TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Rayonier Performance Fibers, LLC
PO Box 2002
Fernandina Beach, Florida 32035

Fernandina Beach Mill
ARMS Facility ID No. 0890004
Foot of Gum Street
Fernandina Beach, FL 32034

PROJECT

Project No. 0890004-034-AC
Application for Air Construction Permit
New Chlorine Dioxide Generator Plant No. 2

COUNTY

Nassau, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Northeast District Office
Air Resources Section
7625 Baymeadows Way, Suite B200
Jacksonville, Florida 32256-7590

September 07, 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 Process Description and Location

Rayonier is an acid sulfite based pulp mill using ammonia as a base chemical for the manufacture of dissolving pulps. This plant produces approximately 10 different grades of pulp. The pulp produced at this plant is used in products such as plastics, photographic film, LCD screens, paints, cigarette filters, pharmaceuticals, food productions, cosmetics and textiles. The mill is permitted to produce 165,852 ADMT of pulp on a 12 month rolling total basis.

The sulfite process utilizes a sulfurous acid and ammonium bisulfite cooking solution to chemically separate the lignin from the cellulose. Pine wood chips and cooking solution are cooked in the six (6) batch digesters. The cooking process requires approximately 6 hours to complete. The unbleached sulfite pulp and spent cooking solution (SSL- spent sulfite liquor) are separated over vacuum washers (red stock washers). The unbleached pulp is then sent into the screening area to remove any knots and tailings (uncooked, woody materials), while the SSL is pumped to the evaporators to concentrate the solids content before being burned in the recovery boiler. The collected knots and tailings are pressed for use as fuel in the No. 6 Power Boiler.

The sulfurous acid and ammonium bisulfite cooking solution is prepared in the "acid plant".

The unbleached pulp exiting the screening operation enters the bleach plant. The first stage in the bleaching plant is the Hot Caustic Extraction (HCE) stage. Caustic soda is used to remove hemi-cellulose (small chain cellulose molecules), from the pulp in small pressure vessels called HCE cells. The mill currently operates eight (8) such cells. The pulp is washed after this HCE stage. The spent solution, Hot Caustic Extract, is concentrated in a set of evaporators before being sold to Kraft mills for its sodium content and energy value.

Pulp leaving the HCE stage is further purified in continuous and batch stages using peroxide, chlorine dioxide, chlorine, sodium hydroxide, and sodium hypochlorite depending upon the pulp grade

specifications. Following these bleaching stages, the pulp passes through centrifugal dirt cleaners before being sent to the pulp machine. The pulp machine forms the sheet by draining water from the pulp slurry (containing 99% water) over a moving wire to a consistency of 50% water. The remainder of the water is removed by passing the pulp sheet over pressing and drying cylinders heated internally with steam. The pulp sheet, which contains approximately 7% moisture, is then wound onto a "jumbo" before being transported to the finishing room where the pulp sheet is cut into smaller rolls or sheets based on customer specifications. No coatings are used on any of the pulp grades produced by the mill.

The digestion, the HCE stage, and the pulp machine are high users of steam for heating. The steam is produced in the power boiler. Steam is also used to produce about 100 percent of the mill's electricity needs.

The recovery boiler provides steam for the evaporators and its emissions are scrubbed for sulfur dioxide recovery using an ammonia solution. The ammonium bisulfite produced in the scrubber is used for cooking acid make-up.

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

Rayonier Performance Fibers, LLC proposes to construct a new additional chlorine dioxide (ClO_2) generator plant (Plant No. 2) with a proposed capacity of approximately 24 tons per day (TPD) of ClO_2 generation. The existing plant will remain in production with an approximate capacity of 2.5 TPD of ClO_2 generation. The new ClO_2 generator plant is not intended or expected to result in an increase in mill pulp production capacity. The existing plant is listed as an unregulated emission unit in the Title V Air Operating Permit. Plant No. 2 will also be designated as an unregulated emission unit.

Pursuant to Rule 62-212.400, F.A.C., Rayonier Performance Fibers, LLC 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.

Proposed Work

New ClO_2 Plant No. 2: The permittee is authorized to relocate and reassemble an existing ClO_2 Plant at the Fernandina Beach mill. In conjunction with this plant a new ClO_2 storage tank will be constructed. Estimated capacity of this new tank is 40,000 gallons.

