TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

RockTenn CP, LLC
One Everitt Avenue
Panama City, Florida 32402

Panama City Mill
Facility ID No. 0050009

PROJECT

Project No. 0050009-037-AC
Application for Title V Source Air Construction Permit
No. 4 Boiler Biomass Feed System Upgrade

COUNTY

Bay County, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Waste Management/Air Resources Program
Northwest District Office
160 West Government Street, Suite 308
Pensacola, Florida 32502-5740

August 1, 2014

1. GENERAL PROJECT INFORMATION

Air Pollution Regulations

Projects at stationary sources 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 applicable 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 categories. 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.

Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

Facility Description and Location

RockTenn CP, LLC is an existing Pulp and Paper Facility, which is categorized under Standard Industrial Classification Codes No. 2611, Pulp Mills, and 2621, Paper Mills. The facility is located in Bay County at One Everitt Avenue in Panama City, Florida. The UTM coordinates of the existing facility are Zone 16, 632.8 km East, and 3335.1 km North. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS).

Facility Regulatory Categories

- The facility is a major source of hazardous air pollutants (HAP).
- The facility has no 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 proposes to replace the No. 4 Combination Boiler mechanical biomass fuel distributors with air swept biomass feed spouts to improve control of the biomass feed rate and distribution of the biomass over the stoker grate. Additionally, the applicant proposes to install three new oxygen analyzers at the No. 3 Boiler and No. 4 Boiler outlets to allow automation of combustion air control system for the Boilers, and to upgrade the existing Prism System used for monitoring the operating parameter data that is required by 40 CFR 63, Subpart DDDDD. Installation of the new air swept biomass feed spouts is expected to improve boiler efficiency, but the project will not increase the heat input to the boiler or the amount of wood burned.

The No. 3 and No. 4 Combination Boilers are subject to the requirements of 40 CFR 63, Subpart DDDDD – NESHAP for Industrial, Commercial and Institutional Boilers and Process Heaters, referred to as Major Source Boiler MACT. The compliance date for the regulation is January 31, 2016.

Changes included in this project are as follows:

1. No. 3 Combination Boiler –This project revises the emission unit description to include the boiler reclassification as a hybrid suspension grate (HSG) boiler when burning biomass as fuel, as defined by Boiler MACT. Additionally, the project will to install three new oxygen analyzers at the No. 3 Boiler outlet to allow automation of the combustion air control system for the No. 3 Boiler, and upgrade the existing Prism System, used for monitoring the operating parameter data for the No. 3 Boiler that is required by Boiler MACT.

2. Combination Boiler No. 4 – Install air swept biomass feed spouts to allow more accurate control of the biomass feed rate and distribution of the biomass over the stoker grate, and reclassify the No. 4 Boiler as an HSG boiler when burning biomass as fuel, as defined by Boiler MACT. Additionally, the project will install three new oxygen analyzers at the No. 4 Boiler outlet to allow automation of the combustion air control system for the No. 4 Boiler, and upgrade the existing Prism System, used for monitoring the operating parameter data for the No. 4 Boiler that is required by Boiler MACT.

3. The pollutants regulated by Boiler MACT have been included in this permit, including emissions limits for hydrogen chloride, mercury, and carbon monoxide. Currently permitted particulate matter emissions limits are more stringent than Boiler MACT limits.

4. Update emission factors for both boilers to incorporate the most recent publications of industry-specific data (i.e. National Council for Air and Stream Improvement Inc.) or US EPA AP-42.

FDEP has determined that the proposed modifications to the No. 4 Combination Boiler (EU 016) will reclassify the boiler as an HSG burner designed to burn wet biomass/bio-based solid fuel, as defined by Boiler MACT. FDEP has also determined that the No. 3 Combination Boiler (EU 015) meets the definition of a hybrid suspension grate burner designed to burn wet biomass/bio-based solid fuel, as defined by Boiler MACT. (The determination was received by the Applicant on April 14, 2014 in an email from Jeff Koerner at FDEP).

