TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Buckeye Florida, Limited Partnership
One Buckeye Drive
Perry, Florida 32348

Foley Mill
ARMS Facility ID No. 1230001

PROJECT

Project No. 1230001-034-AC
Application for Air Construction Permit
Oxygen Delignification System prior to Purification Plant No. 2

COUNTY

Taylor

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Northeast District Office
Air Resources Section
7625 Baymeadows Way, Suite 200B
Jacksonville, Florida 32256-7590

October 10, 2011

1. GENERAL PROJECT INFORMATION

Air Pollution Regulations

Projects with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Rules 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial activities. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations on a quarterly basis in Rule 62-204.800, F.A.C.

Facility Description and Location

The applicant operates an existing Pulp Mill (SIC No. 2611) at One Buckeye Drive, Perry, Taylor County, Florida 32348. This facility is located east of US 19, south of SR 30, southeast of Perry, Taylor County; UTM Coordinates: Zone 17, 256.7 km East and 3328.7 km North; Latitude: 30°03'59" North and Longitude: 83°33'12" West. This site is an area that is in attainment (or designated as unclassifiable) for all pollutants subject to a National Ambient Air Quality Standard (NAAQA).

Existing Process Description

Buckeye Florida, Limited Partnership Foley Mill operates an existing dissolving grade Kraft process pulp mill. In the Kraft process, the digesting liquor (white liquor) is a solution of sodium hydroxide and sodium sulfide that is mixed with wood chips and cooked under pressure. The spent liquor, known as weak black liquor, is concentrated and sodium sulfate is added to make up for chemical losses. The black liquor solids (BLS) are burned in the recovery furnaces to produce a smelt of sodium carbonate and sodium sulfide. The smelt is dissolved in water to form green liquor to which quicklime (calcium oxide) is added to convert the sodium carbonate back to sodium hydroxide, which reconstitutes the cooking liquor. The spent lime cake (calcium carbonate) is recalcined in a rotary lime kiln to produce quicklime, which is used to convert the green liquor to cooking liquor. Steam and energy needs at the plant are met by: combination boilers, which burn bark/wood, tall oil, supplemental residual oil; power boilers, which burn residual oil, tall oil, natural gas; and recovery boilers, which burn BLS, tall oil, and supplemental ultra low sulfur diesel and residual oil.

Facility Regulatory Categories

- The facility is a major source of hazardous air pollutants (HAP).
- The facility does not operate units subject to the acid rain provisions of the Clean Air Act.

- The facility is a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility is a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

Project Description

The applicant has proposed that an oxygen delignification system be installed prior to the bleaching stages of the existing No. 2 Purification Plant. An oxygen delignification system includes equipment that mixes and reacts oxygen with the pulp, separates the waste steam and gases after the reaction, and washes the dissolved lignin material , other organics, and the spent alkali from the pulp. The material is sent back to the chemical recovery system for processing. No increase in black liquor solids combustion will occur because of minor changes to the digester cooking process which will result in no net increase in black liquor solids generated.

Pulp from the brown stock washers will continue to be fed to the existing bleach feed tank. Instead of being directly sent to the bleaching stages of the existing No. 2 Purification Plant, a 10 percent hydrogen peroxide, magnesium sulfate, and a 8.5 percent caustic solution will be injected into the pulp feed line as the pulp leaves the bleach feed tank on its route to a newly installed extraction stage, referred to as the O2 stage pretube tower. Ninety percent oxygen will be injected into a mixer located just below the O2 stage pretube tower. This mixture (pulp, oxygen, and added chemicals) will be maintained in the upflow O_2 stage where approximately 45% delignification will occur. The existing Tower 15 from the No. 2 Purification Plant will be used for the downflow section (O2 Stage Tower 15) where the remaining delignification of the pulp occurs. Gaseous emissions from the O2 Stage Tower 15 are vented to the atmosphere through the existing E-Stage vent fan in the No. 2 Purification Plant.

