Facility Name: **Appling County Pellets**
City: Baxley
County: Appling
AIRS #: 04-13-001=00032 Application #: TV-406527

Date SIP Application Received: n/a
Date Title V Application Received: July 5, 2019
Permit No: 2499-001-0032-V-02-1

| Program | Review Engineers | Review Managers |
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**Introduction**

This narrative is being provided to assist the reader in understanding the content of the referenced SIP permit to construct and draft operating permit amendment. Complex issues and unusual items are explained in simpler terms and/or greater detail than is sometimes possible in the actual permit. This permit is being issued pursuant to: (1) Sections 391-3-1-.03(1) and 391-3-1-.03(10) of the Georgia Rules for Air Quality Control, (2) Part 70 of Chapter I of Title 40 of the Code of Federal Regulations, and (3) Title V of the Clean Air Act Amendments of 1990. The following narrative is designed to accompany the draft permit and is presented in the same general order as the permit. This narrative is intended only as an adjunct for the reviewer and has no legal standing. Any revisions made to the permit in response to comments received during the public comment period and EPA review process will be described in an addendum to this narrative.

## I. Facility Description

A. Existing Permits

Table 1 below lists the current Title V permit, and all administrative amendments, minor and significant modifications to that permit, and 502(b)(10) attachments.

Table 1: Current Title V Permit and Amendments

| Permit/Amendment Number | Date of Issuance | Description |
|---|---|---|
| 2499-001-0032-V-02-0 | March 27, 2019 | Title V Initial Permit |

B. Regulatory Status

1. PSD/NSR/RACT

The facility is a synthetic minor source under PSD/NSR regulations. Potential Particulate matter emissions from the facility can exceed 250 tons per year for unlimited/uncontrolled operation. The proposed Title V permit has a PSD avoidance limit of 1.8 pound per hour from the hammer mill bin vent filter and the pellet mill baghouse in order to avoid the facility being a PSD major source for PM.

Emissions from the facility were estimated using emission factors from the 2016 source tests for the dryer for VOC, CO, NOx and PM. Emission factors from the most recent source test for VOC, Formaldehyde, Methanol and Acetaldehyde were used to estimate VOC and HAPs emissions from the facility. The VOC emissions from the dryer were based on a series of testing done on the dryer exhaust in August 2017 and July 2018. The testing was done for a range of hardwood and softwood mix. The VOC emission factor from the dryer tests ranges from 2.60 lbs/ODT for 70/30 hardwood softwood mix to 1.84 lbs/ODT for 100 percent hardwood based on WPP1 protocol. The VOC emissions from pellet Mill vents, Pellet cooler baghouse, hammermill baghouse were based on 2017 test on these exhaust. EPD default storage emission factor of 0.40 lbs/ODT was used for storage and handling emissions. The total VOC emissions from the facility is projected below 250 tons per year based on a production capacity of 155,000 oven dried tons per year @ 11 % moisture drying capacity. The facility wide VOC emissions are below 250 tons per year and hence it is considered a minor source for PSD applicability purposes.

Carbon monoxide emissions from the dryer were tested in 2010 resulting in CO emission of 48.29 lb/hr at a production rate of 17.4 ODT/hr (2.77 lb/ODT). At the production limit of 155,000 ODT tons/year the worst case CO emissions are projected to be 211ton/year which is much lower than emissions calculated using the AP-42 emission factor of 5.3 lb/ODT.

2. Title V Major Source Status by Pollutant

**Table 2: Title V Major Source Status**

| Pollutant | Is the Pollutant Emitted? | If emitted, what is the facility's Title V status for the Pollutant? | | |
|---|---|---|---|---|
| | | Major Source Status | Major Source Requesting SM Status | Non-Major Source Status |
| PM | yes | ✓ | | |
| $PM_{10}$ | yes | ✓ | | |
| $PM_{2.5}$ | yes | ✓ | | |
| $SO_2$ | yes | | | ✓ |
| VOC | yes | ✓ | | |
| $NO_x$ | yes | | | ✓ |
| CO | yes | | | ✓ |
| Individual HAP | yes | | ✓ | |
| Total HAPs | yes | | | ✓ |

## II. Proposed Modification

A. Description of Modification

The Permittee has proposed to control PM and VOC/HAPs emissions from the Pellet Dryer (WD02) exhaust using a Wet ESP and a RTO. After the proposed change the Pellet Dryer exhaust will **not be burnt** in the dryer burner. The (RTO) will have a gas-fired burner rated at *6* MMBTU/hour. The new PM and VOC/HAPs control will enable increase in the dryer production since VOC/HAPs, CO and PM emissions from the dryer burner and the dryer will be controlled by the wet ESP and the RTO. The revised facility will be designed to produce 1*55,000* tons of wood pellets per year.

