

NORTH CAROLINA DIVISION OF AIR QUALITY <p style="text-align: center;">Air Permit Review</p>		Region: Mooresville Regional Office County: Stanly NC Facility ID: 8400020 Inspector's Name: Bill Bass Date of Last Inspection: 03/27/2006 Compliance Code: C/In Compliance With Procedural Reqr	
Permit Issue Date: January XX, 2007		Permit Applicability (this application only) SIP: NSPS: NESHAP: PSD: PSD Avoidance: NC Toxics: 112(r): Other: First Time Title V permit	
Facility Data Applicant (Facility's Name): H W Culp Lumber Co, Inc Facility Address: H W Culp Lumber Co, Inc 44091 Old US 52 Highway New London, NC 28127 SIC: 2421 / Sawmills & Planing Mills General NAICS: 321113 / Sawmills Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V			
Contact Data		Application Data	
Facility Contact	Authorized Contact	Technical Contact	Application Number: 8400020.04A Date Received: 02/03/2004 Application Type: Modification Application Schedule: TV-1st Time Existing Permit Data Existing Permit Number: 04897/R14 Existing Permit Issue Date: 06/10/2005 Existing Permit Expiration Date: 12/31/2006
Mike Sasser Safety Coordinator (704) 463-7311 P O Box 235 New London NC, 28127	Henry Culp, III Vice President (704) 463-7311 P O Box 235 New London NC, 28127	Mike Sasser Safety Coordinator (704) 463-7311 P O Box 235 New London NC, 28127	
Review Engineer: Betty Gatano Review Engineer's Signature: Date:		Comments / Recommendations: Issue 04897/T16 (Note: 0489R15 should be issued shortly) Permit Issue Date: January XX, 2007 Permit Expiration Date: 2012	

I. Introduction

The U.S. Environmental Protection Agency (EPA) has given interim approval to North Carolina's Title V operating permits program effective on December 15, 1995. This EPA approval triggered the requirements for Title V facilities to submit permit applications to the Division of Air Quality (DAQ). Title V facilities are required to obtain an operating permit that addresses all applicable regulations under the State Implementation Plan, Federal Implementation Plan, and other provisions of the Clean Air Act (CAA). The Title V Operating Permit will define all of the facility's obligations under the CAA.

This first-time Title V air permit application review intends to convey all pertinent emissions data, rules, policies, and engineering assumptions used to construct the proposed watermark Title V operating permit. The primary source of information used to construct the proposed watermark permit is the above referenced air permit application.

II. Background Information

H.W. Culp Lumber Company (H.W. Culp) operates a commercial sawmill (SIC Code 2421) in New London, Stanly County, North Carolina. The facility is currently operating under Air Permit No. 04897R14, issued on June 10, 2005. The facility previously operated as a synthetic minor facility. A limit on the amount of

lumber produced at the facility was removed with the issuance of Air Permit No. 04897R12 on January 3, 2003, making H.W. Culp a Title V facility due to emissions of volatile organic compounds (VOCs). The facility was required to submit a Title V application within in 12 months of beginning operation at Title V levels. H.W. Culp submitted application 8400020.04A, received by DAQ on February 3, 2004, for a first-time Title V permit.

III. Facility Description

H.W. Culp is a commercial sawmill operation. This facility is engaged in the debarking, sawing, planing, drying, and sizing of Southern Pine lumber, which is sold to wood treaters and the construction industry. The facility is Title V major for VOCs mainly from the lumber kilns. More specific detail on the operations and emissions are provided below in Section VI.

IV. Statement of Compliance

The DAQ has reviewed the compliance status of this facility. The facility certified that it was in compliance with all applicable regulations in its application for a first-time Title V permit received by the DAQ on February 3, 2004. Over the last five years the facility has received two Notices of Violation for a submitting late report in 2002 and a late emission inventory in 2004. Both noncompliant situations have been resolved. Mr. William Bass of the Mooresville Regional Office (MRO) conducted the most recent inspection of the facility on March 27, 2006. The facility was in compliance with all applicable requirements at that time.

V. Summary of Emission Sources and Control Devices

Table 1 contains a summary of all permitted emission sources and associated air pollution control devices and appurtenances.