The pulp, now delignified, will then undergo a two stage washing process. The delignified pulp is first fed to the O_2 Stage Washer 16, which is an existing washer that will be relocated from the No. 2 Purification Plant to the delignification area. This washer will utilize recycled filtrate from the new twin roll press (see below) filtrate tank for washing. The pulp will then continue to a new O_2 stage twin roll press for further washing with water from evaporative condensate and the No. 2 filtrate cooler.. These waters will not contain high levels of reduced sulfur compounds. The delignified pulp then continues on to the existing stages of the purification (bleaching) process in the No. 2 Purification Plant.

The O_2 delignification plant will result in a lower Kappa number signifying a lower lignin content of the pulp entering the No. 2 Purification Plant. This should lessen the quantity of bleaching chemicals needed in the bleaching process, and thereby cause a reduction in the quantity of air pollutants generated in the bleaching plant. The liquid effluent quality will also improve since less bleaching chemicals will be required. The applicant also states that less steam will be required in the bleaching plant because of a lowered demand for hot water and bleaching chemicals.

The O_2 stage tower 15, the O_2 stage seal box 16 (follows the O2 Stage Washer 16), and the O_2 stage #2 WW chest (follows the O2 Stage New Twin Roll Press) will be vented to the atmosphere through the existing E-Stage vent fan in the No. 2 Purification Plant. The emissions are not scrubbed or controlled. The O_2 stage washer 16 and the O_2 stage twin roll press gaseous emissions will both be vented to the existing No. 2 Purification Plant scrubber. It is noted that 40 CFR 63, Subpart S does not require O_2 stage washer 16 and the O_2 stage twin roll press gaseous emissions units to be vented to the scrubber. Although the emissions from the Oxygen Delignification System are required to be captured and sent

to a control device the applicant will use the Clean Condensate Alternative technology to comply with the requirements.

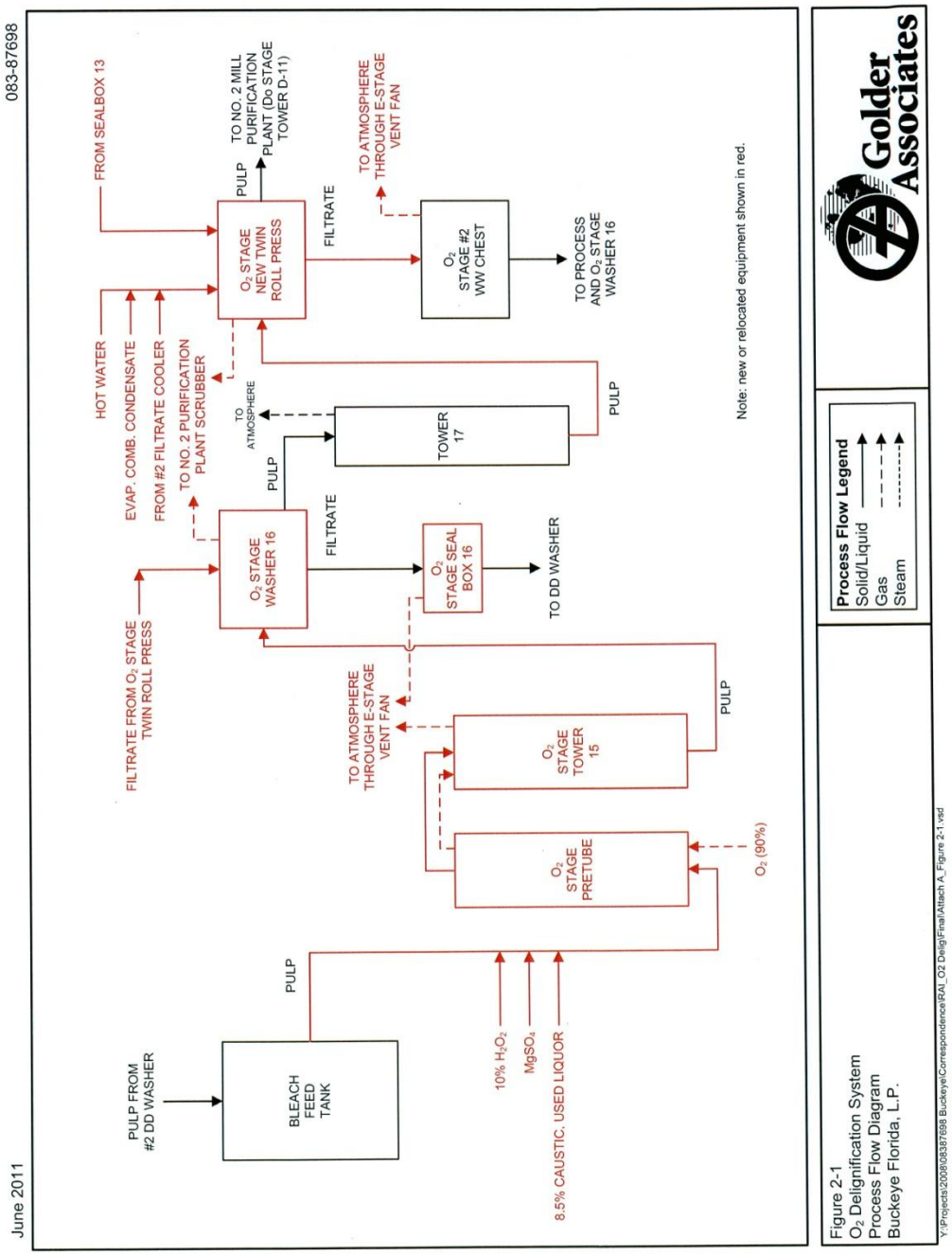
Installation and operation of the Oxygen Delignification System will result in th emissions of VOCs, TRS, CO, and HAPs.

