

Facility Name: **Hazlehurst Wood Pellets, LLC**

City: Hazlehurst

County: Jeff Davis

AIRS #: 04-13-16100023

Application #: TV-352816

Date SIP Application Received: n/a

Date Title V Application Received: May 6, 2019

Permit No: 2499-161-0023-V-02-4

<b>Program</b>	<b>Review Engineers</b>	<b>Review Managers</b>
<b>SSPP</b>	S. Ganapathy	Ginger Payment
<b>SSCP</b>	n/a	n/a
<b>ISMU</b>	n/a	n/a
<b>TOXICS</b>	n/a	n/a
<b>Permitting Program Manager</b>		Eric Cornwell

## 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

<b>Permit/Amendment Number</b>	<b>Date of Issuance</b>	<b>Description</b>
2499-161-0023-V-02-0	8/18 2015	Initial Title V Permit
2499-161-0023-V-02-1	5/25/2016	502(b)(10) change wood-fired burner replacement
2499-161-0023-V-02-2	7/6/2016	Sig Mod without construction – removal of fuel oil firing in burners and remove pressure drop monitors in exhaust recycle duct from hammermills, pellet press and pellet coolers
2499-161-0023-V-02-3	11/15/2017	502(b)(10) change – addition of a baghouse parallel to existing baghouse in each production line

**B. Regulatory Status****1. PSD/NSR/RACT**

The facility is synthetic minor under PSD/NSR regulations for CO, NO<sub>x</sub> and VOC. Emissions of CO, VOC and NO<sub>x</sub> are limited to 249 tons/year in order to avoid going through a New Source Review under the PSD rules. The facility will continue to be a PSD SM source for CO, NO<sub>x</sub> and VOC after the proposed modifications. This permit amendment also limits PM emissions to less than 250 tpy as a matter of precaution.

## 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 <sub>10</sub>	yes	✓		
PM <sub>2.5</sub>	yes	✓		
SO <sub>2</sub>	yes			✓
VOC	yes	✓		
NO <sub>x</sub>	yes	✓		
CO	yes	✓		
Individual HAP	yes			✓
Total HAPs	yes			✓

**II. Proposed Modification**

## A. Description of Modification

The Permittee proposes to construct and operate one new furnace, one new dryer, one new chipper, 2 green hammermills, 7 dry hammermills, and 3 pellet lines with a total of 15 presses and 3 coolers. Some of the equipment will be new, some existing. The new wood-fired furnace will be rated at a nominal, approximate 200 MMBTU/hour. Particulate (PM) emissions from the furnace and dryer will be controlled with a wet electrostatic precipitator (WESP). PM emissions from the dry hammermills will be controlled by cyclofilters. PM emissions from the presses and coolers will be controlled by baghouses. Volatile organic compound (VOC) and organic hazardous air pollutant (HAP) emissions from the furnace and dryer will be controlled with a Regenerative Thermal Oxidizer (RTO). VOC and HAP emissions from the dry hammermills, presses, and coolers will be controlled with a Regenerative Catalytic Oxidizer (RCO). The RTO and RCO will each have a gas-fired burner rated at 6 MMBTU/hour. The new dryer has a capacity of 78 oven dried tons per hour, and an annual throughput capacity of 675,000 oven dried tons (ODT). ODT = weight of wood in short tons at 11% moisture, calculated.

No pre-dried wood product will be brought from off-site; all wood will be routed through the dryer through the pellet-forming equipment.

Because of the significant changes to the plant, and to the permit requirements, all Conditions in the existing permit and its amendments (in Sections 2-6) are deleted and completely replaced by the conditions in Amendment 2.

**B. Emissions Change**

After the proposed change emissions of PM, PM<sub>10</sub>, PM<sub>2.5</sub> are expected to be lower for the furnace/dryer, dry hammermills, pellet press and pellet coolers due to WESP (dryer control) and baghouses for the downstream units. The regenerative thermal oxidizer and catalytic oxidizer (RTO and RCO) will result in more than 95% reduction of VOC and HAPs emissions from the furnace/dryer, dry hammermills, pellet press and pellet coolers. Due to the proposed PM, VOC and HAPs controls, the facility will be able to increase production from the dryers, hammermills, pellet presses and pellet coolers without becoming a PSD major source.

