

**Golder Associates Inc.**

6241 NW 23rd Street, Suite 500  
Gainesville, FL USA 32653  
Telephone (352) 336-5600  
Fax (352) 336-6603  
www.golder.com



March 18, 2005

**RECEIVED** 0437615

MAR 21 2005

BUREAU OF AIR REGULATION

Florida Department of Environmental Protection  
Department of Air Resources Management  
2600 Blair Stone Road, MS 5500  
Tallahassee, FL 32399-2400

Attention: Mr. Jeffery Koerner, P. E.

RE: UNITED STATES SUGAR CORPORATION (U.S. SUGAR) – CLEWISTON MILL  
BOILER NO. 8 – ALTERNATIVE pH MONITORING PLAN

Dear Mr. Koerner:

Please find attached a request for an alternative monitoring plan for pH for Boiler No. 8, which is now operating at United States Sugar Corporation's (U.S. Sugar) Clewiston Mill. Monitoring of pH of the scrubber effluent is required under 40 CFR Part 63, Subpart DDDDD, which contains the National Emissions Standards for Hazardous Air Pollutants (NESHAPs) for Industrial, Commercial, and Institutional Boilers and Process Heaters, promulgated on September 13, 2004. This rule is referred to as the "Boiler MACT" rule, since it incorporates maximum achievable control technology (MACT) requirements of the NESHAPs.

Boiler No. 8 has two wet cyclone separators that require pH monitoring under the Boiler MACT rule. Due to the high cost of continuously monitoring for pH in a highly abrasive environment, U.S. Sugar is proposing an alternative pH monitoring plan.

The compliance testing for Boiler No. 8, for the purpose of demonstrating compliance with the conditions of permit No. 0510003-024-AC/PSD-FL-333, and with the provisions of 40 CFR Part 63, Subpart DDDDD, is scheduled for March 24 through 25, 2005. It would be greatly appreciated if a determination on this request can be made prior to March 24, 2005.

Thank you for review of this request. Please call or e-mail me if you have any questions concerning this information.

Sincerely,

GOLDER ASSOCIATES INC.

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

DB/nav

Enclosure

cc: Don Griffin  
Peter Briggs  
Ron Blackburn, DEP  
EPA Region 4

Y:\Projects\2004\0437615 US Sugar Blr8\4.1\031705-520.doc



**BOILER NO. 8  
MACT ALTERNATIVE MONITORING PLAN  
FOR pH**

***U. S. SUGAR CORPORATION  
CLEWISTON, FL***

**Prepared For:**

**United States Sugar Corporation  
Clewiston, Florida**

**Prepared By:**

**Golder Associates Inc.  
6241 NW 23rd Street, Suite 500  
Gainesville, Florida 32653-1500**

**March 2005**

**0437615**

**DISTRIBUTION:**

**2 Copies – U. S. Sugar**

**1 Copies - Golder Associates Inc.**

## TABLE OF CONTENTS

1.0	INTRODUCTION.....	1-1
2.0	PROCESS DESCRIPTION .....	2-1
2.1	BOILER NO. 8 .....	2-1
3.0	ALTERNATIVE MONITORING PLAN FOR pH.....	3-2
3.1	SAMPLE LOCATION AND FREQUENCY .....	3-2
3.2	PH PERFORMANCE AND EQUIPMENT SPECIFICATIONS .....	3-3
3.3	PERFORMANCE EVALUATION PROCEDURES .....	3-3
3.4	OPERATION AND MAINTENANCE PROCEDURES .....	3-3
3.5	DATA QUALITY ASSURANCE PROCEDURES .....	3-4
3.6	ALTERNATIVE TO pH MONITORING.....	3-5
4.0	RECORDKEEPING AND REPORTING PROCEDURES.....	4-6

## 1.0 INTRODUCTION

United States Sugar Corporation (U.S. Sugar) operates a sugar mill and sugar refinery located in Clewiston, Hendry County, Florida. The mill receives sugarcane by train from nearby cane fields and processes it into raw sugar. The facility is currently permitted under Title V operating permit No. 0510003-017-AV, issued October 18, 2004.