Proposed Work

Oxygen Delignification System: The permittee is authorized to conduct this project as follows:

- Construct and operate (for purposes of start-up and shakedown) the Oxygen Delignification System and associated appurtenances
- For the proposed project, the application documents the baseline actual emissions from the No. 2 Purification Plant ,the projected actual emissions from the No. 2 Purification Plant, the baseline emissions from the Oxygen Delignification System (equal to zero), and the potential emissions from the Oxygen Delignification System.

Oxygen Delignification System Flow Diagram



Processing Schedule

03/09/2011	Department received the application for a minor source air pollution construction permit.
04/06/2011	Department requested additional information.
06/28/2011	Department received additional information.
07/27/2011	Department issues 2nd request for additional information.
10/05/2011	Department received additional information, application deemed complete.

2. PSD APPLICABILITY

General PSD Applicability

The Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. A PSD applicability review is required in areas currently in attainment with the state and federal AAQS or areas otherwise designated as "unclassifiable". A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit: 5 tons per year or more of lead; 250 tons per year or more of any regulated air pollutant; or 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the 28 PSD-major facility categories (fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants, and charcoal production plants.). Projects at existing or new major stationary sources are subject to PSD preconstruction review. In addition, proposed projects at existing minor sources are subject to PSD preconstruction review if potential emissions *from the proposed project* will exceed the PSD major stationary source thresholds.

Once a project becomes subject to PSD preconstruction review, each PSD pollutant is reviewed for PSD applicability based on emissions thresholds known as the "significant emission rates" defined in Rule 62-210.200, F.A.C. for the following pollutants: carbon monoxide (CO); nitrogen oxides (NO_X); sulfur dioxide (SO_2); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM_{10}); volatile organic compounds (VOC); lead (Pb); Fluorides (F); sulfuric acid mist (SAM); hydrogen sulfide (H_2S); total reduced sulfur (TRS), including H_2S; reduced sulfur compounds, including H_2S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO_2 and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as nonmethane organic compounds (NMOC); and mercury (Hg). Pollutant emissions from the project exceeding these rates are considered "significant" and the applicant must employ the Best Available Control Technology (BACT) to minimize emissions

of each such pollutant and evaluate the air quality impacts. Although a facility or project may be *major* with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants.

