

**NORTH CAROLINA DIVISION OF AIR QUALITY**

**Application Review - Preliminary Determination**

Issue Date: ??

**Region:** Wilmington Regional Office  
**County:** Columbus  
**NC Facility ID:** 2400036  
**Inspector's Name:** Russell Morgan III  
**Date of Last Inspection:** 08/28/2017  
**Compliance Code:** 3 / Compliance - inspection

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Facility Data</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Permit Applicability (this application only)</b>                                                                                                                                                                                                                                                                                                                                |
| <p><b>Applicant (Facility's Name):</b> International Paper Riegelwood Mill</p> <p><b>Facility Address:</b><br/>                 International Paper Riegelwood Mill<br/>                 865 John L Riegel Road<br/>                 Riegelwood, NC 28456</p> <p><b>SIC:</b> 2621 / Paper Mills Exc Building Paper<br/> <b>NAICS:</b> 322121 / Paper (except Newsprint) Mills</p> <p><b>Facility Classification: Before:</b> Title V <b>After:</b> Title V<br/> <b>Fee Classification: Before:</b> Title V <b>After:</b> Title V</p> | <p><b>SIP:</b> 15A NCAC 02D .0530<br/> <b>NSPS:</b> N/A<br/> <b>NESHAP:</b> N/A<br/> <b>PSD:</b> Yes – CO, NOx, PM, PM<sub>10</sub>, PM<sub>2.5</sub> and CO<sub>2e</sub><br/> <b>PSD Avoidance:</b> N/A<br/> <b>NC Toxics:</b> N/A<br/> <b>112(r):</b> N/A<br/> <b>Other:</b> N/A</p> <p>Note: Evaluated unsafe health risk due to increased emissions from the modification.</p> |

|                                                                                                                           |                                                                                                     |                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Contact Data</b>                                                                                                       |                                                                                                     |                                                                                                                       | <b>Application Data</b>                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Facility Contact</b>                                                                                                   | <b>Authorized Contact</b>                                                                           | <b>Technical Contact</b>                                                                                              | <p><b>Application Number:</b> 2400036.18A<br/> <b>Date Received:</b> 02/21/2018<br/> <b>Application Type:</b> Modification<br/> <b>Application Schedule:</b> PSD</p> <p style="text-align: center;"><b>Existing Permit Data</b></p> <p><b>Existing Permit Number:</b> 03138/T41<br/> <b>Existing Permit Issue Date:</b> 06/10/2015<br/> <b>Existing Permit Expiration Date:</b> 04/30/2017</p> |
| Kimberly Fail<br>Environmental<br>Compliance Manager<br>(910) 362-4753<br>865 John L. Riegel Road<br>Riegelwood, NC 28456 | Floyd Whitmire<br>Mill Manager<br>(910) 362-4880<br>865 John L. Riegel Road<br>Riegelwood, NC 28456 | Kevin Spargo<br>Senior Environmental<br>Engineer<br>(910) 362-4918<br>865 John L. Riegel Road<br>Riegelwood, NC 28456 |                                                                                                                                                                                                                                                                                                                                                                                                |

**Total Actual emissions in TONS/YEAR:**

| CY   | SO2     | NOX     | VOC     | CO      | PM10   | Total HAP | Largest HAP                            |
|------|---------|---------|---------|---------|--------|-----------|----------------------------------------|
| 2016 | 995.69  | 1640.29 | 2394.79 | 1412.55 | 379.11 | 1110.86   | 880.09<br>[Methanol (methyl alcohol)]  |
| 2015 | 1230.07 | 2049.66 | 2538.90 | 1829.96 | 503.30 | 1392.53   | 1102.11<br>[Methanol (methyl alcohol)] |
| 2014 | 1223.06 | 2072.26 | 2613.41 | 1863.78 | 511.94 | 1441.55   | 1134.20<br>[Methanol (methyl alcohol)] |
| 2013 | 1179.69 | 2013.64 | 2603.38 | 1814.48 | 513.82 | 1437.97   | 1131.85<br>[Methanol (methyl alcohol)] |
| 2012 | 1290.41 | 1878.59 | 2650.60 | 1292.40 | 406.71 | 1461.88   | 1152.16<br>[Methanol (methyl alcohol)] |

|                                                                                                             |                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Review Engineer:</b> Brian Bland</p> <p><b>Review Engineer's Signature:</b> _____ <b>Date:</b> ??</p> | <p><b>Comments / Recommendations:</b></p> <p><b>Issue:</b> 03138/T42<br/> <b>Permit Issue Date:</b> ??<br/> <b>Permit Expiration Date:</b> ??, 2023</p> |
|-------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|

## I. Introduction and Purpose of Application

### A. Facility Description and Proposed Change

International Paper Riegelwood Mill (IPRW) currently holds Title V Permit No. 03138T41 with an expiration date of April 30, 2017. Because the renewal application (App. No. 2400036.16A) was received 9 months prior to the expiration date, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied for this Kraft pulp mill located in Riegelwood, Columbus County, North Carolina. The mill is a multi-functional site that historically produced both pulp and paper products, but is now only producing fluff pulp. Significant operations onsite include: woodyard, pulping, chemical recovery, causticizing and lime recovery, bleaching and power/steam generation.

#### 1. PSD Project

The Division of Air Quality received a permit application (Application No. 2400036.18A) for a Prevention of Significant Determination (PSD) modification from IPRW. This application was received and considered administratively complete for processing on February 21, 2018.