Compliance with 40 CFR 63, Subpart DDDDD

The 40 CFR 63, Subpart DDDDD compliance date for the No. 3 and No. 4 Combination Boilers is January 31, 2016. Pursuant to Application 0050009-037-AC, received July 1, 2014, the applicant proposes to use the following controls to comply with Boiler MACT:

- Utilize a scrubber liquid flow monitor and a scrubber liquid pressure drop monitor for compliance with PM limits.
- Utilize a pH monitor, a scrubber liquid flow monitor, and a scrubber liquid pressure drop monitor for compliance with HCl limits.
- Utilize an oxygen analyzer system for compliance with CO limits.

40 CFR Part 241 – Non-hazardous Secondary Material (NHSM)

All fuels burned in the Nos. 3 and 4 Combination Boilers are not classified as “solid waste” and therefore, both boilers are subject to NESHAP DDDDD requirements. The table below shows the permitted fuels and basis for applicability to the Boiler MACT standard.

Description of Fuel Permitted	No. 3 Boiler	No. 4 Boiler	Basis for Coverage Under Boiler MACT Standard
Wood	√	√	Meets the definition of "Biomass or Bio-based Solid fuel" under 63.7575
Bark	√	√	Meets the definition of "Biomass or Bio-based Solid fuel" under 63.7575
Coal	√	√	Meets the definition of "Coal" under 63.7575
Natural Gas	√	√	Meets the definition of "Natural Gas" under 63.7575
No. 2 Oil	√	√	Meets the definition of "Light Liquid" under 63.7575
No. 6 Oil	√	√	Meets the definition of "Heavy Liquid" under 63.7575
Primary Clarified Wood Fibers	√	√	NHSM Used as Fuels for "dewatered pulp and paper sludges that are not discarded and are generated and burned on-site by pulp and paper mills that burn a significant portion of such materials where such dewatered residuals are managed in a manner that preserves the meaningful heating value of the materials (February 7, 2013 Federal Register, Vol 78, No. 26 pg 9137). The Mill will document that the primary clarified wood fibers meet this categorical non-waste determination at least 6 months prior to the compliance date (January 31, 2016)
Secondary solids (residuals) from the aerated stabilization basin	√	√	Meets the Categorical Non-Waste Determinations for Specific NHSM Used as Fuels for "dewatered pulp and paper sludges that are not discarded and are generated and burned on-site by pulp and paper mills that burn a significant portion of such materials where such dewatered residuals are managed in a manner that preserves the meaningful heating value of the materials (February 7, 2013 Federal Register, Vol 78, No. 26 pg 9137). The Mill will document that Secondary solids (residuals) from the aerated stabilization basin meet this categorical non-waste determination at least 6 months prior to the compliance date (January 31, 2016).

Processing Schedule

July 1, 2014 Received the application for a minor source air pollution construction permit.

2. PSD APPLICABILITY

General PSD Applicability

For areas currently in attainment with the state and federal AAQS or areas otherwise designated as unclassifiable, 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. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 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 following 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.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to 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 non-methane organic compounds (NMOC); and mercury (Hg). In addition, significant emissions rate also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 kilometers of a Class I area and have an impact on such area equal to or greater than 1 $\mu g/m^3$, 24-hour average.

If the potential emission exceeds the defined significant emissions rate of a PSD pollutant, the project is considered "significant" for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions 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

This project affects only the biomass fuel feed system for the Boilers. TRS emissions are not included in the PSD applicability analysis because destruction of the non-condensable gases and stripper off-gases is not affected by this project.

Baseline Actual Emissions Calculations

The baseline actual emissions were calculated based on a consecutive 24-month period out of the previous 10 years (2004-2013). Actual emissions for each of these years were determined based on operating data, available stack test data, and emission factors taken from sources such as EPA and the National Council for Air and Stream Improvement (NCASI). Baseline actual emissions are included in Table A.

