

ENGINEERING ANALYSIS
Abbie CWP, LLC
Facility No. 606-S009

Introduction

On May 26, 2021, ACES Consulting Group submitted, on behalf of Abbie CWP, LLC, an application to construct a new sawmill at a Greenfield site in Abbeville, Henry County, Alabama. Application addenda were received on June 21, 2021. Once the construction is completed, the facility would have the capability of producing approximately 52 MMBF of kiln-dried, rough-cut lumber and timber per year. Air Permit No. X001 would be issued for the proposed sawmill pending the resolution of any comments that may be received during the public comment period.

Proposed Project

The proposed sawmill would be constructed in Henry County approximately two miles west of Abbeville. Processes at the facility would consist of a debarker, a bark hog and storage bin, a chipper and storage bin, a sawmill and storage bin, a 200 MMBF batch kiln direct-fired by a 16 MMBtu/hr natural gas-fired burner, and a trimmer with a hog and storage bin.

Abbie CWP (ACWP) would produce dog-eared fence board, 1” and 2” rough boards and 4” rough timbers. Logs would be brought on site by truck, debarked and then processed in the sawmill. Bark would be sent to a bark hog, mechanically conveyed to a bark bin, and then shipped off-site. Trim from the sawmill would go through a chipper/screen, mechanically conveyed to the chip bin, and then shipped off-site. Sawdust would be collected in a sawdust bin and shipped off-site. The rough, green boards would then be dried in the batch lumber dry kiln. The kiln would have a minimum drying time of 36 hours.

After drying, the rough boards would be trimmed, and dog eared. The trim would be hogged and mechanically conveyed for shipping offsite. There would be no lumber finishing or planing at the facility. The debarker, sawmill line, and board trimming process would be contained within an enclosed building.

Insignificant sources at the mill would include a 500 gallon and 1,000-gallon diesel storage tank and various wood products industry activities as designated by Trivial Section 1.E.(2) and 1.S (<http://adem.alabama.gov/programs/air/airforms/titlevlists.pdf>).

Applicability: Federal Regulations

Title V

Upon completion of construction, this facility would be considered a major source under Title V regulations because the potential emissions of volatile organic compounds (126.14 TPY of VOC) would exceed the 100 ton per year (TPY) major source threshold. It would be considered a minor source of hazardous air pollutants (HAPs) because the potential emissions of individual HAPs would be less than 10 TPY and the potential emissions for combined HAP would be less than 25 TPY. The facility would be required to submit an application for a Title V Major Source Operating Permit within one year of commencement of operation.

National Emission Standards for Hazardous Air Pollutants (NESHAP)

The National Emission Standards for Hazardous Air Pollutants (NESHAP) requires that any facility regulated under section 112 of the Clean Air Act whose potential emission of hazardous air pollutants (HAPs) exceeds the major source threshold, unless the source is a specifically designated area source, must control these emissions to the level achievable by the maximum achievable technology as specified in the applicable provisions under 40 CFR Part 63. The Plywood and Composite Wood Products NESHAP (PCWP MACT) regulates HAP emissions from plywood and composite wood products (PCWP) manufacturing facilities that are major HAP sources. Lumber drying kilns are “affected sources” under this MACT. As Abbie CWP would be minor source of HAP, it would not be subject to the requirements of the PCWP MACT.

New Source Pollutant Standards (NSPS)

None of the processes at the proposed facility would be affected sources under NSPS.

Prevention of Significant Deterioration (PSD)

The proposed facility would be located in Henry County which is currently classified as an attainment area for all criteria pollutants. ACWP would not be one of the 28 Major Source categories listed in ADEM Admin. Code r. 335-3-14-.04(2)(a)(1); therefore, the major source threshold of concern is 250 TPY for criteria pollutants. Based upon the potential emissions of all criteria air pollutants, the proposed project would not trigger PSD applicability.

Applicability: State Regulations

Particulate Matter

Fuel Burning Equipment

The proposed lumber kiln would not be subject to ADEM Admin. Code r. 335-3-4-.03(1), because the kiln would be direct fired, and therefore, not considered “fuel burning equipment”.

Process Industries – General

All of the proposed units and processes would be subject to the State particulate matter emission standards for process industries as provided in ADEM Admin. Code r. 334-3-4-.04(1). Although the dry kiln would be subject to the PM standard, the expected emissions would be much less than those allowed by the regulation as the kiln would be fired with natural gas. The PM emissions from the green end, sawmill and trim line would be considered fugitive and contained within enclosures.

Visible Emissions

All proposed units and processes would be subject to the State visible emission standards of ADEM Admin. Code r. 335-3-4-.01(1), which states that no air emission source may emit particulate of an opacity greater than 20% (as measured by a six-minute average) more than once during any 60-minute period and at no time shall emit particulate of an opacity greater than 40% (as measured by a six-minute average).

Sulfur Dioxide

The proposed lumber kiln would not be subject to the State sulfur dioxide emission standard of 4.0 lb/MMBtu of heat input [ADEM Admin. Code r. 335-3-5-.01(1)(b)] as the unit would be direct fired. Potential SO₂ emissions using AP-42 emission factors for natural gas combustion were used for applicability purposes under the Title V and PSD regulations.

