**NORTH CAROLINA DIVISION OF AIR QUALITY**

# Application Review

**Issue Date:** XXXX XX, 2024

**Region:** Wilmington Regional Office
**County:** Columbus
**NC Facility ID:** 2400036
**Inspector's Name:** Jmanda Dunston
**Date of Last Inspection:** 02/10/2023
**Compliance Code:** 3 / Compliance - inspection

## Facility Data

**Applicant (Facility's Name):** International Paper - Riegelwood Mill

**Facility Address:**
International Paper - Riegelwood Mill
865 John L. Riegel Road
Riegelwood, NC 28456

**SIC:** 2621 / Paper Mills Exc Building Paper
**NAICS:** 322121 / Paper (except Newsprint) Mills

**Facility Classification: Before:** Title V **After:** Title V
**Fee Classification: Before:** Title V **After:** Title V

## Permit Applicability (this application only)

**SIP:** 02D .0501(c), .0503, .0504, .0508, .0516, .0519, .0521, .0528, .0606, .0607, 02Q .0317
**NSPS:** Subpart BB
**NESHAP:** Subparts S, MM, and DDDDD
**PSD:** 02D .0530, .0530(u)
**PSD Avoidance:** 02Q .0317
**NC Toxics:** 02D .1100
**112(r):** N/A
**Other:** N/A

## Contact Data

| Facility Contact | Authorized Contact | Technical Contact |
|---|---|---|
| Stephen Greer<br>Environmental Manager<br>(910) 362-3476<br>865 John L. Riegel Rd<br>Riegelwood, NC 28456 | Jason Hoffman<br>Mill Manager<br>(910) 362-4883<br>865 John L. Riegel Road<br>Riegelwood, NC 28456 | Kevin Spargo<br>Senior Environmental Engineer<br>(910) 362-4918<br>865 John L. Riegel Road<br>Riegelwood, NC 28456 |

## Application Data

**Application Number:** 2400036.20A, .20B, .24A
**Date Received:** 01/27/2020
**Application Type:** Significant Modification
**Application Schedule:** TV-Significant (02Q .0501(b)(2) Part 2)

**Existing Permit Data**
**Existing Permit Number:** 03138/T44
**Existing Permit Issue Date:** 03/03/2023
**Existing Permit Expiration Date:** 02/29/2028

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

| CY | SO2 | NOX | VOC | CO | PM10 | Total HAP | Largest HAP |
|---|---|---|---|---|---|---|---|
| 2021 | 1603.36 | 1667.59 | 2596.98 | 2933.87 | 417.45 | 1196.70 | 986.53 [Methanol (methyl alcohol)] |
| 2020 | 1566.80 | 1654.45 | 2680.10 | 2887.05 | 424.30 | 1217.27 | 1003.54 [Methanol (methyl alcohol)] |
| 2019 | 1340.71 | 1602.67 | 2491.04 | 2519.75 | 416.14 | 1148.82 | 945.54 [Methanol (methyl alcohol)] |
| 2018 | 1546.81 | 1693.61 | 2571.81 | 2533.19 | 447.28 | 1188.49 | 978.87 [Methanol (methyl alcohol)] |
| 2017 | 1285.47 | 1620.34 | 2913.54 | 2389.09 | 462.13 | 1358.86 | 1073.85 [Methanol (methyl alcohol)] |

| Review Engineer: Emily Supple<br><br>Review Engineer's Signature: Date: | Comments / Recommendations:<br>Issue 03138/T45<br>Permit Issue Date: XXXX XX, 2024<br>Permit Expiration Date: XXXXX XX, 202X |
|---|---|

1. **Purpose of Application**

International Paper – Riegelwood Mill (IPRW) currently holds Title V Permit No. 03138T44 with an expiration date of February 29, 2028 for a paper mill in Riegelwood, Columbus County, North Carolina.

IPRW has submitted the following permit applications which will be consolidated with this permitting action:

- Permit Application No. 2400036.14A – This application is a 502(b)(10) notification received on May 2, 2014 to add No. 2 fuel oil as a permitted fuel for the lime kilns, power boilers, and recovery boilers. The application was consolidated with the renewal application, 2400036.16A, and closed out in IBEAM.

- Permit Application No. 2400036.16A – This application is primarily a renewal application, but the permit renewal will be addressed in future permitting actions. Thus, this application should not be closed out during this permitting action. This application also served as the second step of the two-step significant modification for the Product Mix Project under 15A NCAC 02Q .0501(b)(2). The first step application was 2400036.15A and was issued with Air Permit No. 03138T41. The second step application will be processed with this permitting action.

- Permit Application No. 2400036.20A – This application is the second step of a two-step significant modification under 15A NCAC 02Q .0501(b)(2) for the addition of a new turbine generator (ID No. TG4) with Permit Application No. 2400036.18A. The application was received on January 27, 2020.

- Permit Application No. 2400036.20B – This application is a 502(b)(10) notification received on February 14, 2020 to replace a bagfilter (ID No. CD-H367) with a functionally equivalent bagfilter.

- Permit Application No. 2400036.24A – This application is the second step of a two-step significant modification under 15A NCAC 02Q .0501(b)(2) for the upgrades made to the No. 5 Recovery Furnace associated with Permit Application No. 2400036.22A. The application was received on March 5, 2024.

Several additional permitting actions to be made with this revision have also been requested by the facility in comments made on May 3, 2024 as follows:

- A notification received on February 13, 2024 requested for the bubble limits given under 40 CFR Part 63, Subpart MM be removed from the permit. On May 3, 2024, the facility requested that this change be made to the permit with this permit revision.

- Remove the No. 3 Lime Kiln, as has been requested in Permit Application No. 2400036.24B.

- Fully revise the Subpart MM condition as per the requests made in a permit markup document sent to DAQ on June 27, 2022.

- Add operational flexibility conditions for the No. 5 Recovery Boiler electrostatic precipitator (ESP).

Comments are addressed in Section 13 below.

2. **Facility Description**

The following information is taken from the most recent inspection report:

**Wood Chipping:** Wood chips and bark are utilized as the primary raw material feed to this facility. They are almost entirely derived from logs that are purchased. Since the startup of the new wood yard, very few chips have been purchased. Only softwood chips are utilized in the pulping process, while the bark is utilized as a fuel for the boilers. Logs are received via truck or rail and are stored in the log storage area just to the west of the Roll Warehouse. They are then loaded, either by the new circular crane or the existing Heeded crane into a log feeder bin that feeds the Drum Debarker, which in turn feeds the Chipper. The wood chips are then conveyed to the pine wood chip pile.

**Digestion:** From the wood chip pile, the chips are conveyed to either the wood chip silos or directly to the digesters. In the digesters, a strong alkaline aqueous solution reacts with wood chips under conditions of elevated temperature and pressure to break down (de-polymerize) the wood fibers by attacking the lignin and leaving behind the cellulose fiber pulp. The alkaline solution used is an aqueous mixture of sodium hydroxide and sodium sulfide called "white liquor". Its total alkalinity is ~14%. Both continuous and batch digesters are used at this facility.

**Washing:** During the digestion process, alkali and the sodium sulfide in the white liquor are consumed to produce sodium carbonate and sodium sulfate. Since residual alkaline contaminants in wet paper can yellow the fluff pulp under drying conditions utilized in this process, virtually all of the excess alkali has to be removed from the "brown stock" cellulose pulp. This is accomplished is a series of filtration/washing stages.

From the blow tank the pulp passes to the De-knotters and then onto 1st stage vacuum filter, followed by the 2nd stage filter. The brown cellulose pulp then moves to the caustic extractive oxy-peroxide delignification process. Here, pulp is fed to a pre-oxygen washer and then onto the oxygen reactor/post oxygenation steps, where the lignin is partially oxidized in the presence of the alkaline peroxide at ~210ºF. After a final washing step, the pulp moves on to the bleach plant.

**Bleaching/$ClO_2$:** Oxidation of the lignin is completed in the bleaching process. At the bleach plant, the pre-treated brown stock is reacted with chlorine dioxide ($ClO_2$) bleaching solution that bleaches the brown cellulose fibers white. IP operates three separate Elemental Chlorine Free (ECF) bleach plants. The chlorine dioxide bleaching solution is generated onsite. The three bleaching lines are utilized in this bleaching process. Two of the bleaching lines employ a 4 stage ($D_0$, $E_{OP}$, $D_1$, $D_2$) bleaching process, while the other utilizes a five stage ($D_0$, $E_{OP}$, $D_2$, E, $D_3$) bleaching sequence. The D is an industry accepted abbreviation designating a chlorine dioxide bleaching step. The E and $E_{OP}$ bleaching steps consist of an alkaline sodium hydroxide extraction, either alone (E) or with oxygen and peroxide ($E_{OP}$). Each stage consists of a mixing step, where the bleaching agent is mixed into the pulp and fed to a bleaching tower, where the bleaching actually occurs. The last step in each stage is a washing step, where the pulp is washed free of the bleaching mixture. The bleached pulp is then fed to either of the two fluff pulp lines.

The chlorine dioxide bleaching agent is generated on-site in the chlorine dioxide plant. IP utilizes the Single Vessel Process (SVP) $ClO_2$ production process. This process uses sodium chlorate as an oxidizing agent and methanol as a reducing agent according to the balanced equation below:

$$6NaClO_3 + CH_3OH + 4H_2SO_4 \rightarrow 6ClO_2 + CO_2 + 2Na_3H(SO_4)_2 + 5H_2O$$

Crystalline sodium chlorate is received via railcar and is fed to the $ClO_2$ generator as 650 – 660 gpl aqueous solution. Sulfuric acid (93%) and 100% methanol are reacted under vacuum. The $ClO_2$ product stream is about 10.5 gpl $ClO_2$.

IP's total $ClO_2$ storage capacity is ~620,000 gallons, but they typically maintain about 500,000 gallons (~22 tons) or about 10 hrs of inventory. Because of this, the $ClO_2$ product exceeds the regulatory threshold for this substance under CAA §112(r) as one of two 112(r) substances it maintains on site.

**Fluff:** IP operates two fluff lines. The first operates in the position that the No. 18 paper machine once operated. This paper line was modified to convert it from paper production to fluff pulp as part of the recent mill conversion process. All modifications have been completed and the unit is operational. The design capacity of

this line is ~1002 ADTFP (Air Dried Tons Fluff Pulp). The No. 15 paper machine has been taken off-line and demolished since 03/21/2017.

The 2nd fluff line in operation is the original fluff line and is known as the Carolina King Line. Both lines produce loose and baled fiber that is utilized in absorbent products such as baby diapers, feminine hygiene and incontinence products. The process building is divided into two sections – fluff market pulp production and bale finishing.

Currently, the mill only operates the No. 18 pulp dryer.

**Recovery:** The dilute and depleted digestion fluid, called black liquor, is sent to Recovery where it is concentrated by multi-effect evaporation. The concentrated black liquor solution is then fed to the recovery boilers and utilized as a source of fuel to generate steam and to regenerate sodium sulfide by the reduction of sulfate with carbon-containing lignin compounds. IP operates two permitted recovery boilers that can fire black liquor, No. 6 fuel oil or natural gas. Recovery Boilers No. 4 can fire ~2.4 MM lbs of black liquor solids/day and No. 5 can fire ~7.39 MM lbs of black liquor solids per day. These boilers generate about 80% of the steam required by the facility. The remaining steam is generated by the power boilers discussed further below. The molten smelt that results from the combustion process is quenched/dissolved with water to produce "green liquor", which is an aqueous mixture of sodium carbonate and sodium sulfide.

The No. 4 Recovery Boiler has been shut down as of December 2023.

**Lime Kiln:** Recycled calcium oxide, which is generated in the No. 4 lime kiln, is reacted with water to produce calcium hydroxide in the lime slakers. Calcium hydroxide solution, from the lime slakers is then added to the green liquor and precipitates calcium carbonate, generating sodium hydroxide in the process. The calcium carbonate is separated from the regenerated white liquor and sent to the lime kiln, where it is converted back to the calcium oxide, which is sent to the lime slakers to begin the process again. The regenerated white liquor is used in the digestion of the wood chips. Overall, the recovery of sulfur and alkali from the pulping process is >95%.

**Power Boilers:** Because of the energy intensive nature of the Kraft process (steam & power), the internal generation of electricity and steam is warranted. The massive steam loads required in the evaporation trains required for concentrating weak process streams make internal power generation economical. IP has two power boilers onsite to accomplish this, PB2 and PB5.

The facility is a Title V facility because emissions of VOC, PM10, SO2, NOx, CO, total HAPs, and individual HAPs exceed the applicable thresholds (100 tons per year for VOC, PM10, SO2, NOx, and CO; 25 tons per year for total HAPs; 10 tons per year for individual HAPs).

## 3. History/Background/Application Chronology

History/Background

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| June 10, 2015 | Permit No. 03138T41 was issued for a Part 1 significant modification to convert the mill to softwood-only production. |
| November 13, 2018 | The Preliminary Determination was made for a PSD applicability analysis as part of an application to add a new turbine generator. It was determined that the project could be approved, and a revised permit issued. |
| February 8, 2019 | Permit No. 03138T42 was issued for a PSD significant modification to add a new turbine generator. |
| January 21, 2020 | Permit No. 03138T43 was issued for a one-step significant modification to revise the scrubber monitoring requirements for the No. 5 Power Boiler and to add MACT Subpart DDDDD. |

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| March 3, 2023 | Permit No. 03138T44 was issued for a Part 1 significant modification to add natural gas to the list of fuels for use in No. 5 Recovery Boiler. |

Application Chronology

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| May 2, 2014 | A 502(b)(10) notification was received for a new fuel for the lime kilns and power boilers. |
| August 1, 2016 | Received permit application 2400036.16A for renewal. The acknowledgement letter was sent the same day. |
| March 7, 2018 | An Addendum to the Title V Permit Renewal Application was submitted to request modifications to be included with the renewal application. |
| January 27, 2020 | Received permit application 240036.20A for a Part 2 Application for the new turbine generator project. The acknowledgement letter was sent the same day. |
| February 14, 2020 | Received a 502(b)(10) notification for a new bagfilter. This notification initiated permit application no. 2400036.20B. The acknowledgement letter was sent the same day. |
| June 27, 2022 | Received a permit markup document containing requested permit revisions for the upcoming renewal, originally sent in August 2019. |
| January 11, 2023 | Applications reassigned to Emily Supple of DAQ. |
| February 13, 2024 | Received a notification of shutdown sources and rescission of 40 CFR Part 63, Subpart MM "Bubble Limits". |
| March 3, 2023 | Permit No. 03138T44 was issued for a Part 1 significant modification to add natural gas to the list of fuels for use in No. 5 Recovery Boiler. |
| March 5, 2024 | Received Application No. 2400036.24A for a Part 2 Application for the upgrades to the No. 5 Recovery Furnace associated with application 2400036.22A. |
| April 12, 2024 | Draft permit and review forwarded to applicant, SSCB, regional office and Supervisor for comments. No comments were received from the regional office or SSCB. |
| May 3, 2024 | Comments received from Amy Marshall of All4. Comments are addressed in Section 13 below. |
| XXXX XX, 2024 | Draft permit and permit review forwarded for public noticing via DAQ website. |
| XXXX XX, 2024 | Public comment period ends. Comments? |
| XXXX XX, 2024 | EPA comment period ends. Comments? |
| XXXX XX, 2024 | Permit issued. |

## 4. Permit Modifications/Changes and TVEE Discussion

The following table describes the modifications to the current permit as part of the renewal process. This summary is not meant to be an exact accounting of each change but a summary of those changes.

| Page No. | Section | Description of Changes |
|---|---|---|
| All | All | • Updates dates and permit revision number. |
| Throughout | - | • Updated description of the Nos. 2 and 5 Power Boilers (ID Nos. ES-PB2 and ES-PB5), Nos. 4 and 5 Recovery Boilers (ID Nos. ES-RB4 and ES-RB5), and Nos. 3 and 4 Lime Kilns (ID Nos. ES-LK3 and ES-K4001) to add No. 2 fuel oil to the list of permitted fuels.<br>• Removed starch silos (ID Nos. ES-JA301, ES-JA306, ES-JA307, and ES-JA322)<br>• Removed finishing operations (ID No. ES-FINOPS)<br>• Removed No. 15 paper machine (ID No. ES-J-009)<br>• Modified description of No. 18 paper machine to No. 18 pulp dryer (ID No. ES-JJ-030)<br>• Modified description of pulp dryer to No. 20 pulp dryer (ID No. ES-PD)<br>• Removed No. 3 Lime Kiln (ID No. ES-LK3) |
| 10 | 2.1 B.1.c | • Updated monitoring language |
| 11 | 2.1 B.2.c | • Updated operating parameters |
| 12 | 2.1 B.3.c | • Added minor revision to testing language |
| 12 | 2.1 B.4.c,d | • Added minor updates to monitoring language |
| 14 | 2.1 B.7.a | • Updated monitoring language |
| 17 | 2.1 C.1.a,c | • Updated monitoring language |
| 18 | 2.1 C.2.c | • Added minor revision to testing language |
| 20 | 2.1 C.6.c | • Updated monitoring language |
| 21 | 2.1 C.7.a | • Updated monitoring language |
| 29 | 2.1 I.1.c | • Updated testing language |
| 30 | 2.1 I.3.c | • Updated testing language |
| 31 | 2.1 J.1.c | • Updated testing language |
| 32-33 | 2.1 J.1.d,<br>2.1 J.2.c,<br>2.1 J.3.d | • Updated monitoring language;<br>• Added language allowing for operation of the ESP while one side or one field of the ESP is down for maintenance |
| 33 | 2.1 J.3.e | • Added COMS requirements |
| 38 | 2.1 L.3.c | • Updated testing language |
| 42 | 2.1 O.1.c | • Updated testing language |
| 42 | 2.1 O.1.d | • Added language allowing for operation of the ESP while one or more fields are down for maintenance |
| 44 | 2.1 O.3.d | • Added COMS requirements<br>• Added language allowing for operation of the ESP while one or more fields are down for maintenance |
| 47 | 2.1 R | • Added No. 18 Pulp Dryer to section |
| 75-78 | 2.2 C.1 | • Updated Subpart MM language to be consistent with updated MACT rule |
| 75 | 2.2 C.1.e | • Added language requiring proper operation of automatic voltage control (AVC) |
| 75-76 | 2.2 C.1.f | • Added COMS requirements |
| 76 | 2.2 C.1.h | • Added language for fan amperage monitoring |
| 76-77 | 2.2 C.1.j,k | • Added language defining monitoring exceedances/failure to meet operating limits |
| 77 | 2.2 C.1.o | • Added recordkeeping requirement for monitoring exceedances and instances of failure to meet operating limits |
| 77 | 2.2 C.1.q | • Updated reporting requirement from quarterly to semiannual for consistency with the updated MACT rule |

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| 81 | 2.2 E.1.a | • Removed TAP limits for the No. 15 Paper Machine |
| 85 | 2.2 F.1 | • Updated to remove requirements for No. 3 Lime Kiln |
| 92 | 3 | • Modified description of the fuel oil storage tanks (ID Nos. IES-1FOST and IES-2FOST) for No. 2 fuel oil storage |
| 93-100 | 4 | • Updated General Conditions to most recent version (7.0, 08/21/23) |
| - | 2.1 N | • Removed section due to removal of the No. 3 Lime Kiln |
| - | 2.1 Q | • Removed section due to removal of starch silos |
| - | 2.1 U | • Removed section due to removal of No. 15 paper machine |
| - | 2.2 C.2 | • Removed 112(j) condition for SSM requirements for Subpart MM |
| - | 2.2 H | • Removed section due to completion of 02D .0530(u) reporting requirement |
| - | 2.2 K | • Removed section due to completion of 02Q .0504 application submittal requirement for Application No. 2400036.18A modification |
| - | 2.2 M | • Removed section due to completion of 02Q .0504 application submittal requirement for Application No. 2400036.22A modification |

Title V Equipment Editor (TVEE) was updated with this application. TVEE was reviewed and approved by Connie Horne of DAQ on XXXX XX, 2024.

**5. Application No. 2400036.14A: 502(b)(10 ) Notification for Addition of No. 2 Fuel Oil to Lime Kilns, Power Boilers, and Recovery Boilers**

A 502(b)(10) notification was submitted by IPRW and received on May 2, 2014 to add No. 2 fuel oil to the list of permitted fuels to the Nos. 4 and 5 Recovery Boilers (ID Nos. ES-RB4 and ES-RB5), the No. 4 Lime Kiln (ID No. ES-K4001), and the Nos. 2 and 5 Power Boilers (ID Nos. ES-PB2 and ES-PB5).

It was also requested to add No. 2 fuel oil to the list of permitted fuels for the No. 1 Power Boiler. This source has since been removed from the permit, but a regulatory review has been completed for this boiler retrospectively. It has also been requested to remove the No. 3 Lime Kiln from the permit with this permitting action. A regulatory review will be completed for this source as well, although it will no longer be listed in the permit.

The facility also proposed to repurpose the No. 1 #6 fuel oil storage tank (ID No. IES-1FOST) as a No. 2 fuel oil storage tank.

DAQ issued a 502(b)(10) acknowledgement letter on May 8, 2014 for this notification which initiated Permit Application No. 2400036.14A. This application was consolidated with receipt of the permit renewal application, No. 2400036.16A. DAQ requested IPRW to send updated permit application forms for this change. The permit application forms were received with the addendum to the permit renewal application on March 7, 2018. A review of the changes with this application are as follows.

a. Overview of Emissions Factors

The applicant utilized several sources of emissions data for estimating emissions rates for both Baseline Actual Emissions and Projected Actual Emissions.

- Published National Council for Air and Stream Improvement (NCASI) database, emission reports, and technical bulletins.
- U.S. EPA's AP-42 Compilation of Air Emission Factors
- 40 CFR Part 98
- Site-specific data

*NCASI Emissions Factors*

The applicant has used the NCASI technical bulletins and database, as follows:

- Technical Bulletin No. 884 (August 2004), Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills;
- NCASI Criteria Database for Pulp and Paper Mills (March 2013);
- NCASI memo "Particulate Emissions Data for Pulp and Paper Industry-Specific Sources (October 2006)

*U.S. EPA AP-42 Emissions Factors*

The applicant has used emission factors from U.S. EPA's AP-42 as follows:

- Section 1.3, Fuel Oil Combustion; and
- Section 1.4, Natural Gas Combustion

*Site-Specific Data*

Site-specific stack test data was used as the basis of emissions factors for PM from the lime kilns; and NOx, CO, SO2, TRS, and H2S from the power boilers.

b. Regulatory Review

The following regulations apply to the Nos. 4 and 5 Recovery Boilers, Nos. 3 and 4 Lime Kilns, and the Nos. 1, 2, and 5 Power Boilers:

- 15A NCAC 02D .0501, Compliance with Emission Control Standards
- 15A NCAC 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers
- 15A NCAC 02D .0504, Particulates from Woodburning Indirect Heat Exchangers
- 15A NCAC 02D .0508, Particulates from Pulp and Paper Mills
- 15A NCAC 02D .0516, Sulfur Dioxide from Combustion Sources
- 15A NCAC 02D .0519, Control of Nitrogen Oxide Emissions
- 15A NCAC 02D .0521, Control of Visible Emissions
- 15A NCAC 02D .0524, New Source Performance Standards (40 CFR 60 Subpart BB)
- 15A NCAC 02D .0528, Total Reduced Sulfur from Kraft Pulp Mills
- 15A NCAC 02D .0530, Prevention of Significant Deterioration
- 15A NCAC 02D .0606, Sources Covered by Appendix P of 40 CFR Part 51
- 15A NCAC 02D .0607, Large Wood and Wood-Fossil Fuel Combination Units
- 15A NCAC 02D .1100, Control of Toxic Air Pollutants
- 15A NCAC 02D .1111, Maximum Achievable Control Technology (40 CFR 63 Subpart MM)
- 15A NCAC 02Q .0317, Avoidance Condition for PSD
- 15A NCAC 02Q .0317, Avoidance Condition for NSPS

- 15A NCAC 02D .0501, Compliance with Emission Control Standards

  This rule applies to the No. 2 Power Boiler and states that emissions of sulfur dioxide shall not exceed 1.6 pounds per million Btu heat input. No. 2 fuel has a maximum sulfur content of 0.5% by weight. This value translates to a value of 0.51 pounds per million Btu using the SO2 emission factor of 142*(Sulfur%) given in AP-42 Section 1.3 and assuming a fuel heating value of 140 million Btu per thousand gallons. Therefore, the No. 2 Power Boiler is expected to be in compliance with this regulation while combusting No. 2 fuel oil.

- 15A NCAC 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers

  This rule applies to the No. 1, No. 2, and No. 5 Power Boilers and states that emissions of particulate matter from the combustion of fuels in these boilers shall not exceed the allowable emission rate as determined by the equation $E = 1.090*Q^{-0.2594}$ where Q equals the maximum heat input in million Btu per hour. The existing emission limit, which was calculated for these boilers when they were initially permitted, is 0.16 pounds per million Btu heat input, each, when firing natural gas/coal/fuel oil.

  Based on the emission factor of 3.3 pounds of PM per thousand gallons (Mgal) as given in AP-42 Section 1.3 and a fuel heating value of 140 million Btu per thousand gallons, the emission rate of PM for combustion of No. 2 fuel oil is 0.023 pounds per million Btu, which is less than the allowable emission rate for each boiler. Therefore, the facility is expected to be in compliance with this regulation while combusting No. 2 fuel oil in the Nos. 1, 2, and 5 Power Boilers.

- 15A NCAC 02D .0504, Particulates from Woodburning Indirect Heat Exchangers

  This rule applies to the No. 2 Power Boiler and the No. 5 Power Boiler and states that emissions of particulate matter shall not exceed the allowable emission rate as calculated by the following equation:

$$E_c = [(E_w)(Q_w) + (E_o)(Q_o)] / Q_t$$

  Where;
  Ec = emission limit for combined firing (pound per mmBtu);
  Ew = 0.25 pounds per million Btu heat input (when firing bark/wood fiber sludge only) - determined for

02D .0504
Eo = 0.16 pounds per million Btu heat input (when firing natural gas/coal/ fuel oil only) – determined for 02D .0503
Qw = actual wood heat input including wood fiber sludge in Btu per hour;
Qo = actual heat input other than wood heat input in Btu per hour; and
Qt = Qw + Qo

The heat input ratings for ES-PB2 and ES-PB5 will not change with the addition of No. 2 fuel oil. Thus, the allowable particulate emission rate can be calculated as follows for ES-PB2:

$$E_c = [(0.25)(425) + (0.16)(425)] \div (425 + 425) = 0.205\ lb/mmBtu$$

The allowable particulate emission rate for ES-PB5 can be calculated as follows:

$$E_c = [(0.25)(600) + (0.16)(249)] \div (600 + 249) = 0.223\ lb/mmBtu$$

As given by the application, the expected actual particulate emission rates for ES-PB2 and ES-PB5 are each 3.26 lb/Mgal (NCASI Table 9.3). Assuming a fuel heating value of 140 mmBtu/Mgal, as given by AP-42 Section 1.3, this value translates to a value of 0.023 lb/mmBtu. This value is below each of the allowable particulate emission rates given above. Therefore, both No. 2 and No. 5 Power Boilers are expected to be in compliance with this regulation while combusting No. 2 fuel oil.

- 15A NCAC 02D .0508, Particulates from Pulp and Paper Mills

This rule applies to the No. 4 Lime Kiln and the Nos. 4 and 5 Recovery Boilers and states that particulate emissions shall not exceed 0.5 pounds of particulate matter per equivalent ton of air-dried pulp (ADTP) for the No. 4 Lime Kiln and 3 lb/ADTP for the No. 4 Recovery Boiler.

The most recent particulate matter stack test conducted on the No. 4 Lime Kiln was on February 13 and 14, 2018. During this test, the No. 4 Lime Kiln had a particulate emission rate of 0.02 lb/ADTP while firing 85% natural gas and 15% No. 6 fuel oil.

The application provides an emission factor of 22.2 lb/Mgal (NCASI Table 9.4) for particulate emissions when firing No. 6 fuel oil and 3.26 lb/Mgal (NCASI Table 9.3) for particulate emissions when firing No. 2 fuel oil. Thus, firing No. 2 fuel oil is expected to have a significantly lower particulate emission rate than firing No. 6 fuel oil. Therefore, if the No. 4 Lime Kiln is in compliance while firing No. 6 fuel oil, compliance while firing No. 2 fuel oil is expected.

The most recent particulate matter stack test conducted on the No. 4 Recovery Boiler was on September 2, 3, and 16, 2020. During this test, the No. 4 Recovery Boiler had a particulate emission rate of 1.05 lb/ADTP while firing black liquor solids. The production rate was approximately 25.5 ADTP/hr, so the total particulate emission rate was 26.78 lb/hr.

The application provides an emission factor of 3.26 lb/Mgal (NCASI Table 9.3) for particulate matter from firing No. 2 fuel oil. Assuming a fuel heating value of 140 mmBtu/Mgal, this translates to a value of 0.023 lb/mmBtu. The No. 4 Recovery Boiler has a heat input rating of 236 mmBtu/hr when firing fuel oil, so the total particulate emission rate when firing No. 2 fuel oil is 5.43 lb/hr. This value is significantly lower than the emission rate determined during source testing. Since the emission rate during source testing was in compliance with the 02D .0508 emission limit, then the emission rate when firing No. 2 fuel oil is expected to be in compliance with the 02D .0508 emission limit. Therefore, continued compliance is expected when firing No. 2 fuel oil in the No. 4 Recovery Boiler.

The most recent particulate matter stack test conducted on the No. 5 Recovery Boiler was on September 2, 3, and 16, 2020. During this test, the No. 5 Recovery Boiler had a particulate emission rate of 0.83 lb/ADTP while firing black liquor solids. The production rate was approximately 45 ADTP/hr, so the total particulate emission rate was 26.78 lb/hr.

The application provides an emission factor of 3.26 lb/Mgal (NCASI Table 9.3) for particulate matter from firing No. 2 fuel oil. Assuming a fuel heating value of 140 mmBtu/Mgal, this translates to a value of 0.023 lb/mmBtu. The No. 5 Recovery Boiler has a heat input rating of 140 mmBtu, so the total particulate emission rate when firing No. 2 fuel oil is 3.22 lb/hr. The previous heat input rating of the No. 5 Recovery Boiler (prior to the T44 revision) was 557 mmBtu/hr, so the previous total particulate matter emission rate when firing No. 2 fuel oil was 12.81 lb/hr. Both values appear to demonstrate compliance with the 02D .0508 emission limit. Therefore, continued compliance is expected when firing No. 2 fuel oil in the No. 5 Recovery Boiler.

- 15A NCAC 02D .0516, Sulfur Dioxide from Combustion Sources

  This rule applies to the Nos. 1, 2, and 5 Power Boilers and the Nos. 4 and 5 Recovery Boilers and states that emissions of sulfur dioxide shall not exceed 2.3 pounds per million Btu heat input. No. 2 fuel has a maximum sulfur content of 0.5% by weight. This value translates to a value of 0.51 pounds per million Btu using the SO2 emission factor of 142*(Sulfur%) given in AP-42 Section 1.3 and assuming a fuel heating value of 140 million Btu per thousand gallons, which is less than the allowable emission limit for each source.

  Additionally, the No. 2 Power Boiler complies with the more stringent 02D .0501(c) emission limit, as discussed above, so compliance with 02D .0516 is indicated by compliance with 02D .0501(c).

  Therefore, the Nos. 1, 2, and 5 Power Boilers and the Nos. 4 and 5 Recovery Boilers are expected to be in compliance with this regulation while combusting No. 2 fuel oil.

- 15A NCAC 02D .0519, Control of Nitrogen Oxide Emissions

  This rule applies to the No. 1, 2, and No. 5 Power Boilers and states that the emission limit of nitrogen oxides for a boiler burning coal, oil, or gas in combination shall be calculated by the following equation:

  $$E = \frac{(E_c * Q_c) + (E_o * Q_o)}{Q_t}$$

  Where: E = the emission limit for combination in pounds per million Btu
  $E_c$ = the emission limit for coal only (1.8 pounds per million Btu)
  $E_o$ = the emission limit for oil or gas (0.8 pounds per million Btu)
  $Q_c$ = the actual coal heat input to the combination in Btu per hour
  $Q_o$ = the actual oil and gas heat input to the combination in Btu per hour
  $Q_t = Q_c + Q_o$ and is the actual total heat input to the combination in Btu per hour

  The emission rate of NOx from the combustion of No. 2 fuel oil as given by AP-42 Section 1.3 is 24 pounds per thousand gallons. This translates to a value of 0.17 pounds per million Btu using a fuel heating value of 140 million Btu per thousand gallons. Since the emission rate of 0.17 pounds per million Btu is less than the emission limit given for oil or gas (0.8 pounds per million Btu), compliance with this regulation is expected when firing No. 2 fuel oil in the Nos. 1, 2 and 5 Power Boilers.

- 15A NCAC 02D .0521, Control of Visible Emissions

  This rule applies to the No. 3 Lime Kilns and the Nos. 1, 2, and 5 Power Boilers and states that visible emissions from the Nos. 1 and 2 Power Boilers shall not exceed 40 percent opacity, and visible emissions from the No. 5 Power Boiler and the No. 3 Lime Kiln shall not exceed 20 percent opacity. No emission limit is given for the No. 4 Lime Kiln since this source has an opacity limit given by 40 CFR 60 Subpart BB.

  Due to the low sulfur content of No. 2 fuel oil and a low particulate emission rate, the boiler is expected to remain in compliance with the visible emission limit above when combusting No. 2 fuel oil.

- 15A NCAC 02D .0524, New Source Performance Standards (40 CFR 60 Subpart BB)

  For discussion of NSPS applicability, see Section 5.c below.

- 15A NCAC 02D .0528, Total Reduced Sulfur from Kraft Pulp Mills

  This rule applies to the No. 3 Lime Kiln and the No. 4 Recovery Boiler and states that the emission of total reduced sulfur shall not exceed 20 ppm by volume measured as hydrogen sulfide on a dry basis, corrected to 10% oxygen. The facility complies with this regulation at the No. 3 Lime Kiln by complying with the $H_2S$ monitoring under MACT Subpart MM and at the No. 4 Recovery Boiler by periodic stack testing.

  Total reduced sulfur emissions are not expected with the firing of fuel oil. Therefore, compliance is expected with the firing of No. 2 fuel in the No. 3 Lime Kiln and the No. 4 Recovery Boiler.