For each pollutant, the consecutive 2-year period with the highest average annual emissions was selected as the baseline actual emissions for the project. The 2-year periods selected for each pollutant are identified below.

- SO_2: 2006 to 2007
- NOX: 2004 to 2005
- CO: 2006 to 2007
- PM: 2006 to 2007
- PM10: 2005 to 2006
- PM2.5: 2006 to 2007
- VOC: 2004 to 2005
- SAM: 2006 to 2007
- Pb: 2006 to 2007
- F: 2004 to 2005
- GHG: 2005 to 2006

Table 1 includes stack test data for PM, NOx, CO, and VOC emissions from the No. 4 Combination Boiler. The boiler underwent a physical change in 2005 with improvements made to the overfire air system. Therefore, the stack test data prior to February 2006 were used to determine emissions for years 2004 and 2005. For years 2006 and beyond, PM, NOx, CO and VOC emissions were calculated using an emission factor based on the average of the stack test results listed in Table 1 below.

Table 1: Historic Stack Test Results for Boiler No. 4

	Stack Test Emissions Rate (lb/MMBtu)			
Test Date	**PM**	**NOx**	**CO**	**VOC**
Oct 2004	0.0483			
Feb 2005	0.0223	0.3759	0.1574	0.0024
Feb 2006	0.068	0.424	0.15	0.002
Apr 2006	0.039			
Oct 2006	0.0516			
Jun 2007	0.014			
Oct 2008	0.0244			
Nov 2009	0.0298			
Nov 2010	0.0314			
Nov 2011	0.024			
Jan 2012	0.0262			
Aug 2013	0.055	0.26	0.445	
Nov 2013	0.0478			
2003 – 2005 Averaging Period	**0.0353**	**0.376**	**0.157**	**0.0024**
2006 – 2013 Averaging Period	**0.0374**	**0.342**	**0.298**	**0.0020**

Note: Stack tests conducted in 2006 and later are representative of current Mill operations.

The continuous emissions monitoring system (CEMS) for sulfur dioxide (SO_2) was installed in 2006. For years 2006 and beyond, SO_2 emissions were calculated using an emission factor based on historic SO_2 CEMS data, listed in Table 2 below.

Table 2: Historic SO_2 CEMS Data for Boiler No. 4

Year	**Average SO_2 CEMS Data (lb/MMBtu)**
2006	1.016
2007	1.170
2008	1.016
2009	0.971
2010	0.846
2011	0.853
2012	0.589
2013	0.559
Average:	**0.878**

For years 2004 and 2005, the following sources of emission factors for each fuel were used:

- No.6 fuel oil – US EPA's *Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources*, Fifth Edition (AP-42), Chapter 1.3, Table 1.3-1, and the annual recorded sulfur content of the fuel burned.

- Natural gas – AP-42, Chapter 1.4, Table 1.4-2.

- Coal – NCASI Technical Bulletin No. 1020, *Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers*, Table 10.3 for boilers burning pulverized coal as fuel.

- Biomass – NCASI, Technical Bulletin No. 1020, Table 10.4.

Projected Actual Emissions Calculations

Projected actual emissions for the No. 4 Combination Boiler were developed based on the highest historic fuel usage rate. The maximum annual heat input rate occurred in 2005 and was calculated to be 3,245,592.2 MMBtu/yr. To obtain future annual fuel usage rates for each fuel, the trend in fuel usage was analyzed to determine current and future usages. In 2013, the Mill replaced the bark bin serving No. 4 Boiler (Permit No. 0050009-036-AC). As a result, the Mill has decreased the amount of coal and has increased the amount of biomass used as fuel. The following percentages were used to determine the annual usage rate for each fuel:

- No. 6 fuel oil: 2 percent of the total heat input (64,912 MMBtu/yr)
- Natural gas: 8 percent of the total heat input (259,647 MMBtu/yr)
- Coal: 35 percent of the total heat input (1,135,957 MMBtu/yr)
- Biomass: 55 percent of the total heat input (1,785,076 MMBtu/yr)

The emission factors used to calculate the projected actual emissions were the same as those used to calculate the baseline actual emissions. Projected actual emissions are included in Table A.

