STATEMENT OF BASIS

For the issuance of Air Permit # 1681-AOP-R15 AFIN: 70-00473

1. PERMITTING AUTHORITY:

Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

2. APPLICANT:

Anthony Forest Products Company, LLC
1236 Urbana Road
El Dorado, Arkansas 71730

3. PERMIT WRITER:

Alexander Sudibjo

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Sawmills
NAICS Code: 321113

5. ALL SUBMITTALS:

Date of Application	Type of Application (New, Renewal, Modification, Deminimis/Minor Mod, or Administrative Amendment)	Short Description of Any Changes That Would Be Considered New or Modified Emissions
4/13/2017	Modification	New Dual Path Kiln #3 and Abort Stack Paving two sections of roads
5/25/2017	Administrative Amendment	New cyclone for Planer Mill as insignificant activity

6. REVIEWER'S NOTES:

With this modification, the facility is requesting the following changes:

1. Installation of a Dual Path Kiln #3 (SN-27) and an Abort Stack associated with DPK#3 (SN-28). The additional kiln will increase the production capacity from 165.1 MMBF/yr to 240.1 MMBF/yr. This results in a net increase in VOC emissions that exceeds the PSD significance level. An initial test is required to verify PM_{10} and CO emissions.

2. Paving of additional road segments in the facility (SN-20) to accommodate additional traffic.
3. Installation of product quality upgrades to DPK#1 and #2 (SN-23 and SN-14). There are also updates in the emission calculations for these sources not related to these upgrades.
4. Installation of a new Planer Mill Trim Cyclone (IA) to meet National Fire Protection Association combustible dust standards.
5. Additions of a chip overflow pile and a chip bin to the insignificant activities list.

The facility's annual permitted emissions are increasing by 3.6 tpy SO_2, 140.1 tpy VOC, 83.6 tpy CO, 22.4 tpy NOx, and 11.63 tpy total HAPs.

7. COMPLIANCE STATUS:

As of April 13, 2017, there are no compliance issues with the facility.

8. PSD APPLICABILITY:

a) Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? Y

b) Is the facility categorized as a major source for PSD? Y

- *Single pollutant ≥ 100 tpy and on the list of 28 or single pollutant ≥ 250 tpy and not on list*

If yes, explain why this permit modification is not PSD.

The addition of the third dual path kiln will increase the overall potential production of the facility from 165.1 MMBf/yr to 240.1 MMBf/yr. This new kiln is being installed without the need to modify any of the existing upstream or downstream production processes. However, the increased production will debottleneck most production processes at the facility including the Sawmill (SN-06), Log Yard Haul Roads (SN-20), Planermill Building (SN-21), Sawdust Storage Silo (IA-13), Chip Bin (IA-13), Planer Mill Biomass Storage Bins (IA-13), and storage piles (bark, sawdust, biochar, and chip) handling (IA-13).

The existing kilns (SN-23 and SN-14), existing kiln abort stacks (SN-25 and SN-24), and storage pile wind erosion will not be debottlenecked nor will they see any increase in production as a result of the additional kiln.

Significant Emission Increase

According to 40 CFR §52.21(a)(2)(iv)(b), the procedure for calculating whether a significant emission increase will occur depends on the type of emission units being modified. These procedures are outlined in §52.21(a)(2)(iv)(c)-(f). Since the proposed project subject to PSD analysis will add new and debottleneck existing emission units, the hybrid applicability test of §52.21(a)(2)(iv)(f) is the relevant method for calculating the emission increase associated with the project. The hybrid test requires the addition of emission increases using the actual-to-projected- actual applicability test for debottlenecked sources (SN-06, SN-20, SN-21, and IA-

13), and emission increases using the actual-to-potential test for new emission units (SN-27 and SN-28).

Actual-to-Projected-Actual Test

To determine Baseline Actual Emissions (BAE), a facility is allowed to select any consecutive 24- month period over the ten years preceding commencement of construction or the date a complete permit application is received for the project, whichever date is earlier. For the purposes of this review, the 24-month period from February 2015 to January 2017 was selected.

For Projected Actual Emissions (PAE), the debottlenecked sources (SN-06, SN-20, SN-21, and IA-13) were set at their potential to emit (PTE). The actual-to-projected-actual test emission increases are outlined in the table below.