- 15A NCAC 02D .0530, Prevention of Significant Deterioration

  For discussion of PSD applicability, see Section 5.c below.

- 15A NCAC 02D .0606, Sources Covered by Appendix P of 40 CFR Part 51

  This rule applies to the No. 2 Power Boiler and requires control of opacity and excess emissions monitoring and reporting. Opacity is controlled by a multicyclone and venturi scrubber (ID Nos. CD-PB2-MC and CD-PB2-SCRB).

  An increase in opacity is not expected with the firing of No. 2 fuel oil. Continued compliance is expected.

- 15A NCAC 02D .0607, Large Wood and Wood-Fossil Fuel Combination Units

  This rule applies to the No. 5 Power Boiler and requires control of opacity and excess emissions monitoring and reporting. Opacity is controlled by a multicyclone and venturi scrubber (ID Nos. CD-PB5-MC and CD-PB5-SCRB).

  An increase in opacity is not expected with the firing of No. 2 fuel oil. Continued compliance is expected.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants

  For discussion of toxics applicability, see Section 5.d below.

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

  For discussion of MACT applicability, see Section 5.c below.

- 15A NCAC 02Q .0317, Avoidance Conditions for PSD

  This rule applies to the Nos. 3 and 4 Lime Kilns and requires the facility to limit the NOx emissions from these sources to a combined total of less than 402.75 tons per consecutive 12-month period. The No. 4 lime kiln also has an individual limit of less than 159 tons of NOx per consecutive 12-month period.

  The addition of No. 2 fuel oil is not expected to increase the NOx emissions from the Nos. 3 and 4 lime kilns when compared with the currently permitted fuels. Compliance with this regulation is expected when firing No. 2 fuel oil.

- 15A NCAC 02Q .0317, Avoidance Condition for NSPS

This rule applies to the No. 5 Recovery Boiler and requires the facility to limit the capacity factor of fossil fuels fired in the boiler to less than 10%.

The addition of No. 2 fuel oil will not increase the amount of fossil fuel used nor will the heat input rate of the boiler change. Thus, no changes to this avoidance condition are necessary.

Continued compliance with this regulation is expected.

c. NSPS, NESHAP, and PSD Applicability

**NSPS Subpart BB**

As given in 40 CFR 60.14, a modification to a source subject to NSPS is defined as "any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere." The emissions changes with the proposed change to Recovery Boiler No. 5 are discussed in PSD Applicability, below.

NSPS Subpart BB applies to facilities in kraft pulp mills including power boilers and lime kilns that commenced construction, reconstruction, or modification after September 24, 1976, and on or before May 23, 2013. Nos. 2 and 5 Power Boilers as well as the No. 4 Lime Kiln are currently subject to this Subpart and comply with emission limits for filterable PM, opacity, and Total Reduced Sulfur (TRS). As demonstrated in PSD Applicability below, the proposed project is not expected to increase the emission of any of these NSPS-regulated pollutants. Therefore, the changes to be made to the Power Boilers, Lime Kilns, and Recovery Boiler do not constitute a modification per NSPS.

As given in 40 CFR 60.15, a reconstruction is defined as "the replacement of components of an existing facility to such an extent that: (1) the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and (1) it is technologically and economically feasible to meet the applicable standards set forth in this part." This change is a simple fuel addition and does not require a replacement or addition of any components. Therefore, the capital cost will not exceed 50 percent of the fixed capital cost of an entirely new unit, and the changes made to the Power Boilers, Lime Kilns, and Recovery Boilers do not constitute a reconstruction per NSPS.

**MACT Subparts S, MM, and DDDDD**

As given in 40 CFR 63.2, a reconstruction is defined as "the replacement of components of an affected or a previously nonaffected source to such an extent that: (1) the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source; and (2) it is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Administrator (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source."

This change is a simple fuel addition and does not require a replacement or addition of any components. Therefore, the capital cost will not exceed 50 percent of the fixed capital cost of an entirely new unit, and the changes made to the Power Boilers, Lime Kilns, and Recovery Boilers do not constitute a reconstruction per MACT.

**PSD**

IPRW is classified as an existing major stationary source for PSD purposes. The No. 5 Power Boiler is subject to BACT as specified in Table 5.c.1 below, and the No. 5 Recovery Boiler is subject to BACT as specified in Table 5.c..2 below.

IPRW demonstrates compliance with BACT for the No. 5 Power Boiler by conducting performance testing for PM, SO2, NOx, CO, and VOC on an annual basis (or every five years if the emission rate during testing is less than 80% of the applicable limit).

IPRW demonstrates compliance with BACT for the No. 5 Recovery Boiler by conducting performance testing for NOx and CO every five years and by limiting the heat input rate from fuel oil to 557 mmBtu/hr.

The addition of No. 2 fuel oil to the No. 5 Power Boiler and No. 5 Recovery Boiler is not expected to affect compliance with BACT. The facility will continue regular performance testing to ensure compliance. No changes to BACT will be made with this application.

**Table 5.c.1: No. 5 Power Boiler BACT**

| Pollutant | Emission Limits |
|---|---|
| Particulate matter | 0.16 pounds per million Btu heat input for coal<br>0.0562 pounds per million Btu heat input for oil<br>0.25 pounds per million Btu heat input for bark/wood fiber sludge |
| Sulfur dioxide | 0.80 pounds per million Btu heat input for coal<br>0.80 pounds per million Btu heat input for oil<br>0.024 pounds per million Btu heat input for bark/wood fiber sludge |
| Nitrogen Oxides | 0.4 pounds per million Btu heat input for coal<br>0.367 pounds per million Btu heat input for oil<br>0.35 pounds per million Btu for bark/wood fiber sludge |
| Carbon Monoxide | 0.208 pounds per million Btu heat input for coal<br>0.033 pounds per million Btu heat input for oil<br>0.50 pounds per million Btu heat input for bark/wood fiber sludge |
| Volatile Organic Compounds | 0.00292 pounds per million Btu heat input for coal<br>0.00187 pounds per million Btu heat input for oil<br>0.213 pounds per million Btu heat input for bark/wood fiber sludge |

**Table 5.c.2: No. 5 Recovery Boiler BACT**

| Pollutant | Emission Limits |
|---|---|
| Sulfur dioxide | 979.2 pounds per hour |
| Nitrogen Oxides | 100 ppmv corrected to 8 percent oxygen (24-hour average) |
| Carbon Monoxide | 300 ppmv corrected to 8 percent oxygen (24-hour average) |
| Volatile Organic Compounds | 37 pounds per hour |

PSD Applicability

The PSD regulations are applicable to construction of any new major stationary source or an existing major stationary source undergoing a major modification. IPRW is classified as an existing major stationary source for

PSD purposes. Preconstruction review requires an evaluation to determine if the proposed project results in a net emission increase of any regulated pollutant above its associated significant emission rate (SER) listed in 40 CFR 51.166(b)(23). Projects determined to exceed these thresholds must undergo a detailed review of control technology, ambient impacts analysis, and additional analysis to obtain a PSD permit prior to the start of construction.

To determine PSD applicability for the proposed changes with this application, the facility used the "actual-to-projected-actual applicability test for projects that only involve existing emissions units" as specified in 40 CFR 51.166(a)(7)(iv)(c). No increase in the firing of fuel oil will occur nor will the heat input rate of any emission unit increase with this application. Thus, no increase in throughput or debottlenecking in any areas of the mill will occur, so only the Nos. 2 and 5 Power Boilers, Nos. 3 and 4 Lime Kilns, and No. 4 Recovery Boiler were identified as affected units. Although the No. 1 Power Boiler has been removed and decommissioned, this source was included in the PSD applicability determination provided by IPRW in 2014 and was onsite during the selected baseline period of January 2010 through December 2011. Thus, the No. 1 Power Boiler will be included in this analysis. It is important to note that the emissions from the No. 1 Power Boiler are generally low and ultimately did not affect the results of this analysis.

Baseline actual emissions (BAE) are defined as "the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during any consecutive 24-month period within the five-year period immediately preceding the date that a complete permit application is received by the Division". The subject application was received on May 2, 2014. The baseline period selected for all pollutants was from January 2010 through December 2011 and is an appropriate period given the date of the application. The baseline emissions for all NSR regulated pollutants are shown in Table 5.c.3 below. The detailed emissions calculations are contained in the application spreadsheet.

**Table 5.c.3: Baseline Actual Emissions**

| | Emissions, tpy | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | VOC | PM | PM10 | PM2.5 | $SO_2$ | NOx | CO | Fluorides | Lead | $H_2SO_4$ | $H_2S$ | TRS | CO2e |
| Baseline Actual Emissions - LK3 | 0.1 | 2.2 | 1.9 | 1.7 | 2.0 | 4.8 | 0.4 | 0.0 | 0.3 | 0.2 | 0.1 | 0.1 | 1.66E+03 |
| Baseline Actual Emissions - LK4 | 4.3 | 11.7 | 11.2 | 10.9 | 66.4 | 333.0 | 36.9 | 0.0 | 0.0 | 1.8 | 2.4 | 1.5 | 5.67E+04 |
| Baseline Actual Emissions - RB4 | 41.4 | 114.4 | 109.1 | 92.3 | 368.8 | 266.1 | 238.8 | 0.2 | 0.0 | 2.6 | 11.4 | 18.6 | 4.46E+05 |
| Baseline Actual Emissions - RB5 | 51.2 | 142.5 | 102.9 | 92.5 | 82.9 | 973.8 | 921.6 | 0.0 | 0.0 | 12.3 | 8.1 | 12.6 | 1.29E+06 |
| Baseline Actual Emissions - PB1 | 0.4 | 0.40 | 0.40 | 0.40 | 0.0 | 1.3 | 4.6 | 0.0 | 0.0 | 0.0 | - | 0.0 | 9.24E+03 |
| Baseline Actual Emissions - PB2 | 17.0 | 53.1 | 52.8 | 52.7 | 723.9 | 297.5 | 124.7 | 0.0 | 0.0 | 3.0 | - | 0.1 | 2.16E+05 |
| Baseline Actual Emissions - PB5 | 14.9 | 71.2 | 70.9 | 70.8 | 7.2 | 279.6 | 185.5 | 0.0 | 0.0 | 3.1 | - | 0.1 | 2.29E+05 |
| | | | | | | | | | | | | | |
| Baseline Actual Emissions | 129 | 395 | 349 | 321 | 1,251 | 2,156 | 1,512 | 0 | 0 | 23 | 22 | 33 | 2.24E+06 |

Projected actual emissions (PAE) are defined, in part, as "the maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a regulated NSR pollutant in any one of the 5 years following the date the unit resumes regular operation after the project…". The projected actual emissions were calculated based on the annualized maximum production level that the mill achieved during the five-year lookback period which occurred during the month of December 2011, or 8,527 Mgal/yr. The projected actual emissions for all NSR regulated pollutants are shown in Table 5.c.4 below. The detailed emissions calculations are contained in the application spreadsheet.

**Table 5.c.4: Projected Actual Emissions**

| | Emissions, tpy | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | VOC | PM | PM10 | PM2.5 | $SO_2$ | NOx | CO | Fluorides | Lead | $H_2SO_4$ | $H_2S$ | TRS | CO2e |
| | | | | | | | | | | | | | |
| Projected Actual Emissions - LK3 | 0.0 | 2.0 | 1.8 | 1.6 | 0.6 | 3.0 | 0.4 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 1,637.0 |
| Projected Actual Emissions - LK4 | 5.7 | 16.6 | 15.9 | 15.6 | 35.0 | 409.0 | 50.1 | 0.0 | 0.0 | 7.6 | 3.5 | 2.8 | 99,536.8 |
| Projected Actual Emissions - RB4 | 46.6 | 129.1 | 122.9 | 103.9 | 387.1 | 296.6 | 269.1 | 0.3 | 0.0 | 2.7 | 12.9 | 20.9 | 5.02E+05 |
| Projected Actual Emissions - RB5 | 51.3 | 142.8 | 103.2 | 92.8 | 42.5 | 974.5 | 923.4 | 0.0 | 0.0 | 11.6 | 8.1 | 12.6 | 1.29E+06 |
| Projected Actual Emissions - PB1 | 0.7 | 1.95 | 1.75 | 1.75 | 59.5 | 21.7 | 9.9 | 0.0 | 0.0 | 1.0 | - | 0.0 | 3.07E+04 |
| Projected Actual Emissions - PB2 | 23.4 | 81.5 | 81.1 | 80.9 | 765.0 | 427.4 | 163.2 | 0.0 | 0.0 | 6.3 | - | 0.1 | 3.58E+05 |
| Projected Actual Emissions - PB5 | 18.9 | 62.2 | 61.7 | 61.6 | 3.9 | 344.9 | 233.9 | 0.0 | 0.0 | 3.0 | - | 0.1 | 3.02E+05 |
| | | | | | | | | | | | | | |
| Projected Actual Emissions | 147 | 436 | 388 | 358 | 1,294 | 2,477 | 1,650 | 0 | 0 | 32 | 25 | 37 | 2.59E+06 |

Projected emissions increases (PEI) are calculated by subtracting the BAE from the PAE for each regulated NSR pollutant. This is done to determine if the project will cause a significant emission increase. If any projected emissions increases are above the significant emission rate (SER) for a given NSR, a major modification under PSD is triggered. However, the facility may choose to exclude any emissions that a unit "could have accommodated" (CHA) during the baseline period and that are unrelated to the project.

It is clear from the BAE and PAE shown above that the emissions of PM, PM10, PM2.5, SO2, NOx, CO, and sulfuric acid mist (SAM) are above the applicable SERs. Thus, IPRW further analyzed the applicability by excluding CHA emissions from the PAE. CHA emissions for all NSR regulated pollutants are shown in Table 5.c.5 below. The detailed calculations are contained in the application spreadsheet.

**Table 5.c.5: Could-have-accommodated Emissions**

| | Emissions, tpy | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | VOC | PM | PM10 | PM2.5 | $SO_2$ | NOx | CO | Fluorides | Lead | $H_2SO_4$ | $H_2S$ | TRS | CO2e |
| Emissions Accommodated During Baseline - LK3 | 0.1 | 2.2 | 1.9 | 1.7 | 2.0 | 4.8 | 0.4 | 0.0 | 0.0 | 0.2 | 0.1 | 0.1 | 1.66E+03 |
| Emissions Accommodated During Baseline - LK4 | 6.0 | 17.8 | 17.1 | 16.6 | 117.5 | 495.6 | 48.6 | 0.1 | 0.0 | 3.3 | 3.5 | 2.8 | 1.01E+05 |
| Emissions Accommodated During Baseline - RB4 | 46.6 | 128.9 | 122.9 | 104.0 | 411.4 | 299.1 | 269.0 | 0.3 | 0.0 | 2.9 | 12.9 | 20.9 | 5.03E+05 |
| Emissions Accommodated During Baseline - RB5 | 51.3 | 143.0 | 103.3 | 93.0 | 155.8 | 986.4 | 923.2 | 0.0 | 0.0 | 12.9 | 8.1 | 12.6 | 1.29E+06 |
| Emissions Accommodated During Baseline - PB1 | 0.5 | 0.50 | 0.50 | 0.50 | 0.0 | 1.6 | 5.7 | 0.0 | 0.0 | 0.0 | - | 0.0 | 1.15E+04 |
| Emissions Accommodated During Baseline - PB2 | 23.5 | 87.1 | 86.8 | 86.7 | 845.2 | 488.0 | 231.0 | 0.0 | 0.0 | 9.7 | - | 0.1 | 3.59E+05 |
| Emissions Accommodated During Baseline - PB5 | 19.0 | 103.3 | 102.9 | 102.9 | 12.2 | 370.9 | 233.0 | 0.0 | 0.0 | 5.3 | - | 0.1 | 3.03E+05 |
| Emissions Accommodated During Baseline | 147 | 483 | 435 | 405 | 1,544 | 2,646 | 1,711 | 0 | 0 | 34 | 25 | 37 | 2.57E+06 |

When considering if emissions increases can be excludable as "could have accommodated" or CHA, the excludable portion of the projected emissions increases must only include emissions that *both* (1) the unit could have accommodated during the baseline period; and (2) are unrelated to the project.

IPRW has calculated excludable CHA emissions using actual emissions calculated from production data from December 2011, a month that occurred during the selected baseline period. Since the CHA emissions were appropriately calculated from production data that occurred within the baseline period, the first condition in determining excludable emissions has been met.

The second condition in determining excludable emissions increases is to determine if the emissions increases are unrelated to the project. Emissions increases are likely to be related to the project when the project:

- Allows or results in the use of a higher emitting fuel;
- Increases capacity;
- Regains lost capacity;
- Increases reliability;
- Increases demand for a product; or
- Increases the ability to use an existing fuel.

The proposed fuel switch will not increase capacity, regain lost capacity, or increase reliability of any piece of equipment. The proposed new fuel, No. 2 fuel oil, is generally lower emitting than the fuels currently permitted, except for natural gas. No new components are being installed that will increase the heat input rating of any equipment. The CHA emissions were calculated using actual production data and appear to be unrelated to the proposed fuel switch. Thus, it appears that the CHA emissions are eligible to be excluded from PAE calculations.

To calculate the net project emissions increases, baseline actual emissions (BAE) are subtracted from CHA emissions to determine the excludable portion of the projected emissions increases, or the demand growth exclusion. The following general formula was used to calculate the net project emissions increases (PEI):

PEI = PAE – BAE – (CHA – BAE)

Table 5.c.6 shows a summary of the net PEI for each NSR regulated pollutant:

**Table 5.c.6: Summary of Projected Emissions Increases**

| | Emissions, tpy | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **VOC** | **PM** | **PM10** | **PM2.5** | **$SO_2$** | **NOx** | **CO** | **Fluorides** | **Lead** | **$H_2SO_4$** | **$H_2S$** | **TRS** | **CO2e** |
| Baseline Actual Emissions - LK3 | 0.1 | 2.2 | 1.9 | 1.7 | 2.0 | 4.8 | 0.4 | 0.0 | 0.3 | 0.2 | 0.1 | 0.1 | 1.66E+03 |
| Baseline Actual Emissions - LK4 | 4.3 | 11.7 | 11.2 | 10.9 | 66.4 | 333.0 | 36.9 | 0.0 | 0.0 | 1.8 | 2.4 | 1.5 | 5.67E+04 |
| Baseline Actual Emissions - RB4 | 41.4 | 114.4 | 109.1 | 92.3 | 368.8 | 266.1 | 238.8 | 0.2 | 0.0 | 2.6 | 11.4 | 18.6 | 4.46E+05 |
| Baseline Actual Emissions - RB5 | 51.2 | 142.5 | 102.9 | 92.5 | 82.9 | 973.8 | 921.6 | 0.0 | 0.0 | 12.3 | 8.1 | 12.6 | 1.29E+06 |
| Baseline Actual Emissions - PB1 | 0.4 | 0.40 | 0.40 | 0.40 | 0.0 | 1.3 | 4.6 | 0.0 | 0.0 | 0.0 | - | 0.0 | 9.24E+03 |
| Baseline Actual Emissions - PB2 | 17.0 | 53.1 | 52.8 | 52.7 | 723.9 | 297.5 | 124.7 | 0.0 | 0.0 | 3.0 | - | 0.1 | 2.16E+05 |
| Baseline Actual Emissions - PB5 | 14.9 | 71.2 | 70.9 | 70.8 | 7.2 | 279.6 | 185.5 | 0.0 | 0.0 | 3.1 | - | 0.1 | 2.29E+05 |
| Baseline Actual Emissions | 129 | 395 | 349 | 321 | 1,251 | 2,156 | 1,512 | 0 | 0 | 23 | 22 | 33 | 2.24E+06 |
| Projected Actual Emissions - LK3 | 0.0 | 2.0 | 1.8 | 1.6 | 0.6 | 3.0 | 0.4 | 0.0 | 0.0 | 0.1 | 0.1 | 0.1 | 1,637.0 |
| Projected Actual Emissions - LK4 | 5.7 | 16.6 | 15.9 | 15.6 | 35.0 | 409.0 | 50.1 | 0.0 | 0.0 | 7.6 | 3.5 | 2.8 | 99,536.8 |
| Projected Actual Emissions - RB4 | 46.6 | 129.1 | 122.9 | 103.9 | 387.1 | 296.6 | 269.1 | 0.3 | 0.0 | 2.7 | 12.9 | 20.9 | 5.02E+05 |
| Projected Actual Emissions - RB5 | 51.3 | 142.8 | 103.2 | 92.8 | 42.5 | 974.5 | 923.4 | 0.0 | 0.0 | 11.6 | 8.1 | 12.6 | 1.29E+06 |
| Projected Actual Emissions - PB1 | 0.7 | 1.95 | 1.75 | 1.75 | 59.5 | 21.7 | 9.9 | 0.0 | 0.0 | 1.0 | - | 0.0 | 3.07E+04 |
| Projected Actual Emissions - PB2 | 23.4 | 81.5 | 81.1 | 80.9 | 765.0 | 427.4 | 163.2 | 0.0 | 0.0 | 6.3 | - | 0.1 | 3.58E+05 |
| Projected Actual Emissions - PB5 | 18.9 | 62.2 | 61.7 | 61.6 | 3.9 | 344.9 | 233.9 | 0.0 | 0.0 | 3.0 | - | 0.1 | 3.02E+05 |
| Projected Actual Emissions | 147 | 436 | 388 | 358 | 1,294 | 2,477 | 1,650 | 0 | 0 | 32 | 25 | 37 | 2.59E+06 |
| Emissions Accommodated During Baseline - LK3 | 0.1 | 2.2 | 1.9 | 1.7 | 2.0 | 4.8 | 0.4 | 0.0 | 0.0 | 0.2 | 0.1 | 0.1 | 1.66E+03 |
| Emissions Accommodated During Baseline - LK4 | 6.0 | 17.8 | 17.1 | 16.6 | 117.5 | 495.6 | 48.6 | 0.1 | 0.0 | 3.3 | 3.5 | 2.8 | 1.01E+05 |
| Emissions Accommodated During Baseline - RB4 | 46.6 | 128.9 | 122.9 | 104.0 | 411.4 | 299.1 | 269.0 | 0.3 | 0.0 | 2.9 | 12.9 | 20.9 | 5.03E+05 |
| Emissions Accommodated During Baseline - RB5 | 51.3 | 143.0 | 103.3 | 93.0 | 155.8 | 986.4 | 923.2 | 0.0 | 0.0 | 12.9 | 8.1 | 12.6 | 1.29E+06 |
| Emissions Accommodated During Baseline - PB1 | 0.5 | 0.50 | 0.50 | 0.50 | 0.0 | 1.6 | 5.7 | 0.0 | 0.0 | 0.0 | - | 0.0 | 1.15E+04 |
| Emissions Accommodated During Baseline - PB2 | 23.5 | 87.1 | 86.8 | 86.7 | 845.2 | 488.0 | 231.0 | 0.0 | 0.0 | 9.7 | - | 0.1 | 3.59E+05 |
| Emissions Accommodated During Baseline - PB5 | 19.0 | 103.3 | 102.9 | 102.9 | 12.2 | 370.9 | 233.0 | 0.0 | 0.0 | 5.3 | - | 0.1 | 3.03E+05 |
| Emissions Accommodated During Baseline | 147 | 483 | 435 | 405 | 1,544 | 2,646 | 1,711 | 0 | 0 | 34 | 25 | 37 | 2.57E+06 |
| **Project Net Emissions Increases** | **-0.5** | **-46.5** | **-47.1** | **-47.0** | **-250.4** | **-169.2** | **-60.9** | **-0.1** | **0.0** | **-1.9** | **0.0** | **0.0** | **15,399** |
| | | | | | | | | | | | | | |
| **NSR Significant Emission Rates** | 40 | 25 | 15 | 10 | 40 | 40 | 100 | 3 | 0.6 | 7 | 10 | 10 | 75,000 |
| **Major NSR Review Required** | **No** | **No** | **No** | **No** | **No** | **No** | **No** | **No** | **No** | **No** | **No** | **No** | **No** |

As shown in Table 5.c.6, no NSR regulated pollutant is expected to be emitted at a net increase with the proposed project above the applicable SER. Therefore, PSD review is not triggered for this application.

Pursuant to 15A NCAC 02D .0530(u), because the applicant relied on the demand growth exclusion using CHA emissions to demonstrate that the fuel switch does not result in a significant emissions increase, the Permittee would have been required to conduct monitoring and recordkeeping of annual emissions, related to the project, in tons per year, for 5 years following the completion of the project. This project occurred more than 5 years ago, and no actual emission increases were expected. Additionally, two of the units included in this project have been shut down (No. 1 Power Boiler and No. 3 Lime Kiln). Thus, DAQ will not include any 02D .0530(u) requirements for this project.

Increment Tracking

Columbus County has triggered minor source baseline date for PM10, SO2, and NOx. Emissions changes with this application are shown below and are based on the PEI given in Table 5.c.6 above.

No changes in facility-wide emissions are expected to occur due to the modification associated with Application No. 240036.14A. Thus, increment tracking is not required.

d. Toxics

Under 15 A NCAC 2Q.0700 facilities that emit TAPs for which they are required to have a permit under 15 NCAC 2D.1100 must demonstrate compliance with the Acceptable Ambient Levels (AALs). IP Riegelwood

submitted a facility-wide modeling demonstration, which included combustion sources, on March 15, 2011 as part of a permit application to combust natural gas in the No. 5 Power Boiler. Facility wide emission rates were compared to the TPERs, and 30 compounds required modeling. The results of the 2011 demonstration are provided in the following Table 5.d.1.

**Table 5.d.1: 2011 Modeled Impacts**

| Compound | AAL, µg/m3 | Modeled Impact of Potential Emissions, µg/m$^3$ | % of AAL |
|---|---|---|---|
| **1-hour averaging periods** | | | |
| Acetaldehyde | 27000 | 93.1 | 0.3% |
| Acrolein | 80 | 1.4 | 1.8% |
| Ammonia | 2700 | 513.5 | 19.0% |
| Chlorine | 900 | 98.3 | 10.9% |
| Cresol | 2200 | 241.5 | 11.0% |
| Formaldehyde | 150 | 94.3 | 62.9% |
| Hydrogen Chloride | 700 | 21.9 | 3.1% |
| Hydrogen Fluoride | 250 | 0.04 | 0.0% |
| Methyl Ethyl Ketone | 88500 | 14.5 | 0.0% |
| Methyl Mercaptan | 50 | 33.5 | 67.0% |
| Methylene Chloride | 1700 | 2.3 | 0.1% |
| Phenol | 950 | 25.15 | 2.6% |
| Sulfuric Acid | 100 | 8.605 | 8.6% |
| **24-hour averaging periods** | | | |
| Carbon disulfide | 186 | 6.8 | 3.7% |
| Chlorine | 37.5 | 31.6 | 84.3% |
| Chromium VI | 0.62 | 0.316 | 51.0% |
| Hydrogen Fluoride | 30 | 0.01 | 0.0% |
| Hydrogen Sulfide | 120 | 26.43 | 22.0% |
| Manganese (& Cmpds) | 31 | 0.01 | 0.0% |
| Mercury (& Cmpds) | 0.6 | 0.0041 | 0.7% |
| Methyl Ethyl Ketone | 3700 | 3.5 | 0.1% |
| n-Hexane | 1100 | 2.3 | 0.2% |
| Nickel (& Cmpds) | 0.6 | 0.1 | 15.2% |
| Sulfuric Acid | 12 | 2.3 | 19.2% |
| **Annual averaging periods** | | | |
| 1,3-Butadiene | 0.44 | 0.00624 | 1.4% |
| Arsenic (& Cmpds) | 0.00023 | 0.0001 | 43.5% |
| Benzene | 0.12 | 0.03 | 22.1% |
| Benzo(a)pyrene | 0.03 | 0.00002 | 0.1% |
| Beryllium | 0.0041 | 0.00009 | 2.2% |
| Cadmium | 0.0055 | 0.00012 | 2.2% |
| Carbon tetrachloride | 6.7 | 0.1 | 1.2% |
| Chloroform | 4.3 | 0.2 | 3.6% |
| Ethylene Dichloride | 3.8 | 0.00079 | 0.0% |
| Methylene Chloride | 24 | 0.13 | 0.5% |
| Vinyl Chloride | 0.38 | 0.0176 | 4.6% |

With the exception of 24-hour chlorine emissions, modeled facility impacts are less than 70% of all AALs, and in most cases are less than 5% of AALs (22 of 35).

On June 21, 2012, the North Carolina General Assembly passed air toxics reform legislation HB 952. Under the bill, any source that is covered under a MACT or Generally Achievable Control Technology (GACT) standard and any source covered under a 112(j) permit is exempt from regulation under the state air toxics rule, except in those circumstances when the Division of Air Quality's (DAQ) Director makes a written finding that emissions from such a source presents an unacceptable risk to public health (e.g., a Director's call). The legislation requires that, upon receipt of any permit application that would result in an increase in TAP emissions, DAQ must review the application to determine if the emissions of TAPs from the facility present an unacceptable risk to human health. In 2012, the Riegelwood Mill requested removal of the toxics limits for MACT sources from its air permit, including the Power Boilers, Lime Kilns, and Recovery Boilers.

To evaluate the facility-wide impacts of the addition of No. 2 fuel oil in the Power Boilers, Lime Kilns, and Recovery Boilers, potential toxics emissions from these sources when firing No. 2 fuel oil were compared to the emission rates of NC toxics from the 2011 dispersion modeling analysis. Tables 5.d.2 through 4 present each post-project TAP emission rate from the Power Boilers, Lime Kilns, and Recovery Boilers compared with the applicable emission rate from the 2011 analysis. PAE emissions were calculated using fuel usage estimates from the application and AP-42 Section 1.3 emission factors. For estimation of hourly emissions, the operating hours per year were estimated by dividing the expected annual boiler capacity (mmBtu/yr) by the maximum heat input of the boiler (mmBtu/hr). For estimation of daily emissions, it was assumed that each boiler operated 365 days per year.

**Table 5.d.2: Projected TAP Emissions from Power Boilers**

| Toxic Air Pollutant | No. 1 Power Boiler | | No. 2 Power Boiler | | No. 5 Power Boiler | |
|---|---|---|---|---|---|---|
| | 2011 Emission Rate | PAE from No. 2 Fuel Oil | 2011 Emission Rate | PAE | 2011 Emission Rate | PAE |
| **Arsenic** | **4.68E-01 lb/yr** | **9.39E-01 lb/yr** | 5.96E+01 lb/yr | 3.77 lb/yr | 3.49E+01 lb/yr | 2.58 lb/yr |
| Benzene | 4.47 lb/yr | 3.59E-01 lb/yr | 4.10E+03 lb/yr | 1.44 lb/yr | 5.78E+03 lb/yr | 9.86E-01 lb/yr |
| Beryllium | 6.13 lb/yr | 7.04E-01 lb/yr | 1.04E+01 lb/yr | 2.80 lb/yr | 6.46 lb/yr | 1.93 lb/yr |
| Cadmium | 6.13 lb/yr | 7.04E-01 lb/yr | 1.51E+01 lb/yr | 2.80 lb/yr | 2.13E+01 lb/yr | 1.93 lb/yr |
| Soluble Chromate Compounds | 3.62 lb/day | 1.93E-03 lb/day | 6.05E-02 lb/day | 7.68E-03 lb/day | 3.55E-02 lb/day | 5.30E-03 lb/day |
| **Formaldehyde** | **5.50E-02 lb/hr** | **5.89E-02 lb/hr** | 1.72 lb/hr | 1.00E-01 lb/hr | 2.42 lb/hr | 5.87E-02 lb/hr |
| Manganese | 1.20E-01 lb/day | 3.86E-03 lb/day | 3.85E-01 lb/day | 1.55E-02 lb/day | 5.43E-01 lb/day | 1.06E-02 lb/day |
| Mercury | 1.68E-02 lb/day | 1.93E-03 lb/day | 3.31E-02 lb/day | 7.68E-03 lb/day | 1.94E-02 lb/day | 5.30E-03 lb/day |
| **Methyl Chloroform (1-hour)*** | **3.93E-04 lb/hr** | **4.21E-04 lb/hr** | 2.46E-02 lb/hr | 7.16E-04 lb/hr | 3.47E-02 lb/hr | 4.20E-04 lb/hr |
| Methyl Chloroform (24-hour)* | 9.44E-03 lb/day | 1.08E-03 lb/day | 5.90E-01 lb/day | 4.35E-03 lb/day | 8.32E-01 lb/day | 2.98E-03 lb/day |
| Nickel | 3.38 lb/day | 1.93E-03 lb/day | 5.75 lb/day | 7.68E-03 lb/day | 3.37 lb/day | 5.30E-03 lb/day |
| **Toluene (1-hour)*** | **1.03E-02 lb/hr** | **1.11E-01 lb/hr** | **1.76E-02 lb/hr** | **1.88E-02 lb/hr** | 1.46E-02 lb/hr | 1.10E-02 lb/hr |
| **Toluene (24-hour)*** | **2.48E-01 lb/day** | **2.85E-01 lb/day** | 4.22E-01 lb/day | 1.14E-01 lb/day | 3.50E-01 lb/day | 7.82E-02 lb/day |
| **Xylene (1-hour)*** | **1.83E-04 lb/hr** | **1.95E-04 lb/hr** | 2.22E-03 lb/hr | 3.31E-04 lb/hr | 3.13E-03 lb/hr | 1.94E-04 lb/hr |
| Xylene (24-hour)* | 4.40E-03 lb/day | 5.01E-04 lb/day | 5.32E-02 lb/day | 2.01E-03 lb/day | 7.51E-02 lb/day | 1.38E-03 lb/day |

*Emissions of this toxic air pollutant were not modeled as the emission rate is below the applicable TPER limit.