PSD Review

As provided in the application, the following table summarizes potential emissions and PSD applicability for the project.

Table A. Actual Emissions (Baseline vs Projected) and PSD Applicability

Pollutant (TPY)	**Baseline Actual Emissions (BAE)**	**Projected Actual Emissions (PAE)**	**Emissions Change**	**Significant Emissions Rate**	**Subject to PSD**
SO_2	1,688.9	1,424.3	-264.6	40	NO
NO_X	597.5	555	-42.5	40	NO
CO	463.3	482.8	19.5	100	NO
PM	58.2	60.7	2.5	25	NO
PM_{10}	78.7	77.4	-1.3	15	NO
$PM_{2.5}$	69.7	71.9	2.2	10	NO
VOC	3.81	3.25	-.06	40	NO
SAM	75.8	63.4	-12.4	40	NO
Pb	3.76E-02	4.15E-02	0.004	6.00E-01	NO
F	5.27	3.44	-1.83	3	NO
CO_2	319,161.4	321,259.3	2,097.9		
CH_4	31.3	28.4	-2.9		
N_2O	8.3	9.14	0.9		
GHG	319,200.3	321,296.9	2,096.6		

Pollutant (TPY)	Baseline Actual Emissions (BAE)	Projected Actual Emissions (PAE)	Emissions Change	Significant Emissions Rate	Subject to PSD
CO_2e	322,356.7	324,692.5	2,335.8	75,000	NO

This facility is a major stationary source for PSD, emitting more than 250 tons per year of SO_2, NO_X and CO. A PSD applicability analysis for the proposed project uses the baseline actual-to-projected actual emissions comparison allowed by Rule 62-212.400(2)(a)1., F.A.C. The emissions comparison shows all emissions increases due to the project are less than PSD significant emissions rates. Therefore, this project is not subject to PSD review.

3. APPLICATION REVIEW

Application Fee

Title V Facility - No fee required.

Discussion of Emissions

All fuels burned in the Nos. 3 and 4 Combination Boilers are not classified as "solid waste" and therefore, both boilers are subject to 40 CFR 63, DDDDD.

The No. 3 Combination Boiler has been defined as a hybrid suspension grate boiler when firing biomass fuels, in accordance with 40 CFR 63, Subpart DDDDD. The pollutants regulated by Subpart DDDDD have been included in this permit application, including emissions limits for hydrogen chloride, mercury, and carbon monoxide. Currently permitted particulate matter emissions limits are more stringent than NESHAP DDDDD limits.

Modifications to No. 4 Combination Boiler includes the installation of air swept biomass feed spouts, and reclassification of the boiler as a hybrid suspension grate boiler when burning biomass as fuel, in accordance with 40 CFR 63, Subpart DDDDD. Emissions limitations from Subpart DDDDD are included in this application, including hydrogen chloride, mercury and carbon monoxide.

State Requirements

Rules 62-296.410, Carbonaceous Fuel Burning Equipment, and 62-296.404, Kraft Pulp Mills, F.A.C.

Federal NSPS Provisions

40 CFR 60, Subpart A – General Provisions
40 CFR 60, Subpart BB – Standards of Performance for Kraft Pulp Mills

Federal NESHAP Provisions

40 CFR 63, Subpart S – HAP from Pulp and Paper Industry
40 CFR 63, Subpart MM – Chemical Recovery Combustion Sources
40 CFR 63, Subpart DDDDD – Industrial, Commercial, and Institutional Boilers and Process Heaters
40 CFR 63, Subpart ZZZZ – NESHAP for Stationary Reciprocating Internal Combustion Engines

Other Draft Permit Requirements

There are no other draft permit requirements.

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. Howard Ard 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 850.595.0622 or howard.ard@dep.state.fl.us.