**Development of emission factors**Dryer DRY RTO

VOC: GA EPD default emission factor of 6lb/ODT x 95% DRE

HAP: GA EPD default emission factors for acetaldehyde, formaldehyde, and methanol x 95% DRE; other HAP emission factor from Appling County Pellets testing x 95% DRE.

NOx: Applicant provided emission factor of .25 lb/mmbtu x 200 mmbtu/hr 8760 (219 tpy) 219 tpy divided by production limit of 675,000 ODT/yr = 0.65 lb/ODT- then a slight buffer is added yielding 0.66 lb/ODT. This EF compares conservatively to the results from a similar sized dryer with RTO controls at GA Biomass – the latest NOx test there yields an EF of 0.38 lb/ODT

CO: Applicant provided emission factor of .25 lb/mmbtu x 200 mmbtu/hr 8760 (219 tpy) 219 tpy divided by production limit of 675,000 ODT/yr = 0.65 lb/ODT- then a slight buffer is added yielding 0.66 lb/ODT. This EF compares conservatively to the results from a similar sized dryer with RTO controls at GA Biomass – the latest CO test there yields an EF of 0.07 lb/ODT

PM: Applicant provided emission factor of .015 gr/cf exhaust airflow x airflow x 8760 = 98 tpy 98 tpy divided by production limit of 675,000 ODT/yr = 0.29 lb/ODT- then a slight buffer is added yielding 0.30 lb/ODT. This EF compares conservatively to the results from a similar sized dryer with RTO controls at GA Biomass – the latest CO test there yields an EF of 0.05 lb/ODT

Hammermill/Pellet Presses/Cooler RCO

VOC: GA EPD default emission factors of 2.5 lb/ ton (hammermills) + 1.3 lb/ton (steam injected pelletmills/coolers) x 95% DRE

HAP: GA EPD default emission factors for acetaldehyde, formaldehyde, and methanol x 95% DRE;

NOx: Applicant provided AP-42 fuel burning emission factor of .1 lb/mmbtu x 6 mmbtu/hr 8760 (2.6 tpy) 2.6 tpy divided by production limit of 675,000 ODT/yr = 0.008lb/ODT- then a large buffer is added to account for btu from voc-laden exhaust burned yielding 0.06 lb/ODT.

CO: Applicant provided AP-42 emission factor of .084 lb/mmbtu x 6 mmbtu/hr 8760 (2.2 tpy) 2.2 tpy divided by production limit of 650,000 ODT/yr = 0.007 lb/ODT- then a large buffer is added yielding 0.06 lb/ODT.

PM: Applicant provided emission factor of .015 gr/cf exhaust airflow x airflow x 8760 = 98 tpy

98 tpy divided by production limit of 650,000 ODT/yr = 0.30 lb/ODT- then a slight buffer is added yielding 0.31 lb/ODT.

**HAND silos**

VOC: GA EPD default factor is 0.4 lb/ODT; the applicant argues that the default factor is based on a test configuration at GA Biomass that handled uncooled pellets, yielding a higher than normal emission factor. GA EPD will allow a factor of ½ the default factor (0.2 lb/ODT); the permittee will be required to test to determine the validity of the factor and use the higher of the factor or the test result.

PM: GA EPD estimates a conservative value of 18 tons per year from the storage silos in the handling group HAND

HAP: GA EPD default emission factors for acetaldehyde, formaldehyde, and methanol

Emissions from the woodyard (Unit ID WOOD), including chip piles, and chipper are estimated using the Applicant’s estimates, however these emissions are fugitive in nature and not accounted toward PSD applicability because the pellet plant is not one of the “list of 28” in 40 CFR 52.21.

**Emission Factors**

	VOC EF	meoh ef	hcoh ef	acet ef	Other hap ef	PM EF	NOX EF	CO EF	Production (per year)
RTO	0.300	0.006	0.007	0.006	0.010	0.300	0.660	0.660	675000 ODT
RCO	0.190	0.001	0.001	0.001	0.000	0.310	0.060	0.060	650000 tons
HAND	0.200	0.001	0.002	0.001	0.000				650000 tons
<b>Annual Emissions</b>									
	voc	meoh	hcoh	acet	Other hap	PM	Nox	CO	total HAP
RTO	101.250	2.025	2.363	2.025	3.375	101.250	222.750	222.750	9.788
RCO	61.750	0.163	0.325	0.163	0.000	100.750	19.500	19.500	0.650
HAND	65.000	0.325	0.650	0.325	0.000	0.000	0.000	0.000	1.300
<b>Total</b>	<b>228.000</b>	<b>2.513</b>	<b>3.338</b>	<b>2.513</b>	<b>3.375</b>	<b>202.000</b>	<b>242.250</b>	<b>242.250</b>	<b>11.738</b>

Emission factors are in lb/actual ton. For the dryer RTO, this is measured as ODT, for other downstream equipment it is measured as actual tons. The production rate listed in the above table for the RCO-controlled equipment is the production weight existing the dry hammermills.