**Table 5.d.3: Projected TAP Emissions from Recovery Boilers**

| Toxic Air Pollutant | No. 4 Recovery Boiler | | No. 5 Recovery Boiler | |
|---|---|---|---|---|
| | 2011 Emission Rate | PAE | 2011 Emission Rate | PAE |
| Arsenic | 1.82 lb/yr | 1.44E-01 lb/yr | 3.96 lb/yr | 6.70E-01 lb/yr |
| **Benzene** | **2.95E-02 lb/yr** | **5.48E-02 lb/yr** | 6.42E-02 lb/yr | 2.56E-01 lb/yr |
| **Beryllium** | 5.79E-01 lb/yr | 1.08E-01 lb/yr | **8.34E-02 lb/yr** | **5.03E-01 lb/yr** |
| Cadmium | 5.79E-01 lb/yr | 1.08E-01 lb/yr | 1.19 lb/yr | 5.03E-01 lb/yr |
| Soluble Chromate Compounds | 1.80E-02 lb/day | 2.95E-04 lb/day | 4.25E-02 lb/day | 1.38E-03 lb/day |
| **Formaldehyde** | **5.19E-02 lb/hr** | **5.55E-02 lb/hr** | **1.23E-01 lb/hr** | **1.31E-01 lb/hr** |
| Manganese | 1.13E-01 lb/day | 5.90E-04 lb/day | 2.67E-01 lb/day | 2.75E-03 lb/day |
| Mercury | 1.59E-02 lb/day | 2.95E-04 lb/day | 1.01E-02 lb/day | 1.38E-03 lb/day |
| **Methyl Chloroform (1-hour)*** | **3.71E-04 lb/hr** | **3.97E-04 lb/hr** | **8.76E-04 lb/hr** | **9.39E-04 lb/hr** |
| Methyl Chloroform (24-hour)* | 8.91E-03 lb/day | 1.66E-04 lb/day | 2.10E-02 lb/day | 7.74E-04 lb/day |
| Nickel | 3.19 lb/day | 2.95E-04 lb/day | 7.53 lb/day | 1.38E-03 lb/day |
| **Toluene (1-hour)*** | **9.75E-03 lb/hr** | **1.04E-02 lb/hr** | **2.30E-02 lb/hr** | **2.47E-02 lb/hr** |
| Toluene (24-hour)* | 2.34E-01 lb/day | 4.35E-03 lb/day | 5.53E-01 lb/day | 2.03E-02 lb/day |
| **Xylene (1-hour)*** | **1.73E-04 lb/hr** | **1.83E-04 lb/hr** | **4.08E-04 lb/hr** | **4.34E-04 lb/hr** |
| Xylene (24-hour)* | 4.15E-03 lb/day | 7.64E-05 lb/day | 9.80E-03 lb/day | 3.57E-04 lb/day |

*Emissions of this toxic air pollutant were not modeled as the emission rate is below the applicable TPER limit.

**Table 5.d.4: Projected TAP Emissions from Lime Kilns**

| Toxic Air Pollutant | No. 3 Lime Kiln | | No. 4 Lime Kiln | |
|---|---|---|---|---|
| | 2011 Emission Rate | PAE | 2011 Emission Rate | PAE |
| **Arsenic** | 1.10E-01 lb/yr | 8.02E-02 lb/yr | **1.63 lb/yr** | **4.88 lb/yr** |
| **Benzene** | **1.79E-02 lb/yr** | **2.87E-02 lb/yr** | **2.65E-01 lb/yr** | **1.86 lb/yr** |
| **Beryllium** | **2.32E-03 lb/yr** | **6.02E-02 lb/yr** | **3.44E-02 lb/yr** | **3.66 lb/yr** |
| **Cadmium** | **3.32E-02 lb/yr** | **6.02E-02 lb/yr** | **4.93E-01 lb/yr** | **3.66 lb/yr** |
| Soluble Chromate Compounds | 1.64E-01 lb/day | 1.65E-04 lb/day | 3.95E-01 lb/day | 1.00E-02 lb/day |
| **Formaldehyde** | **1.91E-02 lb/hr** | **1.92E-02 lb/hr** | **4.66E-02 lb/hr** | **5.00E-02 lb/hr** |
| Manganese | 4.18E-02 lb/day | 3.30E-04 lb/day | 1.02E-01 lb/day | 2.01E-02 lb/day |
| **Mercury** | 1.57E-03 lb/day | 1.65E-04 lb/day | **3.83E-03 lb/day** | **1.00E-02 lb/day** |
| **Methyl Chloroform (1-hour)*** | 1.37E-04 lb/hr | 1.37E-04 lb/hr | **3.34E-04 lb/hr** | **3.57E-04 lb/hr** |
| Methyl Chloroform (24-hour)* | 3.29E-03 lb/day | 8.66E-05 lb/day | 8.01E-03 lb/day | 5.63E-03 lb/day |
| Nickel | 1.18 lb/day | 1.65E-04 lb/day | 2.87 lb/day | 1.00E-02 lb/day |
| **Toluene (1-hour)*** | 3.60E-03 lb/hr | 3.60E-03 lb/hr | **8.76E-03 lb/hr** | **9.39E-03 lb/hr** |
| Toluene (24-hour)* | 8.63E-02 lb/day | 2.28E-03 lb/day | 2.10E-01 lb/day | 1.48E-01 lb/day |
| **Xylene (1-hour)*** | 6.38E-05 lb/hr | 6.33E-05 lb/hr | **1.55E-04 lb/hr** | **1.65E-04 lb/hr** |
| Xylene (24-hour)* | 1.53E-03 lb/day | 4.00E-05 lb/day | 3.73E-03 lb/day | 2.60E-03 lb/day |

*Emissions of this toxic air pollutant were not modeled as the emission rate is below the applicable TPER limit.

Emissions of arsenic, benzene, beryllium, cadmium, formaldehyde, and mercury were found to be higher than the TAP emission rates from the 2011 dispersion modeling analysis. To determine the maximum impact after switching to No. 2 fuel oil in the sources listed above, the potential emission increases due to the fuel switch were added to the total emission rate of each toxic air pollutant modeled in the 2011 analysis. The new emissions estimates were compared to the 2011 modeled emission rate and then compared with the AAL to determine if the new toxics emissions will pose a significant risk to human health.

| Pollutant | 2011 Modeled Emission Rate | %AAL in 2011 | Potential Post-Fuel Switch Emission Rate | %AAL after Fuel Switch |
|---|---|---|---|---|
| Arsenic | 109.5 lb/yr | 43.5% | 113.2 lb/yr | 45%[2] |
| Benzene | 12,550.9 lb/yr | 22.1% | 12552.5 lb/yr | 22.1% |
| Beryllium | 26.82 lb/yr | 2.2% | 30.9 lb/yr | 2.5% |
| Cadmium | 63.24 lb/yr | 2.2% | 66.4 lb/yr | 2.3% |
| Formaldehyde | 8.82 lb/hr | 62.9% | 8.84 lb/hr | 63.0% |
| Mercury | 1.35E-01 lb/day | 0.68% | 1.41E-01 lb/day | 0.71% |

[1]Emissions calculated using factors from AP-42 Section 1.3 assuming 8760 hours of operation per year.
[2]Arsenic AAL was increased in 2014 to 2.1E-06 mg/m$^3$. The numbers above represent the %AAL in comparison to the 2011 arsenic AAL of 2.3 E-07 mg/m$^3$, which results in a much higher percentage.

Emissions of methyl chloroform (1-hour), toluene, and xylene (1-hour) were found to be higher than the TAP emission rates form the 2011 toxics analysis. For methyl chloroform (1-hour), toluene, and xylene, the facility-wide toxics emissions from the 2011 analysis were added to the emission increases due to the fuel switch and compared with the applicable TPER to determine if a modeling analysis is required. The following tables demonstrate the results of this analysis.

| Toxic Air Pollutant | Facility-wide Emission Rate After Addition of No. 2 Fuel Oil | TPER | Modeling Required? |
|---|---|---|---|
| Methyl Chloroform | 7.01E-02 lb/hr | 64 lb/hr | No |
| Toluene | 4.05E-01 lb/hr | 14.4 lb/hr | No |
| | 6.84 lb/day | 98 lb/day | No |
| Xylene | 8.00E-01 lb/hr | 16.4 lb/hr | No |

No toxic air pollutant is expected to be emitted at a rate that poses an unacceptable risk to human health.

e. Other Regulatory Considerations

- A P.E. seal is NOT required for this application .
- A zoning consistency determination is NOT required for this application.
- A permit fee was not assessed for this application as it appears to qualify as a Section 502(b)(10) change under 15A NCAC 02Q .0523.

**6. Application No. 2400036.16A: Second Step Application for Product Mix Project (Application No. 2400036.15A)**

Permit Application No. 2400036.16A was submitted on August 1, 2016. This application served as a permit renewal application as well as a second step permit application for a previous permit application for modification (2400036.15A).

Permit Application No. 2400036.15A for the Product Mix Project was submitted in February 2015 and permit number 03138T41 was issued to incorporate the requested modifications. The project involved converting the mill to 100% softwood pulp production. The technical review for the first-step application is included as Attachment 1 below.

The following equipment was modified as part of the project:

- No. 3 Bleach Plant
- No. 18 Paper Machine
- No. 4 Brownstock Washer line
- Kamyr continuous digester
- Hardwood weak black liquor tank
- Goslin turpentine system
- No. 5 Recovery Furnace

The technical review for the first step application is provided in Attachment 1 to this document.

With this application, IPRW is requesting that the following equipment and associated control devices be removed from the permit:

- No. 1 Power Boiler (ES-PB1)
- No. 15 Paper Machine (ES-J-009)
- IR dryers associated with No. 18 Paper Machine (ES-JJ-030)
- Starch Silos (ES-JA301, ES-JA306, ES-JA307, and ES-JA322)
- Finishing Operations (ES-FINOPS)

The permit renewal component of this application will be addressed in a future permitting action.

a. Regulatory Review

The following regulations were added to the permit with the issuance of Permit No. 03138T41:

- 15A NCAC 02D .0530(u)

  Pursuant to 15A NCAC 2D .0530(u), because the Permittee relied on projected actual emissions for the purposes of demonstrating that the modifications in Application No. 2400036.15A did not result in significant emissions increases, the Permittee was required to maintain records of annual emissions, related to the modifications, in tons per year, for 5 years following resumption of regular operations after the modifications. This rule further required the Permittee to submit annual reports within 60 days after the end of each year during which these records must be generated. This report shall contain the items listed in 40 CFR 51.166(r)(6)(v)(a) through (c).

  A compliance inspection was conducted on September 1, 2016 by Russell Morgan III, previously of WiRO. The inspection report indicated that the modifications proposed in Application No. 2400036.15A were completed between March 8 and September 1, 2016. The required reports have been submitted for the required five years (CY2016 through CY2022) and appeared to demonstrate compliance with the projected actual emissions.

The DAQ will remove this requirement from the permit as it has been completed.

- 15A NCAC 02Q .0504

  This rule requires that the Permittee submit a second step application within one year of commencement of post-modification operations. The September 1, 2016 inspection report indicated that the modifications had been completed on or before the date of the inspection. The second step permit application was received on August 1, 2016 which is within one year of commencement of post-modification operations. Thus, the facility was in compliance with this regulation.

  The DAQ will remove this requirement from the permit as it has been completed.

b. Other Regulatory Considerations

- A P.E. seal is NOT required for this application .
- A zoning consistency determination is NOT required for this application.
- A permit fee of $922 was required for this application and received on August 1, 2016.

**7. Application No. 2400036.20A: Second Step Application for Application No. 2400036.18A**

Permit Application No. 2400036.20A was submitted on January 27, 2020. This application is the second step of a two-step significant modification under 15A NCAC 02Q .0501(c)(2) for the addition of a new turbine generator (ID No. TG4) (Application No. 2400036.18A).

Permit No. 03138T42 was issued on February 8, 2019 to allow the facility to add a new 40 MW condensing steam turbine generator, TG4. TG4 is not an emission source itself, but the facility will burn additional bark in the Nos. 2 and 5 Power Boilers to supply the generator with steam.

The technical review for the first step application is provided in Attachment 2 to this document.

With this application, the facility also requested the following permit revisions:

- Shutdown of several emission units (the equipment mentioned under Section 6 above; PB1 was removed with the issuance of 03138T43);
- Conversion of the No. 18 paper machine to a pulp dryer and renaming the existing pulp dryer to No. 20 pulp dryer;
- Implementation of the Boiler MACT rule (implemented in Permit No. 03138T43);
- Permit revisions to reflect implementation of the MACT Subpart MM RTR rule and differences between MACT Subpart MM and NSPS Subpart BB requirements. In addition:
    - Facility received written approval from the Environmental Protection Agency (EPA) for alternate monitoring of the No. 4 Lime Kiln (ID No. ES-K4001) which is controlled by an electrostatic precipitator (ESP, ID No. CD-K421) and a wet scrubber (ID No. CD-K4006). IPRW will utilize a continuous opacity monitoring system (COMS) to monitor opacity in the ductwork between the ESP and the wet scrubber, and meet all COMS calibration, maintenance, and operating requirements of 40 CFR 63 Subpart MM and 40 CFR 60 Subpart BB. These alternate monitoring requirements are in lieu of continuous parameter monitoring of differential pressure and scrubber liquid flow rate of the wet scrubber as required by 63.864(e)(10) and 60.284(b)(2).
    - Facility received written approval from the EPA for alternate monitoring of the operating parameters of the wet scrubbers (ID Nos. CD-4ST-1, CD-5EST-1, and CD-5WST-1) associated with the No. 4 Smelt Dissolving Tank and the No. 5 East and West Smelt Dissolving Tanks. IPRW will utilize fan amperage as an alternative monitoring parameter in lieu of continuously monitoring pressure drop across each scrubber as given by 63.864(e)(10)(i). This alternate monitoring parameter was also approved to replace pressure drop monitoring as required by 60.282(b)(2)(i).
- Completion of several 5-year reporting requirements for actual emissions per 15A NCAC 02D .0530(u);
    - Remove Permit Condition No. 2.1 C.7
    - Remove Permit Condition No. 2.2 H.1
- Request to harmonize Nos. 2 and 5 Power Boilers scrubbers parameter monitoring averaging periods across the various applicable regulations to align with the Boiler MACT;
    - Specify a 30-day rolling average for monitoring parameters in permit conditions for 02D .0503, 02D .0606, and 02D .0607.
- Updates to Nos. 2 and 5 Power Boilers monitoring requirements;
    - Rewording of the SO2 monitoring required by Permit Condition Nos. 2.1 B.1.c and 2.1 C.3.c to clarify that only liquid flow rate monitoring from Permit Condition Nos. 2.1 B.2.c and 2.1 C.1.c, respectively, applies and not differential pressure drop.
- Updates to the No. 4 Lime Kiln operating limits to specify that the kiln may be operated while one field of the electrostatic precipitator (ESP) is not operating.

a. <u>Regulatory Review</u>

The following regulations are affected by this permitting action:

- 15A NCAC 02D .0501, Compliance with Emission Control Standards
- 15A NCAC 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers
- 15A NCAC 02D .0508, Particulates from Pulp and Paper Mills
- 15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources
- 15A NCAC 02D .0524, New Source Performance Standards (40 CFR 60 Subpart BB)
- 15A NCAC 02D .0606, Sources Covered by Appendix P of 40 CFR Part 51
- 15A NCAC 02D .0607, Large Wood and Wood-Fossil Fuel Combination Units
- 15A NCAC 02D .1111, Maximum Achievable Control Technology (40 CFR 63 Subpart MM)
- 15A NCAC 02D .1111, Maximum Achievable Control Technology (40 CFR 63 Subpart DDDDD)

1. 15A NCAC 02D .0501, Compliance with Emission Control Standards

   Permit Condition No. 2.1 B.1 is applicable to the No. 2 Power Boiler (PB2) and limits emissions of sulfur dioxide to 1.6 pounds per million Btu heat input.

   Currently, Permit Condition No. 2.1 B.1.c indicates that the wet scrubber monitoring requirements listed in Permit Condition No. 2.1 B.2.c through e (15A NCAC 02D .0503) are applicable for compliance with the requirements of 02D .0501.

   As stated in the application, only the scrubbing liquid flow rate monitoring requirements of Permit Condition No. 2.1 B.2.c through e are applicable to the SO2 emission standard under 02D .0501. The differential pressure drop monitoring requirements are not applicable to compliance with 02D .0501 because compliance with the 02D .0501 SO2 limit is determined by scrubbing liquid flow rate and pH monitoring only.

   The language of Permit Condition No. 2.1 B.1.c will be revised to clarify that only scrubbing liquid flow rate monitoring from Permit Condition No. 2.1 B.2.c through e is required for compliance with the SO2 limit. No further changes to this condition are required with this permit application.

2. 15A NCAC 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers

   Permit Condition Nos. 2.1 B.2 and 2.1 C.1 are applicable to PB2 and PB5, respectively, and limit emissions of particulate matter to 0.16 million pounds per million Btu heat input for each boiler.

   Currently, these conditions require the Permittee to record the scrubbing liquid flow rate and pressure drop of the wet scrubbers (ID Nos. CD-PB2-SCRB and CD-PB5-SCRB) on a daily basis. With this application, the Permittee is requesting to update the monitoring language given in these conditions to be consistent with the monitoring requirements of MACT Subpart DDDDD (Permit Condition No. 2.2 I.1). Specifically, the monitoring language will be updated to require continuous monitoring of the scrubbing liquid flow rate and pressure drop of the wet scrubbers, and compliance with the operating limits will be determined based on a 30-day rolling average value for each parameter.

   The Permittee has also included a mark-up document from August 2019 which revised these conditions further to remove the language pertaining to scrubber pump motor amperage as an alternative monitoring parameter. Additionally, the operating parameters for the wet scrubbers were updated based on the stack testing conducted October 24-27, 2018. Table 7.1 shows the requested updates to the applicable monitoring parameters.

**Table 7.1: Requested Monitoring Parameter Updates**

| Control Device ID No. CD-PB2-SCRB | | |
|---|---|---|
| **Operating Parameter** | **Previous Value** | **Requested Updated Value** |

| | | |
|---|---|---|
| Pressure Drop (inches of water) | 3.6 | 4.4 |

The stack test (2017-283ST) was reviewed and approved by SSCB on March 14, 2018.

The language of Permit Condition Nos. 2.1 B.2.c and 2.1 C.1.c will be updated to reflect the updated monitoring language as discussed above. No further changes to this condition are required with this permit application.

3. 15A NCAC 02D .0508, Particulates from Pulp and Paper Mills

Permit Condition No. 2.1 O.1 is applicable to the No. 4 Lime Kiln and limits emissions of particulate matter to 0.5 pounds per equivalent tons of air-dried pulp (ADTP). The No. 4 Lime Kiln is currently controlled by a dry ESP (ID No. CD-K4021) and a wet scrubber (ID No. CD-K4006).

IPRW conducted performance testing in February 2018 to evaluate the operation of the No. 4 Lime Kiln under two ESP maintenance scenarios: (1) while one field of the ESP is not operating (e.g., shut down for maintenance) and (2) on natural gas only to keep the kiln warm while three of four ESP fields are taken offline for maintenance. The test results demonstrated compliance with the emission limits given in 02D .0508 and were submitted to DAQ and approved by SSCB. The review memo was sent on August 21, 2018.

Based on the results of this performance test, IPRW is requesting to update the permit language for this condition to specify that the No. 4 Lime Kiln may be operated while one field of the ESP is down for maintenance and may be operated on natural gas only while three fields of the ESP are down for maintenance. IPRW will keep records of the amount of time that the kiln is operated with one or more ESP fields down and will continue to ensure compliance with PM standards by monitoring opacity after the ESP using the existing COMS.

The language above will be added to Permit Condition No. 2.1 O.1.d. No further changes to this condition are required with this permit application.

4. 15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources

Permit Condition No. 2.1 C.3 is applicable to the No. 5 Power Boiler (PB5) and limits emissions of sulfur dioxide to 2.3 pounds per million Btu heat input.

Currently, Permit Condition No. 2.1 C.3.c indicates that the wet scrubber monitoring requirements listed in Permit Condition No. 2.1 C.1.c through e (15A NCAC 02D .0503) are applicable for compliance with the requirements of 02D .0516.

As stated in the application, only the scrubbing liquid flow rate monitoring requirements of Permit Condition No. 2.1 C.1.c through e are applicable to the SO2 emission standard of 02D .0516. The differential pressure drop monitoring requirements are not relevant for compliance with 02D .0516 because compliance with the 02D .0501 SO2 limit is determined by scrubbing liquid flow rate and pH monitoring only.

The language of Permit Condition No. 2.1 C.3.c will be revised to clarify that only scrubbing liquid flow rate monitoring of Permit Condition No. 2.1 C.1.c through e is required. No further changes to this condition are required with this application.

5. 15A NCAC 02D .0524, New Source Performance Standards (40 CFR 60 Subpart BB)

For discussion of NSPS applicability, see Section 7.b below.

6. 15A NCAC 02D .0606, Sources Covered by Appendix P of 40 CFR Part 51

Permit Condition No. 2.1 B.7 is applicable to PB2 and requires monitoring, recordkeeping, and reporting of the continuous opacity monitoring activities and excess emissions events.

Currently, this condition requires the Permittee to continuously monitor and record the scrubbing liquid flow rate and pressure drop of the wet scrubber (ID No. CD-PB2-SCRB). With this application, the Permittee is requesting to update the monitoring language given in this condition to be consistent with the monitoring requirements of MACT Subpart DDDDD (Permit Condition No. 2.2 I.1). Specifically, the monitoring language will be updated such that compliance with the operating limits will be determined based on a 30-day rolling average value for each parameter.

The Permittee has also included a mark-up document from August 2019 which revised this condition further to remove the language pertaining to scrubber pump motor amperage as an alternative monitoring parameter. Additionally, the operating parameters for the wet scrubber were updated based on the stack test conducted October 24-27, 2018. Table 7.1 above shows the requested updates to the applicable monitoring parameters for the wet scrubber (ID No. CD-PB2-SCRB).

The language of Permit Condition No. 2.1 B.7.a will be updated to reflect the updated monitoring language as discussed above. No further changes to this condition are required with this permit application.

7. 15A NCAC 02D .0607, Large Wood and Wood-Fossil Fuel Combination Units

Permit Condition No. 2.1 C.7 is applicable to PB5 and requires monitoring, recordkeeping, and reporting of the continuous opacity monitoring activities and excess emissions events.

Currently, this condition requires the Permittee to continuously monitor and record the scrubbing liquid flow rate and pressure drop of the wet scrubber (ID No. CD-PB5-SCRB). With this application, the Permittee is requesting to update the monitoring language given in this condition to be consistent with the monitoring requirements of MACT Subpart DDDDD (Permit Condition No. 2.2 I.1). Specifically, the monitoring language will be updated such that compliance with the operating limits will be determined based on a 30-day rolling average value for each parameter.

The Permittee has also included a mark-up document from August 2019 which revised this condition further to remove the language pertaining to scrubber pump motor amperage as an alternative monitoring parameter. Additionally, the operating parameters for the wet scrubber were updated based on the stack test conducted October 24-27, 2018. Table 7.1 above shows the requested updates to the applicable monitoring parameters for the wet scrubber (ID No. CD-PB5-SCRB).

The language of Permit Condition No. 2.1 C.7.a will be updated to reflect the updated monitoring language as discussed above. No further changes to this condition are required with this permit application.

8. 15A NCAC 02D .1111, Maximum Achievable Control Technology (40 CFR 63 Subpart MM)

For discussion of MACT applicability, see Section 7.b below.

b. NSPS, NESHAP, and PSD Applicability

**NSPS Subpart BB**

Smelt Dissolving Tanks Monitoring Requirements

The No. 5 East and West Smelt Dissolving Tanks are subject to NSPS Subpart BB which limits emissions of particulate matter and Total Reduced Sulfur (TRS) from these sources to 0.1 g/kg black liquor solids (BLS) and 0.016 g/kg BLS, respectively.

This condition currently requires that IPRW comply with the MACT Subpart MM monitoring and recordkeeping requirements given in Section 2.2 C.1 which includes a requirement to continuously monitor fan amperage and scrubbing liquid flow rate for the smelt dissolving tank scrubbers.

IPRW sent a letter to EPA on February 8, 2019 requesting the approval of fan amperage as an alternative monitoring method for the wet scrubbers (ID Nos. CD-5EST-1 and CD-5WST-1) associated with the smelt dissolving tanks (ID Nos. ES-ST5E-1 and ES-ST5W) in lieu of pressure drop monitoring as required by 40 CFR 60.282(b)(2)(i).

On October 23, 2019, EPA sent a response to IPRW indicating that the request to use fan amperage as an alternative monitoring method in lieu of pressure drop monitoring was approved. The approved monitoring method is as follows:

- The no-load amperage value must be determined using manufacturer specifications, or by performing a no-load test for each smelt dissolving tank scrubber. Documentation for determining the no-load value must be retained on site;
- The lowest 1-hour average fan amperage value must be determined using the performance test requirements described in section 63.865, and the 1-hour average must be in compliance with the applicable limit in section 63.862;
- The average between the no-load amperage and the stack test amperage must be determined and documentation of the determination must remain on site;
- Fan amperage must be monitored at least once each successive 15-minute period using the procedures described in section 63.8(c) and section 63.684(e)(10); and
- Continuous compliance must be demonstrated based on a 3-hour average.

All other requirements of NSPS Subpart BB continue to apply. The monitoring requirements given in Permit Condition No. 2.1 L.3.d (NSPS Subpart BB for the smelt dissolving tanks) will be revised to include the language above by referencing the updated monitoring and recordkeeping requirements of MACT Subpart MM given in Permit Condition No. 2.2 C.1.

No. 4 Lime Kiln Monitoring Requirements

The No. 4 Lime Kiln is subject to NSPS Subpart BB which limits emissions of particulate matter and TRS to 0.13 gr/dscf PM corrected to 10 percent oxygen when burning only liquid fuel or 0.066 gr/dscf PM corrected to 10 percent oxygen when burning gaseous fuel and 8 ppm of TRS by volume on a dry basis corrected to 10 percent oxygen based on a 12-hour average.

This condition currently requires that IPRW comply with the MACT Subpart MM monitoring and recordkeeping requirements given in Section 2.2 C.1 as the compliance monitoring for the PM limit, which includes a requirement for continuous opacity monitoring and exemptions from the requirements to monitor pressure drop and scrubbing liquid flow rate as per EPA's approval letter dated June 6, 2003.

On June 28 and August 28, 2019, IPRW sent letters to EPA requesting the approval of continuous opacity monitoring for the No. 4 Lime Kiln ESP (ID No. CD-K4021) in lieu of pressure drop and scrubber liquid flow rate monitoring for compliance with the PM limit.

On December 26, 2019, EPA sent a response to IPRW indicating that the request to use continuous opacity monitoring as an alternative monitoring method in lieu of pressure drop and scrubber liquid flow rate monitoring for compliance with the PM limit was approved. The approved monitoring method is as follows:

- In lieu of scrubber monitoring requirements of 40 CFR 63 Subpart MM or 40 CFR 60 Subpart BB, IPRW will utilize a COMS to monitor opacity in the ductwork between the ESP and the wet scrubber, and meet all COMS calibration, maintenance, and operating requirements of the rules.

    - NESHAP Subpart MM: Ongoing monitoring requirements, corrective action, and violation criteria found in 63.864(k) will continue to apply, except for those pertaining to wet scrubber monitoring parameters.
    - NSPS Subpart BB: Excess emissions occur when the COMS 6-minute average opacity is greater than 20% and a violation occurs when the opacity exceeds 20% for one percent (1%) or more of the operating time in a semi-annual period.
- IPRW will maintain proper operation of the ESP automatic voltage controller per the requirements of NESHAP Subpart MM.
- IPRW will confirm in test plans and reports that sample ports for PM testing are located after the ESP and prior to the wet scrubber. Compliance testing for PM will be conducted at this location. No changes to the testing requirements of 40 CFR 63 Subpart MM or 40 CFR 60 Subpart BB were requested, and testing should therefore continue per the requirements of each rule.
- Given that the above alternative requirements are met, IPRW will not monitor flow and differential pressure drop of the wet scrubber per 63.864(e)(10) for NESHAP Subpart MM compliance and will not monitor differential pressure or scrubbing liquid supply pressure per 60.284(b)(2) for NSPS Subpart BB PM limit compliance.

All other requirements of NSPS Subpart BB continue to apply. The monitoring requirements given in Permit Condition No. 2.1 O.3.d (NSPS Subpart BB for the No. 4 Lime Kiln) will be revised to include the language above including a continuous opacity monitoring requirement and specifying excess emissions in terms of opacity.

No. 4 Lime Kiln ESP Operation

NSPS Subpart BB is applicable to the No. 4 Lime Kiln and limits emissions of particulate matter and TRS to 0.13 gr/dscf PM corrected to 10 percent oxygen when burning only liquid fuel or 0.066 gr/dscf PM corrected to 10 percent oxygen when burning gaseous fuel and 8 ppm of TRS by volume on a dry basis corrected to 10 percent oxygen based on a 12-hour average. The No. 4 Lime Kiln is currently controlled by a dry ESP (ID No. CD-K4021) and a wet scrubber (ID No. CD-K4006).

IPRW conducted performance testing in February 2018 to evaluate the operation of the No. 4 Lime Kiln under two ESP maintenance scenarios: (1) while one field of the ESP is not operating (e.g., shut down for maintenance) and (2) on natural gas only to keep the kiln warm while three of four ESP fields are taken offline for maintenance. The test results demonstrated compliance with the emission limits given in 02D .0508 and were submitted to DAQ and approved by SSCB. The review memo was sent on August 21, 2018.

Based on the results of this performance test, IPRW is requesting to update the permit language for this condition (Permit Condition No. 2.1 O.3.d) to specify that the No. 4 Lime Kiln may be operated while one field of the ESP is down for maintenance and may be operated on natural gas only while three fields of the ESP are down for maintenance. IPRW will keep records of the amount of time that the kiln is operated with one or more ESP fields down and will continue to ensure compliance with PM standards by monitoring opacity after the ESP using the existing COMS.

The language above will be added to Permit Condition No. 2.1 O.3.d.

**NESHAP Subpart MM**

Smelt Dissolving Tanks Monitoring Requirements

The No.4 Smelt Dissolving Tanks and the No. 5 East and West Smelt Dissolving Tanks are subject to MACT Subpart MM which limits emissions of particulate matter from these sources.

This condition currently requires IPRW to continuously monitor the fan amperage and scrubbing liquid flow rates of the smelt dissolving tank scrubbers. Fan amperage was approved as an alternative monitoring parameter in lieu of scrubber pressure drop by EPA on September 17, 2003. Since then, Subpart MM has

undergone a Risk and Technology Review (RTR) during which Subpart MM was amended to include fan amperage as an alternative to pressure drop monitoring for smelt dissolving tank dynamic scrubbers.

IPRW sent a letter to EPA on February 8, 2019 requesting the approval of fan amperage as an alternative monitoring method for the wet scrubbers (ID Nos. CD-5EST-1 and CD-5WST-1) associated with the smelt dissolving tanks (ID Nos. ES-ST5E-1 and ES-ST5W) in lieu of pressure drop monitoring as required by 40 CFR 60.282(b)(2)(i).

On October 23, 2019, EPA sent a response to IPRW indicating that the request to use fan amperage as an alternative monitoring method in lieu of pressure drop monitoring was approved. The approved monitoring method is as follows:

- The no-load amperage value must be determined using manufacturer specifications, or by performing a no-load test for each smelt dissolving tank scrubber. Documentation for determining the no-load value must be retained on site;
- The lowest 1-hour average fan amperage value must be determined using the performance test requirements described in section 63.865, and the 1-hour average must be in compliance with the applicable limit in section 63.862;
- The average between the no-load amperage and the stack test amperage must be determined and documentation of the determination must remain on site;
- Fan amperage must be monitored at least once each successive 15-minute period using the procedures described in section 63.8(c) and section 63.684(e)(10); and
- Continuous compliance must be demonstrated based on a 3-hour average.

The monitoring requirements given in Permit Condition No. 2.2 C.1 will be revised to include the language above and update the language to reflect the implementation of the MACT Subpart MM RTR rule. This involves removing the reference to EPA's approval letter since monitoring of fan amperage is now allowed by the MACT itself.

No. 4 Lime Kiln Monitoring Requirements

The No. 4 Lime Kiln is subject to MACT Subpart MM which limits emissions of particulate matter.

This condition currently requires that IPRW comply with the MACT Subpart MM by conducting continuous opacity monitoring. Exemptions from the requirements to monitor pressure drop and scrubbing liquid flow rate are given as per EPA's approval letter dated June 6, 2003.

On June 28 and August 28, 2019, IPRW sent letters to EPA requesting the approval of continuous opacity monitoring for the No. 4 Lime Kiln ESP (ID No. CD-K4021) in lieu of pressure drop and scrubber liquid flow rate monitoring.

On December 26, 2019, EPA sent a response to IPRW indicating that the request to use continuous opacity monitoring as an alternative monitoring method in lieu of pressure drop and scrubber liquid flow rate monitoring was approved. The approved monitoring method is as follows:

- In lieu of scrubber monitoring requirements of 40 CFR 63 Subpart MM or 40 CFR 60 Subpart BB, IPRW will utilize a COMS to monitor opacity in the ductwork between the ESP and the wet scrubber, and meet all COMS calibration, maintenance, and operating requirements of the rules.
    - NESHAP Subpart MM: Ongoing monitoring requirements, corrective action, and violation criteria found in 63.864(k) will continue to apply, except for those pertaining to wet scrubber monitoring parameters.
    - NSPS Subpart BB: Excess emissions occur when the COMS 6-minute average opacity is greater than 20% and a violation occurs when the opacity exceeds 20% for one percent (1%) or more of the operating time in a semi-annual period.

- IPRW will maintain proper operation of the ESP automatic voltage controller per the requirements of NESHAP Subpart MM.
- IPRW will confirm in test plans and reports that sample ports for PM testing are located after the ESP and prior to the wet scrubber. Compliance testing for PM will be conducted at this location. No changes to the testing requirements of 40 CFR 63 Subpart MM or 40 CFR 60 Subpart BB were requested, and testing should therefore continue per the requirements of each rule.
- Given that the above alternative requirements are met, IPRW will not monitor flow and differential pressure drop of the wet scrubber per 63.864(e)(10) for NESHAP Subpart MM compliance and will not monitor differential pressure or scrubbing liquid supply pressure per 60.284(b)(2) for NSPS Subpart BB compliance.

The monitoring requirements given in Permit Condition No. 2.2 C.1 will be revised to include the language above and update the reference to EPA's most recent approval letter.

No. 4 Lime Kiln ESP Operation

MACT Subpart MM is applicable to the No. 4 Lime Kiln and limits emissions of particulate matter from this source. The No. 4 Lime Kiln is currently controlled by a dry ESP (ID No. CD-K4021) and a wet scrubber (ID No. CD-K4006).

IPRW conducted performance testing in February 2018 to evaluate the operation of the No. 4 Lime Kiln under two ESP maintenance scenarios: (1) while one field of the ESP is not operating (e.g., shut down for maintenance) and (2) on natural gas only to keep the kiln warm while three of four ESP fields are taken offline for maintenance. The test results demonstrated compliance with the emission limits given in 02D .0508 and were submitted to DAQ and approved by SSCB. The review memo was sent on August 21, 2018.