The application describes the project as: “The mill operates multiple power and recovery boilers to supply steam and electricity to the mill. Since converting to fluff pulp, the mill is venting steam in order to consume all of the black liquor solids and own make bark. The proposed project will add a new 40 MW condensing steam turbine generator, the No. 4 Turbine Generator (TG4). The addition of TG4 will allow the Nos. 1 and 2 Turbine Generators to be removed from service. There are no plans to sell electricity. TG4 itself is not an emission source; however, the Mill expects to burn approximately 100,000 more tons per year of bark, as compared to baseline levels, in the Nos. 2 and 5 Power Boilers. Natural gas usage is expected to decrease slightly and potential emissions of the power boilers will not change.”

IPRW submitted a PSD applicability analysis, as part of the permit application, that shows emissions increases for carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), particulate matter equal to or less than 100 micrometers diameter (PM), particulate matter equal to or less than 10 micrometers diameter (PM<sub>10</sub>), particulate matter equal to or less than 2.5 micrometers diameter (PM<sub>2.5</sub>), and carbon dioxide equivalent (CO<sub>2e</sub>) are above the PSD significant emission rates (SER). As stated in the permit application, because the new turbine generator is not an emission source and there are no physical modifications being made to any existing emission sources to accommodate the increase in bark firing, no Best Available Control Technology (BACT) analysis was included in the application.

#### 2. Permit Renewal and Expiration Date

IPRW submitted an application for a permit renewal on August 1, 2016, or at least nine months prior to the expiration date of April 30, 2017. Therefore, the application shield as specified under 15A NCAC 02Q .0512(b) remains in effect. Because the renewed permit has not yet been issued, the expiration date was changed to ??, 2023 with the issuance of Air Permit No. 03138T42. A footnote was also added to the permit stating, “This permit shall expire on the earlier of ??, 2023, or the renewal of Permit No. 03138T41 has been issued or denied.”

### B. Plant Location

IPRW is located in Columbus County in southeast North Carolina. Columbus County has been classified as in attainment for all pollutants subject to a National Ambient Air Quality Standard (NAAQS).

### C. Permitting History since Issuance of Title V Permit

| Permit   | Issue Date       | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 03138T37 | May 23, 2012     | Initial Title V Permit was issued with an expiration date of June 30, 2017.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 03138T38 | June 20, 2012    | Air permit modification processed as an administrative amendment to correct several typographic errors in the permit.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 03138T39 | October 17, 2012 | Air permit modification processed as a minor permit modification for the purpose of: <ul style="list-style-type: none"> <li>• upgrading the wood yard to process tree length logs and increase chip production capacity to 8,500 tons per day.</li> <li>• the removal of toxic air pollutant (TAP) permit limits for all MACT affected sources pursuant to HB952. This item was added as an addendum received on September 14, 2012.</li> </ul> As a part of this permit modification, the expiration date was corrected to April 30, 2017. |
| 04291T40 | January 17, 2014 | Air permit modification processed as administrative amendment that was initiated mainly to incorporate late 2012 source test results into Air Permit No. 03138T39.                                                                                                                                                                                                                                                                                                                                                                          |
| 04291T41 | June 10, 2015    | Air permit processed as the first step of a two-step significant modification under 15A NCAC 02Q .0501(c)(2) [due to changes in the rule, this would now be identified as a 15A NCAC 02Q .0501(b)(2) change] for the following: <ul style="list-style-type: none"> <li>• making modifications to convert the mill to 100% softwood pulp production.</li> <li>• the removal of several 15A NCAC 02D .0530(u) tracking/reporting requirements that had been satisfied.</li> </ul>                                                             |

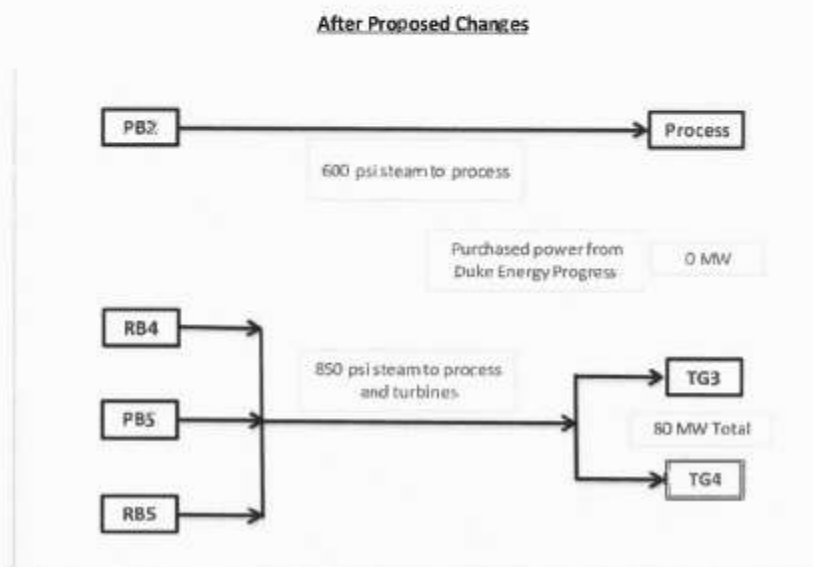
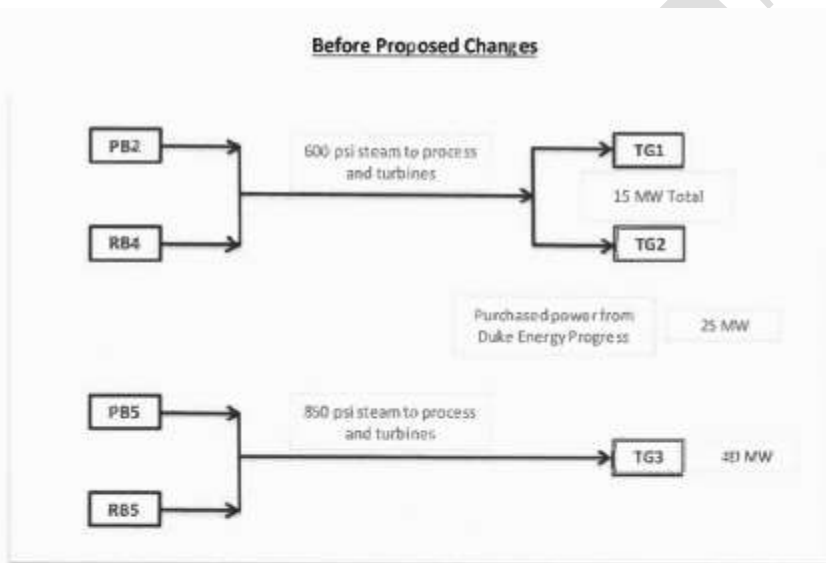
### D. Application Chronology