Actual-to-projected-actual test (ATPA): Debottlenecked Sources			
Source	PM	PM_{10}	$PM_{2.5}$
Sawmill (SN-06) BAE	8.13	0.89	0.45
Log Yard Haul Roads (SN-20) BAE	15.79	4.02	0.57
Sawdust Storage Silo (IA-13) BAE	0.061	0.005	0.002
Chip Bin (IA-13) BAE	0.058	0.006	0.003
Planer Mill Biomass Storage Bins (IA-13) BAE	0.041	0.003	0.002
Bark Pile (IA-13) BAE	0.117	0.055	0.008
Sawdust Pile (IA-13) BAE	0.019	0.009	0.001
BioChar Pile (IA-13) BAE	0.013	0.006	0.006
Chip Overflow Pile (IA-13) BAE	0.056	0.026	0.004
Planermill Building (SN-21) BAE	4.05	1.66	0.83
Sawmill (SN-06) PTE	15.85	1.74	0.87
Log Yard Haul Roads (SN-20) PTE	22.00	4.88	0.96
Sawdust Storage Silo (IA-13) PTE	0.143	0.012	0.006
Chip Bin (IA-13) PTE	0.132	0.013	0.007
Planer Mill Biomass Storage Bins (IA-13) PTE	0.083	0.007	0.003
Bark Pile (IA-13) PTE	0.239	0.113	0.113
Sawdust Pile (IA-13) PTE	0.036	0.017	0.017

Actual-to-projected-actual test (ATPA): Debottlenecked Sources			
Source	PM	PM_{10}	$PM_{2.5}$
BioChar Pile (IA-13) PTE	0.030	0.014	0.014
Chip Overflow Pile (IA-13) PTE	0.115	0.054	0.054
Planermill Building (SN-21) PTE	6.60	2.64	1.32
Total ATPA BAE	28.33	6.69	1.87
Total PAE	45.23	9.49	3.37
Total ATPA Debottlenecked Sources Emission Increase	**16.90**	**2.80**	**1.50**

Actual-to-Potential Test

To determine the BAE, a facility is required to set the baseline emissions equal to 0 tpy for the initial permitting of the emission source. The actual-to-potential test emission increases are outlined in the table below.

Actual-to-Potential test (ATP): New Sources									
Source	PM	PM_{10}	$PM_{2.5}$	VOC	SO_2	NOx	CO	Lead	CO_2e
DPK#3 (SN-27) BAE	0	0	0	0	0	0	0	0	0
DPK#3 Abort Stack (SN-28) BAE	0	0	0	0	0	0	0	0	0
DPK#3 (SN-27) PTE	5.36	5.36	5.36	142.5	3.45	30.74	82.78	0.007	28,535
DPK#3 Abort Stack (SN-28) PTE	0.42	0.37	0.37	0.02	0.03	0.28	0.76	6E-05	264
Total BAE	0	0	0	0	0	0	0	0	0
Total PAE	5.78	5.73	5.73	142.52	3.48	31.02	83.54	0.007	28,799
Total ATP New Sources Emission Increase	**5.78**	**5.73**	**5.73**	**142.52**	**3.48**	**31.02**	**83.54**	**0.007**	**28,799**

Hybrid Test

The total increases from both the actual-to-projected-actual test and the actual-to-potential test are summed together to determine the total project increases. These increases are compared against the Significant Emission Rate (SER) for each NSR pollutant.

Summary of Hybrid Test									
Source	PM	PM_{10}	$PM_{2.5}$	VOC	SO_2	NOx	CO	Lead	CO_2e
Total ATPA Debottlenecked Sources Emission Increase	16.90	2.80	1.50	0	0	0	0	0	0
Total ATP New Sources Emission Increase	5.78	5.73	5.73	142.52	3.48	31.02	83.54	0.007	28,799
Hybrid Test Total Emission Increase	22.68	8.53	7.23	142.52	3.48	31.02	83.54	0.007	28,799
PSD Significant Emission Rate (SER)	25	15	10	40	40	40	100	0.6	75,000
% of PSD SER Threshold	90.7%	56.7%	72.3%	**356%**	8.8%	77.5%	83.6%	1.1%	38.4%

As shown above, a significant emission increase will occur for VOC as a result of the project. Anthony Forest Products has elected not perform an emission netting review. Therefore, the evaluation of the significant emission increase as outlined above is sufficient.

As Anthony Forest Products Company is subject to PSD permitting for VOC, review of the Best Available Control Technology (BACT) for VOC was completed as required by PSD regulation, 40 CFR §52.21(j). The BACT summary outlines the control technology analysis completed to ensure the application of BACT for VOC.

Additionally, the PSD required impact analysis of the ambient air impacts associated with the project was completed. The purpose of the analysis is to demonstrate that the emissions from the proposed new major stationary source, in conjunction with applicable emissions increases and decreases from existing and "proposed" new off-site sources, will neither cause nor contribute to a violation of the National Ambient Air Quality Standard (NAAQS). There are separate increment standards for Class I areas (federally protected lands) and Class II areas (all other areas). A PSD impact analysis for this project is required only for ozone of which VOC is a precursor, not for VOC.