Based on the results of this performance test, IPRW is requesting to update the permit language for this condition (Permit Condition No. 2.2 C.1) to specify that the No. 4 Lime Kiln may be operated while one field of the ESP is down for maintenance and may be operated on natural gas only while three fields of the ESP are down for maintenance. IPRW will keep records of the amount of time that the kiln is operated with one or more ESP fields down and will continue to ensure compliance with PM standards by monitoring opacity after the ESP using the existing COMS.

The language above will be added to Permit Condition No. 2.2 C.1.

Reporting

Currently, the permit specifies a quarterly reporting requirement under 40 CFR 63.867(c). Per the updated 40 CFR 63.867(c), the owner or operator must submit semiannual excess emissions reports containing the information specified in 40 CFR 63.867(c)(1) through (5).

Thus, the permit will be updated to require semiannual reporting under 40 CFR 63.867(c) and remove the quarterly reporting requirement.

As per 40 CFR 63.867(d)(1), within 60 days after the date of completing each performance test as defined in 40 CFR 63.2 required by Subpart MM, the owner or operator shall submit the results of the performance test following the procedures specified in either 40 CFR 63.867(d)(1)(i) or (ii).

> 40 CFR 63.867(d)(1)(i) - For data collected using test methods supported by the EPA's Electronic Reporting Tool (ERT) as listed on the EPA's ERT Web site (https://www.epa.gov/electronic-reporting-air-emissions/electronic-reporting-tool-ert) at the time of the test, the owner or operator must submit the results of the performance test to the EPA via the Compliance and Emissions Data Reporting Interface (CEDRI).

40 CFR 63.867(d)(1)(ii) - For data collected using test methods that are not supported by the EPA's ERT as listed on the EPA's ERT Web site at the time of the test, the owner or operator must submit the results of the performance test to the Administrator at the appropriate address listed in § 63.13 unless the Administrator agrees to or specifies an alternative reporting method.

Additionally, as per 40 CFR 63.867(d)(2), the owner or operator must submit the notifications required in 40 CFR 63.9(b) and 63.9(h) (including any information specified in § 63.867(b)) and semiannual reports to the EPA via the CEDRI. The Permittee shall upload an electronic copy of each notification in CEDRI beginning with any notification specified in 40 CFR 63.867(d)(2) that is required after October 11, 2019. The owner or operator must use the appropriate electronic report in CEDRI for this subpart listed on the CEDRI Web site (https://www.epa.gov/electronic-reporting-air-emissions/compliance-and-emissions-data-reporting-interface-cedri) for semiannual reports.

Startup, shutdown, and malfunction (SSM) Requirements

Subpart MM was amended during the residual risk and technology (RTR) review conducted in October 2017. One of the amendments to the rule included provisions addressing periods of startup, shutdown, and malfunction (SSM).

Currently, the permit contains 112(j) provisions for startup, shutdown, and malfunction requirements under Subpart MM for the No. 4 Lime Kiln and the Nos. 4 and 5 Recovery Boilers because the SSM exemption provisions in the General Provisions for nonopacity and opacity standards were vacated in 2008.

The 2017 RTR amendments included (1) a requirement for the facility to meet the standards at all times including during periods of SSM, and (2) alternative monitoring parameters for wet scrubbers and ESPs during these periods.

With this permitting action, the 112(j) SSM condition for Subpart MM (Condition No. 2.2 C.2) will be removed, and the Subpart MM condition (Condition No. 2.2 C.1) will be updated with the current Subpart MM requirements.

**PSD**

PSD Applicability

IPRW is classified as an existing major stationary source for PSD purposes. With this application, no physical changes or changes in operation are being proposed. Therefore, PSD review is not triggered for this application.

Increment Tracking

No emissions changes are expected with this application. Thus, increment tracking is not required.

c. Other Regulatory Considerations

- A P.E. seal is NOT required for this application .
- A zoning consistency determination is NOT required for this application.
- A permit fee of $988 was required for this application and received on January 31, 2020.

**8. Application No. 2400036.20B: 502(b)(10) Notification for Replacement of Bagfilter (ID No. CD-H367)**

A 502(b)(10) notification was submitted by IPRW and received on February 19, 2020 to replace the bagfilter (ID No. CD-H367) that serves the Reburnt Lime Handling System (ID No. ES-LHReburnt) and Reburnt Lime Silos (ID Nos. ES-RLS1 and ES-RLS2) due to wear.

The reburnt lime handling system and silos are subject only to PM and opacity standards under 15A NCAC 02D .0515 and 02D .0521, respectively. No new requirements will apply nor will any testing of the new bagfilter be required. The bagfilter description of "bagfilter (1005 square feet of filter area)" remains accurate as the replacement bagfilter is of equivalent size as the existing one. The new bagfilter is constructed of stainless steel rather than carbon steel, but the control efficiency is expected to remain the same. No further permitting action is required for this bagfilter replacement.

**9. Application No. 2400036.24A: Second Step Application to Application No. 2400036.22A**

Permit Application No. 2400036.24A was submitted on March 5, 2024. This application served as a second step permit application for a previous permit application for modification (2400036.22A).

Permit Application No. 2400036.22A for the Recovery Boiler No. 5 (RB5) Natural Gas Load Burner Project was submitted in December 2022 and permit number 03138T44 was issued to incorporate the requested modification to RB5.

The following modifications were permitted as part of this project:

- Revised the rated heat input for fuel oil in RB5 from 557 million Btu per hour to 140 million Btu per hour; and
- Added a rated heat input of 254 million Btu per hour for natural gas (load burner plus ignitors).

The technical review for the first step application is provided in Attachment 3 to this document.

No further modifications are requested with this second step application.

a. Regulatory Review

The following regulations were added to the permit with the issuance of Permit No. 03138T44:

- 15A NCAC 02D .0530(u)

  Pursuant to 15A NCAC 2D .0530(u), because the Permittee relied on projected actual emissions for the purposes of demonstrating that the modifications in Application No. 2400036.22A did not result in significant emissions increases, the Permittee was required to maintain records of annual emissions, related to the modifications, in tons per year, for 5 years following resumption of regular operations after the modifications. This rule further required the Permittee to submit annual reports within 60 days after the end of each year during which these records must be generated. This report shall contain the items listed in 40 CFR 51.166(r)(6)(v)(a) through (c).

  No changes to this condition are necessary with this permitting action.

- 15A NCAC 02Q .0504

  This rule requires that the Permittee submit a second step application within one year of commencement of post-modification operations. Permit No. 03138T44 was issued on March 3, 2023, and this second step application was submitted on March 5, 2024. IPRW completed the RB5 modifications in March of 2023. Therefore, the second step application was submitted on time (within one year of commencement of operation), and this condition has been satisfied.

  This condition will be removed from the permit with this permitting action.

b. Other Regulatory Considerations

- A P.E. seal is NOT required for this application .
- A zoning consistency determination is NOT required for this application.
- A permit fee was not required for this application.

**10. Facility Emissions Review**

No facility-wide emission changes are expected with any of the above permit modifications.

Actual emissions for criteria pollutants and HAPs for the previous five annual reporting periods are provided in the header of this permit review.

**11. Compliance Status**

DAQ has reviewed the compliance status of IPRW. During the most recent inspection, conducted on August 2, 2023, the facility appeared to be in compliance with all applicable requirements.

Further, the facility has had only one air quality violation within the last five years:

- An NOV/NRE was issued on March 29, 2019 for excess emissions greater than 1% of operational time during the reporting period and for Clean Condensate Alternative (CCA) Continuous Monitoring System (CMS) downtime in excess of 2% of operational time during the reporting period. A civil penalty of $2,293 was assessed on August 30, 2019. A September 24, 2019 letter from DAQ indicated that the penalty has been paid in full.

The facility's Annual Compliance Certification was received on February 28, 2024, and indicated compliance with all applicable requirements in CY2023.

**12. Public Notice/EPA and Affected State(s) Review**

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice provided to the public under 02Q .0521 above.

**13. Conclusions, Comments, and Recommendations**

IPRW submitted comments on the draft permit on May 3, 2024, as summarized below.

**Comment 1:** " IP requests that we take this opportunity while the permit is open to fully clean up the MACT Subpart MM condition. Only some of the changes that we requested several years ago to harmonize the MM condition with the RTR rule revisions have been made in this draft and we'd also like to go ahead and take No. 3 Lime Kiln out of the permit and have the MM condition reflect the submittal the mill made recently that compliance is no longer using the bubble limit but using the single source limits for the equipment that is still operating. Therefore, you can also delete all the equivalency by permit conditions related to Subpart MM."

**DAQ Response:** Agree with applicant. The following permitting actions will be taken based on this comment: (1) remove the No. 3 Lime Kiln; (2) remove the "bubble limits" and replace with the source specific limits under Subpart MM; and (3) update the requirements under Subpart M according to the MACT Subpart MM applicability addressed in Section 7.b (starting on page 31 above).

**Comment 2:** "The second request is that DAQ not add an 0530u tracking condition for the 10-year-old No. 2 fuel oil 502(b)10 change – more than 5 years has passed since the mill has done the project, some of the equipment in the project is now shut down, and there were no actual emissions increases as a result of the project."

**DAQ Response:** Agree with comment. More than 5 years have passed since the project was completed, and there were no actual emissions increases as a result of the project. Additionally, several of the units included in

the project have been shut down, including the No.1 Power Boiler and the No. 3 Lime Kiln. DAQ will remove the proposed 02D .0530(u) tracking condition for Application No. 2400036.14A.

**Comment 3:** "Third, we appreciate the addition of the operational flexibility condition for the No. 4 Lime Kiln ESP and request that you also add a similar condition for the No. 5 Recovery Boiler ESP."

**DAQ Response:** Performance testing on the No. 5 Recovery Boiler was conducted on September 2, 3, and 16, 2020. During this testing, RB5 was tested with one entire side of the ESP removed from service (alternate operating scenario 1) and with one transformer-rectifier (T/R) field removed from service (alternate operating scenario 2). The emissions test results demonstrated compliance with the applicable regulations in each operating scenario. Thus, the monitoring requirements for the No. 5 Recovery Boiler under 02D .0508 and 02D .0524 (NSPS Subpart BB) will be updated to allow the No. 5 Recovery Boiler to continue operating if one side or one field of the ESP is out of service. The Permittee shall keep records of the amount of time the boiler is operated with one side or one field of the ESP out of service. When one ESP field is out of service, the throughput of Recovery Boiler No. 5 may not exceed 269 kpph (thousand pounds per hour) BLS. When one side of the ESP is out of service, the throughput of Recovery Boiler No. 5 may not exceed 179 kpph BLS.

The permit applications listed above have been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources.
DAQ recommends the issuance of Air Permit No. 03138T45.

**Attachment 1: Application No. 2400036.15A Review**

**NORTH CAROLINA DIVISION OF AIR QUALITY**

# Air Permit Review

**Permit Issue Date:** June 10, 2015

**Region:** Wilmington Regional Office
**County:** Columbus
**NC Facility ID:** 2400036
**Inspector's Name:** Russell Morgan III
**Date of Last Inspection:** 03/26/2015
**Compliance Code:** 3 / Compliance - inspection

## Facility Data

**Applicant (Facility's Name):** International Paper - Riegelwood Mill

**Facility Address:**
International Paper - Riegelwood Mill
865 John L Riegel Road
Riegelwood, NC 28456

**SIC:** 2621 / Paper Mills Exc Building Paper
**NAICS:** 322121 / Paper (except Newsprint) Mills

**Facility Classification: Before:** Title V **After:** Title V
**Fee Classification: Before:** Title V **After:** Title V

## Permit Applicability (this application only)

**SIP:**
**NSPS:**
**NESHAP:**
**PSD:**
**PSD Avoidance:**
**NC Toxics:**
**112(r):**
**Other:**

## Contact Data

| Facility Contact | Authorized Contact | Technical Contact |
|---|---|---|
| Gary Morrow<br>Senior Environmental Engineer<br>(910) 362-3309<br>865 John L Riegel Rd<br>Riegelwood, NC 28456 | Floyd Whitmire<br>Mill Manager<br>(910) 362-4880<br>865 John L Riegel Road<br>Riegelwood, NC 28456 | Gary Morrow<br>Senior Environmental Engineer<br>(910) 362-3309<br>865 John L Riegel Rd<br>Riegelwood, NC 28456 |

## Application Data

**Application Number:** 2400036.15A
**Date Received:** 02/25/2015
**Application Type:** Modification
**Application Schedule:** TV-Sign-501(c)(2)

**Existing Permit Data**
**Existing Permit Number:** 03138/T40
**Existing Permit Issue Date:** 01/17/2014
**Existing Permit Expiration Date:** 04/30/2017

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

| CY | SO2 | NOX | VOC | CO | PM10 | Total HAP | Largest HAP |
|---|---|---|---|---|---|---|---|
| 2013 | 1179.69 | 2013.64 | 2603.38 | 1814.48 | 513.82 | 1437.97 | 1131.85 [Methanol (methyl alcohol)] |
| 2012 | 1290.41 | 1878.59 | 2650.60 | 1292.40 | 406.71 | 1461.88 | 1152.16 [Methanol (methyl alcohol)] |
| 2011 | 1026.40 | 1864.36 | 2570.41 | 1557.50 | 385.37 | 1432.99 | 1151.70 [Methanol (methyl alcohol)] |
| 2010 | 1176.48 | 1866.09 | 2841.66 | 1670.66 | 356.63 | 1656.69 | 1334.80 [Methanol (methyl alcohol)] |
| 2009 | 1020.08 | 1685.29 | 2691.53 | 1452.90 | 388.79 | 1660.66 | 1376.62 [Methanol (methyl alcohol)] |

**Review Engineer:** Brian Bland

**Review Engineer's Signature:** **Date:** June 10, 2015

**Comments / Recommendations:**
**Issue** 03138/T41
**Permit Issue Date:** June 10, 2015
**Permit Expiration Date:** April 30, 2017

**1. Purpose of Application**

International Paper Riegelwood Mill (IPRW) operates a bleached kraft pulp mill in Riegelwood, North Carolina. The facility is a pulp production facility and operations include multiple fuel-fired boilers, chemical recovery operations, wood pulping and bleaching operations.

Application No. 2400036.15A was submitted February 25, 2015 for the purpose of making modifications to convert the mill to 100% softwood pulp production. The proposed modification constitutes a significant modification of the Title V Air Quality Permit. IPRW has chosen to use the two-step significant modification procedures pursuant to 15A NCAC 2Q .0501(c)(2). This first step modification is being processed in accordance with state permitting procedures. Within 12 months of start-up of any of the modified equipment, IPRW will be required to submit a complete Title V application. In this application, the facility also requested the removal of several 15A NCAC 2D .0530(u) tracking/reporting requirements that have been satisfied.

**2. Project Description**

As described in the permit application, "The IP Riegelwood Mill proposes to make modifications to convert the mill to 100% softwood pulp production. The total post-project softwood pulp production will be approximately 781,000 air dried tons of bleached pulp (ADTBP) per year. The mill's current short-term capacity is about 2,770 ADTBP/day, with an annual average capacity of about 2,400 ADTBP/day or 876,000 ADTBP/yr. Production of softwood pulp produces more black liquor than production of hardwood pulp, so although total pulp production will be decreasing based on recent historical throughputs, there will be a slight increase in utilization of the No. 5 Recovery Furnace as a result of the project (although not above historical maximum hourly utilization rates).

The following equipment will be modified as part of the project:

- No. 3 Bleach Plant- minor modifications like vat dilution pump upgrades to accommodate softwood instead of hardwood
- No. 18 Paper Machine- machine will be modified to allow a different product mix
- No.4 Brownstock Washer line- modifications to accommodate switch from hardwood to softwood
- Kamyr continuous digester- no physical modifications; change to processing softwood instead of hardwood
- Hardwood weak black liquor tank- add soap skimming to process softwood weak black liquor
- Goslin turpentine system- add tertiary condenser to make sure all turpentine is recovered
- No. 5 Recovery Furnace- air system adjustments (e.g., tertiary air fan replacement, possible additional airports) to be able to achieve maximum capacity at all times (currently cannot reach maximum capacity in the summer). Re-trim the feedwater valve to allow increased feedwater makeup flow during periods of high steam demand."

Following implementation of the project, several emissions sources will no longer operate, specifically:
No. 1 Power Boiler (ID No. ES-PB1)
No. 15 Paper Machine (ID No. ES-J-009)
IR dryers associated with No. 18 Paper Machine (ID No. ES-JJ-030)
Starch Silos (ID Nos. JA301, JA 306, JA307 and JA322)
Finishing Operations (ID No. ES-FINOPS)

<u>Project Timeline</u>
The April 27, 2015 additional information response described the projected timeline as follows: "The mill expects to shut down one of the paper machines during 1st quarter 2016. With this shutdown, mill throughput will be reduced by about 700 tons of pulp per day, with a corresponding decrease in actual emissions mill-wide. In the April/May timeframe, the mill will cease hardwood production and complete the modifications to No. 18 paper machine during an outage. The modifications to No. 4 Brownstock Washer will be made. Following the outage, the No. 18 machine and the rest of the mill will process only softwood and the No. 15 Paper Machine, the IR dryers, and the finishing operations will not operate. There will be a shakedown period to achieve full and efficient operation under the new configuration. No. 1 Power Boiler may be needed at times, but not after September 1, 2016."

## 3. Regulatory Review

There are no significant changes to the regulatory requirements as a result this modification, so specific requirements associated with each applicable regulation will not be discussed in this document.

The facility is currently subject to the following regulations:

15A NCAC 2D .0501, Compliance with Emission Control Standards
15A NCAC 2D .0503, Particulates from Fuel Burning Indirect Heat Exchangers
15A NCAC 2D .0504, Particulates from Wood Burning Indirect Heat Exchangers
15A NCAC 2D .0508, Particulates from Pulp and Paper Mills
15A NCAC 2D .0515, Particulates from Miscellaneous Industrial Processes
15A NCAC 2D .0516, Sulfur Dioxide Emissions from Combustion Sources
15A NCAC 2D .0519, Control of Nitrogen Dioxide and Nitrogen Oxides Emissions
15A NCAC 2D .0521, Control of Visible Emissions
15A NCAC 2D .0524, New Source Performance Standards (40 CFR 60, Subparts Dc and BB)
15A NCAC 2D .0528, Total Reduced Sulfur from Kraft Pulp Mills
15A NCAC 2D .0530, Prevention of Significant Deterioration
15A NCAC 2D .0606, Sources Covered by Appendix P of 40 CFR Part 51
15A NCAC 2D .0607, Large Wood and Wood-Fossil Fuel Combination Units
15A NCAC 2D .1100, Control of Toxic Air Pollutants
15A NCAC 2D .1109, 112(j) Case-by-Case MACT
15A NCAC 2D .1111, MACT (40 CFR 63, Subparts S, MM, ZZZZ and GGGGG)
15A NCAC 2D .1806, Control and Prohibition of Odorous Emissions
15A NCAC 2Q .0317, Avoidance Conditions (for PSD, NSPS Subpart D, 112(j) Case-by-Case MACT)

PSD Considerations
IPRW is considered a PSD major source as the facility belongs to one of the 28 source categories listed in the PSD regulations and emits greater than 100 TPY of a PSD-regulated compound. As shown below, a PSD applicability analysis found that a PSD review was not required.

Baseline Actual Emissions
To calculate emissions increases from the project, a baseline actual to projected actual analysis was performed. The facility reviewed monthly production data and selected a baseline period of January 2010 through December 2011 (highest 24-month pulp production rate) for all compounds except greenhouse gases, where a January 2012 through December 2013 (period with highest greenhouse gas emissions) baseline period was selected. All project emissions increases are less than the significant emission rates established by the PSD rule.

Projected Actual Emissions (see Section 3.1.7 of the application)
"For most sources, the projected actual emission factors are the same as the baseline actual emission factors. However, for some sources, published information and a discussion with NCASI staff indicates that emissions will be different when processing softwood versus hardwood. The projected actual emission factors for the No. 4 Brownstock Washing System differ from the baseline actual emission factors due to the conversion from hardwood to softwood. Baseline emission factors for the Brown Stock Washer Set No.4 are based on NCASI data or site-specific test data for hardwood pulp washing. Future emission factors were selected from the 2013 NCASI Database for softwood pulp on the No.4 washer line and screen system.

Softwood VOC emission factors are also used for projected actual emissions (instead of a mix of softwood and hardwood factors) for the chip piles, bleach plants, and high-density pulp storage. The future emission factors for No. 18 paper machine are different from the baseline emission factors since this machine will be converted to a new product mix. Certain papermaking support equipment will be shut down with the project, so the projected actual emissions from the shutdown equipment are zero.

Projected actual emissions from the Nos. 2 and 5 Power Boilers are based on their expected utilization following the project (e.g., steam needed to achieve the projected actual softwood pulp production) and the anticipated fuel mix (biomass and natural gas). Auxiliary fuel use (e.g., startup fuel) for the lime kilns and recovery furnaces is projected to stay the same as baseline, but future lime and black liquor throughputs correspond to the throughputs required to achieve the projected actual pulp production."

**Summary of project PSD Compound Emissions Increases (see Table 4-1 of the application)**

| | NOx | PM(f) | $PM_{10}$ | $PM_{2.5}$ | $SO_2$ | VOC | CO | F | Pb | $H_2SO_4$ | $H_2S$ | TRS as $H_2S$ | $CO_2e$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BAE | 1964.51 | 480.87 | 523.97 | 475.02 | 1274.43 | 2727.53 | 1838.35 | 0.28 | 0.07 | 22.24 | 118.04 | 408.25 | 2.531 |
| PAE | 1929.08 | 417.57 | 466.37 | 420.51 | 1056.95 | 2463.50 | 1859.9 | 0.22 | 0.06 | 18.45 | 105.65 | 232.00 | 2.509 |
| PEI | -35.43 | -63.31 | -57.60 | -54.50 | -217.48 | -264.02 | 21.55 | -0.07 | -0.01 | -3.79 | -12.40 | -176.25 | -0.021 |
| SER | 40 | 25 | 15 | 10 | 40 | 40 | 100 | 3 | 0.6 | 7 | 10 | 10 | 0.075 |

- BAE is Baseline Actual Emissions, PAE is Projected Actual Emissions, PEI is Project Emissions Increases, SER is NSR Significant Emission Rates
- Emissions shown in tons/years, except CO2e that is shown in millions tons/year
- As part an additional information response, IPRW demonstrated that project emissions are below the SERs (only CO emissions increase) even without accounting for the removal of multiple emissions sources

Pursuant to 15A NCAC 2D .0530(u), because the Permittee relied on projected actual emissions for the purposes of demonstrating that these modifications did not result in significant emissions increases, the Permittee is required to maintain records of annual emissions, related to the modifications, in tons per year, for 5 years following resumption of regular operations after the modifications. This rule further requires the Permittee to submit annual reports within 60 days after the end of each year during which these records must be generated. This report shall contain the items listed in 40 CFR 51.166(r)(6)(v)(a) through (c).

Columbus County has been triggered for PSD increment tracking for $PM_{10}$,SO2 and NOx. For PSD increment tracking purposes, this modification expanded increment as follows: PM10 by 13.15 lb/hr, SO2 by 49.65 lb/hr and NOX by 8.09 lb/hr.

NSPS

An NSPS modification is defined as a physical or operational change that results in an increased emission rate of a pollutant to which a standard applies. Kraft pulp mill standards, located in 40 CFR 60 Subparts BB and BBa, include emission standards for particulates (PM) and total reduced sulfur (TRS).

Changes to be made as part of this project do not meet the NSPS definition of a modification as discussed in the detail in Section 4. 1. 2. of the application and outlined below:

No. 3 Bleach Plant, Hardwood weak black liquor tank and No. 18 Paper Machine are not covered by NSPS BB or BBa.

There is no expected increase to throughput or TRS emissions associated with the No. 4 Brownstock Washer line and Kamyr digester. No PM emissions are associated with either No. 4 Brownstock Washer line (NCASI Database) or Kamyr digester (site specific data/recent emissions inventories).

No. 5 Recovery Furnace: changes will allow the unit to reach its capacity more consistently, but there will not be an increase in PM or TRS emissions rate as there is no increase in maximum hourly throughput. This project does not change the 10% annual capacity NSPS Subpart D avoidance limit and doesn't trigger applicability of NSPS Subpart Db as there is no increase in fossil fuel firing.

MACT

The modified sources are covered by NESHAP Subparts S (MACT I for the pulp and paper industry) and MM (MACT II for the pulp and paper industry). These MACT conditions will not change because of this project as discussed in the detail in Section 4. 1. 3. of the application and outlined below:

40 CFR 63.440(c) defines a new Subpart S source as an additional pulping or bleaching line.

This project does not trigger MACT as it does not involve installation of a new pulping or bleaching line.

No. 5 Recovery Furnace is also subject to NESHAP Subpart MM, but since the modification costs will be far less than 50% of unit replacement cost, it will continue to operate as an existing source. Additionally, since the project will not increase the throughput by more than 10% (24-hour basis) over the most recent performance test, the mill will continue to use the existing bubble limits to comply with Subpart MM.

CAM

CAM applicability is not triggered as all sources with control devices that are being modified are subject to MACT standards.

**4. Toxics**

A review of North Carolina Air Toxics is not triggered as there is no increase in throughput/capacity and no change in TAP emission factors as result of the conversion from hardwood to softwood. Toxics applicability, with respect to this project, was explained in the April 6, 2015 additional information response: "IP Riegelwood submitted a facility-wide modeling demonstration, which included combustion sources, on March 15, 2011 as part of a permit application to combust natural gas in the No. 5 Power Boiler. Facility wide emission rates were compared to the TPERs and 30 compounds required modeling. Emission rates were optimized up to 98% of each TAP's AAL, so modeled emission rates are higher than calculated potential emission rates. Throughputs/capacities are not increasing with this project. Emission factors for NC TAPs are largely NCASI emission factors. There are no differences in NC TAP emission factors for hardwood versus softwood. Methanol and terpene emission factors change, but these compounds are not NC TAPs. In a few cases, we calculate individual TAPs by taking methanol test data and multiplying by the ratio of the individual TAP to methanol emission factor, but methanol emissions are lower for softwood than hardwood. For Brownstock Washer 4, the H2S and methyl mercaptan emission factors for softwood are lower than the hardwood factors modeled. Therefore, this project does not cause increases of TAP emissions above those already modeled."

**5. Changes to Permit**

The following table describes the modifications to the current permit as part of the renewal process.

| Page(s) | Section | Description of Change(s) |
|---|---|---|
| All | All | Update dates and permit revision number |
| 3, 7-8 | Permitted Items | Add asterisks to identify emission sources that will cease operations by September 1, 2016<br>For emissions sources associated with "Product Mix Project" Application No. 2400036.15A, add hashtag to ID numbers and 15A NCAC 2Q .0501(c)(2) paragraph to bottom of permitted item list |
| 16-17(T40) | 2.1 B.7 (T40) | Remove 15A NCAC 2D .0530(u) condition for Combustion Optimization Project (Application No. 2400036.08B, Permit 03138R31) as this record keeping/reporting requirement has been satisfied |
| 34(T40) | 2.1 I.4 (T40) | Remove 15A NCAC 2D .0530(u) condition for Application No. 2400036.08C (modifications to the Recovery Boilers Nos. 4 and 5) as this record keeping/reporting requirement has been satisfied |
| 34 | 2.1 J | Correct Recovery Boiler No. 5 (ID No. ES-RB5) description to 7.39 million pounds of black liquor solids per day average |
| 38(T40) | 2.1 J.6 (T40) | Remove 15A NCAC 2D .0530(u) condition for Application No. 2400036.08C (modifications to the Recovery Boilers 4 and 5) as this record keeping/reporting requirement has been satisfied |
| 54(T40) | 2.1 R.1 (T40) | Remove 15A NCAC 2D .0530(u) condition for Application No. 2400036.06A (modifications to the Pulp Dryer) as this record keeping/reporting requirement has been satisfied |

| Page(s) | Section | Description of Change(s) |
|---|---|---|
| 98(T40) | 2.2 H.1 (T40) | Remove 15A NCAC 2D .0530(u) condition for Application No. 2400036.08A (revised), and as included in Permit No. 03138R32, for modifications to the Kamyr continuous digester (ID No. K1), Recovery Boiler No. 5 (ID No. ES-RB5), and the mill hot water system as this record keeping/reporting requirement has been satisfied |
| 98 | 2.2 H.1 (T41) | Add 15A NCAC 2D .0530(u) record keeping/reporting requirement for this modification (Application No. 2400036.15A, "Product Mix Project") |

As detailed above, several 15A NCAC 2D .0530(u) tracking/reporting requirements were removed as requested by the Permittee. Since the reports are mailed to the regional office, confirmation that these five .0530(u) conditions had been satisfied was received from the Wilmington Regional Office (WiRO) as part of the application review.

**6. Facility Compliance Status**

The last full inspection of this facility was completed on March 26, 2015 by Russ Morgan of the Wilmington Regional Office (WiRO). At this time, the facility "appeared to be compliant with all permit conditions and requirements"

**7. Facility Emissions Review**

The following table represents the criteria pollutant emissions from the latest available reviewed facility emission inventory:

| Pollutant | 2013 Actual Emissions (tpy) |
|---|---|
| CO | 1814.48 |
| NOx | 2013.64 |
| PM (TSP) | 624.24 |
| PM10 | 513.82 |
| PM2.5 | 461.48 |
| SO2 | 1179.69 |
| VOC | 2603.38 |

**8. Recent Permit History**

December 8, 2006 Permit No. 03138R26 issued pursuant to Application No. 2400036.06A. The purpose of this application was to allow changes to the existing pulp dryer in order to allow production of the fluff pulp.

December 15, 2006 Permit No. 03138R27 issued pursuant to PSD Application 2400036.05D. The purpose of this application was to add language concerning the two weak black liquor storage tanks (ID Nos. ST001 and ST002) replacing the function of the existing black liquor storage ponds and the collateral increases in sulfur dioxide emissions.

September 12, 2007 Permit No. 03138R28 issued pursuant to Application No. 2600034.07B and 2600034.07D. The purpose of this application was to upgrade the No. 3 chlorine dioxide generator process and to add permit language to allow for the use of temporary electrical generation to be used during plant shutdowns, maintenance, and power loss. The temporary generator language was removed for T37.

December 13, 2007 Permit No. 03138R29 issued pursuant to Application No. 2400036.07F. The purpose of this application was to add two temporary package boilers.