Boiler No. 8 at the Clewiston Mill will be regulated, upon startup, under Title 40 of the Code of Federal Regulations, Part 63 (40 CFR 63), Subpart DDDDD: National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Industrial, Commercial, and Institutional Boilers and Process Heaters. Subpart DDDDD (Boiler MACT) regulates emissions of mercury (Hg), solid hazardous air pollutant (HAP) metals, inorganic HAPs, and organic HAPs. The regulation of solid HAP metals emissions is through a surrogate particulate matter (PM) emission standard or, alternatively, a total selected metals (TSM) standard. The regulation of inorganic HAPs is through a surrogate hydrogen chloride (HCl) emission standard. The PM emission limit for new solid fuel-fired boilers is 0.025 pound per million British thermal units (lb/MMBtu); the HCl limit is 0.02 lb/MMBtu; and the Hg limit is  $3 \times 10^{-6}$  lb/MMBtu.

The Boiler MACT regulates organic HAPs through a surrogate carbon monoxide (CO) work practice standard for new units only, which requires a continuous emission monitoring system (CEMS) to measure CO concentrations in the flue gas stream. The CO work practice standard for all fuels is 400 parts per million by volume, dry basis, corrected to 7 percent oxygen (ppmvd @ 7 percent O<sub>2</sub>).

The Boiler MACT also sets operating limits for add-on control devices. Boiler No. 8 will employ a wet sand separator and an electrostatic precipitator (ESP) for control of PM emissions. For Boiler No. 8, the Boiler MACT requires the following parameters to be monitored continuously:

<b>Work Practice Standard</b>	<b>Continuous Monitoring System (CMS) Parameter</b>
CO	CO ppmvd @ 7% O <sub>2</sub> : 30-day rolling average
<b>Add-on Control Device</b>	
Wet Scrubber	Liquid Flow, Pressure Drop, and pH
ESP	Voltage and Secondary Current, or Total Power Input

According to the MACT rules, Boiler No. 8 must comply with Subpart DDDDD upon startup. The initial performance tests must be conducted within 180 days of startup. Also, for each continuous monitoring system (CMS) required, the facility must develop and submit a site-specific monitoring plan to the EPA Administrator for approval at least 60 days prior to the initial performance evaluation of the CMS. The site-specific monitoring plan must address the following:

1. Installation of the CMS sampling probe or other interface at a measurement location relative to each affected process unit such that the measurement is representative of control of the exhaust emissions (e.g., on or downstream of the last control device);
2. Performance and equipment specifications for the sample interface, the pollutant concentration or parametric signal analyzer, and the data collection and reduction systems;
3. Performance evaluation procedures and acceptance criteria (e.g., calibrations);
4. Ongoing operation and maintenance procedures in accordance with the general requirements of Part 63.8(c)(1), (c)(3), and (c)(4)(ii);
5. Ongoing data quality assurance procedures in accordance with general requirements of Part 63.8(d); and
6. Ongoing recordkeeping and reporting procedures in accordance with the general requirements of Part 63.10(c), (e)(1), and (e)(2)(i).

The site-specific monitoring plan for Boiler No. 8 was submitted to FDEP and EPA in February 2005 as part of the Boiler No. 8 MACT Compliance Application.

As shown in the above table, Boiler No. 8 will require continuous monitoring of the wet scrubber effluent pH. Boiler No. 8 will have two wet cyclonic scrubbers operating in parallel. Due to the harsh environment and associated high cost of continuous monitoring of pH of the wet scrubbers effluent for Boiler No. 8, and pursuant to 40 CFR Part 63.8(f)(4), U.S. Sugar requests to use an alternative monitoring plan for pH of the wet scrubber effluent. The alternative monitoring plan is presented in the following sections.

In addition, U.S. Sugar proposes to conduct testing for uncontrolled HCl emissions from Boiler No. 8. U.S. Sugar will follow the same testing protocol for HCl emissions testing as contained in the February 2005 site-specific test plan submitted to FDEP and EPA. U.S. Sugar will perform the testing at a sample location upstream of the wet scrubbers. If the uncontrolled emissions indicate that the Boiler MACT standard for HCl of 0.02 lb/MMBtu is achievable without the wet scrubbers,

U.S. Sugar will request an exemption from the wet scrubber monitoring requirements of Subpart DDDDD, including the requirement to monitor pH of the scrubber effluent.