| Date                             | Event                                                                                                                                                                                 |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| December 8, 2017                 | Preapplication meeting attended by DAQ, IPRW and AECOM                                                                                                                                |
| January 25, 2018                 | Tom Anderson of the Air Quality Analysis Branch (AQAB) of NCDAQ informed the National Park Service, U.S. Fish & Wildlife Service and U.S. Forest Service of the project via e-mail    |
| February 7, 2018                 | AQAB approved (with comments) the modeling protocol                                                                                                                                   |
| February 21, 2018                | DAQ received PSD Permit Application No. 2400036.18A                                                                                                                                   |
| February 23, 2018                | DAQ issued a permit acknowledgement letter to IPRW                                                                                                                                    |
| March 9, 2018                    | DAQ e-mails AECOM regarding Section 3.7 apparently missing from Section 3 "Proposed Project and Project Emissions" of the submitted application                                       |
| March 9, 2018                    | AECOM e-mails the page missing from Section 3.7 to DAQ                                                                                                                                |
| March 20, 2018                   | A copy of the PSD permit application was sent to of EPA Region 4                                                                                                                      |
| March 20, 2018                   | DAQ issued a letter to IPRW indicating that the PSD application was deemed complete                                                                                                   |
| April 4, 2018                    | AQAB issues Review of PSD Dispersion Modeling Analyses memorandum                                                                                                                     |
| July 27, 2018                    | DAQ, via e-mail to AECOM, requested clarification regarding: PM emissions, possible PSD review due to PM emissions and references for emission factors used in emissions calculations |
| July 27, 2018 and August 9, 2018 | AECOM, via e-mail, responded to the July 27, 2018 request for clarification                                                                                                           |
| September 28, 2018               | Draft permit and permit review document sent to Applicant and Wilmington Regional Office (WiRO) for review and comments                                                               |
| October 3, 2018                  | Permit review document sent to Applicant                                                                                                                                              |

| Date              | Event                                                                                                |
|-------------------|------------------------------------------------------------------------------------------------------|
| October 3, 2018   | Response from Applicant received that they don't have any comments.                                  |
| October 8, 2018   | WiRO comments were received. WiRO noted that an NOV/NRE was issued to the facility on July 30, 2018. |
| November 13, 2018 | Draft Permit and Preliminary Determination sent to public notice                                     |

## II. Modified Emission Sources and Emissions Estimates

IPRW operates multiple power and recovery boilers to supply steam and electricity to the mill. The proposed project will add a new 40 MW condensing steam turbine generator. The addition of the new steam turbine generator will allow the Nos. 1 and 2 Turbine Generators to be removed from service. Potential emissions of the power boilers will not change, but IPRW expects to burn approximately 100,000 more tons per year of bark, as compared to baseline levels in the Nos. 2 and 5 Power Boilers, while natural gas usage is expected to decrease. The application used these diagrams to show the changes:



Project emissions calculations and emission factors are presented in Appendix B of the application. Specific details regarding the emission factors used are included in Appendix B, however the general background of the emission factors is summarized below:

- Site Specific Data  
Stack test data was used to determine emissions in this application as described below.  
Combustion of bark, sludge and natural gas: PM, CO, NO<sub>x</sub>, SO<sub>2</sub>, and VOC.  
Combustion of NCG/SOG: SO<sub>2</sub> and NO<sub>x</sub>.  
Combustion of No. 6 fuel oil: PM, CO, NO<sub>x</sub> and SO<sub>2</sub>.  
Note: VOC emission factors for combustion of bark, natural gas and sludge are from No. 5 Power Boiler stack tests with individual NCASI VOC compound emission factors added to the stack test VOC emission factor.
- National Council for Air and Stream Improvement, Inc. (NCASI) data  
The 2013 NCASI electronic database of emission factors for pulp and paper mill sources was utilized for this project.  
Combustion of bark and sludge: lead and TRS.  
Combustion of NCG/SOG: CO and sulfuric acid.  
Combustion of No. 6 fuel oil: lead, fluorides, and sulfuric acid.  
Combustion of natural gas: lead.  
Combustion of sludge: lead and TRS.
- U.S. Environmental Protection Agency (EPA) publications, such as AP-42 Compilation of Air Emission Factors (5th Edition unless otherwise noted)  
  
For Nos. 2 and 5 Power Boilers where site specific data or NCASI emission factors were not available, the following AP-42 data was used:  
  
Section 1.3, Fuel Oil Combustion, for VOC emissions  
Section 1.4, Natural Gas Combustion, for lead.
- U.S. EPA's Mandatory Greenhouse Gas Reporting Regulation calculation methodologies (40 CFR 98)  
Carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O) emissions from combustion were calculated using the U. S. EPA Mandatory Greenhouse Gas (GHG) reporting rule emission factors and global warming potentials from Subparts A and C.