May 12, 2008 Permit No. 03138R30 issued pursuant to Application No. 2400036.07C. The purpose of this application was to add OFA to Power Boiler No. 2 along with some other upgrades and replacements.

| | |
|---|---|
| May 15, 2008 | Permit No. 03138R31 an administrative amendment issued pursuant to Application No. 2400036.08B. The purpose of this application was to remove the requirement to test prior to the installation of the bark spouts that was erroneously added in R30. |
| August 20, 2008 | Permit No. 03138R32 was issued pursuant to Application No. 2400036.08A. The purpose of this application was a mill optimization project. |
| December 17, 2008 | Permit No. 03138R33 was issued pursuant to Application No. 2400036.08C. The purpose of this application was to permit the firing of ultra-low sulfur (ULS) No. 2 fuel oil with black liquor solids (BLS) as a fuel for the recovery boilers. |
| April 30, 2010 | Permit No. 03138R34 was issued pursuant to Application No. 2400036.10A. The purpose of this application was to permit the firing of natural gas in the No. 4 lime kiln. |
| March 9, 2011 | Permit No. 03138R35 was issued pursuant to Application No. 2400036.09B. The purpose of this application was to establish 112(j) emissions limitations for Power Boilers Nos. 1, 2 and 5. |
| July 27, 2011 | Permit No. 03138R36 was issued pursuant to Application No. 2400036.11B. The purpose of this application was to add natural gas as permitted fuel for the No. 5 Power Boiler and add new source-by-source permit limits for toxic air pollutants. |
| May 23, 2012 | Permit No. 03138T37 was issued pursuant to Application No. 2400036.04C. Although the initial Title V permit (Permit No. 03138T20) was previously issued, it was appealed by International Paper within 30 days of issuance. The issues upon which the appeal was based had been resolved. Therefore, the purpose of this permitting activity was to issue an updated Title V permit that reflects both the settlement agreement, as well as any permit modifications authorized subsequent to the appeal and made to the existing state construction and operating permit(s). |
| June 20, 2012 | Permit No. 03138T38 was issued pursuant to Application No. 2400036.12A, submitted June 19, 2012, as administrative amendment to correct minor errors in Air Permit No. 03138T37. |
| September 27, 2012 | Permit No. 03138T39 was issued pursuant to Application No. 2400036.12B, submitted August 14, 2012, for the purpose of upgrading the wood yard to process tree length logs and increase chip production capacity to 8,500 tons per day. The proposed modification constitutes a minor modification of the Title V Air Quality Permit. An addendum to Application No. 2400036.12B was received on September 14, 2012. The purpose of this addendum was to request the removal of toxic air pollutant (TAP) permit limits for all MACT affected sources pursuant to HB952. |
| January 17, 2014 | Permit No. 03138T40 was issued pursuant to Application No. 2400036.13A as administrative amendment that was initiated mainly to incorporate late 2012 source test results into Air Permit No. 03138T39. |

**9. Application Chronology**

| | |
|---|---|
| February 25, 2015 | A permit application for the Product Mix Project was received and processed as Application No. 2400036.15A. |
| April 2, 2015 | Additional information requested regarding projected timeline, emission factors and toxics. |
| April 6, 2015 | Response to additional information request was received. |
| April 21, 2015 | Teleconference with Amy Marshall of AECOM (consultant for IPRW) to discuss additional information items and needed follow-up. |

| | |
|---|---|
| April 27, 2015 | Follow-up additional information response received. |
| May 21, 2015 | Follow-up additional information request regarding VOC emission factors sent. |
| May 21, 2015 | Additional information response received from AECOM. |
| May 22, 2015 | Draft permit forwarded to Gary Morrow of IPRW and Amy Marshall of AECOM for comments. |
| May 22, 2015 | Draft permit and review document forwarded to Russ Morgan of the WiRO and Samir Parekh of the Stationary Source Compliance Branch (SSCB) for comments. |
| May 28, 2015 | WiRO comments received from Russ Morgan. A typo in the baseline actual emissions was corrected and the most recent compliance inspection date was updated. |
| May 29, 2015 | Teleconference with Gary Morrow and Amy Marshall to discuss IPRW's comments on the draft permit. The main comment was that the permit should clearly reflect that only the IR dryers associated with No. 18 Paper Machine are being taken about of service, not the whole emission source. |
| June 3, 2015 | Sent revised draft permit to Gary Morrow, Amy Marshall and Russ Morgan. |
| June 4, 2015 | Response from Amy Marshall that there were no comments on the revised draft, except that there was a small typo (corrected). |

**NORTH CAROLINA DIVISION OF AIR QUALITY**

# PSD Final Determination (Including Preliminary Determination)

**Issue Date:** February 8, 2019

**Region:** Wilmington Regional Office
**County:** Columbus
**NC Facility ID:** 2400036
**Inspector's Name:** Jmanda Dunston
**Date of Last Inspection:** 01/31/2019
**Compliance Code:** 3 / Compliance - inspection

## Facility Data

**Applicant (Facility's Name):** International Paper Riegelwood Mill

**Facility Address:**
International Paper Riegelwood Mill
865 John L Riegel Road
Riegelwood, NC 28456

**SIC:** 2621 / Paper Mills Exc Building Paper
**NAICS:** 322121 / Paper (except Newsprint) Mills

**Facility Classification: Before:** Title V **After:** Title V
**Fee Classification: Before:** Title V **After:** Title V

## Permit Applicability (this application only)

**SIP:** 15A NCAC 02D .0530, 15A NCAC 02Q .0700
**NSPS:** N/A
**NESHAP:** N/A
**PSD:** Yes – CO, NOx, PM, $PM_{10}$, $PM_{2.5}$ and $CO_2e$
**PSD Avoidance:** N/A
**NC Toxics:** N/A
**112(r):** N/A
**Other:** N/A

## Contact Data

| Facility Contact | Authorized Contact | Technical Contact |
|---|---|---|
| Kimberly Fail<br>Environmental 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 Engineer<br>(910) 362-4918<br>865 John L. Riegel Road<br>Riegelwood, NC 28456 |

## Application Data

**Application Number:** 2400036.18A
**Date Received:** 02/21/2018
**Application Type:** Modification
**Application Schedule:** PSD

**Existing Permit Data**
**Existing Permit Number:** 03138/T41
**Existing Permit Issue Date:** 06/10/2015
**Existing Permit Expiration Date:** 04/30/2017

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

| CY | SO2 | NOX | VOC | CO | PM10 | Total HAP | Largest HAP |
|---|---|---|---|---|---|---|---|
| 2017 | 1285.47 | 1620.34 | 2913.54 | 2389.09 | 462.13 | 1358.86 | 1073.85 [Methanol (methyl alcohol)] |
| 2016 | 995.69 | 1640.29 | 2394.79 | 1412.55 | 379.11 | 1110.86 | 880.09 [Methanol (methyl alcohol)] |
| 2015 | 1230.07 | 2049.66 | 2538.90 | 1829.96 | 503.30 | 1392.53 | 1102.11 [Methanol (methyl alcohol)] |
| 2014 | 1223.06 | 2072.26 | 2613.41 | 1863.78 | 511.94 | 1441.55 | 1134.20 [Methanol (methyl alcohol)] |
| 2013 | 1179.69 | 2013.64 | 2603.38 | 1814.48 | 513.82 | 1437.97 | 1131.85 [Methanol (methyl alcohol)] |

**Review Engineer:** Brian Bland

**Review Engineer's Signature:** **Date:** February 8, 2019

**Comments / Recommendations:**
**Issue** 03138/T42
**Permit Issue Date:** February 8, 2019
**Permit Expiration Date:** January 31, 2024

This document is intended to be a summary document of the Permitting Section's response to any public or EPA comments regarding the issuance of the Air Quality Permit. A more complete record of the full review by the North Carolina Division of Air Quality (NCDAQ) can be found in the Preliminary Determination (Attachment A) along with applications and other documentation in materials retained by the NCDAQ in the normal course of its review process. The following application chronology is provided highlighting some, but not all, of the significant events. The Application Chronology in Preliminary Determination includes more details.

| Date | Event |
|---|---|
| February 21, 2018 | DAQ received PSD Permit Application No. 2400036.18A from International Paper Riegelwood Mill (IPRW) |
| September 28, 2018 | Draft permit sent to Applicant and draft permit and permit review document sent to Wilmington Regional Office (WiRO) for review and comments |
| October 3, 2018 | Draft permit review document sent to Applicant for review and comments |
| November 13, 2018 | Draft Permit and Preliminary Determination sent to public notice |
| December 13, 2018 | Last day of public comment period for Draft Permit and Preliminary Determination |
| February 2019 | Final PSD review was processed |
| February 2019 | Permit signed and issued |

## SECTION 1

The Major New Source Review Branch of the NCDAQ Permitting Section evaluated the application for compliance with the "Prevention of Significant Deterioration" (PSD) requirements and other NCDAQ air quality regulations. The findings were assembled in a Preliminary Determination (Attachment A).

A notice of the opportunity for public comment concerning the Preliminary Determination appeared in the "The News Reporter" of Whiteville, North Carolina. The Public Notice was also posted on the Department of Environmental Quality website and e-mailed to all Interested Parties. The Public Notice stated that interested persons had thirty days in which to review the PSD application, Preliminary Determination and Draft Permit at specified locations and to submit written comments or to request in writing a public hearing. This period began on November 13, 2018 and ended on December 13, 2018.

NCDAQ received 9 comments requesting a public hearing. The comments were received from various locations across the state: Two commenters were located in the immediate area of the facility (specifically Delco), five commenters were from Wilmington, one commenter was located in Chapel Hill and one commenter was located in Charlotte.

NCDAQ received comments on the draft permit and review from Southern Environmental Law Center (SELC) dated December 13, 2018. For completeness, NCDAQ asked the applicant to provide additional information regarding SELC's regulatory concerns. On January 15, 2019, NCDAQ received a response from the applicant (see Attachment C) in an e-mail from Amy Marshall, AECOM.

DAQ's responses to comments received during the public comment period are provided below.

**Comment** (from two commenters) BACT is required for Nos. 2 and 5 Power Boilers.

DAQ Response:

EPA regulations do not require any non-modified emissions unit to undergo BACT. See §51.166(j)(3) or §52.21(j)(3):

> "A major modification shall apply best available control technology for each regulated NSR pollutant for which it would result in a significant net emissions increase at the source. This requirement applies to each proposed emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of operation in the unit."

According to these regulations, BACT applies to those emissions units at which a significant net emissions increase would occur for any regulated NSR pollutant at the source, as a result of physical change or change in method of operation in the emissions unit. The EPA has interpreted these provisions to mean that BACT applies in the context of modification to only an emissions unit that has been modified or added to an existing facility.

For the purposes of determining whether a PSD permit is required (applicability of PSD), the EPA requires a permitting agency to look beyond the emissions unit being modified (across the entire source) to determine the extent of emissions increase that result from the modification. Thus, EPA has considered downstream and upstream emissions increases and decreases from emissions units that are not physically or operationally changed when determining the level of increases from the modification. These upstream or downstream emissions increases that are accounted for in the analysis are often the result of the increased throughput resulting from the removal of a bottleneck in the equipment that is physically changed. Debottlenecked emissions units are not subject to BACT as they have not experienced emissions increase due to physical change or change in method of operation of the unit itself.

With respect to the proposed project, No. 4 Turbine Generator (TG4) replaces the existing Nos. 1 and 2 Turbine Generators (TG1 and TG2). TG1 and TG2 (non-emitting units) are bottlenecked to process additional steam (from the power boilers) due to capacity constraint; thus, they are unable to produce increased amount of electricity (beyond 15 MW total). The new TG4 (non-emitting unit) is capable of producing 40 MW electric power, allowing for processing of additional steam, which is currently vented to the atmosphere due to lack of available capacity. Thus, TG4 debottlenecks the Nos. 2 and 5 Power Boilers to burn more bark (100,000 tons/yr approximately over the baseline usage).

Consistent with the above approach, after considering the emission changes across the source, including the emissions changes of Nos. 2 and 5 Power Boilers, the project exhibited emissions increases exceeding the significance thresholds for PM, $PM_{10}$, $PM_{2.5}$, CO, NOx, and GHG. However, as discussed above, these debottlenecked boilers are not subject to BACT; because they are not experiencing emissions increase due to physical or operational change to themselves.

The subject Power Boilers are not physically modified due to a change occurring to a non-emitting unit (TG4). Additionally, prior to the proposed modification there was no federally enforceable limit on the amount of bark the boilers were permitted to burn. Thus, they cannot be deemed operationally changed due to an increase in bark fuel usage (above baseline levels), caused by an installation of a larger TG4 (non-emitting unit).

The following EPA policy determinations are also instructive:

Detroit Edison Greenwood: A physical change (addition of gas canes to allow a boiler to burn natural gas) to the facility resulted in a significant increase in NOx emissions, but there was no physical change or change in the method of operation to the boiler. The letter from Gerald A. Emison, Director, Office of Air Quality Planning and Standards sent as a follow-up to an October 19, 1989 meeting includes the following:

> "…the requirement to apply BACT is applicable only to those emissions units at the source which undergo both a physical or operational change and a significant net emissions increase."
>
> "Our review indicates that, by itself, the addition of gas canes to the burners is not a physical change or change in the method of operation in the unit and, consequently, would not subject the boiler to a BACT review. Therefore, if the sole change to the boiler is the addition of the canes, then, in this case, the only requirements necessary for a PSD permit are an air quality analysis, additional impacts analyses, and (if applicable) a Class I impact analysis -- the application of BACT is not required."

Pulp Mill installs a new digester (and bleach plant) that debottlenecks capacity of recovery boiler.

The associated July 28, 1983 EPA Memorandum from Edward R. Reich, Director Stationary Source Compliance Division, Office of Air Quality Planning and Standards includes the following:

"Since the recovery boiler itself will not be undergoing a physical change or change in the method of operation, it will not have to apply BACT. However, all emissions increases must undergo air quality analysis and will consume applicable air quality increments."

The portion of this memorandum, explaining that BACT was not required; because the boiler itself was not undergoing a physical change or change in the method of operation was cited in a February 8, 2000 letter by EPA Region V in response to Wisconsin Department of Natural Resources (WDNR) PSD Applicability inquiry. The WDNR inquiry concerned a physical change to a process line where "The change will require an increase in the amount of steam that is provided to the process line by the power boiler. No physical change to the power boiler is necessary."

Rochester Public Utilities (RPU) - Silver Lake Plant: The facility included four coal-fired boilers and steam turbines. Minnesota Pollution Control Agency (MPCA) issued a PSD permit, without requiring BACT, to RPU to tap into their existing steam lines to provide steam to the Mayo Clinic's Prospect Utility Plant. This project didn't change the boilers but resulted in the burning of an additional 73,700 tons per year of coal and a significant increase in $SO_2$ emissions. The Minnesota Center for Environmental Advocacy (MCEA) filed a petition for review of this permit with the Environmental Appeals Board (EAB) and argued that the term "emissions unit" encompasses the steam lines as well as the boilers, based on a change to the regulatory definition of "emissions unit" in revisions to the PSD regulations promulgated at 67 FR 80186 (December 31, 2002). EAB concluded that the revised PSD regulations did not change the meaning of "emissions unit" and BACT didn't apply because no "emission units" were modified.

EPA's PSD and Title V Permitting Guidance for Greenhouse Gases (March 2011, page 23) again includes the EPA's interpretation that the BACT in the context of a modification applies only to an emissions unit that has been modified or added to an existing source.

In summary, the Nos. 2 and 5 Power Boilers (emissions units) are not physically or operationally modified in accordance with §51.166(j)(3), as implemented through North Carolina's State Implementation Plan-approved PSD regulation (15A NCAC 02D .0530); thus, these boilers are not subject to BACT. Moreover, TG4 is a non-emitting unit; therefore, it cannot be subject to the BACT provisions. The information provided by the applicant and DAQ's processing of the application have satisfied all applicable PSD requirements as follows:

§51.166(j) "Control technology review" (Not applicable as discussed above)
§51.166(k) "Source impact analysis"
§51.166(l) "Air quality models"
§51.166(m) "Air quality analysis"
§51.166(n) "Source information"
§51.166(o) "Additional impact analyses"
§51.166(p) "Sources impacting Federal Class I areas" (Not applicable)
§51.166(q) "Public participation"

As required, the DAQ will issue a PSD permit for the proposed No. 4 Turbine Project.

**Comment** (from four commenters) Project results in an increase in GHGs that is not in line with Executive Order 80.

DAQ Response:

Governor Cooper's Executive Order 80 sets goals for the state of North Carolina to strive to achieve reductions in greenhouse gas emissions. Those goals include a reduction in statewide greenhouse gas emissions of 40% below 2005 levels, an increase in zero emission vehicles, and energy consumption reductions in state owned buildings of 40% from 2002-2003 levels. The NC Climate Change Interagency Council is charged with developing holistic approaches and programs so that North Carolina can strive to accomplish all the goals in Executive Order 80 while ensuring that North Carolina's vibrant economy continues to expand. A specific directive of the council is the development of a North Carolina Clean Energy Plan by October 2019 that will seek stakeholder input in the expansion of clean energy technologies, energy efficiency measures, and clean transportation solutions. A key outcome from this process is the level of greenhouse gas emissions expected under current conditions and reductions achievable under alternative future scenarios with recommended policy,

administrative, and voluntary actions taken by public and private entities. Until such time when legislative or regulatory proposals are considered and acted upon, projects such as these must be evaluated based on the current state and federal rules and regulations in place. The DAQ will continue to develop emissions inventory of key sources and monitor the effects of large projects on projected emissions levels.

**Comment** (from four commenters) Object to project on Environmental Justice (EJ) grounds and/or that EJ concerns weren't sufficiently studied

DAQ Response:

The DAQ reviewed an air quality analysis for the area as part of this permitting process. That review included an analysis of ambient air quality monitoring data, emissions inventory information per source sector (criteria and toxic air pollutants), and demographic and socioeconomic data.

## SECTION 2 – Revised Table of Changes

**Summary of Changes to the Previous Permit**

| New 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><br>Replace "2D" and "2Q" citations with "02D" and "02Q" |
| 3 | Permitted Items | Add "PSD" indicator to ES-PB2<br><br>Add 15A NCAC 02Q .0501(b)(2) modification footnote and tag associated emission sources<br><br>Correct footnote associated with Application No. 2400036.15A to reflect the current citation is 15A NCAC 02Q .0501(b)(2) |
| 16 | Section 2.1 B Table | Added 15A NCAC 02D .0530 to Applicable Regulations |
| 24 | Section 2.1 C Table | Added 15A NCAC 02D .0530 to Applicable Regulations |
| 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 |

## SECTION 3 – Final Determination

Based on the application submitted and the review of this proposal, the NCDAQ made the preliminary determination available for comment. The comment period expired on December 13, 2018.

Clarifications/Corrections:
During discussion of PSD/BACT in the Preliminary Determination, "no physical change" was used in several instances where "no physical change or change in the method of operation" would have more clearly conveyed DEQ's point. Any possible ambiguity should be removed by DEQ's response, above, to the public comment that BACT is required for Nos. 2 and 5 Power Boilers.

Due to the correction of minor errors, the Preliminary Review's Application Chronology below contains several minor differences from the Application Chronology sent to Public Notice.

A compliance inspection was conducted by WiRO on January 31, 2019.

NCDAQ recommends issuance of Permit No. 03138T42.

**ATTACHMENT A – PRELIMINARY REVIEW**

# 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 (NOx), particulate matter equal to or less than 100 micrometers diameter (PM), particulate matter equal to or less than 10 micrometers diameter ($PM_{10}$), particulate matter equal to or less than 2.5 micrometers diameter ($PM_{2.5}$), and carbon dioxide equivalent ($CO_2e$) 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 January 31, 2024 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 January 31, 2024, 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:<br>• upgrading the wood yard to process tree length logs and increase chip production capacity to 8,500 tons per day.<br>• 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.<br>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:<br>• making modifications to convert the mill to 100% softwood pulp production.<br>• the removal of several 15A NCAC 02D .0530(u) tracking/reporting requirements that had been satisfied. |

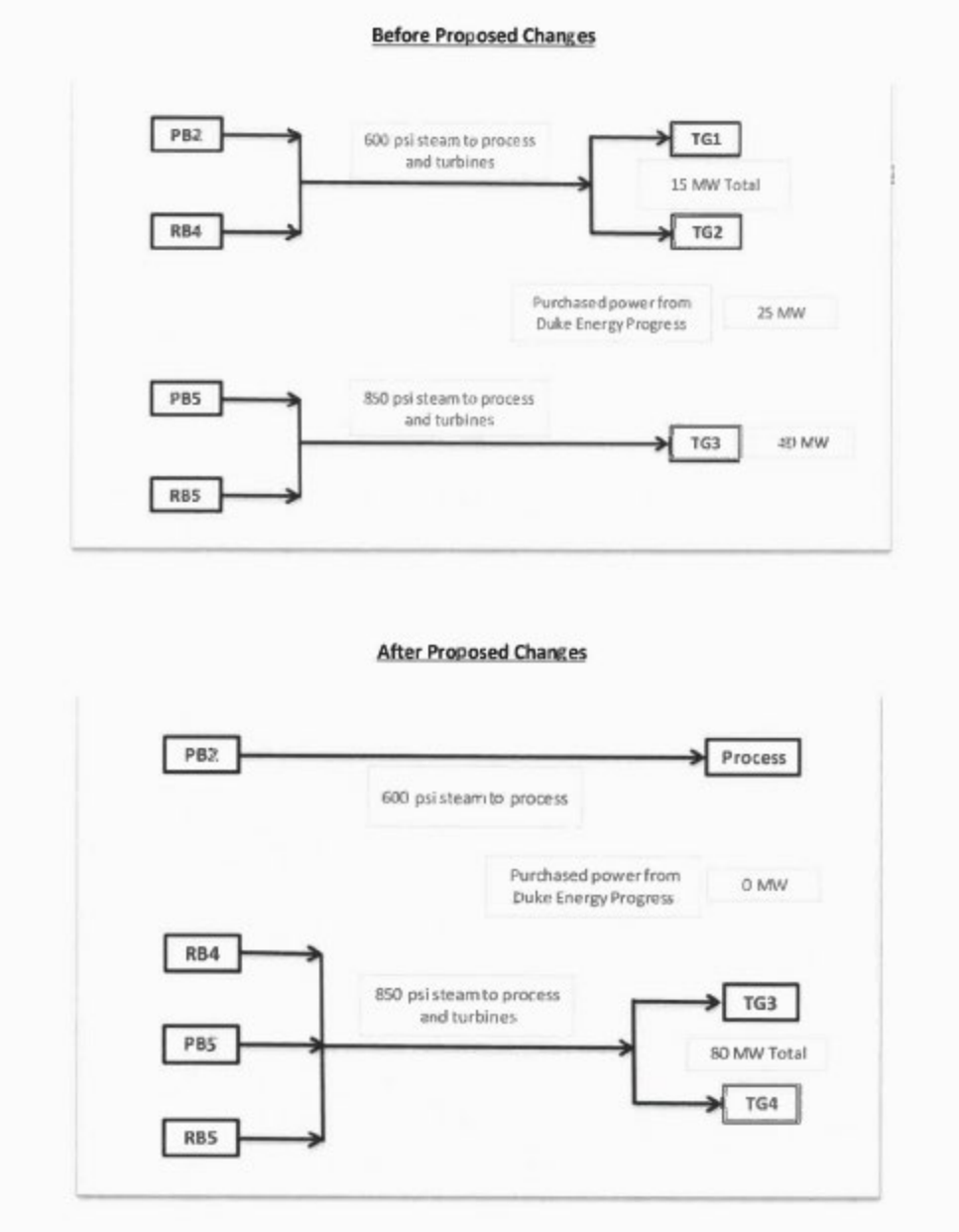
D. Application Chronology

| 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 |

| Date | Event |
|---|---|
| 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 sent to Applicant and draft permit and permit review document sent to Wilmington Regional Office (WiRO) for review and comments |
| October 3, 2018 | Draft permit review document sent to Applicant |
| 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, NOx, $SO_2$, and VOC.
  Combustion of NCG/SOG: $SO_2$ and NOx.
  Combustion of No. 6 fuel oil: PM, CO, NOx and $SO_2$.
  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 ($CO_2$), methane ($CH_4$), and nitrous oxide ($N_2O$) 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)(l). Specifically, 15A NCAC 02D .0530(b)(l)(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, NOx, PM, $PM_{10}$, $PM_{2.5}$ and $CO_2e$ 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 | NOx | $SO_2$ | PM | $PM_{10}$ | $PM_{2.5}$ | $CO_2e$ | VOC | Pb | TRS/$H_2S$ | $H_2SO_4$ | 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 ($\mu g/m^3$) | Class II SIL ($\mu g/m^3$) | Percent of Class II SIL ($\mu g/m^3$) |
|---|---|---|---|---|
| CO | 1-hour | 14 | 2000 | <1% |
| | 8-hour | 9 | 500 | 2% |
| $NO_2$ | 1-hour | 7.3 | 7.5 | 97% |
| | Annual | 0.21 | 1 | 21% |
| $PM_{10}$ | 24-hour | 1.32 | 5 | 26% |

| | | | | |
|---|---|---|---|---|
| $PM_{2.5}$ | 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 $CO_2e$, 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 $PM_{2.5}$ Precursor NOx

   An analysis of NOx and $SO_2$ precursor emissions impacts on secondary formation of $PM_{2.5}$ was conducted to compare total $PM_{2.5}$ impacts to the 24-hour and annuals $PM_{2.5}$ SILs. The approach followed EPA *Guidance for $PM_{2.5}$ Permit Modeling* (May 2014).

   For determining the daily and annual $PM_{2.5}$ 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 $PM_{2.5}$ under the PSD Permitting Program* (December 2, 2016) was utilized. The project emissions for NOx and $SO_2$ are lower than the lowest MERPs from any region for daily and annual $PM_{2.5}$. Therefore, no impacts will occur.

   **Daily $PM_{2.5}$:**
   (143 tpy NOx Project/ 1155 tpy NOx daily $PM_{2.5}$ MERP) * (4 tpy $SO_2$ Project/ 225 tpy $SO_2$ daily $PM_{2.5}$ MERP) = 0.12 + 0.02 = 0.14 * 100 = 14%
   (0.9 µg/$m^3$ modeled daily $PM_{2.5}$ concentration)/ (1.2 µg/$m^3$ SIL) = 0.75 * 100 = 75%
   14% + 75% = 89%

   **Annual $PM_{2.5}$:**
   (143 tpy NOx Project/ 3184 tpy NOx annual $PM_{2.5}$ MERP) * (4 tpy $SO_2$ Project/ 2289 tpy $SO_2$ annual $PM_{2.5}$ MERP) = 0.04 + 0.002 = 0.042 * 100 = 4%
   (0.1 µg/$m^3$ modeled annual $PM_{2.5}$ concentration)/ (0.2 µg/$m^3$ 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 NOx 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 NOx. In addition to VOCs, an important component of ozone formation is the ambient concentration of NOx. Studies have shown that

ozone formation in the Southeast is NOx limited, meaning that ozone formation is limited by the amount of NOx in the atmosphere rather than the amount of VOCs. Project VOC and NOx 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 $PM_{2.5}$ 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 $PM_{2.5}$ and ozone as the critical air quality threshold to develop conservative ozone MERPs values. As such, NOx 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 NOx, $SO_2$, $PM_{2.5}$, or $PM_{10}$. 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 $PM_{10}$ and $PM_{2.5}$ 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 PM10 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), 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 PM10 size category.” Since the TSP and PM10 emissions are extremely close, and the PM10 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 02D .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 $ClO_2$ and $Cl_2$ 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 $PM_{10}$, $SO_2$ and NOx. This modification will result in an increase of emissions as follows: $PM_{10}$ by 10.13 lb/hr, $SO_2$ by 0.95 lb/hr and NOx 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><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><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**

**PUBLIC NOTICE**
**FOR APPLICATION**
**SUBMITTED UNDER THE REGULATION**
**"PREVENTION OF SIGNIFICANT DETERIORATION"**

International Paper Riegelwood Mill has applied to the North Carolina Department of Environmental Quality, Division of Air Quality (DAQ), Permitting Section, to make modifications to its Kraft pulp mill located at 865 John L. Riegel Road, Riegelwood, North Carolina 28456, Columbus County. The proposed project includes, but is not limited to, adding a new turbine generator. The project is also expected to increase the amount of bark burned in the Nos 2 and 5 Power Boilers.

The facility is defined as a "major stationary source" for the discharge of significant quantities of VOC, PM, $PM_{10}$, $PM_{2.5}$, SO2, NOx, CO and GHG.

The proposed project will result in a significant emission increase of CO, NOx, PM, $PM_{10}$, $PM_{2.5}$ and GHG.

The proposed project is subject to review and processing under North Carolina Administrative Code, Title 15A, Subchapter 02D, Section .0530, "Prevention of Significant Deterioration" and Subchapter 02Q, Section .0300, "Construction and Operation Permits."

The International Paper Riegelwood Mill application has been reviewed by the DAQ, Major New Source Review Branch in Raleigh, North Carolina to determine compliance with the requirements of the North Carolina Environmental Management Commission air pollution regulations.

A preliminary review, including analysis of the impact of the facility emissions on local air quality, has led to the determination that the project can be approved, and the DAQ air permit issued, if certain permit conditions are met.

Columbus County is classified as an attainment area. Compliance with all ambient air quality standards and the PSD increments is projected.

Persons wishing to submit written comments or request a public hearing regarding the Air Quality Permit are invited to do so. Requests for a public hearing must be in writing and include a statement supporting the need for such a hearing, an indication of your interest in the facility, and a summary of the information intended to be offered at such hearing.

Written comments or requests for a public hearing should be postmarked no later than December 13, 2018 and addressed to Brian Bland, Division of Air Quality, 1641 Mail Service Center, Raleigh, North Carolina 27699-1641.

All comments received or postmarked by this date will be considered in the final determination regarding the Air Quality Permit. A public hearing may be held if the Director of the DAQ determines that significant public interest exists or that the public interest will be served.

A copy of all data and the application submitted by International Paper Riegelwood Mill and other material used by the DAQ in making this preliminary determination are available for public inspection during normal business hours at the following locations:

NC DEQ
Division of Air Quality
New Source Review Branch
217 West Jones Street
Raleigh, N.C. 27603

or

NC DEQ
Division of Air Quality
Wilmington Regional Office
127 Cardinal Drive Ext
Wilmington, NC 28405

Information on the proposed permit, the permit application, and the staff review is available on the DAQ website (https://deq.nc.gov/about/divisions/air-quality/events) or by writing or calling:

William Willets, P.E.
Chief, Permitting Section
North Carolina Division of Air Quality
1641 Mail Service Center
Raleigh, North Carolina 27699-1641
Telephone: (919) 707-8726

Michael Abraczinskas, Director
Division of Air Quality, NCDEQ

**ATTACHMENT 2**

**LISTING OF ENTITIES AND ASSOCIATED MATERIALS**

| | | |
|---|---|---|
| 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 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 Permit & Public Notice |
| | Preliminary Determination, Draft Permit, and Public Notice, via electronic mail to: ceron.heather@epa.gov with cc to lorinda.sheppard@epa.gov | |
| NATIONAL PARK SERVICE | Ms. Andrea Stacy<br>andrea_stacy@nps.gov<br>(303) 969-2816 | None |
| U.S. FISH & WILDLIFE 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 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 & Public Notice |

## International Paper Responses to Southern Environmental Law Center Comments

Southern Environmental Law Center (SELC) submitted comments on December 13, 2018 on the draft Prevention of Significant Deterioration (PSD) permit that would allow the International Paper (IP) Riegelwood Mill to install the No. 4 Turbine Generator. We have reviewed the SELC's comments, particularly with respect to PSD/BACT and climate change, and offer the following in response.

As described more fully in the permit application document that was submitted on February 21, 2018 for this project, IP prepared a conservative PSD applicability analysis for the project. The No. 4 Turbine Generator will not itself be a source of emissions, but emissions increases from combustion of additional bark that is expected to be fired in the Nos. 2 and 5 Power Boilers (PB2 and PB5) were quantified as part of the PSD applicability assessment. Emission increases associated with additional bark firing were projected to result in significant emission increases of several pollutants (CO, NOx, PM, $PM_{10}$, $PM_{2.5}$, and $CO_{2e}$); accordingly the project triggered PSD review and, contrary to SELC's contention, a complete PSD permit application was submitted to the NC DAQ for this project.

As required by existing EPA and NC DAQ policies and procedures, computer dispersion modeling studies of the project's emission increases were carried out as part of the PSD review effort. These studies demonstrated that emissions increases of CO, $NO_2$, $PM_{10}$, and $PM_{2.5}$ were below significant impact levels. DAQ has already determined that facility-wide air toxics emissions from the IP Riegelwood Mill do not present an unacceptable risk to human health. The Riegelwood Mill's current air permit has emission limits for several TAPs based on previous facility-wide modeling analyses. Because this project does not involve any new sources of TAPs or increase potential emissions of TAPs, the facility-wide air toxics analysis was not required to be updated. The US EPA also determined that facility-wide emissions of hazardous air pollutants (HAP) from the IP Riegelwood mill do not pose unacceptable risk when it completed its risk analysis for the pulp and paper National Emission Standards for Hazardous Air Pollutants (NESHAP).

Per longstanding EPA and NC DAQ policies, a Best Available Control Technology (BACT) assessment was not required to be conducted for the project because:
The No. 4 Turbine Generator is not an emissions unit,

Neither PB2 nor PB5 will undergo a modification as part of the project, and

There are no other new or modified emission units associated with the project.

Nonetheless, SELC claims that the mill is required to install BACT on PB2 and PB5 as part of the project because they erroneously contend that the additional bark firing that is projected to occur in PB2 and PB5 constitutes a change in the method of operation of these units. As explained further below, SELC's conclusions with respect to BACT conflict with existing PSD regulations and established policies.

**The increase in bark firing does not constitute a change in the method of operation of PB2 or PB5.**

Although the PSD regulations do not specifically define what constitutes "a change in the method of operation" of an emissions unit, the federal regulations at 40 CFR 51.166(b) and 40 CFR 52.21(b) specifically list several types of changes as being excluded from the PSD definition of a major modification. An increase in the production rate of existing equipment is one of these exclusions.

> *§51.166(b)(2)(iii) A physical change or change in the method of operation shall not include: (f) An increase in the hours of operation or in the production rate, unless such change would be prohibited under any federally enforceable permit condition which was established after January 6, 1975, pursuant to 40 CFR 52.21 or under regulations approved pursuant to 40 CFR subpart I or §51.166.*
>
> *§52.21(b)(2)(iii) A physical change or change in the method of operation shall not include: (f) An increase in the hours of operation or in the production rate, unless such change would be prohibited under any federally enforceable permit condition which was established after January 6, 1975, pursuant to 40 CFR 52.21 or under regulations approved pursuant to 40 CFR subpart I or 40 CFR 51.166.*

The language at 51.166(b)(2)(iii) is incorporated into 15A NCAC 02D.0530 by reference. The reason EPA chose to exclude increases in the production rate or operating hours from consideration as changes in the method of operation of existing equipment is provided in the Federal Register preamble accompanying promulgation of the PSD regulations (see 45 FR 52704):

> "This exclusion stems largely from EPA's decision that the definitions of 'major modification' should focus on changes in 'actual emissions.' While EPA has concluded that as a general rule Congress intended any significant net increase in such emissions to undergo PSD or nonattainment review, it is also convinced that Congress could not have intended a company to have to get a NSR permit before it could lawfully change hours or rate of operation."

Since promulgation of the PSD regulations, EPA has consistently excluded increases in fuel firing rates and other types of production rate increases at existing equipment from consideration as modifications.

At the same time, the Agency has also consistently required emission changes from production rate increases at unmodified equipment to be accounted for in a PSD applicability assessment if these increases are associated with a physical change elsewhere in the facility. IP followed this requirement for this project when accounting for the emission changes at PB2 and PB5 that are expected to result from the installation of the No. 4 Turbine Generator.

There are two power boilers and two recovery boilers at the Riegelwood mill that burn multiple fuels to provide steam and power for mill operations. The mill's steam and power demands fluctuate depending on the season and overall mill production rates. Bark firing rates in PB2 or PB5 currently vary in response to these changing demands; these variations are not and never have been considered to be changes in the method of operation of these units. Even if the No. 4

Turbine Generator project were not carried out, IP could increase bark firing rates in PB2 or PB5 as needed to burn less of another permitted fuel in PB2 or PB5.

Accordingly, the firing of additional bark in PB2 or PB5 does not constitute a change in the method of operation of these units. The power boilers are already permitted to burn bark and this project does not increase the permitted bark firing rates or emission rates from either unit currently allowed by the mill's air permit.

**Existing emission units that are not physically changed or not undergoing a change in the method of operation are not subject to BACT.**

When promulgating the 1980 PSD regulations, EPA explained that the Alabama Power court decision provides the Agency with the "…authority to set *de minimis* thresholds for BACT applicability, in order to alleviate economic and administrative burdens." In addition, EPA explained that "…the BACT requirement applies only to only the modified units and added units at the source…" that contribute to a source-wide significant net emission increase (see 45 FR 52722). Therefore the Agency concluded that unmodified units that contribute to a source's projected emissions increase solely as a result of increased throughput or an increase in annual operating hours are not subject to BACT.

This distinction between modified and unmodified units was incorporated into the PSD regulations at 40 CFR 51.166(j)(3) and 40 CFR 52.21(j).

> *§51.166(j) Control technology review. The plan shall provide that: (3) A major modification shall apply best available control technology for each a regulated NSR pollutant for which it would be a significant net emissions increase at the source. This requirement applies to each proposed emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of operation in the unit.*
>
> *§52.21(j) Control technology review. (3) A major modification shall apply best available control technology for each regulated NSR pollutant for which it would result in a significant net emissions increase at the source. This requirement applies to each proposed emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of operation in the unit.*

Since the PSD regulations were promulgated, EPA has consistently upheld this distinction with respect to BACT applicability between modified and unmodified emission units in numerous policy letters and documents, of which the following constitute representative examples.

In a memo dated July 28, 1983, EPA's Office of Air Quality Planning and Standards explained to Region 10 staff that BACT did not apply to a recovery boiler at a pulp and paper mill whose emissions were projected to increase as a result of the installation of a new bleach plant and larger pulp digester. Emissions from the recovery boiler were to increase as a result of the mill needing to process more black liquor because of the increased digester capacity, but EPA

concluded that "…since the recovery boiler itself will not be undergoing a physical change or change in the method of operation, it will not have to apply BACT."