PSD Applicability for Project

The project involves the installation of an Oxygen Delignification System, a new emissions source. The existing No. 2 Purification Plant is an emission unit affected by this project. Since a new and an existing source are involved in this project the Hybrid Test for Multiple Types of Emissions Units (Rule 62-212.400(2)(a)3., F.A.C.) is applicable. For the new Oxygen Delignification System the baseline emissions are zero (0) tons per year (TPY) and the projected actual emissions are equivalent to its potential emissions for PSD applicability review purposes. For the existing No. 2 Purification Plant the applicant has chosen the two year period of 2004/2005 calendar years as the baseline emission period. It is noted that HAP emissons are not a PSD pollutant and therefore are not part of the PSD applicability review.The baseline emissions for the emission units involved are presented below in Table A:

Pollutant	Table A: Baseline Actual Annual Emissions, Tons/Year	
	Oxygen Delignification System	No. 2 Purification Plant
CO	0	145.46
VOC	0	8.68
TRS	0	1.65

Note: Emission factors used to calculate emissions are taken from the National Council for Air and Stream Improvement (NCASI) Technical Bulletin Nos. 884 and 973 and from the application (including additional information received).

Three PSD pollutants could potentially increase as a result of this project: CO, VOC, and TRS. The potential emissions for the Oxygen Delignification System and the Projected Actual Emissions for the No. 2 Purification Plant are presented in Table B:

Pollutant	Table B: Projected Actual Annual Emissions, Tons/Year		
	[1]Oxygen Delignification System	No. 2 Purification Plant	Summary of Emissions
CO	8.95	124.02	132.97
VOC	38.79	8.68	47.47
TRS	3.80	1.65	5.45

[1] Potential Emissions

Note: Emission factors used to calculate emissions are taken from the National Council for Air and Stream Improvement (NCASI) Technical Bulletin Nos. 884 and 973 and from the application (including additional information received).

Table C provides the emission summary and PSD applicability determination for the project:

Pollutant	Table C: Actual Annual Emissions Summary and PSD Analysis, Tons/Year				
	Baseline Actual Emissions	Projected Actual Emissions	Project Increase	PSD Significant Emissions Rate	Subject to PSD?
CO	145.46	132.97	(12.49)	100	No
VOC	8.68	47.47	38.79	40	No
TRS	1.65	5.45	3.80	10	No

PSD does not apply since the project emission increases (deacreases) of the three affected pollutants were not at significant levels.

National Emission Standards for Hazardous Air Pollutants (NESHAPS) Applicability

40 CFR 63, Subpart S, National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry

HAPs emitted by the Oxygen Delignification System are listed as follows:

Pollutant	Potential HAP Emissions, Tons/Year
	Oxygen Delignification System
Methanol	*143.23
Total HAPs	*149.19

Note: Emission factors used to calculate emissions are taken from the National Council for Air and Stream Improvement (NCASI) Technical Bulletin Nos. 884 and 973 and from the application (including additional information received).

*Methanol is approximately 96% of total HAPs.

In accordance with 40 CFR 63.443(a)(1) (c), and (d) the Oxygen Delignification System gaseous HAP emissions shall be captured, vented , and controlled. In accordance with 40 CFR 63.443(d) a reduction of 98% by weight, or, incineration in a thermal oxidizer, or combustion in a lime kiln, recovery furnace, or boiler is the required control method. An **alternative** to the capture, vent and control requirement is the use of the Clean Condensate Alternative (CCA) Technology option. The CCA allows mills to control HAP emissions by reducing the amount of HAPs that are volatilized from selected process equipment (such as the wastewater treatment lagoon) instead of using combustion devices to control

HVLC system vent streams. By reducing the HAP concentration in the selected process equipment (such as the wastewater treatment lagoon), the amounts of volatilized HAPs are also reduced.