### **III. Project Regulatory Review**

#### **A. State Regulations**

##### **1. 15A NCAC 02D .0524 - New Source Performance Standards**

NSPS applicability is not triggered by this project.

##### **2. 15A NCAC 02D .0530 - Prevention of Significant Deterioration**

Because the facility is located in Columbus County, that is attainment for all NAAQS pollutants, the planned modification and its emissions are required to be assessed in light of PSD requirements. IPRW is a major stationary source for PSD purposes, and the emission increases as a result of this modification exceed the significance levels as listed in 40 CFR 51.166(b)(23)(i).

However, as stated in the permit application, because the new turbine generator is not an emission source and there are no physical modifications being made to any existing emission sources to accommodate the increase in bark firing, no BACT analysis was included in the application.

3. 15A NCAC 02D .1100/ 15A NCAC 02Q .0700 - Control of Toxic Air Pollutants

In previous modeling analyses submitted by the Permittee, potential emissions of Toxic Air Pollutants (TAPs) were optimized (to 98% of the Acceptable Ambient Levels (AAL)) to develop permitted emission rates. IPRW's current air permit has emission limits for several TAPs based on previous facility-wide modeling analyses but does not include MACT-affected sources. Because this project does not involve any new sources of TAPs or increase potential emissions of TAPs (based on the optimized levels), the facility did not update the facility-wide air toxics analysis. This modification does not present an unsafe health risk based on previous modeling at the facility.

4. 15A NCAC 02D .1111 - Maximum Achievable Control Technology

Nos. 2 and 5 Power Boilers are not being reconstructed (there is no modification to the boilers with this project), so the 112j requirements will continue to apply through May 19, 2019. Starting May 20, 2019, the mill's existing affected sources will comply with the applicable requirements of 40 CFR 63, Subpart DDDDD. An initial compliance demonstration is required within 180 days of that date.

**B. Federal Regulations**

1. 40 CFR 60 - New Source Performance Standards (NSPS)

NSPS applicability is not triggered by this project. Specifically, there is no physical change or change in the method of operation to Nos. 2 and 5 Power Boilers, and the 40 MW steam turbine generator is not an emission source.

2. 40 CFR 63 - National Emission Standards for Hazardous Air Pollutants (NESHAP)

The NESHAP for Industrial, Commercial, and Institutional Boilers and Process Heaters (Subpart DDDDD, "Boiler MACT") was originally promulgated in 2004, but was vacated in 2007. This vacatur of the rule triggered requirements for the "MACT Hammer" under Section 112(j) of the Clean Air Act. Nos. 2 and 5 Power Boilers are the only boilers or process heaters subject to Case-by-Case MACT (and on May 20, 2019, MACT DDDDD). The Temporary Package Boilers (ID Nos. ES-PKB-1 and ES-PKB-2) currently have an avoidance condition for the Case-by-Case MACT. This will be replaced with one for MACT Subpart DDDDD. The requirements for avoiding this condition will be effectively the same. Provided the temporary boilers meet the definition of temporary, they will not be subject to this rule.

However, as a result of the December 2016 court case, *American Chemistry Council v. EPA*, portions of this rule have been remanded back to EPA for further review. Therefore, in the future, portions of this rule and permit stipulation are subject to change.

**IV. Prevention of Significant Deterioration**

The basic goal of the PSD regulations is to ensure the air quality in clean (i.e. attainment) areas does not significantly deteriorate while maintaining a margin for future industrial growth. The PSD regulations focus on industrial facilities, both new and modified, that create large increases in the emission of certain pollutants. The EPA promulgated final regulations governing PSD in the Federal Register published

August 7, 1980. Effective March 25, 1982, the NCDAQ received full authority from the EPA to implement PSD regulations in the state.

## A. PSD Applicability

Under PSD requirements all major new or modified stationary sources of air pollutants regulated and listed in this section of the Clean Air Act must be reviewed and approved prior to construction by the permitting authority. A major stationary source is defined as any one of 28 named source categories that has the potential to emit 100 tons per year of any regulated pollutant or any other stationary source that has the potential to emit 250 tons per year of any PSD regulated pollutant. IPRW is a Kraft pulp mill, which is one of the 28 listed source categories with major source thresholds of 100 tons per consecutive 12-month period, under 40 CFR 51.166(b)(1)(i)(a). Being a major stationary source for PSD purposes, any emission increases as a result of this modification must be compared to the significance levels listed in 40 CFR 51.166(b)(23)(i) to determine which pollutants must undergo a PSD review.

### 1. Baseline Actual Emissions (BAE)

North Carolina's definition of BAE differs from the Federal PSD rules as specified in 15A NCAC 02D .0530(b)(1). Specifically, 15A NCAC 02D .0530(b)(1)(A) includes *"For an existing emissions unit, baseline actual emissions means the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the five year period immediately preceding the date that a complete permit application is received by the Division for a permit required under this Rule..."*

Section 3.5 of the Application explains, "For this project, 5 years of monthly production data was reviewed and a different baseline period was selected for each PSD compound. The baseline period was selected to maximize emissions of Nos. 2 and 5 Power Boilers together, over the particular 24-month period. Appendix B shows the baseline period selected for all compounds. Table 3-1 shows the baseline actual emissions for Nos. 2 and 5 Power Boilers."