B. Emissions Change

No significant emission increased are expected from the Baxley pellet mill due to the proposed change. Potential emissions of CO, PM and VOC will continue to be less than the PSD major source limit of 250 tpy. Potential Emissions of single and total HAPs will continue to be below 10/25 tons pe year. Emissions of CO, PM, VOC/HAPs will decrease significantly if the production of the pellet furnish dryer remain unchanged.

**Table 3: Emissions Change Due to Modification**

| Pollutant | Is the Pollutant Emitted? | Net Actual Emissions Increase (Decrease) (tpy) | Net Potential Emissions Increase (Decrease) (tpy) |
|---|---|---|---|
| PM | yes | | 0 |
| $PM_{10}$ | yes | | |

| | | | |
|---|---|---|---|
| $PM_{2.5}$ | yes | | |
| $SO_2$ | yes | | |
| VOC | yes | | 0 |
| $NO_x$ | yes | | 0 |
| CO | yes | | 0 |
| Individual HAP | yes | | 0 |
| Total HAPs | yes | | 0 |

C. PSD/NSR Applicability

NSR isn't applicable to the proposed permit amendment since there will be no increase in emissions of any pollutant. The wetESP and RTO will reduce PM, CO, VOC and HAPs emission. For VOC and HAPs the destruction efficiency of the RTO is greater than 95%.

## III. Facility Wide Requirements

There is no change to existing facility wide requirements.

The facility will continue to be limited to 249 tons per year of VOC, CO and PM to remain as PSD minor. Furthermore, the facility will be limited to 10 tons per year of individual HAP and 25 tons per year of total HAP.

The dryer capacity will be limited to *155,000* oven dried tons per year at 11% moisture and the facility will be restricted to processing no more than 30 percent softwood mix by weight. The increased drying capacity of the dryer is due to installation and operation of the wetESP (PM emissions) and RTO (VOC and HAP emissions).

D. Permit Conditions

No new permit conditions are added in this permit amendment. Existing permit conditions are amended to remove references to dryer DD1.

## IV. Regulated Equipment Requirements

A. Brief Process Description

PM emissions from the pellet furnish dryer WD02 are controlled using a wetESP. VOC and HAPs emissions from the wood burner and pellet furnish dryer are controlled using a Regenerative Thermal Oxidizer (RTO).