Ozone Impact Analysis

VOC and NOx are recognized as precursors to ozone, which has an established NAAQS. Since the project has a significant emissions increase of VOC, an evaluation in terms of VOC effect on attainment status of ozone is required. Pursuant to 40 CFR §52.21(m), air quality monitoring must be conducted for each pollutant potentially emitted at a significant emission rate by the proposed source or modification. Therefore, a pre-construction ambient monitoring analysis would be required for ozone emissions, and monitoring data would be required to be submitted as part of this application. As demonstrated below, the pre-construction monitoring is fulfilled

with the existing monitoring stations operated by the ADEQ, as the monitoring is representative of the conditions at the facility.

The two ozone monitoring sites that best represent the ozone concentration in the region surrounding the facility are Caddo Valley station (05-019-9991) and the Monroe Airport (22-073-0004). These monitors were identified based on the proximity to the facility and the similarity of the surrounding air shed in the region of the monitoring station to Anthony Forest Products. Note that both Little Rock (168 - 186 km) and Shreveport (140 - 170 km) metropolitan areas have multiple monitors, but these monitors' ozone concentrations are driven by their urban air shed and are not representative of the rural nature of Anthony Forest Products. The 4th high daily maximum 8-hour concentrations averaged over 3 years (2014-2016) are shown in the table below.

Background Ozone Concentration						
Station	County	Distance (km)	Emissions ($\mu g/m^3$)			
			2014	2015	2016	3-Year Average (2014-2016)
Caddo Valley	Clark County, AR	127	59	60	54	58
Monroe Airport	Ouachita Parish, LA	81	59	60	60	60

The increase in ozone formation from the proposed kiln conversion at the Anthony Forest Products facility is expected to be insignificant. The total potential emission increases associated with the projects is 142.5 tpy VOC and 31.0 tpy NOx. This represents a total emitted VOC increase of 0.2% over a 2014 baseline (72,711 tpy) and a NOx increase of 0.9% over a 2014 baseline (3,532 tpy) from Union County as obtained from EPA AirData County Emissions Map, 2011 (http://www.epa.gov/air/emissions/). Only accounting for the baseline emissions from Union County, the ratio of VOC to NOx is 20.6:1. This approach is a conservative estimation of the VOC to NOx ratio as it does not account for the less industrially developed surrounding counties and other regional impacts. The proposed project will have a negligible impact on this ratio.

Based on the Union County area's low concentration of ozone, attainment status, and continued declining background concentration (in decline from 2006 to 2014), along with the Anthony Forest Products projected VOC emissions presenting a minor increase in total VOC emissions, there is no expected effect on the attainment status of the region.

Additional Impacts Analysis

The potential impact due to the proposed project of air emissions associated with construction, and related growth, are presented in this section along with an assessment of the impact on soil, vegetation, endangered species, and visibility. A qualitative approach has been taken to these analyses for areas which do not have well established analytical techniques.

Construction and Growth Impacts

The proposed project has no effect on construction and growth impacts. During construction, Anthony Forest Products will minimize the impact on the surrounding environment primarily focusing on reduction of the formation of fugitive particles.

The construction and operation from the project at Anthony Forest Products should not result in any noticeable residential growth in the area. There is expected gradual commercial growth in the area; however, this growth is not expected to be directly due to the proposed project at the Anthony Forest Products facility.

Impact on Soil and Vegetation

The effects of air pollution on vegetation can be classified into three distinct categories: acute, chronic, and long-term. Acute effects are those resulting from a short exposure (< 1 month) to high concentrations. Chronic effects refer to those developed from exposure to a threshold level of pollutant over months or years. Long-term effects refer to abnormal changes in ecosystems and subtle physiological alterations in organisms. Both acute and chronic effects can be the result of an air borne pollutant acting directly on an organism while long-term effects can be indirectly caused by secondary effects such as changes in soil pH.

The secondary NAAQS are intended to protect the public welfare from adverse effects of airborne pollutants. This protection extends to soil and vegetation. Predicted concentrations of VOC resulting from the kiln project will not significantly impact ozone concentration and will not cause or contribute to violation of the NAAQS. Because the NAAQS were established to protect soil and vegetation, no significant impacts on the soil and vegetation are expected due to the proposed project.

In addition to BACT, Anthony Forest Products will utilize good working practices for equipment associated with the proposed kiln project. The combination of BACT, good work practices, and minimal air quality impacts will result in minimal impact on the soil and vegetation in and around the site.

Analysis of Endangered Species

An air quality impact analysis has been performed for VOC. The proposed project will result in potential impacts below the secondary NAAQS. It is possible that some endangered species may be present in Union County; however, through compliance with the NAAQS, Anthony Forest Products does not expect to have an impact on any endangered species. According to the U.S. Fish and Wildlife Service, the only currently endangered species possibly located in Union County is the Red-cockaded woodpecker.