Emission Testing and Monitoring

I recommend that no emission testing be required for the proposed kiln at this time because it is expected that the unit would be able to comply with the applicable standards, testing on kilns is not easily conducted, and there are no emission control devices. Emission testing for the proposed sawmill and trim line would not be feasible as the emissions from the processes would be fugitive. If emission problems are observed in the future from the kiln, testing may be required at that time.

To ensure that the maximum capacity of the proposed kiln is not exceeded, ACWP would be required to calculate the kiln production on a monthly and 12-month rolling total basis, to be updated within ten (10) days of the end of each calendar month.

Recordkeeping and Reporting

Recordkeeping

Within 180 days of issuance of Temporary Authorization to Operate the kiln, ACWP would be required to develop, implement, and submit to the Air Division a preventive maintenance plan for the kiln. ACWP would be required to maintain records of its actions taken to comply with proper maintenance and operating practices. The facility would also be required to maintain records of average monthly and 12-month rolling lumber production. These records would be maintained on-site in a permanent form readily available for inspection for a period of five years from the date of generation.

Reporting

ACWP would be required to submit Semiannual Monitoring Reports for the proposed kiln, which would include a certification that all maintenance and operating practices were accomplished as required during the reporting period, and if not, describe the date and reason any required action was not accomplished. The report would also include each of the calculated 12-month rolling totals (BF) of lumber dried during the reporting period.

Public Participation

As this facility would be located at a Greenfield site, a 15-day public comment period would be required as outlined in ADEM 335-3-14-.01(7). To satisfy the public participation requirement, a copy of the engineering analysis and draft permits will be made available on the Department's website for at least 15 days of public review. After the 15-day public comment period, the final permits and any response to comments will be made available on the Department's eFile system.

Conclusions and Recommendations

This analysis indicates that this facility would meet the requirements of all applicable federal and State rules and regulations. Therefore, I recommend that ACWP be issued the following Air Permit for the proposed sawmill facility, pending any comments received during the 15-day public comment period:

X001 - 200 MBF Direct-fired Lumber Dry Kiln (KILN), w/16 MMBtu/hr Natural Gas-Fired Burner



Lester Meredith
Chemical Branch
Air Division

June 28, 2021

Date

Kiln Emissions

Parameter	Details				Comments
Burner Rating	16	MMBtu/hr	140,160	MMBtu/yr	Natural gas burner design and full year operation
Dried Lumber Production	6	MBF/hr	52,000	MBF/yr	Kiln design and maximum annual production
Natural Gas Heating Value	1,020	Btu/scf			Conversion of natural gas

Pollutant	Emission Factors		Potential Emissions		Emission Factor or Calculation Reference
	Lumber Drying lb/MBF	Natural Gas Combustion lb/MMscf	lb/hr	tpy	
PM (f)	0.022	1.9	0.16	0.71	NCDENR Lumber Kiln Emission Factor for Steam Heated Kiln (PM) and AP-42 Table 1.4-2 for NG Emissions (PM filterable)
PM ₁₀	0.022	7.6	0.25	1.10	NCDENR Lumber Kiln Emission Factor for Steam Heated Kiln (assumed PM ₁₀ = PM) and AP-42 Table 1.4-2 for NG Emissions
PM _{2.5}	0.022	7.6	0.25	1.10	NCDENR Lumber Kiln Emission Factor for Steam Heated Kiln (assumed PM _{2.5} = PM) and AP-42 Table 1.4-2 for NG Emissions
VOC as C	3.80		22.80	99.86	ADEQ Memo for Emission Factor, VOC as C
VOC (WPP1)	4.80		28.80	126.14	WPP1 = (VOC as C * 1.225 + (1-0.65) * Methanol + Formaldehyde)
SO ₂		0.6	0.01	0.04	AP-42 Table 1.4-2
CO		84	1.32	5.77	AP-42 Table 1.4-1

Kiln Emissions

Pollutant	Emission Factors		Potential Emissions		Emission Factor or Calculation Reference
	Lumber Drying lb/MBF	Natural Gas Combustion lb/MMscf	lb/hr	tpy	
NO _x		50.0	0.78	3.44	AP-42 Table 1.4-1
Lead		5.00E-04	7.8E-06	3.4E-05	AP-42 Table 1.4-2
CO ₂		150,281	2,357	10,325	EPA EF for GHG MRR, Tables C-1 and A-1, GWP = 1
CH ₄		2.25	0.04	0.15	EPA EF for GHG MRR, Tables C-2 and A-1, GWP = 25
N ₂ O		0.22	0.00	0.02	EPA EF for GHG MRR, Tables C-2 and A-1, GWP = 298
GHG		150,284	2,357	10,325	Sum of individual GHGs
Total CO _{2e}		150,405	2,359	10,334	EPA EF for GHG MRR, Tables C-1, C-2, and A-1
Acetaldehyde	0.04		0.24	1.05	EPA EF from PCWP Memo
Acrolein	0.004		0.02	0.11	
Formaldehyde	0.07		0.39	1.71	
Methanol	0.18		1.08	4.73	
Phenol	0.01		0.06	0.26	
Propionaldehyde	0.004		0.02	0.11	
Total HAP			1.82	7.96	Total HAP