### 2. Projected Actual Emissions (PAE)

40 CFR 51.166(b)(40)(i) defines PAE as "the maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a regulated New Source Review (NSR) pollutant in any one of the 5 years (12-month period) following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that regulated NSR pollutant, and full utilization of the unit would result in a significant emissions increase, or a significant net emissions increase at the major stationary source."

PAE methodology used for this modification is described in the application as: "To provide a conservative estimate of projected actual emissions, we used the highest bark emission factor between Nos. 2 and 5 Power Boilers and calculated the emissions associated with burning an additional 122.9 MMBtu/hr of bark, 24 hours per day, for 350 days per year. We added those emissions to the baseline actual emissions of Nos. 2 and 5 Power Boilers to calculate projected actual emissions for Nos. 2 and 5 Power Boilers. We did not take credit for any decrease in natural gas combustion."

For this proposed modification, PSD applicability analysis was completed for applicable PSD-regulated pollutants. As shown in the table below, emissions of CO, NO<sub>x</sub>, PM, PM<sub>10</sub>, PM<sub>2.5</sub> and CO<sub>2e</sub> exceeded their respective SERs. As discussed in the permit application, because the new turbine generator is not an emission source and there are no physical modifications being made to

any existing emission sources to accommodate the increase in bark firing, no BACT analysis was included in the application.

Table 3-1 “International Paper Riegelwood Turbine Project PSD Applicability Summary” from the application is reproduced below:

|                  | Emissions, tpy |                 |                 |        |                  |                   |                  |       |      |                      |                                |          |
|------------------|----------------|-----------------|-----------------|--------|------------------|-------------------|------------------|-------|------|----------------------|--------------------------------|----------|
|                  | CO             | NO <sub>x</sub> | SO <sub>2</sub> | PM     | PM <sub>10</sub> | PM <sub>2.5</sub> | CO <sub>2e</sub> | VOC   | Pb   | TRS/H <sub>2</sub> S | H <sub>2</sub> SO <sub>4</sub> | F        |
| Baseline Actual  | 375.64         | 667.95          | 752.64          | 159.34 | 170.62           | 170.62            | 446,267.26       | 21.83 | 0.05 | 0.17                 | 2.57                           | 4.05E-05 |
| Projected Actual | 540.82         | 810.41          | 756.77          | 200.12 | 215.01           | 215.01            | 554,435.65       | 28.54 | 0.07 | 0.22                 | 2.57                           | 4.05E-05 |
| Project Increase | 165.18         | 142.47          | 4.13            | 40.78  | 44.39            | 44.39             | 108,168.39       | 6.71  | 0.02 | 0.06                 | 0                              | 0.00     |
| PSD SER          | 100            | 40              | 40              | 25     | 15               | 10                | 75,000           | 40    | 0.6  | 10                   | 7                              | 3        |
| PSD Review       | YES            | YES             | NO              | YES    | YES              | YES               | YES              | NO    | NO   | NO                   | NO                             | NO       |

## B. PSD Air Quality Impact Analysis

PSD regulations [40 CFR 51.166(k)] require an applicant to perform an ambient impact analysis to demonstrate: 1) that no NAAQS will be exceeded at any location and during any time period where the proposed new source or modification will have significant impact; and 2) that the proposed new source or modification, in combination with other increment-affecting sources, will not cause any allowable PSD increment to be exceeded. PSD regulation 40 CFR 51.166(m) requires analysis of ambient air quality in the impact area of the proposed source or modification for all pollutants (including those for which no NAAQS exist) with emissions increases in significant [40 CFR 51.166(b)(23)] quantities.

As presented in the application, IPRW is located in Columbus County, about 30 kilometers (km) northwest of Wilmington, North Carolina, along the Cape Fear River. The Riegelwood area is located in the coastal plain of North Carolina and is characterized primarily by swampland with predominantly flat terrain with elevations changing only a few feet within a few kilometers of the plant site. Therefore, near-field complex terrain modeling issues are not expected to be a significant factor. However, terrain was included in the modeling evaluation. For modeling purposes, the area, including and surrounding the site, was classified as rural, based on the land use type scheme established by Auer 1978.

Highlights of the AQAB review of the PSD Dispersion Modeling Analyses for IPRW are presented below. The full review can be found in AQAB’s April 4, 2018 Memorandum.

AERMOD 16216r, paired with meteorological data (2012-2016) from Wilmington (surface) and Morehead City/Newport (upper), was utilized to perform the modeling analysis for IPRW. Building Profile Input Program (BPIP) with PRIME algorithms were used to determine calculated GEP stack heights and to develop direction-specific dimensions to determine, if any, downwash effects. The worst-case stack was determined for each averaging period and all emissions are assumed to be from the respected worst-case stack for each averaging time.

### Class II Significant Impact Levels (SIL) Modeling

| Pollutant | Averaging Period | Project Maximum Model Impact (µg/m <sup>3</sup> ) | Class II SIL (µg/m <sup>3</sup> ) | Percent of Class II SIL (µg/m <sup>3</sup> ) |
|-----------|------------------|---------------------------------------------------|-----------------------------------|----------------------------------------------|
| CO        | 1-hour           | 14                                                | 2000                              | <1%                                          |



|                   |         |       |     |     |
|-------------------|---------|-------|-----|-----|
|                   | 8-hour  | 9     | 500 | 2%  |
| NO <sub>2</sub>   | 1-hour  | 7.3   | 7.5 | 97% |
|                   | Annual  | 0.21  | 1   | 21% |
| PM <sub>10</sub>  | 24-hour | 1.32  | 5   | 26% |
| PM <sub>2.5</sub> | 24-hour | 0.86  | 1.2 | 72% |
|                   | Annual  | 0.062 | 0.3 | 21% |

As stated in Section 5.1 of the application, a modeling analysis was not performed for CO<sub>2e</sub>, as no modeling requirements exist for this pollutant. As discussed in Section IV.B.8, PM was also not modeled.