In addition to BACT, Anthony Forest Products will utilize good working practices for equipment associated with the proposed project. The combination of BACT, good work practices, and

minimal air quality impacts will result in the proposed project having minimal impact on endangered species potentially near the site.

Impact on Visibility (Regional Haze Analysis)

One component of the PSD regulations includes the protection of air quality and air quality related values (AQRV) at potentially affected nearby Class I areas. Assessment of the potential impact to visibility is required within 300 km of a Class I area. The only Class I area within 300 km of Anthony Forest Products is the Caney Creek Wilderness Area at about 200 km.

Based on the Federal Land Managers Air Quality Related Values Work Group (FLAG) 2010 Report, Class I evaluations for visibility are not required for a facility if the Q/D ratio for the project is less than or equal to 10 (as long as the Class I area is beyond 50 km from the site). The Q in the Q/D equation is equal to 57.2 tpy and is based on the increase in all visibility affecting pollutants (NOx, SO2, PM, and H2SO4) calculated on the basis of maximum 24-hr emissions in tons/yr resulting from the project. The D in the equation is based on the distance (km) from the site to the Class I area. The Q/D for the Caney Creek Wilderness Area is 0.3 well below the screening value of 10.

Given that the amount of visibility affecting pollutants emitted from the project are minimal and the low Q/D value, it is concluded that the project will have an insignificant effect on visibility in this Class I area. Anthony Forest Products does not believe additional screening is required. The Request for Applicability of Class I Area Modeling Analysis form is attached to confirm this assumption.

BACT Analysis

During the lumber drying process, organic compounds present in the wood will be released. These are organic compounds that are in gaseous form at the elevated temperature of the wood, and are comprised largely of lower molecular weight volatiles, and higher molecular weight resin and fatty acids. The type and amounts of compounds released will depend on several factors related to the drying process, including the kiln temperature, the surface area of the wood material relative to its mass, initial moisture content, and the amount of moisture removed from the material as well as the wood species dried. A biomass gasifier/burner is the heat source for DPK #3 (SN-27), the kiln can utilize a natural gas burner as an auxiliary fuel. An abort stack (SN-28) is necessary during startup or for unplanned shutdown of the gasifier/burner. The EPA RACT/BACT/LAER Clearinghouse (RBLC) was searched for lumber drying kilns (process type 30.8) permitted after January 1, 2007. In cases where BACT was specified, it was determined to be proper maintenance & operations such as “work practice standards”, “proper maintenance and operation”, and “proper temperature and process management; drying to appropriate moisture content” with no additional/add-on control.

As the review of the RBLC did not reveal any facilities that have add on control for lumber drying kilns, a search was also completed of VOC control technologies for other processes that could possibly be applied to a lumber drying kiln. Control technologies evaluated are:

- Regenerative Thermal Oxidation
- Regenerative Catalytic Oxidation
- Carbon Adsorption
- Condensation
- Biofiltration
- Wet Scrubbing
- Proper Maintenance & Operation

Regenerative Thermal Oxidation: Regenerative Thermal Oxidizer (RTO) units use beds of ceramic pieces to recover and store heat. A VOC-laden air stream passes through a heated ceramic bed before entering a combustion chamber. In the combustion chamber, the VOC- laden gas stream is heated by auxiliary fuel (natural gas) combustion to a final oxidation temperature typically between 1,400°F to 1,500°F and maintained at this temperature to achieve maximum VOC destruction. The exhaust gases from the combustion chamber are used to heat another ceramic bed. Periodically, the flow is reversed so the bed that was being heated is now used to preheat the VOC-laden gas stream. Usually, there are three or more beds that are continually cycled. Destruction efficiency of VOC depends upon the design criteria (i.e., chamber temperature, residence time, inlet VOC concentration, compound type, and degree of mixing). Typical VOC destructive efficiency ranges from 95 to 99% for RTO systems depending on system requirements and characteristics of the contaminated stream. Lower control efficiencies are generally associated with lower concentration flows.

Due to the high moisture content and low exit temperature in the exhaust stream, RTO would be technically infeasible.

Regenerative Catalytic Oxidation: Regenerative catalytic oxidizer (RCO) units function similar to RTO, except that the heat recovery beds in RCO contain catalytic media. The catalyst accelerates the rate of VOC oxidation and allows for VOC destruction at lower temperatures than in an RTO, typically 600°F to 1,000°F, which reduces auxiliary fuel usage. Typical VOC destructive efficiency ranges from 90 to 99% for RCO systems. However, this also depends on system requirements and characteristics of the contaminated stream.