In a letter dated January 18, 1990 EPA concluded that although the conversion of Detroit Edison's Greenwood Plant to natural gas firing was subject to PSD review for NOx, BACT did not apply to the plant's boiler. The physical change associated with the project (i.e., installation of equipment and piping to deliver gas to the boiler) occurred elsewhere at the plant and the boiler itself was not modified as a part of the project. In this letter, EPA stated that "…the requirement to apply BACT is applicable only to those emission units at the source which undergo both a physical or operational change and a significant net emissions increase."

In Section B.II of the 1990 Draft New Source Review Workshop Manual, EPA simply stated that "…the BACT requirement applies to each individual new or modified affected emissions unit and pollutant emitting activity at which a net emissions increase would occur." This statement reiterates the Agency's position that BACT does not apply to an unmodified emissions unit at a source with a net emissions increase.

EPA Region IV confirmed to the South Carolina DHEC in a letter dated March 14, 1997 that Hoechst Celanese Corporation correctly concluded that BACT was not required to be applied to an unmodified coal-fired boiler whose emissions were projected to increase as a result of planned modification to extraction towers elsewhere in the plant.

Particularly germane to this project, in a letter to the Wisconsin DNR dated February 24, 2005, EPA Region V explained that BACT did not apply to four boilers at a Murphy Oil refinery as a result of increased fuel firing resulting from physical changes elsewhere in the facility. EPA explained that "BACT would not apply to the boilers if no physical changes or change in the method of operation is planned for the boilers."

**Emissions Increases were Properly Addressed and BACT is Not Required**

In summary, emissions from PB2 and PB5 resulting from increased bark firing were accounted for in the PSD applicability assessment for this project. However, there will be neither a physical change nor a change in the method of operation of either unit, and thus in accordance with the PSD regulations and established EPA policies, BACT is not required to be installed on these boilers.

**Combustion of Biomass in PB2 and PB5 is Climate Neutral**

SELC also asserts that DAQ should address Governor Cooper's recent Executive Order No. 80 related to climate change in NC. Our reading of this executive order is that it creates obligations for state agencies to develop plans and programs to address climate change, and does not have any immediate requirements for industry. Nonetheless, nothing additional is required of either International Paper or NC DAQ with respect to this project because combustion of biomass in PB2 and PB5 is climate neutral. The Riegelwood Mill's two power boilers burn biomass obtained from managed forests and also burn biomass residuals such as those from in-woods chipping, bark and sawdust from lumber mills, and processed yard and storm debris. The mill's

wood procurement system is certified to FSC (Forest Stewardship Council) and SFI (Sustainable Forestry Initiative) standards. International Paper has a Global Responsible Fiber Procurement Policy that states mills will not knowingly accept fiber from illegally logged forests or from forests where high conservation values are threatened by management activities.[1]

Congress adopted legislation in May 2017 and again in March 2018 directing the EPA, the Department of Agriculture (USDA), and the Department of Energy (DOE) to establish clear and simple policies that reflect the carbon neutrality of forest-derived bioenergy. The carbon neutrality of biomass harvested from sustainably-managed forests has been recognized repeatedly by an abundance of studies, agencies, institutions, legislation and rules around the world, including the guidance of the Intergovernmental Panel on Climate Change and the reporting protocols of the United Nations Framework Convention on Climate Change. Numerous EPA documents and policy memos have found positive benefits from forest biomass use, including EPA's original draft accounting framework (September 2011) and revised draft framework (November 2014). Both documents recognize the GHG reduction benefits of bioenergy from forest product mill residuals and byproducts. Most recently, in April, EPA issued a policy statement to treat biogenic carbon dioxide emissions from the combustion of forest biomass at stationary sources as carbon neutral.[2]

Scientific studies and EPA's work shows that the use of forest products manufacturing residuals for energy not only has a de minimis impact on atmospheric concentrations of GHGs but also can reduce net atmospheric GHG concentrations.[3] Unlike fossil fuels that add carbon to the atmosphere from nonrenewable geologic sources, carbon associated with the combustion of biomass is part of a natural cycle that maintains a carbon balance. When biomass is burned, the stored carbon — which would have been emitted through natural decay or could have been lost in a forest fire — is released into the atmosphere and reabsorbed by growing forests. Efficiently using biomass residuals in combined heat and power systems like the Riegelwood Mill's power boilers minimizes total forest system GHG emissions.

Finally, the project results in combustion of additional biomass in Nos. 2 and 5 Power Boilers because the addition of the No. 4 turbine generator will allow the mill to purchase less power from Duke Energy. The additional biomass combustion replaces purchased power generated by Duke Energy primarily from combustion of fossil fuels.

[1] http://www.internationalpaper.com/planet/sustaining-forests

[2] https://www.epa.gov/sites/production/files/2018-04/documents/biomass_policy_statement_2018_04_23.pdf

[3] https://afandpa.org/docs/default-source/1pgrs/2018-summer-update/carbon-neutrality-of-biomass-july-2018.pdf?sfvrsn=2

**ATTACHMENT C – Public Comments**

SOUTHERN ENVIRONMENTAL LAW CENTER

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December 13, 2018

***Via Electronic and U.S. Mail***

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**Re: Comments on International Paper Riegelwood Mill Draft Permit Modification (03138T42)**

Dear Mr. Bland,

On behalf of Clean Air Carolina[1] and itself, the Southern Environmental Law Center[2] respectfully submits these comments on the draft air permit ("Draft Permit") published by the North Carolina Department of Environmental Quality, Division of Air Quality ("NCDEQ") for modifications to the International Paper Riegelwood Mill ("IP Riegelwood").

As discussed more fully below, the Draft Permit fails to meet the Clean Air Act requirements under the Prevention of Significant Deterioration ("PSD") provision. Specifically, because the proposed project qualifies as a major modification, IP Riegelwood was required to conduct PSD review, obtain a PSD construction permit, and install best available control technology ("BACT"). IP Riegelwood's reason for avoiding PSD application, in particular installation of BACT, is not supported by the law. NCDEQ's seemingly unquestioned acceptance of IP Riegelwood's unsupported assertions and avoidance of its statutory duties is unacceptable. NCDEQ must rescind the Draft Permit until a complete PSD review and BACT analysis is conducted. Furthermore, before issuing a revised draft permit, NCDEQ must consider the environmental justice impacts of the proposed project and evaluate the project for consistency with Governor Cooper's Executive Order on climate change. Finally, for full and complete

[1] Clean Air Carolina is a statewide organization of educators, health professionals, scientists and clean air advocates dedicated to the protection of human health and the environment in North Carolina. As a statewide organization focused on preserving and improving the air quality of North Carolina, Clean Air Carolina takes a specific interest in sources of emissions within the state, especially Title V permits pertaining to air emissions.

[2] The Southern Environmental Law Center ("SELC") is a non-profit environmental organization dedicated to the protection of natural resources, communities, and special places in a six-state region of the Southeast. SELC works in all three branches of government to help create, implement, and enforce the laws and policies that govern how our environment is protected.

public participation, NCDEQ should hold a public hearing before issuing a final permit to IP Riegelwood.

NCDEQ submitted the Draft Permit for comment on November 13, 2018, and confirmed that the comment deadline is December 13, 2018. These comments are therefore timely. The commenters request that NCDEQ promptly send an electronic copy of any final permit for IP Riegelwood to the SELC representative listed in the signature block at the end of these comments.

## I. The Draft Permit Includes Installation of a New Turbine Generator and Increased Bark Combustion

International Paper Riegelwood Mill ("IP Riegelwood" or the "mill") is a kraft pulp mill located in Riegelwood, Columbus County, North Carolina.[3] IP Riegelwood originally produced both pulp and paper productions, but currently only produces fluff pulp.[4] The mill also generates electricity on site for use in the mill's operation, which is supplemented by electricity purchased from off-site generators: "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 bark liquor solids and own make bark."[5]

On February 21, 2018, IP Riegelwood applied to NCDEQ for a proposed project at the mill. This project would include installation of a new 40 MW condensing steam turbine generator, which would allow two existing turbine generators to be removed from service.[6] As part of the proposed project, IP Riegelwood "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."[7] Currently, these two power boilers are permitted to "fire a variety of fuels,"[8] primarily bark, sludge, and natural gas.[9] By adding the new turbine generator, IP Riegelwood will be able to increase the relative amount of bark that is combusted in these two power boilers.[10]

As a result of the proposed project, emissions in the two power boilers will significantly increase. In particular, IP Riegelwood projected

> emissions increases for carbon monoxide (CO), nitrogen oxides (NOx), particulate matter equal to or less than 100 micrometers diameter (PM), particulate matter equal to or less than 10 micrometers diameter ($PM_{10}$),

[3] NCDEQ, International Paper Riegelwood Application Review – Preliminary Determination at I.A (Nov. 13, 2018) [hereinafter "NCDEQ, Application Review"].
[4] *Id.*
[5] International Paper Riegelwood Mill, PSD Air Permit Application for the No. 4 Turbine Project at the Riegelwood Mill at 1-1 (Feb. 2018) [hereinafter "IP Riegelwood, Application"].
[6] *Id.*
[7] *Id.*; NCDEQ, Application Review, *supra* note 3, at I.A.1.
[8] IP Riegelwood, Application, *supra* note 5, at PDF 187.
[9] *Id.* at 3-1.
[10] *Id.* at 5.4.1, PDF 51, PDF 187.

> particulate matter equal to or less than 2.5 micrometers diameter ($PM_{2.5}$), and carbon dioxide equivalent ($CO_{2e}$) . . . above the [Clean Air Act's] PSD significant emission rates (SER).[11]

Despite these significant emissions increases, IP Riegelwood did not conduct full PSD review or install best available control technology ("BACT"). Instead, IP Riegelwood stated that a BACT analysis was not required because "the power boilers are not being modified with this project and [the new turbine generator] is not an emission source."[12] NCDEQ accepted this blanket and unsupported assertion, publishing the Draft Permit without requiring IP Riegelwood to comply with the relevant PSD requirements.[13]

## II. NCDEQ Must Rescind the Draft Permit Until International Paper Riegelwood Conducts the Required PSD Review, Including Installation of BACT

The Clean Air Act's Prevention of Significant Deterioration ("PSD") regulations were enacted to ensure that the air quality does not significantly deteriorate as a result of future industrial growth.[14] As such, the PSD regulations, as incorporated by North Carolina's State Implementation Plan,[15] govern both new and modified facilities that result in large increases in emissions of certain regulated pollutants. As it relates to modified facilities, only *major* modifications trigger PSD.

A "major modification" is defined as:

> [A]ny physical change in or change in the method of operation of a major stationary source that results in: a significant emission increase . . . of a regulated [New Source Review] pollutant . . . ; and a significant net emissions increase of that pollutant from the major stationary source.[16]

Thus, a major modification has four requirements: (1) a physical change or change in the method of operation; (2) of a major stationary source; that results in (3) a significant emissions increase of a regulated pollutant; and (4) a significant net emissions increase of that pollutant. All major modifications must undergo PSD review, including installation of BACT, prior to commencing construction.[17] Specifically, BACT is required for "each regulated [New Source Review]

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[11] NCDEQ, Application Review, *supra* note 3, at I.A.1.
[12] IP Riegelwood, Application, *supra* note 5, at 1-1; *see* NCDEQ, Application Review, *supra* note 3, at I.A.1 (stating that a BACT analysis was not required "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").
[13] NCDEQ, Draft Air Quality Permit No. 03138T42 (Nov. 13, 2018) [hereinafter "NCDEQ, Draft Permit"].
[14] *See generally* EPA, *Prevention of Significant Deterioration Basic Information*, https://www.epa.gov/nsr/prevention-significant-deterioration-basic-information (last updated Nov. 29, 2016).
[15] *See* 15A N.C.A.C. 02D .0530.
[16] 40 C.F.R. § 51.166(b)(2)(i).
[17] 42 U.S.C. § 7475(a) (setting forth PSD requirements, including that the facility obtain a PSD permit, is subject to PSD review, and is subject to BACT).

pollutant for which it would be a significant net emissions increase at the source" and for "each proposed emissions unit at which a net emissions increase in the pollutant would occur."[18]

As discussed more fully below, IP Riegelwood's proposed project is a PSD major modification that requires PSD review and installation of BACT for the regulated pollutants and the two power boilers at which the significant net emissions increase will occur.

**a. International Paper Riegelwood is a PSD major stationary source.**

For purposes of PSD, a "major stationary source" is defined as any of the specifically enumerated "stationary sources of air pollutants which emits, or has the potential to emit, 100 tons per year or more of any regulated [New Source Review] pollutant."[19] The list of stationary sources with a 100 ton per year ("tpy") threshold includes kraft pulp mills, such as IP Riegelwood.[20] Both NCDEQ and IP Riegelwood concede that the mill is a PSD major stationary source for several regulated pollutants.[21]

**b. The proposed modification will result in emissions increases above the relevant PSD significance thresholds.**

The terms "significant net emissions increase" and "significant emissions increase" are defined in the regulations as "a rate of emissions that would equal or exceed" specified thresholds. For purposes of IP Riegelwood's proposed project, an increase of 100 tpy of CO, 40 tpy of NOx, 25 tpy of PM, 15 tpy of $PM_{10}$, or 10 tpy of $PM_{2.5}$ is considered "significant" under the regulations.[22] An increase of 75,000 tpy of $CO_{2e}$ is also considered "significant" for purposes of a PSD major modification.[23] Both NCDEQ and IP Riegelwood concede that the proposed project will result in a significant net emissions increase of these six regulated pollutants.[24] Specifically, according to IP Riegelwood's calculations, CO emissions will increase by 165.18 tpy, NOx emissions will increase by 142.47 tpy, PM emissions will increase by 40.78 tpy, $PM_{10}$

[18] 40 C.F.R. § 51.166(j)(3) ("A major modification shall apply best available control technology for each regulated NSR pollutant for which it would be a significant net emissions increase at the source. This requirement applies to each proposed emissions unit at which a net emissions increase in the pollutant would occur as a result of the physical change or change in the method of operation in the unit.").
[19] *Id.* § 51.166(b)(1)(i)(a).
[20] *Id.*
[21] NCDEQ, International Paper Riegelwood Public Notice (Nov. 13, 2018) [hereinafter "NCDEQ, Public Notice"] ("The facility is defined as a 'major stationary source' for the discharge of significant quantities of VOC, PM, $PM_{10}$, $PM_{2.5}$, SO2, NOx, CO and GHG."); IP Riegelwood, Application, *supra* note 5, at 4.1.1 ("The IP Riegelwood Mill is considered a major source under the PSD regulations because Kraft pulp and paper manufacturers are one of the 28 listed categories, and the Riegelwood Mill emits more than 100 tpy of a regulated criteria compound.").
[22] 40 C.F.R. § 51.166(b)(23)(i); *see id.* § 51.166(b)(39).
[23] *Id.* § 51.166(b)(48)(iii).
[24] NCDEQ, Public Notice, *supra* note 21 ("The proposed project will result in a significant emission increase of CO, NOx, PM, $PM_{10}$, $PM_{2.5}$, and GHG."); NCDEQ, Application Review, *supra* note 3, at III.A.2; IP Riegelwood, Application, *supra* note 5, at 4.1.1 ("The potential project emissions increases presented in Table 3-1 show that emissions increases for CO, NOx, PM, $PM_{10}$, $PM_{2.5}$, and $CO_{2e}$ are above the PSD significant emission rates.").

emissions will increase by 44.39 tpy, $PM_{2.5}$ emissions will increase by 44.39 tpy; and $CO_{2e}$ emissions will increase by 108,158.39 tpy.[25]

**c. The Draft Permit includes a physical modification and a resulting change in the method of operation.**

A modification for purposes of a PSD major modification includes "any physical change in or change in the method of operation of a major stationary source."[26] Although "physical change in or change in the method of operation" is not defined in the regulations, courts have concluded that the phrase is "extremely broad."[27] A broad interpretation of this phrase is also supported by the limited exceptions to what constitutes a physical change or change in the method of operation contained in the regulations.[28] For example, "[a]n increase in the hours of operation or in the production rate" is not considered a physical change in or change in the method of operation,[29] *unless* such increased hours or production was "enabled by or otherwise connected to a physical change."[30]

IP Riegelwood's proposed project meets this broad definition of "any physical change in or change in the method of operation." As part of the proposed project, IP Riegelwood will physically change the mill by adding a new turbine generator and will also change the method of operation of the two power boilers by increasing the amount of bark they burn. Based on IP Riegelwood's own permitting documents, the increased bark combustion is "enabled by or otherwise connected to"[31] the new turbine generator—"Project emissions increases *due to the addition of the new No. 4 Turbine Generator* are the Nos. 2 and 5 Power Boilers actual emissions subtracted from the Nos. 2 and 5 Power Boilers projected actual emissions."[32] Because the proposed project includes a physical change in and change in the method of operation of a major stationary source that will result in significant net emissions increases, the proposed project is a major modification for purposes of PSD. This conclusion is further supported by the plain

[25] NCDEQ, Application Review, *supra* note 3, at IV.A.2 (Table 3-1).
[26] 40 C.F.R. § 51.166(b)(2)(i).
[27] *United States v. Ameren Mo.*, 229 F. Supp. 3d 906, 985 (E.D. Mo. 2017) (discussing the phrase "physical change").
[28] *See* 40 C.F.R. § 51.166(b)(2)(iii)(a-k).
[29] *Id.* § 51.166(b)(2)(iii)(f).
[30] *United States v. Duke Energy Corp.*, 5 F. Supp. 3d 771, 780 (M.D.N.C. 2014); *see Envtl. Defense v. Duke Energy Co.*, 549 U.S. 561, 579 (2007) (disagreeing with the conclusion that "increases in operating hours (resulting in emissions increases . . .) must be ignored even if caused or enabled by an independent 'physical change . . . or change in the method of operation.' "); *see also* 57 Fed. Reg. 32,314, 32,328 (July 21, 1992) ("[A]n increase in emissions attributable to an increase in hours of operation or production rate which is the result of a construction-related activity is not excluded from [PSD] review."); EPA Region 4, Applicability Determination (Mar. 14, 1997), https://www.epa.gov/sites/production/files/2015-07/documents/hoechst.pdf ("[W]hen a particular physical change or change in the method of operation would cause an increase in emissions from other emissions units, then those 'other' emissions must be included in determining PSD applicability for the particular change.") (Attachment 1).
[31] *See Duke Energy Corp.*, 5 F. Supp. 3d at 780.
[32] IP Riegelwood, Application, *supra* note 5, at 3.7 (emphasis added).

language of the regulatory definition, which only requires that the physical or operational change occur at a major stationary source and result in a significant net emissions increase.[33]

IP Riegelwood, however, contends that its proposed project does not require BACT analysis (i.e., it is not a major modification) because the new turbine generator is not itself an emission source and because there is no physical modification to the power boilers.[34] IP Riegelwood appears to completely read the "change in method of operation" component of a PSD major modification out of the regulation.[35] In fact, the only mention of "change in the method of operation" in IP Riegelwood's application documents is in reference to the Clean Air Act's New Source Performance Standards.[36] IP Riegelwood's interpretation impermissibly narrows the scope of what constitutes a PSD major modification and is not supported by the relevant law.

Unfortunately, NCDEQ appears to have accepted IP Riegelwood's interpretation without question.[37] Such an approach by the body governed with regulating air pollution in North Carolina is unacceptable. NCDEQ has a duty to engage in due diligence during the permitting process to ensure that federal and states laws are being followed. NCDEQ cannot merely accept a polluting industry's word for it that they are complying with the relevant laws.

## III. NCDEQ Failed to Consider the Environmental Justice Impacts of the Proposed Project to Nearby Communities

[33] 40 C.F.R. § 51.166(b)(2)(i) ("Major modification means any physical change in or change in the method of operation *of a major stationary source* that would result in: a significant emissions increase . . . of a regulated [New Source Review] pollutant . . . ; and a significant net emissions increase of that pollutant *from the major stationary source*." (emphases added)).

[34] IP Riegelwood, Application, *supra* note 5, at 4.1.1 (discussing PSD applicability).

[35] In its application, IP Riegelwood defines a PSD major modification as "any change to a major stationary source that would result in a significant emissions increase of any pollutant subject to regulation under the Act." *Id.* Although this definition is provided in quotation marks, IP Riegelwood does not provide a citation for where this definition can be found. Conveniently, such definition omits the phrase "physical change in or change in the method of operation" that is contained in the PSD regulatory definition of major modification. Additionally, when discussing the proposed project, IP Riegelwood again omits reference to operational changes, focusing solely on physical changes. *Id.* ("[B]ecause 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 is included in this application." (emphasis added)).

[36] In contrast to its discussion of PSD, IP Riegelwood defines a modification for purposes of New Source Performance Standards as "any physical change or operational change to an existing facility that results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies." *Id.* at 4.1.2. IP Riegelwood concludes that the proposed project does not trigger this provision because "[n]o physical changes or changes in the method of operation are being made to Nos. 2 and 5 Power Boilers and [the new turbine generator] is not an emission source." *Id.* IP Riegelwood provides not further explanation and does not explain why it omits consideration of operational changes when considering PSD applicability. All arguments made in these comments regarding how the proposed project results in a change in the method of operation for purposes of PSD are incorporated by reference here.

[37] *See* NCDEQ, Application Review, *supra* note 3, at III.A.2 ("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.").

On November 13, 2018, NCDEQ published the Draft Permit for IP Riegelwood to significantly increase several pollutants that will negatively impact the public health of nearby low-income and minority communities, and it did so without considering how such impacts may disproportionately impact those communities.

**a. The Draft Permit allows for a significant increase in pollutants that are harmful to public health.**

According to IP Riegelwood, the proposed project will result in significant emissions increases of several regulated pollutants, including carbon monoxide, nitrogen oxides, particulate matter, fine particulate matter, and greenhouse gases (also referred to as "carbon dioxide equivalent").[38] In addition to these emissions increases, which are projected to be above the PSD significance thresholds, IP Riegelwood is also a large emitter of sulfur dioxide ("SO2"), volatile organic compounds ("VOCs"),[39] and hazardous air pollutants ("HAPs").[40]

High levels of harmful pollutants emitted as a result of this proposed project will negatively impact the surrounding community's health. In particular, particulate matter poses a significant health risk as some of the particles are small enough to evade the body's respiratory protections, enter deep into the lungs, and pass into the bloodstream thereby impacting the cardiovascular system.[41] Both short-term and long-term exposure to particulate matter has been shown to have adverse health effects. Acute exposure can cause irritation of the eyes, nose, throat, and lungs;[42] coughing, wheezing, and aggravation of existing respiratory conditions, such as chronic obstructive pulmonary disease ("COPD") and asthma; lung inflammation; reduction in lung capacity;[43] nausea and vomiting; neurological effects including headaches, numbness, weakness, and dizziness;[44] exacerbation of cardiovascular diseases and stroke;[45] and diabetes.[46]

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[38] NCDEQ, Application Review, *supra* note 3, at I.A.1.
[39] Exposure to VOCs such as benzene and formaldehyde has been shown to cause eye, nose, and throat irritation; headaches, loss of coordination and nausea; damage to the liver, kidneys, and central nervous system; and some have been shown to be carcinogenic. EPA, *Volatile Organic Compounds' Impact on Indoor Air Quality*, https://www.epa.gov/indoor-air-quality-iaq/volatile-organic-compounds-impact-indoor-air-quality#Health_Effects (last updated Nov. 6, 2017).
[40] According to NCDEQ's Application Review document, in 2016 IP Riegelwood emitted 995.69 tons of SO2 per year, 2394.79 tons of VOCs, and 110.86 tons of total HAPs, of which 880.09 was methanol. NCDEQ, Application Review, *supra* note 3, at PDF 1. The proposed project is also expected to increases these emissions, although the increases are not above the applicable significance thresholds. *Id.* at IV.A.2 (Table 3-1).
[41] Robert D. Brook et al., *Particulate Matter Air Pollution and Cardiovascular Disease: An Update to the Scientific Statement from the American Heart Association*, 121 Circulation 2331, 2332 (2010) (Attachment 2).
[42] EPA, *Health Assessment Document for Diesel Engine Exhaust* (2002), http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=29060 (Attachment 3).
[43] Ki-Hyun Kim et al., *A Review on the Human Health Impact of Airborne Particulate Matter*, 74 Env't Int'l 136, 138 (Jan. 2015) (Attachment 4).
[44] Angela Clifford et al, *Exposure to Air Pollution and Cognitive Functioning Across the Life Course - A Systematic Literature Review*, 147 Envtl. Research 383, 386-92 (May 2016) (Attachment 5).
[45] Anoop S.V. Shah et al., *Short Term Exposure to Air Pollution and Stroke: Systematic Review and Meta-Analysis*, The BMJ (2015) (Attachment 6).

Older adults, pregnant women, children, and people with asthma or heart disease are more vulnerable to these health effects.[47]

These public health effects are particularly relevant when you consider the background health conditions of Columbus County, North Carolina, where IP Riegelwood is located. Columbus County recently ranked 96th out of North Carolina's 100 counties for overall health outcomes and 97th for length of life.[48] In particular, Columbus County already has high rates of respiratory disease and illness. Between 2010 and 2014, asthma-related hospital discharge rates for all ages were significantly higher in the county than the state averages.[49] In 2014, total hospital charges for asthma were approximately $660,368 ($9,767/case), and COPD hospital charges were an estimated $3.1 million ($13,534/case).[50] Moreover, the five-year mortality rates for chronic lower respiratory disease ("CLRD") stayed consistently above the North Carolina average from 2006 to 2015.[51]

**b. The Draft Permit will add to the cumulative impacts of pollution sources in Columbus County.**

The increased emissions associated with the Draft Permit will add to the cumulative impacts of pollutant sources in the area. According to the Division of Air Quality's permit inventory, IP Riegelwood is one of fourteen facilities with current air permits in Columbus County, several of which are clustered in Riegelwood and Delco, nearby to IP Riegelwood's mill.[52]

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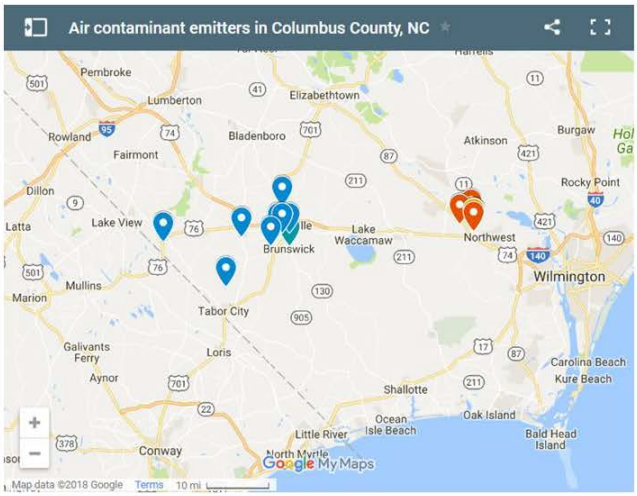
[46] Benjamin Bowe et al., *The 2016 Global and National Burden of Diabetes Mellitus Attributable to PM 2.5 Air Pollution*, 2 The Lancet Planetary Health e301, e305 (2018) (Attachment 7).
[47] American Lung Association, *Healthy Air: Who Is at Risk?*, http://www.lung.org/our-initiatives/healthy-air/outdoor/air-pollution/who-is-at-risk.html (last viewed Dec. 12, 2018).
[48] County Health Rankings & Roadmaps Program, *North Carolina Summary Report* at 12 (2018) (health outcomes) (Attachment 8); County Health Rankings & Roadmaps Program, *North Carolina Data* at tab 3 (2018) (length of life) (Attachment 9). *See generally* County Health Rankings & Roadmaps Program, *North Carolina Rankings* http://www.countyhealthrankings.org/rankings/data/NC (last visited Dec. 11, 2018).
[49] Clean Air Carolina, *Columbus County Air Quality Health Report* (Attachment 10).
[50] *Id.*
[51] *Id.*
[52] Lisa Sorg, *Foreign Company Proposed to Emit 140 Tons of "Super Pollutants" Each Year In Southeastern NC*, NC Policy Watch (May 2, 2018) (source for map) (Attachment 11).




"In total, these facilities emit more than 11,000 tons of pollution," including "3,275 tons of hazardous and/or toxic pollutants, including arsenic, benzene, formaldehyde and ammonia; 906 tons of greenhouse gases, such as carbon dioxide; and 7,400 tons of criteria pollutants, including sulfur dioxide, particulate matter and carbon monoxide."[53] IP Riegelwood is one of the largest emitters in Columbus County—in 2016 alone the mill emitted 1110.86 tons of hazardous air pollutants and 5,409.88 tons of criteria pollutants.[54]

Two other large emitters in Columbus County—West Frasier (a wood products company) and Hexion (a chemical company) are located approximately three miles from IP Riegelwood's mill.[55] Also within that range is Malec Brothers Transport, a proposed methyl bromide log fumigation facility that has requested a permit from NCDEQ to emit well over 100 tons per year of methyl bromide, a highly toxic chemical. After NCDEQ issued a draft permit for Malec's methyl bromide log fumigation operation, the people of Delco, Riegelwood, and the surrounding communities overwhelmingly opposed the proposed operation and expressed frustration over the inadequate notice to the community prior to the public hearing and the potential environmental justice impacts of siting yet another large industrial source of pollution in the area.[56] NCDEQ took steps to address the public's concerns by placing a hold on the permit, moving forward with proposed rulemaking to regulate methyl bromide in log fumigation, and conducting an

[53] *Id.*
[54] NCDEQ, Application Review, *supra* note 3, at PDF 1 ("Total Actual emissions in TONS/YEAR"). In 2016, IP Riegelwood emitted 995.69 tons of SO2; 1,640.29 tons of NOx; 2,394.79 tons of volatile organic compounds; 1,412.55 tons of CO; 379.11 tons of $PM_{10}$; and 1,110.86 tons of total hazardous air pollutants. *Id.*
[55] *See* Sorg, *Foreign Company*, *supra* note 52.
[56] Over 300 people attended a public hearing on May 3, 2018, at Acme-Delco Middle School about the Malec proposed permit. Ben Smart, *Public Outcry at Methyl Bromide Hearing, Company Insists it Would be Safe*, WECT (May 4, 2018) (Attachment 12); Diana Matthews, *Emotions High at Air Quality Hearing*, The News Reporter (May 4, 2018) (Attachment 13); Lisa Sorg, *A Chaotic Night in Delco: Angry Opposition to Fumigation Plant, Company Reps Shouted Down, DEQ Fumbles, and a Mystery Call to the Fire Marshal*, NC Policy Watch (May 4, 2018) (Attachment 14).

environmental justice impact statement for the proposed operation.[57] Despite these positive steps and an acknowledgement from NCDEQ that an environmental justice analysis was warranted for the Malec facility, NCDEQ has issued the Draft Permit for IP Riegelwood, which substantially increases emissions of several harmful pollutants, without conducting any environmental justice analysis despite its proximity to the Malec facility.

There is no indication, from the permitting documents made available to the public, that NCDEQ has considered, even in a preliminary manner, the potential environmental justice impacts of increasing emissions at the IP Riegelwood mill.[58] The population living within a three mile radius of IP Riegelwood's mill is 50% minority and 44% low income.[59] Accordingly, this area's demographic index is in the 70th percentile when compared to the rest of the state.[60] EPA's EJSCREEN is an environmental justice screening tool that combines environmental and demographic indicators and provides national, regional, and state information on eleven EJ indexes. The EJSCREEN for a three-mile radius around the IP Riegelwood mill showed that the area received over 60th percentile and above for all eleven EJ indexes.[61] In particular, the area is in the 70th percentile for particular matter and 76th percentile for respiratory health, issues that will be negatively affected by the increased emissions from IP Riegelwood's proposed project.[62]

Based on this information, and NCDEQ's newly created Secretary's Environmental Justice and Equity Board, NCDEQ should undertake an environmental justice analysis in according with its 2000 Environmental Equity Initiative Policy, which states that the Department will "[a]ddress environmental equity issues in permitting decisions for projects potentially having a disparate impact on communities protected by Title VI of the Civil Rights Act of 1964."[63] Such analysis should be completed and incorporated into a revised draft permit, and provide the public an opportunity to participate after having full knowledge of the potential impacts of the proposed project.[64]

## IV. NCDEQ Must Evaluate the Proposed Modification for Consistency with Governor Cooper's Executive Order on Climate Change

On October 29, 2018, Governor Cooper signed Executive Order 80 title, "North Carolina's Commitment to Address Climate Change and Transition to a Clean Energy Economy."[65] Executive Order 80 "reaffirms North Carolina's commitment to reducing statewide

[57] NCDEQ, *Division of Air Quality to Take Action on Methyl Bromide Log Fumigation* (July 26, 2018) https://deq.nc.gov/news/press-releases/2018/07/26/division-air-quality-take-action-methyl-bromide-log-fumigation (Attachment 15).
[58] *See* NCDEQ, *Secretary's Environmental Justice and Equity Advisory Board Inaugural Meeting* at slide 3 (July 11, 2018) (discussing the process for an "EJ Snapshot" and "EJ Review") (Attachment 16).
[59] EPA, EJScreen Report: IP Riegelwood 3-mile radius (Dec. 11, 2018) (Attachment 17).
[60] *Id.* "A Demographic Index is based on the average of two demographic indicators; Percent Low-Income and Percent Minority." EPA, *Overview of Demographic Indicators in EJSCREEN*, https://www.epa.gov/ejscreen/overview-demographic-indicators-ejscreen (last visited Dec. 11, 2018).
[61] *Id.*
[62] *Id.*
[63] NCDEQ, *Environmental Equity Initiative Policy* (Oct. 19, 2000) (Attachment 18).
[64] One of the stated goals of the Department's Environmental Equity Initiative Policy is to "provide information for citizens and neighborhood groups to allow meaningful participation in the regulatory process." *Id.* at 2.
[65] Exec. Order No. 80 (Oct. 29, 2018) (Attachment 19).

greenhouse gas emissions"[66] and orders that North Carolina "will support the 2015 Paris Agreement goals and honor the state's commitments to the United States Climate Alliance."[67] To do so, the Executive Order sets several goals, including a 40 percent greenhouse gas emissions reduction from 2005 levels by 2025.[68] The order also create the North Carolina Climate Change Interagency Council, with representatives from every state cabinet, and directs DEQ specifically to develop a North Carolina Clean Energy Plan to encourage the use of clean energy, including wind, solar, energy efficiency, and energy storage.[69]

With this executive order and North Carolina's recommitment to the goals of the Paris Agreement, the state and DEQ as the agency charged with protection of North Carolina's environmental resources need to evaluate all new permits for consistency with the goals and carbon reduction targets of the executive order. According to the United Nations Intergovernmental Panel on Climate Change ("IPCC"), the world only has twelve years to cut manmade carbon emissions to keep warming to no more than 1.5°C and avoid the worst impacts from climate change.[70]

As mentioned above, the Draft Permit allows IP Riegelwood to significantly increase its emissions of several harmful pollutants, including carbon dioxide and carbon dioxide equivalents ("$CO_{2e}$"). Based on IP Riegelwood's permitting documents, the mill currently emits 446,267.26 tpy of $CO_{2e}$.[71] As a result of the proposed project, IP Riegelwood is projected to emit 554,435.65 tpy of $CO_{2e}$,[72] an increase of 108,168.39 tpy above baseline levels.[73] Such an increase in $CO_{2e}$ as a result of the proposed project, especially when considering that the mill is already a large emitter of $CO_{2e}$, must be evaluated in light of the Executive Order's call for reduced greenhouse gas emissions and recommitment to the goals of the Paris Agreement.