Table 1. Emission Sources and Control Devices

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description
ES-10	One log debarking operation	N/A	N/A
ES-11	One log sawing sawdust transfer operation	N/A	N/A
K1 ES-9	Two unadulterated wood-fired process heaters for drying lumber (27 and 60 million BTUs per hour maximum heat input, respectively)	N/A	N/A
ES1	One wood planing operation	C1 4B	One cyclone (168 inches in diameter) in series with one bagfilter (5,992 square feet of filter area)
ES2	One wood dust collection system	C2	One cyclone (51 inches in diameter)
ES4	One hammermill operation	C4	One cyclone (102 inches in diameter)

VI. Emission Source-by-Source Evaluation

Potential emissions have been determined for each emission source included in the Title V permit application. Although the potential emissions presented in this review may differ slightly from those contained in the Title V permit application, the potential emissions herein are accurate based on the DAQ's current guidelines. The potential emissions (including multiple source emissions and insignificant activities)

for the entire facility are given below in Table 2 and are based on a lumber production limit of 110,000,000 board-feet/year (bd-ft/yr).

Table 2. Facility Wide Potential Emissions

Pollutant	Maximum Potential (ton/yr)
PM-10	66.4
VOC	211.5
CO*	25.0
NO _x *	72.2
SO ₂ *	3.7
Largest Emitted HAP (Methanol)	8.9
Total HAPs	24.99

*Emissions of NO_x, SO₂, and CO result solely from combustion of wood in the kiln.

A. Woodworking operations associated with the sawmill including:

- **One log debarking operation (D No. ES-10)**
- **One log sawing sawdust transfer operation (ID No. ES-11)**

Description

In the sawmill operations, logs are debarked outside the sawmill building. The removed bark is transported via an open drag chain conveyor to an enclosed shredder. The shredded bark is then transferred to a storage bin and eventually dumped into open-top tractor-trailers. Inside the building, the sawmill operation includes various conveyers, band saws, gang saws, trim saws, sorting tables, and a stacker, all of which transform the debarked logs into rough lumber. The residual chips and sawdust are dropped from the saws through guides to vibrating trays, where the chips and sawdust are then transported via an enclosed drag chain conveyor into one of three storage bins. The doors on the bins are slowly opened to drop the chips and sawdust into open-top tractor-trailers.

Emissions

Only particulate matter (PM) is emitted from the sawmill, debarking, and sawdust / bark handling and transfer operations. The sawmill itself is enclosed, and particulate emissions are assumed to be completely contained within the building. Therefore PM emissions from the sawmill (ID No. IES-10) are less than 5 tons per year, and this source is included on the permit as an insignificant source per 15A NCAC 2Q .0503(8).

The facility has taken a lumber production limit of 110,000,000 bd-ft per year to avoid applicability of Prevention of Significant Deterioration (PSD) requirements (discussed in more detail below). All PM emissions were calculated from “AIRS” emission factors for debarking and sawdust handling,¹ which are given in lbs/ton. To convert to the production rate from board-feet to pounds for use with the emission factors, the facility used a wood weight of 4.75 lb log/bd-feet. This value is higher than the DAQ’s typical range of values (2.2 to 4.0 lb/bd-feet), but it was allowed in the calculation because the PM emissions results were more conservative. The PM emissions from the bark and sawdust handling and transfer operations were based on the amount produced in 2003 and scaled up to production limit for PSD avoidance. The potential PM and PM₁₀ emissions are listed in Table 3.

¹ The emission factors for debarking and sawdust handling were available in the 4th Edition of the AP-42. These factors appear to have been withdrawn in January 2002, and they do not appear in the most recent version of the AP-42.

Table 3. Potential PM and PM₁₀ Emissions from the Log Debarking Operation (ID No. ES-10) and the Log Sawing Sawdust Transfer Operation (ES-11)

Emission Source	Emission Factor	Potential PM Emissions (tpy)	Potential PM₁₀ Emissions (tpy)
Log Debarker (ID No. ES-10)	0.02 lb PM/ton log 0.011 lb PM ₁₀ /ton log	2.6	1.4
Bark Transfer/Handling (included in ES-10)*	1 lb PM/ton bark 0.36 PM ₁₀ /ton bark	11.9	4.3
Total Particulate from ES-10	--	14.5	5.7
Log sawing sawdust transfer operation (ID No. ES-11)*	1 lb PM/ton sawdust 0.36 PM ₁₀ /ton sawdust	11.4	4.1

* 18,000 tons of bark and 17,150 tons of sawdust were generated at a lumber production rate of 83,088,397 bd-ft/yr in 2003. To calculate potential emissions, the generated amounts were scaled up to 110,000,000 bd-ft/yr.