Although regenerative catalytic oxidizers can operate at a lower temperature than thermal oxidizers, the temperature of the exit stream from lumber drying kilns is still not high enough for optimal function of the catalytic oxidizer. Furthermore, loss of catalytic activity occurs due to fouling by particulate matter or suppression or poisoning from other contaminants in the waste gas stream. In order to effectively use catalytic oxidation, the contaminants must be removed from the waste gas stream. Removing these contaminants would require additional control equipment which adds greatly to the cost of the system. Catalysts must periodically be replaced due to thermal aging, adding significantly to the cost of operating the unit in addition to creating solid waste. Catalytic oxidation has never been applied to a lumber drying kiln. Regenerative catalytic oxidation is not considered feasible for the kiln.

Carbon Adsorption: The core component of a carbon adsorption system is an activated carbon bed contained in a steel vessel. The VOC-laden gases pass through the carbon bed and the VOCs

are adsorbed on the activated carbon. The cleaned gas is discharged to the atmosphere. The spent carbon is regenerated either at an onsite regeneration facility or by an off-site activated carbon supplier. Steam is used to replace adsorbed organic compounds at high temperatures to regenerate the spent carbon. At proper operating conditions, carbon adsorption systems have demonstrated VOC reduction efficiencies of approximately 90 to 95%.

Carbon adsorption is not practical because of the high moisture content of the exhaust stream from lumber drying kilns. At high moisture content, water molecules begin to compete with the hydrocarbon molecules for active adsorption sites. This reduces the capacity and the efficiency of the adsorption system. For the reason stated above and because there are currently no known lumber drying kilns that are equipped with carbon adsorption system, the use of carbon adsorption systems for the proposed kiln is not considered technically feasible.

Condensation: Condensation removes vaporous contaminants from the gas stream by cooling it and converting the vapor into a liquid. In some instances, control of VOC can be satisfactorily achieved entirely by condensation. However, most applications require additional control methods. In such cases, the use of a condensation process reduces the concentration load on downstream control equipment. The two most common type of condensation devices are contact or barometric condensers and surface condensers.

Condensation is only effective when the gas steam can be cooled to a temperature where VOC constituent condenses as a liquid out of the gas stream. To condense terpenes, the primary constituent of lumber kiln VOC emissions, the temperature would need to be reduced to -40°F. At this temperature, freezing of the water vapor would generate ice, causing unacceptable plugging of the unit. Condensation is not technically feasible for the proposed kiln.

Biofiltration: Biofiltration is an air pollution control technology in which off-gases containing biodegradable organic compounds are vented, under controlled temperature and humidity, through a special filter material containing microorganisms. As exhaust gases pass through the biofilter, VOC is absorbed on the filter material, and the microorganisms break down the compounds and transform them into CO_2 and H_2O with varying efficiency.

The most important variable affecting bioreactor operations is temperature. Most microorganisms can survive and flourish in a temperature range of 60 to 105°F (30 to 41°C). The exiting exhaust temperature of the proposed lumber kiln is approximately 140 - 200°F. Furthermore, the VOC emissions from the kilns are primarily terpenes. Terpenes are highly viscous and would foul the biofilter. Biofiltration is not technically feasible for the proposed lumber drying kiln.

Wet Scrubbing: Scrubbing of gas or vapor pollutants from a gas stream is usually accomplished in a packed column (or other type of column) where pollutants are absorbed by counter-current flow of a scrubbing liquid. A VOC-laden gas stream with relatively high water solubility is required in order for the wet scrubber to be effective.

The VOC emissions from the kiln are primarily terpenes. Terpenes are not highly soluble. Moreover, they are highly viscous and would foul the absorption media of a wet scrubber. Wet scrubbing is not technically feasible for the proposed lumber drying kiln.

Proper Maintenance and Operation: Proper maintenance and operation of lumber drying kilns can effectively reduce VOC emissions. Proper drying schedule and temperature should be selected based on moisture content and manufacturer's specifications. Routine maintenance should also be completed on all kilns based on manufacturer's recommendations.

Proper maintenance and operation is the only control technology considered technically feasible. The RBLC search shows other emission factors utilized in permitting emission limits of VOC; there is no information to determine that these factors can be routinely "achieved in practice". The species of wood dried within a kiln has a distinct impact on the resulting VOC emissions. The emission factor proposed for the VOC emission limits of 3.8 lb/MBf matches the uncontrolled emission factor in the Arkansas Department of Environmental Quality (ADEQ) VOC Emissions from Lumber Drying Kilns Guidance memorandum dated October 31, 2014.

