is less than Boiler No. 4's maximum permitted 24-hour heat input rate of 633 MMBtu/hr, it was assumed that all of Boiler No. 4's annual heat input occurred during the crop season. Therefore, no off-crop season operation was assumed for Boiler No. 4. However, this was for modeling purposes only, and in no way should limit the year-round operation of Boiler No. 4, subject to the annual heat input limitation.

**Comment 3. Table 4-2 of the application (Maximum Annual HCl-Equivalent Emissions During the Crop Season) indicates that a factor of 7% was applied to Cl<sub>2</sub> emissions from Boilers 7 and 8 based on test data for Boiler 8, as summarized in Table A-4. Please provide all other Cl<sub>2</sub> and HCl test data available for Boilers 7 and 8. Were the cyclone pre-controls operated as wet cyclones or dry cyclones? Please identify the operating conditions for the controls.**

**Response:** Since the original submittal, additional performance tests for HCl and Cl<sub>2</sub> have been conducted on Boiler Nos. 7 and 8. The results are presented in Appendix A. The results of the January 25, 2007, test on Boiler No. 7 while burning bagasse is presented in Table A-4a. The results of the January 5, 2007, test on Boiler No. 8 while burning bagasse and the August 22, 2006, test on Boiler No. 8 while burning wood chips are presented in Table A-4b. Three 1-hour test runs were performed on each boiler, and EPA Method 26A was used to determine the HCl and Cl<sub>2</sub> concentrations. Based on these results, U.S. Sugar has revised the HCl and Cl<sub>2</sub> emissions. The HCl and Cl<sub>2</sub> emission test summary pages and corresponding fuel analysis results are included in Appendix B.

The procedure used to derive the HCl and Cl<sub>2</sub> emission rates were as follows:

1. We used the 90<sup>th</sup> percentile confidence level of the historical fuel analysis data and assumed 100 percent of Cl in the fuel is emitted out the stack, i.e., no control for Cl. The historical bagasse analysis data, as presented in Tables A-1 and A-2, has been revised to account for the more recent bagasse analysis results. In addition, the Boiler MACT bagasse analysis results were treated as one data point in order to not bias the statistical results, since the historical data is based on weekly composites of multiple daily samples beginning in 2002.
2. For both bagasse and wood fuel, the percentage of chlorine in the fuel emitted as Cl<sub>2</sub> was determined from the stack tests and analysis of fuel samples obtained during the stack tests. A safety factor of 2 was applied to these percentages for bagasse, and a safety factor of 3 was used for wood chips.
3. We assumed a percentage of Cl<sub>2</sub> was emitted out the stack, based on the results of the stack testing, with the remainder of the total chlorine in the fuel emitted as HCl, to be conservative.

This methodology was used to justify that most of the chlorine in the fuel is not emitted as Cl<sub>2</sub>. The stack tests, summarized in Tables A-4a and A-4b, reveal that most of the chlorine in the fuel is actually absorbed in the fly ash. The tests show that only 6 percent of the total chlorine in bagasse is emitted as Cl<sub>2</sub> from Boiler No. 7, and only 8 percent of the total chlorine in bagasse is emitted as Cl<sub>2</sub> from Boiler No. 8. In addition, only 1 percent of chlorine in wood chips is emitted as Cl<sub>2</sub> from Boiler No. 8. The percentages were increased as described above in order to estimate worst-case emissions.

Since wood chips will normally only be burned during the off-crop season in Boiler Nos. 7 and 8, the HCl and Cl<sub>2</sub> emissions from this fuel were removed from the crop season emissions table. Table 4-2 is used to summarize emissions during the crop season, which are based solely on burning bagasse in all boilers. The revised Table 4-2 has been prepared and is included with this response.

The cyclone pre-controls on Boiler Nos. 7 and 8 were operated as wet cyclones during all HCl/Cl<sub>2</sub> testing. However, as described previously, no credit is being taken for removal of Cl in the control system.

During the January 25, 2007, bagasse test on Boiler No. 7, the water flow ranged from 24,240 to 32,340 gph and the total ESP power input ranged from 92 to 115 kilowatts (kW). During the January 5, 2007, bagasse test on Boiler No. 8, the water flow ranged from 12,000 to 27,000 gph and the total ESP power input ranged from 29 to 36 kW. During the August 22, 2006, wood chip test on Boiler No. 8, the water flow rate was 21,000 gph and the total ESP power input ranged from 20 to 46 kW.

The proposed Title V emission limits for HCl and Cl<sub>2</sub> for the boilers will be expressed in terms of lb/MMBtu (refer to revised Table 5-1 attached). These emission limits incorporate the HCl and Cl<sub>2</sub> test data, with appropriate safety factors.

**Comment 4. Table 4-2 of the application (Maximum Annual HCl-Equivalent Emissions During the Crop Season) indicated that a factor of 15% was applied to Cl<sub>2</sub> emissions from Boilers 1, 2 and 4. Please provide the basis for the assumption of a 15% factor for Boilers 1, 2 and 4? Please provide all other Cl<sub>2</sub> and HCl test data available for Boilers 1, 2, and 4. The note in this table indicates that the factor will be verified by stack testing. Please identify the number of tests, the proposed EPA reference methods, and the expected timeframe during which the tests will be conducted.**

**Response:** Stack tests were recently performed on Boiler Nos. 1 and 4 to obtain more accurate HCl and Cl<sub>2</sub> emissions. The stack test on Boiler No. 1 was performed on November 28, 2006, and the stack test on Boiler No. 4 was performed on December 1, 2006. Because Boiler Nos. 1 and 2 are nearly identical, the HCl and Cl<sub>2</sub> emission factors from the Boiler No. 1 test were applied to Boiler No. 2. The results of these two tests are presented in Table A-4a. Three 1-hour test runs were performed on each boiler, and EPA Method 26A was used to determine the HCl and Cl<sub>2</sub> concentrations. The HCl and Cl<sub>2</sub> emission test summary pages and corresponding fuel analyses results are included in Appendix A.

The procedures used to derive the HCl and Cl<sub>2</sub> emission rates for Boiler Nos. 1, 2 and 4 were the same as those described in the response to Comment 3 above. This methodology was used to justify that most of the chlorine in the fuel is not emitted as Cl<sub>2</sub>. The stack tests indicate that only 4 percent of the total chlorine in the bagasse fuel burned in Boiler No. 1 and Boiler No. 4 is emitted as Cl<sub>2</sub>. The same emission factor and percentage used for Boiler No. 1 was applied to Boiler No. 2 since they are nearly identical boilers.

The proposed Title V emission limits for HCl and Cl<sub>2</sub> for the boilers will be expressed in terms of lb/MMBtu (refer to revised Table 5-1 attached). These emission limits incorporate the HCl and Cl<sub>2</sub> test data, with appropriate safety factors.

**Comment 5. When using fuel analyses in the HBCA, the NESHAP Subpart DDDDD provisions in 4(a)(1) require you assume that any chlorine detected will be emitted as Cl<sub>2</sub>, when using fuel analyses. Was this done? Please explain.**

**Response:** It was assumed that all chlorine in the fuel is emitted out the stack, but not as 100 percent Cl<sub>2</sub>. Although 40 CFR 63, Appendix A, states that any detected chlorine must be assumed to be emitted as chlorine gas when using fuel analyses, this does not realistically portray the emissions from the boilers at the Clewiston Mill. Typically, for this type of combustion source, the majority of chlorine in the fuel is either absorbed or emitted as HCl. To assume that any chlorine detected is emitted as Cl<sub>2</sub> is a gross over-estimation. Tables A-4a and A-4b demonstrate that very little chlorine

in the fuel is emitted as  $\text{Cl}_2$ . In any event, the proposed Title V limits in Table 5-1 reflect lb/MMBtu emission limits for both HCl and  $\text{Cl}_2$ , which were used in the HBCA demonstration.

**Comment 6. Please identify any specific deviations in the proposed fuel sampling and analysis protocol that differ from the NESHAP Subpart DDDDD provisions.**

**Response:** Appendix A of the original HBCA application contains the fuel sampling and analysis protocol for bagasse and wood chips for the Boiler MACT testing. This fuel sampling and analysis protocol describes any deviations from the NESHAP Subpart DDDDD provisions. In addition, Table A-6 in Appendix A also identifies any deviations in the fuel sampling and analysis procedures from the NESHAP Subpart DDDDD provisions.

The main deviation in the bagasse fuel sampling and analysis protocol is that grab samples were obtained from the moving conveyor since it is not possible to "stop" the bagasse conveyor belts. Stopping the conveyor belts disrupts the boiler fuel feed, and therefore, boiler operation since the conveyor belt directly feeds the bagasse feeders on each boiler. In addition, there is no intermediate storage of bagasse between the bagasse storage pile, the conveyor belt, and the bagasse feeders.

During the off-crop season, wood chips are moved from the wood chip storage pile to the biomass fuel conveying system via front-end loader. The wood chips are dropped into a feed hopper, and the feed hopper discharges to a conveyor belt. The main deviation in the wood chips sampling and analysis protocol is that grab samples are obtained from the feed hopper just downstream of the point where wood chips are introduced into the feeder box. This allows the fuel samples to be taken as the wood chips are transported directly into the conveying system.

**Comment 7. See Table 4-6, "Maximum Predicted Manganese Impacts". Please identify the calculations for the Hazard Quotient for manganese. For the predicted maximum impacts identified in this table, please provide a map of the facility and surrounding areas (i.e., Figure 4-2) showing the points of maximum predicted impacts. On this map, also identify accessible public areas such as residences, schools, parks, etc.**

**Response:** The hazard quotient for manganese is calculated by dividing the maximum predicted impacts in micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ) by the manganese criteria value of  $0.05 \mu\text{g}/\text{m}^3$ .

The manganese emissions have been revised to reflect the updated emission factors for bagasse and wood chips, and to account for wood chip burning only during the off-crop season in Boiler Nos. 7 and 8. Tables 4-1 and 4-3 have been revised and are included with this response. Impacts at the property line and beyond were modeled using the AERMOD model and Ft. Myers meteorological data for years 2001 through 2005. As per discussions and correspondence with Cleve Holladay, Ft. Myers meteorological data is more appropriate to use in AERMOD than meteorological data from Palm Beach International Airport. Even though the Palm Beach International Airport meteorological data has historically been used to model impacts at the Clewiston Mill, it was recently determined that the surface roughness at the Clewiston Mill is more closely related to the surface roughness at Ft. Myers as compared to the surface roughness at the Palm Beach International Airport. Because of the very sensitive nature of the AERMOD model to surface roughness, it is more appropriate to use the Ft. Myers data.

The modeling results, which are presented in the revised Table 4-6, demonstrate that the maximum impacts occur at the property line. A map of the facility and surrounding areas is provided in

Figure 1 attached, which identifies sensitive receptor locations, and Figure 2 shows isopleths of the predicted annual average Mn impacts, the point of maximum impact.

**Comment 8. See Table 4-7, "Maximum Predicted HCl-Equivalent Impacts". Please identify the calculations for the Hazard Quotients for Cl<sub>2</sub> and HCl as well as the overall Hazard Index. For the predicted maximum impacts identified in this table, please provide a map of the facility and surrounding areas (i.e., Figure 4-2) showing the points of maximum predicted impacts. On this map, also identify accessible public areas such as residences, schools, parks, etc.**

**Response:** The hazard quotient for HCl is calculated by dividing the maximum predicted impacts in  $\mu\text{g}/\text{m}^3$  by the HCl criteria value of  $20 \mu\text{g}/\text{m}^3$ . The hazard index is calculated by summing the hazard quotients for multiple substances and/or exposure pathways.

In Table 4-7 of the original HBCA application, the hazard index was not utilized since only the impacts from one pollutant (HCl-equivalent) were determined. Instead, the hazard quotient was used. The maximum predicted HCl impacts in Table 4-7 are based on the HCl-equivalent emissions, which takes into account both HCl and Cl<sub>2</sub> emissions. The modeling results are the same whether the HCl-equivalent is modeled or the HCl and Cl<sub>2</sub> emissions are taken into account separately. Therefore, the HCl-equivalent emissions were modeled. The results of this modeling were then compared to the HCl criteria value of  $20 \mu\text{g}/\text{m}^3$ .

In addition to the typographical error in the column title in Table 4-7, the HCl-equivalent emissions have been revised to reflect the updated emission factors for bagasse and wood chips, and to account for wood chip burning only during the off-crop season in Boiler Nos. 7 and 8. Tables 4-2 and 4-4 have been revised and are included with this response.

Impacts at the property line and beyond were modeled using the AERMOD model and Ft. Myers meteorological data for years 2001 through 2005. The modeling results, which are presented in the revised Table 4-7, demonstrate that the maximum impacts occur at the property line. A map of the facility and surrounding areas is provided in Figure 3 attached, which shows isopleths of the predicted annual average HCl impacts, the point of maximum impact, and identifies sensitive receptor locations.

**Comment 9. Appendix A, 4(e) states, "During the emissions test, you must collect operating parameter monitoring system data at least every 15 minutes during the entire emissions test and establish the site-specific operating requirements in Tables 3 or 4, as appropriate, of subpart DDDDD using data from the monitoring system and the procedures specified in §63.7530 of subpart DDDDD." Please provide the monitoring data and specify the applicable operating limits.**

**Response:** Because we are assuming zero control for Cl, i.e., no control device efficiency was relied upon for the HCl and Cl<sub>2</sub> emissions; we are not proposing any operating limits. The operating parameters for particulate matter (PM) control were submitted in the original Title V Compliance Assurance Monitoring (CAM) Plan and subsequent revisions.

Copies of the 15-minute monitoring data for the HCl/Cl<sub>2</sub> stack tests summarized in Tables A-4a and A-4b are included in Appendix A of this response.

**Comment 10. In addition to the Title V permit parameters presented in Table 5-1, please include the following: emission release type, stack height, stack area, stack gas**

**temperature, stack gas exit velocity, type of control devices, control equipment operating limits, and fuel mix (annual average). Identify any restrictions (and the boilers) for which the HBCA analysis was based on less than 100% operation.**

**Response:** Table 5-1 has been updated to include the above mentioned information as enforceable and non-enforceable Title V parameters. The annual average fuel mixtures for the crop and off-crop seasons are presented in Tables 5-2 and 5-3, respectively. The average of the historical bagasse data was used to determine the annual average fuel mix.

The off-crop season emissions were based on a 300,000 lb/hr steam restriction. Three different potential scenarios were evaluated based on the 300,000 lb/hr total steam restriction. These scenarios include operating all the boilers (Boiler Nos. 1, 2, 4, 7, and 8) during the crop season with various boilers operating during the off-crop season. The first off-crop season scenario includes burning wood chips in Boiler No. 7 only, the second off-crop season scenario includes burning wood chips in Boiler No. 8 only, and the third off-crop season scenario includes burning bagasse in Boiler Nos. 1 and 2.

**Comment 11. Boilers 1, 2, 4, 7, and 8 are permitted to fire bagasse and distillate oil. Only Boiler 8 is permitted to fire wood. The addition of wood as a permitted fuel for other boilers would require a new HBCA analysis. Please comment.**

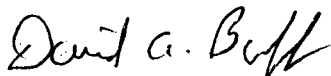
**Response:** Because of plans to burn wood chips in Boiler Nos. 7 and 8 primarily during the off-crop season, emissions from this fuel are included in the revised tables for these boilers only (Tables 4-3 and 4-4). There are no plans to burn wood chips in Boiler Nos. 1, 2, and 4 at this time. U.S. Sugar is aware that adding wood chips as a permitted fuel for these boilers would require a new HBCA analysis.

Signed responsible official (R.O.) and professional engineer (P.E.) certification statements are included with this RAI response.

Thank you for consideration of this information. If you have any questions, please do not hesitate to call me at (352) 336-5600.

Sincerely,

GOLDER ASSOCIATES INC.



David A. Buff, P.E., Q.E.P.  
Principal Engineer

CB/DB/kjp

Enclosures

cc: Peter Briggs, USSC  
Keith Tingberg, USSC

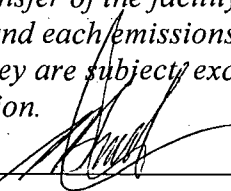


E. Claire Booth, E.I.  
Staff Engineer

## FACILITY INFORMATION

### Application Responsible Official Certification

Complete if applying for an initial/revise/renewal Title V permit or concurrent processing of an air construction permit and a revised/renewal Title V permit. If there are multiple responsible officials, the "application responsible official" need not be the "primary responsible official."

1. Application Responsible Official Name: <b>Neil Smith, Vice President and General Manager, Sugar Manufacturing</b>
2. Application Responsible Official Qualification (Check one or more of the following options, as applicable): <input checked="" type="checkbox"/> For a corporation, the president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit under Chapter 62-213, F.A.C. <input type="checkbox"/> For a partnership or sole proprietorship, a general partner or the proprietor, respectively. <input type="checkbox"/> For a municipality, county, state, federal, or other public agency, either a principal executive officer or ranking elected official. <input type="checkbox"/> The designated representative at an Acid Rain source.
3. Application Responsible Official Mailing Address... Organization/Firm: <b>United States Sugar Corporation</b> Street Address: <b>111 Ponce de Leon Ave.</b> City: <b>Clewiston</b> State: <b>FL</b> Zip Code: <b>33440</b>
4. Application Responsible Official Telephone Numbers... Telephone: <b>(863) 902-2703</b> ext. Fax: <b>(863) 902-2729</b>
5. Application Responsible Official Email Address: <b>nsmith@ussugar.com</b>
6. Application Responsible Official Certification: <i>I, the undersigned, am a responsible official of the Title V source addressed in this air permit application. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof and all other applicable requirements identified in this application to which the Title V source is subject. I understand that a permit, if granted by the department, cannot be transferred without authorization from the department, and I will promptly notify the department upon sale or legal transfer of the facility or any permitted emissions unit. Finally, I certify that the facility and each emissions unit are in compliance with all applicable requirements to which they are subject except as identified in compliance plan(s) submitted with this application.</i>  Signature  Date <u>5/11/07</u>

**Professional Engineer Certification**

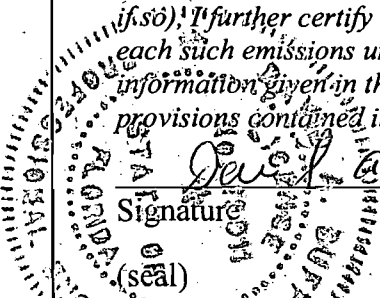
1. Professional Engineer Name: <b>David A. Buff</b> Registration Number: <b>19011</b>
2. Professional Engineer Mailing Address... Organization/Firm: <b>Golder Associates Inc.**</b> Street Address: <b>6241 NW 23<sup>rd</sup> Street, Suite 500</b> City: <b>Gainesville</b> State: <b>FL</b> Zip Code: <b>32653</b>
3. Professional Engineer Telephone Numbers... Telephone: <b>(352) 336-5600</b> ext. <b>545</b> Fax: <b>(352) 336-6603</b>
4. Professional Engineer Email Address: <b>dbuff@golder.com</b>
5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i> <i>(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/>, if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.</i> <i>(4) If the purpose of this application is to obtain an air construction permit (check here <input type="checkbox"/>, if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here <input checked="" type="checkbox"/>, if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.</i> <i>(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here <input type="checkbox"/>, if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.</i>   Signature: <u>David A. Buff</u> Date: <u>6/1/07</u>



TABLE 2-2  
STACK AND OPERATING PARAMETERS AND LOCATIONS USED IN THE HBCA MODELING ANALYSIS, U.S. SUGAR, CLEWISTON MILL

Emission Unit	Model ID	UTM Coordinates <sup>a</sup>		Relative Location <sup>b</sup>				Stack Data <sup>c</sup>				Heat Input (MMBtu/hr)	Steam Rate (lb/hr)	Operating Data <sup>e</sup>				
		East (m)	North (m)	X		Y		Height		Diameter				Temperature		Gas Flow (acfm)	Velocity	
				ft	m	ft	m	ft	m	ft	m			°F	°K		ft/s	m/s
<b>Maximum Permitted - Crop Season</b>																		
Boiler No. 1	BLR1O	506,184.6	2,956,934.8	185	56	-5	-1.5	213	64.9	8.0	2.44	496	245,000	150	339	250,000	82.9	25.3
Boiler No. 2	BLR2O	506,171.8	2,956,934.8	143	44	-5	-1.5	213	64.9	8.0	2.44	447	215,000	150	339	250,000	82.9	25.3
Boiler No. 4 <sup>e</sup>	BLR4O	506,128.2	2,956,936.3	0	0	0	0.0	150	45.7	8.2	2.50	566 <sup>e</sup>	268,246	160	344	251,257	79.3	24.2
Boiler No. 7 <sup>f</sup>	BLR7O	506,095.7	2,956,956.1	-107	-33	65	19.8	225	68.6	8.0	2.44	738	350,000	272	406	337,000	111.7	34.1
Boiler No. 8 <sup>f</sup>	BLR8O	506,046.2	2,956,987.3	-269	-82	167	51.0	199	60.7	10.9	3.32	1,077	575,000	255	397	437,000	78.1	23.8
													1,653,246					
<b>Maximum Permitted - Off-Crop Season</b>																		
<b>Scenario A</b>																		
Boiler No. 7 <sup>f</sup>	BLR7F	506,095.7	2,956,956.1	-107	-33	65	19.8	225	68.6	8.0	2.44	738	350,000	272	406	337,000	111.7	34.1
<b>Scenario B</b>																		
Boiler No. 8 <sup>f</sup>	BLR8F	506,046.2	2,956,987.3	-269	-82	167	51.0	199	60.7	10.9	3.32	1,077	575,000	255	397	437,000	78.1	23.8
<b>Scenario C</b>																		
Boiler No. 1	BLR1F	506,184.6	2,956,934.8	185	56	-5	-1.5	213	64.9	8.0	2.44	496	245,000	150	339	250,000	82.9	25.3
Boiler No. 2	BLR2F	506,171.8	2,956,934.8	143	44	-5	-1.5	213	64.9	8.0	2.44	447	215,000	150	339	250,000	82.9	25.3
													460,000					
<b>300,000 lb/hr steam - Off-Crop Season</b>																		
<b>Scenario A</b>																		
Boiler No. 7 <sup>f</sup>	BLR7F	506,095.7	2,956,956.1	-107	-33	65	19.8	225	68.6	8.0	2.44	633	300,000	272	406	289,000	95.8	29.2
<b>Scenario B</b>																		
Boiler No. 8 <sup>f</sup>	BLR8F	506,046.2	2,956,987.3	-269	-82	167	51.0	199	60.7	10.9	3.32	562	300,000	255	397	207,109	37.0	11.3
<b>Scenario C <sup>d</sup></b>																		
Boiler No. 1	BLR1F	506,184.6	2,956,934.8	185	56	-5	-1.5	213	64.9	8.0	2.44	323	159,789	150	339	163,050	54.1	16.5
Boiler No. 2	BLR2F	506,171.8	2,956,934.8	143	44	-5	-1.5	213	64.9	8.0	2.44	292	140,223	150	339	163,050	54.1	16.5
													300,012					

<sup>a</sup> Universal Transverse Mercator Coordinates, Zone 17, North American Datum of 1927 (NAD27).

<sup>b</sup> Relative to Boiler No. 4.

<sup>c</sup> Stack and operating data based on Title V renewal application (2005), unless otherwise noted.

<sup>d</sup> Both boilers operating at 65.22% load, which equates to a total of 300,000 lb/hr steam. Boiler No. 2 is nearly identical to Boiler No. 1.

<sup>e</sup> Boiler No. 4 limited to 2,880,000 MMBtu/yr, which equates to 566 MMBtu/hr for the crop season (5,088 hours).

<sup>f</sup> Temperature and flow rate based on the average of the 2006 and 2007 stack test results.

TABLE 4-1  
 MAXIMUM ANNUAL MANGANESE EMISSIONS DURING THE CROP SEASON, CLEWISTON MILL (SITE SPECIFIC DEMONSTRATION)

Boiler ID	Model ID	Emission Estimation Method	Heat Input (MMBtu/hr)	Steam Rate (lb/hr)	Hours of Operation (hr/yr) <sup>a</sup>	Mn Emission Factor (lb/MMBtu) <sup>b</sup>	Maximum Crop Season Mn Emissions (TPY)	Mn Emissions For 7-Months	
								(lb/hr)	(g/s)
Boiler No. 1	BLR10	Bagasse Fuel Analysis	496	245,000	5,088	1.40E-03	1.767	0.694	0.0875
Boiler No. 2	BLR20	Bagasse Fuel Analysis	447	215,000	5,088	1.40E-03	1.592	0.626	0.0789
Boiler No. 4 <sup>c</sup>	BLR40	Bagasse Fuel Analysis	566	268,246	5,088	1.40E-03	2.016	0.792	0.0998
Boiler No. 7	BLR70	Bagasse Fuel Analysis	738	350,000	5,088	1.40E-03	2.628	1.033	0.1302
Boiler No. 8	BLR80	Bagasse Fuel Analysis	1,077	575,000	5,088	1.40E-03	3.836	1.508	0.1900
<b>Total All Boilers</b>				<b>1,653,246</b>			<b>11.839</b>	<b>4.654</b>	<b>0.586</b>

<sup>a</sup> Based on 7 months of operation during the crop season (October - April), which is equivalent to 212 days.

<sup>b</sup> Based on the 90th percentile of historical bagasse data (see Table A-2).

<sup>c</sup> Boiler No. 4 limited to 2,880,000 MMBtu/yr heat input, which equates to 566 MMBtu/hr for 5,088 hr/yr.

TABLE 4-2  
 MAXIMUM ANNUAL HCl-EQUIVALENT EMISSIONS DURING THE CROP SEASON, CLEWISTON MILL (SITE SPECIFIC DEMONSTRATION)

Boiler ID	Model ID	Emission Estimation Method	Heat Input (MMBtu/hr)	Steam Rate (lb/hr)	Hours of Operation (hr/yr) <sup>a</sup>	Chlorine Fuel Analysis Factor <sup>b</sup> (lb/MMBtu)	Percentage of Chlorine in Fuel Emitted as <sup>c</sup>		HCl Emission Factor (lb/MMBtu)	Cl <sub>2</sub> Emission Factor (lb/MMBtu)	HCl Crop Season Emission Rate (TPY)	Cl <sub>2</sub> Crop Season Emission Rate (TPY)	Crop Season Toxicity- Weighted Emission Rate (HCl-Equivalents) (TPY) <sup>d</sup>	HCl-Equivalent Emissions for 7-Months	
							HCl	Cl <sub>2</sub>						(lb/hr)	(g/d)
Boiler No. 1	BLR10	Bagasse Fuel Analysis/Stack Tests	496	245,000	5,088	0.089	92%	8%	0.0819	0.0071	103.32	8.98	1,001.7	393.8	49.6
Boiler No. 2	BLR20	Bagasse Fuel Analysis/Stack Tests	447	215,000	5,088	0.089	92%	8%	0.0819	0.0071	93.11	8.10	902.8	354.9	44.7
Boiler No. 4	BLR40	Bagasse Fuel Analysis/Stack Tests	566 <sup>e</sup>	268,246	5,088	0.089	92%	8%	0.0819	0.0071	117.90	10.25	1,143.1	449.3	56.6
Boiler No. 7	BLR70	Bagasse Fuel Analysis/Stack Tests	738	350,000	5,088	0.089	88%	12%	0.0783	0.0107	147.04	20.05	2,152.2	846.0	106.6
Boiler No. 8	BLR80	Bagasse Fuel Analysis/Stack Tests	1,077	575,000	5,088	0.089	84%	16%	0.0748	0.0142	204.83	39.02	4,106.4	1,614.2	203.4
Total All Boilers				1,653,246									9,306.2	3,658.1	460.9

<sup>a</sup> Based on 7 months of operation during the crop season (October - April), which is equivalent to 212 days.

<sup>b</sup> Based on the 90th percentile of historical bagasse data (see Table A-2).

<sup>c</sup> Percentages of chlorine in fuel emitted are based on stack tests (see Tables A-4a and A-4b). A safety factor of 2 was added to the Cl<sub>2</sub> percentages. The same emission factor was applied to Boiler Nos. 1 and 2 because they are nearly identical.

<sup>d</sup> Based on Equation 2 in Appendix A (Subpart DDDDD). RY<sub>HCl</sub> is 0.02 mg/m<sup>3</sup> and RY<sub>Cl<sub>2</sub></sub> is 0.0002 mg/m<sup>3</sup>.

<sup>e</sup> Boiler No. 4 limited to 2,830,000 MMBtu/yr heat input, which equates to 566 MMBtu/hr for 5,088 hr/yr.

**TABLE 4-3  
MAXIMUM ANNUAL MANGANESE EMISSIONS DURING THE OFF-CROP SEASON, U.S. SUGAR, CLEWISTON MILL (SITE SPECIFIC DEMONSTRATION)**

Off-Crop Season Scenario	Boiler ID	Model ID	Emission Estimation Method	Heat Input (MMBtu/hr)	Steam Rate (lb/hr)	Hours of Operation (hr/yr) <sup>a</sup>	Emission Factor (lb/MMBtu) <sup>b</sup>	Maximum Off-Crop Season Mn Emissions (TPY)	Mn Emissions For 5-Months	
									(lb/hr)	(g/s)
<b>Scenario A</b>										
	Boiler No. 7	BLR7F	Wood Chip Fuel Analysis	633	300,000	3,672	4.90E-03	5.691	3.100	0.3905
<b>Scenario B</b>										
	Boiler No. 8	BLR8F	Wood Chip Fuel Analysis	562	300,000	3,672	4.90E-03	5.055	2.753	0.3469
<b>Scenario C</b>										
	Boiler No. 1	BLR1F	Bagasse Fuel Analysis	323	159,789	3,672	1.40E-03	0.832	0.453	0.0571
	Boiler No. 2	BLR2F	Bagasse Fuel Analysis	292	140,223	3,672	1.40E-03	0.749	0.408	0.0514
<b>Boiler Nos. 1 &amp; 2 Total</b>					<b>300,012</b>			<b>1.581</b>	<b>0.861</b>	<b>0.1085</b>

<sup>a</sup> Based on 5 months of operation during the off-crop season (May - September), which is equivalent to 153 days.

<sup>b</sup> Based on the 90th percentile of historical bagasse and wood chips fuel analysis data (see Tables A-2 and A-3, respectively).

TABLE 4-1  
MAXIMUM ANNUAL HCl-EQUIVALENT EMISSIONS DURING THE OFF-CROP SEASON, U.S. SUGAR, CLEWISTON MILLS (SITE SPECIFIC DEMONSTRATION)

Off-Crop Season Scenario	Boiler ID	Model ID	Emission Estimation Method	Heat Input (MMBtu/hr) <sup>a</sup>	Steam Rate (lb/hr)	Hours of Operation (hr/yr) <sup>b</sup>	Chlorine Fuel Analysis Factor <sup>c</sup> (lb/MMBtu)	Percentage of Chlorine in Fuel Emitted as		HCl Emission Factor (lb/MMBtu)	Cl <sub>2</sub> Emission Factor (lb/MMBtu)	HCl Off-Crop Season Emission Rate (TPY)	Cl <sub>2</sub> Off-Crop Season Emission Rate (TPY)	Off-Crop Season Toxicity-Weighted Emission Rate (HCl-Equivalents) (TPY) <sup>d</sup>	HCl-Equivalent Emissions for 5 Months	
								HCl <sup>e</sup>	Cl <sub>2</sub> <sup>e</sup>						(lb/hr)	(g/s)
Scenario A	Boiler No. 7	BLR7F	Wood chip fuel analysis/stack tests	633	300,000	3,672	0.310	97%	3%	0.301	0.0093	349.23	10.50	1,429.34	778.51	98.09
Scenario B	Boiler No. 8	BLR8F	Wood chip fuel analysis/stack tests	562	300,000	3,672	0.310	97%	3%	0.301	0.0093	310.22	9.59	1,269.65	691.55	87.13
Scenario C	Boiler No. 1	BLR1F	Bagasse fuel analysis/stack tests	323	159,789	3,672	0.089	92%	8%	0.082	0.0071	48.63	4.23	471.51	256.81	32.36
	Boiler No. 2	BLR2F	Bagasse fuel analysis/stack tests	292	140,223	3,672	0.089	92%	8%	0.082	0.0071	45.53	3.81	424.93	231.44	29.16
	Boiler Nos. 1 & 2 Total					300,012								896.44	488.26	61.52

<sup>a</sup> Based on 300,000 lb/hr steam during the off-crop season (see Table 2-2).