B. Equipment List for the Process

| | | Specific Limitations/Requirements | | Air Pollution Control Devices | |
|---|---|---|---|---|---|
| **ID No.** | **Description** | **Applicable Requirements/Standards** | **Corresponding Permit Conditions** | **ID No.** | **Description** |
| HS01 | 62.4 MMBtu/hr Heat Source - GTS Reciprocating Grate Furnace | 391-3-1-.02(2)(b)<br>391-3-1-.02(2)(e)<br>391-3-1-.02(2)(g) | 2.1.1, 2.1.2, 3.2.1 3.2.5, 3.4.1, 3.4.2, 3.4.3, 3.4.4, 3.4.5,3.5.2, 4.2.1,4.2.2, 4.2.3,4.2.4, 5.2.1, 5.2.2, 5.2.4,5.2.6, 5.2.8, 6.1.7, 6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.2.5,6.2.6, 6.2.7 | FK03<br><br>**WESP**<br><br>**RTO** | High Efficiency Cyclone – Fisher Klosterman XQ 120 Series<br>**Wet Electrostatic Precipitator**<br>**Regenerative Thermal Oxidizer** |
| WD02 | Rotary Wood Dryer rated at 18 oven dried tons per hour @ 11% moisture | 391-3-1-.02(2)(b)<br>391-3-1-.02(2)(e)<br>391-3-1-.02(2)(n) | 2.1.1, 2.1.2, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.4.1, 3.4.2, 3.4.4, 3.4.5, 3.5.2, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 5.2.1, 5.2.2, 5.2.4, 5.2.5,5.2.7, 5.2.8, 6.1.7, 6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.2.5,6.2.6,6.2.7, 6.2.8 | | |
| HM04 | Hammermill rated 20 oven dried tons per hour @ 11% moisture | 391-3-1-.02(2)(b)<br>391-3-1-.02(2)(e)<br>391-3-1-.02(2)(n) | 2.1.1, 2.1.2, 3.2.1, 3.4.1, 3.4.2, 3.4.4, 3.4.5, 3.5.1,4.2.1, 4.2.2, 4.2.4, 5.2.2, 5.2.4,5.2.7, 5.2.8, 6.1.7, 6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.2.5,6.2.6 | BV01 | Bin Vent Filter |
| PM05 | Eight (8) Pellet Mill/ Two (2) Pellet Cooler rated at 20 oven dried tons per hour @ 5% moisture | 391-3-1-.02(2)(b)<br>391-3-1-.02(2)(e)<br>391-3-1-.02(2)(n) | 2.1.1,2.1.2, 3.2.1, 3.2.2, 3.4.1, 3.4.2, 3.4.4, 3.4.5, 3.5.1, 3.5.2, 4.2.1, 4.2.2, 4.2.4,5.2.2, 5.2.3, 5.2.4, 5.2.8, 6.1.7, 6.2.1, 6.2.2, 6.2.3, 6.2.4, 6.2.5,6.2.6 | BH01 | Baghouse (pellet coolers) Pellet mill steam extraction is uncontrolled |
| RL01<br>SL01 | Railcar Loading and Storage Silo | 391-3-1-.02(2)(b)<br>391-3-1-.02(2)(e)<br>391-3-1-.02(2)(n) | 2.1.1, 2.1.2, 3.2.1, 3.2.2, 3.4.1, 3.4.2, 3.4.4, 3.4.5, 4.2.1, 4.2.2, 4.2.4, 5.2.4, 5.2.8, 6.1.7, 6.2.1, 6.2.3, 6.2.4, 6.2.5,6.2.6 | None | NA |

C. Equipment & Rule Applicability

**Emission and Operating Caps** –

The facility has a HAP major source avoidance cap of *155,000* oven dried tons per year at 11% moisture. The facility also has SM limits for individual and total HAPs. The production cap insures that the facility will be a HAPs minor source. The production has increased due to installation and operation of the RTO which has 98% destruction efficiency for VOC and HAPs.

**Applicable Rules and Regulations** -

There is no change to currently applicable rules and regulations such as Rule (b), Rule (n) and Rule (e). There is no change to currently applicable rules and regulations to the Heat Source and the Dryer (WD01).

D. Permit Conditions

In Condition 3.2.1 the PM emission rate from the Dryer (WD01) is updated to reflect the proposed wetESP which should drastically reduce the PM emissions from the dryer. In Condition 3.2.2 the

dryer production limit has been increased to tpy to reflect the destruction of VOC and HAPs by proposed dryer RTO.

New Condition 3.2.6 requires operation of the wet ESP and RTO whenever the pellet furnish dryer operates.

New Condition 3.2.7 requires the RTO to be operated at 1500 F or the temperature approved by the Division following the most recent destruction efficiency test.

## V. Testing Requirements (with Associated Record Keeping and Reporting)

New Condition 4.2.6 requires the Permittee to test the pellet dryer emissions for VOC and HAPs (Formaldehyde, Acetaldehyde and Methanol) within 90 days after the startup of the WetESP and the RTO. The VOC and HAPs emission tests need to be repeated once every three years.

New Condition 4.2.7 requires the Permittee to test the dryer exhaust stack for CO and NOx emissions within 90 days after the startup of the WetESP and the RTO to demonstrate compliance with the PSD avoidance CO emission limit in the permit. Testing should be conducted with at least *20%* of the dried wood being softwood. Periodic performance tests for NOx and CO are required once every three years. If the tested emission factors are higher than the emission factors in Section 6.2, then the Permittee shall start using the higher tested emission factors to estimate NOx and CO emissions starting on the test date and shall submit a permit application within 180 days of the testing date to change the emission factors to the tested factors.