The moisture content of the wood exiting the dryer (“oven dried) is typically 11% . As the wood is further processed, the moisture content continues to decrease slightly. For example, the estimated moisture content of the wood fibers after the hammermills is 8%, and the moisture content of the pellets exiting the coolers is 4%. Converting 675,000 ODT to actual tons existing the cooler is:

Actual tons at 8% moisture =  $675,000 \times (1-11\%) / 1-8\%$  = 653,000 tons  
 Actual tons at 4% moisture =  $675,000 \times (1-11\%)/(1-4\%)$  = 625,800 tons.

C. PSD/NSR Applicability

Currently the facility is a PSD minor source for VOC, CO, NO<sub>x</sub> and PM. The facility will continue to be a PSD minor source after the proposed modification since potential emissions of all PSD pollutant will be less than 250 tons per year.

### **III. Facility Wide Requirements**

All existing Conditions in Section 2 are deleted and replaced with conditions limiting HAP below 10/25 to avoid 112(g), limiting PM, VOC, NO<sub>x</sub>, and CO below 250 tons per year to avoid PSD major source status, and a dryer production limit of 675,000 ODT/yr to further bolster the PSD avoidance limits. It should be noted that production limit may be changed in the future via a permit action if the Division determines that the operations at the plant have lower emission factors than those currently established in this permit. These facility-wide emission limits are made enforceable by tracking production throughput in both the dryer and the pelletizing process, and using emission factors to calculate emissions.

The applicant submitted a Toxic Impact Assessment following Georgia's 2017 Toxic Guidelines. The compounds evaluated were formaldehyde, methanol, and acetaldehyde. The results demonstrate that compliance with the Acceptable Ambient Concentrations (AACs) for these compounds.

### **IV. Regulated Equipment Requirements**

#### **A. Brief Process Description**

The facility has proposed to replace the existing three burners/dryers with one single wood-fired burner/furnace (FUR) rated at 200 MMBTU/hr for providing direct heat to a new dryer (DRY). PM emissions from the new burner/dryer will be controlled using a new wet electrostatic precipitator (WESP). VOC and HAPs emissions will be controlled using a Regenerative Thermal Oxidizer (RTO).

Downstream of the dryer, the 7 dry hammermills will be vented individually to its own cyclo-filter (CYFL1-7) and then to a regenerative catalytic oxidizer (RCO) which is shared with the pellet presses and pellet coolers.

PM and VOC emissions from the 15 pellet presses and 3 pellet coolers (3 pellet lines) will be controlled using a baghouse on each line, then all baghouse exhausts will be routed to the RCO.

Hazlehurst Pellet Plant is designed to produce up to 675,000 Oven dry ton/year (625,000 actual tons at final moisture of ~4%) of wood pellets. The dryer DRY can product up to 675,000 ODT/yr of wood pellet sawdust furnish. The difference in production between 675k tpy and 625k tpy was explained as water loss; although the measuring unit is the same (Oven dried tons = 11% moisture), actual moisture content goes from 11% out of the dryer to 8% out of the hammermills, to 4% out of the pellet cooler.

The applicant does not intend to purchase pre-dried material and pelletize that material. However, if they do, the emissions from the pelletizing will be accounted for because production will be tracked both from the dryer exit and the finished pellet exit (after the pellet coolers near the final product handling and loadout area (HAND)).