The ClO_2 production process for the new plant will be an "R8" process, which is based on the reduction of sodium chlorate by methanol in a strong sulfuric acid solution. Sodium chlorate, methanol, and sulfuric acid will be received and stored adjacent to the ClO_2 plant. Methanol will be stored in the mill storage tank already in place for the existing ClO_2 plant. ClO_2 produced by the proposed plant will be stored in the existing No. 2 ClO_2 storage tank (167,000 gallon capacity) and in a new No. 3 ClO_2 storage tank of approximately 40,000 gallon capacity. The existing No. 1 ClO_2

storage tank (20,000 gallon capacity) will be removed from service.

A sodium chlorate solution will be produced from dissolved chlorate crystals. The sodium chlorate solution, methanol, and sulfuric acid will be introduced into the generator system in the proper quantities to efficiently produce ClO_2 generator liquor. The generator liquor will be circulated through the ClO_2 generator (reactor) and will pass through a liquor heat exchanger (reboiler) where low pressure steam will increase the temperature of the slurry so that water will be evaporated upon exit from the reactor. The ClO_2 will flash off in the generator reaction. The relatively pure ClO_2 gas, which contains some air and water vapor, will then be passed into a ClO_2 absorption tower.

Chilled water will be introduced at the top of the tower and ClO_2 will be absorbed at a solution strength of less than 10 grams per liter. This solution is collected and piped to the ClO_2 storage tanks. The remaining gas leaving the ClO_2 absorption tower will go to a ClO_2 recovery system/vent scrubber where the remaining traces of ClO_2 and chlorine will absorbed. Gases from the ClO_2 storage tanks and other process vessels will also be vented to this scrubber, which uses a sodium bisulfite scrubbing media. A dedicated cooling tower will also be constructed for water conservation purposes.

The additional ClO_2 will supplement the use of elemental chlorine (Cl_2) in the bleach plant and may ultimately allow Rayonier Performance Fibers LLC to convert its bleaching operation to an elemental chlorine free (ECF) process. The reduction of use of chlorine (Cl_2) will result in the reduction of the emissions of Hazardous Air Pollutants from the bleaching plant. The new ClO_2 generator is also part of the Best Available Technology (BAT) determination included in the Florida Department of Environmental Protection (FDEP) National Pollutant Discharge Elimination System (NPDES) permit (pending).

Processing Schedule

06/23/2011	Department received the application for a minor source air pollution construction permit, application 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 following table summarizes the potential calculated changes (increases) in potential emissions attributable to the new ClO_2 generator project based on the application:

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Table A. Projected Emission Increases (Tons per Year) and PSD Applicability

Pollutant	Baseline Potential Emissions	Potential Emissions	Projected Increases	PSD Significant Emissions Rate	Subject to PSD?
[1]VOC	0	0.392	0.392	-	-
[2]VOC	0	0.500	0.500	-	-
Total	0	0.892	0.892	40	No

[1]Plant No. 1 VOC potential emissions (including methanol storage tank)

[2]Plant No. 2 potential emissions

3. FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) REVIEW

Brief Discussion of Emissions and PSD Applicability

The Department concurs with the above conclusion and summary of the project.

Potential VOC emissions were used for Plant No. 1 and Plant No. 2 as the worst case scenario. VOC emissions from Plant No. 1 included potential formic acid (also a VOC) emissions using the emission factor of 0.115 lbs of formic acid emitted per ton of ClO_2 produced. VOC emissions from the methanol storage tank were also included in plant No. 1 total emissions. EPA's TANKS Emission Estimation Software was used to calculate the methanol tank VOC emissions. Plant No. 2 formic acid emissions were calculated using the same factor as was used for the No. 1 Plant.

Based on the potential emissions summary, supporting information provided by the applicant, conclusions presented by the applicant, and the emissions summary presented above the Department concludes that the project does not trigger PSD preconstruction review.

Therefore, the project requires a minor air construction permit to authorize the construction of the new ClO_2 generator plant No. 2. The more conservative method of using the potential emissions of the new emissions unit and the potential emissions of the existing emission unit, which was affected, was used to determine PSD applicability. Since baseline actual to projected actual emissions were not used to determine the applicability status of PSD the permittee is not required to submit annual emission estimates of actual emissions.

NSPS Applicability

The NSPS does not have a source category for Chlorine Dioxide Generating Plants.

NESHAP Applicability

The NESHAP does not have a source category for Chlorine Dioxide Generating Plants. Maximum estimated emissions of Cl_2 from the project are 2.2 TPY as presented by the applicant. The Department concurs with this estimation.

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.