PROJECT DESCRIPTION

Buckeye operates an existing dissolving grade Kraft sulfate process pulp mill (SIC No. 2611) in Perry, Florida. This site is in an area that is in attainment (or designated as unclassifiable) for each air pollutant subject to a state or federal Ambient Air Quality Standard (NAAQS). The goal of the Foley Energy Independence Project is to improve efficiency for steam and electrical equipment at the plant, reduce the amount of electricity purchased from the grid and reduce the amount of purchased fossil fuels. Currently, the mill purchases approximately 120,000 MW-hours per year of electricity and approximately 6 million MMBtu per year of fuels. The project consists of the following major changes.

- The existing Nos. 2 and 3 Recovery Boilers (EU-006 and EU-007) will be physically modified and converted from direct contact evaporator units to low-odor, non-direct contact evaporator units. After completing the recovery boiler conversions, the black liquor oxidation system will be permanently shutdown. There will be miscellaneous changes to the common systems shared by the existing units such as piping, ductwork, pumps, tanks, etc.
- Two new forced-circulation/crystallizer black liquor concentrators and a new black liquor storage tank will be added to the existing multiple effect evaporator system (EU-046). The new concentrators will increase the solids content of the BLS from approximately 50% to 72%. Increased non-condensable gases generated from the multiple effect evaporator system will be controlled by combustion in the No. 1 Bark Boiler (primary control) or the No. 1 Power Boiler (secondary control), which also controls TRS emissions with a white liquor pre-scrubber.
- A new 28 MW condensing steam turbine-electrical generator will be installed to take advantage of the equipment efficiency improvements and approximately 13% additional bark/wood firing (annual basis) in the Nos. 1 and 2 Bark Boilers. Only 12 MW are expected to be generated as a result of this project. Future steam improvement projects may take advantage of the additional capacity. No physical changes or changes in the method of operation for the Bark Boilers are necessary to meet this goal. After completing the installation, the steam header pressure will then be controlled by modulating the steam flow to the condensing steam turbine instead of varying the firing rates of the power and bark boilers, which is the current practice. This means that the Bark Boilers can become based loaded units while firing bark/wood and less fossil fuel will be needed, which is currently fired as necessary to control the steam header pressure.
- Based on the equipment efficiency improvements and shift to bark/wood, the No. 2 Power Boiler (EU-003) will be restricted to firing only natural gas. No other changes are proposed for this unit.

Based on a netting analysis including other contemporaneous projects, this project is subject to preconstruction review for the prevention of significant deterioration (PSD) of air quality for emissions of carbon monoxide (CO), nitrogen oxides (NO_X), particulate matter (PM), and PM with an aerodynamic mean diameter equal to or less than 10 microns (PM_{10}) in accordance with Rule 62-212.400, F.A.C.

SUMMARY OF BACT DETERMINATIONS

In accordance with Rule 62-212.400(2), F.A.C., the permittee conducted a PSD netting analysis that compared baseline actual emissions with projected actual emissions. Based on the analysis, the project is subject to PSD preconstruction review for CO, NO_X, PM and PM_{10}. The Nos. 2 and 3 Recovery Boilers were the only units being modified or constructed that emit these PSD-significant pollutants. Therefore, the Department determined the Best Available Control Technology (BACT) for CO, NO_X, PM and PM_{10} emissions from the Nos. 2 and 3 Recovery Boilers. The provisions regulating PM emissions will serve as a surrogate for controlling PM_{10} emissions. The following tables summarize the BACT determinations.

No. 2 Recovery Boiler

Pollutant	BACT Standards	Control Technology Basis	Monitoring
CO [a]	400.0 ppmvd @ 8% O_2 and 214.1 lb/hour	Boiler Design and	CEMS

Pollutant	BACT Standards	Control Technology Basis	Monitoring
	based on a 30-day rolling average	Operation	
NO_X [a]	80.0 ppmvd @ 8% O_2 and 70.4 lb/hour based on a 30-day rolling average	Boiler Design and Operation	CEMS
Opacity [b]	20% based on 6-minute averages	Electrostatic Precipitator	COMS and EPA Method 9
PM	0.030 grains/dscf @ 8% O_2 and 31.6 lb/hour	Electrostatic Precipitator	EPA Method 5 Annual Tests