<sup>b</sup> Based on 5 months of operation during the off-crop season (May - September), which is equivalent to 153 days.

<sup>c</sup> Based on the 90th percentile of fuel analysis data.

<sup>d</sup> Percentages of chlorine in fuel emitted are based on stack tests (see Tables A-4a and A-4b). A safety factor of 2 was added to the Cl<sub>2</sub> percentages for bagasse; a safety factor of 3 was added for wood chips. The same emission factor was applied to Boiler Nos. 1 and 2 because they are nearly identical. U.S. Sugar is in the process of permitting wood chip burning in Boiler No. 7 for the off-crop season. The wood chip emission factor for Boiler No. 8 was used, since these are similar boilers.

<sup>e</sup> Based on Equation 2 in Appendix A (Subpart DDDDD). RV<sub>HCl</sub> is 0.02 mg/m<sup>3</sup> and RV<sub>Cl<sub>2</sub></sub> is 0.0002 mg/m<sup>3</sup>.

**TABLE 4-6**  
**MAXIMUM PREDICTED MANGANESE IMPACTS, U.S. SUGAR, CLEWISTON MILL**

Scenario	Averaging Period	Year	Maximum Predicted Impact ( $\mu\text{g}/\text{m}^3$ )	Receptor Location <sup>a</sup>		Mn Criteria ( $\mu\text{g}/\text{m}^3$ )	Hazard Quotient <sup>b</sup>
				East (m)	North (m)		
Case A	Annual	2001	0.035	507,930	2,954,950	0.05	0.70
		2002	0.032	503,630	2,956,950		0.64
		2003	0.032	504,430	2,958,750		0.64
		2004	0.031	503,630	2,956,950		0.62
		2005	0.031	504,730	2,958,550		0.62
Case B	Annual	2001	0.038	504,230	2,958,550	0.05	0.76
		2002	0.035	503,630	2,956,950		0.70
		2003	0.034	504,430	2,958,650		0.68
		2004	0.034	504,130	2,958,250		0.68
		2005	0.034	504,130	2,958,150		0.68
Case C	Annual	2001	0.030	504,530	2,958,350	0.05	0.60
		2002	0.027	504,130	2,957,050		0.54
		2003	0.026	504,630	2,958,550		0.52
		2004	0.026	503,630	2,956,950		0.52
		2005	0.027	504,830	2,958,450		0.54

<sup>a</sup> UTM coordinates in Zone 17, NAD 27.

<sup>b</sup> The Hazard Quotient is calculated by dividing the maximum predicted impacts in  $\mu\text{g}/\text{m}^3$  by the Mn criteria value of  $0.05 \mu\text{g}/\text{m}^3$ .

Note: Concentrations are highest predicted with AERMOD model and 5-years of meteorological data from Ft. Myers, 2001-2005.

**TABLE 4-7**  
**MAXIMUM PREDICTED HCL-EQUIVALENT IMPACTS, U.S. SUGAR, CLEWISTON MILL**

Scenario	Averaging Period	Year	Maximum Predicted Impact ( $\mu\text{g}/\text{m}^3$ )	Receptor Location <sup>a</sup>		HCl Criteria ( $\mu\text{g}/\text{m}^3$ )	Hazard Quotient <sup>b</sup>
				East (m)	North (m)		
Case A	Annual	2001	20.1	507,730	2,955,250	20	1.0
		2002	17.1	504,130	2,957,050		0.9
		2003	17.9	504,630	2,958,550		0.9
		2004	17.0	503,630	2,956,950		0.9
		2005	17.6	504,830	2,958,450		0.9
Case B	Annual	2001	20.9	504,630	2,958,250	20	1.0
		2002	18.0	504,130	2,957,050		0.9
		2003	18.6	504,730	2,958,350		0.9
		2004	17.7	504,130	2,956,950		0.9
		2005	18.3	504,830	2,958,350		0.9
Case C	Annual	2001	20.5	504,930	2,957,950	20	1.0
		2002	17.9	504,330	2,956,950		0.9
		2003	18.1	504,930	2,958,150		0.9
		2004	17.6	504,130	2,956,950		0.9
		2005	18.3	505,030	2,958,150		0.9

<sup>a</sup> UTM coordinates in Zone 17, NAD 27.

<sup>b</sup> The Hazard Quotient is calculated by dividing the maximum predicted impacts in  $\mu\text{g}/\text{m}^3$  by the HCl criteria value of  $20 \mu\text{g}/\text{m}^3$ .

Note: Concentrations are highest predicted with AERMOD model and 5-years of meteorological data from Ft. Myers, 2001-2005.

TABLE 8-1  
TITLE V PERMIT LIMITS FOR SUBPART DDDDD SOURCES, U.S. SUGAR, CLEWISTON MILL

Unit	Process Parameter	Title V Enforceable Conditions				Emission Release Type	Stack and Operating Data (Non-Enforceable Title V Conditions)								
		Limit	Units	Averaging Time	Fuel Type		Stack Height		Stack Area		Stack Gas Temperature		Exit Velocity		Control Device(s)
						m	ft	m <sup>2</sup>	ft <sup>2</sup>	K	°F	m/s	ft/s		
Boiler No. 1	Maximum Heat Input	496	MMBtu/hr	1-hr	Bagasse	Vertical Stack	64.9	213	4.68	50.33	339	151	25.3	83.0	Wet Scrubber
	Maximum Steam Rate	245,000	lb/hr	24-hr	Bagasse										
	NO <sub>x</sub> Emissions	1.40E-01	lb/MMBtu	--	Bagasse										
	HCl Emissions	0.082	lb/MMBtu	--	Bagasse										
Boiler No. 2	Maximum Heat Input	447	MMBtu/hr	1-hr	Bagasse	Vertical Stack	64.9	213	4.68	50.33	339	151	25.3	83.0	Wet Scrubber
	Maximum Steam Rate	215,000	lb/hr	24-hr	Bagasse										
	NO <sub>x</sub> Emissions	1.40E-03	lb/MMBtu	--	Bagasse										
	HCl Emissions	0.082	lb/MMBtu	--	Bagasse										
Boiler No. 4	Maximum Heat Input	633	MMBtu/hr	1-hr	Bagasse	Vertical Stack	45.7	150	4.91	52.84	344	160	24.2	79.4	Wet Scrubber
	Maximum Heat Input	600	MMBtu/hr	24-hr	Bagasse										
	Maximum Heat Input	2,880,000	MMBtu/yr	Annual	Bagasse										
	NO <sub>x</sub> Emissions	1.40E-03	lb/MMBtu	--	Bagasse										
Boiler No. 7	Maximum Heat Input	812	MMBtu/hr	1-hr	Bagasse	Vertical Stack	68.6	225	4.68	50.33	406	271	34.1	111.9	ESP, Wet Sand Separator
	Maximum Steam Rate	350,000	lb/hr	24-hr	Bagasse										
	Maximum Heat Input	738	MMBtu/hr	24-hr	Bagasse										
	NO <sub>x</sub> Emissions	1.40E-03	lb/MMBtu	--	Bagasse										
Boiler No. 8	Maximum Heat Input	1,185	MMBtu/hr	1-hr	Bagasse	Vertical Stack	60.7	199	8.66	93.18	397	255	21.8	78.1	ESP, Dry Sand Separator, Wet Cyclone, SNCR
	Maximum Steam Rate	575,000	lb/hr	24-hr	Bagasse										
	Maximum Heat Input	1,077	MMBtu/hr	24-hr	Bagasse										
	NO <sub>x</sub> Emissions	1.40E-03	lb/MMBtu	--	Bagasse										
<b>ADDITIONAL CROP SEASON LIMITATIONS</b>															
Boiler Nos. 1, 2, 4, 7, 8	Maximum Operating Hours (each boiler)	5,088	hr/yr	--	--	--	--	--	--	--	--	--	--	--	--
<b>ADDITIONAL OFF-CROP SEASON LIMITATIONS</b>															
Boiler Nos. 1, 2, 4, 7, 8	Total Maximum Steam Rate	300,000	lb/hr	--	--	--	--	--	--	--	--	--	--	--	--
Boiler Nos. 1, 2, 4, 7, 8	Maximum Operating Hours (each boiler)	3,672	hr/yr	--	--	--	--	--	--	--	--	--	--	--	--
Boiler No. 1	Maximum Steam Rate	300,000	lb/hr	--	--	Vertical Stack	64.9	213	4.68	50.33	339	151	16.5	54.1	Wet Scrubber
Boiler No. 2	Maximum Steam Rate	300,000	lb/hr	--	--	Vertical Stack	64.9	213	4.68	50.33	339	151	16.5	54.1	Wet Scrubber
Boiler No. 7	Maximum Steam Rate	300,000	lb/hr	--	--	--	--	--	--	--	--	--	--	--	--
	NO <sub>x</sub> Emissions	4.90E-03	lb/MMBtu	--	Wood Chips	Vertical Stack	68.6	225	4.68	50.33	406	271	29.2	95.8	ESP, Wet Sand Separator
	HCl Emissions	0.30	lb/MMBtu	--	Wood Chips										
Cl <sub>2</sub> Emissions	0.009	lb/MMBtu	--	Wood Chips											
Boiler No. 8	Maximum Steam Rate	300,000	lb/hr	--	--	Vertical Stack	60.7	199	8.66	93.18	397	255	11.3	37.1	ESP, Dry Sand Separator, Wet Cyclone, SNCR
	NO <sub>x</sub> Emissions	4.90E-03	lb/MMBtu	--	Wood Chips										
	HCl Emissions	0.30	lb/MMBtu	--	Wood Chips										
	Cl <sub>2</sub> Emissions	0.009	lb/MMBtu	--	Wood Chips										



**TABLE 5-2  
MAXIMUM ANNUAL FUEL MIXTURES DURING THE CROP SEASON, U.S. SUGAR, CLEWISTON MILL**

<b>Boiler ID</b>	<b>Fuel Type</b>	<b>24-Hour Heat Input (MMBtu/hr)</b>	<b>Hours of Operation <sup>a</sup> (hr/yr)</b>	<b>Heating Value <sup>b</sup> (Btu/lb)</b>	<b>Maximum Fuel Usage (TPY)</b>
Boiler No. 1	Bagasse	496	5,088	3,819	330,407
Boiler No. 2	Bagasse	447	5,088	3,819	297,766
Boiler No. 4 <sup>c</sup>	Bagasse	566	5,088	3,819	377,037
Boiler No. 7	Bagasse	738	5,088	3,819	491,614
Boiler No. 8	Bagasse	1,077	5,088	3,819	717,436

<sup>a</sup> Based on 7 months of operation during the crop season (October - April) , which is equivalent to 212 days.

<sup>b</sup> Based on 3,819 Btu/lb for bagasse and the maximum 24-hour heat input capacity of each boiler. The heating value for bagasse is based on the average of historical fuel data (2002-2007) as presented in Table A-1.

<sup>c</sup> Boiler No. 4 limited to 2,880,000 MMBtu/yr heat input, which equates to 566 MMBtu/hr for 5,088 hr/yr.

**TABLE 5-3  
MAXIMUM ANNUAL FUEL MIXTURES DURING THE OFF-CROP SEASON, U.S. SUGAR, CLEWISTON MILL**

Off-Crop Season Scenario	Boiler ID	Fuel Type	24-Hour Heat Input (MMBtu/hr)	Hours of Operation <sup>a</sup> (hr/yr)	Heating Value <sup>b</sup> (Btu/lb)	Maximum Fuel Usage (TPY)
<b>Scenario A</b>	Boiler No. 7	Wood Chips	633	3,672	4,905	236,939
<b>Scenario B</b>	Boiler No. 8	Wood Chips	562	3,672	4,905	210,363
<b>Scenario C</b>	Boiler No. 1	Bagasse	323	3,672	3,819	155,284
	Boiler No. 2	Bagasse	292	3,672	3,819	140,380

<sup>a</sup> Based on 5 months of operation during the off-crop season (May - September), which is equivalent to 153 days.

<sup>b</sup> Based on 3,819 Btu/lb for bagasse, 4,905 Btu/lb for wood chips, and the maximum 24-hour heat input capacity of each boiler. The heating value for bagasse is based on the average of historical fuel data (2002-2007) as presented in Table A-1. The heating value for wood chips is based on the average of the June and August 2006 fuel sampling results, as presented in Table A-3.



● Sensitive Area

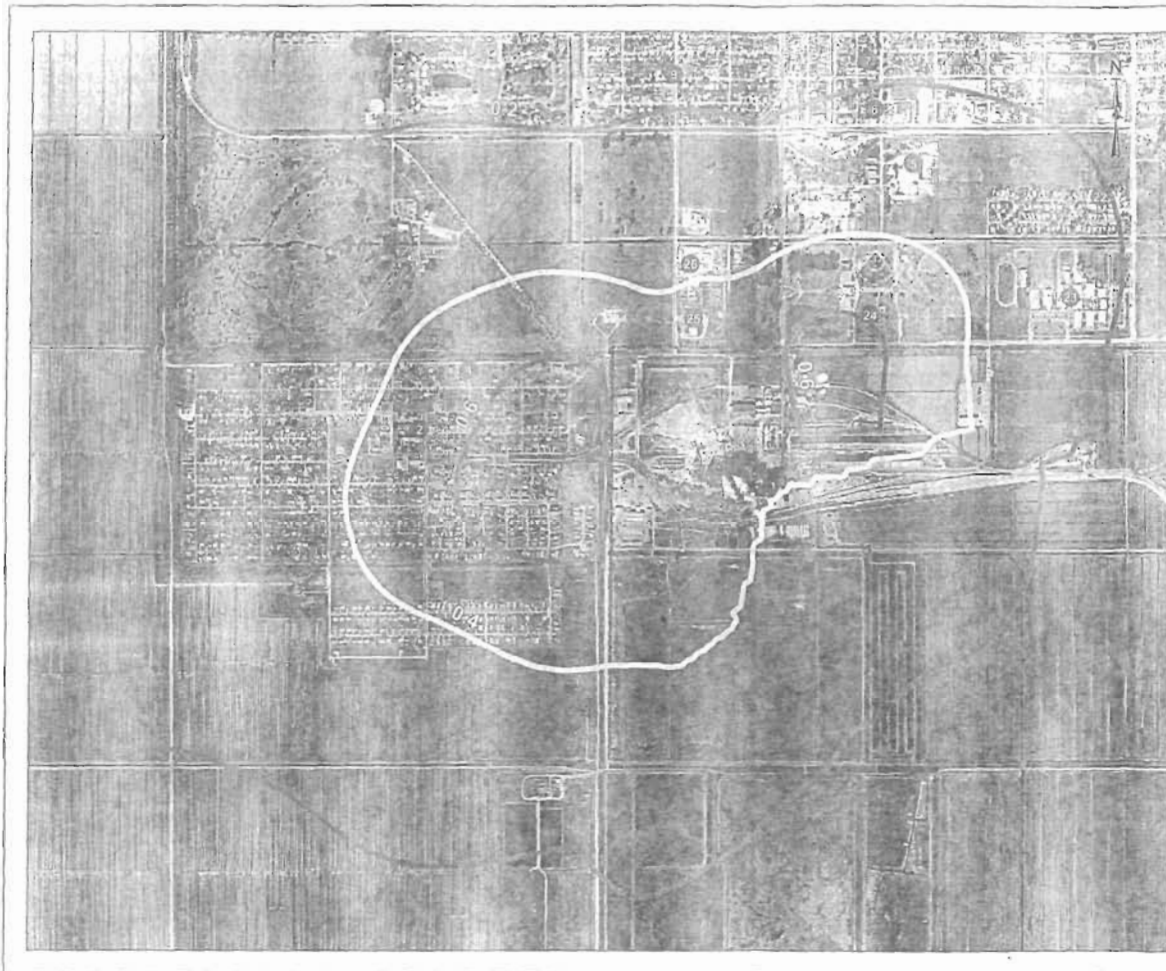
- 1 - Hendry Family Care Center
- 2 - Clewiston Primary School
- 3 - Mount Calvary Baptist Church
- 4 - Missionary Baptist Church
- 5 - Clewiston Middle School
- 6 - Iglesia Misionara Mundial
- 7 - Kingdom Hall of Jehovah's Witness
- 8 - Clewiston Seventh Day
- 9 - First Missionary Baptist Church
- 10 - Evangel Assembly of God
- 11 - Hendry Regional Medical Center
- 12 - Clewiston High School
- 13 - First United Methodist Church of Clewiston
- 14 - St. Martin's Episcopal Church
- 15 - Iglesia De Dios Pentecostal
- 16 - First Baptist Church Clewiston
- 17 - Community Prayer Worship Center
- 18 - Family Home Care
- 19 - Clewiston Intermediate School
- 20 - Community Presbyterian Church
- 21 - Faith Lutheran Church
- 22 - Clewiston Church of Christ
- 23 - School
- 24 - Park
- 25 - Auditorium
- 26 - Elementary School

**REFERENCE**

Projection: Transverse Mercator Datum: NAD 20 Coordinate System: UTM Zone 17



PROJECT	U.S. Sugar Corporation Clewiston Mill
TITLE	Locations of Sensitive Areas



**LEGEND**

MN Hazard Quotient Contours

- 0.2
- 0.4
- 0.6
- ★ Location of Maximum = 0.77
- Sensitive Area
- Clevelston Mill Boundary

**REFERENCE**

Projection: Transverse Mercator Datum: NAD 83 Coordinate System: UTM Zone 17

420 0 420  
Meters

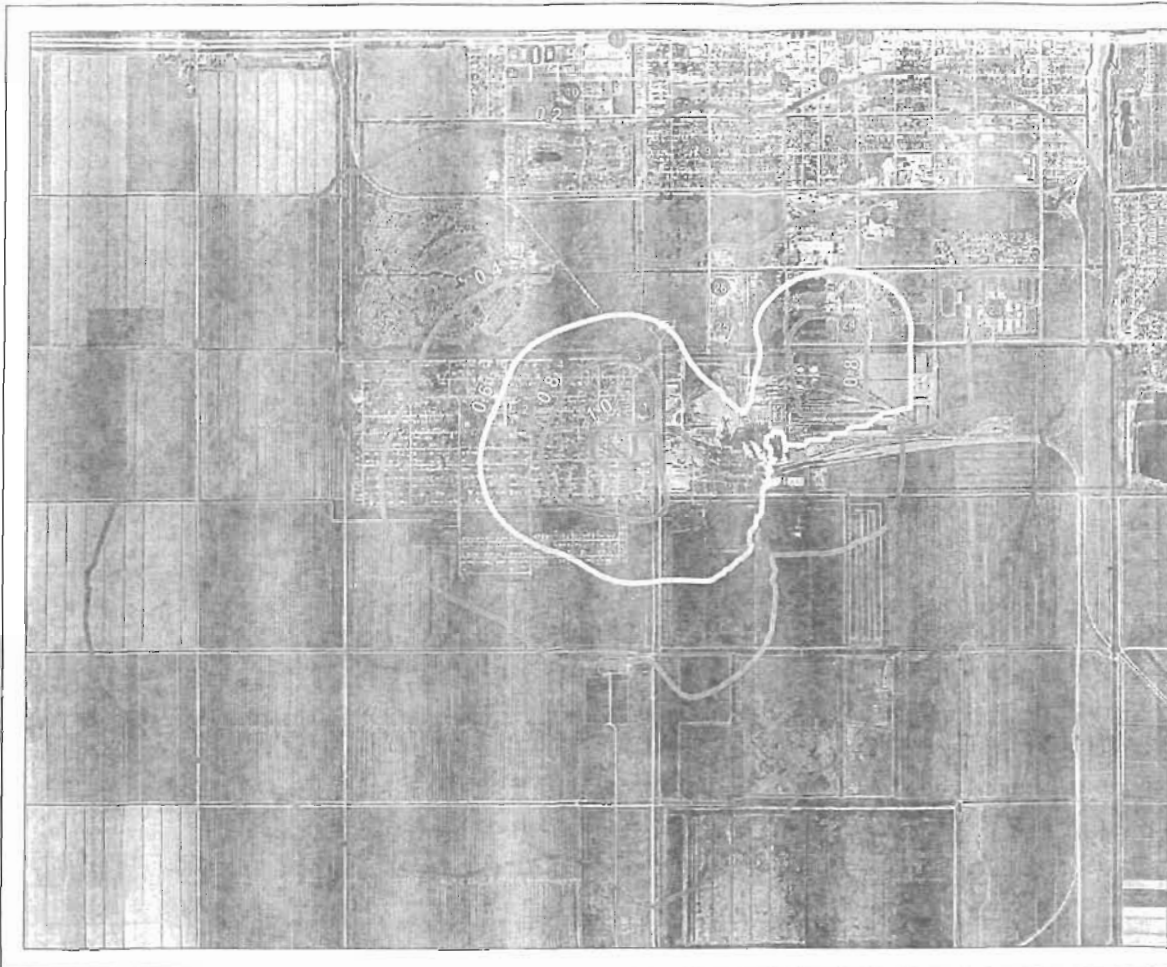
**PROJECT**

U.S. Sugar Corporation  
Clevelston Mill

**TITLE**

Manganese Hazard Quotient Contours

 Goldenrod Associates Blaine, Florida	PREPARED BY: J. L. ... DATE: 08/21/2007	CHECKED BY: ... DATE: 08/21/2007	SCALE: 1" = 1000' DATE: 08/21/2007
	FIGURE 2		



**LEGEND**

**HCl Hazard Quotient Contours**

- 0.2
- 0.4
- 0.6
- 0.8
- 1.0
- ★ Location of Maximum = 1.04
- Sensitive Area
- Clewiston Mill Boundary

**REFERENCE**

Projection: Transverse Mercator; Datum: NAD 83; Coordinate System: UTM Zone 17



**PROJECT:** U.S. Sugar Corporation  
Clewiston Mill

**TITLE:** HCl Hazard Quotient Contours

<p>Golder Associates Geomatics Practice</p>	PROJECT NO. 00000000	DATE: 11/11/2011	<p><b>FIGURE 3</b></p>
	DRAWN BY: J. J. JONES	DATE: 11/11/2011	
	CHECKED BY: J. J. JONES	DATE: 11/11/2011	
	APPROVED BY: J. J. JONES	DATE: 11/11/2011	

## **APPENDIX A**

TABLE A-1  
PROXIMATE, ULTIMATE, AND HEAT CONTENT ANALYSIS RESULTS FOR BAGASSE FROM U.S. SUGAR CLEWISTON

Parameter	Units	Analysis Results (dry basis) for Sample Weeks (collection dates)																				
		1/14-1/20/02	1/21-1/27/02	1/28-2/3/02	2/4-2/10/02	2/11-2/17/02	2/18-2/24/02	2/25-2/30/02	3/1/02-3/7/02	3/8-3/14/02	3/15-3/21/02	3/22-3/28/02	3/29-4/4/02	4/5-4/11/02	4/12-4/18/02	4/19-4/25/02	4/26-5/2/02	5/3-5/9/02	5/10-5/16/02	5/17-5/23/02	5/24-5/30/02	
No. of Samples Compositied		39	42	41	42	43	39	41	42	41	42	41	39	23	26	42	28	36	34	38	26	32
Moisture	% as received	52.66	52.01	50.49	50.06	49.99	50.31	50.18	50.84	51.32	51.60	52.56	54.16	51.20	50.95	51.48	51.66	51.12	51.56	52.96	53.84	55.07
Ash	%	4.01	2.95	5.32	5.04	5.14	3.61	3.15	2.61	3.90	3.23	3.74	0.87	8.40	6.39	7.30	6.65	3.31	4.19	4.12	5.56	5.60
Ash	lb/MMBtu	5.10	6.54	6.80	6.39	6.54	4.48	3.98	3.25	4.91	4.03	4.65	6.00	10.96	8.09	9.54	8.75	4.17	5.02	5.21	7.05	7.16
Volatiles	%	85.41	86.38	83.24	82.86	83.42	84.52	85.49	87.68	87.31	84.04	81.82	83.75	79.86	80.89	81.43	81.59	83.90	83.65	85.91	82.98	82.33
Fixed C	%	10.55	10.67	11.41	12.10	11.44	11.87	11.36	9.71	8.79	12.73	11.44	11.38	11.74	12.72	11.27	11.76	12.79	12.16	9.97	11.46	12.07
HHV	Btu/lb, as received	3,735	3,828	3,874	3,938	4,005	4,012	3,943	3,951	3,872	3,869	3,823	3,721	3,740	3,813	3,715	3,675	3,880	4,047	3,714	3,715	3,517
HHV	Btu/lb, dry	10,922	7,978	7,324	7,884	7,852	8,073	7,911	8,037	7,953	7,994	8,058	8,118	7,664	7,900	7,658	7,602	7,936	8,356	7,896	7,878	7,827
MMF	Btu/lb	8,254	8,240	8,301	8,338	8,313	8,401	8,169	8,270	8,303	8,283	8,397	8,568	8,428	8,466	8,313	8,190	8,230	8,252	8,364	8,381	8,330
MAF	Btu/lb	8,256	8,220	8,264	8,303	8,277	8,376	8,168	8,253	8,276	8,261	8,372	8,533	8,366	8,440	8,261	8,143	8,208	8,222	8,236	8,342	8,291
Air Dry Loss	%	52.23	51.65	50.00	48.75	48.30	49.83	49.58	50.05	49.85	50.75	51.98	53.59	50.56	49.72	50.64	50.85	50.26	50.97	52.53	52.19	54.07
Carbon	%	47.50	47.65	47.06	46.91	46.78	47.75	48.12	48.26	47.63	48.34	47.54	48.26	48.35	48.64	48.11	49.51	50.94	49.91	49.23	48.88	48.88
Hydrogen	%	5.67	5.60	5.63	5.54	5.88	5.98	6.10	6.49	6.00	6.31	6.44	5.23	4.71	5.24	4.90	6.39	5.86	6.39	6.62	6.46	6.59
Nitrogen	%	0.36	0.38	0.36	0.38	0.33	0.40	0.36	0.41	0.35	0.38	0.41	0.29	0.25	0.34	0.33	0.33	0.33	0.31	0.38	0.30	0.30
Sulfur	%	0.06	0.05	0.07	0.03	0.07	0.07	0.04	0.04	0.04	0.05	0.07	0.09	0.05	0.05	0.07	0.07	0.09	0.08	0.06	0.07	0.09
Oxygen	%	42.37	43.37	41.56	42.07	41.80	42.19	42.23	42.19	42.05	41.69	41.80	41.26	40.24	41.34	41.29	37.05	39.62	38.09	38.91	38.38	38.54
SO <sub>2</sub>	lb/MMBtu	0.15	0.13	0.18	0.08	0.18	0.18	0.10	0.10	0.10	0.13	0.18	0.22	0.13	0.13	0.19	0.19	0.23	0.19	0.15	0.18	0.24
F Factor																						
Ed	decMMBtu	9,329	9,203	9,390	9,221	9,403	9,354	9,667	9,722	9,487	9,736	9,562	9,114	9,083	9,050	9,072	10,794	10,195	10,025	10,467	10,315	10,367

Note: % = percent.  
 Btu/lb = British thermal unit per pound.  
 C = carbon.  
 HHV = higher heating value.  
 lb/MMBtu = pounds per million British thermal unit.  
 MAF = moisture and ash free; dry basis heating value without ash included.  
 MMF = mineral and matter free; heating value without sulfur and ash included.  
 SO<sub>2</sub> = sulfur dioxide.

TABLE A-1  
PROXIMATE, ULTIMATE, AND HEAT CONTENT ANALYSES RESULTS FOR BAGASSE FROM U.S. SUGAR CLEWISTON

Parameter	Units	BOILER MACT TESTING																				Boiler MACT Testing Average*	Range			Parameter									
		3/24/05	3/24/05	3/25/05	3/26/05	3/26/05	3/26/05	6/1/06	6/1/06	6/2/06	6/2/06	6/2/06	11/28/06	11/28/06	11/28/06	12/1/06	12/1/06	12/1/06	12/1/06	1/5/07	1/5/07		1/5/07	1/25/07	1/25/07		1/25/07	Min	Max	Avg					
No. of Samples Compositd		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	69	--	--	--	
Moisture	% as received	54.29	56.02	59.11	57.27	58.61	58.46	59.95	50.41	49.04	49.00	46.23	58.48	55.50	55.59	54.38	53.30	56.04	52.42	51.62	51.55	51.23	53.05	52.03	54.07	48.99	55.07	51.74					Moisture		
Ash	%	10.64	7.08	5.07	3.78	6.19	4.19	4.78	3.23	8.61	6.09	5.23	5.80	6.47	8.14	5.26	21.00	10.57	5.16	3.37	5.21	4.22	6.96	9.89	6.82	0.87	8.40	4.63					Ash		
Ash	lb/MMBtu	14.42	9.11	6.39	4.67	7.87	5.26	5.84	3.89	10.90	7.70	6.45	7.49	8.33	10.76	7.16	32.54	14.14	6.64	4.19	6.64	5.27	8.80	12.82	9.01	3.25	10.96	6.26					Ash		
Volatiles	%	77.65	81.26	83.28	84.71	82.03	82.91	80.96	81.86	75.37	79.51	72.88	83.44	81.73	78.57	77.02	68.52	77.51	83.18	83.65	82.31	84.31	81.90	78.57	80.36	79.86	87.68	83.72					Volatiles		
Fixed C	%	11.71	11.66	11.65	11.51	11.73	12.50	14.26	14.91	16.02	14.40	16.89	10.76	11.80	13.29	11.41	10.48	11.92	11.66	12.98	12.46	11.47	11.14	11.54	12.55	8.79	12.79	11.45					Fixed C		
HHV	Btu/lb as received	3,323	3,416	3,290	3,491	3,255	3,207	3,278	4,118	4,055	4,004	4,360	3,214	3,456	3,260	3,352	3,014	3,287	3,699	3,890	3,817	3,903	3,710	3,702	3,578	3,517	4,047	3,519					HHV		
HHV	Btu/lb dry	7,378	7,749	7,923	8,170	7,864	7,962	8,183	8,203	7,998	7,910	8,108	7,742	7,765	7,566	7,347	6,453	7,377	7,773	8,041	7,976	8,002	7,909	7,717	7,299	7,602	8,356	7,914					HHV		
MMF	Btu/lb	8,335	8,412	8,381	8,517	8,426	8,339	8,610	8,603	8,703	8,446	8,593	8,259	8,348	8,295	8,393	8,346	8,440	8,232	8,342	8,350	8,383	8,552	8,640	8,434	8,189	8,752	8,350					MMF		
MAF	Btu/lb	8,250	8,361	8,346	8,490	8,382	8,310	8,596	8,580	8,642	8,422	8,556	8,218	8,203	8,236	8,306	8,169	8,300	8,197	8,321	8,313	8,383	8,501	8,264	8,383	8,143	8,722	8,316					MAF		
Air Dry Loss	%	55.74	55.35	58.24	56.50	57.82	57.27	58.15	48.08	45.23	45.83	41.77	53.68	54.70	54.92	55.55	52.59	55.29	51.71	50.32	50.88	46.97	50.74	50.40	52.51	46.30	54.07	50.95					Air Dry Loss		
Carbon	%	45.78	48.29	48.91	50.05	48.15	49.61	50.33	50.72	48.30	50.00	50.47	50.14	50.06	49.64	47.82	42.47	47.13	52.94	53.32	52.36	52.39	51.07	49.29	49.98	46.11	50.94	48.17					Carbon		
Hydrogen	%	5.58	5.79	5.80	5.20	5.55	5.62	5.83	5.92	5.41	5.63	5.60	6.09	6.07	5.96	5.87	5.19	5.86	5.56	5.99	6.00	5.96	5.77	5.68	5.74	4.71	6.62	5.90					Hydrogen		
Nitrogen	%	0.52	0.47	0.49	0.55	0.42	0.49	0.42	0.38	0.46	0.44	0.40	0.48	0.52	0.55	0.48	0.49	0.48	0.27	0.28	0.28	0.33	0.42	0.35	0.43	0.25	0.43	0.35					Nitrogen		
Sulfur	%	0.05	0.06	0.07	0.09	0.06	0.06	0.07	0.06	0.03	0.08	0.09	0.10	0.07	0.09	0.09	0.05	0.07	0.08	0.48	0.06	0.04	0.07	0.05	0.09	0.03	0.09	0.06					Sulfur		
Oxygen	%	37.43	28.31	39.66	40.33	39.63	40.03	38.57	39.69	36.64	37.76	38.21	37.39	36.81	35.82	34.20	30.80	35.29	35.99	36.56	36.07	37.16	35.71	34.74	37.07	37.05	43.37	40.69					Oxygen		
SO <sub>2</sub>	lb/MMBtu	0.14	0.16	0.18	0.27	0.16	0.16	0.18	0.15	0.19	0.21	0.21	0.25	0.18	0.24	0.23	0.16	0.19	0.21	1.20	0.15	0.11	0.19	0.13	0.23	0.08	0.24	0.16					SO <sub>2</sub>		
F-Factor																																			
Fd	dic/MMBtu	9,927	9,967	9,821	9,435	9,631	9,803	9,845	9,753	9,827	10,080	9,883	10,416	10,455	10,716	10,482	10,561	10,254	10,904	10,804	10,843	10,582	10,471	10,391	10,211	9,850	10,794	9,671					Fd		

Note: % = percent.  
 Btu/lb = British thermal unit per pound.  
 C = carbon.  
 HHV = higher heating value.  
 lb/MMBtu = pounds per million British thermal unit.  
 MAF = moisture and ash free; dry basis heating value without ash included.  
 MMF = mineral and moisture free; heating value without sulfur and ash included.  
 SO<sub>2</sub> = sulfur dioxide.