#### 1. Class II Area Analysis of PM<sub>2.5</sub> Precursor NO<sub>x</sub>

An analysis of NO<sub>x</sub> and SO<sub>2</sub> precursor emissions impacts on secondary formation of PM<sub>2.5</sub> was conducted to compare total PM<sub>2.5</sub> impacts to the 24-hour and annuals PM<sub>2.5</sub> SILs. The approach followed EPA *Guidance for PM<sub>2.5</sub> Permit Modeling* (May 2014).

For determining the daily and annual PM<sub>2.5</sub> secondary impacts, Scenario D from EPA's draft *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier I Demonstration Tool for Ozone and PM<sub>2.5</sub> under the PSD Permitting Program* (December 2, 2016) was utilized. The project emissions for NO<sub>x</sub> and SO<sub>2</sub> are lower than the lowest MERPs from any region for daily and annual PM<sub>2.5</sub>. Therefore, no impacts will occur.

##### Daily PM<sub>2.5</sub>:

$(143 \text{ tpy NO}_x \text{ Project} / 1155 \text{ tpy NO}_x \text{ daily PM}_{2.5} \text{ MERP}) * (4 \text{ tpy SO}_2 \text{ Project} / 225 \text{ tpy SO}_2 \text{ daily PM}_{2.5} \text{ MERP}) = 0.12 + 0.02 = 0.14 * 100 = 14\%$

$(0.9 \mu\text{g}/\text{m}^3 \text{ modeled daily PM}_{2.5} \text{ concentration}) / (1.2 \mu\text{g}/\text{m}^3 \text{ SIL}) = 0.75 * 100 = 75\%$

$14\% + 75\% = 89\%$

##### Annual PM<sub>2.5</sub>:

$(143 \text{ tpy NO}_x \text{ Project} / 3184 \text{ tpy NO}_x \text{ annual PM}_{2.5} \text{ MERP}) * (4 \text{ tpy SO}_2 \text{ Project} / 2289 \text{ tpy SO}_2 \text{ annual PM}_{2.5} \text{ MERP}) = 0.04 + 0.002 = 0.042 * 100 = 4\%$

$(0.1 \mu\text{g}/\text{m}^3 \text{ modeled annual PM}_{2.5} \text{ concentration}) / (0.2 \mu\text{g}/\text{m}^3 \text{ SIL}) = 0.50 * 100 = 50\%$

$4\% + 50\% = 54\%$

Both values are below 100%. It can be assumed that the critical air quality impact will not be exceeded.

#### 2. Class II Area Full Impact Air Quality Modeling Analysis

A Class II Area NAAQS full impact analysis was not conducted given that all project emissions impacts modeled below the SILs.

#### 3. Class I Area Significant Impact Air Quality Modeling Analysis

A Class I Area NAAQS and AQRV full impact analysis was not conducted given the Federal Land Managers did not comment on the proposed project. No Class I areas are located within 100 km.

Additional impact analyses were conducted for ozone, growth, soils and vegetation, and visibility impairment.

#### 4. Ozone Impact Analysis

The project NO<sub>x</sub> emissions of 142.47 tons per year exceed the ozone SERs (40 CFR 51.166(b)(23)(i)) of 40 tons per year of VOCs or NO<sub>x</sub>. In addition to VOCs, an important component of ozone formation is the ambient concentration of NO<sub>x</sub>. Studies have shown that ozone formation in the Southeast is NO<sub>x</sub> limited, meaning that ozone formation is limited by the

amount of NO<sub>x</sub> in the atmosphere rather than the amount of VOCs. Project VOC and NO<sub>x</sub> emissions impacts on ambient ozone levels were analyzed and assessed using the MERPs screening approach. MERPs are defined as the screening emission level (tpy) above which project precursor emissions would conservatively be expected to have a significant impact on secondary PM<sub>2.5</sub> or Ozone formation. A MERP value is developed for each precursor pollutant from photochemical ozone modeling of a hypothetical source and a "critical air quality threshold". The MERPs guidance relies on EPA's 2016 draft SILs for PM<sub>2.5</sub> and ozone as the critical air quality threshold to develop conservative ozone MERPs values. As such, NO<sub>x</sub> project emissions were evaluated based on an ozone MERPs value developed from a representative hypothetical source located in Horry, SC (Source #10 from Eastern U.S. Region, as shown in MERPs Appendix Table A-1). This approach shows that project impacts are not expected to cause or contribute to a violation of the 8-hour Ozone NAAQS.

#### 5. Growth Analysis

Because this project will not employ additional employees, no secondary growth is expected.

#### 6. Soils and Vegetation

The project impacts on soils and vegetation was analyzed by comparing the maximum modeled concentrations to secondary NAAQS and screening thresholds recommended in EPA's "A Screening Procedure for Impacts of Air Pollution Sources on Plants, Soils and Animals" (EPA-450/2-81-078). The modeled concentrations from the Class II significant impact analysis were well below the secondary NAAQS and screening thresholds. Therefore, little or no significant impacts are anticipated from the project to soils and/or vegetation.

#### 7. Visibility Impairment

A Class I Area NAAQS and AQRV full impact analysis was not conducted given the Federal Land Managers (National Park Service, U.S. Fish & Wildlife Service and U.S. Forest Service) did not comment on the proposed project. No Class I areas are located within 100 km.