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
Facility	-	40 CFR Part 63, Subpart DDDD
26	-	40 CFR Part 60, Subpart IIII
26	-	40 CFR Part 63, Subpart ZZZZ
27 and 28	VOC	PSD

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. AMBIENT AIR EVALUATIONS:

a) Reserved.

b) Non-Criteria Pollutants:

The non-criteria pollutants listed below were evaluated. Based on Department procedures for review of non-criteria pollutants, emissions of all other non-criteria pollutants are below thresholds of concern.

1st Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The Department has deemed the PAER to be the product, in lb/hr, of 0.11 and the Threshold Limit Value (mg/m^3), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Lead	0.05	5.50E-03	5.41E-03	Yes
Acrolein	0.229	0.025	0.35	No
Formaldehyde	0.368	0.04	1.26	No
Methanol	262.1	28.83	4.59	Yes
Pentachlorophenol	0.5	0.055	5.75E-06	Yes
Antimony	0.5	0.055	8.91E-04	Yes
Arsenic	0.01	1.10E-03	2.48E-03	No
Beryllium	5.00E-05	5.50E-06	1.24E-04	No
Cadmium	0.01	1.10E-03	4.62E-04	Yes
Chromium	0.5	0.055	2.37E-03	Yes
Chromium VI	0.01	1.10E-03	3.03E-04	Yes
Cobalt	0.02	2.20E-03	7.33E-04	Yes
Manganese	0.1	0.011	0.18	No
Mercury	0.01	1.10E-03	3.95E-04	Yes
Phosphorus	0.1	1.10E-03	3.05E-03	Yes
Selenium	0.2	2.20E-03	3.16E-04	Yes

2nd Tier Screening (PAIL)

AERMOD air dispersion modeling was performed on the estimated hourly emissions from the following sources, in order to predict ambient concentrations beyond the property boundary. The Presumptively Acceptable Impact Level (PAIL) for each compound has been deemed by the Department to be one one-hundredth of the Threshold Limit Value as listed by the ACGIH.

Pollutant	PAIL ($\mu g/m^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu g/m^3$)	Pass?
Acrolein	2.292	1.007	Yes
Formaldehyde	15	5.363	Yes
Arsenic	0.1	0.0092	Yes
Beryllium	5.00E-04	4.58E-04	Yes
Manganese	1.0	0.666	Yes

12. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
06 Debarking	AP-42, 10.1 TCEQ Wood Industry Emission Factors – Log Debarking Controls (Appendix A7)	PM = 0.024 lb/ton PM_{10} = 11% of PM $PM_{2.5}$ = 50% of PM_{10}	Partial building enclosure	95%	920,000 ton/yr 225 ton/hr
06 Sawing	AP-42 10.1 TCEQ Wood Industry Emission Factors – Sawing Controls (Appendix A7)	PM = 0.35 lb/ton PM_{10} = 11% of PM $PM_{2.5}$ = 50% of PM_{10}	Building Enclosure	90%	874,000 ton/yr 225 ton/hr
20	AP-42, 13.2	17 paved sections 2 unpaved sections	Wet Suppression	50%	Logs = 920,000 ton/yr By-product (shavings) = 50,600 ton/yr By-product (other) = 266,800 ton/yr Finished Lumber = 254,656 ton/yr
21	Vendor	0.01 grain/scf 42,800 cfm 7000 grain/lb PM_{10} = 40% of PM $PM_{2.5}$ = 50% of PM_{10}	Cyclone and Baghouse	Cyclone 94% & Baghouse 99.9%	3600 hr/yr
23, 14, 27 Biomass	ADEQ Memo (10/31/2014)	VOC = 3.8 lb/MBF	-	-	<u>SN-23</u> 25 MMBtu/hr 8.2 MBF/hr 71,610 MBF/yr 219,000 MMBtu/hr 2.9 tons sawdust/hr
	NCDENR Wood Kiln Emission Calculator	$PM/PM_{10}/PM_{2.5}$ = 0.143 lb/MBF Acetaldehyde = 0.052 lb/MBF Acrolein = 0.0075 lb/MBF Methanol = 0.161 lb/MBF			

