TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Georgia Pacific Consumer Operations, LLC
P.O. Box 919
Palatka, FL 32178-0919

Palatka Mill
Facility ID No. 1070005

PROJECT

Project No. 1070005-066-AC
Application for Minor Source Air Construction Permit
Natural Gas Burners at No. 4 Combination Boiler
New Source Review Reform Project

COUNTY

Putnam County, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Division of Air Resource Management
Bureau of Air Regulation
New Source Review Section
2600 Blair Stone Road, MS#5505
Tallahassee, Florida 32399-2400

Revised
March 31, 2011

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

The Palatka Mill is an existing Kraft pulp and paper mill, which is categorized under Standard Industrial Classification Code No. 2611. The existing Palatka Mill is located in Putnam County at 215 County Road 216 in Palatka, Florida. The UTM coordinates of the existing facility are Zone 17, 434.00 km East and 3,283.4 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 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

On September 9, 2009 the Department issued permit No. 1070005-045-AC, PSD-FL-393 which allowed several modifications to the No. 4 combination boiler in two phases. Phase 1 included upgrades to the bark/wood delivery/storage, increased bark/wood firing rate, addition of an over-fire air system, new mechanical collectors to replace the existing pre-cleaner, bottom ash handling system, ductwork between the No. 4 Combination Boiler and No. 5 Power Boiler and ductwork to assist the over fire air system. Phase 2 included the conversion of the supplemental residual oil firing system for No. 4 Combination Boiler to natural gas and permanently discontinued use of residual oil. All of phase 1 work would be complete before phase 2 modifications would begin construction. The permittee did not start any of the modifications within 18 months of the permit issuance. The project was subject to PSD preconstruction review because of the increased bark feed rate and no work was done under this permit. As part of this permit application, the permittee requested PSD-FL-393 be surrendered (Part B, Page 4 of the application).

This new application contains three modifications originally permitted under permit No. 1070005-045-AC: 1) convert the supplemental residual oil burners for No. 4 Combination Boiler to natural gas burners and permanently discontinue use of residual oil; 2) replace 28 continuous tube sections in the boiler's superheater section; and 3) upgrades to the existing mechanical dust collection system and replacement of the existing steam turbine-driven induced draft fan with an electric motor to recover bark/wood firing capacity lost due to down time of the existing drive system.

Processing Schedule

January 10, 2011	Received the application for a minor source air pollution construction permit.
January 20, 2011	Conference call with the permittee. Additional information provided by the applicant.
February 9, 2011	Application complete.

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:

- 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 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 emissions exceed 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

As provided in the application, the following table 1 summarizes potential emissions and PSD applicability for the project. The footnotes below discuss the methodology of determining the 'could have accommodated' bark/wood firing capacity of the unit. This information can also be found in Table 4-9 of the application.

Table 1- Summary of the Applicant's PSD Applicability Analysis

Pollutant	Annual Emissions, Tons/Year					Subject to PSD?
	Baseline Actual	Demand Growth	Projected Actual	Increase	Significant Emissions Rate	
CO	817.65	46.55	932.50	68.30	100	No
NO_X	398.75	0	426.19	27.44	40	No
PM	139.12	0	140.08	0.96	25	No
PM_{10}	108.39	0	110.96	2.57	15	No
$PM_{2.5}$	96.62	0	100.88	4.26	10	No
SO_2	827.99	0	37.61	-790.38	40	No
SAM	36.82	0	1.67	-35.15	7	No
VOC	46.33	2.65	52.78	3.8	40	No
Pb	.01000	0	0.0076	-0.0024	0.6	No
Hg	0.0010	0	0.0009	-0.0001	0.1	No
F	0.084	0	0	-0.084	3	No

- Activity factors based on annual heat input rate that could have been accommodated during the baseline period due to bark burning (3,239,946 MMBtu/yr for 2002-2003; 3,501,937 MMBTU/yr for 2004-2005). Because the heat input rate that could have been accommodated due to bark burning is higher than the projected actual heat input rate, the heat input rate was reduced to the projected actual heat input rate (2,992,500 MMBtu/yr; see Table 4-7 of the application) minus the restored heat input rate (111,825 MMBtu/yr). The restored heat input rate is based on recovering 35 TPD of bark/wood burning capacity as a result of the dust collector and ID fan projects, and a total of 355 days/year operation.
    - Restored Heat Input Rate: 35 TPD x 355 day/yr x 9 MMBtu/ton = 111,825 MMBtu/yr
    - Could have accommodated: 2,992,500 MMBtu/yr – 111,825 MMBtu/yr = 2,880,675 MMBtu/yr