The Class II visibility analysis was not required given the project emissions do not exceed significant amounts of NO<sub>x</sub>, SO<sub>2</sub>, PM<sub>2.5</sub>, or PM<sub>10</sub>. Additionally, the project is not located within 10 km of an area protected from visibility impairment. And further, all Class II significant impact analyses were below respective SILs for all PSD pollutants under evaluation. Therefore, NC DAQ did not require the Class II Visibility Impairment Analysis.

#### 8. Non-Regulated Pollutants Impact Analysis

IPRW also evaluated PM and North Carolina toxics. There is not currently a NAAQS for PM, but PM<sub>10</sub> and PM<sub>2.5</sub> were modeled against their respective NAAQSs. In response to a July 27, 2018 Additional Information Request, AECOM explained "We reviewed the emission factors used for both Power Boilers and found that for bark, natural gas, and sludge the total PM and PM<sub>10</sub> emission factors were equal. For fuel oil #6 there was a negligible difference in emission factors. According to the NC DAQ PSD Model Guidance ([https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/psd\\_guidance.pdf](https://files.nc.gov/ncdeq/Air%20Quality/permits/mets/psd_guidance.pdf)), page 8 states the following: "Also note: NC requires that TSP emissions (i.e. < 100 micron size particles) be modeled as a part of the state SAAQS demonstration. The SAAQS demonstration is not necessary if all particulate emissions fall into the more conservative PM<sub>10</sub> size category." Since the TSP and PM<sub>10</sub> emissions are extremely close, and the PM<sub>10</sub> modeling was well below the SIL, we believe that there would be no issues with compliance with the TSP SAAQS."

As detailed in Section 4.2.4 Control of Toxic Air Pollutants – 15A NCAC 02D .1100 and 02Q .0700, because this project does not involve any new sources of TAPS or increase potential emissions of TAPs, an updated facility-wide air toxics analysis was not included. Emissions of all

TAPs in previous modeling analyses were optimized (to 98% of the Acceptable Ambient Levels (AAL) in 15A NCAC 02D .1100) to develop permitted emission rates. The current air permit has emission limits for several TAPs based on the previous facility-wide modeling analyses, but the emission limits for MACT-affected sources were removed in Air Permit No. 03138T39, as requested by IPRW pursuant to HB 952.

### C. Public Participation Requirements

In accordance with 40 CFR 51.166(q), Public participation, the reviewing authority (NCDAQ) shall meet the following:

1) *Make a preliminary determination whether construction should be approved, approved with conditions, or disapproved.*

This document satisfies this requirement providing a preliminary determination that construction should be approved consistent with the permit conditions described herein.

2) *Make available in at least one location in each region in which the proposed source would be constructed a copy of all materials the applicant submitted, a copy of the preliminary determination, and a copy or summary of other materials, if any, considered in making the preliminary determination.*

This preliminary determination, application, and draft permit will be made available in the Wilmington Regional Office and in the Raleigh Central Office, with the addresses provided below.

Wilmington Regional Office  
127 Cardinal Drive Extension  
Wilmington, North Carolina 28405

Raleigh Central Office  
217 West Jones Street  
Raleigh, NC 27603

In addition, the preliminary determination and draft permit will be made available on the NCDAQ public notice webpage.

3) *Notify the public, by advertisement in a newspaper of general circulation in each region in which the proposed source would be constructed, of the application, the preliminary determination, the degree of increment consumption that is expected from the source or modification, and of the opportunity for comment at a public hearing as well as written public comment.*

The NCDAQ prepared a public notice (See Attachment 1) that will be published in a newspaper of general circulation in the region.

4) *Send a copy of the notice of public comment to the applicant, the Administrator and to officials and agencies having cognizance over the location where the proposed construction would occur as follows: Any other State or local air pollution control agencies, the chief executives of the city and county where the source would be located; any comprehensive regional land use planning agency, and any State, Federal Land Manager, or Indian Governing body whose lands may be affected by emissions from the source or modification.*

The NCDAQ will send the public notice (See Attachment 1) to the Columbus County Manager at 111 Washington Street, Whiteville, NC 28472 as well as those on the official email distribution lists for PSD permit applications.

*5) Provide opportunity for a public hearing for interested persons to appear and submit written or oral comments on the air quality impact of the source, alternatives to it, the control technology required, and other appropriate considerations.*

The NCDAQ public notice (See Attachment 1) provides contact information to allow interested persons to submit comments and/or request a public hearing.

## **V. Other Issues**

### **A. Compliance**

NCDAQ has reviewed the compliance status of this facility. The most recent inspection was completed on August 28, 2017. Russ Morgan of the WiRO indicated that the facility appeared to be compliant with Title V requirements reviewed at the time of this inspection.

Based on a search of the NCDEQ Compliance-Violations databases, in the last five years, there has been one NOV issued. Specifically, a July 30, 2018 Notice of Violation/Notice of Recommendation for Enforcement was issued for an emissions violation of 15A NCAC 2D .0508 during a February 6, 2018 emission test.

### **B. Zoning Requirements**

IPRW is located in an area without zoning, so the facility followed the requirements in 15A NCAC 02Q .0113.

The full specifications can be found in 15A NCAC 02Q .0113 "Notification in Areas without Zoning," but before submitting a permit application for a new or expanded facility in an area without zoning, the Permittee is required to:

- (1) publish a legal notice in a newspaper of general circulation; and
- (2) to post a sign on their property where the new or expanded source is located based.

A notarized Affidavit of Publication, with copy of the Public Notice attached, was included as Appendix D of the application. The Affidavit confirms that the Public Notice was published in The News Reporter (Whiteville, NC) on January 29, 2018.