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
		Phenol = 0.01 lb/MBF			SN-14 30 MMBtu/hr 11.5 MBF/hr 93,500MBF/yr 262,800 MMBtu/hr 3.4 tons sawdust/hr SN-27 31.5 MMBtu/hr 8.7 MBF/hr 75,000 MBF/yr 275,940 MMBtu/hr 3.6 tons sawdust/hr
	NCASI Special Report 08-01, May 2008	Formaldehyde = 0.04 lb/MBF			
	AP-42, 1.6	SO_2 = 0.025 lb/MMBtu CO = 0.6 lb/MMBtu Various HAPs			
	GHG Mandatory Reporting Rule	CO_2 = 206.7352 lb/MMBtu CH_4 = 0.0158688 lb/MMBtu N_2O = 0.007934 lb/MMBtu			
27 Natural Gas	AP-42, 1.4	NOx = 0.27 lb/MMBtu Various HAPs	-	-	31.6 MMBtu/hr Max 5% of total operation = 438 hours/yr
24, 25, 28 Diesel Fuel	AP-42, 1.3	SO_2 = 7.1 lb/1000 gal NO_X = 20 lb/1000 gal CO = 5 lb/1000 gal PM = 2 lb/1000 gal VOC = 1.1 lb/1000 gal	-	-	Max diesel usage 15 gal/hr 360 gal/yr
24, 25, 28 Sawdust	AP-42, 1.6	PM = 0.33 lb/MMBtu PM_{10} = 0.29 lb/MMBtu $PM_{2.5}$ = 0.29 lb/MMBtu SO_2 = 0.025 lb/MMBtu NO_X = 0.22 lb/MMBtu CO = 0.6 lb/MMBtu VOC = 0.017 lb/MMBtu Various HAPs	-	-	8.8 MMBtu/hr 4382 Btu/lb 2000 lb/hour Max duration of startup = 24 hours Max 12 startups per kiln in a year Max hours of operation = 288 hour/yr per kiln
	GHG Mandatory Reporting Rule	CO_2 = 206.7352 lb/MMBtu CH_4 = 0.0158688 lb/MMBtu N_2O = 0.007934 lb/MMBtu			
26	NSPS IIII Tier 3 Limit	PM/PM_{10} = 0.15 g/bhp-hr NOx = 3.0 g/bhp-hr CO = 2.6 g/bhp-hr	-	-	175 bhp 1.47 MMBtu/hr 500 hr/yr
	AP-42, 3.3-2	VOC = 0.36 lb/MMBtu SO_2 = 0.29 lb/MMBtu Various HAPs			

13. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
23 (DPK#1) 14 (DPK#2)	PM_{10}	5	Test only one kiln every five years (alternating schedule)	Dept. Guidance (Test for Emission Verification)

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
	CO	10	Test only one kiln every five years (alternating schedule)	
27 (DPK#3)	PM_{10}	201/201A	One time	Dept. Guidance (Test for Emission Verification)
	CO	10		

14. MONITORING OR CEMS:

The permittee must monitor the following parameters with CEMS or other monitoring equipment (temperature, pressure differential, etc.)

SN	Parameter or Pollutant to be Monitored	Method (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
None				

15. RECORDKEEPING REQUIREMENTS:

The following are items (such as throughput, fuel usage, VOC content, etc.) that must be tracked and recorded.

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
06	Logs debarked	920,000 tons per consecutive 12 months	Monthly	Y
	Logs sawed	874,000 tons per consecutive 12 months	Monthly	Y
20	Wet Suppression Application	As needed to control visible emissions from traffic	As needed but no less than once a month	N
	Products Transported	<u>in tons of product per consecutive 12 months</u> Logs: 920,000 By-Products (Shavings): 50,600 By-Products (Others): 266,800 Finished Lumber: 254,656	Monthly	Y
21	Planer Mill Hours of Operation	3,600 hours per consecutive 12 months	Monthly	Y
23	Lumber Throughput	71.61 MMBF per consecutive 12 months	Monthly	Y

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
14	Lumber Throughput	93.5 MMBF per consecutive 12 months	Monthly	Y
27	Lumber Throughput	75.0 MMBF per consecutive 12 months	Monthly	Y
	Hours of operation when burning natural gas	438 hours per consecutive 12 months	Monthly	Y
24	Diesel fuel usage limit as starter fluid	360 gallons per consecutive 12 months	Daily when in startup	N
	Abort stack operating hours	288 hours per consecutive 12 months	Monthly	Y
	Sawdust throughput limit for gasifier/burner	2000 lb of sawdust per hour	Daily when in startup	N
25	Diesel fuel usage limit as starter fluid	360 gallons per consecutive 12 months	Daily when in startup	N
	Abort stack operating hours	288 hours per consecutive 12 months	Monthly	Y
	Sawdust throughput limit for gasifier/burner	2000 lb of sawdust per hour	Daily when in startup	N
28	Diesel fuel usage limit as starter fluid	360 gallons per consecutive 12 months	Daily when in startup	N
	Abort stack operating hours	288 hours per consecutive 12 months	Monthly	Y
	Sawdust throughput limit for gasifier/burner	2000 lb of sawdust per hour	Daily when in startup	N
26	Hours of Operation	500 hours per calendar year	Monthly	Y

16. OPACITY:

SN	Opacity %	Justification for limit	Compliance Mechanism
06	20	Regulation 19	Weekly observation
20	5	Regulation 18	Weekly observation
21	5	Regulation 18	Monthly observation