No. 3 Recovery Boiler

Pollutant	BACT Standards	Control Technology	Monitoring
CO [a]	400.0 ppmvd @ 8% O_2 and 208.0 lb/hour based on a 30-day rolling average	Boiler Design and Operation	CEMS
NO_X [a]	80.0 ppmvd @ 8% O_2 and 68.3 lb/hour based on a 30-day rolling average	Boiler Design and Operation	CEMS
Opacity [b]	20% based on 6-minute averages	Electrostatic Precipitator	COMS and EPA Method 9
PM	0.030 grains/dscf @ 8% O_2 and 30.7 lb/hour	Electrostatic Precipitator	EPA Method 5 Annual Tests

a. The CO and NO_X standards are based on a 30-day rolling CEMS average excluding emissions data collected during startup and shutdown.

b. The opacity standard applies once the electrostatic precipitator is placed in service during startup.

The Department's technical review and rationale for the BACT determinations are presented in the Technical Evaluation and Preliminary Determination issued concurrently with the draft permit and the Final Determination issued concurrently with the final PSD air construction permit.

STANDARD CONTINUOUS EMISSIONS MONITORING REQUIREMENTS

The Nos. 2 and 3 Recovery Boilers (EU-006 and EU-007) are subject to the following requirements for the new continuous emissions monitoring systems (CEMS). The permit requires compliance with the CO and NO_X emissions standards to be demonstrated continuously with data collected from a certified CEMS.

CEMS OPERATION PLAN

1. CEMS Operation Plan: The permittee shall create and implement a plan for the proper installation, calibration, maintenance, and operation of each CEMS required by this permit. The permittee shall submit the CEMS Operation Plan to the Bureau of Air Monitoring and Mobile Sources for approval prior to CEMS installation. The CEMS Operation Plan shall become effective 60 days after submittal or upon its approval. If the CEMS Operation Plan is not approved, the permittee shall submit a new or revised plan for approval. If the existing CO CEMS will be used, the permittee shall submit the CO CEMS Operation Plan along with the NO_X CEMS Operation Plan. *{Permitting Note: The Department maintains both guidelines for developing a CEMS Operation Plan and example language that can be used as the basis for the facility-wide plan required by this permit. Contact the Emissions Monitoring Section of the Bureau of Air Monitoring and Mobile Sources at 850/488-0114.}* [Rule 62-4.070(3), F.A.C.]

MONITORS, PERFORMANCE SPECIFICATIONS AND QUALITY ASSURANCE

2. Installation: All CEMS shall be installed such that representative measurements of emissions or process parameters from the facility are obtained. The owner or operator shall locate the CEMS by following the procedures contained in the applicable performance specification in Appendix B of 40 CFR 60.

3. Span Values and Dual Range Monitors: The permittee shall set appropriate span values for the CEMS based on the emissions standards and range of operation. If necessary, the permittee shall install dual range monitors in accordance with the CEMS Operation Plan. [Rule 62-4.070(3), F.A.C.]

4. Diluent Monitor: Because of the permit requirement to correct the CEMS output to the oxygen concentrations specified in the applicable emissions standard, the permittee shall maintain the existing oxygen (O_2) monitors. [Rule 62-4.070(3), F.A.C.]

5. Moisture Correction: If necessary, the permittee shall install a system to determine the moisture content of the exhaust gas and develop an algorithm to enable correction of the monitoring results to a dry basis (0% moisture). [Rule 62-4.070(3), F.A.C.]

6. Continuous Flow Monitor: For compliance with mass emission flow rate standards, the permittee shall install a continuous flow monitor to determine the stack exhaust flow rate. The flow monitor shall be certified pursuant to 40 CFR Part 60, Appendix B, Performance Specification 6. Alternatively, the permittee may install a fuel flow monitor and use an appropriate F-Factor computational approach to calculate the stack exhaust flow rate. *{Permitting Note: The CEMS Operation Plan will contain additional details and procedures for monitor installation.}* [Rule 62-4.070(3), F.A.C.]

7. Performance Specifications: The permittee shall evaluate the "acceptability" of each CEMS by conducting the appropriate performance specification. CEMS determined to be "unacceptable" shall not be considered "installed" for purposes of meeting the timelines of this permit. For CO monitors, the permittee shall conduct Performance Specification 4 of 40 CFR Part 60, Appendix B. For NO_X monitors, the permittee shall conduct Performance Specification 2 of 40 CFR Part 60, Appendix B. [Rule 62-4.070(3), F.A.C.]