Section 4.2.6. of the application describes the posting of the sign as "At least 10 days prior to the submittal of the permit application, the facility was required to post a sign that is at least 6 square feet in size, less than ten feet from the highway right-of-way, at least six feet from the ground, contains lettering a person with 20/20 vision can view from the center of the road, and is placed parallel to the highway. The sign was posted on January 25, 2018. The sign contains the name of the facility, the name and address of the applicant, and a summary of the modification. The sign will remain in place for at least 30 days following the submittal of the permit application." A photograph of the sign was included in Appendix D of the application.

### **C. Professional Engineer's Seal**

A Professional Engineer's seal was not required or included as part of the application.

### **D. Application Fee**

An application fee in the amount of \$14,762.00 was received.

**E. CAA Section 112(r)**

This facility is subject to the requirements of CAA 112(r) because it maintains quantities of ClO<sub>2</sub> and Cl<sub>2</sub> above their respective threshold quantities. The last full 112(r) inspection was completed on February 25-26, 2014. The next full 112(r) inspection will be required in 2019. IPRW's RMP plan was last revised in May of 2016. This permit modification does not affect the 112(r) status of the facility.

**F. CAM**

Not applicable. The application does not include approval for a new control device or a modification to an existing control device. Additionally, CAM requirement applicability can only be required under the renewal or the significant modification procedure under the Title V program. This application is not processed under either the Title V renewal or the significant modification provisions.

G. Columbus County has been triggered for PSD increment tracking for PM<sub>10</sub>, SO<sub>2</sub> and NO<sub>x</sub>. This modification will result in an increase of emissions as follows: PM<sub>10</sub> by 10.13 lb/hr, SO<sub>2</sub> by 0.95 lb/hr and NO<sub>x</sub> by 32.53 lb/hr.

**VI. Changes to Permit**

The following changes were made to the International Paper Riegelwood Mill Air Permit No. 03138T41:

| Page(s)    | Section                  | Description of Change(s)                                                                                                                                                                                           |
|------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Attachment | Insignificant Activities | Add note with link to applicability of MACT or GACT                                                                                                                                                                |
| All        | All                      | Update dates and permit revision number<br>Replace "2D" and "2Q" citations with "02D" and "02Q"                                                                                                                    |
| 3          | Permitted Items          | Add 15A NCAC 02Q .0501(b)(2) modification footnote and tag associated emission sources<br>Correct footnote associated with Application No. 2400036.15A to reflect the current citation is 15A NCAC 02Q .0501(b)(2) |
| 109        | Section 2.2 K            | Add 15A NCAC 02Q .0504 paragraph requiring the submittal of a complete Title V application within one year of the issuance of Air Permit No. 3138T42                                                               |
| 110        | Section 3                | Update General Conditions to current version                                                                                                                                                                       |

**VII. Conclusion**

Based on the application submitted and the review of this proposal by the NCDAQ, the NCDAQ is making a preliminary determination that the project can be approved and a revised permit issued. After consideration of all comments a final determination will be made.

**ATTACHMENT 1**

**PUBLIC NOTICE**

DRAFT

**ATTACHMENT 2**

**LISTING OF ENTITIES AND ASSOCIATED MATERIALS**

DRAFT

|                                 |                                                                                                                                                                                |                                                            |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| NEWSPAPER                       | The News Reporter<br>127 W. Columbus St.<br>Whiteville, NC 28472-0707<br>(910) 642-4104                                                                                        | Public Notice                                              |
| OFFICIALS                       | Mr. Mike Stephens<br>Manager, Columbus County<br>Whiteville, NC 28472<br>(910) 640-6630                                                                                        | Public Notice                                              |
| SOURCE                          | Mr. Floyd Whitmire<br>Mill Manager<br>International Paper Riegelwood Mill<br>865 John L Riegel Road<br>Riegelwood, NC 28456<br>(910) 362-4880                                  | Preliminary Determination, Draft<br>Permit & Public Notice |
| EPA                             | Ms. Heather Ceron<br>Air Permits Section<br>U.S. EPA Region 4<br>Sam Nunn Atlanta Federal Building<br>61 Forsyth Street, S.W.<br>Atlanta, Georgia 30303-3104<br>(404) 562-9185 | Preliminary Determination, Draft<br>Permit & Public Notice |
|                                 | Preliminary Determination, Draft Permit, and Public Notice, via electronic mail to:<br>ceron.heather@epa.gov with cc to lorinda.sheppard@epa.gov                               |                                                            |
| NATIONAL PARK<br>SERVICE        | Ms. Andrea Stacy<br>andrea_stacy@nps.gov<br>(303) 969-2816                                                                                                                     | None                                                       |
| U.S. FISH & WILDLIFE<br>SERVICE | Ms. Jill Webster<br>jill_webster@fws.gov<br>(303) 914-3804                                                                                                                     | None                                                       |
| U.S. FOREST SERVICE             | Ms. Melanie Pitrolo<br>mpitrolo@fs.fed.us<br>(828) 257-4213                                                                                                                    | None                                                       |
|                                 | Mr. Bill Jackson<br>bjackson02@fs.fed.us<br>(828) 257-4815                                                                                                                     | None                                                       |
| WILMINGTON<br>REGIONAL OFFICE   | Mr. Brad Newland<br>NCDAQ<br>Air Quality Regional Supervisor<br>127 Cardinal Drive Extension<br>Wilmington, NC 28405<br>(910) 796-7215                                         | Preliminary Determination, Draft Permit &<br>Public Notice |