B. Equipment List for the Process

Emission Units		Specific Limitations/Requirements		Air Pollution Control Devices	
ID No.	Description	Applicable Requirements/Standards	Corresponding Permit Conditions	ID No.	Description
WOOD	Log storage/handling Debarking/screening Chipper Chip piles	391-3-1-.02(2)(n)	3.4.3, 3.4.4, 5.2.7, 5.2.8		
GHM	Green Hammermills (2)	391-3-1-.02(2)(n)	3.4.3, 3.4.4, 5.2.7, 5.2.8		
FUR	Wood fired furnace 200 MMBTU/hr	391-3-1-.02(2)(g) 391-3-1-.02(2)(b) 391-3-1-.02(2)(g)	3.2.1, 3.2.3, 3.4.1, 3.4.2, 3.4.5, 4.2.1, 4.2.4, 4.2.5, 5.2.1, 5.2.2, 5.2.5, 5.2.6, 5.2.14, 5.2.15, 6.2.1-6.2.7	WESP	Wet Electrostatic Precipitator
DRY	Pellet Dryer 78 ODT/hr	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	2.1.6, 3.2.1, 3.2.3, 3.4.1, 3.4.2, 3.4.3, 3.4.4, 4.2.1, 4.2.4, 5.2.1, 5.2.2, 5.2.5, 5.2.6, 5.2.9, 5.2.14, 5.2.15, 6.2.1-6.2.7	RTO	Regenerative Thermal Oxidizer
HAM1-7	Dry Hammermills (7)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	3.2.2, 3.2.4, 3.4.1, 3.4.2, 4.2.2, 4.2.4, 5.2.1, 5.2.3, 5.2.4, 5.2.6, 5.2.7, 5.2.8, 5.2.10-5.2.17, 6.2.3-6.2.7	CYFL1-7 RCO	Cyclofilters 1-7 Regenerative Catalytic Oxidizer
PEL1-5	Line 1 Presses (5)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e)	3.2.2, 3.2.4, 3.4.1, 3.4.2, 4.2.2, 4.2.4, 5.2.1, 5.2.3, 5.2.4, 5.2.6, 5.2.7, 5.2.8, 5.2.9-5.2.17, 6.2.1-6.2.7	BH1	Baghouse 1
COOL1	Line 1 Cooler	391-3-1-.02(2)(n)		RCO	Regenerative Catalytic Oxidizer
PEL6-10	Line 2 Presses (5)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e)	3.2.2, 3.2.4, 3.4.1, 3.4.2, 4.2.2, 4.2.4, 5.2.1, 5.2.3, 5.2.4, 5.2.6, 5.2.7, 5.2.8, 5.2.9-5.2.17, 6.2.1-6.2.7	BH2	Baghouse 2
COOL2	Line 2 Cooler	391-3-1-.02(2)(n)		RCO	Regenerative Catalytic Oxidizer
PEL11-15	Line 3 Presses (5)	391-3-1-.02(2)(b) 391-3-1-.02(2)(e)	3.2.2, 3.2.4, 3.4.1, 3.4.2, 4.2.2, 4.2.4, 5.2.1, 5.2.3, 5.2.4, 5.2.6, 5.2.7, 5.2.8, 5.2.9-5.2.17, 6.2.1-6.2.7	BH3	Baghouse 3
COOL3	Line 3 Cooler	391-3-1-.02(2)(n)		RCO	Regenerative Catalytic Oxidizer
HAND	Pellet Handling/storage/ Loadout/silos 1-4	391-3-1-.02(2)(b) 391-3-1-.02(2)(e) 391-3-1-.02(2)(n)	3.4.1-3.4.5, 4.2.3, 6.2.4, 6.2.5		

\* Generally applicable requirements contained in this permit may also apply to emission units listed above. The lists of applicable requirements/standards and corresponding permit conditions are intended as a compliance tool and may not be definitive.

### C. Equipment & Rule Applicability

NSPS Subpart Dc does not apply to the proposed wood burner/furnace since it supplies direct heat to the pellet furnish dryer. The burner/furnace does not produce steam, heat water or other heat transfer fluid and is not a boiler or fuel burning equipment. The opacity of visible emissions from the dryers, hammermills, pellet presses and pellet coolers are limited to 40% by Georgia Rule (b). PM emissions from the pellet furnish dryer, hammermill, pellet presses and pellet coolers will be subject to Georgia Rule (e).

The sulfur content of sawdust fired in the dryer burner is limited to 3% by weight by Georgia Rule (g)2 ; no sulfur monitoring is necessary due to the natural low sulfur content of the wood. Fugitive emissions from the dryer, Hammermills, Pellet presses and Pellet coolers are limited to 20% by Georgia Rule (n)2.

### D. Permit Conditions

Condition 3.2.1 requires the operation of WESP and RTO whenever the pellet furnish dryer operates for compliance with the VOC and HAPs PSD avoidance limit.

Condition 3.2.2 requires the Permittee to operate and maintain all baghouses and RCO during operation of the dry hammermills, pellet presses and pellet coolers to comply with the PSD avoidance limits for PM, CO and VOC.