\* The average of the Boiler MACT tests was used to determine the total average, minimum, and maximum. This was done for consistency since the proximate bagasse data is based on weekly composites.



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0714-7582

TABLE A-7  
METALS AND CHEMICAL ANALYSES FOR PACAFSE FROM U.S. SUGAR CLEWISTON

Parameter	Units	Concentration (by year) for Sample Works (reference limit)																															
		1974-1976		1977-1978		1979-1980		1981-1982		1983-1984		1985-1986		1987-1988		1989-1990		1991-1992		1993-1994		1995-1996		1997-1998		1999-2000		2001-2002		2003-2004		2005-2006	
		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate		Duplicate	
Chloride	ppm	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	
Asenic	ppm	0.6	0.6	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Barium	ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Cadmium	ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	
Chromium	ppm	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Lead	ppm	0.3	0.2	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Manganese	ppm	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	
Nickel	ppm	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Selenium	ppm	1.0	1.0	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Vanadium	ppm	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Iron	ppm	50.4	51.3	46.6	51.9	51.3	51.4	49.2	45.2	48.1	45.0	10.1	49.6	22.1	48.4	49.3	31.8	49.3	42.5	51.6	54.4	47.4	49.3										
% of Samples		10	10	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	
Compliance		10	10	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	

\* For concentrations that are reported as below detection limit the minimum, maximum, average, and standard deviation were calculated by using one-half of detection limit. Duplicate samples were not included in the calculation.  
 \* Minimum, maximum, average, and standard deviation for mercury are based only on the individual samples with a lower detection limit.  
 \* 95% confidence level calculated based on the following equation:  $LC(95) = \bar{X} + 1.645(SD)$ .  
 $P_n = \text{mean} + (SD) \cdot Z_n$ , where:  
 $P_n$  = 95% confidence level pollution concentration (in  $\mu\text{g}/\text{kg}$ )  
 $\bar{X}$  = average of full samples analyzed (BAMMBA)  
 $SD$  = standard deviation of pollution concentration (BAMMBA)  
 $Z_n$  = Z score critical value for 95% confidence probability (0.5) for n degrees of freedom  
 $n$  = number of samples  
 \* Not included because were determined on a smaller basis than all previous testing.  
 \* The average of the BAMMBA MACT tests was used to determine the best average, maximum, minimum, and 95% confidence level. This was done for consistency since the historical data are based on wet-basis chemistry.

4/5/2012

6738-7424

TABLE A-1  
METALS AND CHLORINE ANALYSES FOR RAFFINOS FROM U.S. SUGAR COLUMBIA

Table with multiple columns for Concentration (by basis) for Sample Units (per/ton/dm) and Boiler MACT Testing. Rows include elements like Chlorine, Arsenic, Boron, Cadmium, Chromium, Lead, Manganese, Nickel, Selenium, Mercury, and Molybdenum. Columns represent different sample units and time periods.

\* For concentrations that are reported below detection limit, the maximum, mean, and standard deviation were established by taking one-half of detection limit. Duplicate samples were not included in the calculation.  
# Minimum, mean, maximum, average, and standard deviation for mercury are based only on the individual samples with a lower detection limit.  
\*\* 95% confidence level calculated based on the following equation (49 CFR 53.7302(e)(7)):  
Pa = mean + (SD) \* 1.96  
Pm = 50% confidence level pollution concentration (Boiler MACT)  
Sm = average of fuel sample analysis (Boiler MACT)  
SD = standard deviation of fuel sample analysis (Boiler MACT)  
1 = distribution curve value for 95% confidence probability (Z) for a = 1 degree of freedom  
n = number of samples  
\* Not included because considered as outlier based on all previous testing. Lab is retaining results by request.  
# The average of the Boiler MACT test results used to determine the test average, minimum, maximum, and 95% confidence level. This was done for consistency since the historical bagasse data is based on wet by components.

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015-1561

Parameter	Units	BOILER MACT TESTING				Range			Parameter	
		1/24/07	1/24/07	1/24/07	1/24/07	Min	Max	Avg		
		Boiler MACT Testing Average								
Chlorine	ppm	250	340	340	300	443	377	720	328	Chlorine
Arsenic	ppm	--	--	--	--	0.6	0.13	0.80	0.49	Arsenic
Barythium	ppm	--	--	--	--	0.1	< 0.01	< 0.10	< 0.06	Barythium
Cadmium	ppm	--	--	--	--	0.1	< 0.01	< 0.20	< 0.03	Cadmium
Chromium	ppm	--	--	--	--	0.6	0.70	0.83	0.76	Chromium
Lead	ppm	--	--	--	--	0.3	0.15	0.90	0.24	Lead
Manganese	ppm	19.0	6.0	9.0	17.0	12.7	2.6	12.7	6.4	Manganese
Nickel	ppm	--	--	--	--	0.7	0.10	0.75	0.25	Nickel
Selenium	ppm	--	--	--	--	1.0	0.40	1.20	0.72	Selenium
Mercury	ppm	0.01	< 0.01	0.01	0.01	0.02	0.01	0.11	0.04	Mercury
Moisture	%	51.6	31.7	33.1	51.0	53.1	48.0	55.1	50.5	Moisture
No. of Samples Collected		3	3	3	3	69				

Parameter	Units	BOILER MACT TESTING				Range			Standard Deviation	95% Confidence Level*	Parameter	
		1/24/07	1/24/07	1/24/07	1/24/07	Min	Max	Avg				
		Boiler MACT Testing Average										
HHV	Btu/lb	7,819	8,042	7,909	7,717	7,789	7,607	8,356	7,924	--	HHV	
Chlorine	lb/1000 lbs	0.052	0.042	0.042	0.039	0.033	0.048	0.092	0.067	0.016	0.038	Chlorine
Arsenic	lb/1000 lbs	--	--	--	--	7.2E-05	1.89E-05	1.18E-04	3.04E-05	--	--	Arsenic
Barythium	lb/1000 lbs	--	--	--	--	1.2E-05	< 1.6E-06	< 1.32E-05	< 7.54E-06	--	--	Barythium
Cadmium	lb/1000 lbs	--	--	--	--	1.69E-05	< 5.10E-06	< 2.96E-05	< 7.74E-06	--	--	Cadmium
Chromium	lb/1000 lbs	--	--	--	--	8.12E-05	1.31E-05	9.85E-05	5.15E-05	--	--	Chromium
Lead	lb/1000 lbs	--	--	--	--	2.90E-05	3.22E-05	1.18E-04	1.00E-05	--	--	Lead
Manganese	lb/1000 lbs	2.41E-02	7.50E-04	4.14E-03	2.23E-03	1.60E-02	7.01E-04	1.60E-03	1.09E-03	--	--	Manganese
Nickel	lb/1000 lbs	--	--	--	--	3.60E-05	1.22E-05	9.81E-05	3.21E-05	--	--	Nickel
Selenium	lb/1000 lbs	--	--	--	--	1.22E-05	2.07E-05	1.79E-04	4.72E-05	--	--	Selenium
S-Metals Total		--	--	--	--	1.92E-03	9.92E-04	1.97E-03	1.24E-03	2.91E-04	1.69E-03	S-Metals
S-Metals w/o Mn	lb/1000 lbs	--	--	--	--	3.62E-04	1.62E-04	3.66E-04	2.54E-04	9.44E-05	4.00E-04	S-Metals w/o Mn
Moisture†	%	1.21E-06	< 1.75E-06	1.26E-06	1.35E-06	2.80E-06	3.99E-07	3.80E-06	1.51E-06	3.99E-07	2.18E-06	Moisture†
Manganese	lb/1000 lbs	2.41E-03	7.50E-04	1.14E-03	7.33E-04	1.60E-03	7.01E-04	1.60E-03	1.04E-03	2.57E-04	1.49E-03	Manganese

\* For concentrations that are reported below detection limits the minimum, maximum, average, and standard deviation were calculated by taking one half of detection limit. Duplicate samples were not included in the calculations.  
 † Maximum, minimum, average, and standard deviation for moisture are based only on the individual samples with a lower detection limit.  
 \* 95% confidence limit calculated based on the following equation:  $F_{1-\alpha, n-1, 1-\beta} \times \frac{F_{1-\alpha, n-1, 1-\beta}}{n-1}$   
 $F_{1-\alpha, n-1, 1-\beta} = \text{mean} + (SD) \times t$ , where  
 $F_{1-\alpha, n-1, 1-\beta}$  = 95% confidence limit of pollutant concentration (lb/1000 lbs)  
 $\text{mean}$  = average of test sample analyzed (lb/1000 lbs)  
 $SD$  = standard deviation of pollutant concentration (lb/1000 lbs)  
 $t$  = t distribution critical value for 95% confidence probability (0.1) at n-1 degrees of freedom  
 $n$  = number of samples  
 † This included butyl acetate as a carrier based on all previous testing. Lab is reworking results by re-analysis.  
 ‡ The average of the Boiler MACT test was used to determine the total average, maximum, minimum, and 95% confidence limit. This was done for consistency since the historical test data is based on wet fly samples.

**TABLE A-3**  
**WOOD CHIP ANALYSIS - U.S. SUGAR CLEWISTON - BOILER NO. 8**

Parameter	Units	Analysis Results - Wood Chip Samples						Average
		Sample 1 6/1/2006	Sample 2 6/1/2006	Sample 3 6/1/2006	1036-1142 8/22/2006	1320-1426 8/22/2006	1530-1636 8/22/2006	
No. of Samples Compositied		5	5	5	3	3	3	
Moisture	% , as received	32.24	33.95	30.20	36.57	32.72	33.93	33.27
Ash	% , as received	5.73	8.52	8.86	12.08	12.02	11.70	9.82
Ash	% , dry basis	8.46	12.90	12.70	19.04	17.87	17.71	14.78
HHV	Btu/lb, as received	5,434	4,901	5,157	4,397	4,757	4,782	4,905
HHV	Btu/lb, dry basis	8,018	7,421	7,388	6,932	7,071	7,238	7,345
Nitrogen	% , as received	0.44	0.30	0.29	0.33	0.32	0.36	0.34
Nitrogen	% , dry basis	0.65	0.45	0.42	0.52	0.48	0.54	0.51
Chlorine	% , as received	0.173	0.132	0.122	0.092	0.095	0.107	0.12
Chlorine	% , dry basis	0.255	0.200	0.175	0.145	0.141	0.161	0.18
Chlorine	lb/MMBtu	0.318	0.269	0.237	0.209	0.199	0.222	0.24
								Standard deviation = 0.04
								t-distribution = 1.475884
								90th percentile = 0.31
Mercury	ppm, as received	0.04	0.03	0.03	0.01	0.01	0.01	0.02
Mercury	ppm, dry basis	0.05	0.04	0.04	0.02	0.02	0.02	0.03
Mercury	lb/MMBtu	6.2E-06	5.4E-06	5.4E-06	2.9E-06	2.8E-06	2.8E-06	4.3E-06
								Standard deviation = 1.6E-06
								t-distribution = 1.475884
								90th percentile = 6.6E-06
Arsenic	ppm, as received	3.1	3.4	12.4	--	--	--	6.3
Arsenic	ppm, dry basis	4.5	5.1	17.7	--	--	--	9.1
Arsenic	lb/MMBtu	5.7E-04	6.9E-04	2.4E-03	--	--	--	1.2E-03
Beryllium	ppm, dry basis	<0.08	<0.1	<0.1	--	--	--	0.1
Beryllium	lb/MMBtu	1.0E-05	1.3E-05	1.4E-05	--	--	--	1.2E-05
Cadmium	ppm, dry basis	0.69	0.88	0.72	--	--	--	0.76
Cadmium	lb/MMBtu	8.5E-05	1.2E-04	9.8E-05	--	--	--	1.0E-04
Chromium	ppm, dry basis	12.7	14.2	16.5	--	--	--	14.5
Chromium	lb/MMBtu	1.6E-03	1.9E-03	2.2E-03	--	--	--	1.9E-03
Lead	ppm, dry basis	6.3	6.3	5.8	--	--	--	6.1
Lead	lb/MMBtu	7.8E-04	8.5E-04	7.9E-04	--	--	--	8.1E-04
Manganese	ppm, dry basis	34.3	37.0	25.1	19.0	18.0	19.0	25.4
Manganese	lb/MMBtu	4.3E-03	5.0E-03	3.4E-03	2.7E-03	2.5E-03	2.6E-03	3.4E-03
								Standard deviation = 1.0E-03
								t-distribution = 1.475884
								90th percentile = 4.9E-03
Nickel	ppm, dry basis	1.7	2.6	1.3	--	--	--	1.8
Nickel	lb/MMBtu	2.1E-04	3.5E-04	1.7E-04	--	--	--	2.4E-04
Selenium	ppm, as received	0.06	0.06	0.06	--	--	--	0.06
Selenium	ppm, dry basis	0.08	0.09	0.09	--	--	--	0.09
Selenium	lb/MMBtu	1.0E-05	1.2E-05	1.2E-05	--	--	--	1.1E-05
TSM <sup>a</sup>	ppm, dry basis	60.3	66.2	67.3	--	--	--	64.6
TSM <sup>a</sup>	lb/MMBtu	7.5E-03	8.9E-03	9.1E-03	--	--	--	8.5E-03
								Standard deviation = 8.7E-04
								t-distribution = 1.885618
								90th percentile = 0.010

Note: % = percent

Btu/lb = British thermal unit per pound

HHV = higher heating value

lb/MMBtu = pound per million British thermal units

ppm = parts per million

TSM = total selected metals (arsenic, beryllium, cadmium, chromium, lead, manganese, nickel and selenium)

Footnotes:

<sup>a</sup> For informational purposes only. Boiler No. 8 complies with the MACT limit for PM.

TABLE A-4a  
HCL AND Cl<sub>2</sub> STACK TEST RESULTS ON BOILER NOS. 1, 4, AND 7, U.S. SUGAR CLEWISTON

Parameter	Source of Data	Boiler No. 1				Boiler No. 4				Boiler No. 7			
		11/28/06 0919-1022	11/28/06 1107-1209	11/28/06 1303-1407	Average	12/1/06 1256-1402	12/1/06 1446-1551	12/1/06 1622-1735	Average	1/25/07 0909-1013	1/25/07 1106-1210	1/25/07 1325-1429	Average
Fuel Type		89% Bagasse/11% Oil	94% Bagasse/6% Oil	97% Bagasse/3% Oil		83% Bagasse/17% Oil	84% Bagasse/16% Oil	83% Bagasse/17% Oil		100% Bagasse	100% Bagasse	100% Bagasse	
F-Factor (dsc/MMBtu)*	Fuel Analysis	10,416	10,455	10,716	10,529	10,432	10,561	10,254	10,432	10,552	10,471	10,391	10,481
Stack Flow (acfm)	Stack Test	228,163	286,469	271,874	262,169	228,163	228,163	228,163	228,163	318,415	301,630	301,314	307,120
Stack Flow (dscfm)	Stack Test	122,830	160,360	152,745	145,312	122,830	122,830	122,830	122,830	185,293	174,015	175,714	178,341
Stack Temp. (deg. F)	Stack Test	154.8	156.6	158.8	156.7	151.3	152.8	152.3	152.1	275.6	272.8	271.3	273.2
Oxygen (%) - dry basis	Stack Test	14.0	12.0	13.0	13.0	10.5	9.7	10.1	10.1	10.6	9.8	10.7	10.4
Steam Production (lb/hr)	Stack Test	163,882	171,045	165,217	167,381	245,070	255,000	246,038	248,703	307,597	319,097	290,569	305,754
Heat Input from F-Factor (MMBtu/hr)	Stack Test	234	392	323	316	352	374	371	366	520	531	495	515
Hydrogen Chloride (lb/hr)	Stack Test	0.54	1.33	1.22	1.03	0.94	0.91	0.69	0.85	0.93	0.75	2.81	1.50
Hydrogen Chloride (lb/MMBtu)	Stack Test	0.0023	0.0034	0.0038	0.0032	0.0027	0.0024	0.0019	0.0023	0.0018	0.0014	0.0057	0.0030
Chlorine Gas (lb/hr)	Stack Test	0.39	0.16	0.48	0.44	0.56	0.57	0.50	0.54	1.13	1.31	1.28	1.24
Chlorine Gas (lb/MMBtu)	Stack Test	0.0017	0.0012	0.0015	0.0014	0.0016	0.0015	0.0013	0.0015	0.0022	0.0023	0.0026	0.0024
Chlorine (lb/MMBtu)	Fuel Analysis	0.036	0.033	0.046	0.039	0.034	0.045	0.031	0.037	0.042	0.042	0.039	0.041
		Percentage of chlorine in fuel emitted as HCl = 8%				Percentage of chlorine in fuel emitted as HCl = 6%				Percentage of chlorine in fuel emitted as HCl = 7%			
		Percentage of chlorine in fuel emitted as Cl <sub>2</sub> = 4%				Percentage of chlorine in fuel emitted as Cl <sub>2</sub> = 4%				Percentage of chlorine in fuel emitted as Cl <sub>2</sub> = 6%			

Notes:  
 lbs/hr = pound per hour  
 MMBtu/hr = million British thermal units per hour  
 acfm = actual cubic foot per minute  
 dscfm = dry standard cubic foot per minute  
 F = Fahrenheit  
 % = percent  
 lb/MMBtu = pound per million British thermal units  
 dsc/MMBtu = dry standard cubic foot per million British thermal units

\* Fuel factors for Boiler No. 1 and Boiler No. 4 are representative of the combination of bagasse and oil firing.

TABLE A-4b  
HCL AND CL<sub>2</sub> STACK TEST RESULTS ON BOILER NO. 8, U.S. SUGAR CLEWISTON

Parameter	Source of Data	Boiler No. 8 <sup>a</sup>				Boiler No. 8 <sup>a</sup>				
		1/5/07 1058-1158	1/5/07 1345-1445	1/5/07 1622-1722	Average	8/22/06 1036-1142	8/22/06 1320-1426	8/22/06 1530-1636	Average	
Fuel Type		Bagasse	Bagasse	Bagasse		Wood Chips	Wood Chips	Wood Chips		
F-Factor (dscf/MMBtu)	Fuel Analysis	10,904	10,804	10,843	10,850	11,162	11,501	11,005	11,223	
Stack Flow (acfm)	Stack Test	421,959	429,330	443,786	431,692	262,552	256,382	257,466	258,800	
Stack Flow (dscfm)	Stack Test	216,073	216,113	219,030	217,072	148,855	146,795	148,794	148,148	
Stack Temp. (deg. F)	Stack Test	353	358	362	358	315	313	315	314	
Oxygen (%) - dry basis	Stack Test	9.3	8.7	7.6	8.5	10.4	10.4	10.3	10.4	
Steam Production (lb/hr)	DAHS	499,726	520,274	510,811	510,270	202,398	202,350	199,188	201,312	
Heat Input from F-Factor (MMBtu/hr)	Stack Test	795	832	831	820	404	384	411	400	
Hydrogen Chloride (lb/hr)	Stack Test	0.74	3.02	1.17	1.64	31.63	37.05	33.23	33.97	
Hydrogen Chloride (lb/MMBtu)	Stack Test	0.0011	0.0043	0.0015	0.0023	0.0784	0.0966	0.0808	0.0852	
Chlorine Gas (lb/hr)	Stack Test	2.03	1.89	1.98	1.97	0.56	0.44	0.40	0.47	
Chlorine Gas (lb/MMBtu)	Stack Test	0.0031	0.0027	0.0026	0.0028	0.0014	0.0011	0.0010	0.0012	
Chlorine (lb/MMBtu)	Fuel Analysis	0.042	0.026	0.032	0.033	0.209	0.199	0.222	0.210	
		Percentage of chlorine in fuel emitted as HCl =				7%	Percentage of chlorine in fuel emitted as HCl =			41%
		Percentage of chlorine in fuel emitted as Cl <sub>2</sub> =				8%	Percentage of chlorine in fuel emitted as Cl <sub>2</sub> =			1%

Notes:

- lb/hr = pound per hour
- MMBtu/hr = million British thermal units per hour
- acfm = actual cubic foot per minute
- dscfm = dry standard cubic foot per minute
- F = Fahrenheit
- % = percent
- lb/MMBtu = pound per million British thermal units
- dscf/MMBtu = dry standard cubic foot per million British thermal units

<sup>a</sup> Measured at the east inlet to the wet cyclones.

## **APPENDIX B**

**BOILER 1**

**11/28/06**



**SOURCE TEST REPORT  
FOR  
HYDROCHLORIC ACID, AND CHLORINE EMISSIONS**

**BOILER 1  
IMPINGEMENT WET SCRUBBER OUTLET  
TRAVELING GRATE  
CLEWISTON, FLORIDA**

**FDEP PERMIT NUMBER 0510003-017-AV  
I D NUMBER 001**

**MACT PERFORMANCE TEST**

**NOVEMBER 28, 2006**

**PREPARED FOR:**

**U.S. SUGAR CORPORATION  
SOUTH W.C. OWEN AVENUE  
CLEWISTON, FLORIDA 33440**

**PREPARED BY:**

**AIR CONSULTING AND ENGINEERING, INC.  
2106 N.W. 67TH PLACE, SUITE 4  
GAINESVILLE, FLORIDA 32653  
(352) 335-1889**

**238-06-01**

**Table 1. Emission Summary**  
**Boiler 1**  
**United States Sugar Corporation - Clewiston Mill**  
**Clewiston, Florida**  
**November 28, 2006**

Run Number	Time	Oxygen %	CO2 %	Flow Rate dscfm	Steam Rate lbs/hr	Fuel Factor dscf/MMBTU	Heat Input MMBTUH	HCl Emissions		Cl2 Emissions	
								lbs/hr	lbs/MMBTU	lbs/hr	lbs/MMBTU
1	0919-1022	14.0	7.0	122830	165882	10416	233.5	0.54	0.0023	0.39	0.0017
2	1107-1209	12.0	8.5	160360	171045	10455	391.9	1.33	0.0034	0.46	0.0012
3	1303-1407	13.0	9.0	152745	165217	10716	323.3	1.22	0.0038	0.48	0.0015
<b>Average</b>	--	13.0	8.2	145312	167381	10529	316.2	1.03	0.0032	0.44	0.0015

$$\text{lbs/MMBTU HCl} = \frac{[(\text{mg}) \times (\text{lbs}/453,600\text{mg})]}{\text{VMstd.}} \times \text{F-Factor} \times \frac{20.9}{(20.9\text{-}\%O_2)}$$

$$\text{Heat Input} = \text{MMBTUH} = \frac{(\text{dscfm} \times 60 \text{ min/hr})}{\text{F-Factor}} \times \frac{(20.9\text{-}\%O_2)}{20.9}$$

AIR CONSULTING AND ENGINEERING, INC.  
2106 NW 67th Place, Suite 4, Gainesville, Florida 32653

**HCL and CL2 Laboratory Results**

**Boiler 1**  
**United States Sugar Corporation - Clewiston Mill**  
**Clewiston, Florida**  
**November 28, 2006**

---

Run	HCL as Chloride mg	HCL mg	Chlorine as Chloride mg	Chlorine Gas mg
1	1.6	1.54	3.0	1.1
2	2.9	2.88	2.9	1.0
3	2.8	2.78	3.0	1.1
0.1N H2SO4Blank	0.1			
0.1N NAOH Blank			1.9	

---

Molecular Weight CL = 35.453 lb/lb-mole  
Molecular Weight HCL = 36.453 lb/lb-mole

$$\text{mg HCL} = (\text{mg CL} - \text{CL Blank (0.1NH}_2\text{SO}_4)) \times \frac{\text{MW HCL}}{\text{MW CL}}$$

$$\text{mg CL}_2 = (\text{mg CL} - \text{CL Blank (0.1N NaOH)})$$

**AIR CONSULTING AND ENGINEERING, INC.**

**FUEL FACTOR CALCULATION**

**COMPANY NAME:** United States Sugar Corporation - Clewiston Mill  
**SOURCE:** Boiler 1  
**FUEL FIRED:** Bagasse

Run	1	2	3
<b>F-Factor (scf/MMBTU) Bagasse</b>	10571	10541	10764
<b>F-Factor (scf/MMBTU) Oil</b>	9190	9190	9190
<b>Heat Input from Oil (MMBTUH)</b>	38.9	22.6	10.6
<b>Total Heat Input (MMBTUH)</b>	346.5	355.4	346.2
<b>Fuel % Bagasse</b>	88.77	93.64	96.94
<b>Fuel % Oil</b>	11.23	6.36	3.06
<b>F-Factor (scf/MMBTU) (Bagasse &amp; Oil)</b>	<b>10416</b>	<b>10455</b>	<b>10716</b>

F-Factor (scf/MMBTU) (Bagasse & Oil) =  
(F-Factor Bagasse x % Bagasse in Fuel) + (F-Factor Oil x % Oil in Fuel)

Fuel % Oil =  $\frac{\text{Heat Input Oil}}{\text{Total Heat Input}} \times 100\%$

**AIR CONSULTING AND ENGINEERING, INC.**

**FUEL FACTOR CALCULATION**

**COMPANY NAME:** United States Sugar Corporation - Clewiston Mill  
**SOURCE:** Boiler 1  
**FUEL FIRED:** Bagasse

Run	1	2	3
	wet	wet	wet
<b>Date</b>	11/28/06	11/28/06	11/28/06
<b>Time</b>			
<b>Carbon (%)</b>	20.82	22.28	22.05
<b>Hydrogen (%)</b>	2.53	2.70	2.65
<b>Nitrogen (%)</b>	0.20	0.23	0.24
<b>Sulfur (%)</b>	0.04	0.03	0.04
<b>Oxygen (%)</b>	15.52	16.38	15.81
<b>HHV (BTU/lb)</b>	3214	3456	3360
<b>F-Factor (scf/MMBTU)</b>	<b>10571</b>	<b>10541</b>	<b>10764</b>

**Sample Calculation - Run 1**

$$F_w = \frac{K[(K_{hw} \% H) + (K_{cw} \% C) + (K_{sw} \% S) + (K_{nw} \% N) - (K_{ow} \% O)]}{GCV_w}$$

$$= \frac{10E6[3.64(2.53) + 1.53(20.82) + 0.57(0.04) + 0.14(0.2) - 0.46(15.52)]}{3214}$$

$$= 10571$$

Where:

- %H Concentration of hydrogen from the ultimate fuel analysis on a wet basis (as received)
- %C Concentration of carbon from the ultimate fuel analysis on a wet basis (as received)
- %S Concentration of sulfur from the ultimate fuel analysis on a wet basis (as received)
- %N Concentration of nitrogen from the ultimate fuel analysis on a wet basis (as received)
- %O Concentration of oxygen from the ultimate fuel analysis on a wet basis (as received)
- K<sub>hd</sub> conversion factor (3.64 scf/lb-%)
- K<sub>c</sub> conversion factor (1.53 scf/lb-%)
- K<sub>s</sub> conversion factor (0.57 scf/lb-%)
- K<sub>n</sub> conversion factor (0.14 scf/lb-%)
- K<sub>o</sub> conversion factor (0.46 scf/lb-%)
- K conversion factor (10E6 BTU/MMBTU)
- GCV gross calorific heating value (BTU/lb HHV) wet


**Hazen Research, Inc.**

4601 Indiana Street  
Golden, CO 80403 USA  
Tel: (303) 279-4501  
Fax: (303) 278-1528

Date January 17 2007  
HRI Project 002-SA2  
HRI Series No. L136/06-1  
Date Rec'd. 12/13/06  
Cust. P.O.#

Air Consulting and Engineering  
Dagmar Fick  
2106 NW 67th Place  
Gainesville, FL 32606

Sample Identification  
Boiler 1 Run 1

Reporting Basis >	As Rec'd	Dry	Air Dry
-------------------	----------	-----	---------

**Proximate (%)**

Moisture	58.48	0.00	1.90
Ash	2.41	5.80	5.69
Volatile	34.64	83.44	81.85
Fixed C	4.47	10.76	10.56
Total	100.00	100.00	100.00

Sulfur	0.04	0.10	0.10
Btu/lb (HHV)	3214	7742	7595
MMF Btu/lb	3298	8259	
MAF Btu/lb		8218	
Air Dry Loss (%)	57.68		

**Ultimate (%)**

Moisture	58.48	0.00	1.90
Carbon	20.82	50.14	49.19
Hydrogen	2.53	6.09	5.98
Nitrogen	0.20	0.48	0.47
Sulfur	0.04	0.10	0.10
Ash	2.41	5.80	5.69
Oxygen*	15.52	37.39	36.67
Total	100.00	100.00	100.00

Chlorine**	0.011	0.028	0.027
------------	-------	-------	-------

**Forms of Sulfur (as S,%)**

Sulfate		
Pyritic		
Organic		
Total	0.04	0.10

**Water Soluble Alkalies (%)**

Na2O  
K2O

Lb. Alkali/MM Btu=  
Lb. Ash/MM Btu= 7.49  
Lb. SO2/MM Btu= 0.26  
HGI= @ % Moisture  
As Rec'd. Sp.Gr.=  
Free Swelling Index=  
F-Factor(dry), DSCF/MM BTU= 10,570

Report Prepared By:

Gerard H. Cunningham  
Fuels Laboratory Supervisor

\* Oxygen by Difference.

\*\* Not usually reported as part of the ultimate analysis.