8. Quality Assurance: The permittee shall follow the quality assurance procedures of 40 CFR Part 60, Appendix F. For CO, the required relative accuracy test audit (RATA) tests shall be performed using EPA Method 10 in Appendix A of 40 CFR Part 60. For NO_X, the RATA tests shall be performed using EPA Method 7E in Appendix A of 40 CFR Part 60. [Rule 62-4.070(3), F.A.C.]

CALCULATION APPROACH FOR SIP COMPLIANCE

9. CEMS for Compliance: Once adherence to the applicable performance specification for each CEMS is demonstrated, the permittee shall use the CEMS to demonstrate compliance with the applicable emission standards as specified by this permit. [Rules 62-212.400(PSD-BACT) and 62-4.070(3), F.A.C.]

10. CEMS Data: Each CEMS shall monitor and record emissions during all operations and whenever emissions are being generated, including during episodes of startups, shutdowns, and malfunctions. All data shall be used, except for invalid measurements taken during monitor system breakdowns, repairs, calibration checks, zero adjustments, and span adjustments. [Rule 62-4.070(3), F.A.C.]

11. Operating Hours and Operating Days: For purposes of this Appendix, the following definitions shall apply. An hour is the 60-minute period beginning at the top of each hour. Any hour during which an emissions unit is in operation for more than 15 minutes is an operating hour for that emission unit. A day is the 24-hour period from midnight to midnight. Any day with at least one operating hour for an emissions unit is an operating day for that emission unit. [Rule 62-4.070(3), F.A.C.]

12. Valid Hourly Averages: Each CEMS shall be designed and operated to sample, analyze, and record data evenly spaced over the hour at a minimum of one measurement per minute. All valid measurements collected during an hour shall be used to calculate a 1-hour block average that begins at the top of each hour.

    a. Hours that are not operating hours are not valid hours.

    b. For each operating hour, the 1-hour block average shall be computed from at least two data points separated by a minimum of 15 minutes. If less than two such data points are available, there is insufficient data, the 1-hour block average is not valid, and the hour is considered as "monitor unavailable."

    [Rule 62-4.070(3), F.A.C.]

13. Calculation Approaches: Compliance with the 30-day rolling CO and NO_X averages shall be determined after each operating day by calculating and recording the arithmetic average of all valid hourly averages for the previous 30 operating days (compliance period). As specified in the permit, limited amounts of CEMS data collected during startup and shutdown may be excluded from the compliance period. [Rules 62-212.400(PSD-BACT) and 62-4.070(3), F.A.C.]

14. Minimum Valid Hours: At least one valid hourly average shall be used to calculate the emissions over any averaging period specified by this permit. One valid hourly average shall be sufficient to calculate the emissions over any averaging period. [Rule 62-4.070(3), F.A.C.]

MONITOR AVAILABILITY

15. Monitor Availability: Monitor availability shall be calculated on a quarterly basis for each emission unit as the number of valid hourly averages obtained by the CEMS, divided by the number of operating hours, times 100%. The monitor availability calculation shall not include periods of time where the monitor was functioning properly, but was unable to collect data while conducting a mandated quality assurance/quality control activity such as calibration error tests, RATA, calibration gas audit, or relative accuracy audits (RAA). Monitor availability for each CEMS shall be 95% or greater in any calendar quarter. Monitor availability shall be reported in the quarterly excess emissions report. In the event 95% availability is not achieved, the permittee shall provide the Department with a report identifying the problems in achieving 95% availability and a plan of corrective actions that will be taken to achieve 95% availability. The permittee shall implement the reported corrective actions within the next calendar quarter. Failure to take corrective actions or continued failure to achieve the minimum monitor availability shall be violations of this permit. [Rule 62-4.070(3), F.A.C.]

EXCESS EMISSIONS

16. Definitions:

a. *Excess Emissions* (under the Florida SIP) are defined as emissions of pollutants in excess of those allowed by any applicable air pollution rule of the Department, or by a permit issued pursuant to any such rule or Chapter 62-4, F.A.C. The term applies only to conditions which occur during startup, shutdown, or malfunction.

b. *Startup* is defined as the commencement of operation of any emissions unit which has shut down or ceased operation for a period of time sufficient to cause temperature, pressure, chemical or pollution control device imbalances, which result in excess emissions.

c. *Shutdown* means the cessation of the operation of an emissions unit for any purpose.

d. *Malfunction* means any unavoidable mechanical and/or electrical failure of air pollution control equipment or process equipment or of a process resulting in operation in an abnormal or unusual manner.