## 2.0 PROCESS DESCRIPTION

### 2.1 BOILER NO. 8

Boiler No. 8 will fire bagasse as its primary fuel, with ultra low-sulfur No. 2 fuel oil used for startup, shutdown, and as a supplementary fuel. Boiler No. 8 is designed to produce 550,000 pounds per hour (lb/hr) steam as a 1-hour average and 500,000 lb/hr steam as a daily 24-hour average. The boiler is permitted to operate up to 365 days per calendar year [8,760 hour per year (hr/yr)].

Boiler No. 8 utilizes air pollution control equipment consisting of two wet cyclone scrubbers, an electrostatic precipitator (ESP) to remove PM, and a selective non-catalytic reduction system (SNCR) to reduce nitrogen oxides (NO<sub>x</sub>) emissions.

Subpart DDDDD requires that U.S. Sugar monitor the pH of the wet scrubber effluent. For Boiler No. 8, this would require two pH monitors located on the scrubber effluent discharge line of each wet scrubber. The rule also requires that the pH monitors be checked for calibration on at least two points every 8 hours of process operation [40 CFR 63.7525(f)].

U.S. Sugar has obtained one engineering cost quote for installation of the pH monitors. Due to operation in a harsh environment, and the need for a building to house the monitors and allow for calibration checks every 8 hours, the cost quote is approximately \$130,000.

### 3.0 ALTERNATIVE MONITORING PLAN FOR pH

The Boiler MACT rule requires the installation of the CMS sampling probe or other interface at a measurement location relative to Boiler No. 8 such that the measurement is representative of control of the exhaust emissions (e.g., on or downstream of the last control device). However, 40 CFR Part 63.8(f)(4)(i), allows the applicant to apply for an alternative monitoring plan. The rule cites nine cases where an alternative monitoring plan can be applied for, but does not limit requests to these nine situations.

One specific case cited in the rule is where installation of a CMS specified by a relevant standard would not provide accurate measurements due to liquid water or other interferences caused by substances within the effluent gases. The wet scrubbers, also referred to as the wet sand separators on Boiler No. 8, discharge an extremely abrasive slurry that contains fine sand particles. This environment would be very abrasive to the pH probe and difficult and costly to maintain a pH probe for continuous monitoring.

Another specific case is where an alternative location for measurement is desired, if it can be demonstrated that installation at the alternative location will enable accurate and representative measurements. U.S. Sugar is proposing an alternative location for measuring the scrubber effluent pH. Since the two wet scrubbers will be controlling the flue gas emissions from a single process unit, the two wet scrubbers are identical, and the scrubbers will be using the same source for scrubber water, the pH of the scrubber effluent from each scrubber should be virtually identical. Therefore, a single monitoring location for pH is proposed. It is believed that the alternative plan proposed below will enable accurate and representative measurements.

The following sections describe the alternative monitoring plan proposed for pH monitoring of the wet scrubber effluent on Boiler No. 8.

#### 3.1 SAMPLE LOCATION AND FREQUENCY

For Boiler No. 8, an operator will measure the pH from a sample taken from a point where the effluents of the two wet scrubbers combine, which is in the spent scrubbing slurry pit for Boiler No. 8. Since the flue gas stream of Boiler No. 8 is divided and sent to two wet scrubbers, and the wet scrubbers are both fed with the same scrubber water, the pH of each effluent will be virtually



identical. Therefore, a pH sample taken at this point will be representative of the effluent discharge of each wet scrubber. The pH water sample will meet the following requirements:

1. The pH water sample will be taken at a location that provides a representative measurement of scrubber effluent pH, and
2. The location will be at a point where the fluid is properly mixed and representative.

The pH samples will be extracted from the scrubber effluent slurry pit. Each sample will be taken by allowing effluent to run into a clean sample container. The sample will then be taken to the laboratory; and the probe of a bench pH meter will be inserted into the sample, allowed to stabilize, and the pH reading recorded.