**Hazen Research, Inc.**  
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Date January 17 2007  
 HRI Project 002-SA2  
 HRI Series No. L136/06-2  
 Date Rec'd. 12/13/06  
 Cust. P.O.#

Air Consulting and Engineering  
 Dagmar Fick  
 2106 NW 67th Place  
 Gainesville, FL 32606

Sample Identification  
 Boiler 1 Run 2

Reporting Basis >	As Rec'd	Dry	Air Dry
Proximate (%)			
Moisture	55.50	0.00	1.76
Ash	2.88	6.47	6.36
Volatile	36.37	81.73	80.29
Fixed C	5.25	11.80	11.59
Total	100.00	100.00	100.00

Sulfur	0.03	0.07	0.07
Btu/lb (HHV)	3456	7765	7628
MMF Btu/lb	3566	8348	
MAF Btu/lb		8303	
Air Dry Loss (%)	54.70		

Ultimate (%)			
Moisture	55.50	0.00	1.76
Carbon	22.28	50.06	49.18
Hydrogen	2.70	6.07	5.96
Nitrogen	0.23	0.52	0.51
Sulfur	0.03	0.07	0.07
Ash	2.88	6.47	6.36
Oxygen*	16.38	36.81	36.16
Total	100.00	100.00	100.00
Chlorine**	0.012	0.026	0.026

Forms of Sulfur (as S,%)

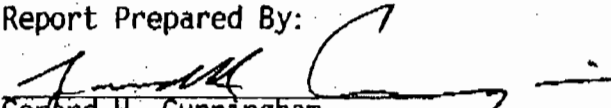
Sulfate		
Pyritic		
Organic		
Total	0.03	0.07

Water Soluble Alkalies (%)

Na<sub>2</sub>O  
 K<sub>2</sub>O

Lb. Alkali/MM Btu=  
 Lb. Ash/MM Btu= 8.34  
 Lb. SO<sub>2</sub>/MM Btu= 0.18  
 HGI= @ % Moisture  
 As Rec'd. Sp.Gr.=  
 Free Swelling Index=  
 F-Factor(dry).DSCF/MM BTU= 10,543

Report Prepared By:

  
 Gerard H. Cunningham  
 Fuels Laboratory Supervisor

\* Oxygen by Difference.

\*\* Not usually reported as part of the ultimate analysis.

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Date January 17 2007  
HRI Project 002-SA2  
HRI Series No. L136/06-3  
Date Rec'd. 12/13/06  
Cust. P.O.#

Air Consulting and Engineering  
Dagmar Fick  
2106 NW 67th Place  
Gainesville, FL 32606

Sample Identification  
Boiler 1 Run 3

Reporting Basis >	As Rec'd	Dry	Air Dry
<b>Proximate (%)</b>			
Moisture	55.59	0.00	1.48
Ash	3.62	8.14	8.02
Volatile	34.90	78.57	77.41
Fixed C	5.89	13.29	13.09
Total	100.00	100.00	100.00

Sulfur	0.04	0.09	0.09
Btu/lb (HHV)	3360	7566	7454
MMF Btu/lb	3495	8295	
MAF Btu/lb		8236	
Air Dry Loss (%)	54.92		

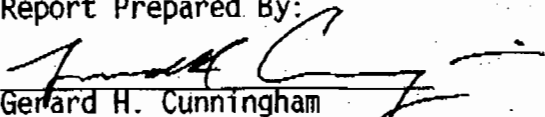
<b>Ultimate (%)</b>			
Moisture	55.59	0.00	1.48
Carbon	22.05	49.64	48.91
Hydrogen	2.65	5.96	5.87
Nitrogen	0.24	0.55	0.54
Sulfur	0.04	0.09	0.09
Ash	3.62	8.14	8.02
Oxygen*	15.81	35.62	35.09
Total	100.00	100.00	100.00
Chlorine**	0.015	0.035	0.034

**Forms of Sulfur (as S,%)**

Sulfate		
Pyritic		
Organic		
Total	0.04	0.09

Lb. Alkali/MM Btu=  
Lb. Ash/MM Btu= 10.76  
Lb. SO<sub>2</sub>/MM Btu= 0.24  
HGI= @ % Moisture  
As Rec'd. Sp.Gr.=  
Free Swelling Index=  
F-Factor(dry), DSCF/MM BTU= 10,760

Report Prepared By:

  
Gerard H. Cunningham  
Fuels Laboratory Supervisor

**Water Soluble Alkalies (%)**

Na<sub>2</sub>O  
K<sub>2</sub>O

\* Oxygen by Difference.

\*\* Not usually reported as part of the ultimate analysis.




**Hazen Research, Inc.**

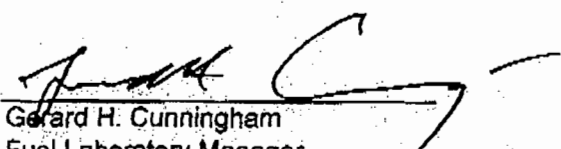
4601 Indiana Street  
 Golden, CO 80403 USA  
 Tel: (303) 279-4501  
 Fax: (303) 278-1528

Date: January 17, 2007  
 Project No: 002-SA2  
 Control No: L136/06  
 Received: 12/13/06

Air Consulting and Engineering  
 Dagmar Fick  
 2106 NW 67th Place, Suite 4  
 Gainesville, FL 32606

Sample Number: K317/06	-1	-2	-3	-4	-5	-6
Sample Identification:	B1 Run 1	B1 Run 2	B1 Run 3	B4 Run 2	B4 Run 3	B4 Run 4
Air Dry Loss, %	57.68	54.70	54.92	53.55	52.59	55.29
Residual Moisture, %	1.90	1.78	1.48	1.79	1.48	1.68
As Received Moisture, %	58.48	55.50	55.59	54.38	53.29	56.04
Mercury (Air Dry Basis), mg/kg	0.05	0.05	0.05	0.06	0.06	0.04
Mercury (As Received Basis), mg/kg	0.02	0.02	0.02	0.03	0.03	0.02
Mercury (Dry Basis), mg/kg	0.05	0.05	0.05	0.06	0.06	0.04

By:

  
 Gerard H. Cunningham  
 Fuel Laboratory Manager



**Hazen Research, Inc.**  
4601 Indiana Street  
Golden, CO 80403 USA  
Tel: (303) 279-4501  
Fax: (303) 278-1528

Date: Jan. 17, 2007  
PROJ. # 002-SA2  
CTRL # L136/06  
REC'D 12/13/06

Air Consulting and Engineering  
Dagmar Fick  
2106 NW 67th Place, Suite 4  
Gainesville, FL 32606

Sample No: L136/06-7  
Sample Identification: Boiler 1 Fuel Oil 11/28/06

**ULTIMATE**

Water, %	0.005
Ash, %	<0.001
Sulfur, %	0.023
Carbon, %	88.16
Hydrogen, %	11.60
Nitrogen, %	0.11
Oxygen, %*	0.10

**PROXIMATE**

Water, %	0.005
Ash, %	<0.001
Volatile Matter, %	100.00
Fixed Carbon, %*	<0.01

**CALORIFIC VALUE**

BTU/lb	19473
--------	-------

By:

Gerard H. Cunningham  
Fuel Laboratory Manager

\* by difference







**BOILER 4**

**12/1/06**

**SOURCE TEST REPORT  
FOR  
HYDROCHLORIC ACID AND CHLORINE EMISSIONS**

**BOILER 4  
IMPINGEMENT WET SCRUBBER OUTLET  
TRAVELING GRATE  
CLEWISTON, FLORIDA**

**FDEP PERMIT NUMBER 051-0003-017-AV  
EMISSION UNIT 009**

**MACT PERFORMANCE TEST**

**DECEMBER 1, 2006**

**PREPARED FOR:**

**U.S. SUGAR CORPORATION  
SOUTH W.C. OWEN AVENUE  
CLEWISTON, FLORIDA 33440**

**PREPARED BY:**

**AIR CONSULTING AND ENGINEERING, INC.  
2106 N.W. 67TH PLACE  
GAINESVILLE, FLORIDA 32653  
(352) 335-1889**

**238-06-01**

**Table 1. Emission Summary  
Boiler 4  
United States Sugar Corporation - Clewiston Mill  
Clewiston, Florida  
December 1, 2006**

Run Number	Time	Oxygen %	CO2 %	Flow Rate dscfm	Steam Rate lbs/hr	Fuel Factor dscf/MMBTU	Heat Input MMBTUH	HCl Emissions		Cl2 Emissions	
								lbs/hr	lbs/MMBTU	lbs/hr	lbs/MMBTU
2	1256-1402	10.5	9.8	122830	245070	10482	351.6	0.94	0.0027	0.56	0.0016
3	1446-1551	9.7	10.5	122830	255000	10561	374.0	0.91	0.0024	0.57	0.0015
4	1622-1735	10.1	10.2	122830	246038	10254	371.1	0.69	0.0019	0.50	0.0013
<b>Average</b>	--	10.1	10.1	122830	248703	10432	365.5	0.85	0.0023	0.54	0.0015

**Note:** Run 1 was voided - problems with the HCl Train

$$\text{lbs/MMBTU HCl} = \frac{[(\text{mg}) \times (\text{lbs}/453,600\text{mg})]}{\text{VMstd.}} \times \text{F-Factor} \times \frac{20.9}{(20.9-\%O_2)}$$

$$\text{Heat Input} = \text{MMBTUH} = \frac{(\text{dscfm} \times 60 \text{ min/hr})}{\text{F-Factor}} \times \frac{(20.9-\%O_2)}{20.9}$$



AIR CONSULTING AND ENGINEERING, INC.  
2106 NW 67th Place, Suite 4, Gainesville, Florida 32653

**HCL and CL2 Laboratory Results**

**Boiler 4**  
**United States Sugar Corporation - Clewiston Mill**  
**Clewiston, Florida**  
**December 1, 2006**

Run	HCL as Chloride mg	HCL mg	Chlorine as Chloride mg	Chlorine Gas mg	
1	4.7	4.73	1.8	-0.10	Run voided
2	2.2	2.16	3.2	1.30	
3	2.1	2.06	3.2	1.30	
4	1.6	1.54	3.0	1.10	
0.1N H2SO4Blank	0.1				
0.1N NAOH Blank			1.9		

Molecular Weight CL = 35.453 lb/lb-mole  
Molecular Weight HCL = 36.453 lb/lb-mole

$$\text{mg HCL} = (\text{mg CL} - \text{CL Blank (0.1NH}_2\text{SO}_4)) \times \frac{\text{MW HCL}}{\text{MW CL}}$$

$$\text{mg CL}_2 = (\text{mg CL} - \text{CL Blank (0.1N NaOH)})$$

AIR CONSULTING AND ENGINEERING, INC.

FUEL FACTOR CALCULATION

COMPANY NAME: United States Sugar Corporation - Clewiston Mill  
SOURCE: Boiler # 4  
FUEL FIRED: Bagasse

Run	1	2	3
F-Factor (scf/MMBTU) Bagasse	10739	10814	10466
F-Factor (scf/MMBTU) Oil	9190	9190	9190
Heat Input from Oil (MMBTUH)	86.1	86.3	86.3
Total Heat Input (MMBTUH)	519.7	554.2	518.4
Fuel % Bagasse	83.43	84.43	83.35
Fuel % Oil	16.57	15.57	16.65
F-Factor (scf/MMBTU) (Bagasse & Oil)	10482	10561	10254

F-Factor (scf/MMBTU) (Bagasse & Oil) =  
(F-Factor Bagasse x % Bagasse in Fuel) + (F-Factor Oil x % Oil in Fuel)

Fuel % Oil =  $\frac{\text{Heat Input Oil}}{\text{Total Heat Input}} \times 100\%$

11/13/76 280 10-03076

**Best Available Copy**

**AIR CONSULTING AND ENGINEERING, INC.**

**FUEL FACTOR CALCULATION**

**COMPANY NAME:** United States Sugar Corporation - Clewiston Mill  
**SOURCE:** Boiler #4  
**FUEL FIRED:** Bagasse

Run	2	3	4
	wet	wet	wet
<b>Date</b>	12/1/06	12/1/06	12/1/06
<b>Time</b>			
<b>Carbon (%)</b>	21.81	19.84	20.98
<b>Hydrogen (%)</b>	2.68	2.42	2.58
<b>Nitrogen (%)</b>	0.22	0.23	0.21
<b>Sulfur (%)</b>	0.04	0.02	0.03
<b>Oxygen (%)</b>	15.61	14.38	15.51
<b>HHV (BTU/lb)</b>	3352	3014	3287
<b>F-Factor (scf/MMBTU)</b>	<b>10739</b>	<b>10814</b>	<b>10466</b>

**Sample Calculation - Run 1**

$$F_w = \frac{K[(Kh_w * \%H) + (Kc_w * \%C) + (Ks_w * \%S) + (Kn_w * \%N) - (Ko_w * \%O)]}{GCV_w}$$

$$= \frac{10E6[3.64(2.68) + 1.53(21.81) + 0.57(0.04) + 0.14(0.22) - 0.46(15.61)]}{3352}$$

$$= 10739$$

- Where:
- %H Concentration of hydrogen from the ultimate fuel analysis on a wet basis (as received)
  - %C Concentration of carbon from the ultimate fuel analysis on a wet basis (as received)
  - %S Concentration of sulfur from the ultimate fuel analysis on a wet basis (as received)
  - %N Concentration of nitrogen from the ultimate fuel analysis on a wet basis (as received)
  - %O Concentration of oxygen from the ultimate fuel analysis on a wet basis (as received)
  - K<sub>hd</sub> conversion factor (3.64 scf/lb-%)
  - K<sub>c</sub> conversion factor (1.53 scf/lb-%)
  - K<sub>s</sub> conversion factor (0.57 scf/lb-%)
  - K<sub>n</sub> conversion factor (0.14 scf/lb-%)
  - K<sub>o</sub> conversion factor (0.46 scf/lb-%)
  - K conversion factor (10E6 BTU/MMBTU)
  - GCV gross calorific heating value (BTU/lb HHV) wet

MW 12/1/06 10:00 AM  
 10739

**Best Available Copy**



**Hazen Research, Inc.**  
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 Golden, CO 80403 USA  
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 Fax: (303) 278-1528

Date January 17 2007  
 HRI Project 002-SA2  
 HRI Series No. L136/06-4  
 Date Rec'd. 12/13/06  
 Cust. P.O.#

Air Consulting and Engineering  
 Dagmar Fick  
 2106 NW 67th Place  
 Gainesville, FL 32606

Sample Identification  
 Boiler 4 Run 2

Reporting Basis > As Rec'd Dry Air Dry

Proximate (%)

Moisture	54.38	0.00	1.79
Ash	5.26	11.54	11.33
Volatile	35.13	77.02	75.64
Fixed C	5.23	11.44	11.24
Total	100.00	100.00	100.00

Sulfur	0.04	0.09	0.09
Btu/lb (HHV)	3352	7347	7216
MMF Btu/lb	3552	8393	
MAF Btu/lb		8306	
Air Dry Loss (%)	53.55		

Ultimate (%)

Moisture	54.38	0.00	1.79
Carbon	21.81	47.82	46.96
Hydrogen	2.68	5.87	5.77
Nitrogen	0.22	0.48	0.47
Sulfur	0.04	0.09	0.09
Ash	5.26	11.54	11.33
Oxygen*	15.61	34.20	33.59
Total	100.00	100.00	100.00
Chlorine**	0.012	0.025	0.025

Forms of Sulfur (as S,%)

Sulfate		
Pyritic		
Organic		
Total	0.04	0.09

Lb. Alkali/MM Btu=  
 Lb. Ash/MM Btu= 15.70  
 Lb. SO2/MM Btu= 0.25  
 HGI= @ % Moisture  
 As Rec'd. Sp.Gr.=  
 Free Swelling Index=  
 F-Factor(dry), DSCF/MM BTU= 10,742

Report Prepared By

*Gerard H. Cunningham*  
 Gerard H. Cunningham  
 Fuels Laboratory Supervisor

\* Oxygen by Difference.

\*\* Not usually reported as part of the ultimate analysis.

5060.9  
 11060.0  
 7216  
 12/13/06  
 05/10



**Hazen Research, Inc.**  
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Date January 17 2007  
 HRI Project 002-SA2  
 HRI Series No. L136/06-5  
 Date Rec'd. 12/13/06  
 Cust. P.O.#

Air Consulting and Engineering  
 Dagmar Fick  
 2106 NW 67th Place  
 Gainesville, FL 32606

Sample Identification  
 Boiler 4 Run 3

Reporting Basis >

Proximate (%)

	As Rec'd	Dry	Air Dry
Moisture	53.30	0.00	1.49
Ash	9.81	21.00	20.69
Volatile	32.00	68.52	67.50
Fixed C	4.89	10.48	10.32
Total	100.00	100.00	100.00

Sulfur	0.02	0.05	0.05
Btu/lb (HHV)	3014	6453	6357
MMF Btu/lb	3370	8346	
MAF Btu/lb		8169	
Air Dry Loss (%)	52.59		

Ultimate (%)

Moisture	53.30	0.00	1.49
Carbon	19.84	42.47	41.84
Hydrogen	2.42	5.19	5.11
Nitrogen	0.23	0.49	0.48
Sulfur	0.02	0.05	0.05
Ash	9.81	21.00	20.69
Oxygen*	14.38	30.80	30.34
Total	100.00	100.00	100.00

Chlorine**	0.014	0.029	0.029
------------	-------	-------	-------

Forms of Sulfur (as S.%)

Sulfate		
Pyritic		
Organic		
Total	0.02	0.05

Lb. Alkali/MM Btu=  
 Lb. Ash/MM Btu= 32.55  
 Lb. SO2/MM Btu= 0.16  
 HGI= @ % Moisture  
 As Rec'd. Sp.Gr.=  
 Free Swelling Index=  
 F-Factor(dry).DSCF/MM BTU= 10,818

Report Prepared By:

*Gerard H. Cunningham*  
 Gerard H. Cunningham  
 Fuels Laboratory Supervisor

Water Soluble Alkalies (%)

Na2O  
 K2O

\* Oxygen by Difference.

\*\* Not usually reported as part of the ultimate analysis.



**Hazen Research, Inc.**  
 4601 Indiana Street  
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Date January 17 2007  
 HRI Project 002-SA2  
 HRI Series No. L136/06-6  
 Date Rec'd. 12/13/06  
 Cust. P.O.#

Air Consulting and Engineering  
 Dagmar Fick  
 2106 NW 67th Place  
 Gainesville, FL 32606

Sample Identification  
 Boiler 4 Run 4

Reporting Basis >	As Rec'd	Dry	Air Dry
Proximate (%)			
Moisture	56.04	0.00	1.68
Ash	4.65	10.57	10.39
Volatile	34.07	77.51	76.21
Fixed C	5.24	11.92	11.72
Total	100.00	100.00	100.00

Sulfur	0.03	0.07	0.07
Btu/lb (HHV)	3287	7477	7351
MMF Btu/lb	3459	8440	
MAF Btu/lb		8360	
Air Dry Loss (%)	55.29		

Ultimate (%)			
Moisture	56.04	0.00	1.68
Carbon	20.98	47.73	46.93
Hydrogen	2.58	5.86	5.76
Nitrogen	0.21	0.48	0.47
Sulfur	0.03	0.07	0.07
Ash	4.65	10.57	10.39
Oxygen*	15.51	35.29	34.70
Total	100.00	100.00	100.00
Chlorine**	0.010	0.023	0.023

Forms of Sulfur (as S,%)

Sulfate		
Pyritic		
Organic		
Total	0.03	0.07

Lb. Alkali/MM Btu=  
 Lb. Ash/MM Btu= 14.13  
 Lb. SO<sub>2</sub>/MM Btu= 0.19  
 HGI= @ % Moisture  
 As Rec'd. Sp.Gr.=  
 Free Swelling Index=  
 F-Factor(dry), DSCF/MM BTU= 10,463

Water Soluble Alkalies (%)

Na<sub>2</sub>O  
 K<sub>2</sub>O

Report Prepared By:  
  
 Gerard H. Cunningham  
 Fuels Laboratory Supervisor

\* Oxygen by Difference.  
 \*\* Not usually reported as part of the ultimate analysis.

**Hazen Research, Inc.**

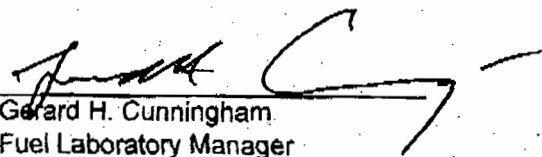
4601 Indiana Street  
 Golden, CO 80403 USA  
 Tel: (303) 279-4501  
 Fax: (303) 278-1528

Date: January 17, 2007  
 Project No: 002-SA2  
 Control No: L138/06  
 Received: 12/13/06

Air Consulting and Engineering  
 Dagmar Fick  
 2106 NW 67th Place, Suite 4  
 Gainesville, FL 32606

Sample Number: K317/06	-1	-2	-3	-4	-5	-6
Sample Identification:	B1 Run1	B1 Run 2	B1 Run 3	B4 Run 2	B4 Run 3	B4 Run 4
Air Dry Loss, %	57.68	54.70	54.92	53.55	52.59	55.29
Residual Moisture, %	1.90	1.76	1.48	1.79	1.48	1.68
As Received Moisture, %	58.48	55.50	55.59	54.38	53.29	56.04
Mercury (Air Dry Basis), mg/kg	0.05	0.05	0.05	0.06	0.06	0.04
Mercury (As Received Basis), mg/kg	0.02	0.02	0.02	0.03	0.03	0.02
Mercury (Dry Basis), mg/kg	0.05	0.05	0.05	0.06	0.06	0.04

By:

  
 Gerard H. Cunningham  
 Fuel Laboratory Manager



**Hazen Research, Inc.**

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Date: Jan. 17, 2007  
PROJ. # 002-SA2  
CTRL # L136/06  
REC'D 12/13/06

Air Consulting and Engineering  
Dagmar Fick  
2106 NW 67th Place, Suite 4  
Gainesville, FL 32606

Sample No: L136/06-7  
Sample Identification: Boiler 1 Fuel Oil 11/28/06

**ULTIMATE**

Water, %	0.005
Ash, %	<0.001
Sulfur, %	0.023
Carbon, %	88.18
Hydrogen, %	11.60
Nitrogen, %	0.11
Oxygen, %*	0.10

**PROXIMATE**

Water, %	0.005
Ash, %	<0.001
Volatile Matter, %	100.00
Fixed Carbon, %*	<0.01

**CALORIFIC VALUE**

BTU/lb	18473
--------	-------

By:

Gerard H. Cunningham  
Fuel Laboratory Manager

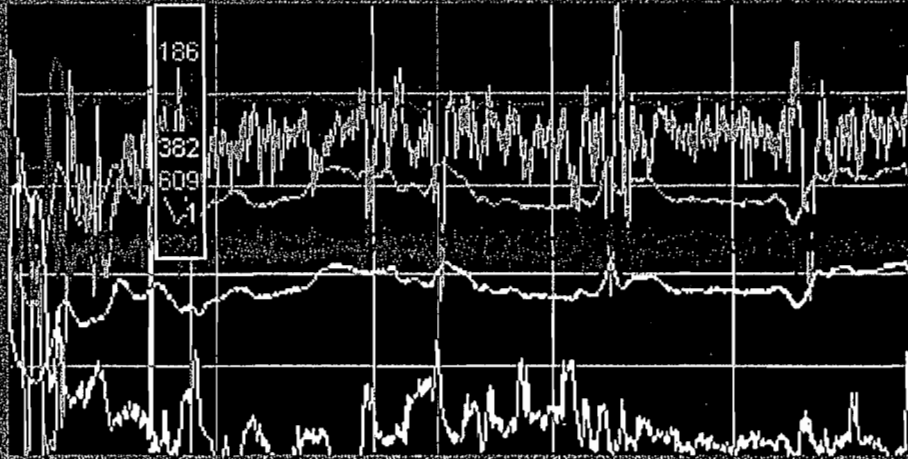
\* by difference











4

BOILER MAIN

ID AIR

OIL

OF AIR

FURNACE TEMP & PRES

FD AIR

1 Hour Span

Alarm Time	Alarm Date	Tagname	Tag Description

Ack Current	Ack Page	Ack All	Silence Cur.	Silence Page	Silence All	Identify
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**BOILER 7**

**1/25/07**

**SOURCE TEST REPORT  
FOR  
HYDROCHLORIC ACID AND CHLORINE EMISSIONS**

**BOILER NUMBER 7 – ESP OUTLET  
VIBRATING GRATE**

**U.S. SUGAR CORPORATION – CLEWISTON MILL  
CLEWISTON, FLORIDA**

**FDEP PERMIT 0510003-017-AV**

**MACT PERFORMANCE TEST**

**JANUARY 25, 2007**

**PREPARED FOR:**

**U.S. SUGAR CORPORATION  
SOUTH W.C. OWEN AVENUE  
CLEWISTON, FLORIDA 33440**

**PREPARED BY:**

**AIR CONSULTING AND ENGINEERING, INC.  
2106 NW 67TH PLACE, SUITE 4  
GAINESVILLE, FLORIDA 32653  
(352) 335-1889**

**238-06-01**

**Table 1. Emission Summary**  
**Boiler 7**  
**United States Sugar Corporation - Clewiston Mill**  
**Clewiston, Florida**  
**January 25, 2007**

Run Number	Time	Oxygen %	CO2 %	Flow Rate dscfm	Fuel Factor dscf/MMBTU (Fuel Analysis)	Steam Rate lbs/hr	Heat Input MMBTUH	HCl Emissions		Cl2 Emissions	
								lbs/hr	lbs/MMBTU	lbs/hr	lbs/MMBTU
1	0909-1013	10.6	9.8	185293	10582	307597	519.8	0.93	0.0018	1.13	0.0022
2	1106-1210	9.8	10.6	174015	10471	319097	530.5	0.75	0.0014	1.31	0.0025
3	1325-1429	10.7	9.7	175714	10391	290569	494.7	2.81	0.0057	1.28	0.0026
<b>Average</b>	—	10.4	10.0	178341	10481	305754	515.0	1.50	0.0030	1.24	0.0024

$$\text{lbs/MMBTU HCl} = \frac{[(\text{mg}) \times (\text{lbs}/453,600\text{mg})]}{\text{VMstd.}} \times \text{F-Factor} \times \frac{20.9}{(20.9-\%O_2)}$$

$$\text{Heat Input} = \text{MMBTUH} = \frac{(\text{dscfm} \times 60 \text{ min/hr}) \times (20.9-\%O_2)}{\text{F-Factor} \times 20.9}$$

**HCL and CL2 Laboratory Results**

**Boller 7**  
**United States Sugar Corporation - Clewiston Mill**  
**Clewiston, Florida**  
**January 25, 2007**

Run	HCL as Chloride mg	HCL mg	Chlorine as Chloride mg	Chlorine Gas mg
1	2.1	2.06	5.5	2.5
2	1.7	1.65	5.9	2.9
3	6.1	6.17	5.8	2.8
0.1N H2SO4Blank	0.10			
0.1N NAOH Blank			3	

Molecular Weight CL = 35.453 lb/lb-mole  
 Molecular Weight HCL = 36.453 lb/lb-mole

$$\text{mg HCL} = (\text{mg CL} - \text{CL Blank (0.1NH}_2\text{SO}_4)) \times \frac{\text{MW HCL}}{\text{MW CL}}$$

$$\text{mg CL}_2 = (\text{mg CL} - \text{CL Blank (0.1N NaOH)})$$



**AIR CONSULTING AND ENGINEERING, INC.**

**FUEL FACTOR CALCULATION**

**COMPANY NAME:** United States Sugar Corporation - Clewiston Mill  
**SOURCE:** Boiler 7  
**FUEL FIRED:** Bagasse

Run	1	2	3
	dry	dry	dry
Date	1/25/07	1/25/07	1/25/07
Time			
<b>Carbon (%)</b>	52.29	51.07	49.29
<b>Hydrogen (%)</b>	5.96	5.77	5.68
<b>Nitrogen (%)</b>	0.33	0.42	0.35
<b>Sulfur (%)</b>	0.04	0.07	0.05
<b>Oxygen (%)</b>	37.16	35.71	34.74
<b>HHV (BTU/lb)</b>	8002	7909	7717
<b>F-Factor (dscf/MMBTU)</b>	<b>10582</b>	<b>10471</b>	<b>10391</b>

**Sample Calculation - Run 1**

$$F_d = \frac{K[(K_{hd}\%H) + (K_c\%C) + (K_s\%S) + (K_n\%N) - (K_o\%O)]}{GCV_d}$$

$$= \frac{10E6[3.64(5.96) + 1.53(52.29) + 0.57(0.04) + 0.14(0.33) - 0.46(37.16)]}{8002}$$

$$= 10582$$

**Where:**

- %H Concentration of hydrogen from the ultimate fuel analysis on a wet basis (as received)
- %C Concentration of carbon from the ultimate fuel analysis on a wet basis (as received)
- %S Concentration of sulfur from the ultimate fuel analysis on a wet basis (as received)
- %N Concentration of nitrogen from the ultimate fuel analysis on a wet basis (as received)
- %O Concentration of oxygen from the ultimate fuel analysis on a wet basis (as received)
- K<sub>hd</sub> conversion factor (3.64 scf/lb-%)
- K<sub>c</sub> conversion factor (1.53 scf/lb-%)
- K<sub>s</sub> conversion factor (0.57 scf/lb-%)
- K<sub>n</sub> conversion factor (0.14 scf/lb-%)
- K<sub>o</sub> conversion factor (0.46 scf/lb-%)
- K conversion factor (10E6 BTU/MMBTU)
- GCV gross calorific heating value (BTU/lb HHV) dry

## MERCURY EMISSIONS

HHV dry: 7876 BTU/lb dry

Hg dry: 0.01 mg/kg =  $0.01 \times 10E-6$  kg/kg =  $1.0 \times 10E-8$  lb/lb

lbs/mmBTU Hg =  $\frac{1.0 \times 10E-8 \text{ lb/lb}}{7876 \times 10E-6 \text{ mmBTU/lb}}$  =  $1.27 \times 10E-6$



**Hazen Research, Inc.**  
 4601 Indiana Street  
 Golden, CO 80403 USA  
 Tel: (303) 279-4501  
 Fax: (303) 278-1528

Date February 15 2007  
 HRI Project 009-555  
 HRI Series No. A344/07-1  
 Date Rec'd. 01/30/07  
 Cust. P.O.#

Golder Associates, Inc.  
 David Buff  
 6241 NW 23rd Street, Suite 500  
 Gainesville, FL 32653

Sample Identification  
 USSC-BLR7-012507-C1

Reporting Basis >	As Rec'd	Dry	Air Dry
<b>Proximate (%)</b>			
Moisture	51.23	0.00	8.03
Ash	2.06	4.22	3.88
Volatile	41.12	84.31	77.54
Fixed C	5.59	11.47	10.55
Total	100.00	100.00	100.00

Sulfur	0.02	0.04	0.04
Btu/lb (HHV)	3903	8002	7359
MMF Btu/lb	3991	8383	
MAF Btu/lb		8354	
Air Dry Loss (%)	46.97		

<b>Ultimate (%)</b>			
Moisture	51.23	0.00	8.03
Carbon	25.50	52.29	48.09
Hydrogen	2.91	5.96	5.48
Nitrogen	0.16	0.33	0.30
Sulfur	0.02	0.04	0.04
Ash	2.06	4.22	3.88
Oxygen*	18.12	37.16	34.18
Total	100.00	100.00	100.00
Chlorine**	0.016	0.034	0.031

**Forms of Sulfur (as S,%)**

Sulfate		
Pyritic		
Organic		
Total	0.02	0.04

Lb. Alkali/MM Btu=  
 Lb. Ash/MM Btu= 5.27  
 Lb. SO<sub>2</sub>/MM Btu= 0.11  
 HGI= @ % Moisture  
 As Rec'd. Sp.Gr.=  
 Free Swelling Index=  
 F-Factor(dry), DSCF/MM BTU= 10,582

Report Prepared By:

Gerhard H. Cunningham  
 Fuels Laboratory Supervisor

\* Oxygen by Difference.  
 \*\* Not usually reported as part of the ultimate analysis.