[Rule 62-210.200(Definitions), F.A.C.]

17. Excess Emissions Prohibited: Excess emissions caused entirely or in part by poor maintenance, poor operation or any other equipment or process failure that may reasonably be prevented during startup, shutdown or malfunction shall be prohibited. All such preventable emissions shall be included in any compliance determinations based on CEMS data. [Rules 62-210.700(4) and 62-4.070(3), F.A.C.]

18. Data Exclusion for SIP Compliance: As per the procedures in this condition, limited amounts of CO and NO_X CEMS emissions data may be excluded from the corresponding compliance demonstration, provided that best operational practices to minimize emissions are adhered to and the duration of data excluded is minimized. The limited amounts of data authorized for exclusion are specified in each corresponding permit subsection. As provided by the authority in Rule 62-210.700(5), F.A.C., the following conditions replace the provisions in Rule 62-210.700(1), F.A.C.

a. *Excess Emissions.* For purposes of SIP-based permit limits, limited amounts of excess emissions data collected during periods of startup and shutdown may be excluded from compliance calculations as allowed by the permit standards.

b. *Limiting Data Exclusion.* If the compliance calculation using all valid CEMS emission data (as defined in this Appendix) indicates that the emission unit is in compliance, then no CEMS data shall be excluded from the compliance demonstration.

c. *Event Driven Exclusion.* The excess emissions must occur due to an underlying event (startup or shutdown). If there is no underlying event, then no data may be excluded.

d. *Continuous Exclusion.* Data shall be excluded on a continuous basis per event. Data from discontinuous periods shall not be excluded for the same underlying event.

e. *Reporting Excluded Data.* These procedures for excluding SIP-based excess emissions from compliance calculations are not necessarily the same procedures used for "excess emissions" as defined by federal rules. Semiannual reports required by this permit shall indicate the duration of data excluded from SIP compliance calculations.

The Excess Emissions Rule at Rule 62-210.700, F.A.C., cannot vary any requirement of a NSPS or NESHAP provision. [Rules 62-212.400(PSD-BACT) and 62-210.700, F.A.C.]

19. Notification Requirements: The permittee shall notify the Compliance Authority within one working day of discovering any emissions that demonstrate non-compliance for a given averaging period. [Rule 62-4.130, F.A.C.]

CALCULATING AND REPORTING ANNUAL EMISSIONS

20. CEMS for Calculating Annual Emissions: As defined by this Appendix, all valid data shall be used when calculating annual emissions.

a. Annual emissions shall include data collected during startup, shutdown, and malfunction periods.

b. Annual emissions shall include data collected during periods when the emission unit is not operating, but

emissions are being generated (for example, firing fuel to warm up a process for some period of time prior to the emission unit's "official" startup).

c. Annual emissions shall not include data from periods of time where the monitor was functioning properly, but was unable to collect data while conducting a mandated quality assurance/quality control activity such as calibration error tests, RATA, calibration gas audit, or RAA. These periods of time shall be considered "missing data" for purposes of calculating annual emissions.

d. Annual emissions shall not include data from periods of time when emissions are in excess of the calibrated span of the CEMS. These periods of time shall be considered "missing data" for purposes of calculating annual emissions.

[Rules 62-212.400(PSD) and 62-4.070(3), F.A.C.]

21. Accounting for Missing Data: All valid measurements collected during each hour shall be used to calculate a 1-hour block average that begins at the top of each hour. For each hour, the 1-hour block average shall be computed from at least two data points separated by a minimum of 15 minutes. If less than two such data points are available, the permittee shall account for emissions during that hour using site-specific data to generate a reasonable estimate of the 1-hour block average. [Rule 62-4.070(3), F.A.C.]

22. Emissions Calculation: Annual emissions shall be calculated as the sum of all valid emissions occurring during the year. [Rules 62-212.400(PSD) and 62-4.070(3), F.A.C.]

Reporting Annual Emissions: The permittee shall use data from each required CEMS when calculating annual emissions for purposes of computing actual emissions, baseline actual emissions, and net emissions increase, as defined at Rule 62-210.200, F.A.C., and for purposes of computing emissions pursuant to the reporting requirements of Rules 62-210.370(3) and 62-212.300(1)(e), F.A.C. [Rules 62-212.400(PSD) and 62-4.070(3), F.A.C.]