These measurements will be performed once per shift. After the first 30 days of measurements, the data will be submitted to the Florida Department of Environmental Protection (FDEP) to determine if the frequency of measurements can be reduced. U.S. Sugar believes that due to the nature of the process, the pH will not vary substantially over time. U.S. Sugar will continue to take pH measurements once per shift, until such time as FDEP approves a different sampling frequency.

### **3.2 PH PERFORMANCE AND EQUIPMENT SPECIFICATIONS**

A bench pH meter will be utilized to monitor the pH of the wet scrubber effluent. Performance and equipment specifications of the bench pH meter will be provided upon approval of this alternative monitoring plan.

### **3.3 PERFORMANCE EVALUATION PROCEDURES**

The pH meter's calibration will be checked on at least two points immediately prior to each pH reading of the wet scrubber effluent on Boiler No. 8. Data will be recorded in a log maintained by U.S. Sugar operation personnel.

### **3.4 OPERATION AND MAINTENANCE PROCEDURES**

The bench pH meter will be operated and maintained consistent with the manufacturer's specifications and good operating practices.

### **3.5 DATA QUALITY ASSURANCE PROCEDURES**

The ongoing data quality assurance procedures shall be in accordance with the general requirements of Part 63.8(d).

63.8 (d). Quality control program.

- (1) The results of the quality control program required in this paragraph will be considered by the Administrator when he/she determines the validity of monitoring data.
- (2) The owner or operator of an affected source that is required to use a CMS and is subject to the monitoring requirements of this section and a relevant standard shall develop and implement a CMS quality control program. As part of the quality control program, the owner or operator shall develop and submit to the Administrator for approval upon request a site-specific performance evaluation test plan for the CMS performance evaluation required in paragraph (e)(3)(i) of this section, according to the procedures specified in paragraph (e). In addition, each quality control program shall include, at a minimum, a written protocol that describes procedures for each of the following operations:
  - (i) Initial and any subsequent calibration of the CMS;
  - (ii) Determination and adjustment of the calibration drift of the CMS;
  - (iii) Preventive maintenance of the CMS, including spare parts inventory;
  - (iv) Data recording, calculations, and reporting;
  - (v) Accuracy audit procedures, including sampling and analysis methods; and
  - (vi) Program of corrective action for a malfunctioning CMS.
- (3) The owner or operator shall keep these written procedures on record for the life of the affected source or until the affected source is no longer subject to the provisions of this part, to be made available for inspection, upon request, by the Administrator. If the performance evaluation plan is revised, the owner or operator shall keep previous (i.e., superseded) versions of the performance evaluation plan on record to be made available for inspection, upon request, by the Administrator, for a period of 5 years after each revision to the plan. Where relevant, e.g., program of corrective action for a malfunctioning CMS, these written procedures may be incorporated as part of the affected source's startup, shutdown, and malfunction plan to avoid duplication of planning and recordkeeping efforts.

To provide on-going data quality assurance, the pH meter's calibration will be checked on at least two points immediately prior to each pH reading of the wet scrubber effluent on Boiler No. 8. Data will be recorded in a log maintained by U.S. Sugar operation personnel.

### **3.6 ALTERNATIVE TO pH MONITORING**

U.S. Sugar is also proposing to conduct testing for uncontrolled HCl emissions from Boiler No. 8. Due to the alkaline nature of fly ash from bagasse burning, it is believed that uncontrolled emissions of HCl will be below the Subpart DDDDD limit of 0.02 lb/MMBtu. Bagasse analysis from the Clewiston Mill indicates equivalent HCl emissions in the fuel ranging from 0.049 to 0.088 lb/MMBtu. Therefore, up to a 75-percent inherent removal efficiency would be necessary to achieve the HCl emission limit. Based on existing sugar industry test data for sulfur dioxide (SO<sub>2</sub>) emissions, as well as information from biomass-fired boilers in the pulp and paper industry, an inherent removal efficiency of 75 percent or greater is readily achievable.