**Hazen Research, Inc.**

4601 Indiana Street  
 Golden, CO 80403 USA  
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Date February 15 2007  
 HRI Project 009-555  
 HRI Series No. A344/07-2  
 Date Rec'd. 01/30/07  
 Cust. P.O.#

Golder Associates, Inc.  
 David Buff  
 6241 NW 23rd Street, Suite 500  
 Gainesville, FL 32653

Sample Identification  
 USSC-BLR7-012507-C2

Reporting Basis >	As Rec'd	Dry	Air Dry
<b>Proximate (%)</b>			
Moisture	53.08	0.00	4.76
Ash	3.27	6.96	6.63
Volatile	38.42	81.90	78.00
Fixed C	5.23	11.14	10.61
Total	100.00	100.00	100.00

Sulfur	0.03	0.07	0.07
Btu/lb (HHV)	3710	7909	7532
MMF Btu/lb	3845	8552	
MAF Btu/lb		8501	
Air Dry Loss (%)	50.74		

<b>Ultimate (%)</b>			
Moisture	53.08	0.00	4.76
Carbon	23.96	51.07	48.64
Hydrogen	2.71	5.77	5.50
Nitrogen	0.20	0.42	0.40
Sulfur	0.03	0.07	0.07
Ash	3.27	6.96	6.63
Oxygen*	16.75	35.71	34.00
Total	100.00	100.00	100.00
Chlorine**	0.015	0.033	0.031

**Forms of Sulfur (as S,%)**

Sulfate		
Pyritic		
Organic		
Total	0.03	0.07

Lb. Alkali/MM Btu=  
 Lb. Ash/MM Btu= 8.80  
 Lb. SO<sub>2</sub>/MM Btu= 0.19  
 HGI= @ % Moisture  
 As Rec'd. Sp. Gr. =  
 Free Swelling Index=  
 F-Factor(dry), DSCF/MM BTU= 10.473

**Water Soluble Alkalies (%)**

Na<sub>2</sub>O  
 K<sub>2</sub>O

Report Prepared By:  
  
 Gerard H. Cunningham  
 Fuels Laboratory Supervisor

\* Oxygen by Difference.

\*\* Not usually reported as part of the ultimate analysis.



**Hazen Research, Inc.**

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Date February 15 2007  
HRI Project 009-555  
HRI Series No. A344/07-3  
Date Rec'd. 01/30/07  
Cust. P.O.#

Golder Associates, Inc.  
David Buff  
6241 NW 23rd Street, Suite 500  
Gainesville, FL 32653

Sample Identification  
USSC-BLR7-012507-C3

Reporting Basis >

As Rec'd

Dry

Air Dry

Proximate (%)

Moisture	52.03	0.00	3.28
Ash	4.75	9.89	9.57
Volatile	37.69	78.57	75.99
Fixed C	5.53	11.54	11.16
Total	100.00	100.00	100.00

Sulfur	0.02	0.05	0.05
Btu/lb (HHV)	3702	7717	7464
MMF Btu/lb	3901	8640	
MAF Btu/lb		8564	
Air Dry Loss (%)	50.40		

Ultimate (%)

Moisture	52.03	0.00	3.28
Carbon	23.64	49.29	47.67
Hydrogen	2.72	5.68	5.49
Nitrogen	0.17	0.35	0.34
Sulfur	0.02	0.05	0.05
Ash	4.75	9.89	9.57
Oxygen*	16.67	34.74	33.60
Total	100.00	100.00	100.00

Chlorine**	0.014	0.030	0.029
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Forms of Sulfur (as S,%)

Sulfate		
Pyritic		
Organic		
Total	0.02	0.05

Lb. Alkali/MM Btu=  
Lb. Ash/MM Btu= 12.82  
Lb. SO2/MM Btu= 0.13  
HGI= @ % Moisture  
As Rec'd. Sp.Gr.=  
Free Swelling Index=  
F-Factor(dry), DSCF/MM BTU= 10,390

Water Soluble Alkalies (%)

Na2O  
K2O

Report Prepared By

Gerard H. Cunningham  
Fuels Laboratory Supervisor

\* Oxygen by Difference.

\*\* Not usually reported as part of the ultimate analysis.



**Hazen Research, Inc.**  
 4601 Indiana Street  
 Golden, CO 80403 USA  
 Tel: (303) 279-4501  
 Fax: (303) 278-1528

Date: February 15, 2007  
 Project No: 009-555  
 Control No: A344/07  
 Received: 01/30/07

Golder Associates, Inc.  
 David Buff  
 6241 NW 23rd Street, Suite 500  
 Gainesville, Florida 32653

Sample Number: A344/07	-1	-2	-3
Sample Identification: USSC-BLR7	012507-C1	012507-C2	012507-C3
Air Dry Loss, %	46.97	50.74	50.40
Residual Moisture, %	8.03	4.76	3.28
As Received Moisture, %	51.23	53.08	52.03
Ash (Air Dry Basis), %	3.88	6.63	9.57
Ash (As Received Basis), %	2.06	3.27	4.75
Ash (Dry Basis), %	4.22	6.96	9.89
Mercury (Air Dry Basis), mg/kg	<0.01	0.01	0.01
Mercury (As Received Basis), mg/kg	<0.005	0.005	0.005
Mercury (Dry Basis), mg/kg	<0.01	0.01	0.01
<b>Metals in Ash</b>			
Manganese, mg/kg	150	130	180
<b>Dry Whole Fuel Basis</b>			
Manganese, mg/kg	6	9	18

The ash was prepared at 600 degrees Celsius.  
 The 'dry whole' fuel values are calculated values.

By:   
 Gerard H. Cunningham  
 Fuel Laboratory Manager









**BOILER 8**

**1/5/07**

**SOURCE TEST REPORT  
FOR  
PARTICULATE MATTER, HYDROCHLORIC ACID,  
AND CHLORINE EMISSIONS**

**BOILER 8  
EAST INLET DUCT TO CYCLONE  
CLEWISTON, FLORIDA**

**FDEP PERMIT NUMBER 051-0003-030-AC  
PSD-FL-333B  
EMISSION UNIT 028**

**MACT PERFORMANCE TEST**

**JANUARY 5, 2007**

**PREPARED FOR:**

**U.S. SUGAR CORPORATION  
111 PONCE DELEON AVENUE  
CLEWISTON, FLORIDA 33440**

**PREPARED BY:**

**AIR CONSULTING AND ENGINEERING, INC.  
2106 N.W. 67TH PLACE  
GAINESVILLE, FLORIDA 32653  
(352) 335-1889**

**238-06-01**

**Table 1. Emission Summary  
Boiler 8  
United States Sugar Corporation - Clewiston Mill  
Clewiston, Florida  
January 5, 2007**

Run Number	Time	Oxygen %	CO2 %	Flow Rate dscfm	Fuel Factor dscf/MMBTU Fuel Analysis	Steam Rate lbs/hr Boiler Parameters	Heat Input MMBTUH Fuel Analysis	HCl Emissions		Cl2 Emissions	
								lbs/hr	lbs/MMBTU	lbs/hr	lbs/MMBTU
1	1058-1158	9.3	10.8	216073	10904	499726	660.5	0.74	0.0011	2.03	0.0031
2	1345-1445	8.7	11.3	216113	10804	520274	699.4	3.02	0.0043	1.89	0.0027
3	1622-1722	7.6	12.5	219030	10843	510811	773.0	1.17	0.0015	1.98	0.0026
<b>Average</b>	—	8.5	11.5	217072	10850	510270	711.0	1.64	0.0023	1.96	0.0028

$$\text{lbs/MMBTU HCl} = \frac{[(\text{mg}) \times (\text{lbs}/453,600\text{mg})]}{\text{VMstd.}} \times \text{F-Factor} \times \frac{20.9}{(20.9 - \%O_2)}$$

$$\text{Heat Input} = \text{MMBTUH} = \frac{(\text{dscfm} \times 60 \text{ min/hr}) \times (20.9 - \%O_2)}{\text{F-Factor} \times 20.9}$$

where: mg = from HCl/Cl2 analysis (Appendix C)  
VMstd. = sample volume (Appendix A)

AIR CONSULTING AND ENGINEERING, INC.  
 2106 NW 67th Place, Suite 4, Gainesville, Florida 32653

**HCL and CL2 Laboratory Results**

**Boiler 8**  
**United States Sugar Corporation - Clewiston Mill**  
**Clewiston, Florida**  
**January 5, 2007**

Run	HCL as Chloride mg	HCL mg	Chlorine as Chloride mg	Chlorine Gas mg
1	1.3	1.09	5.4	3.0
2	4.6	4.48	5.2	2.8
3	1.9	1.71	5.3	2.9
0.1N H2SO4 Blank	0.24			
0.1N NAOH Blank			2.4	

Molecular Weight CL = 35.453 lb/lb-mole  
 Molecular Weight HCL = 36.453 lb/lb-mole

$$\text{mg HCL} = (\text{mg CL} - \text{CL Blank (0.1NH}_2\text{SO}_4)) \times \frac{\text{MW HCL}}{\text{MW CL}}$$

$$\text{mg CL}_2 = (\text{mg CL} - \text{CL Blank (0.1N NaOH)})$$

**AIR CONSULTING AND ENGINEERING, INC.**

**FUEL FACTOR CALCULATION**

**COMPANY NAME:** United States Sugar Corporation - Clewiston Mill  
**SOURCE:** Boiler 8  
**FUEL FIRED:** Bagasse

Run	1	2	3
	dry	dry	dry
<b>Date</b>	1/5/07	1/5/07	1/5/07
<b>Time</b>			
<b>Carbon (%)</b>	52.94	53.32	52.36
<b>Hydrogen (%)</b>	5.56	5.99	6
<b>Nitrogen (%)</b>	0.27	0.28	0.28
<b>Sulfur (%)</b>	0.08	0.48	0.06
<b>Oxygen (%)</b>	35.99	36.56	36.07
<b>HHV (BTU/lb)</b>	7774	8041	7879
<b>F-Factor (dscf/MMBTU)</b>	10904	10804	10843

**Sample Calculation - Run 1**

$$F_d = \frac{K[(K_{hd}\%H) + (K_c\%C) + (K_s\%S) + (K_n\%N) - (K_o\%O)]}{GCV}$$

$$= \frac{10E6[3.64(5.56) + 1.53(52.94) + 0.57(0.08) + 0.14(0.27) - 0.46(35.99)]}{7774}$$

$$= 10904$$

Where:

- %H Concentration of hydrogen from the ultimate fuel analysis on a wet basis (as received)
- %C Concentration of carbon from the ultimate fuel analysis on a wet basis (as received)
- %S Concentration of sulfur from the ultimate fuel analysis on a wet basis (as received)
- %N Concentration of nitrogen from the ultimate fuel analysis on a wet basis (as received)
- %O Concentration of oxygen from the ultimate fuel analysis on a wet basis (as received)
- K<sub>hd</sub> conversion factor (3.64 scf/lb-%)
- K<sub>c</sub> conversion factor (1.53 scf/lb-%)
- K<sub>s</sub> conversion factor (0.57 scf/lb-%)
- K<sub>n</sub> conversion factor (0.14 scf/lb-%)
- K<sub>o</sub> conversion factor (0.46 scf/lb-%)
- K conversion factor (10E6 BTU/MMBTU)
- GCV gross calorific heating value (BTU/lb HHV) dry

### MERCURY EMISSIONS

HHV dry: 7898 BTU/lb dry

Hg dry: 0.0133 mg/kg =  $0.0133 \times 10E-6$  kg/kg =  $1.33 \times 10E-8$  lb/lb

lbs/mmBTU Hg =  $\frac{1.33 \times 10E-8 \text{ lb/lb}}{7898 \times 10E-6 \text{ mmBTU/lb}} = 1.68 \times 10E-6$



**Hazen Research, Inc.**

4601 Indiana Street  
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Tel: (303) 279-4501  
Fax: (303) 278-1528

Date February 5 2007  
HRI Project 009-555  
HRI Series No. A110/07-1  
Date Rec'd. 01/11/07  
Cust. P.O.#

Golder Associates, Inc.  
David Buff  
6241 NW 23rd Street, Suite 500  
Gainesville, FL 32653

Sample Identification  
010507-1 01/05/07 11 AM

Reporting Basis >

As Rec'd

Dry

Air Dry

Proximate (%)

Moisture	52.42	0.00	1.47
Ash	2.45	5.16	5.08
Volatile	39.58	83.18	81.96
Fixed C	5.55	11.66	11.49
Total	100.00	100.00	100.00

Sulfur	0.04	0.08	0.08
Btu/lb (HHV)	3699	7774	7660
MMF Btu/lb	3799	8232	
MAF Btu/lb		8197	
Air Dry Loss (%)	51.71		

Ultimate (%)

Moisture	52.42	0.00	1.47
Carbon	25.19	52.94	52.16
Hydrogen	2.64	5.56	5.48
Nitrogen	0.13	0.27	0.27
Sulfur	0.04	0.08	0.08
Ash	2.45	5.16	5.08
Oxygen*	17.13	35.99	35.46
Total	100.00	100.00	100.00

Chlorine**	0.016	0.033	0.033
------------	-------	-------	-------

Forms of Sulfur (as S,%)

Sulfate			
Pyritic			
Organic			
Total	0.04	0.08	

Lb. Alkali/MM Btu=  
Lb. Ash/MM Btu= 6.63  
Lb. SO2/MM Btu= 0.21  
HGI= @ % Moisture  
As Rec'd. Sp.Gr.=  
Free Swelling Index=  
F-Factor(dry), DSCF/MM BTU= 10.902

Water Soluble Alkalies (%)

Na2O  
K2O

Report Prepared By:  
  
Gerard H. Cunningham  
Fuels Laboratory Supervisor

\* Oxygen by Difference.

\*\* Not usually reported as part of the ultimate analysis.





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Date February 5 2007  
 HRI Project 009-555  
 HRI Series No. A110/07-2  
 Date Rec'd. 01/11/07  
 Cust. P.O.#

Golder Associates, Inc.  
 David Buff  
 6241 NW 23rd Street, Suite 500  
 Gainesville, FL 32653

Sample Identification  
 010507-2 01/05/07 2 PM

Reporting Basis > As Rec'd Dry Air Dry

Proximate (%)

Moisture	51.62	0.00	2.62
Ash	1.63	3.37	3.28
Volatile	40.47	83.65	81.46
Fixed C	6.28	12.98	12.64
Total	100.00	100.00	100.00

Sulfur	0.23	0.48	0.47
Btu/lb (HHV)	3890	8041	7830
MMF Btu/lb	3953	8342	
MAF Btu/lb		8321	
Air Dry Loss (%)	50.32		

Ultimate (%)

Moisture	51.62	0.00	2.62
Carbon	25.79	53.32	51.92
Hydrogen	2.90	5.99	5.84
Nitrogen	0.13	0.28	0.27
Sulfur	0.23	0.48	0.47
Ash	1.63	3.37	3.28
Oxygen*	17.70	36.56	35.60
Total	100.00	100.00	100.00

Chlorine**	0.010	0.021	0.020
------------	-------	-------	-------

Forms of Sulfur (as S,%)

Sulfate		
Pyritic		
Organic		
Total	0.23	0.48

Water Soluble Alkalies (%)

Na2O  
 K2O

Lb. Alkali/MM Btu=  
 Lb. Ash/MM Btu= 4.19  
 Lb. SO2/MM Btu= 1.20  
 HGI= @ % Moisture  
 As Rec'd. Sp.Gr.=  
 Free Swelling Index=  
 F-Factor(dry), DSCF/MM BTU= 10,806

Report Prepared By:

Gerard H. Cunningham  
 Fuels Laboratory Supervisor

\* Oxygen by Difference.

\*\* Not usually reported as part of the ultimate analysis.

**Hazen Research, Inc.**

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Date February 5 2007  
 HRI Project 009-555  
 HRI Series No. A110/07-3  
 Date Rec'd. 01/11/07  
 Cust. P.O.#

Golder Associates, Inc.  
 David Buff  
 6241 NW 23rd Street, Suite 500  
 Gainesville, FL 32653

Sample Identification  
 010507-3 01/15/07 4 PM

Reporting Basis >	As Rec'd	Dry	Air Dry
<b>Proximate (%)</b>			
Moisture	51.55	0.00	1.37
Ash	2.53	5.23	5.16
Volatile	39.88	82.31	81.18
Fixed C	6.04	12.46	12.29
Total	100.00	100.00	100.00

Sulfur	0.03	0.06	0.06
Btu/lb (HHV)	3817	7879	7771
MMF Btu/lb	3923	8350	
MAF Btu/lb		8313	
Air Dry Loss (%)	50.88		

<b>Ultimate (%)</b>			
Moisture	51.55	0.00	1.37
Carbon	25.37	52.36	51.64
Hydrogen	2.91	6.00	5.92
Nitrogen	0.14	0.28	0.28
Sulfur	0.03	0.06	0.06
Ash	2.53	5.23	5.16
Oxygen*	17.47	36.07	35.57
Total	100.00	100.00	100.00
Chlorine**	0.012	0.025	0.025

**Forms of Sulfur (as S,%)**

Sulfate		
Pyritic		
Organic		
Total	0.03	0.06

**Water Soluble Alkalies (%)**

Na2O  
 K2O

Lb. Alkali/MM Btu=  
 Lb. Ash/MM Btu= 6.64  
 Lb. SO2/MM Btu= 0.15  
 HGI= @ % Moisture  
 As Rec'd. Sp.Gr.=  
 Free Swelling Index=  
 F-Factor(dry), DSCF/MM BTU= 10,843

Report Prepared By

Gerard H. Cunningham  
 Fuels Laboratory Supervisor

\* Oxygen by Difference.

\*\* Not usually reported as part of the ultimate analysis.



**Hazen Research, Inc.**

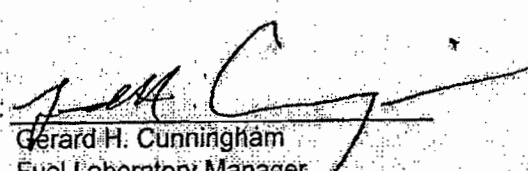
4601 Indiana Street  
Golden, CO 80403 USA  
Tel: (303) 279-4501  
Fax: (303) 278-1528

Date: February 5, 2007  
Project No: 009-555  
Control No: A110/07  
Received: 01/11/07

Golder Associates, Inc.  
David Buff  
6241 NW 23rd Street, Suite 500  
Gainesville, Florida 32653

Sample Number: A110/07	-1	-2	-3
Sample Identification:	010507-1 11AM	010507-2 2PM	010507-1 4PM
Air Dry Loss, %	51.71	50.32	50.88
Residual Moisture, %	1.47	2.62	1.37
As Received Moisture, %	52.42	51.62	51.55
Ash (Air Dry Basis), %	5.08	3.28	5.16
Ash (As Received Basis), %	2.45	1.63	2.53
Ash (Dry Basis), %	5.16	3.37	5.23
Mercury (Air Dry Basis), mg/kg	0.02	0.01	0.01
Mercury (As Received Basis), mg/kg	0.01	0.005	0.005
Mercury (Dry Basis), mg/kg	0.02	0.01	0.01
<b>Metals In Ash</b>			
Manganese, mg/kg	440	549	359
<b>Dry Whole Fuel Basis</b>			
Manganese, mg/kg	23	18	19

The ash was prepared at 600 degrees Celsius.  
The 'dry whole' fuel values are calculated values.

By:   
Gerard H. Cunningham  
Fuel Laboratory Manager







**Boiler No. 8 - ESP Report**  
**1/5/2007 (C-1)**

Time	Power Input 1 (kW)	Power Input 2 (kW)	Power Input 3 (kW)	Power Input 4 (kW)	Power Input 5 (kW)	Power Input Total (kW)
10:58	8.92	Down	Down	10.93	12.40	32.25
10:59	7.48	Down	Down	10.17	12.45	30.10
11:00	7.95	Down	Down	10.68	12.58	31.22
11:01	7.62	Down	Down	10.50	12.00	30.12
11:02	8.23	Down	Down	11.17	12.50	31.90
11:03	8.85	Down	Down	11.57	12.63	33.05
11:04	8.67	Down	Down	11.08	12.33	32.08
11:05	7.07	Down	Down	11.28	12.13	30.48
11:06	7.45	Down	Down	11.02	12.30	30.77
11:07	7.65	Down	Down	10.62	12.30	30.57
11:08	8.03	Down	Down	10.58	12.60	31.22
11:09	6.15	Down	Down	10.80	12.65	29.60
11:10	7.65	Down	Down	10.55	12.63	30.83
11:11	7.15	Down	Down	9.57	12.53	29.25
11:12	8.20	Down	Down	10.18	12.78	31.17
11:13	6.73	Down	Down	8.78	12.48	28.00
11:14	5.77	Down	Down	8.70	12.62	27.08
11:15	6.70	Down	Down	9.03	11.63	27.37
11:16	8.23	Down	Down	10.08	11.92	30.23
11:17	8.10	Down	Down	10.07	11.90	30.07
11:18	7.85	Down	Down	10.18	11.97	30.00
11:19	7.93	Down	Down	10.52	11.97	30.42
11:20	8.28	Down	Down	10.57	11.97	30.82
11:21	7.83	Down	Down	10.47	11.97	30.27
11:22	7.07	Down	Down	10.82	11.93	29.82
11:23	8.28	Down	Down	10.78	12.00	31.07
11:24	8.48	Down	Down	10.90	12.35	31.73
11:25	8.10	Down	Down	11.13	12.20	31.43
11:26	7.92	Down	Down	11.12	12.35	31.38
11:27	7.17	Down	Down	11.02	12.15	30.33
11:28	8.57	Down	Down	11.25	12.47	32.28
11:29	8.75	Down	Down	11.38	12.00	32.13
11:30	7.87	Down	Down	10.98	12.35	31.20
11:31	6.72	Down	Down	10.73	12.40	29.85
11:32	7.70	Down	Down	10.98	12.00	30.68
11:33	8.17	Down	Down	11.08	12.00	31.25
11:34	7.53	Down	Down	10.92	12.10	30.55
11:35	8.27	Down	Down	11.05	12.20	31.52
11:36	7.32	Down	Down	11.20	11.97	30.48
11:37	8.33	Down	Down	10.92	12.17	31.42
11:38	8.75	Down	Down	11.45	12.10	32.30
11:39	7.53	Down	Down	10.40	11.93	29.87
11:40	7.38	Down	Down	10.63	11.90	29.92
11:41	6.70	Down	Down	10.03	11.90	28.63
11:42	7.70	Down	Down	10.35	12.08	30.13
11:43	6.45	Down	Down	9.80	11.85	28.10
11:44	7.38	Down	Down	10.37	12.03	29.78
11:45	8.20	Down	Down	10.77	12.02	30.98
11:46	8.48	Down	Down	11.17	11.97	31.62
11:47	6.30	Down	Down	10.53	11.90	28.73
11:48	7.63	Down	Down	10.97	11.85	30.45
11:49	6.10	Down	Down	11.33	11.75	29.18
11:50	7.03	Down	Down	10.57	11.80	29.40
11:51	7.10	Down	Down	11.08	11.97	30.15
11:52	6.85	Down	Down	10.85	12.02	29.72
11:53	8.43	Down	Down	8.62	11.93	28.98
11:54	8.35	Down	Down	8.98	11.90	29.23
11:55	8.50	Down	Down	9.67	12.13	30.30
11:56	5.92	Down	Down	8.85	11.77	26.53
11:57	7.65	Down	Down	10.68	11.87	30.20
11:58	8.28	Down	Down	11.02	11.90	31.20
<b>Average =</b>	<b>7.66</b>	<b>N/A</b>	<b>N/A</b>	<b>10.55</b>	<b>12.14</b>	<b>30.35</b>

Boiler No. 8 - ESP Report  
1/5/2007 (C-2)

Time	Power Input 1 (kW)	Power Input 2 (kW)	Power Input 3 (kW)	Power Input 4 (kW)	Power Input 5 (kW)	Power Input Total (kW)
13:45	7.27	Down	Down	11.30	11.72	30.28
13:46	6.80	Down	Down	11.18	11.77	29.75
13:47	6.83	Down	Down	10.95	11.73	29.52
13:48	6.47	Down	Down	11.70	11.68	29.85
13:49	7.27	Down	Down	10.97	11.68	29.92
13:50	7.32	Down	Down	11.15	11.85	30.32
13:51	6.77	Down	Down	11.00	11.03	28.80
13:52	8.02	Down	Down	11.55	11.52	31.08
13:53	8.02	Down	Down	11.43	11.55	31.00
13:54	7.67	Down	Down	11.45	11.45	30.57
13:55	6.63	Down	Down	11.08	11.32	29.03
13:56	6.37	Down	Down	11.72	11.65	29.73
13:57	8.38	Down	Down	11.60	11.73	31.72
13:58	8.32	Down	Down	11.90	11.87	32.08
13:59	7.78	Down	Down	11.27	11.65	30.70
14:00	7.40	Down	Down	11.13	12.25	30.78
14:01	8.08	Down	Down	11.08	12.83	32.00
14:02	8.33	Down	Down	11.87	12.95	33.15
14:03	7.47	Down	Down	11.57	12.30	31.33
14:04	6.72	Down	Down	10.47	12.22	29.40
14:05	8.03	Down	Down	10.92	11.67	30.62
14:06	7.67	Down	Down	11.20	11.68	30.55
14:07	7.98	Down	Down	11.25	11.18	30.42
14:08	7.30	Down	Down	10.73	11.67	29.70
14:09	7.12	Down	Down	10.83	11.75	29.70
14:10	6.98	Down	Down	11.02	11.48	29.48
14:11	5.93	Down	Down	10.10	11.28	27.32
14:12	5.97	Down	Down	10.10	10.80	26.87
14:13	7.03	Down	Down	9.18	11.03	27.25
14:14	6.82	Down	Down	10.20	11.93	28.95
14:15	7.03	Down	Down	10.50	11.77	29.30
14:16	6.27	Down	Down	10.17	11.72	28.15
14:17	5.63	Down	Down	10.10	11.62	27.35
14:18	4.93	Down	Down	10.25	11.12	26.30
14:19	5.17	Down	Down	9.67	10.77	25.60
14:20	5.80	Down	Down	8.00	10.95	24.75
14:21	5.72	Down	Down	9.70	11.07	26.48
14:22	6.45	Down	Down	9.80	11.60	27.85
14:23	5.93	Down	Down	10.48	11.92	28.33
14:24	5.62	Down	Down	10.42	11.67	27.70
14:25	5.58	Down	Down	10.15	11.68	27.42
14:26	6.60	Down	Down	10.37	11.65	28.62
14:27	7.58	Down	Down	10.70	11.90	30.18
14:28	7.78	Down	Down	10.57	11.93	30.28
14:29	7.38	Down	Down	11.02	11.63	30.03
14:30	6.93	Down	Down	10.47	11.50	28.90
14:31	7.15	Down	Down	10.48	11.25	28.88
14:32	7.53	Down	Down	10.63	11.68	29.85
14:33	6.53	Down	Down	10.25	11.43	28.22
14:34	4.67	Down	Down	9.58	11.05	25.30
14:35	6.55	Down	Down	10.17	11.30	28.02
14:36	7.13	Down	Down	10.50	11.57	29.20
14:37	8.40	Down	Down	10.70	11.70	30.80
14:38	7.90	Down	Down	10.68	11.25	29.83
14:39	8.40	Down	Down	10.82	11.60	30.82
14:40	8.12	Down	Down	10.78	11.47	30.37
14:41	7.50	Down	Down	10.13	11.62	29.25
14:42	5.90	Down	Down	10.15	10.85	26.90
14:43	6.70	Down	Down	10.43	11.15	28.28
14:44	5.30	Down	Down	10.03	11.17	26.50
14:45	4.82	Down	Down	9.38	10.78	24.98
<b>Average =</b>	<b>6.91</b>	<b>N/A</b>	<b>N/A</b>	<b>10.64</b>	<b>11.57</b>	<b>29.12</b>



Boiler No. 8 - ESP Report  
1/5/2007 (C-3)

Time	Power Input 1 (kW)	Power Input 2 (kW)	Power Input 3 (kW)	Power Input 4 (kW)	Power Input 5 (kW)	Power Input Total (kW)
16:22	5.53	Down	Down	7.98	13.97	27.48
16:23	6.62	Down	Down	6.93	13.72	27.27
16:24	6.80	Down	Down	8.23	13.22	28.25
16:25	6.42	Down	Down	6.42	16.17	29.00
16:26	6.12	Down	Down	9.82	29.90	45.83
16:27	8.18	Down	Down	10.27	15.40	33.85
16:28	5.65	Down	Down	8.67	13.53	27.85
16:29	7.53	Down	Down	7.55	13.87	28.95
16:30	7.45	Down	Down	8.50	13.82	29.77
16:31	7.08	Down	Down	7.28	14.18	28.55
16:32	6.45	Down	Down	7.53	14.23	28.22
16:33	7.38	Down	Down	8.10	14.87	30.35
16:34	8.08	Down	Down	7.87	14.23	30.18
16:35	7.53	Down	Down	9.82	14.38	31.73
16:36	7.83	Down	Down	10.22	14.55	32.60
16:37	5.58	Down	Down	7.33	14.03	26.95
16:38	7.02	Down	Down	7.93	14.77	29.72
16:39	7.23	Down	Down	8.18	15.02	30.43
16:40	6.12	Down	Down	8.00	15.10	29.22
16:41	7.43	Down	Down	7.53	14.38	29.35
16:42	6.83	Down	Down	6.97	13.88	27.68
16:43	8.18	Down	Down	7.70	14.45	30.33
16:44	6.05	Down	Down	8.25	14.92	29.22
16:45	5.82	Down	Down	8.10	14.42	28.33
16:46	7.78	Down	Down	8.25	14.83	30.87
16:47	7.07	Down	Down	6.75	14.67	28.48
16:48	6.55	Down	Down	9.17	16.30	32.02
16:49	5.07	Down	Down	9.65	18.88	33.60
16:50	7.10	Down	Down	8.58	19.35	35.03
16:51	6.45	Down	Down	9.35	23.05	38.85
16:52	6.25	Down	Down	8.43	19.02	33.70
16:53	7.78	Down	Down	7.62	24.77	40.17
16:54	7.62	Down	Down	9.20	66.78	83.60
16:55	6.25	Down	Down	10.10	39.73	56.08
16:56	8.50	Down	Down	11.35	30.30	50.15
16:57	9.02	Down	Down	10.00	30.02	49.03
16:58	8.22	Down	Down	11.02	38.77	58.00
16:59	8.27	Down	Down	9.02	27.10	44.38
17:00	10.68	Down	Down	11.03	23.23	44.95
17:01	10.58	Down	Down	12.35	20.67	43.60
17:02	7.43	Down	Down	10.77	17.92	36.12
17:03	8.73	Down	Down	11.17	17.20	37.10
17:04	10.38	Down	Down	12.77	16.80	39.95
17:05	6.95	Down	Down	12.78	16.65	36.38
17:06	6.63	Down	Down	11.82	16.30	34.75
17:07	7.83	Down	Down	8.33	15.80	31.97
17:08	8.13	Down	Down	8.93	16.15	33.22
17:09	8.72	Down	Down	9.60	17.30	35.62
17:10	10.43	Down	Down	13.05	17.10	40.58
17:11	6.43	Down	Down	11.53	17.10	35.07
17:12	8.77	Down	Down	9.00	16.20	33.97
17:13	8.17	Down	Down	12.68	16.22	37.07
17:14	9.37	Down	Down	10.85	16.38	36.60
17:15	8.27	Down	Down	12.95	16.22	37.43
17:16	5.48	Down	Down	9.27	15.93	30.68
17:17	8.45	Down	Down	11.23	16.30	35.98
17:18	11.92	Down	Down	14.05	16.65	42.62
17:19	8.23	Down	Down	10.68	17.08	36.00
17:20	10.38	Down	Down	10.47	17.47	38.32
17:21	9.85	Down	Down	14.47	17.18	41.50
17:22	9.28	Down	Down	13.27	17.92	40.47
Average =	7.67	N/A	N/A	9.62	18.69	35.98