SN	Opacity %	Justification for limit	Compliance Mechanism
23, 14, 27	20	Regulation 19	Weekly observation
24, 25, 28	20	Regulation 19	Observation during Startup
26	20	Regulation 19	Daily Observation when use exceeds 24-hours per event

17. DELETED CONDITIONS:

Former SC	Justification for removal
None	

18. GROUP A INSIGNIFICANT ACTIVITIES:

Source Name	Group A Category	Emissions (tpy)							
		PM	PM_{10}	SO_2	VOC	CO	NO_X	HAPs	
								Single	Total
Bark storage pile	A-13	0.95	0.47						
Sawdust storage pile	A-13	1.08	0.54						
Boiler ash (Biochar) storage Pile	A-13	1.44	0.72						
Chip Overflow Pile	A-13	0.83	0.41						
Planer Mill Woodwaste storage bin	A-13	0.083	0.007						
Fuel Storage Silo	A-13	0.143	0.012						
Chip Storage Bin	A-13	0.132	0.013						
1,000 Gasoline tank	A-13				0.67				
Parts Washer	A-13				0.01				
Planer Mill Trim Cyclone	A-13	0.27	0.27						
A-13 Total		4.928	2.442		0.68				
240 gallon diesel tank	A-2				0.01				
500 gallon diesel tank	A-3				0.01				
1000 gallon diesel tank	A-3				0.01				

Source Name	Group A Category	Emissions (tpy)							
		PM	PM_{10}	SO_2	VOC	CO	NO_X	HAPs	
								Single	Total
1000 gallon diesel tank	A-3				0.01				

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

List all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
1681-AOP-R13

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Facility Name: Anthony Forest Products Company
Permit Number: 1681-AOP-15
AFIN: 70-00473

$/ton factor	23.93	Annual Chargeable Emissions (tpy)	615.5
Permit Type	Modification	Permit Fee $	2560.51

Minor Modification Fee $	500
Minimum Modification Fee $	1000
Renewal with Minor Modification $	500
Check if Facility Holds an Active Minor Source or Minor Source General Permit	☐
If Hold Active Permit, Amt of Last Annual Air Permit Invoice $	0
Total Permit Fee Chargeable Emissions (tpy)	107
Initial Title V Permit Fee Chargeable Emissions (tpy)	

HAPs not included in VOC or PM: *Chlorine, Hydrazine, HCl, HF, Methyl Chloroform, Methylene Chloride, Phosphine, Tetrachloroethylene, Titanium Tetrachloride*

Air Contaminants: *All air contaminants are chargeable unless they are included in other totals (e.g., H2SO4 in condensible PM, H2S in TRS, etc.)*

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
PM		122.6	63.5	-59.1	-59.1	63.5
PM_{10}		29.6	28	-1.6		
$PM_{2.5}$		0	0	0		
SO_2		6.5	10.1	3.6	3.6	10.1
VOC		316.7	456.8	140.1	140.1	456.8
CO		146.5	230.1	83.6		
NO_X		62.7	85.1	22.4	22.4	85.1
Lead	☐	0.0116912	1.84E-02	0.0067088		

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
Acrolein	☐	0.6101	9.16E-01	0.3059		
Antimony	☐	0.00192494	3.02E-03	0.00109506		
Arsenic	☐	0.0053556	8.42E-03	0.0030644		
Beryllium	☐	0.00026778	4.21E-04	0.00015322		
Cadmium	☐	0.00099834	1.57E-03	0.00057166		
Chromium	☐	0.005113	8.04E-03	0.002927		
Chromium VI	☐	0.00085184	1.33E-03	0.00047816		
Cobalt	☐	0.0015824	2.49E-03	0.0009076		
Manganese	☐	0.39404	6.12E-01	0.21796		
Mercury	☐	0.00085184	1.34E-03	0.00048816		
Methanol	☐	13.29	19.34	6.05		
Nickel	☐	0.0080332	0	-0.0080332		
Pentachlorophenol	☐	1.24088E-05	1.95E-05	7.0912E-06		
Phosphorus	☐	0.0065782	1.03E-02	0.0037218		
Selenium	☐	0.00068206	1.07E-03	0.00038794		
1,1,1-Trichloroethane	☐	0.0075382	0	-0.0075382		
Chlorine	☐	0.188494	0	-0.188494		
Dichloromethane	☐	0.070632	0	-0.070632		
HCl	☐	4.628	0	-4.628		
Acetone	☐	0.04628	0	-0.04628		
Acetaldehyde	☐	0.01	0	-0.01		
Formaldehyde	☐	0.01	4.83	4.82		
Total Other HAPs	☐	0	18.03	18.03		
	☐	0	0	0		
	☐	0	0	0		
	☐	0	0	0		
	☐	0	0	0		
	☐	0	0	0		