U.S. Sugar will follow the same testing protocol for HCl emissions testing as contained in the February 2005 site-specific test plan submitted to FDEP and EPA. U.S. Sugar will perform the testing at a sample location upstream of the wet scrubbers. If the uncontrolled emissions indicate that the Boiler MACT standard for HCl of 0.02 lb/MMBtu is achievable without the wet scrubbers, U.S. Sugar will request an exemption from the wet scrubber monitoring requirements of Subpart DDDDD, including the requirement to monitor pH of the scrubber effluent.

#### 4.0 RECORDKEEPING AND REPORTING PROCEDURES

Recordkeeping and reporting will be performed in accordance with the general requirements of Part 63.10(c), (e)(1), and (e)(2)(i):

63.10(c). Additional recordkeeping requirements for sources with continuous monitoring systems. In addition to complying with the requirements specified in paragraphs (b)(1) and (b)(2) of this section, the owner or operator of an affected source required to install a CMS by a relevant standard shall maintain records for such source of –

- (1) All required CMS measurements (including monitoring data recorded during unavoidable CMS breakdowns and out-of-control periods);

63.10(e). Additional reporting requirements for sources with continuous monitoring systems –

- (1) General. When more than one CEMS is used to measure the emissions from one affected source (e.g., multiple breechings, multiple outlets), the owner or operator shall report the results as required for each CEMS.
- (2) Reporting results of continuous monitoring system performance evaluations.
  - (i) The owner or operator of an affected source required to install a CMS by a relevant standard shall furnish the Administrator a copy of a written report of the results of the CMS performance evaluation, as required under §63.8(e), simultaneously with the results of the performance test required under §63.7, unless otherwise specified in the relevant standard.

The pH measurements will be performed and recorded in a log once per shift. U.S. Sugar will continue to take pH measurements once per shift, until such time as FDEP approves a different sampling frequency.

**Golder Associates Inc.**

6241 NW 23rd Street, Suite 500  
Gainesville, FL USA 32653  
Telephone (352) 336-5600  
Fax (352) 336-6603  
www.golder.com

February 22, 2005

Florida Department of Environmental Protection  
Department of Air Resources Management  
2600 Blair Stone Road, MS 5500  
Tallahassee, FL 32399-2400

Attention: Mr. Jeffery Koerner, P. E.

RE: UNITED STATES SUGAR CORPORATION (U.S. SUGAR) – CLEWISTON MILL  
BOILER NO. 8  
APPLICATION TO IMPLEMENT 40 CFR PART 63, SUBPART DDDDD AND  
SUBMITTAL OF SITE-SPECIFIC TEST PLANS

Dear Mr. Koerner:

United States Sugar Corporation's (U.S. Sugar) was issued a construction permit for a new Boiler No. 8 (Permit No. 0510003-024-AC/PSD-FL-333A, issued November 4, 2004) to be located at the Clewiston Mill. The new Boiler No. 8 is now under construction, and the boiler will begin commercial operations in mid-March 2005.

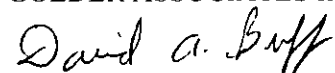
Boiler No. 8 will be subject to the provisions of 40 CFR Part 63, Subpart DDDDD, which is the National Emissions Standards for Hazardous Air Pollutants (NESHAPs) for Industrial, Commercial, and Institutional Boilers and Process Heaters, promulgated on September 13, 2004. This rule is referred to as the "Boiler MACT" rule, since it incorporates the maximum achievable control technology (MACT) requirements of the NESHAPs.

The purpose of this submittal is to incorporate the provisions of Subpart DDDDD into the Boiler No. 8 construction permit. Included in this application are the site-specific monitoring, performance testing, and fuel sampling and analysis plans required by Subpart DDDDD.

Please call or e-mail me if you have any questions concerning this information and application.

Sincerely,

GOLDER ASSOCIATES INC.



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

DB/nav

Enclosures

cc: Don Griffin  
Peter Briggs  
Ron Blackburn, DEP  
Cecily Tart, DEP  
Doug Neeley, EPA Region 4  
Connie Oldham, EPA RTP

L022205-615



RECEIVED

0437615

FEB 23 2005

BUREAU OF AIR REGULATION