**BOILER 8**

**8/22/06**

**SOURCE TEST REPORT  
FOR  
PARTICULATE MATTER, MERCURY, CHLORINE AND  
HYDROCHLORIC ACID EMISSIONS**

**BOILER 8  
UNITED STATES SUGAR CORPORATION  
CLEWISTON, FLORIDA**

**FDEP PERMIT NUMBER 051-0003-030-AC  
PSD-FL-333B  
EMISSION UNIT 028**

**MACT PERFORMANCE TEST  
WOOD CHIP FIRING**

**AUGUST 22, 2006**

**PREPARED FOR:**

**U.S. SUGAR CORPORATION  
111 PONCE DELEON AVENUE  
CLEWISTON, FLORIDA 33440**

**PREPARED BY:**

**AIR CONSULTING AND ENGINEERING, INC.  
2106 NW 67TH PLACE, SUITE 4  
GAINESVILLE, FLORIDA 32653  
(352) 335-1889**

**238-05-01**

**Table 2. Hydrochloric Acid Emission Summary**  
**Boiler 8 - Inlet to Wet Cyclones**  
**United States Sugar Corporation**  
**Clewiston, Florida**  
**August 22, 2006**

Run Number	Time	Oxygen %	CO2 %	Steam Rate lbs/hr Plant Data	Fuel Factor dscf/MMBTU Fuel Analysis	Heat Input* MMBTUH	Flow Rate dscfm	HCl Emissions		Cl2 Emissions	
								lbs/hr	lbs/MMBTU	lbs/hr	lbs/MMBTU
1	1036-1136	11.5	9.6	202933	11162	403.5	148855	28.14	0.0785	1.10	0.0031
2	1320-1420	12.5	7.7	202604	11501	383.6	146795	29.73	0.0967	0.90	0.0029
3	1530-1630	11.4	8.9	199219	11005	411.4	148794	29.93	0.0809	0.79	0.0021
<b>Average</b>	—	11.8	8.8	201585	11223	399.5	148148	29.27	0.0854	0.93	0.0027

**Note:** Results were not blank corrected  
HCl and Cl2 were not measured isokinetically, emissions in lbs/hr were calculated using the stack flow rate

\* The heat input was calculated using the stack flow rate and stack O2 measurements

$$\text{lbs/MMBTU HCl} = \frac{[(\text{mg}) \times (\text{lbs}/453.600\text{mg})] \times \text{F-Factor} \times 20.9}{\text{VMstd.} \times 20.9 - \% \text{O}_2}$$

Laboratory Results  
Boiler 8

Run	HCL as Chloride mg	HCL mg	Chlorine as Chloride mg	Chlorine mg
1	60.0	61.69	1.2	2.40
2	64.0	65.81	1	2.00
3	64.0	65.81	0.87	1.74
H2SO4Blank	0.1	0.10		
NAOH Blank			0.1	0.20

CL = 35.453 lb/lb-mole  
HCL = 36.453 lb/lb-mole  
Chlorine = 70.906 lb/lb-mole

**AIR CONSULTING AND ENGINEERING, INC.**

**FUEL FACTOR CALCULATION**

**COMPANY NAME:** United States Sugar Corporation  
**SOURCE:** Boiler 8  
**FUEL FIRED:** Wood Chips

Run	1	2	3
	wet	wet	wet
Date	8/22/06	8/22/06	8/22/06
Time			
<b>Carbon (%)</b>	29.34	32.33	31.56
<b>Hydrogen (%)</b>	3.43	3.79	3.55
<b>Nitrogen (%)</b>	0.33	0.32	0.36
<b>Sulfur (%)</b>	0.05	0.06	0.06
<b>Oxygen (%)</b>	18.20	18.76	18.84
<b>HHV (BTU/lb)</b>	4397	4757	4782
<b>F-Factor (scf/MMBTU)</b>	<b>11162</b>	<b>11501</b>	<b>11005</b>

**Sample Calculation - Run 1**

$$F_w = \frac{K[(K_{hw} * \%H) + (K_{cw} * \%C) + (K_{sw} * \%S) + (K_{nw} * \%N) - (K_{ow} * \%O)]}{GCV_w}$$

$$= \frac{10E6[3.64(3.43) + 1.53(29.34) + 0.57(0.05) + 0.14(0.33) - 0.46(18.2)]}{4397}$$

$$= 11162$$

Where:

- %H Concentration of hydrogen from the ultimate fuel analysis on a wet basis (as received)
- %C Concentration of carbon from the ultimate fuel analysis on a wet basis (as received)
- %S Concentration of sulfur from the ultimate fuel analysis on a wet basis (as received)
- %N Concentration of nitrogen from the ultimate fuel analysis on a wet basis (as received)
- %O Concentration of oxygen from the ultimate fuel analysis on a wet basis (as received)
- Khd conversion factor (3.64 scf/lb-%)
- Kc conversion factor (1.53 scf/lb-%)
- Ks conversion factor (0.57 scf/lb-%)
- Kn conversion factor (0.14 scf/lb-%)
- Ko conversion factor (0.46 scf/lb-%)
- K conversion factor (10E6 BTU/MMBTU)
- GCV gross calorific heating value (BTU/lb HHV) wet



**Hazen Research, Inc.**  
 4601 Indiana Street  
 Golden, CO 80403 USA  
 Tel: (303) 279-4501  
 Fax: (303) 278-1528

Date September 14 2006  
 HRI Project 009-555  
 HRI Series No. H301/06-1  
 Date Rec'd. 08/29/06  
 Cust. P.O.#

Golder Associates, Inc.  
 David Buff  
 6241 NW 23rd Street, Suite 500  
 Gainesville, FL 32653

Sample Identification  
 USSC-082206-1 Wood Chips

Reporting Basis >

	As Rec'd	Dry	Air Dry
Proximate (%)			
Moisture	36.57	0.00	1.85
Ash	12.08	19.04	18.69
Volatile	40.87	64.43	63.24
Fixed C	10.48	16.53	16.22
Total	100.00	100.00	100.00

Sulfur	0.05	0.08	0.08
Btu/lb (HHV)	4397	6932	6804
MMF Btu/lb	5056	8727	
MAF Btu/lb		8563	
Air Dry Loss (%)	35.37		

Ultimate (%)

Moisture	36.57	0.00	1.85
Carbon	29.34	46.26	45.40
Hydrogen	3.43	5.41	5.31
Nitrogen	0.33	0.52	0.51
Sulfur	0.05	0.08	0.08
Ash	12.08	19.04	18.69
Oxygen*	18.20	28.69	28.16
Total	100.00	100.00	100.00
Chlorine**	0.092	0.145	0.142

Forms of Sulfur (as S,%)

Sulfate		
Pyritic		
Organic		
Total	0.05	0.08

Lb. Alkali/MM Btu=  
 Lb. Ash/MM Btu= 27.47  
 Lb. SO<sub>2</sub>/MM Btu= 0.24  
 HGI= @ % Moisture  
 As Rec'd. Sp.Gr.=  
 Free Swelling Index=  
 F-Factor(dry), DSCF/MM BTU= 11,165

Water Soluble Alkalies (%)

Na<sub>2</sub>O  
 K<sub>2</sub>O

Report Prepared By:  
  
 Gerard H. Cunningham  
 Fuels Laboratory Supervisor

\* Oxygen by Difference.

\*\* Not usually reported as part of the ultimate analysis.



**Hazen Research, Inc.**

4601 Indiana Street  
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Date September 14 2006  
HRI Project 009-555  
HRI Series No. H301/06-2  
Date Rec'd. 08/29/06  
Cust. P.O.#

Golder Associates, Inc.  
David Buff  
6241 NW 23rd Street, Suite 500  
Gainesville, FL 32653

Sample Identification  
USSC-082206-2 Wood Chips

Reporting Basis >	As Rec'd	Dry	Air Dry
<b>Proximate (%)</b>			
Moisture	32.72	0.00	2.18
Ash	12.02	17.87	17.48
Volatile	45.61	67.80	66.32
Fixed C	9.65	14.33	14.02
Total	100.00	100.00	100.00
Sulfur	0.06	0.09	0.09
Btu/lb (HHV)	4757	7071	6917
MMF Btu/lb	5466	8762	
MAF Btu/lb		8609	
Air Dry Loss (%)		31.22	

<b>Ultimate (%)</b>			
Moisture	32.72	0.00	2.18
Carbon	32.33	48.06	47.01
Hydrogen	3.79	5.63	5.51
Nitrogen	0.32	0.48	0.47
Sulfur	0.06	0.09	0.09
Ash	12.02	17.87	17.48
Oxygen*	18.76	27.87	27.26
Total	100.00	100.00	100.00
Chlorine**	0.095	0.141	0.138

**Forms of Sulfur (as S,%)**

Sulfate		
Pyritic		
Organic		
Total	0.06	0.09

**Water Soluble Alkalies (%)**

Na2O  
K2O

Lb. Alkali/MM Btu=  
Lb. Ash/MM Btu= 25.27  
Lb. SO2/MM Btu= 0.26  
HGI= @ % Moisture  
As Rec'd. Sp.Gr.=  
Free Swelling Index=  
F-Factor(dry), DSCF/MM BTU= 11.500

Report Prepared By:

Gerard H. Cunningham  
Fuels Laboratory Supervisor

\* Oxygen by Difference.

\*\* Not usually reported as part of the ultimate analysis.





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Date September 14 2006  
 HRI Project 009-555  
 HRI Series No. H301/06-3  
 Date Rec'd. 08/29/06  
 Cust. P.O.#

Golder Associates, Inc.  
 David Buff  
 6241 NW 23rd Street, Suite 500  
 Gainesville, FL 32653

Sample Identification  
 USSC-082206-3 Wood Chips

Reporting Basis >	As Rec'd	Dry	Air Dry
Proximate (%)			
Moisture	33.93	0.00	4.54
Ash	11.70	17.71	16.91
Volatile	45.10	68.26	65.16
Fixed C	9.27	14.03	13.39
Total	100.00	100.00	100.00

Sulfur	0.06	0.08	0.08
Btu/lb (HHV)	4782	7238	6909
MMF Btu/lb	5472	8950	
MAF Btu/lb		8796	
Air Dry Loss (%)	30.79		

Ultimate (%)			
Moisture	33.93	0.00	4.54
Carbon	31.56	47.77	45.60
Hydrogen	3.55	5.38	5.13
Nitrogen	0.36	0.54	0.52
Sulfur	0.06	0.08	0.08
Ash	11.70	17.71	16.91
Oxygen*	18.84	28.52	27.22
Total	100.00	100.00	100.00
Chlorine**	0.107	0.161	0.154

Forms of Sulfur (as S,%)

Sulfate		
Pyritic		
Organic		
Total	0.06	0.08

Lb. Alkali/MM Btu=  
 Lb. Ash/MM Btu= 24.47  
 Lb. SO<sub>2</sub>/MM Btu= 0.23  
 HGI= @ % Moisture  
 As Rec'd. Sp.Gr.=  
 Free Swelling Index=  
 F-Factor(dry), DSCF/MM BTU= 11,007

Water Soluble Alkalies (%)

Na<sub>2</sub>O  
 K<sub>2</sub>O

Report Prepared By:  
  
 Gerard H. Cunningham  
 Fuels Laboratory Supervisor

\* Oxygen by Difference.

\*\* Not usually reported as part of the ultimate analysis.



**Hazen Research, Inc.**

4801 Indiana Street  
Golden, CO 80403 USA  
Tel: (303) 279-4501  
Fax: (303) 278-1528

Date: Sept. 14, 2006  
Project No: 009-555  
Control No: H301/06  
Received: 08/29/06

Golder Associates, Inc.  
David Buff  
6241 NW 23rd Street, Suite 500  
Gainesville, Florida 32653

Sample Number: H301/06	-1	-2	-3
Sample Identification: USSC-060106	-4	-6	-8

Air Dry Loss, %	35.37	31.22	30.79
Residual Moisture, %	1.85	2.18	4.54
As Received Moisture, %	36.57	32.72	33.93

Ash (Air Dry Basis), %	18.69	17.48	16.91
Ash (As Received Basis), %	12.08	12.02	11.70
Ash (Dry Basis), %	19.04	17.87	17.71

Mercury (Air Dry Basis), mg/kg	0.02	0.02	0.02
Mercury (As Received Basis), mg/kg	0.01	0.01	0.01
Mercury (Dry Basis), mg/kg	0.02	0.02	0.02

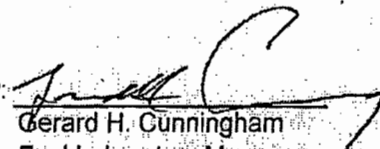
**Metals in Ash**

Manganese, mg/kg	98	100	110
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**Dry Whole Fuel Basis**

Manganese, mg/kg	19	18	19
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The ash was prepared at 600 degrees Celsius.  
The 'dry whole' fuel values are calculated values.

By:   
Gerard H. Cunningham  
Fuel Laboratory Manager

Boiler 8 - Wet Cyclone Report  
8/22/2006 (C-1)

Time *	Water Flow Rate 1 (gal/hr)	Water Flow 1 (On/Off)	Pressure Drop 1 (inches H <sub>2</sub> O)	Water Flow Rate 2 (gal/hr)	Water Flow 2 (On/Off)	Pressure Drop 2 (inches H <sub>2</sub> O)
9:36	21,010	On	0.32	21,000	On	0.34
9:37	20,990	On	0.51	21,000	On	0.51
9:38	21,000	On	0.48	20,990	On	0.29
9:39	21,010	On	0.31	21,010	On	0.33
9:40	21,000	On	0.42	21,000	On	0.39
9:41	21,010	On	0.43	21,000	On	0.37
9:42	21,000	On	0.40	21,000	On	0.36
9:43	20,990	On	0.40	21,000	On	0.39
9:44	21,010	On	0.37	21,000	On	0.33
9:45	20,990	On	0.43	21,000	On	0.38
9:46	21,000	On	0.37	21,010	On	0.31
9:47	20,990	On	0.39	20,990	On	0.38
9:48	21,010	On	0.39	21,010	On	0.39
9:49	21,000	On	0.42	20,990	On	0.32
9:50	21,000	On	0.41	21,010	On	0.36
9:51	21,010	On	0.39	20,990	On	0.29
9:52	21,000	On	0.52	21,000	On	0.35
9:53	21,000	On	0.48	21,000	On	0.36
9:54	21,000	On	0.31	21,010	On	0.24
9:55	20,980	On	0.52	21,010	On	0.42
9:56	21,010	On	0.40	20,990	On	0.38
9:57	21,000	On	0.51	21,000	On	0.46
9:58	20,990	On	0.39	20,990	On	0.26
9:59	21,000	On	0.45	21,010	On	0.37
10:00	21,010	On	0.32	21,000	On	0.23
10:01	20,980	On	0.42	21,010	On	0.48
10:02	21,010	On	0.32	20,990	On	0.34
10:03	21,000	On	0.25	21,000	On	0.18
10:04	21,000	On	0.40	21,000	On	0.39
10:05	21,000	On	0.43	21,010	On	0.39
10:06	21,000	On	0.40	21,010	On	0.29
10:07	21,000	On	0.36	20,990	On	0.34
10:08	21,000	On	0.38	21,000	On	0.16
10:09	21,000	On	0.46	21,000	On	0.28
10:10	21,000	On	0.47	21,010	On	0.26
10:11	21,000	On	0.30	21,000	On	0.29
10:12	21,000	On	0.49	21,000	On	0.33
10:13	21,000	On	0.32	21,010	On	0.29
10:14	21,000	On	0.24	20,990	On	0.22
10:15	21,000	On	0.38	20,990	On	0.28
10:16	21,000	On	0.49	21,000	On	0.44
10:17	20,990	On	0.37	21,000	On	0.28
10:18	21,000	On	0.44	21,010	On	0.43
10:19	21,000	On	0.57	21,000	On	0.45
10:20	21,000	On	0.47	21,000	On	0.44
10:21	21,010	On	0.50	21,010	On	0.40
10:22	20,990	On	0.46	21,000	On	0.45
10:23	21,000	On	0.36	20,990	On	0.36
10:24	21,000	On	0.42	20,990	On	0.42
10:25	21,000	On	0.33	21,000	On	0.33
10:26	20,990	On	0.53	21,000	On	0.48
10:27	21,000	On	0.38	21,000	On	0.42
10:28	21,000	On	0.43	21,000	On	0.29
10:29	21,010	On	0.38	20,990	On	0.30
10:30	20,990	On	0.32	21,010	On	0.36
10:31	21,010	On	0.31	21,000	On	0.24
10:32	20,990	On	0.44	20,990	On	0.42
10:33	21,000	On	0.44	21,000	On	0.50
10:34	21,010	On	0.45	21,010	On	0.38
10:35	21,000	On	0.49	21,000	On	0.44
10:36	21,010	On	0.31	20,990	On	0.40
<b>Average</b>	<b>21,000</b>	<b>N/A</b>	<b>0.41</b>	<b>21,000</b>	<b>N/A</b>	<b>0.35</b>

\* The CEMS DAHS does not account for Daylight Savings Time, therefore, the CEMS data corresponding to the stack test runs is one-hour behind actual time.

**Boiler 8 - ESP Report**  
**8/22/2006 (C-1)**

Time *	Secondary Power Input 1	Secondary Power Input 2	Secondary Power Input 3	Secondary Power Input 4	Secondary Power Input 5	Secondary Power Input Total
	(kW)	(kW)	(kW)	(kW)	(kW)	(kW)
9:36	0.18	0.00	14.55	30.53	0.00	45.27
9:37	0.40	0.00	12.95	32.17	0.00	45.52
9:38	0.27	0.00	13.72	28.85	0.00	42.83
9:39	0.27	0.00	13.70	26.68	0.00	40.65
9:40	0.25	0.00	13.97	32.67	0.00	46.88
9:41	0.18	0.00	14.98	32.87	0.00	48.03
9:42	0.18	0.00	15.07	31.27	0.00	46.52
9:43	0.30	0.00	14.50	31.53	0.00	46.33
9:44	0.25	0.00	14.63	31.18	0.00	46.07
9:45	0.27	0.00	14.53	31.17	0.00	45.97
9:46	0.27	0.00	14.35	29.93	0.00	44.55
9:47	0.25	0.00	14.40	31.50	0.00	46.15
9:48	0.20	0.00	14.40	31.97	0.00	46.57
9:49	0.25	0.00	13.82	28.48	0.00	42.55
9:50	0.18	0.00	14.35	32.37	0.00	46.90
9:51	0.20	0.00	14.40	32.02	0.00	46.62
9:52	0.17	0.00	14.35	31.17	0.00	45.68
9:53	0.13	0.00	14.30	31.37	0.00	45.80
9:54	0.17	0.00	13.55	31.08	0.00	44.80
9:55	0.13	0.00	14.35	31.65	0.00	46.13
9:56	0.23	0.00	13.12	31.82	0.00	45.17
9:57	0.33	0.00	14.53	31.42	0.00	46.28
9:58	0.20	0.00	14.60	31.73	0.00	46.53
9:59	0.13	0.00	14.68	31.37	0.00	46.18
10:00	0.18	0.00	14.45	31.85	0.00	46.48
10:01	0.17	0.00	14.05	31.60	0.00	45.82
10:02	0.28	0.00	14.15	31.97	0.00	46.40
10:03	0.30	0.00	14.25	30.97	0.00	45.52
10:04	0.20	0.00	13.88	30.93	0.00	45.02
10:05	0.23	0.00	14.07	31.48	0.00	45.78
10:06	0.25	0.00	14.40	30.67	0.00	45.32
10:07	0.18	0.00	14.40	31.08	0.00	45.67
10:08	0.20	0.00	14.13	30.25	0.00	44.58
10:09	0.13	0.00	13.90	30.62	0.00	44.65
10:10	0.23	0.00	14.57	31.45	0.00	46.25
10:11	0.27	0.00	14.63	30.93	0.00	45.83
10:12	0.32	0.00	14.35	31.43	0.00	46.10
10:13	0.20	0.00	14.45	30.80	0.00	45.45
10:14	0.17	0.00	14.35	31.18	0.00	45.70
10:15	0.22	0.00	14.35	30.87	0.00	45.43
10:16	0.20	0.00	14.25	31.12	0.00	45.57
10:17	0.23	0.00	14.25	31.18	0.00	45.67
10:18	0.10	0.00	14.20	31.02	0.00	45.32
10:19	0.18	0.00	14.10	30.85	0.00	45.13
10:20	0.27	0.00	14.05	30.65	0.00	44.97
10:21	0.22	0.00	14.25	31.38	0.00	45.85
10:22	0.25	0.00	13.98	30.65	0.00	44.88
10:23	0.27	0.00	14.20	30.92	0.00	45.38
10:24	0.23	0.00	14.10	30.70	0.00	45.03
10:25	0.17	0.00	14.30	30.80	0.00	45.27
10:26	0.20	0.00	14.35	31.40	0.00	45.95
10:27	0.13	0.00	13.77	30.95	0.00	44.85
10:28	0.17	0.00	14.32	31.05	0.00	45.53
10:29	0.20	0.00	14.35	31.52	0.00	46.07
10:30	0.17	0.00	14.30	31.12	0.00	45.58
10:31	0.20	0.00	14.27	30.80	0.00	45.27
10:32	0.13	0.00	14.32	31.68	0.00	46.13
10:33	0.20	0.00	14.22	30.47	0.00	44.88
10:34	0.20	0.00	13.92	31.40	0.00	45.52
10:35	0.33	0.00	14.25	31.58	0.00	46.17
10:36	0.23	0.00	14.10	30.65	0.00	44.98
<b>Average</b>	<b>0.22</b>	<b>0.00</b>	<b>14.23</b>	<b>31.09</b>	<b>0.00</b>	<b>45.54</b>

\* The CEMS DAHS does not account for Daylight Savings Time, therefore, the CEMS data corresponding to the stack test runs is one-hour behind actual time.

**Boiler 8 - Wet Cyclone Report**  
**8/22/2006 (C-2)**

Time *	Water Flow Rate 1 (gal/hr)	Water Flow I (On/Off)	Pressure Drop I (inches H <sub>2</sub> O)	Water Flow Rate 2 (gal/hr)	Water Flow 2 (On/Off)	Pressure Drop 2 (inches H <sub>2</sub> O)
12:20	21,000	On	0.34	21,010	On	0.33
12:21	21,000	On	0.35	21,000	On	0.31
12:22	21,000	On	0.52	21,000	On	0.48
12:23	21,000	On	0.44	21,000	On	0.37
12:24	21,000	On	0.48	21,000	On	0.41
12:25	21,010	On	0.36	21,000	On	0.29
12:26	21,000	On	0.54	21,000	On	0.37
12:27	21,000	On	0.47	21,000	On	0.44
12:28	21,000	On	0.37	21,010	On	0.28
12:29	21,010	On	0.44	21,000	On	0.32
12:30	21,000	On	0.43	21,000	On	0.30
12:31	21,000	On	0.63	21,000	On	0.52
12:32	21,010	On	0.23	21,010	On	0.17
12:33	21,010	On	0.50	21,000	On	0.39
12:34	21,000	On	0.45	21,010	On	0.29
12:35	20,980	On	0.37	21,000	On	0.30
12:36	21,000	On	0.46	21,000	On	0.42
12:37	21,010	On	0.52	21,000	On	0.44
12:38	21,000	On	0.44	21,010	On	0.41
12:39	21,000	On	0.48	21,000	On	0.48
12:40	21,010	On	0.43	21,010	On	0.40
12:41	20,990	On	0.53	20,990	On	0.38
12:42	21,010	On	0.40	21,010	On	0.35
12:43	21,010	On	0.44	21,010	On	0.31
12:44	21,000	On	0.47	20,990	On	0.47
12:45	20,980	On	0.39	21,000	On	0.32
12:46	21,000	On	0.31	20,990	On	0.24
12:47	21,020	On	0.36	21,000	On	0.33
12:48	21,000	On	0.51	21,010	On	0.33
12:49	21,000	On	0.26	21,000	On	0.29
12:50	21,000	On	0.29	20,990	On	0.21
12:51	21,010	On	0.37	21,010	On	0.36
12:52	20,990	On	0.33	21,010	On	0.29
12:53	21,000	On	0.61	21,000	On	0.47
12:54	21,010	On	0.50	20,990	On	0.36
12:55	20,990	On	0.40	21,000	On	0.18
12:56	20,990	On	0.58	21,000	On	0.43
12:57	21,010	On	0.47	21,000	On	0.39
12:58	21,000	On	0.38	21,000	On	0.36
12:59	20,990	On	0.29	21,010	On	0.26
13:00	21,000	On	0.38	21,000	On	0.30
13:01	21,000	On	0.47	21,000	On	0.37
13:02	21,010	On	0.45	21,000	On	0.46
13:03	21,000	On	0.39	21,000	On	0.34
13:04	21,010	On	0.55	21,000	On	0.40
13:05	20,990	On	0.35	21,000	On	0.33
13:06	21,010	On	0.44	20,990	On	0.43
13:07	21,000	On	0.57	21,010	On	0.59
13:08	20,990	On	0.44	20,990	On	0.35
13:09	21,000	On	0.41	21,010	On	0.33
13:10	21,000	On	0.24	21,000	On	0.17
13:11	21,010	On	0.27	21,000	On	0.22
13:12	20,990	On	0.39	21,000	On	0.38
13:13	21,000	On	0.34	20,990	On	0.37
13:14	21,000	On	0.39	21,010	On	0.43
13:15	21,000	On	0.38	21,000	On	0.30
13:16	21,000	On	0.38	21,010	On	0.34
13:17	21,000	On	0.47	20,990	On	0.45
13:18	21,000	On	0.42	21,000	On	0.43
13:19	21,000	On	0.31	21,000	On	0.26
13:20	20,990	On	0.51	21,000	On	0.23
<b>Average</b>	<b>21,001</b>	<b>N/A</b>	<b>0.42</b>	<b>21,001</b>	<b>N/A</b>	<b>0.35</b>

\* The CEMS DAHS does not account for Daylight Savings Time, therefore, the CEMS data corresponding to the stack test runs is one-hour behind actual time.

Boiler 8- ESP Report  
8/22/2006 (C-2)

Time *	Secondary Power Input 1 (kW)	Secondary Power Input 2 (kW)	Secondary Power Input 3 (kW)	Secondary Power Input 4 (kW)	Secondary Power Input 5 (kW)	Secondary Power Input Total (kW)
12:20	0.22	0.00	0.00	20.75	0.00	20.97
12:21	0.20	0.00	0.00	20.07	0.00	20.27
12:22	0.20	0.00	0.00	19.93	0.00	20.13
12:23	0.17	0.00	0.00	20.32	0.00	20.48
12:24	0.33	0.00	0.00	19.85	0.00	20.18
12:25	0.17	0.00	0.00	19.68	0.00	19.85
12:26	0.20	0.00	0.00	20.82	0.00	21.02
12:27	0.15	0.00	0.00	19.98	0.00	20.13
12:28	0.27	0.00	0.00	20.53	0.00	20.80
12:29	0.18	0.00	0.00	19.47	0.00	19.65
12:30	0.23	0.00	0.00	19.57	0.00	19.80
12:31	0.25	0.00	0.00	19.57	0.00	19.82
12:32	0.10	0.00	0.00	19.43	0.00	19.53
12:33	0.18	0.00	0.00	17.82	0.00	18.00
12:34	0.17	0.00	0.00	18.65	0.00	18.82
12:35	0.17	0.00	0.00	19.23	0.00	19.40
12:36	0.10	0.00	0.00	19.80	0.00	19.90
12:37	0.20	0.00	0.00	20.42	0.00	20.62
12:38	0.17	0.00	0.00	20.22	0.00	20.38
12:39	0.25	0.00	0.00	19.93	0.00	20.18
12:40	0.17	0.00	0.00	16.35	0.00	16.52
12:41	0.20	0.00	0.00	20.30	0.00	20.50
12:42	0.25	0.00	0.00	19.40	0.00	19.65
12:43	0.20	0.00	0.00	20.68	0.00	20.88
12:44	0.17	0.00	0.00	19.50	0.00	19.67
12:45	0.32	0.00	0.00	20.05	0.00	20.37
12:46	0.20	0.00	0.00	19.95	0.00	20.15
12:47	0.20	0.00	0.00	20.25	0.00	20.45
12:48	0.13	0.00	0.00	19.05	0.00	19.18
12:49	0.20	0.00	0.00	20.50	0.00	20.70
12:50	0.30	0.00	0.00	19.87	0.00	20.17
12:51	0.20	0.00	0.00	19.93	0.00	20.13
12:52	0.22	0.00	0.00	19.77	0.00	19.98
12:53	0.20	0.00	0.00	19.30	0.00	19.50
12:54	0.17	0.00	0.00	18.88	0.00	19.05
12:55	0.23	0.00	0.00	19.45	0.00	19.68
12:56	0.27	0.00	0.00	20.47	0.00	20.73
12:57	0.23	0.00	0.00	20.12	0.00	20.35
12:58	0.37	0.00	0.00	20.33	0.00	20.70
12:59	0.17	0.00	0.00	19.72	0.00	19.88
13:00	0.20	0.00	0.00	19.55	0.00	19.75
13:01	0.23	0.00	0.00	19.67	0.00	19.90
13:02	0.20	0.00	0.00	20.13	0.00	20.33
13:03	0.22	0.00	0.00	20.07	0.00	20.28
13:04	0.25	0.00	0.00	19.63	0.00	19.88
13:05	0.22	0.00	0.00	18.12	0.00	18.33
13:06	0.23	0.00	0.00	20.85	0.00	21.08
13:07	0.33	0.00	0.00	19.63	0.00	19.97
13:08	0.15	0.00	0.00	16.65	0.00	16.80
13:09	0.17	0.00	0.00	19.40	0.00	19.57
13:10	0.13	0.00	0.00	19.35	0.00	19.48
13:11	0.20	0.00	0.00	20.62	0.00	20.82
13:12	0.15	0.00	0.00	18.78	0.00	18.93
13:13	0.27	0.00	0.00	21.35	0.00	21.62
13:14	0.13	0.00	0.00	20.97	0.00	21.10
13:15	0.27	0.00	0.00	20.85	0.00	21.12
13:16	0.25	0.00	0.00	19.98	0.00	20.23
13:17	0.23	0.00	0.00	20.50	0.00	20.73
13:18	0.20	0.00	0.00	19.07	0.00	19.27
13:19	0.17	0.00	0.00	19.60	0.00	19.77
13:20	0.13	0.00	0.00	20.62	0.00	20.75
Average	0.21	0.00	0.00	19.76	0.00	19.97

\* The CEMS DAHS does not account for Daylight Savings Time, therefore, the CEMS data corresponding to the stack test runs is one-hour behind actual time.