The Oxygen Delignificaton System is included as part of the MACT I, Phase 2 requirements and will be incorporated into the applicable emisson unit in the Title V Air Operating permit (EU No. 046). In accordance with 40 CFR 63.447 (CCA) the facility must demonstrate that HAP emission reductions using the Clean Condensate Alternative Technology are equal to or greater than those emission reductions that would have been achieved through compliance with the 40 CFR 63.443(a)(1) (c), and (d) requirements of capture, vent, and control.

Buckeye has chosen to use this choice to comply with the required HAP emission reduction requirements for the Oxygen Delignification system installation. Based upon the stated total HAP emission rate of 149.19 tons per year, an annual reduction of total HAPs in the amount of approximately **146.21 tons** (149.19 x 0.98 reduction) will be required. .

The 40 CFR 63.447 standards requires that the CCA HAP emission reductions be calculated and measured in terms of pounds per ton of Oven Dried Pulp. Based upon the conservative estimate of the minimum, mill-wide pulp production of 500,000 ADTUP per year, the required HAP emission reductions due to installation of the Oxygen Delignificaton System have been determined to be **0.64 lbs/ODTUP.**

Buckeye is currently using the CCA option to comply with 40 CFR 63.443 requirements as it pertains to the HAP emissions from the Nos. 1 and 2 Brown Stock Washer Systems (BSW). The required HAP emission reductions from the BSW system were determined to be **0.08 lbs/ODTUP** by the applicant. The required reductions were achieved through the CCA option as demonstrated through monitoring and testing required by the Subpart.

Note: See Appendix C of addtional information received June 28, 2011 and additional information received October 5, 2011.

Upon start-up of the oxygen delignification system Buckeye shall be in compliance with the applicable sections of 40 CFR 63, Subpart S including but not limited to the **0.64 lbs total HAPs/ODTUP** reductions in addition to the **0.08 lbs/ODTUP** HAP emission reductions from the BSW system . In accordance with the General Provisions of Subpart A, demonstration compliance shall be made within 180 days after start-up of the oxygen delignification system.

Performance testing currently required by the Title V Air Operating Permit No. 1230001-031-AV to demonstrate compliance with CCA technology requirements for the Brown Stock Washer systems and the kraft pulping system condensate requirements may also be used for the inital demonstration of compliance testing for the Oxygen Delignification System provided it occurs during the 180 day period after start-up of the Oxygen Delignification System. Applicable calculations derived from testing report data shall be provided demonstrating reductions achieved.

Pursuant to Rule 62-212.400, F.A.C., Buckeye Florida, Limited Partnership provided information to show that the project will not exceed the significant emissions rates that require preconstruction review for the Prevention of Significant Deterioration (PSD) of Air Quality. Therefore, the project requires a minor air construction permit to authorize the construction of the Oxygen Delignificaton System Project. Pursuant to Rule 62-212.300(1)(e), F.A.C., the applicant shall provide reports in summarizing actual emissions (CO, VOC, and TRS) computed in accordance with the requirements of Rule 62-210.370, F.A.C. for each year during the 5-year period following completion of the project.

NSPS Applicability

There is not a NSPS Source category pulp and paper mills Oxygen Delignificaton Systems.

APPLICABILITY OF PREVIOUS PERMITS

Existing Permits and Regulations: The conditions of this permit supplements all other previously issued air construction and operation permits for these emission units. These conditions are in addition to all other applicable permit conditions and regulatory requirements. The Permittee shall continue to comply with the conditions of those permits, which include restrictions and standards regarding capacities, production, operation, fuels, emissions, monitoring, recordkeeping, reporting and the like.

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. No air quality modeling analysis is required because the project does not result in a significant increase in emissions.

Jerry Woosley is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Florida Department of Environmental Protection, Northeast District Office, 7525 Baymeadows Way, Suite 200B, Jacksonville, FL 32256-7590, Phone: 904/256-1700.