## V. **Conclusion**

For the reasons set forth above, the Draft Permit for International Paper Riegelwood Mill is flawed and must be rescinded and revised consistent with these comments. Specifically,

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[66] NC DEQ, *Governor Cooper Commits to Clean Energy Economy for NC to Combat Climate Change, Create Jobs* (Oct. 29, 2018), https://governor.nc.gov/news/governor-cooper-commits-clean-energy-economy-nc-combat-climate-change-create-jobs (Attachment 20).
[67] Exec. Order No. 80, at ¶1.
[68] *Id.* at ¶1(a).
[69] *Id.* at ¶3-4.
[70] IPCC, *Summary for Policymakers* (Oct. 2018), http://report.ipcc.ch/sr15/pdf/sr15_spm_final.pdf.
[71] NCDEQ, Application Review, *supra* note 3, at IV.A.2 (Table 3-1). This is the mill's calculated "baseline actual emissions," defined in North Carolina's PSD regulations: "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 . . . ." 15A NCAC 02D .0530(b)(1)(A).
[72] NCDEQ, Application Review, *supra* note 3, at IV.A (Table 3-1). This represents the mill's calculated "projected actual emissions," which is defined 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 . . . ." 40 C.F.R. § 51.166(b)(40)(i).
[73] For $CO_{2e}$, the PSD threshold for a significant emissions increase is 75,000 tons per year. *Id.* § 51.166(b)(48)(iii).

NCDEQ must require International Paper Riegelwood to conduct the required PSD review, including BACT analysis, for the proposed major modification to the facility. Furthermore, before issuing a revised draft permit, NCDEQ must conduct an environmental justice analysis and ensure consistency with Executive Order 80.

Respectfully submitted,

Heather Hillaker
Associate Attorney
hhillaker@selcnc.org
Southern Environmental Law Center
601 West Rosemary Street, Suite 220
Chapel Hill, North Carolina 27516
*On behalf of Clean Air Carolina*

Mr. Brian Bland

I hope this letter finds you well. I am writing you today to request the Department of Environmental Quality hold a public hearing for the proposed permit modifications submitted by International Paper Riegelwood for their kraft pulp mill located in Columbus County.

I address you with concern for the health of several family members residing in Columbus County. I also address you as an organizer for the North Carolina Environmental Justice Network working on behalf of impacted communities in North Carolina.

The Division of Air Quality's review of the permit states the operation would increase amounts of bark burned by 100,000 tons, additionally a Prevention of Significant Deterioration applicability analysis showed increased emissions of carbon monoxide, nitrogen oxides, carbon dioxide, greenhouse gases, and particulate matter of varying diameter — all exceeding Set Emission Rates.

I intend to offer (during a public hearing) information on potential health risks of

these additional emissions, how they might pose as an environmental injustice to surrounding communities, and how they might disagree with Governor Cooper's Executive Order NO. 80 to address climate change and transition the state to a clean energy economy.

The review of the permit states several times that the proposed No. 4 turbine Generator 'itself' is not an emission source and therefore no Best Available control Technology analysis was included in the application.

Regardless of the source of emissions TG4 or elsewhere, if emissions of potentially hazardous chemicals will increase and even exceed set Emissions Rates why would a best technology analysis not be included in the application? Are there plans to accomodate the increase in emissions? If so what are details of those plans? What potential health risks might residents of Columbus County experience as a result of these increased emissions? Has DEQ conducted a study of cumulative impacts residents may experience as a result of living in proximity

to Riegelwood's five superfund sites in addition to the new proposed emissions? Or cumulative impacts of the newly proposed emissions with the pending permit for the fumigation operation of the Malec Brothers?

I urge you to hold public hearing so community members can ask their questions — and any others on their own.

I also urge you that going forward communities should not have to request hearings from DEQ, but every opportunity necessary should be employed to engage affected communities — it shouldn't have to be requested.

Regards,
Ashley Daniels

12-12-18

Attn: Brian Bland
Division of Air Quality

I am writing to request a Public Hearing on International Paper's Air Pollution permit renewal that is requesting to increase emissions of Carbon Monoxide, Nitrous Oxide, particulate matter and greenhouse gasses at the Columbus County Plant. Thank You for your time.

—Candace Harrell

Candace Harrell
217 Kaiser Rd
Delco, NC 28436

12-12-18

I am writing to request a public hearing on international Papers Air Pollution permit renewal that is requesting to increase emissions of Carbon Monoxide, Nitrous Oxide, particulate matter and greenhouse gasses at the columbus county Plant

thank you

-Nickolas Phillips

217 Kaiser Road
Delco NC 28436

Clean Air Carolina

December 13, 2018

RE: Formal Request for Public Hearing Regarding

Brian Bland
NC Division of Air Quality
1641 Mail Service Center
Raleigh, NC 27699-1641

Dear Mr. Bland,

Clean Air Carolina, a statewide organization of educators, health professionals, scientists and clean air advocates dedicated to the protection of human health and the environment in North Carolina would like to formally request a public hearing in regards to the Draft Air Quality Permit 03138T42 for International Paper Riegelwood Mill. As a statewide organization focused on preserving and improving the air quality of North Carolina, we take a specific interest in the emissions within the state as well as Title V permits pertaining to emissions.

Given the strong public opposition to other nearby polluting industries earlier this year, we believe that holding a public hearing regarding this permit application is important. Based on the turnout by local and statewide residents, we see a heightened need for the community to be involved in any potential increases in emissions and especially in "a significant emission increase of CO, NOx, PM, PM10, PM2.5 and GHG" as per the public notice regarding the permit application.

The need to inform as well as hear from the public regarding this is especially important in light of other nearby Title V facilities. Four Title V facilities are permitted in Columbus County and another three are permitted in nearby Brunswick County. Due to these additional major sources of emissions, any expansion of "discharge of significant quantities of VOC, PM, PM10, PM2.5, SO2, NOx, CO and GHG" should provide a convenient opportunity for the public to weigh in about their concerns.

For these reasons, Clean Air Carolina formally requests a public hearing be held regarding the Draft Air Quality Permit 03138T42 for International Paper Riegelwood Mill.

Sincerely,

June Blotnick

June Blotnick
Executive Director

PO Box 5311 • Charlotte, NC 28299 • www.cleanaircarolina.org • 704.307.9528

**From:** Amy McLane <kevamy@earthlink.net>
**Sent:** Thursday, December 13, 2018 12:35 PM
**To:** SVC_DENR.publiccomments <publiccomments@ncdenr.gov>
**Subject:** [External] Request for Public Hearing - International Paper Riegelwood Mill Air Quality permit (Facility ID 2400036)



I am requesting a public hearing regarding International Paper's proposed significant modification to their Riegelwood Mill Air Quality permit (Facility ID 2400036). The public hearing should specifically address three areas:

1. How potential impacts on community health have been evaluated. A 2009 report indicates higher rates of hospitalizations from asthma in Columbus County compared to statewide rates. The permit modification would allow a significant increase in pollutants known to have a negative impact on human respiratory health. Have these impacts been considered?

2. Whether the significantly increased emissions associated with the proposed permit modification will have a disproportionate impact on minority and/or low-income populations.

3. The permit's consistency (or lack thereof) with Governor Cooper's goal to reduce state-wide greenhouse gas emissions.

Based on the draft materials published by DAQ, I am very concerned about both the significant percentage increase in pollutants as well as the increase in the total volume of pollutants.

A major permit modification such as this deserves a public hearing.

Sincerely,

Amy McLane
2309 Princess Place
Wilmington, NC 28405

6801 Buckhurst Court
Wilmington, NC 28411
December 3, 2018



Mr. Brian Bland
Division of Air Quality
Mail Service Center
Raleigh, NC 27699-1641

Dear Mr. Bland:

This letter is a written request for a public hearing regarding the application of International Paper's Riegelwood Mill to the North Carolina Department of Environmental Quality, Division of Air Quality, Permitting Section, for modifications to its Kraft pulp mill plant at 865 John L. Riegel Road, Riegelwood, North Carolina 284456, in Columbus County.

The proposed modification would significantly increase the facility's emissions of nitrous oxide, sulfur oxide, and greenhouse gases. These increases pose a public health risk to the citizens who live upwind of the facility who are predominantly people of color. Additionally, in light of the recent report of the Federal government on the public health and economic impacts of climate change, major stationary sources like the Riegelwood plant should be striving to reduce the emission of greenhouse gases rather than increasing them by twenty-five percent as proposed in its draft permit modification. The significant increase in emissions also threatens the health of the Cape Fear River, which is already under assault from industries upriver. Because of the public-health and environmental-justice implications of this proposed permit modification, the public should be fully informed thus warranting a public hearing.

Thank you for your consideration of this request.

Sincerely,

Paul R. Smith

December 3, 2018

120 Church St

Wilmington NC 28401

Dear Mr. Bland:

Please accept this letter as written request for a public hearing to be held regarding Internationa Paper's Riegelwood Mill application to the North Carolina Department of Environmental Quality, Division of Air Quality (DAQ), Permitting Section, to make modifications to its Kraft pulp mill located at 865 John L. Riegel Road, Riegelwood, North Carolina 28456, Columbus County.

I am interested in the emissions from this facility as I live near it and am concerned about my health and that of my family. I am also concerned about possible contamination to the Cape Fear River that an increase in emissions may cause. I am only 2 blocks from the river and don't want it contaminated.

The public notice indicates what seems to be significant increases to potentially dangerous chemicals, but I am not a scientist. As you know, our community's health and the health of our river are already being substantially threatened by other industries upriver. I believe the public should be fully informed about what this increase really means for our community before this modification request is granted.

Thank you for your consideration of this request.

Sincerely,

Wendie A Schneider

Received
DEC 0 6 2018
Air Permits Section

Received
DEC 0 7 2018
Air Permits Section

11/28/2018

I am requesting a hearing on the Air Quality Permit being considered for International Paper's Riegelwood Mill. Any increase in air quality is a serious public health issue and should be discussed and heard in public.

Evan Folds

New Hanover Soil & Water Conservation
District Supervisor
Wilmington, NC 28403

**Attachment 3: Application No. 2400036.22A Review**

**NORTH CAROLINA DIVISION OF AIR QUALITY**

# Application Review

**Issue Date: March 3, 2023**

**Region:** Wilmington Regional Office
**County:** Columbus
**NC Facility ID:** 2400036
**Inspector's Name:** Jmanda Dunston
**Date of Last Inspection:** 02/10/2023
**Compliance Code:** 3 / Compliance - inspection

## Facility Data

**Applicant (Facility's Name):** International Paper - Riegelwood Mill

**Facility Address:**
International Paper - Riegelwood Mill
865 John L. Riegel Road
Riegelwood, NC 28456

**SIC:** 2621 / Paper Mills Exc Building Paper
**NAICS:** 322121 / Paper (except Newsprint) Mills

**Facility Classification: Before:** Title V **After:** Title V
**Fee Classification: Before:** Title V **After:** Title V

## Permit Applicability (this application only)

**SIP:** 15A NCAC 02D .0530(u), 02Q .0317 (NSPS Subpart D Avoidance)
**NSPS:** N/A
**NESHAP:** N/A
**PSD:** N/A
**PSD Avoidance:** N/A
**NC Toxics:** N/A
**112(r):** N/A
**Other:** 15A NCAC 02Q .0504

## Contact Data

| Facility Contact | Authorized Contact | Technical Contact |
|---|---|---|
| Tim Gill<br>EHS Manager<br>(910) 362-4934<br>865 John L. Riegel Rd<br>Riegelwood, NC 28456 | Kevin Driscoll<br>Mill Manager<br>(910) 362-4880<br>865 John L. Riegel Road<br>Riegelwood, NC 28456 | Kevin Spargo<br>Senior Environmental Engineer<br>(910) 362-4918<br>865 John L. Riegel Road<br>Riegelwood, NC 28456 |

## Application Data

**Application Number:** 2400036.22A
**Date Received:** 12/05/2022
**Application Type:** Modification
**Application Schedule:** TV-Sign-501(b)(2) Part I

**Existing Permit Data**
**Existing Permit Number:** 03138/T43
**Existing Permit Issue Date:** 01/21/2020
**Existing Permit Expiration Date:** 01/31/2024

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

| CY | SO2 | NOX | VOC | CO | PM10 | Total HAP | Largest HAP |
|---|---|---|---|---|---|---|---|
| 2021 | 1603.36 | 1667.59 | 2596.98 | 2933.87 | 417.45 | 1196.70 | 986.53 [Methanol (methyl alcohol)] |
| 2020 | 1566.80 | 1654.45 | 2680.10 | 2887.05 | 424.30 | 1217.27 | 1003.54 [Methanol (methyl alcohol)] |
| 2019 | 1340.71 | 1602.67 | 2491.04 | 2519.75 | 416.14 | 1148.82 | 945.54 [Methanol (methyl alcohol)] |
| 2018 | 1546.81 | 1693.61 | 2571.81 | 2533.19 | 447.28 | 1188.49 | 978.87 [Methanol (methyl alcohol)] |
| 2017 | 1285.47 | 1620.34 | 2913.54 | 2389.09 | 462.13 | 1358.86 | 1073.85 [Methanol (methyl alcohol)] |

| Review Engineer: Emily Supple<br><br>Review Engineer's Signature: Date: | Comments / Recommendations:<br>**Issue** 03138/T44<br>**Permit Issue Date:** March 3, 2023<br>**Permit Expiration Date:** February 29, 2028*<br>*This permit shall expire on the earlier of February 29, 2028 or the renewal of Permit No. 03138T41 has been issued or denied. |
|---|---|

**1. Facility Description**

Located in Riegelwood, Columbus County, International Paper Riegelwood Mill (IPRW) is a multi-functional site that historically produced both pulp and paper products but is now only producing fluff pulp.

**2. Purpose of Application**

Application No. 2400036.22A requests to replace one of the existing No. 6 fuel oil load burners and natural gas ignitors with a new 195 million Btu per hour natural gas load burner and a 20 million Btu per hour natural gas ignitor for Recovery Boiler No. 5 (ID No. ES-RB5). This proposed change constitutes a significant modification of the Title V Air Quality Permit. This application was submitted as the first part of a two-part significant modification as allowed by 15A NCAC 02Q .0501(b)(2). For such applications, no Public Notice or EPA Review period is required. IPRW will be required to submit a second Title V permit application within 12 months of resumption of operation of Recovery Boiler No. 5 with the new No. 6 fuel oil load burners and natural gas ignitors, and the Title V permit will go through the Public Notice and EPA Review processes at that time.

**3. Application Chronology**

| | |
|---|---|
| December 5, 2022 | DAQ received Permit Application No. 2400036.22A for a two-step significant modification. |
| February 21, 2023 | Discussion with International Paper and Amy Marshall of All4 of permitting timeline and adjusting the maximum fossil fuel heat input rate for RB5 for NSPS Subpart D Avoidance condition. |
| February 24, 2023 | Additional information request sent to International Paper and Amy Marshall of All4 by Rahul Thaker regarding emissions calculations, toxics modeling information, and the John Seitz memorandum. The information was provided on the same day. |
| February 27, 2023 | Conversation with Amy Marshall of All4 to discuss the information contained in the additional information request. |
| February 28, 2023 | Follow up information was received from Amy Marshall of All4 regarding sources for emissions factors, air toxics applicability, and construction costs. |
| March 1, 2023 | Draft permit forwarded to IPRW, Amy Marshall of All4, Wilmington Regional Office, and Jenny Sheppard. |
| March 2, 2023 | Minor comments were received from Amy Marshall and Jenny Sheppard. |

**4. Compliance Statement**

A compliance inspection was recently conducted on February 10, 2023, by Jmanda Dunston of the Washington Regional Office. At the time of this review, the report has not yet been finalized or uploaded to the Laserfiche filing system. However, the compliance inspection result in IBEAM indicates "compliance". Additionally, the facility has a history of compliance during inspections. Based on the second-most recent inspection on September 30, 2022, by Jmanda Dunston of the

Washington Regional Office, "International Paper Riegelwood Mill appeared to be operating in compliance with all applicable Air Quality regulations at the time of inspection."

**5. Permit Modifications/Changes**

The following changes were made to the permit:

| Page No. | Section | Description of Changes |
|---|---|---|
| All | All | • Update dates and permit revision number. |
| 6, 32 | 1 | • Updated description of Recovery Boiler No. 5 (ID No. ES-RB5) to add natural gas as fuel and modify heat input rating. |
| 33 | 2.1 J.5 | • Modified the NSPS Subpart D Avoidance condition to account for natural gas as an added fossil fuel |
| 102 | 2.2 L.1 | • Added condition 02D .0530(u) for "Use of Projected Actual Emissions". |
| 102 | 2.2 L.2 | • Added condition 02Q .0504 for "Option for Obtaining a Construction and Operation Permit". |
| 104-112 | 4 | • Updated General Conditions to most recent version. |

The following change was made to Recovery Boiler No. 5 (ES-RB5):

| Emission Source ID No. | Previous Emission Source Description | Modified Emission Source Description |
|---|---|---|
| ES-RB5#, ###<br><br>**PSD**<br>**NSPS Subpart BB**<br>**MACT Subpart MM** | Recovery Boiler No. 5 - black liquor solids/ultra-low sulfur No. 2 fuel oil/No. 4 equivalent used oil/No. 6 fuel oil (nominal 7.39 million pounds of black liquor solids per day average/nominal 557 million Btu per hour heat input rate from firing fuel oil) with natural gas-fired ignitors | Recovery Boiler No. 5 - black liquor solids/ultra-low sulfur No. 2 fuel oil/No. 4 equivalent used oil/No. 6 fuel oil/Natural gas (nominal 7.39 million pounds of black liquor solids per day average/nominal 140 million Btu per hour heat input rate from firing fuel oil/254 million Btu per hour heat input rate from firing natural gas) |

Overview of Emissions Factors

The applicant utilized several different sources of emissions data for estimating emissions rates for both BAE and PAE for various emissions units as included in Table 5-1 above:

- Published National Council for Air and Stream Improvement (NCASI) database, emission reports, and technical bulletins
- U.S. EPA's AP-42 Compilation of Air Emission Factors (5th Edition, Revised)
- 40 CFR Part 98
- Site-specific data

These sources of emissions data are discussed below:

*NCASI Emissions Factors*

The applicant has used the NCASI technical bulletins and database, as follows:

- Technical Bulletin No. 884 (August 2004), Compilation of Criteria Air Pollutant Emissions Data for Sources at Pulp and Paper Mills Including Boilers;
- Technical Bulletin No. 1050 (September 2018), Compilation of Air Toxics Emissions Data for Pulp and Paper Sources Including Boilers; and
- NCASI Particulate Emissions Data for the Pulp and Paper Industry

*U.S. EPA AP-42 Emissions Factors*

The applicant has used emission factors from U.S. EPA's AP-42, as follows:

- Section 1.3, Fuel Oil Combustion; and
- Section 1.4, Natural Gas Combustion.

*40 CFR Part 98*

40 CFR Part 98 contains regulations establishing the mandatory greenhouse gas (GHG) reporting program. IPRW used emissions factors from Tables C-1 and C-2 of Subpart C to calculate GHG emissions for this project.

*Site-Specific Data*

Site-specific stack test data, continuous emissions monitoring system (CEMS) data, and fuel certification data were used to calculate emissions when available. Stack test data were used as the basis of emissions factors for SO2, NOx, CO, filterable and condensable PM, and methanol from black liquor solids firing in Recovery Boiler No. 5. CEMS data were used as the basis of emissions factors for total reduced sulfur (TRS) from black liquor solids firing in Recovery Boiler No. 5. Monthly fuel certifications were used as the basis of SO2 emissions factors for No. 6 fuel oil firing.

**6. Regulatory Review**

<u>15A NCAC 02Q .0317, NSPS Subpart D Avoidance Condition</u>

Each fossil fuel-fired steam generating unit with a heat input rate of greater than 250 million Btu per hour and each fossil fuel-fired and wood-residue-fired steam generating unit capable of firing fossil fuel at more than 250 million Btu per hour is subject to NSPS Subpart D for Standards of Performance for Fossil-Fuel-Fired Steam Generators. The June 15, 1990 memo "Applicability Clarification to Kraft Recovery Boilers" written by John Seitz, Director of the Stationary Source Compliance Division for the U.S. EPA, clarified that 40 CFR Part 60 (NSPS) Subpart D does not apply to Kraft recovery boilers that co-fire fossil fuel if the annual fossil fuel capacity factor is less than 10%. Thus, Kraft recovery boilers may avoid applicability to NSPS Subpart D if the annual fossil fuel capacity factor is less than 10%.

Currently, Condition 2.1 J.5.a contains an avoidance condition for Subpart D limiting the maximum annual fuel oil usage in Recovery Boiler No. 5 to 3,000,000 gallons per year. The 3,000,000 gallons per year limit is based on a 10% capacity factor of the 557 million Btu per hour heat input boiler as follows:

(557 MMBtu/hr) x 8,760 hr/yr = 4,879,320 MMBtu/yr;

10% of this number (or 10% capacity) is equal to approximately 487,932 MMBtu/yr;
To be conservative, the limit was based on a little less than this number, or 450,000 MMBtu/yr.
Assuming that No. 6 fuel oil has a fuel heating value of 150 MMBtu/Mgal:
(450,000 MMBtu/yr) / (150 MMBtu/$10^3$ gal) = 3,000,000 gallons of fuel oil per year.

With this application, IPRW has proposed a modified version of this condition that includes natural gas combustion to continue avoidance of NSPS Subpart D. Additionally, since the heat input rating of the boiler is decreasing from 557 million Btu per hour to a combined total of 394 million Btu per hour, the maximum fossil fuel heat input that can be used while remaining in compliance with the 10% capacity factor requirement has been reduced to 345,000 million Btu per year of heat input from fossil fuels as follows:

(394 MMBtu/hr) x 8,760 hr/yr = 3,451,440 MMBtu/yr;
10% of this number (or 10% capacity) is equal to 345,144 MMBtu/yr;
To be conservative, the limit was based on a little less than this number, or 345,000 MMBtu/yr. Since the facility is proposing to use two different fuels, the demonstration of compliance with the annual capacity factor limit may be made by monitoring fuel usage of both fuel oil and natural gas as is shown in the equation below.

The proposed condition reads as follows:

a. *Per 15A NCAC 02Q .0317, in order to avoid applicability of 15A NCAC 02D .0524, NSPS Subpart D, the Recovery Boiler No. 5 shall not exceed a 10 percent annual capacity factor for fossil fuel as determined using the equation below:*

$$\frac{345{,}000\ MMBtu}{yr} = \frac{X\ Mgal\ fuel\ oil}{yr} X \frac{150\ MMBtu}{Mgal} + \frac{Y\ MMSCF}{yr} X \frac{1{,}020\ MMBtu}{MMSCF}$$

*Where: X = Thousand gallons of fuel oil combusted in the preceding 12 months.*
*Y = Million standard cubic feet of natural gas combusted in preceding 12 months.*

b. *The Permittee shall maintain records of annual fuel oil and natural gas usage in the No. 5 Recovery Boiler, and the results of the calculation in Section 2.1 J.5.a. above on site. The Permittee shall be deemed in noncompliance with 15A NCAC 02D .0524 if the fuel oil and natural gas usage exceeds the limit in Section 2.1 J.5.a above or these records are not maintained.*

If the annual capacity factor of all fossil fuels fired in the boiler is less than 10%, the facility will be in compliance with this regulation. The proposed condition above appears to be sufficient to determine compliance with this condition. The facility has previously demonstrated compliance with this stipulation for fuel oil. Compliance is expected and will be determined during inspections.

NSPS Subpart Db

This regulation applies to steam generating units with a heat input capacity of greater than 100 million Btu per hour that commenced construction, modification, or reconstruction after June 19, 1984. Recovery Boiler No. 5 commenced construction in 1982, prior to the applicability date for NSPS Subpart Db, so has not been subject to this Subpart. However, with the proposed changes in this application, it was considered if the facility would become subject to this Subpart due to the boiler being “modified” or “reconstructed”.

As given in 40 CFR 60.14, a modification to a source subject to NSPS is defined as "any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere." The emissions changes with the proposed change to Recovery Boiler No. 5 are discussed in PSD Applicability, below.

NSPS Subpart Db provides emission standards for SO2, NOx, and PM. As discussed in PSD Applicability below, emissions of SO2, NOx, and PM do not increase with the proposed changes. Therefore, the proposed changes to Recovery Boiler No. 5 do not constitute a modification per 40 CFR 60.14.

As given in 40 CFR 60.15, a reconstruction is defined as "the replacement of components of an existing facility to such an extent that: (1) the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and (1) it is technologically and economically feasible to meet the applicable standards set forth in this part." It was provided by Amy Marshall on February 24, 2023 that the fixed capital cost of the proposed changes to Recovery Boiler No. 5 is expected to be $1.65 million. It was provided by Amy Marshall on February 28, 2023 that the cost of the new burners will be approximately $425,000. Information was provided in the application to indicate that the cost to entirely replace the boiler would be at least $42 million. Information was provided by Amy Marshall on February 24, 2023 that previously, a recovery furnace had been evaluated for replacement at International Paper Courtland Mill for a construction cost of $198 million and at International Paper Vicksburg for $120-130 million. Additionally, in August 19, 2026 EPA memo, "Costs/Impacts of the Subpart MM Residual Risk and Technology Review" from Katie Hanks and Thomas Holloway that estimated cost and impacts for revisions being contemplated to MACT Subpart MM requirements for recovery furnaces, Table 4 shows that the capital cost to replace 21 recovery furnaces would be between $1,356-$3,683 million total, or between $64 and $175 million each. Therefore, it is reasonable that the cost of the proposed changes to Recovery Boiler No. 5 is less than 50% of the capital cost to replace the entire boiler. Therefore, the proposed changes are not considered to be a reconstruction per 40 CFR 60.15.

As discussed above, the proposed changes do not constitute a modification per 40 CFR 60.14 nor a reconstruction per 40 CFR 60.15. Therefore, the facility will not become subject to this Subpart with this application.

NSPS Subpart BB

This Subpart applies to facilities in kraft pulp mills including recovery furnaces that commenced construction, reconstruction, or modification after September 24, 1976, and on or before May 23, 2013. Recovery Boiler No. 5 is currently subject to this Subpart and complies with emission limits for filterable PM, opacity, and Total Reduced Sulfur (TRS). As demonstrated in Table 4-1 of this application and as discussed in PSD Applicability below, the proposed project is not expected to increase the emission of any of these NSPS-regulated pollutants. As discussed under NSPS Subpart Db above, the proposed changes do not constitute either a modification or a reconstruction. Therefore, this application does not affect compliance with the provisions of NSPS Subpart BB. Compliance with this condition is expected and will be determined during inspections.

NSPS Subpart BBa

This Subpart applies to facilities in kraft pulp mills including recovery furnaces that commenced construction, reconstruction, or modification after May 23, 2013. Recovery Boiler No. 5 commenced construction in 1982 so is not currently subject to this Subpart. However, with the proposed changes to Recovery Boiler No. 5 with this application, it was considered if the facility would become subject to this Subpart due to the boiler being "modified" or "reconstructed". The definitions of modification and reconstruction as per 40 CFR 60.14 and 60.15, respectively, are given above.

NSPS Subpart BBa provides emission standards for filterable PM and Total Reduced Sulfur (TRS). As shown in PSD Applicability below, emissions of PM and TRS do not increase with this application. Therefore, the proposed changes to Recovery Boiler No. 5 do not constitute a modification per 40 CFR 60.14. As discussed in NSPS Subpart Db above, the proposed changes do not constitute a reconstruction per 40 CFR 60.15. Therefore, the facility will not become subject to this Subpart with this application.

NESHAP Subpart MM

This Subpart regulates HAP emissions from chemical recovery combustion systems at major sources of HAP emissions. Recovery Boiler No. 5 is part of an existing chemical recovery system and is therefore subject to NESHAP Subpart MM. IPRW complies with Subpart MM by using a bubble limit approach where emission limits are established by the facility for each source in the chemical recovery system. The bubble limits must only be reestablished if either (1) the air pollution control system for Recovery Boiler No. 5 is modified or (2) Recovery Boiler No. 5 is shut down for more than 60 consecutive days.

As given in 40 CFR 63.2, a reconstruction is defined as "the replacement of components of an affected or a previously nonaffected source to such an extent that: (1) the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source; and (2) it is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Administrator (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source."

It was provided by Amy Marshall on February 24, 2023 that the total construction cost of the proposed changes is expected to be $1.65 million. It was provided by Amy Marshall on February 28, 2023 that the cost of the new burners will be approximately $425,000. Information was provided in the application to indicate that the cost to entirely replace the boiler would be at least $42 million. Information was provided by Amy Marshall on February 24, 2023 that previously, a recovery furnace had been evaluated for replacement at International Paper Courtland Mill for a construction cost of $198 million and at International Paper Vicksburg for $120-130 million. Additionally, in August 19, 2026 EPA memo, "Costs/Impacts of the Subpart MM Residual Risk and Technology Review" from Katie Hanks and Thomas Holloway that estimated cost and impacts for revisions being contemplated to MACT Subpart MM requirements for recovery furnaces, Table 4 shows that the capital cost to replace 21 recovery furnaces would be between $1,356-$3,683 million total, or between $64 and $175 million each. Therefore, it is reasonable that the cost of the proposed changes to Recovery Boiler No. 5 is less than 50% of the capital cost to replace the entire boiler. Therefore, the proposed changes are not considered to be a reconstruction per 40 CFR 63.2.

The proposed project does not result in the boiler being reclassified as new since it is not being reconstructed as per the definitions given in 40 CFR 63.2 and discussed above. Additionally, the proposed project does not include

any modifications to the control system, nor will the project require more than a 60-day shutdown of Recovery Boiler No. 5 as stated in the application. Therefore, the bubble limits listed under NESHAP Subpart MM for Recovery Boiler No. 5 do not need to be reestablished and will not change with this application. Therefore, this application does not affect the applicability of NESHAP Subpart MM. Compliance with this condition is expected and will be determined during inspections.

15A NCAC 02D .0508, "Particulates from Pulp and Paper Mills"

This Rule states in part that emissions of particulate matter from the production of pulp and paper that are discharged from any stack or chimney into the atmosphere shall not exceed 3.0 pounds per equivalent ton of air-dried pulp from a recovery furnace stack. Additionally, emissions from any kraft pulp recovery boiler established after July 1, 1971 shall not exceed an opacity of 35 percent when averaged over a six-minute period. Recovery Boiler No. 5 commenced construction in 1982 and is therefore subject to the 35 percent opacity limit and is subject to the emission limit of 3 pounds of PM per equivalent ton of air-dried pulp. The facility currently demonstrates compliance with this emission limit by conducting an annual performance test of Recovery Boiler No. 5. If emissions from the performance test are less than 80% of the stated limit, then IPRW may reduce testing to every 5 years. The monitoring and recordkeeping requirements for this condition are met by complying with NESHAP Subpart MM. The facility must also submit a semiannual report identifying any deviations with the requirements of this regulation. The proposed project is expected to decrease PM emissions from Recovery Boiler No. 5 with the use of natural gas as fuel. Additionally, the proposed project is not expected to increase the opacity of the Recovery Boiler No. 5 stack. Compliance with this condition is expected and will be determined during inspections and performance testing.

15A NCAC 02D .0516, "Sulfur Dioxide Emissions from Combustion Sources"

This Rule states in part that emissions of sulfur dioxide ($SO_2$) from any sources of combustion shall not exceed 2.3 million pounds of $SO_2$ per million Btu heat input. Recovery Boiler No. 5 is currently subject to this condition for the combustion of fuel oil. The facility must monitor the $SO_2$ emissions from the boiler by using fuel supplier certification to verify fuel sulfur content. Additionally, the facility must report semiannually the fuel supplier certifications and identify any deviations with this condition. The proposed project will add natural gas as a fuel for Recovery Boiler No. 5. Natural gas has an inherently low sulfur content, so compliance with this regulation for natural gas is indicated with no new monitoring, recordkeeping, or reporting requirements. Compliance with this condition is expected and will be determined during inspections and review of semiannual reports.

15A NCAC 02D .0530, "Prevention of Significant Deterioration" and
15A NCAC 02D .0530(u), "Use of Projected Actual Emissions to Avoid Applicability of Requirements of PSD"

Compliance with BACT Limits

Recovery Boiler No. 5 is subject to the following BACT limits, taken from the T43 permit:

| Pollutant | Emission Limits |
|---|---|
| Sulfur dioxide | 979.2 pounds per hour |
| Nitrogen Oxides | 100 ppmv corrected to 8 percent oxygen (24-hour average) |
| Carbon Monoxide | 300 ppmv corrected to 8 percent oxygen (24-hour average) |

| | |
|---|---|
| Volatile Organic Compounds | 37 pounds per hour |

Currently, the facility must not exceed a heat input rate from fuel oil of 557 million Btu per hour in Recovery Boiler No. 5. Additionally, the facility must demonstrate compliance with this condition by using measured fuel oil heat content and a flow device. With the proposed changes, the heat input rating of Recovery Boiler No. 5 will decrease from 557 million Btu per hour to a total of 394 million Btu per hour (140 MMBtu/hr from fuel oil firing, and 254 MMBtu/hr from natural gas firing). The facility will continue to use a fuel oil flow device and measure the fuel oil heat content.