Boiler 8 - Wet Cyclone Report  
8/22/2006 (C-3)

Time *	Water Flow Rate 1 (gal/hr)	Water Flow 1 (On/Off)	Pressure Drop 1 (inches H <sub>2</sub> O)	Water Flow Rate 2 (gal/hr)	Water Flow 2 (On/Off)	Pressure Drop 2 (inches H <sub>2</sub> O)
14:30	20,990	On	0.50	21,000	On	0.37
14:31	21,010	On	0.40	21,010	On	0.35
14:32	20,990	On	0.44	21,000	On	0.43
14:33	21,010	On	0.36	21,000	On	0.21
14:34	21,000	On	0.37	21,000	On	0.44
14:35	21,000	On	0.40	21,000	On	0.22
14:36	21,010	On	0.34	21,000	On	0.37
14:37	20,990	On	0.45	21,000	On	0.36
14:38	21,010	On	0.29	21,000	On	0.24
14:39	21,000	On	0.30	21,000	On	0.15
14:40	21,000	On	0.45	21,000	On	0.38
14:41	21,000	On	0.44	21,000	On	0.24
14:42	21,010	On	0.49	21,010	On	0.34
14:43	21,000	On	0.52	21,000	On	0.41
14:44	21,010	On	0.48	21,000	On	0.37
14:45	20,990	On	0.33	21,010	On	0.33
14:46	21,000	On	0.34	21,000	On	0.22
14:47	20,990	On	0.63	21,010	On	0.43
14:48	21,000	On	0.44	20,990	On	0.43
14:49	21,000	On	0.47	20,990	On	0.38
14:50	21,000	On	0.47	21,000	On	0.42
14:51	21,000	On	0.57	21,010	On	0.31
14:52	21,010	On	0.35	20,990	On	0.30
14:53	20,990	On	0.63	21,000	On	0.46
14:54	21,000	On	0.49	20,990	On	0.35
14:55	21,000	On	0.44	21,000	On	0.40
14:56	21,020	On	0.33	20,990	On	0.38
14:57	21,000	On	0.58	21,010	On	0.48
14:58	21,000	On	0.35	21,000	On	0.40
14:59	21,010	On	0.35	21,010	On	0.28
15:00	21,010	On	0.62	21,000	On	0.47
15:01	20,990	On	0.42	20,990	On	0.22
15:02	21,000	On	0.49	20,990	On	0.48
15:03	20,990	On	0.37	21,010	On	0.23
15:04	20,990	On	0.51	21,000	On	0.26
15:05	21,020	On	0.48	21,000	On	0.39
15:06	21,000	On	0.47	20,990	On	0.39
15:07	21,010	On	0.43	20,990	On	0.46
15:08	21,000	On	0.47	21,000	On	0.32
15:09	21,000	On	0.37	21,000	On	0.35
15:10	21,010	On	0.49	21,000	On	0.46
15:11	21,010	On	0.45	21,000	On	0.31
15:12	21,000	On	0.50	21,000	On	0.43
15:13	20,990	On	0.49	21,010	On	0.43
15:14	21,000	On	0.38	21,000	On	0.34
15:15	21,000	On	0.46	21,000	On	0.40
15:16	21,010	On	0.38	21,000	On	0.30
15:17	21,000	On	0.50	21,000	On	0.44
15:18	21,000	On	0.39	20,990	On	0.29
15:19	21,000	On	0.42	20,990	On	0.29
15:20	21,000	On	0.42	21,000	On	0.39
15:21	21,000	On	0.56	21,010	On	0.35
15:22	21,000	On	0.46	21,000	On	0.44
15:23	21,010	On	0.47	21,000	On	0.44
15:24	21,000	On	0.46	21,000	On	0.46
15:25	21,010	On	0.50	21,000	On	0.40
15:26	20,990	On	0.48	21,000	On	0.34
15:27	20,990	On	0.35	21,000	On	0.35
15:28	21,010	On	0.44	21,010	On	0.39
15:29	20,990	On	0.49	20,990	On	0.41
15:30	21,010	On	0.42	21,000	On	0.39
<b>Average</b>	<b>21,001</b>	<b>N/A</b>	<b>0.44</b>	<b>21,000</b>	<b>N/A</b>	<b>0.36</b>

\* The CEMS DAHS does not account for Daylight Savings Time, therefore, the CEMS data corresponding to the stack test runs is one-hour behind actual time.

Boiler 8 - ESP Report  
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Time *	Secondary Power Input 1 (kW)	Secondary Power Input 2 (kW)	Secondary Power Input 3 (kW)	Secondary Power Input 4 (kW)	Secondary Power Input 5 (kW)	Secondary Power Input Total (kW)
14:30	0.37	0.00	0.00	22.07	0.00	22.43
14:31	0.25	0.00	0.00	22.15	0.00	22.40
14:32	0.20	0.00	0.00	21.77	0.00	21.97
14:33	0.20	0.00	0.00	21.77	0.00	21.97
14:34	0.20	0.00	0.00	21.20	0.00	21.40
14:35	0.27	0.00	0.00	20.82	0.00	21.08
14:36	0.25	0.00	0.00	20.50	0.00	20.75
14:37	0.20	0.00	0.00	20.25	0.00	20.45
14:38	0.27	0.00	0.00	20.43	0.00	20.70
14:39	0.20	0.00	0.00	20.95	0.00	21.15
14:40	0.17	0.00	0.00	20.32	0.00	20.48
14:41	0.17	0.00	0.00	19.48	0.00	19.65
14:42	0.20	0.00	0.00	20.85	0.00	21.05
14:43	0.18	0.00	0.00	20.63	0.00	20.82
14:44	0.27	0.00	0.00	20.10	0.00	20.37
14:45	0.17	0.00	0.00	20.15	0.00	20.32
14:46	0.28	0.00	0.00	19.80	0.00	20.08
14:47	0.22	0.00	0.00	19.55	0.00	19.77
14:48	0.17	0.00	0.00	19.92	0.00	20.08
14:49	0.20	0.00	0.00	20.18	0.00	20.38
14:50	0.23	0.00	0.00	19.98	0.00	20.22
14:51	0.30	0.00	0.00	18.02	0.00	18.32
14:52	0.23	0.00	0.00	18.73	0.00	18.97
14:53	0.27	0.00	0.00	19.05	0.00	19.32
14:54	0.17	0.00	0.00	20.23	0.00	20.40
14:55	0.18	0.00	0.00	19.85	0.00	20.03
14:56	0.17	0.00	0.00	19.43	0.00	19.60
14:57	0.35	0.00	0.00	21.08	0.00	21.43
14:58	0.20	0.00	0.00	20.52	0.00	20.72
14:59	0.25	0.00	0.00	20.25	0.00	20.50
15:00	0.27	0.00	0.00	20.77	0.00	21.03
15:01	0.10	0.00	0.00	20.60	0.00	20.70
15:02	0.13	0.00	0.00	19.95	0.00	20.08
15:03	0.22	0.00	0.00	20.22	0.00	20.43
15:04	0.27	0.00	0.00	19.95	0.00	20.22
15:05	0.20	0.00	0.00	19.95	0.00	20.15
15:06	0.33	0.00	0.00	20.42	0.00	20.75
15:07	0.20	0.00	0.00	19.68	0.00	19.88
15:08	0.20	0.00	0.00	19.45	0.00	19.65
15:09	0.20	0.00	0.00	17.77	0.00	17.97
15:10	0.20	0.00	0.00	19.77	0.00	19.97
15:11	0.30	0.00	0.00	19.48	0.00	19.78
15:12	0.20	0.00	0.00	19.85	0.00	20.05
15:13	0.28	0.00	0.00	19.82	0.00	20.10
15:14	0.25	0.00	0.00	20.00	0.00	20.25
15:15	0.17	0.00	0.00	20.02	0.00	20.18
15:16	0.20	0.00	0.00	19.50	0.00	19.70
15:17	0.17	0.00	0.00	19.52	0.00	19.68
15:18	0.23	0.00	0.00	19.43	0.00	19.67
15:19	0.25	0.00	0.00	19.55	0.00	19.80
15:20	0.17	0.00	0.00	19.83	0.00	20.00
15:21	0.17	0.00	0.00	19.77	0.00	19.93
15:22	0.22	0.00	0.00	19.87	0.00	20.08
15:23	0.22	0.00	0.00	19.65	0.00	19.87
15:24	0.23	0.00	0.00	19.42	0.00	19.65
15:25	0.23	0.00	0.00	19.48	0.00	19.72
15:26	0.23	0.00	0.00	19.55	0.00	19.78
15:27	0.13	0.00	0.00	19.32	0.00	19.45
15:28	0.35	0.00	0.00	20.05	0.00	20.40
15:29	0.10	0.00	0.00	19.68	0.00	19.78
15:30	0.17	0.00	0.00	19.82	0.00	19.98
Average	0.22	0.00	0.00	20.04	0.00	20.25

\* The CEMS DAHS does not account for Daylight Savings Time, therefore, the CEMS data corresponding to the stack test runs is one-hour behind actual time.



**TABLE A-4b  
HCL AND CL<sub>2</sub> STACK TEST RESULTS ON BOILER NO. 8, U.S. SUGAR CLEWISTON**

Parameter	Source of Data	Boiler No. 8 <sup>a</sup>				Boiler No. 8 <sup>a</sup>			
		1/5/07 1058-1158	1/5/07 1345-1445	1/5/07 1622-1722	Average	8/22/06 1036-1142	8/22/06 1320-1426	8/22/06 1530-1636	Average
Fuel Type		Bagasse	Bagasse	Bagasse		Wood Chips	Wood Chips	Wood Chips	
F-Factor (dscf/MMBtu)	Fuel Analysis	10,904	10,804	10,843	<b>10,850</b>	11,162	11,501	11,005	<b>11,223</b>
Stack Flow (acfm)	Stack Test	421,959	429,330	443,786	<b>431,692</b>	262,552	256,382	257,466	<b>258,800</b>
Stack Flow (dscfm)	Stack Test	216,073	216,113	219,030	<b>217,072</b>	148,855	146,795	148,794	<b>148,148</b>
Stack Temp. (deg. F)	Stack Test	353	358	362	<b>358</b>	315	313	315	<b>314</b>
Oxygen (%)- dry basis	Stack Test	9.3	8.7	7.6	<b>8.5</b>	10.4	10.4	10.3	<b>10.4</b>
Steam Production (lb/hr)	DAHS	499,726	520,274	510,811	<b>510,270</b>	202,398	202,350	199,188	<b>201,312</b>
Heat Input from F-Factor (MMBtu/hr)	Stack Test	795	832	831	<b>820</b>	404	384	411	<b>400</b>
Hydrogen Chloride (lb/hr)	Stack Test	0.74	3.02	1.17	<b>1.64</b>	31.63	37.05	33.23	<b>33.97</b>
Hydrogen Chloride (lb/MMBtu)	Stack Test	0.0011	0.0043	0.0015	<b>0.0023</b>	0.0784	0.0966	0.0808	<b>0.0852</b>
Chlorine Gas (lb/hr)	Stack Test	2.03	1.89	1.98	<b>1.97</b>	0.56	0.44	0.40	<b>0.47</b>
Chlorine Gas (lb/MMBtu)	Stack Test	0.0031	0.0027	0.0026	<b>0.0028</b>	0.0014	0.0011	0.0010	<b>0.0012</b>
Chlorine (lb/MMBtu)	Fuel Analysis	0.042	0.026	0.032	<b>0.033</b>	0.209	0.199	0.222	<b>0.210</b>
		Percentage of chlorine in fuel emitted as HCl =				Percentage of chlorine in fuel emitted as HCl =			
		7%				41%			
		Percentage of chlorine in fuel emitted as Cl <sub>2</sub> =				Percentage of chlorine in fuel emitted as Cl <sub>2</sub> =			
		8%				1%			

Notes:

- lb/hr = pound per hour
- MMBtu/hr = million British thermal units per hour
- acfm = actual cubic foot per minute
- dscfm = dry standard cubic foot per minute
- F = Fahrenheit
- % = percent
- lb/MMBtu = pound per million British thermal units
- dscf/MMBtu = dry standard cubic foot per million British thermal units

<sup>a</sup> Measured at the east inlet to the wet cyclones.

**TABLE A-4a  
HCL AND CL<sub>2</sub> STACK TEST RESULTS ON BOILER NOS. 1, 4, AND 7, U.S. SUGAR CLEWISTON**

Parameter	Source of Data	Boiler No. 1				Boiler No. 4				Boiler No. 7			
		11/28/06 0919-1022	11/28/06 1107-1209	11/28/06 1303-1407	Average	12/1/06 1256-1402	12/1/06 1446-1551	12/1/06 1622-1735	Average	1/25/07 0909-1013	1/25/07 1106-1210	1/25/07 1325-1429	Average
Fuel Type		89% Bagasse/11% Oil	94% Bagasse/6% Oil	97% Bagasse/3% Oil		83% Bagasse/17% Oil	84% Bagasse/16% Oil	83% Bagasse/17% Oil		100% Bagasse	100% Bagasse	100% Bagasse	
F-Factor (dscf/MMBtu) <sup>a</sup>	Fuel Analysis	10,416	10,455	10,716	<b>10,529</b>	10,482	10,561	10,254	<b>10,432</b>	10,582	10,471	10,391	<b>10,481</b>
Stack Flow (acfm)	Stack Test	228,163	286,469	271,874	<b>262,169</b>	228,163	228,163	228,163	<b>228,163</b>	318,415	301,630	301,314	<b>307,120</b>
Stack Flow (dscfm)	Stack Test	122,830	160,360	152,745	<b>145,312</b>	122,830	122,830	122,830	<b>122,830</b>	185,293	174,015	175,714	<b>178,341</b>
Stack Temp. (deg. F)	Stack Test	154.8	156.6	158.8	<b>156.7</b>	151.3	152.8	152.3	<b>152.1</b>	275.6	272.8	271.3	<b>273.2</b>
Oxygen (%) - dry basis	Stack Test	14.0	12.0	13.0	<b>13.0</b>	10.5	9.7	10.1	<b>10.1</b>	10.6	9.8	10.7	<b>10.4</b>
Steam Production (lb/hr)	Stack Test	165,882	171,045	165,217	<b>167,381</b>	245,070	255,000	246,038	<b>248,703</b>	307,597	319,097	290,569	<b>305,754</b>
Heat Input from F-Factor (MMBtu/hr)	Stack Test	234	392	323	<b>316</b>	352	374	371	<b>366</b>	520	531	495	<b>515</b>
Hydrogen Chloride (lb/hr)	Stack Test	0.54	1.33	1.22	<b>1.03</b>	0.94	0.91	0.69	<b>0.85</b>	0.93	0.75	2.81	<b>1.50</b>
Hydrogen Chloride (lb/MMBtu)	Stack Test	0.0023	0.0034	0.0038	<b>0.0032</b>	0.0027	0.0024	0.0019	<b>0.0023</b>	0.0018	0.0014	0.0057	<b>0.0030</b>
Chlorine Gas (lb/hr)	Stack Test	0.39	0.46	0.48	<b>0.44</b>	0.56	0.57	0.50	<b>0.54</b>	1.13	1.31	1.28	<b>1.24</b>
Chlorine Gas (lb/MMBtu)	Stack Test	0.0017	0.0012	0.0015	<b>0.0014</b>	0.0016	0.0015	0.0013	<b>0.0015</b>	0.0022	0.0025	0.0026	<b>0.0024</b>
Chlorine (lb/MMBtu)	Fuel Analysis	0.036	0.033	0.046	<b>0.039</b>	0.034	0.045	0.031	<b>0.037</b>	0.042	0.042	0.039	<b>0.041</b>
		Percentage of chlorine in fuel emitted as HCl =			<b>8%</b>	Percentage of chlorine in fuel emitted as HCl =			<b>6%</b>	Percentage of chlorine in fuel emitted as HCl =			<b>7%</b>
		Percentage of chlorine in fuel emitted as Cl <sub>2</sub> =			<b>4%</b>	Percentage of chlorine in fuel emitted as Cl <sub>2</sub> =			<b>4%</b>	Percentage of chlorine in fuel emitted as Cl <sub>2</sub> =			<b>6%</b>

Notes:

- lb/hr = pound per hour
- MMBtu/hr = million British thermal units per hour
- acfm = actual cubic foot per minute
- dscfm = dry standard cubic foot per minute
- F = Fahrenheit
- % = percent
- lb/MMBtu = pound per million British thermal units
- dscf/MMBtu = dry standard cubic foot per million British thermal units

<sup>a</sup> Fuel factors for Boiler No. 1 and Boiler No. 4 are representative of the combination of bagasse and oil firing.

Parameter	Units	BOILER MACT TESTING					Range*			Parameter
		1/5/07	1/25/07	1/25/07	1/25/07	Boiler MACT Testing Average <sup>c</sup>	Min	Max	Avg <sup>a</sup>	
Chlorine	ppm	250	340	330	300	443	377	720	528	Chlorine
Arsenic	ppm	--	--	--	--	0.6	0.15	0.90	0.40	Arsenic
Beryllium	ppm	--	--	--	--	0.1	< 0.05	< 0.10	< 0.06	Beryllium
Cadmium	ppm	--	--	--	--	0.1	< 0.05	< 0.20	< 0.08	Cadmium
Chromium	ppm	--	--	--	--	0.6	0.20	0.80	0.41	Chromium
Lead	ppm	--	--	--	--	0.2	0.10	0.90	0.24	Lead
Manganese	ppm	19.0	6.0	9.0	18.0	12.7	5.6	12.7	8.4	Manganese
Nickel	ppm	--	--	--	--	0.3	0.10	0.75	0.25	Nickel
Selenium	ppm	--	--	--	--	1.0	0.40	1.20	0.72	Selenium
Mercury	ppm	0.01	< 0.01	0.01	0.01	0.02	0.01	0.11	0.04	Mercury
Moisture	%	51.6	51.2	53.1	52.0	53.1	46.0	55.1	50.5	Moisture
No. of Samples Compositied		3	3	3	3	69	--	--	--	

Parameter	Units	BOILER MACT TESTING					Range*			Standard Deviation <sup>a</sup>	90% Confidence Level <sup>b</sup>	Parameter
		1/5/07	1/25/07	1/25/07	1/25/07	Boiler MACT Testing Average <sup>c</sup>	Min	Max	Avg <sup>a</sup>			
HHV	Btu/lb	7,879	8,002	7,909	7,717	7,789	7,602	8,356	7,921	--	--	HHV
Chlorine	lb/MMBtu	0.032	0.042	0.042	0.039	0.057	0.048	0.092	0.067	0.016	0.089	Chlorine
										n = 11		
										t = 1.372		
Arsenic	lb/MMBtu	--	--	--	--	7.26E-05	1.89E-05	1.18E-04	5.06E-05	--	--	Arsenic
Beryllium	lb/MMBtu	--	--	--	--	1.28E-05	< 6.16E-06	< 1.32E-05	< 7.78E-06	--	--	Beryllium
Cadmium	lb/MMBtu	--	--	--	--	1.49E-05	< 6.16E-06	< 2.54E-05	< 9.74E-06	--	--	Cadmium
Chromium	lb/MMBtu	--	--	--	--	8.12E-05	1.24E-05	9.85E-05	5.15E-05	--	--	Chromium
Lead	lb/MMBtu	--	--	--	--	2.98E-05	1.23E-05	1.18E-04	3.08E-05	--	--	Lead
Manganese	lb/MMBtu	2.41E-03	7.50E-04	1.14E-03	2.33E-03	1.60E-03	7.08E-04	1.60E-03	1.06E-03	--	--	Manganese
Nickel	lb/MMBtu	--	--	--	--	3.40E-05	1.25E-05	9.87E-05	3.21E-05	--	--	Nickel
Selenium	lb/MMBtu	--	--	--	--	1.23E-04	5.07E-05	1.52E-04	9.12E-05	--	--	Selenium
8-Metals Total		--	--	--	--	1.97E-03	8.93E-04	1.97E-03	1.29E-03	2.95E-04	1.69E-03	8-Metals
										n = 17		
										t = 1.337		
8-Metals w/o Mn	lb/MMBtu	--	--	--	--	3.68E-04	1.63E-04	5.46E-04	2.74E-04	9.46E-05	4.00E-04	8-Metals w/o Mn
										n = 17		
										t = 1.337		
Mercury <sup>b</sup>	lb/MMBtu	1.27E-06	< 1.25E-06	1.26E-06	1.30E-06	2.80E-06	5.98E-07	2.80E-06	1.31E-06	7.98E-07	2.48E-06	Mercury <sup>b</sup>
										n = 6		
										t = 1.476		
Manganese	lb/MMBtu	2.41E-03	7.50E-04	1.14E-03	2.33E-03	1.60E-03	7.08E-04	1.60E-03	1.06E-03	2.57E-04	1.40E-03	Manganese
										n = 22		
										t = 1.323		

<sup>a</sup> For concentrations that are reported as below detection limit the minimum, maximum, average, and standard deviation were calculated by taking one-half of detection limit. Duplicate samples were not included in the calculations.

<sup>b</sup> Minimum, maximum, average, and standard deviation for mercury are based only on the individual samples with a lower detection limit.

<sup>c</sup> 90% confidence level calculated based on the following equation [40 CFR 63-7530(d)(2)]:

$$P_{90} = \text{mean} + (\text{SD} * t); \text{ where:}$$

$P_{90}$  = 90% confidence level pollutant concentration (lb/MMBtu)  
 mean = average of fuel samples analyzed (lb/MMBtu)  
 SD = standard deviation of pollutant concentrations (lb/MMBtu)  
 t = t distribution critical value for 90% confidence probability (0.1) for n-1 degrees of freedom  
 n = number of samples

<sup>d</sup> Not included because considered an outlier based on all previous testing. Lab is reconfirming results by re-analysis.

<sup>e</sup> The average of the Boiler MACT tests was used to determine the total average, minimum, maximum, and 90% confidence level. This was done for consistency since the historical bagasse data is based on weekly composites.





**TABLE A-1  
PROXIMATE, ULTIMATE, AND HEAT CONTENT ANALYSES RESULTS FOR BAGASSE FROM U.S. SUGAR CLEWISTON**

Parameter	Units	BOILER MACT TESTING																				Boiler MACT Testing Average <sup>a</sup>	Range			Parameter			
		3/24/05	3/24/05	3/25/05	3/26/05	3/26/05	3/26/05	6/1/06	6/1/06	6/2/06	6/2/06	6/2/06	11/28/06	11/28/06	11/28/06	12/1/06	12/1/06	12/1/06	1/5/07	1/5/07	1/5/07		1/25/07	1/25/07	1/25/07		Min	Max	Avg
No. of Samples Compositied		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	69	--	--	--		
Moisture	% , as received	54.29	56.02	59.11	57.27	58.61	58.46	59.95	50.41	49.04	49.00	46.23	58.48	55.50	55.59	54.38	53.30	56.04	52.42	51.62	51.55	51.23	53.08	52.03	54.07	48.99	55.07	51.74	Moisture
Ash	%	10.64	7.08	5.07	3.78	6.19	4.19	4.78	3.23	8.61	6.09	5.23	5.80	6.47	8.14	5.26	21.00	10.57	5.16	3.37	5.23	4.22	6.96	9.89	6.82	0.87	8.40	4.63	Ash
Ash	lb/MMBtu	14.42	9.11	6.39	4.62	7.87	5.26	5.84	3.89	10.90	7.70	6.45	7.49	8.33	10.76	7.16	32.54	14.14	6.64	4.19	6.64	5.27	8.80	12.82	9.01	3.25	10.96	6.26	Ash
Volatiles	%	77.65	81.26	83.28	84.71	82.08	82.91	80.96	81.86	75.37	79.51	77.88	83.44	81.73	78.57	77.02	68.52	77.51	83.18	83.65	82.31	84.31	81.90	78.57	80.36	79.86	87.68	83.72	Volatiles
Fixed C	%	11.71	11.66	11.65	11.51	11.73	12.90	14.26	14.91	16.02	14.40	16.89	10.76	11.80	13.29	11.44	10.48	11.92	11.66	12.98	12.46	11.47	11.14	11.54	12.55	8.79	12.79	11.45	Fixed C
HHV	Btu/lb, as received	3,373	3,416	3,240	3,491	3,255	3,307	3,278	4,118	4,025	4,034	4,360	3,214	3,456	3,360	3,352	3,014	3,287	3,699	3,890	3,817	3,903	3,710	3,702	3,578	3,517	4,047	3,819	HHV
HHV	Btu/lb, dry	7,378	7,769	7,923	8,170	7,864	7,962	8,185	8,303	7,898	7,910	8,108	7,742	7,765	7,566	7,347	6,453	7,477	7,774	8,041	7,879	8,002	7,909	7,717	7,789	7,602	8,356	7,914	HHV
MMF	Btu/lb	8,335	8,412	8,381	8,517	8,426	8,339	8,630	8,603	8,708	8,466	8,593	8,259	8,348	8,295	8,393	8,346	8,440	8,232	8,342	8,350	8,383	8,552	8,640	8,434	8,189	8,752	8,350	MMF
MAF	Btu/lb	8,256	8,361	8,346	8,490	8,382	8,310	8,596	8,580	8,642	8,422	8,556	8,218	8,303	8,236	8,306	8,169	8,360	8,197	8,321	8,313	8,383	8,501	8,564	8,383	8,143	8,722	8,316	MAF
Air Dry Loss	%	53.74	55.35	58.24	56.50	57.82	57.27	58.15	48.08	45.28	45.83	41.77	57.68	54.70	54.92	53.55	52.59	55.29	51.71	50.32	50.88	46.97	50.74	50.40	52.51	48.30	54.07	50.95	Air Dry Loss
Carbon	%	45.78	48.29	48.91	50.05	48.15	49.61	50.33	50.72	48.80	50.00	50.47	50.14	50.06	49.64	47.82	42.47	47.73	52.94	53.32	52.36	52.29	51.07	49.29	49.58	46.11	50.94	48.17	Carbon
Hydrogen	%	5.58	5.79	5.80	5.20	5.55	5.62	5.83	5.92	5.41	5.63	5.60	6.09	6.07	5.96	5.87	5.19	5.86	5.56	5.99	6.00	5.96	5.77	5.68	5.74	4.71	6.62	5.90	Hydrogen
Nitrogen	%	0.52	0.47	0.49	0.55	0.42	0.49	0.42	0.38	0.46	0.44	0.40	0.48	0.52	0.55	0.48	0.49	0.48	0.27	0.28	0.28	0.33	0.42	0.35	0.43	0.25	0.43	0.35	Nitrogen
Sulfur	%	0.05	0.06	0.07	0.09	0.06	0.06	0.07	0.06	0.08	0.08	0.09	0.10	0.07	0.09	0.09	0.05	0.07	0.08	0.48	0.06	0.04	0.07	0.05	0.09	0.03	0.09	0.06	Sulfur
Oxygen	%	37.43	38.31	39.66	40.33	39.63	40.03	38.57	39.69	36.64	37.76	38.21	37.39	36.81	35.62	34.20	30.80	35.29	35.99	36.56	36.07	37.16	35.71	34.74	37.07	37.05	43.37	40.69	Oxygen
SO <sub>2</sub>	lb/MMBtu	0.14	0.16	0.18	0.22	0.16	0.16	0.18	0.15	0.19	0.21	0.21	0.26	0.18	0.24	0.25	0.16	0.19	0.21	1.20	0.15	0.11	0.19	0.13	0.23	0.08	0.24	0.16	SO <sub>2</sub>
F-Factor																													
Fd	dscf/MMBtu	9,927	9,967	9,821	9,435	9,631	9,803	9,845	9,753	9,827	10,080	9,883	10,416	10,455	10,716	10,482	10,561	10,254	10,904	10,804	10,843	10,582	10,471	10,391	10,211	9,050	10,794	9,671	Fd

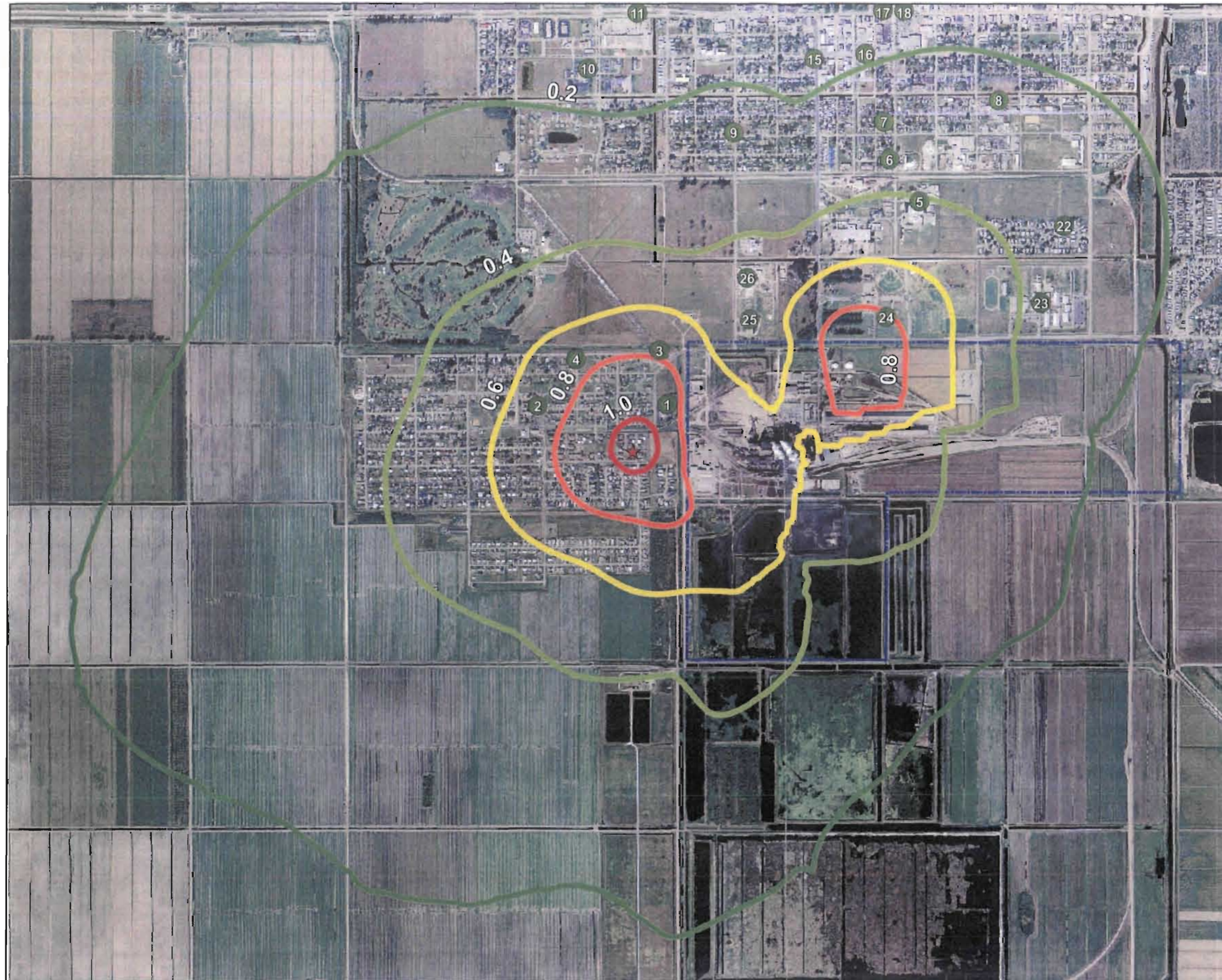
Note: % = percent.  
 Btu/lb = British thermal unit per pound.  
 C = carbon.  
 HHV = higher heating value.  
 lb/MMBtu = pounds per million British thermal unit.  
 MAF = moisture and ash free; dry basis heating value without ash included.  
 MMF = mineral and matter free; heating value without sulfur and ash included.  
 SO<sub>2</sub> = sulfur dioxide.

<sup>a</sup> The average of the Boiler MACT tests was used to determine the total average, minimum, and maximum. This was done for consistency since the historical bagasse data is based on weekly composites.