As shown in the above table, total project emissions will not exceed the PSD significant emissions rates; therefore, the project is not subject to PSD preconstruction review. PM_{10} and particulate matter with a mean particle diameter of 2.5 microns or less ($PM_{2.5}$) were calculated using emission factors from AP-42 for both filterable and condensable emissions. The application showed that most all of the PM emissions were from bark/wood firing and not the fuel oil to natural gas conversion, and the recovered bark/wood firing would not trigger significant emission rates.

Additionally, the applicant provided a preliminary greenhouse gas (GHG) emission review for this project. The review addressed both Steps 1 and 2 of the EPA's tailoring rule. The significant emission rate for carbon dioxide equivalents (CO_2e) is 75,000 tons and the permittee is anticipating the overall GHG emissions would decrease due to the fossil fuel component of the boiler's fuel supply. Therefore, PSD review and BACT determination for GHG emissions will not be required for this project.

3. DEPARTMENT REVIEW

The No. 4 combination boiler is currently in operation at the Palatka Mill and is currently permitted to burn wood/bark and residual fuel oil. The permittee proposes four modifications to the existing unit in this project. The permittee proposes to discontinue the use of fuel oil as a supplemental fuel and instead fire natural gas in its place, upgrade the existing mechanical dust collection system, replace the existing steam turbine-driven induced draft fan-drive with an electric motor and replace 28 continuous tube sections in the boiler's superheater section.

The permittee will continue firing wood/bark as the primary fuel and fire natural gas as a supplemental fuel in lieu of fuel oil. The required annual heat input from natural gas will be the same as that of the fuel oil. The natural gas heat input rating for the burners is slightly higher than the fuel oil heat input rating (427 MMBtu/hr and 418 MMBtu/hr, respectively). Emissions from firing natural gas are not expected to exceed any significant emission rates and SO_2 and SAM emissions should decrease significantly.

The existing dust control system consists of three mechanical dust collectors followed by an electrostatic precipitator. The proposed upgrades to the existing mechanical dust collection system will modify the tertiary dust collector and convert the primary and secondary dust collectors to simple gas ducts. Modifications to the tertiary duct are expected to increase efficiency and reduce maintenance costs. Currently, the dust collection system is operating at 82% control. The vendor guarantees are 84% control so no increases in PM emissions are anticipated from this modification.

The permittee proposes to replace the existing steam-driven induced draft fan-drive with an electric fan motor and fan for increased efficiency and reduced maintenance. The flow rate for the proposed electric motor and ID fan will be the same as the existing fan and will result in the restoration of 35 tons/day of bark combustion within the boiler. The permittee excluded the restored bark rate when determining the 'could have accommodated' rate in its review of projected actual emissions, as it is related to the project. The applicant explains this concept in the footnotes provided in table 4-9 of the application as mentioned in the applicant analysis.

Finally, the permittee has determined that 28 continuous tube sections in the secondary superheater must be replaced in order to withstand the higher temperatures associated with burning natural gas. The work is considered routine maintenance by the permittee and was previously permitted by the Department under permit No. 1070005-038-AC, PSD-FL-380.

Project 1070005-045-AC, PSD-FL-393 was subject to PSD major review based on the revisions at Combination Boiler No. 4 including increased bark/wood firing rate. The applicant has since surrendered this permit and is no longer permitted to increase the bark/wood firing rate. The exclusion of the increase in bark/wood firing rate from this project will show a significant decrease in overall project emissions for this new application. The permittee submitted a revised PSD netting table to show that no changes in PSD applicability resulted in other previous projects as a result of surrendering the PSD permit.