Condition 3.2.3 requires operation of RTO at 1500 °F or the temperature established during the most recent destruction efficiency test that demonstrates compliance with the 95% reduction/destruction efficiency, whichever is higher.

Condition 3.2.4 requires operation of RCO at 800 °F or the temperature established during the most recent destruction efficiency test that demonstrates compliance with the 95% reduction/destruction efficiency, whichever is higher.

Existing Condition 3.3.1 and 3.3.2 were deleted since the new wood-fired burner/furnace is not subject to the requirements of NSPS Subpart Dc. The new burner is not a boiler or a fuel burning equipment and it does not heat water or any other heat transfer fluid or generate steam.

Existing Conditions 3.4.3 and 3.4.4 are not included in this permit amendment since the sources to which the conditions pertain will no longer be at the facility.

Existing Conditions 3.4.8 and 3.4.9 are not included in this permit amendment, since the sources to which the conditions pertain will no longer be at the facility.

Existing Condition 3.5.3, 3.5.4 and 3.5.5 are not included in this permit amendment since the sources to which the conditions apply will no longer be at the facility.

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

To ensure that the emission factors used reflect actual emissions, the facility must test the RTO and RCO within 120 days after startup and thereafter every 3 years. If the test results are higher than the permitted emission factors, the permittee must use the new, higher test result-based factor and submit an application to revise the permitted factor upward accordingly. If the tests show lower emission factors, the permitted factors will still be used. The permitted emission factors can be altered down only via a permit application that has been reviewed and permit amendment issued by GEPD.

HAND must be tested for VOC since the factor to be used is lower than the EPD default factor. EPD proposes to require testing on only one silo in HAND to represent the emissions profile for the four identical silos. This is a one-time test requirement.

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

The control device operating parameters to be monitored are pressure drop across the three baghouses (even though the downstream RCO will also serve as additional PM control), total power in the WESP (even though the downstream RTO will also serve as additional PM control), and RTO/RCO temperature.

The daily visibility check has a 20% opacity action level, which is lower than the 30% proposed because EPD has determined that any opacity from these sources over 20% would likely indicate a mechanical problem and the applicant has not provided any data demonstrating that opacity above 20% is normal “compliant” operation.

To ensure proper operation of the RCO, the permit will require a maintenance plan, as well as annual catalyst bed core samples to ensure activity.

CAM conditions address the selected operating parameters accordingly. VOC and PM from both RTO and RCO are subject to CAM because pre-control emissions exceed 100 tpy and controls are used to comply. PM is subject to the emission standard of Georgia Rule (e). It is not clear in Part 64 if annualized PSD avoidance limits are considered “emissions standards” for the purposes of CAM, but in an abundance of caution, EPD has included this for VOC.

Existing Condition 5.2.13 is not included in this permit amendment since the baghouse Preventive Maintenance Program (PMP) is addressed by Condition 5.2.4.

## **VII. Other Record Keeping and Reporting Requirements**

Condition 6.1.7.c. requires reporting of excursion of wood-fired furnace exhaust visible emissions, visible emission exceeding the 20% opacity action level from dry hammermills, pellet presses and pellet coolers for two or more consecutive days. RTO and RCO combustion temperature excursions also need to be reported. Fugitive dust emission episodes need to be reported as excursions. Any failure to perform the daily fugitive dust source inspection need to be reported as well. Any baghouse pressure drops outside the normal range also needs reporting.

Conditions 6.2.1-6.2.6 require tracking of production and calculation of emissions using the factors cited in previous sections of this amendment.

**VIII. Specific Requirements**

- A. Operational Flexibility  
None requested in this permit application.
- B. Alternative Requirements  
None
- C. Insignificant Activities  
No insignificant activities are added as part of this minor modification.
- D. Temporary Sources  
Not applicable.
- E. Short-Term Activities  
No short term activities were included in this modification.
- F. Compliance Schedule/Progress Reports  
Not applicable.
- G. Emissions Trading  
Not applicable.
- H. Acid Rain Requirements/CAIR/CSPAR  
Not applicable.
- I. Prevention of Accidental Releases  
This modification doesn't change the source's applicability which remains non-applicable
- J. Stratospheric Ozone Protection Requirements  
This modification doesn't change the source's applicability to Title VI.
- K. Pollution Prevention  
None.
- L. Specific Conditions  
None.

**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.//