**TABLE A-1  
PROXIMATE, ULTIMATE, AND HEAT CONTENT ANALYSES RESULTS FOR BAGASSE FROM U.S. SUGAR CLEWISTON**

Parameter	Units	Analysis Results (dry basis) for Sample Weeks (collection dates)																				
		1/14- 1/20/02	1/21- 1/27/02	1/28- 2/3/02	2/4- 2/10/02	2/11- 2/17/02	2/18- 2/24/02	2/25- 3/3/02	3/4- 3/10/02	3/11- 3/17/02	3/18- 3/24/02	3/25- 3/31/02	11/25- 12/1/02	12/9- 12/15/02	12/23- 12/29/02	1/6- 1/12/03	1/20- 1/26/03	2/3-2/9/03	2/17- 2/23/03	3/3-3/9/03	3/17- 3/23/03	3/31- 4/6/03
No. of Samples Composited		39	42	41	42	43	39	41	42	41	42	41	39	23	26	42	28	36	34	38	26	32
Moisture	% , as received	52.86	52.01	50.49	50.06	48.99	50.31	50.18	50.84	51.32	51.60	52.56	54.16	51.20	50.98	51.48	51.66	51.12	51.56	52.96	52.84	55.07
Ash	%	4.04	2.95	5.32	5.04	5.14	3.61	3.15	2.61	3.90	3.23	3.74	0.87	8.40	6.39	7.30	6.65	3.31	4.19	4.12	5.56	5.60
Ash	lb/MMBtu	5.10	6.54	6.80	6.39	6.54	4.48	3.98	3.25	4.91	4.03	4.65	6.00	10.96	8.09	9.54	8.75	4.17	5.02	5.21	7.05	7.16
Volatiles	%	85.41	86.38	83.24	82.86	83.42	84.52	85.49	87.68	87.31	84.04	84.82	83.75	79.86	80.89	81.43	81.59	83.90	83.65	85.91	82.98	82.33
Fixed C	%	10.55	10.67	11.44	12.10	11.44	11.87	11.36	9.71	8.79	12.73	11.44	11.38	11.74	12.72	11.27	11.76	12.79	12.16	9.97	11.46	12.07
HHV	Btu/lb, as received	3,735	3,828	3,874	3,938	4,005	4,012	3,941	3,951	3,872	3,869	3,823	3,721	3,740	3,873	3,715	3,675	3,880	4,047	3,714	3,715	3,517
HHV	Btu/lb, dry	7,922	7,978	7,824	7,884	7,852	8,073	7,911	8,037	7,953	7,994	8,058	8,118	7,664	7,900	7,658	7,602	7,936	8,356	7,896	7,878	7,827
MMF	Btu/lb	8,284	8,240	8,301	8,338	8,313	8,401	8,189	8,270	8,303	8,283	8,397	8,568	8,428	8,486	8,313	8,190	8,230	8,752	8,264	8,381	8,330
MAF	Btu/lb	8,256	8,220	8,264	8,303	8,277	8,376	8,168	8,253	8,276	8,261	8,372	8,533	8,366	8,440	8,261	8,143	8,208	8,722	8,236	8,342	8,291
Air Dry Loss	%	52.23	51.65	50.00	48.75	48.30	49.83	49.58	50.05	49.85	50.75	51.98	53.59	50.56	49.72	50.64	50.85	50.26	50.97	52.53	52.19	54.07
Carbon	%	47.50	47.65	47.06	46.94	46.78	47.75	48.12	48.26	47.63	48.34	47.54	48.26	46.35	46.64	46.11	49.51	50.79	50.94	49.91	49.23	48.88
Hydrogen	%	5.67	5.60	5.63	5.54	5.88	5.98	6.10	6.49	6.00	6.31	6.44	5.23	4.71	5.24	4.90	6.39	5.86	6.39	6.62	6.46	6.59
Nitrogen	%	0.36	0.38	0.36	0.38	0.33	0.40	0.36	0.41	0.38	0.38	0.41	0.29	0.25	0.34	0.33	0.33	0.33	0.31	0.38	0.30	0.30
Sulfur	%	0.06	0.05	0.07	0.03	0.07	0.07	0.04	0.04	0.04	0.05	0.07	0.09	0.05	0.07	0.07	0.07	0.09	0.08	0.06	0.07	0.09
Oxygen	%	42.37	43.37	41.56	42.07	41.80	42.19	42.23	42.19	42.05	41.69	41.80	41.26	40.24	41.34	41.29	37.05	39.62	38.09	38.91	38.38	38.54
SO <sub>2</sub>	lb/MMBtu	0.15	0.13	0.18	0.08	0.18	0.18	0.10	0.10	0.10	0.13	0.18	0.22	0.13	0.13	0.19	0.19	0.23	0.19	0.15	0.18	0.24
F-Factor																						
Fd	dscf/MMBtu	9,329	9,203	9,390	9,221	9,403	9,354	9,667	9,722	9,487	9,736	9,562	9,114	9,083	9,050	9,072	10,794	10,195	10,025	10,467	10,315	10,367

Note: % = percent.  
 Btu/lb = British thermal unit per pound.  
 C = carbon.  
 HHV = higher heating value.  
 lb/MMBtu = pounds per million British thermal unit.  
 MAF = moisture and ash free; dry basis heating value without ash included.  
 MMF = mineral and matter free; heating value without sulfur and ash included.  
 SO<sub>2</sub> = sulfur dioxide.



**LEGEND**


**HCI Hazard Quotient Contours**

- 0.2
- 0.4
- 0.6
- 0.8
- 1.0
- ★ Location of Maximum = 1.04
- Sensitive Area
- Clewiston Mill Boundary

**REFERENCE**

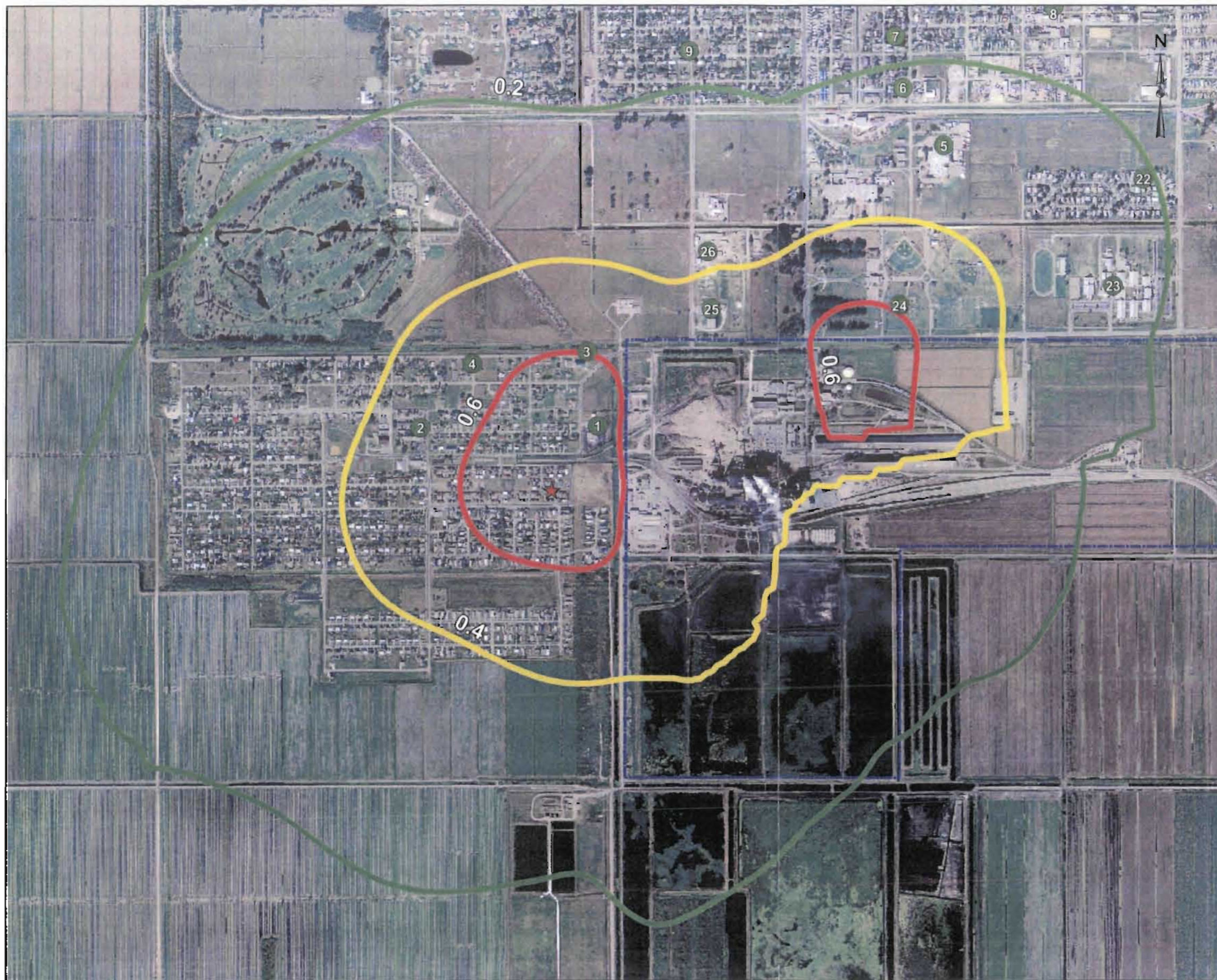
Projection: Transverse Mercator Datum: NAD 27 Coordinate System: UTM Zone 17



PROJECT	U.S. Sugar Corporation Clewiston Mill		
TITLE	HCI Hazard Quotient Contours		
	PROJECT No.	07387562	SCALE AS SHOWN
	DESIGN	AB 31 May 2007	REV. 0
	GIS	AB 31 May 2007	
	CHECKED	CB 31 May 2007	
	DATE	08 31 May 2007	

**FIGURE 3**





**LEGEND**

**MN Hazard Quotient Contours**

- 0.2
- 0.4
- 0.6
- ★ Location of Maximum = 0.77
- Sensitive Area
- Clewiston Mill Boundary

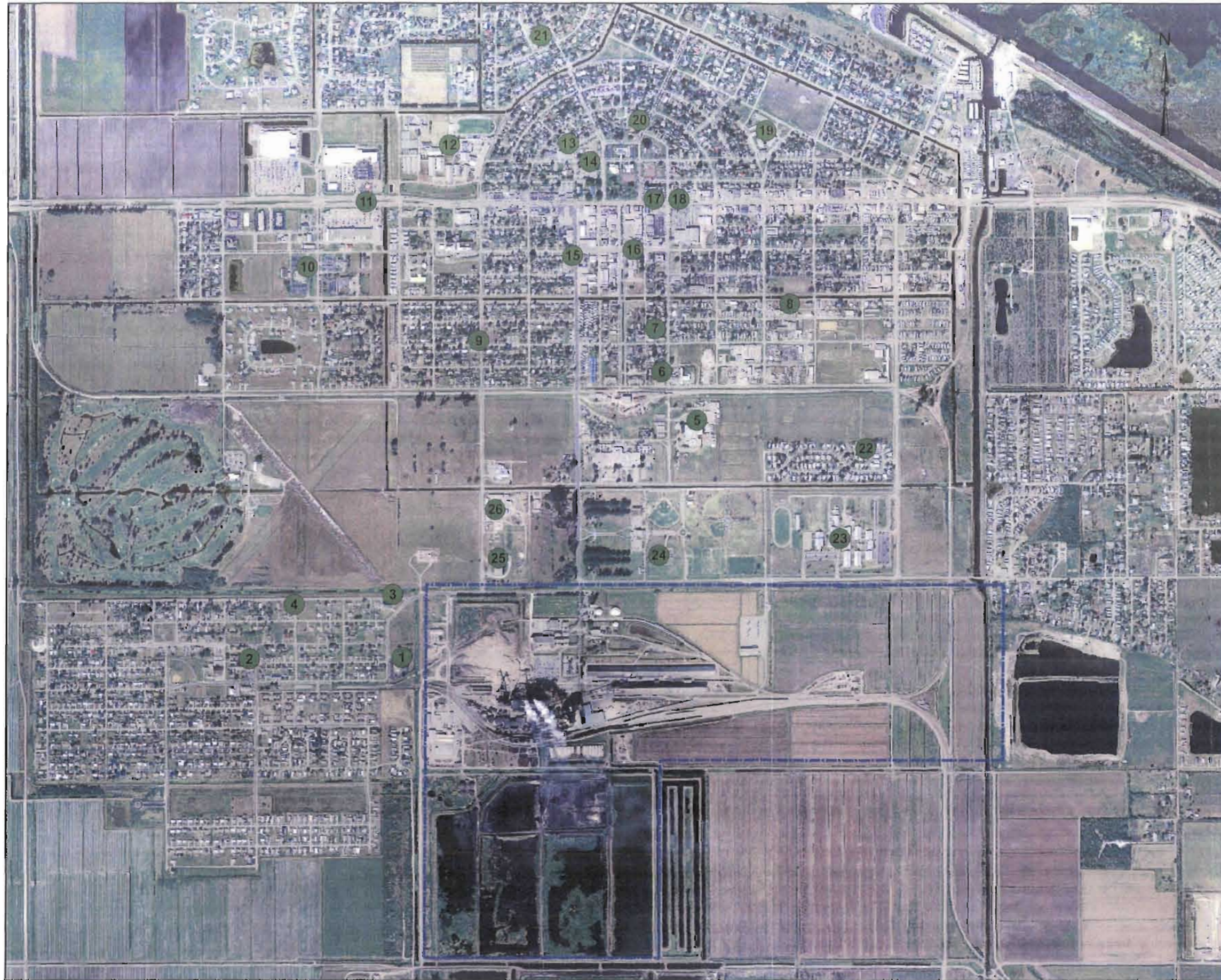
**REFERENCE**

Projection: Transverse Mercator Datum: NAD 27 Coordinate System: UTM Zone 17





PROJECT	U.S. Sugar Corporation Clewiston Mill		
TITLE	<b>Manganese Hazard Quotient Contours</b>		
	PROJECT NO.	07387502	SCALE AS SHOWN
	DESIGN	AB 31 May 2007	REV. 0
	GIS	AB 31 May 2007	
	CHECK	CR 31 May 2007	
	REVIEW	DB 14 May 2007	

**FIGURE 2**

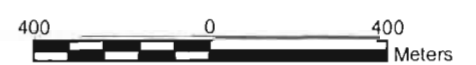


**LEGEND**

-  Clewiston Mill Boundary
-  Sensitive Area
- 1 - Hendry Family Care Center
- 2 - Clewiston Primary School
- 3 - Mount Calvary Baptist Church
- 4 - Missionary Baptist Church
- 5 - Clewiston Middle School
- 6 - Iglesia Misionara Mundial
- 7 - Kingdom hall of Jehovah's Witness
- 8 - Clewiston Seventh Day
- 9 - First Missionary Baptist Church
- 10 - Evangel Assembly of God
- 11 - Hendry Regional Medical Center
- 12 - Clewiston High School
- 13 - First United Methodist Church of Clewiston
- 14 - St. Martin's Episcopal Church
- 15 - Iglesia De Dios Pentecostal
- 16 - First Baptist Church Clewiston
- 17 - Community Prayer Worship Center
- 18 - Family Home Care
- 19 - Clewiston Intermediate School
- 20 - Community Presbyterian Church
- 21 - Faith Lutheran Church
- 22 - Clewiston Church of Christ
- 23 - School
- 24 - Park
- 25 - Auditorium
- 26 - Elementary School

**REFERENCE**

Projection: Transverse Mercator Datum: NAD 27 Coordinate System: UTM Zone 17




<b>PROJECT</b>	U.S. Sugar Corporation Clewiston Mill		
<b>TITLE</b>	<b>Locations of Sensitive Areas</b>		
 Golder Associates Gainesville, Florida	PROJECT No. 07307562	SCALE AS SHOWN	REV. #
	DESIGN: AB 31 May 2007		
	GHE: AB 31 May 2007		
	CHECK: CB 31 May 2007		
	REVIEW: DB 31 May 2007		
<b>FIGURE 1</b>			

TABLE 5-1  
TITLE V PERMIT LIMITS FOR SUBPART DDDDD SOURCES, U.S. SUGAR, CLEWISTON MILL

Unit	Process Parameter	Title V Enforceable Conditions				Stack and Operating Data (Non-Enforceable Title V Conditions)									
		Limit	Units	Averaging Time	Fuel Type	Emission Release Type	Stack Height		Stack Area		Stack Gas Temperature		Exit Velocity		Control Device(s)
							m	ft	m <sup>2</sup>	ft <sup>2</sup>	K	°F	m/s	ft/s	
Boiler No. 1	Maximum Heat Input	496	MMBtu/hr	1-hr	Bagasse	Vertical Stack	64.9	213	4.68	50.33	339	151	25.3	83.0	Wet Scrubber
	Maximum Steam Rate	245,000	lb/hr	24-hr	Bagasse										
	Mn Emissions	1.40E-03	lb/MMBtu	--	Bagasse										
	HCl Emissions	0.082	lb/MMBtu	--	Bagasse										
	Cl <sub>2</sub> Emissions	0.0071	lb/MMBtu	--	Bagasse										
Boiler No. 2	Maximum Heat Input	447	MMBtu/hr	1-hr	Bagasse	Vertical Stack	64.9	213	4.68	50.33	339	151	25.3	83.0	Wet Scrubber
	Maximum Steam Rate	215,000	lb/hr	24-hr	Bagasse										
	Mn Emissions	1.40E-03	lb/MMBtu	--	Bagasse										
	HCl Emissions	0.082	lb/MMBtu	--	Bagasse										
	Cl <sub>2</sub> Emissions	0.0071	lb/MMBtu	--	Bagasse										
Boiler No. 4	Maximum Heat Input	633	MMBtu/hr	1-hr	Bagasse	Vertical Stack	45.7	150	4.91	52.84	344	160	24.2	79.4	Wet Scrubber
	Maximum Heat Input	600	MMBtu/hr	24-hr	Bagasse										
	Maximum Heat Input	2,880,000	MMBtu/yr	Annual	Bagasse										
	Mn Emissions	1.40E-03	lb/MMBtu	--	Bagasse										
	HCl Emissions	0.082	lb/MMBtu	--	Bagasse										
	Cl <sub>2</sub> Emissions	0.0071	lb/MMBtu	--	Bagasse										
Boiler No. 7	Maximum Heat Input	812	MMBtu/hr	1-hr	Bagasse	Vertical Stack	68.6	225	4.68	50.33	406	271	34.1	111.9	ESP, Wet Sand Separator
	Maximum Steam Rate	350,000	lb/hr	24-hr	Bagasse										
	Maximum Heat Input	738	MMBtu/hr	24-hr	Bagasse										
	Mn Emissions	1.40E-03	lb/MMBtu	--	Bagasse										
	HCl Emissions	0.078	lb/MMBtu	--	Bagasse										
	Cl <sub>2</sub> Emissions	0.011	lb/MMBtu	--	Bagasse										
Boiler No. 8	Maximum Heat Input	1,185	MMBtu/hr	1-hr	Bagasse	Vertical Stack	60.7	199	8.66	93.18	397	255	23.8	78.1	ESP, Dry Sand Separator, Wet Cyclone, SNCR
	Maximum Steam Rate	575,000	lb/hr	24-hr	Bagasse										
	Maximum Heat Input	1,077	MMBtu/hr	24-hr	Bagasse										
	Mn Emissions	1.40E-03	lb/MMBtu	--	Bagasse										
	HCl Emissions	0.075	lb/MMBtu	--	Bagasse										
	Cl <sub>2</sub> Emissions	0.014	lb/MMBtu	--	Bagasse										
<b>ADDITIONAL CROP SEASON LIMITATIONS</b>															
Boiler Nos. 1, 2, 4, 7, 8	Maximum Operating Hours (each boiler)	5,088	hr/yr	--	--	--	--	--	--	--	--	--	--	--	--
<b>ADDITIONAL OFF-CROP SEASON LIMITATIONS</b>															
Boiler Nos. 1, 2, 4, 7, 8	Total Maximum Steam Rate	300,000	lb/hr	--	--	--	--	--	--	--	--	--	--	--	--
Boiler Nos. 1, 2, 4, 7, 8	Maximum Operating Hours (each boiler)	3,672	hr/yr	--	--	--	--	--	--	--	--	--	--	--	--
Boiler No. 1	Maximum Steam Rate	300,000	lb/hr	--	--	Vertical Stack	64.9	213	4.68	50.33	339	151	16.5	54.1	Wet Scrubber
	Maximum Steam Rate	300,000	lb/hr	--	--	Vertical Stack	64.9	213	4.68	50.33	339	151	16.5	54.1	Wet Scrubber
Boiler No. 7	Maximum Steam Rate	300,000	lb/hr	--	--	Vertical Stack	68.6	225	4.68	50.33	406	271	29.2	95.8	ESP, Wet Sand Separator
	Mn Emissions	4.90E-03	lb/MMBtu	--	Wood Chips										
	HCl Emissions	0.30	lb/MMBtu	--	Wood Chips										
	Cl <sub>2</sub> Emissions	0.009	lb/MMBtu	--	Wood Chips										
Boiler No. 8	Maximum Steam Rate	300,000	lb/hr	--	--	Vertical Stack	60.7	199	8.66	93.18	397	255	11.3	37.1	ESP, Dry Sand Separator, Wet Cyclone, SNCR
	Mn Emissions	4.90E-03	lb/MMBtu	--	Wood Chips										
	HCl Emissions	0.30	lb/MMBtu	--	Wood Chips										
	Cl <sub>2</sub> Emissions	0.009	lb/MMBtu	--	Wood Chips										

TABLE 4-4  
 MAXIMUM ANNUAL HCL-EQUIVALENT EMISSIONS DURING THE OFF-CROP SEASON, U.S. SUGAR, CLEWISTON MILL (SITE SPECIFIC DEMONSTRATION)

Off-Crop Season Scenario	Boiler ID	Model ID	Emission Estimation Method	Heat Input (MMBtu/hr) <sup>a</sup>	Steam Rate (lb/hr)	Hours of Operation (hr/yr) <sup>b</sup>	Chlorine Fuel Analysis Factor <sup>c</sup> (lb/MMBtu)	Percentage of Chlorine in Fuel Emittted as		HCl Emission Factor (lb/MMBtu)	Cl <sub>2</sub> Emission Factor (lb/MMBtu)	HCl Off-Crop Season Emission Rate (TPY)	Cl <sub>2</sub> Off-Crop Season Emission Rate (TPY)	Off-Crop Season Toxicity-Weighted Emission Rate (HCl-Equivalents) (TPY) <sup>e</sup>	HCl-Equivalent Emissions for 5 Months	
								HCl <sup>d</sup>	Cl <sub>2</sub> <sup>d</sup>						(lb/hr)	(g/s)
<b>Scenario A</b>																
	Boiler No. 7	BLR7F	Wood chip fuel analysis/stack tests	633	300,000	3,672	0.310	97%	3%	0.301	0.0093	349.23	10.80	1,429.34	778.51	98.09
<b>Scenario B</b>																
	Boiler No. 8	BLR8F	Wood chip fuel analysis/stack tests	562	300,000	3,672	0.310	97%	3%	0.301	0.0093	310.22	9.59	1,269.68	691.55	87.13
<b>Scenario C</b>																
	Boiler No. 1	BLR1F	Bagasse fuel analysis/stack tests	323	159,789	3,672	0.089	92%	8%	0.082	0.0071	48.63	4.23	471.51	256.81	32.36
	Boiler No. 2	BLR2F	Bagasse fuel analysis/stack tests	292	140,223	3,672	0.089	92%	8%	0.082	0.0071	43.83	3.81	424.93	231.44	29.16
<b>Boiler Nos. 1 &amp; 2 Total</b>					<b>300,012</b>									<b>896.44</b>	<b>488.26</b>	<b>61.52</b>

<sup>a</sup> Based on 300,000 lb/hr steam during the off-crop season (see Table 2-2).

<sup>b</sup> Based on 5 months of operation during the off-crop season (May - September), which is equivalent to 153 days.

<sup>c</sup> Based the the 90th percentile of fuel analysis data.

<sup>d</sup> Percentages of chlorine in fuel emitted are based on stack tests (see Tables A-4a and A-4b). A safety factor of 2 was added to the Cl<sub>2</sub> percentages for bagasse; a safety factor of 3 was added for wood chips. The same emission factor was applied to Boiler Nos. 1 and 2 because they are nearly identical.

U.S. Sugar is in the process of permitting wood chip burning in Boiler No. 7 for the off-crop season. The wood chip emission factor for Boiler No. 8 was used, since these are similar boilers.

<sup>e</sup> Based on Equation 2 in Appendix A (Subpart DDDDD). RV<sub>HCl</sub> is 0.02 mg/m<sup>3</sup> and RV<sub>Cl<sub>2</sub></sub> is 0.0002 mg/m<sup>3</sup>.

**TABLE 4-2  
MAXIMUM ANNUAL HCL-EQUIVALENT EMISSIONS DURING THE CROP SEASON, CLEWISTON MILL (SITE SPECIFIC DEMONSTRATION)**

Boiler ID	Model ID	Emission Estimation Method	Heat Input (MMBtu/hr)	Steam Rate (lb/hr)	Hours of Operation (hr/yr) <sup>a</sup>	Chlorine Fuel Analysis Factor <sup>b</sup> (lb/MMBtu)	Percentage of Chlorine in Fuel Emittted as <sup>c</sup>		HCl Emission Factor (lb/MMBtu)	Cl <sub>2</sub> Emission Factor (lb/MMBtu)	HCl Crop Season Emission Rate (TPY)	Cl <sub>2</sub> Crop Season Emission Rate (TPY)	Crop Season Toxicity- Weighted Emission Rate (HCl-Equivalents) (TPY) <sup>d</sup>	HCl-Equivalent Emissions for 7-Months	
							HCl	Cl <sub>2</sub>						(lb/hr)	(g/s)
Boiler No. 1	BLR1O	Bagasse Fuel Analysis/Stack Tests	496	245,000	5,088	0.089	92%	8%	0.0819	0.0071	103.32	8.98	1,001.7	393.8	49.6
Boiler No. 2	BLR2O	Bagasse Fuel Analysis/Stack Tests	447	215,000	5,088	0.089	92%	8%	0.0819	0.0071	93.11	8.10	902.8	354.9	44.7
Boiler No. 4	BLR4O	Bagasse Fuel Analysis/Stack Tests	566 <sup>e</sup>	268,246	5,088	0.089	92%	8%	0.0819	0.0071	117.90	10.25	1,143.1	449.3	56.6
Boiler No. 7	BLR7O	Bagasse Fuel Analysis/Stack Tests	738	350,000	5,088	0.089	88%	12%	0.0783	0.0107	147.04	20.05	2,152.2	846.0	106.6
Boiler No. 8	BLR8O	Bagasse Fuel Analysis/Stack Tests	1,077	575,000	5,088	0.089	84%	16%	0.0748	0.0142	204.83	39.02	4,106.4	1,614.2	203.4
<b>Total All Boilers</b>				<b>1,653,246</b>									<b>9,306.2</b>	<b>3,658.1</b>	<b>460.9</b>

<sup>a</sup> Based on 7 months of operation during the crop season (October - April), which is equivalent to 212 days.

<sup>b</sup> Based the the 90th percentile of historical bagasse data (see Table A-2).

<sup>c</sup> Percentages of chlorine in fuel emitted are based on stack tests (see Tables A-4a and A-4b). A safety factor of 2 was added to the Cl<sub>2</sub> percentages. The same emission factor was applied to Boiler Nos. 1 and 2 because they are nearly identical.

<sup>d</sup> Based on Equation 2 in Appendix A (Subpart DDDDD). RV<sub>HCl</sub> is 0.02 mg/m<sup>3</sup> and RV<sub>Cl<sub>2</sub></sub> is 0.0002 mg/m<sup>3</sup>.

<sup>e</sup> Boiler No. 4 limited to 2,880,000 MMBtu/yr heat input, which equates to 566 MMBtu/hr for 5,088 hr/yr.

**TABLE 2-2  
STACK AND OPERATING PARAMETERS AND LOCATIONS USED IN THE HBCA MODELING ANALYSIS, U.S. SUGAR, CLEWISTON MILL**

Emission Unit	Model ID	UTM Coordinates <sup>a</sup>		Relative Location <sup>b</sup>				Stack Data <sup>c</sup>				Heat Input (MMBtu/hr)	Steam Rate (lb/hr)	Operating Data <sup>c</sup>					
		East (m)	North (m)	X		Y		Height		Diameter				Temperature		Gas Flow (acfm)	Velocity		
				ft	m	ft	m	ft	m	ft	m			°F	°K		ft/s	m/s	
<b>Maximum Permitted - Crop Season</b>																			
Boiler No. 1	BLR1O	506,184.6	2,956,934.8	185	56	-5	-1.5	213	64.9	8.0	2.44	496	245,000	150	339	250,000	82.9	25.3	
Boiler No. 2	BLR2O	506,171.8	2,956,934.8	143	44	-5	-1.5	213	64.9	8.0	2.44	447	215,000	150	339	250,000	82.9	25.3	
Boiler No. 4 <sup>e</sup>	BLR4O	506,128.2	2,956,936.3	0	0	0	0.0	150	45.7	8.2	2.50	566 <sup>e</sup>	268,246	160	344	251,257	79.3	24.2	
Boiler No. 7 <sup>f</sup>	BLR7O	506,095.7	2,956,956.1	-107	-33	65	19.8	225	68.6	8.0	2.44	738	350,000	272	406	337,000	111.7	34.1	
Boiler No. 8 <sup>f</sup>	BLR8O	506,046.2	2,956,987.3	-269	-82	167	51.0	199	60.7	10.9	3.32	1,077	575,000	255	397	437,000	78.1	23.8	
													<b>1,653,246</b>						
<b>Maximum Permitted - Off-Crop Season</b>																			
<b>Scenario A</b>																			
Boiler No. 7 <sup>f</sup>	BLR7F	506,095.7	2,956,956.1	-107	-33	65	19.8	225	68.6	8.0	2.44	738	350,000	272	406	337,000	111.7	34.1	
<b>Scenario B</b>																			
Boiler No. 8 <sup>f</sup>	BLR8F	506,046.2	2,956,987.3	-269	-82	167	51.0	199	60.7	10.9	3.32	1,077	575,000	255	397	437,000	78.1	23.8	
<b>Scenario C</b>																			
Boiler No. 1	BLR1F	506,184.6	2,956,934.8	185	56	-5	-1.5	213	64.9	8.0	2.44	496	245,000	150	339	250,000	82.9	25.3	
Boiler No. 2	BLR2F	506,171.8	2,956,934.8	143	44	-5	-1.5	213	64.9	8.0	2.44	447	215,000	150	339	250,000	82.9	25.3	
													<b>460,000</b>						
<b>300,000 lb/hr steam - Off-Crop Season</b>																			
<b>Scenario A</b>																			
Boiler No. 7 <sup>f</sup>	BLR7F	506,095.7	2,956,956.1	-107	-33	65	19.8	225	68.6	8.0	2.44	633	300,000	272	406	289,000	95.8	29.2	
<b>Scenario B</b>																			
Boiler No. 8 <sup>f</sup>	BLR8F	506,046.2	2,956,987.3	-269	-82	167	51.0	199	60.7	10.9	3.32	562	300,000	255	397	207,109	37.0	11.3	
<b>Scenario C <sup>d</sup></b>																			
Boiler No. 1	BLR1F	506,184.6	2,956,934.8	185	56	-5	-1.5	213	64.9	8.0	2.44	323	159,789	150	339	163,050	54.1	16.5	
Boiler No. 2	BLR2F	506,171.8	2,956,934.8	143	44	-5	-1.5	213	64.9	8.0	2.44	292	140,223	150	339	163,050	54.1	16.5	
													<b>300,012</b>						

<sup>a</sup> Universal Transverse Mercator Coordinates, Zone 17, North American Datum of 1927 (NAD27).


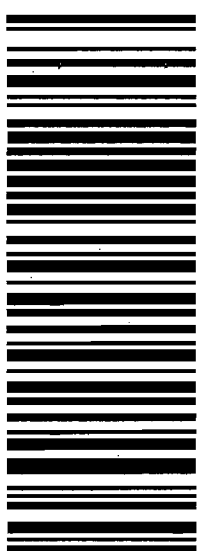
<sup>b</sup> Relative to Boiler No. 4.

<sup>c</sup> Stack and operating data based on Title V renewal application (2005), unless otherwise noted.

<sup>d</sup> Both boilers operating at 65.22% load, which equates to a total of 300,000 lb/hr steam. Boiler No. 2 is nearly identical to Boiler No. 1.

<sup>e</sup> Boiler No. 4 limited to 2,880,000 MMBtu/yr, which equates to 566 MMBtu/hr for the crop season (5,088 hours).

<sup>f</sup> Temperature and flow rate based on the average of the 2006 and 2007 stack test results.

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