The facility was also subject to Best Available Retrofit Technology (BART) review and the No. 4 combination boiler was analyzed for NO_X, SO_2, and PM emissions as part of the review. The permittee previously provided an air quality modeling analysis to demonstrate that this BART-eligible unit would not be subject to the BART requirements. This analysis remains valid.

The Department's review and analysis focused on actual increases due to the natural gas conversion and the recovered wood/bark firing with the installation of the proposed fan-drive replacement. In Table 2, the Department estimated the difference in emission by comparing the fuel oil baseline emission factors with the AP-42 emission factors for natural gas. As expected, the gas conversion provided large decreases in NO_X, PM/PM_{10}, SAM, SO_2, and VOC emissions. Emission factors provided by the applicant in Table 4.9 of the application were used to calculate projected actual emissions from the recovered bark/wood firing. The applicant estimated that the recovered heat input would be 111,825 MMBtu/year and potential emissions were calculated using the applicant's projected actual emission factors for each pollutant. As shown in the table 3 below, no pollutants were over the significant emission rates.

Table 2- Department's Emissions Comparison Between Fuel Oil and Natural Gas

	Emission Factor Fuel Oil (lb/MMBtu)	Heat Input MMBtu/yr	TPY Fuel Oil change	Emission Factor Natural Gas (lb/MMBtu)	Heat Input MMBtu/yr	TPY Natural Gas Change	TPY Change From Gas Conversion
CO	0.033	695007	11.47	0.1	695007	34.75	23.28
NO_X	0.31	695007	108.77	0.15	695007	52.13	-56.64
PM	0.038	695007	13.21	0.0076	695007	2.64	-10.57
PM_{10}	0.024	695007	8.34	0.0076	695007	2.64	-5.70
$PM_{2.5}$	0.015	695007	5.21	0.0076	695007	2.64	-2.57
SO_2	2.36	695007	820.11	0.0006	695007	0.21	-819.90
SAM	0.11	695007	36.49	0.000027	695007	0.0093	-36.48
VOC	0.0019	695007	0.66	0.0055	695007	1.91	1.25
Pb	0.000010	695007	0.0035	0.00000050	695007	0.00017	-0.0033
Hg	0.00000075	695007	0.00026	0.00000026	695007	0.000091	-0.00017
F	0.00025	695007	0.087	0	695007	0	-0.087

Table 3- Department's PSD Applicability Analysis

Pollutant	Annual Emissions, Tons/Year				Subject to PSD?
	TPY Change from Gas Conversion	Recovered Bark/Wood Change	Total Project Change	Significant Emissions Rate	
CO	23.28	33.60	56.88	100	No
NO_X	-56.64	78.27	21.63	40	No
PM	-10.57	5.14	-5.43	25	No
PM_{10}	-5.70	4.03	-1.67	15	No
$PM_{2.5}$	-2.57	3.69	1.12	10	No
SO_2	-819.90	1.40	-818.5	40	No
SAM	-36.48	0.06	-36.42	7	No
VOC	1.25	1.9	3.15	40	No
Pb[1]	-6.6 lb	0.6 lb	-6.0 lb	1,200 lb	No
Hg[1]	-0.34 lb	0.07 lb	-0.27 lb	200 lb	No
F	-0.087	0	-0.087	3	No

1- Emissions are stated in pounds per year.

Table 4- Comparison of Applicant's and Department's PSD Applicability

Pollutant	Applicant Analysis TPY	Department Analysis TPY
CO	68.30	56.88
NO_X	27.44	21.23
PM	0.96	-5.42
PM_{10}	2.57	-1.67
$PM_{2.5}$	4.26	1.12
SO_2	-790.38	-818.5
SAM	-35.15	-36.42
VOC	3.8	3.15
Pb	-4.8 lb	-6.0 lb
Hg	-.20 lb	-0.27 lb
F	-0.084	-0.087

The projected actual emissions calculated by the Department are relatively consistent with those of the applicant, and all projected actual emissions are well below the significant emission rates (Table 4).

The project will not be subject to any new emission rates since most all of the emission rates are expected remain the same or decrease after the conversion. The applicant will be required to submit annual reports for five years to verify emissions have not exceeded the significant emission rates.

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. Bobby Bull 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 Department's Bureau of Air Regulation at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400.