## VI. Monitoring Requirements (with Associated Record Keeping and Reporting)

Amended Condition 5.2.1 requires the multi clone checks until the start of the WetESP and the RTO.

Amended Condition 5.2.2

Amended Condition 5.2.4 requires a daily VE check of the dryer RTO exhaust stack.

Amended Condition 5.2.6 requires monitoring of the RTO combustion temperature and ensure that the 3 hour rolling average temperature of the RTO is higher than 1500 $^{o}$F. Any lower three hour average RTO temperature need to be reported as an exceedance in Condition 6.1.7.b. This condition also requires the Permittee to restore the RTO combustion temperature to above 1500 $^{o}$F.

Amended Condition 5.2.7 requires the Permittee to monitor damper position in the dryer recycle duct until the start of the WetESP and the RTO since the dryer exhaust will not be recycled back to the dryer burner after the start of the WetESP and the RTO.

New Condition 5.2.10 requires the Permittee to monitor the RTO combustion temperature, secondary voltage and secondary current of the WetESP.

New Condition 5.2.11 gives the equation to be used to calculate the Total WetESP power from the measured secondary voltage and current.

New Condition 5.2.12 requires the Permittee to calculate three-hour rolling average Total ESP Power from the total; wetESP power data in Condition 5.2.11.

New Condition 5.2.13 requires the Permittee to maintain a temperature of 1500 $^{o}$F or more in the dryer RTO combustion chamber.

New Condition 5.2.14 requires the Permittee to monitor the dried wood feedstock rate (ODT/hr) exiting the dryer WD02, and the wood pellet production rate (ODT/hr) through the pellet coolers (PM05).

## VII. Other Record Keeping and Reporting Requirements

Condition 6.1.7 was amended to include the exceedance and excursions associated with the WetESP and RTO, the new production limits for the wood dryer and remove any exceedance and excursion associated with recycling of the dryer exhaust gases using the damper system.

Amended Condition 6.2.2 requires the Permittee to calculate monthly emissions of PM/$PM_{10}$, emissions from the heat Source (HS01)/Wood Dryer (DR02) using production data from these sources and the emission factors established from the most recent source tests.

Amended Condition 6.2.3 requires the Permittee to calculate monthly emissions of VOC and HAPs (formaldehyde, acetaldehyde and methanol) emissions using the production data form the dryer, hammermill and the pellet cooler and the emission factors established from the most recent source tests. This condition requires reporting if total VOC emissions exceed 20.5 tons during any month or 249 tons during any consecutive twelve months.

Amended Condition 6.2.6 requires the Permittee to calculate 12 month rolling total of HAPs emissions from the heat Source (HS01)/Wood Dryer (DR02), hammermill and pellet cooler for each month using the HAPs emission test from the most recent source test.

Amended Condition 6.2.7 requires the Permittee to calculate the CO emissions from the wood dryer exhaust using the emission factor from the most recent performance test. The Permittee shall also report any monthly CO emissions in excess of 20.7 tons.

Amended Condition 6.2.8 requires the Permittee to report any monthly wood chip production in excess of 12,900 oven dry tons @11% moisture.

## VIII. Specific Requirements

Discuss any of the following specific requirements as they apply to the modification.

A. Operational Flexibility

The permit amendment allows operation of the shavings plant and the pellet plant in the current configuration of the burner and dryer till installation of the WetESP and RTO.

B. Alternative Requirements

Not applicable.

C. Insignificant Activities

Not applicable

D. Temporary Sources

No temporary sources are incorporated in this permit amendment.

E. Short-Term Activities

No short term activities are included in the modification.

F. Compliance Schedule/Progress Reports

This permit amendment is the result of a consent order designed to bring the facility into compliance with the production limits for the Pellet plant and the Shavings plant.

G. Emissions Trading

Not applicable.

H. Acid Rain Requirements/CAIR/CSPAR

Not applicable.

I. Prevention of Accidental Releases

Not applicable.

J. Stratospheric Ozone Protection Requirements

This modification does not change the source's applicability to Title VI.

K. Pollution Prevention

Not applicable.

L. Specific Conditions

Not applicable.

**Addendum to Narrative**

The 30-day public review started on month day, year and ended on month day, year. Comments were/were not received by the Division.

//If comments were received, state the commenter, the date the comments were received in the above paragraph. All explanations of any changes should be addressed below.//