To demonstrate compliance with the NOx and CO concentration limits, IPRW conducts performance testing once every five years. With the proposed changes, the concentrations of NOx and CO when firing natural gas will be 82 and 80 ppmv, corrected to 8% O2, respectively, based on US EPA AP-42 emissions factors for large wall-fired boilers with low-NOx burners.

The proposed changes will result in a decrease in the maximum hourly SO2 emissions rate to 288 lb/hr as shown:

$$288\ \frac{lb\ SO_2}{hr} = \frac{2.06\ lb\ SO_2}{MMBtu\ No.6\ FO}\ X\ \frac{140\ MMBtu}{hr} + \frac{0.60\ lb\ SO_2}{MMSCF}\ X\ \frac{MMSCF}{1020\ MMBtu}\ X\ \frac{254\ MMBtu}{hr} + \frac{0\ lb\ SO_2}{TBLS}\ X\ \frac{153.93\ TBLS}{hr}$$

Following the proposed changes, the hourly emissions rate of VOC will be 6.97 lb/hr as shown:

$$6.97\ \frac{lb\ VOC}{hr} = \frac{0.00936\ lb\ VOC}{Mgal\ No.6\ FO}\ X\ \frac{MGal}{150\ MMBtu}\ X\ \frac{140\ MMBtu}{hr} + \frac{2.11\ lb\ VOC}{MMSCF}\ X\ \frac{MMSCF}{1020\ MMBtu}\ X\ \frac{254\ MMBtu}{hr} + \frac{0.0418\ lb\ VOC}{TBLS}\ X\ \frac{153.93\ TBLS}{hr}$$

Records must be kept of all calculations, measurements, and analytical results used to demonstrate compliance, and a semiannual report is due containing a summary of the above monitoring and recordkeeping activities.

PSD Applicability

The facility is an existing major stationary source for PSD purposes. To determine PSD applicability for the proposed changes with this application, the facility used the "actual-to-projected-actual applicability test for projects that only involve existing emissions units" as specified in 40 CFR 51.166(a)(7)(iv)(c) by comparing the baseline actual emissions to the projected actual emissions for No. 6 fuel oil and natural gas firing in Recovery Boiler No. 5. No increase in the firing of black liquor solids will occur with the changes from this application nor will the changes result in an increase in throughput in any other areas of the mill. Therefore, no additional equipment was identified as an affected unit.

The baseline period selected was from March 2020 to February 2022 where baseline emissions were defined as "the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during any consecutive 24-month period within the five-year period immediately preceding the date that a complete permit application is received by the Division". Baseline emissions data is shown in Table 1. Fuel Usage and Table 2. Baseline Emissions, below.

# Table 1. Fuel Usage

| Month | Fuel Oil No. 6 | | Natural Gas | | |
|---|---|---|---|---|---|
| | Usage (gal/month) | Average 24-Month Usage (gal) | Usage (hours/month) | Usage (MMBtu/month) | Average 24-Month Usage (MMBtu) |
| May-19 | 0 | | 1 | 13 | |
| Jun-19 | 6,559 | | 1 | 13 | |
| Jul-19 | 603 | | 30 | 390 | |
| Aug-19 | 163,696 | | 78 | 1,014 | |
| Sep-19 | 50,977 | | 28 | 364 | |
| Oct-19 | 100,772 | | 28 | 364 | |
| Nov-19 | 34,415 | | 77 | 1,001 | |
| Dec-19 | 172,928 | | 10 | 130 | |
| Jan-20 | 15,622 | | 115 | 1,495 | |
| Feb-20 | 207,420 | | 127 | 1,651 | |
| Mar-20 | 125,063 | | 24 | 312 | |
| Apr-20 | 175,877 | | 0 | 0 | |
| May-20 | 0 | | 15 | 195 | |
| Jun-20 | 11,268 | | 4 | 52 | |
| Jul-20 | 3,060 | | 37 | 481 | |
| Aug-20 | 32,819 | | 140 | 1,820 | |
| Sep-20 | 185,064 | | 0 | 0 | |
| Oct-20 | 19,057 | | 10 | 130 | |
| Nov-20 | 9,560 | | 21 | 273 | |
| Dec-20 | 37,815 | | 18 | 234 | |
| Jan-21 | 15,221 | | 83 | 1,079 | |
| Feb-21 | 87,233 | | 214 | 2,782 | |
| Mar-21 | 256,674 | | 116 | 1,508 | |
| Apr-21 | 272,425 | 992,064 | 52 | 676 | 7,989 |
| May-21 | 64,156 | 1,024,142 | 20 | 260 | 8,112 |
| Jun-21 | 19,733 | 1,030,729 | 15 | 195 | 8,203 |
| Jul-21 | 21,700 | 1,041,278 | 57 | 741 | 8,379 |
| Aug-21 | 198,205 | 1,058,532 | 23 | 299 | 8,021 |
| Sep-21 | 29,851 | 1,047,969 | 287 | 3,731 | 9,705 |
| Oct-21 | 215,037 | 1,105,102 | 50 | 650 | 9,848 |
| Nov-21 | 24,889 | 1,100,339 | 16 | 208 | 9,451 |
| Dec-21 | 11,588 | 1,019,669 | 84 | 1,092 | 9,932 |
| Jan-22 | 66,376 | 1,045,046 | 486 | 6,318 | 12,344 |
| Feb-22 | 358,857 | 1,120,764 | 53 | 689 | 11,863 |
| Mar-22 | 49,135 | 1,082,800 | 30 | 390 | 11,902 |
| Apr-22 | 136,556 | 1,063,140 | 21 | 273 | 12,038 |
| May-22 | 46,805 | 1,086,542 | 92 | 1,196 | 12,539 |
| Jun-22 | 38,874 | 1,100,345 | 32 | 416 | 12,721 |
| Jul-22 | 27,620 | 1,112,625 | 45 | 585 | 12,773 |
| Aug-22 | 34,534 | 1,113,483 | 10 | 130 | 11,928 |
| **Baseline Average 24-Month Usage (gal)** | | **1,120,764** | **Baseline Average 24-Month Usage (MMBtu)** | | **11,863** |
| **Baseline Period** | | **March 2020 - February 2022** | | | |

# Table 2. Baseline Emissions

| Baseline Actual Annual Throughput | | Units |
|---|---|---|
| Fuel Oil No. 6 | 1,120,764 | gallons |
| Natural Gas | 11.63 | MMscf |

| NSR Pollutants | CAS No./ Code | Emissions Factor (Fuel Oil No. 6) | | Footnote | Emissions Factor (Natural Gas) | | Footnote | Control Efficiency | Baseline Emissions (Fuel Oil No. 6) | | Baseline Emissions (Natural Gas) | | Total Baseline Emissions | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | | Value | Units | | (%) | lbs/yr | tons/yr | lbs/yr | tons/yr | lbs/yr | tons/yr |
| Volatile Organic Compounds (VOC) | VOC | 9.36E-03 | lb/MGal | 1 | 2.11 | lb/MMscf | 7 | | 10.49 | 5.25E-03 | 24.58 | 1.23E-02 | 35.07 | 1.75E-02 |
| Filterable Particulate Matter (FPM) | FPM | 20.70 | lb/MGal | 2 | 1.90 | lb/MMscf | 8 | 99.20% | 185.60 | 9.28E-02 | 0.18 | 8.84E-05 | 185.78 | 9.29E-02 |
| Filterable Particulate Matter less than 10 microns ($FPM_{10}$) | $FPM_{10}$ | 17.80 | lb/MGal | 2 | 1.90 | lb/MMscf | 8 | 99.20% | 159.61 | 7.98E-02 | 0.18 | 8.84E-05 | 159.79 | 7.99E-02 |
| Filterable Particulate Matter less than 2.5 microns ($FPM_{2.5}$) | $FPM_{2.5}$ | 11.59 | lb/MGal | 2 | 1.90 | lb/MMscf | 8 | 99.20% | 103.94 | 5.20E-02 | 0.18 | 8.84E-05 | 104.11 | 5.21E-02 |
| Particulate Matter Condensable (CPM) | CPM | 1.50 | lb/MGal | 2 | 5.70 | lb/MMscf | 8 | | 1,681 | 0.84 | 66.29 | 3.31E-02 | 1,747 | 0.87 |
| Sulfur Dioxide ($SO_2$) | $SO_2$ | 2.06 | lb/MMBtu | 3 | 0.60 | lb/MMscf | 8 | | 346,524 | 173.26 | 6.98 | 3.49E-03 | 346,531 | 173.27 |
| Nitrogen Oxides (NOx) | NOx | 47.00 | lb/MGal | 4 | 190.00 | lb/MMscf | 10 | | 52,676 | 26.34 | 2,210 | 1.10 | 54,886 | 27.44 |
| Carbon Monoxide (CO) | CO | 5.00 | lb/MGal | 4 | 84.00 | lb/MMscf | 10 | | 5,604 | 2.80 | 976.91 | 0.49 | 6,581 | 3.29 |
| Sulfuric Acid (aerosol forms only) | 7664939 | 2.45 | lb/MGal | 5 | | | | | 2,746 | 1.37 | | | 2,746 | 1.37 |
| Hydrofluoric Acid | 7664393 | 2.10E-02 | lb/MGal | 5 | | | | | 23.54 | 1.18E-02 | | | 23.54 | 1.18E-02 |
| Lead | 7439921 | 7.07E-04 | lb/MGal | 5 | 5.95E-04 | lb/MMscf | 9 | 98.00% | 1.58E-02 | 7.92E-06 | 1.38E-04 | 6.92E-08 | 1.60E-02 | 7.99E-06 |
| Carbon Dioxide Equivalent ($CO_2e$) | $CO_2e$ | 166.13 | lb/MMBtu | 6 | 117.10 | lb/MMBtu | 6 | | 27,928,289 | 13,964 | 1,389,074 | 694.54 | 29,317,364 | 14,659 |

[1] Sum of speciated volatile organic compound emission factors from NCASI Technical Bulletin 1050, Section 8.3.

[2] NCASI Technical Bulletin 884, Table 9.4 - Uncontrolled Boiler Emissions Factor.

[3] Average of 2021 fuel oil certification data.

[4] AP-42, Table 1.3-1.

[5] NCASI Technical Bulletin 1050, Section 8.3.

[6] 40 CFR Part 98, Subpart C, Table C-1 and C-2 for natural gas and No. 6 fuel oil converting kg/MMBtu to lb/MMBtu using 2.2046 lb/kg.

[7] Sum of speciated volatile organic compound emission factors from NCASI Technical Bulletin 1050, Section 8.4.

[8] AP-42, Table 1.4-2.

[9] NCASI Technical Bulletin 1050, Section 8.4.

[10] AP-42, Table 1.4-1.

The projected actual emissions were calculated based on the mill's projected decrease in No. 6 fuel oil (93,123 MMBtu/yr) and the corresponding increase in natural gas firing (98,047 MMBtu/yr). Projected emissions increases were calculated by subtracting the baseline emissions from the actual projected emissions. The following Table 3. PSD Summary is taken from the application and demonstrates the expected changes in emissions are below the PSD Significant Emissions Rate (SER) for each regulated NSR pollutant.

**Table 3. PSD Summary**

| Emissions Category | Emissions (tpy) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | VOC | PM | $PM_{10}$ | $PM_{2.5}$ | SO2 | NOx | CO | SAM* | F* | Pb | GHG* as CO2e |
| Baseline Actual Emissions | 1.75E-02 | 0.97 | 0.95 | 0.93 | 173 | 27.4 | 3.29 | 1.37 | 1.18E-02 | 7.99E-06 | 14,659 |
| Projected Actual Emissions | 0.12 | 0.72 | 0.72 | 0.71 | 77.3 | 19.3 | 5.78 | 0.61 | 5.25E-03 | 4.17E-06 | 12,664 |
| Project Emissions Increase | 9.87E-02 | -0.24 | -0.24 | -0.22 | -95.9 | -8.2 | 2.49 | -0.76 | -0.01 | -3.81E-06 | -1,995 |
| PSD Significant Emissions Rate | 40 | 25 | 15 | 10 | 40 | 40 | 100 | 7 | 3 | 0.6 | 75,000 |
| Major NSR Required? | No | No | No | No | No | No | No | No | No | No | No |

* Note: SAM is an abbreviation for Sulfuric Acid Mist, F is an abbreviation for Fluorides, and GHG is an abbreviation for greenhouse gases (given as CO2 equivalent or CO2e).

Because the facility opted to use Projected Actual Emissions (PAE) instead of Potential to Emit (PTE) for PSD applicability, the requirements given in 02D .0530(u) will become applicable for the proposed changes to Recovery Boiler No. 5. However, the changes in emissions are less than 50 percent of the amount that is "a significant emissions increase, without reference to the amount that is a significant net emissions increase" for each applicable regulated NSR pollutant. Therefore, no monitoring, recordkeeping, reporting, or testing is justified or required pursuant to 02D .0530(u) for this application.

15A NCAC 02D .1100, "Control of Toxic Air Pollutants" and
15A NCAC 02Q .0711, "Emission Rates Requiring a Permit"

Under 15 A NCAC 2Q.0700 facilities that emit TAPs for which they are required to have a permit under 15 NCAC 2D.1100 must demonstrate compliance with the Acceptable Ambient Levels (AALs). IP Riegelwood submitted a facility-wide modeling demonstration, which included combustion sources, on March 15, 2011 as part of a permit application to combust natural gas in the No. 5 Power Boiler. Facility wide emission rates were compared to the TPERs and 30 compounds required modeling. The results of the 2011 demonstration are provided below.

| **Compound** | **AAL, µg/m3** | **Modeled Impact of Potential Emissions, µg/m$^3$** | **% of AAL** |
|---|---|---|---|
| 1-hour averaging periods | | | |

| Compound | AAL, µg/m3 | Modeled Impact of Potential Emissions, µg/m$^3$ | % of AAL |
|---|---|---|---|
| Acetaldehyde | 27000 | 93.1 | 0.3% |
| Acrolein | 80 | 1.4 | 1.8% |
| Ammonia | 2700 | 513.5 | 19.0% |
| Chlorine | 900 | 98.3 | 10.9% |
| Cresol | 2200 | 241.5 | 11.0% |
| Formaldehyde | 150 | 94.3 | 62.9% |
| Hydrogen Chloride | 700 | 21.9 | 3.1% |
| Hydrogen Fluoride | 250 | 0.04 | 0.0% |
| Methyl Ethyl Ketone | 88500 | 14.5 | 0.0% |
| Methyl Mercaptan | 50 | 33.5 | 67.0% |
| Methylene Chloride | 1700 | 2.3 | 0.1% |
| Phenol | 950 | 25.15 | 2.6% |
| Sulfuric Acid | 100 | 8.605 | 8.6% |
| 24-hour averaging periods | | | |
| Carbon disulfide | 186 | 6.8 | 3.7% |
| Chlorine | 37.5 | 31.6 | 84.3% |
| Chromium VI | 0.62 | 0.316 | 51.0% |
| Hydrogen Fluoride | 30 | 0.01 | 0.0% |
| Hydrogen Sulfide | 120 | 26.43 | 22.0% |
| Manganese (& Cmpds) | 31 | 0.01 | 0.0% |
| Mercury (& Cmpds) | 0.6 | 0.0041 | 0.7% |
| Methyl Ethyl Ketone | 3700 | 3.5 | 0.1% |
| n-Hexane | 1100 | 2.3 | 0.2% |
| Nickel (& Cmpds) | 0.6 | 0.1 | 15.2% |
| Sulfuric Acid | 12 | 2.3 | 19.2% |
| Annual averaging periods | | | |
| 1,3-Butadiene | 0.44 | 0.00624 | 1.4% |
| Arsenic (& Cmpds) | 0.00023 | 0.0001 | 43.5% |
| Benzene | 0.12 | 0.03 | 22.1% |
| Benzo(a)pyrene | 0.03 | 0.00002 | 0.1% |
| Beryllium | 0.0041 | 0.00009 | 2.2% |
| Cadmium | 0.0055 | 0.00012 | 2.2% |
| Carbon tetrachloride | 6.7 | 0.1 | 1.2% |
| Chloroform | 4.3 | 0.2 | 3.6% |
| Ethylene Dichloride | 3.8 | 0.00079 | 0.0% |
| Methylene Chloride | 24 | 0.13 | 0.5% |
| Vinyl Chloride | 0.38 | 0.0176 | 4.6% |

With the exception of 24-hour chlorine emissions, modeled facility impacts are less than 70% of all AALs, and in most cases are less than 5% of AALs (22 of 35).

On June 21, 2012, the North Carolina General Assembly passed air toxics reform legislation HB 952. The bill was signed by the governor and became law. Under the bill, any source that is covered under a MACT or Generally Achievable Control Technology (GACT) standard and any source covered under a 112(j) permit is exempt from regulation under the state air toxics rule, except in those circumstances when the Division of Air Quality's (DAQ) Director makes a written finding that emissions from such a source presents an unacceptable risk to public health (e.g., a Director's call). The legislation requires that, upon receipt of any permit application that would result in an increase in TAP emissions, DAQ must review the application to determine if the emissions of TAPs from the facility present an unacceptable risk to human health. In 2012, the Riegelwood Mill requested removal of the toxics limits for MACT sources from its air permit.

DAQ made a determination that facility-wide emissions from the IP Riegelwood Pulp and Paper Mill do not present an unacceptable risk to human health in 2011. In addition, U.S. EPA performed a residual risk analysis on the pulp and paper industry, including the IP Riegelwood Mill, as part of its residual risk and technology review of MACT Subparts S (finalized in 2012) and MM (finalized in 2017) and determined risk was acceptable (cancer risk was less than 10 in 1 million for the source category and the hazard index was less than 1) with an ample margin of safety to protect public health.

To evaluate impacts of the proposed natural gas burner project on the previous toxics analysis, post-project potential emissions from the No. 5 Recovery Boiler were compared to the modeled emission rates of NC toxics in the 2011 analysis. The post-project potential emissions of formaldehyde are greater than the 2011 modeled emission rate. The maximum modeled impact of formaldehyde emissions from the mill sources that were operating in 2011 was 94.3 ug/$m^3$ versus an AAL of 150 ug/$m^3$. The modeled formaldehyde emissions from the No. 5 Recovery Boiler were 1.4% of the total modeled emissions. The No. 5 Recovery Boiler is subject to MACT Subpart MM. According to EPA's residual risk analysis for that rule (see EPA-HQ-OAR-2014-0741-0266, Residual Risk Assessment for Pulp Mill Combustion Sources in Support of the October, 2017 Risk and Technology Review Final Rule, Appendix 10, Table 2), Subpart MM sources at IP Riegelwood contribute 2 percent of the facility total chronic cancer risk (which includes formaldehyde). If we assume the No. 5 Recovery Boiler contributed 2% of the 2011 maximum modeled formaldehyde impact, this would be 1.9 ug/$m^3$. The formaldehyde PTE from No. 5 Recovery Boiler is now 1.1 lb/hr versus a 2011 modeled PTE of 0.123 lb/hr (about 10 times higher). If the modeled impact of formaldehyde emissions from the No. 5 Recovery Boiler is now 20 ug/m3, the total mill-wide impact (112.4 ug/$m^3$) would still be less than 75% of the AAL of 150 ug/$m^3$.

Similarly, the post-project potential emissions of methyl mercaptan are greater than the 2011 modeled emission rate. The maximum modeled impact of methyl mercaptan emissions from the mill sources that were operating in 2011 was 33.5 ug/$m^3$ versus an AAL of 50 ug/$m^3$. The modeled methyl mercaptan emissions from the No. 5 Recovery Boiler were 1.6% of the total modeled emissions. If we conservatively assume the No. 5 Recovery Boiler contributed 2% of the 2011 maximum modeled methyl mercaptan impact, this would be 0.67 ug/$m^3$. The methyl mercaptan PTE from No. 5 Recovery Boiler is now 0.576 lb/hr versus a 2011 modeled PTE of 0.33 lb/hr (about 2 times higher). If the modeled impact of methyl mercaptan emissions from the No. 5 Recovery Boiler is now 1.34 ug/m3, the total mill-wide impact (34.17 ug/$m^3$) would still be less than 75% of the AAL of 50 ug/$m^3$.

Additionally, the post-project potential emissions of phenol are greater than the 2011 modeled emission rate. The maximum modeled impact of phenol emissions from the mill sources that were operating in 2011

was 25.15 ug/m$^3$ versus an AAL of 950 ug/m$^3$. The modeled phenol emissions from the No. 5 Recovery Boiler were 0.1% of the total modeled emissions. If we conservatively assume the No. 5 Recovery Boiler contributed 1% of the 2011 maximum modeled phenol impact, this would be 0.25 ug/m$^3$. The phenol PTE from No. 5 Recovery Boiler is now 1.27 lb/hr versus a 2011 modeled PTE of 0.00779 lb/hr (about 165 times higher). If the modeled impact of phenol emissions from the No. 5 Recovery Boiler is now 41.25 ug/m3, the total mill-wide impact (66.15 ug/m$^3$) would still be less than 75% of the AAL of 950 ug/m$^3$.

The toxics PTE for Recovery Boiler No. 5 is attached in the following table. All remaining toxic air pollutants are below the modeled emission rate from the 2011 modeling analysis.

| TAPs | CAS No./ Code | Emissions Factor (Fuel Oil No. 6) | | Footnote | Emissions Factor (Natural Gas) | | Footnote | Emissions Factor (Black Liquor Solids) | | Footnote | Control Efficiency[12] | Emissions (Fuel Oil No. 6) | | Emissions (Natural Gas) | | Emissions (Black Liquor Solids) | | Potential Emissions[13] | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Value | Units | | Value | Units | | Value | Units | | (%) | lb/hr | lb/yr | lb/hr | lb/yr | lb/hr | lb/yr | lb/hr | lbs/yr | tons/yr |
| Acetaldehyde | 75070 | | | | | | | 3.89E-03 | lb/T BLS | 21 | | | | | | 0.599 | 5,244 | 0.599 | 5,244 | 2.62 |
| Arsenic Compounds | 7440382 | 9.43E-04 | lb/MGal | 3 | 2.02E-04 | lb/MMscf | 7 | 2.43E-06 | lb/T BLS | 10 | 21.0% | 6.95E-04 | 2.23 | 3.98E-05 | 0.070 | 3.74E-04 | 3.27 | 1.07E-03 | 5.51 | 2.75E-03 |
| Benzene | 71432 | 2.14E-04 | lb/MGal | 3 | 2.10E-03 | lb/MMscf | | 4.46E-04 | lb/T BLS | 21 | | 2.00E-04 | 0.642 | 5.23E-04 | 0.926 | 0.069 | 602 | 0.069 | 603 | 0.301 |
| Beryllium Compounds | 7440417 | 1.89E-04 | lb/MGal | 3 | 5.94E-05 | lb/MMscf | 7 | 2.36E-06 | lb/T BLS | 10 | | 1.77E-04 | 0.567 | 1.48E-05 | 0.026 | 3.64E-04 | 3.19 | 5.40E-04 | 3.75 | 1.88E-03 |
| Cadmium Compounds | 7440439 | 2.10E-05 | lb/MGal | 3 | 9.37E-05 | lb/MMscf | 7 | 8.75E-06 | lb/T BLS | 10 | | 1.96E-05 | 0.063 | 2.33E-05 | 0.041 | 1.35E-03 | 11.8 | 1.37E-03 | 11.9 | 5.93E-03 |
| Carbon Disulfide | 75150 | | | | | | | 5.00E-04 | lb/T BLS | 21 | | | | | | 0.077 | 674 | 0.077 | 674 | 0.337 |
| Carbon Tetrachloride | 56235 | | | | | | | 3.49E-05 | lb/T BLS | 21 | | | | | | 5.37E-03 | 47.0 | 5.37E-03 | 47.0 | 0.024 |
| Chlorobenzene | 108907 | | | | | | | 1.40E-05 | lb/T BLS | 21 | | | | | | 2.16E-03 | 18.9 | 2.16E-03 | 18.9 | 9.44E-03 |
| Chloroform | 67663 | | | | | | | 8.72E-06 | lb/T BLS | 21 | | | | | | 1.34E-03 | 11.8 | 1.34E-03 | 11.8 | 5.88E-03 |
| Chloromethane | 74873 | | | | | | | 4.30E-05 | lb/T BLS | 21 | | | | | | 6.61E-03 | 57.9 | 6.61E-03 | 57.9 | 0.029 |
| Chromium (VI) Compounds | 18540299 | 7.06E-04 | lb/MGal | 3 | | | | 2.95E-05 | lb/T BLS | 10 | | 6.59E-04 | 2.12 | | | 4.54E-03 | 39.7 | 5.19E-03 | 41.8 | 0.021 |
| Formaldehyde | 50000 | 1.59E-03 | lb/MGal | 3 | 0.309 | lb/MMscf | 7 | 6.70E-03 | lb/T BLS | 21 | | 1.48E-03 | 4.77 | 0.077 | 137 | 1.03 | 9,042 | 1.11 | 9,178 | 4.59 |
| Hydrochloric Acid | 7647010 | 0.176 | lb/MGal | 3 | | | | 0.060 | lb/T BLS | 10 | | 0.164 | 527 | | | 9.24 | 80,921 | 9.40 | 81,447 | 40.7 |
| Hydrofluoric Acid | 0 | 0.021 | lb/MGal | 3 | | | | | | | | 0.020 | 63.0 | | | | | 0.020 | 63.0 | 0.032 |
| Hydrogen Sulfide | 7783064 | | | | | | | 1.09E-03 | lb/T BLS | 23 | | | | | | 0.168 | 1,473 | 0.168 | 1,473 | 0.736 |
| Manganese Compounds | 7439965 | 0.013 | lb/MGal | 3 | 2.48E-03 | lb/MMscf | 7 | 9.26E-05 | lb/T BLS | 10 | 82.0% | 2.10E-03 | 6.76 | 1.11E-04 | 0.197 | 0.014 | 125 | 0.016 | 132 | 0.066 |
| Mercury Compounds | 7439976 | 1.76E-05 | lb/MGal | 3 | 1.01E-03 | lb/MMscf | 7 | 4.38E-06 | lb/T BLS | 10 | 41.0% | 9.67E-06 | 0.031 | 1.48E-04 | 0.262 | 6.75E-04 | 5.91 | 8.23E-04 | 6.17 | 3.09E-03 |
| Methyl Ethyl Ketone | 78933 | | | | | | | 2.30E-03 | lb/T BLS | 21 | | | | | | 0.355 | 3,107 | 0.355 | 3,107 | 1.55 |
| Methyl Isobutyl Ketone | 108101 | | | | | | | 3.92E-04 | lb/T BLS | 21 | | | | | | 0.060 | 529 | 0.060 | 529 | 0.264 |
| Methyl Mercaptan | 74931 | | | | | | | 3.74E-03 | lb/T BLS | 16 | | | | | | 0.576 | 5,044 | 0.576 | 5,044 | 2.52 |
| Methylene Chloride | 75092 | | | | | | | 7.37E-05 | lb/T BLS | 21 | | | | | | 0.011 | 99.4 | 0.011 | 99.4 | 0.050 |
| n-Hexane | 110543 | | | | 1.80 | lb/MMscf | 7 | 1.38E-05 | lb/T BLS | 21 | | | | 0.448 | 794 | 2.12E-03 | 18.6 | 0.450 | 813 | 0.406 |
| Nickel Compounds | 7440020 | 0.079 | lb/MGal | 3 | 6.51E-03 | lb/MMscf | 7 | 3.46E-05 | lb/T BLS | 10 | 95.0% | 3.68E-03 | 11.8 | 8.11E-05 | 0.144 | 5.33E-03 | 46.7 | 9.01E-03 | 58.5 | 0.029 |
| Phenol | 108952 | | | | | | | 8.24E-03 | lb/T BLS | 10 | | | | | | 1.27 | 11,113 | 1.27 | 11,113 | 5.56 |
| Styrene | 100425 | | | | | | | 9.76E-06 | lb/T BLS | 21 | | | | | | 1.50E-03 | 13.2 | 1.50E-03 | 13.2 | 6.58E-03 |
| Sulfuric Acid (aerosol forms only) | 0 | 2.45 | lb/MGal | 3 | | | | 7.63E-03 | lb/T BLS | 10 | | 2.29 | 7,350 | | | 1.17 | 10,290 | 3.46 | 17,640 | 8.82 |
| Toluene | 108883 | 6.20E-03 | lb/MGal | 3 | 3.40E-03 | lb/MMscf | 7 | 2.52E-04 | lb/T BLS | 21 | | 5.79E-03 | 18.6 | 8.47E-04 | 1.50 | 0.039 | 340 | 0.045 | 358 | 0.179 |
| Trichloroethylene | 79016 | | | | | | | 1.42E-05 | lb/T BLS | 21 | | | | | | 2.19E-03 | 19.2 | 2.19E-03 | 19.2 | 9.60E-03 |
| Vinyl Chloride | 75014 | | | | | | | 2.48E-06 | lb/T BLS | 21 | | | | | | 3.82E-04 | 3.34 | 3.82E-04 | 3.34 | 1.67E-03 |
| Xylenes (mixed isomers) | 1330207 | 1.10E-04 | lb/MGal | 3 | | | | 1.36E-04 | lb/T BLS | 21 | | 1.03E-04 | 0.330 | | | 0.021 | 183 | 0.021 | 184 | 0.092 |

Therefore, DAQ has determined that this project does not require updated toxics modeling because it is not expected to pose an unacceptable risk to human health.

15A NCAC 02Q .0113, "Notification in Areas Without Zoning"

IPRW is located in an area without zoning, so IPRW must follow the requirements of 15A NCAC 02Q .0113. This Rule requires that public notice if provided prior to submitting the permit application. Additionally, IPRW is required to publish a legal notice in a newspaper of general circulation in the area where the source is located at least two weeks prior to submitting the permit application. A notice was published on October 6, 2022 in the Whiteville News Reporter and included the name of the facility, the name and address of the applicant, and a summary of the changes in operation. Proof of this publication was provided in Appendix C of the application.

The applicant is also required to, at least ten days prior to the submittal of the permit application, post a sign that is at least six square feet in size, less than ten feet from the highway right-of-way, at least six feet from the ground, that contains lettering a person with 20/20 vision can view from the center of the road and is placed parallel to the highway. Proof is provided in Appendix C of the application that this sign was posted by the facility. The application indicates that the sign was posted on November 14, 2022 and contains the name of the facility, the name and address of the applicant, and a summary of the changes in operation. Compliance with this condition is indicated.

15A NCAC 02Q .0504, "Option for Obtaining a Construction and Operation Permit"

The Permittee shall file an amended application following the procedures of Section 15A NCAC 02Q .0500 within one year from the date of commencement of operation of the modified No. 5 Recovery Furnace (ID No. ES-RB5) with new natural gas load burners and natural gas-fired ignitors (Application No. 2400036.22A). Additionally, as given by 15A NCAC 02Q .0308(a), the facility shall notify the Regional Office of the date of beginning operation of any of the permitted sources postmarked no later than 30 days after such date.

Compliance will be determined once the facility has started up operations.

**7. NSPS, NESHAP, and PSD Applicability**

**NSPS**

NSPS Subpart D – The facility avoids applicability of NSPS Subpart D. See Section 6 above for a complete discussion.

NSPS Subpart Db – The facility is not subject to the requirements of NSPS Subpart Db. See Section 6 above for a complete discussion.

NSPS Subpart BB – The facility is subject to the requirements of NSPS Subpart BB. See Section 6 above for a complete discussion.

NSPS Subpart BBa – The facility is not subject to the requirements of NSPS Subpart BBa. See Section 6 above for a complete discussion.

**NESHAP**

NESHAP Subpart MM – The facility is subject to the requirements of NESHAP Subpart MM. See Section 6 above for a complete discussion.

**PSD**

As discussed in Condition 02D .0530/.0530(u) in Section 6 above, the PSD applicability analysis found that a PSD review was not required for any regulated NSR pollutant. Specifically, a comparison of the emissions differences found an increase of -95.9 TPY SO2 (SER of 40 TPY), -8.2 TPY NOx (SER of 40 TPY), 2.49 TPY CO (SER of 100 TPY), and 0.0987 TPY VOC (SER of 40 TPY). The facility will be subject to 02D .0530(u) but with no monitoring, recordkeeping, reporting, or testing requirements since the changes in emissions will be less than 50% of the applicable SERs for each applicable regulated NSR pollutant.

Columbus County has triggered minor source baseline date for PM10, SO2, and NOx. Emissions changes with this application are shown in the table below.

| Pollutant | Change in Emission Rate (lb/hr) |
|---|---|
| PM10 | -0.01 |
| SO2 | -24.69 |
| NOx | -3.76 |

**8. Facility Emissions Review**

Page 1 of this application review above includes actual emissions for calendar years 2017 through 2021. The facility's potential emissions (PTE) exceed the major source threshold of 100 tons/yr for each criteria pollutant. The PTE also exceeds 10 tons/yr for single HAP and 25 tons/yr for aggregate HAP emissions.

**9. Permitting History**

| 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:<br>• upgrading the wood yard to process tree length logs and increase chip production capacity to 8,500 tons per day.<br>• 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.<br>As a part of this permit modification, the expiration date was corrected to April 30, 2017. |
| 03138T40 | 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. |
| 03138T41 | 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:<br>• making modifications to convert the mill to 100% softwood pulp production.<br>• the removal of several 15A NCAC 02D .0530(u) tracking/reporting requirements that had been satisfied. |
| 03138T42 | February 8, 2019 | Air permit application processed as Prevention of Significant Deterioration (PSD) modification. The project involved the addition a new 40 MW condensing steam turbine generator and the removal of Nos. 1 and 2 Turbine Generators from service. As result, the facility expected to burn approximately 100,000 more tons per year of bark, as compared to baseline levels, in the Nos. 2 and 5 Power Boilers. |
| 03138T43 | January 21, 2020 | Air permit modification requesting a revision of scrubber monitoring conditions for No. 5 Power Boiler processed as a one-step significant modification. MACT 5D was also added to the permit, and the 112(j) Case-by-Case MACT for Boilers requirement was removed from the permit. |

**10. Other Regulatory Concerns**

A P.E. seal was not required for this application.

Requirements in areas without zoning were addressed with this application.

An application fee of $7,210 was required and received for this application.

Public notice and EPA review are not required for the first step of this two-step significant modification.

**11. Recommendations**
The review engineer recommends to issue Permit No. 03138T44 to International Paper - Riegelwood Mill, Columbus County, North Carolina.