Applicable Regulatory Requirement

Table 4 provides a summary of limits and/or standards for the emission sources described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Table 4. Limits and Standards for ES-10 and ES-11

Regulated Pollutant	Limits/Standards	Applicable Regulation
Visible emissions	40 percent opacity	15A NCAC 2D .0521
Odors	State-enforceable only <i>See Section VII on Multiple Emission Limits</i>	15A NCAC 2D .1806

15A NCAC 2D .0521: Control of Visible Emissions

i. Regulation Analysis

The sources (ID Nos. ES-10 and ES-11) were established prior to July 1, 1971 and therefore are subject to 2D .0521(c). Per this regulation, visible emissions shall not be more than 40 percent opacity when averaged over a six-minute period except that six-minute period averaging not more than 90 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period. Compliance with this regulation is expected because the facility has no history of visible emission non-compliance from these emission sources.

ii. Monitoring and Recordkeeping Requirements

The Permittee will observe the emission points of the woodworking operations emission sources every week for emissions above the normal operating conditions. The results of the observations will be maintained in a logbook.

iii. Reporting Requirements

A summary report of the monitoring will be submitted by January 30th and July 30th of each year. All instances of deviations must be clearly identified in the summary report. The results of any maintenance to the control devices shall be reported within 30 days of a written request by DAQ

B. Two unadulterated wood-fired process heaters for drying lumber (ID Nos. K1 and ES-9)

Description

These two direct-fired dry lumber kilns (ID Nos. K1 and ES-9) utilize wood shavings/dust from the planing and trimming operations as their fuel source. The wood shavings/dust are ground via the hammermill and stored in two storage silos. From these silos, the ground wood is transported via an enclosed auger to two metering bins (metered fuel pipes), which feed the two kilns (ID Nos. K1 and ES-9). Propane is utilized to light the burners in the kilns, and each kiln has an associated propane tank (ID Nos. IES-2 and IES-3) with a capacity of 330 gallons.

Emissions

Emissions from the process heaters for drying lumber (aka lumber kilns²) come from two sources – the drying lumber and the combustion of unadulterated fuel (propane and wood wastes). Emissions from both the sources will be evaluated in this review, with the exception of toxic air pollutants (TAPs) resulting from combustion. The methodology for calculating potential emissions is discussed below, and the potential emissions are presented in Table 5.

It is difficult to accurately measure the VOC emissions from the lumber kilns due to the variation of VOC content in the logs due to tree age, harvest location, and harvest season. To estimate potential emissions, H.W. Culp used an emission factor of 3.8 pounds of VOC/1000 bd-ft (MBF) as conservative emission factor.³ The maximum lumber production rate for both kilns is 243×10^6 bd-ft/yr, and at this capacity with an emission factor of 3.8 lbs VOC/ MBF, the potential VOC emissions from the kilns are 462 tons per year. H.W. Culp has requested a production limit of 110,000,000 bd-ft/yr for PSD avoidance for VOCs, and this production limit is used to calculate potential emissions.

The applicant assumed PM emissions resulted solely from the combustion of the wood shavings/dust in the direct-fired dry lumber kilns. The facility has no production limit on the rate of fuel to the kilns. Thus, the potential PM and PM10 emissions were calculated using the maximum heat input of the kilns (27 and 60 million BTUs per hour) and emission factors from DAQ's spreadsheet.⁴

Potential emissions of Hazardous Air Pollutants (HAPs) were determined from both the combustion of wood in the kilns and drying of lumber. The HAP emissions from combustion were calculated from emission factors in the DAQ's spreadsheet⁴. The maximum hourly rate was based on the maximum heat input of the kilns (mmBtu/hr). The annual emission rates of HAPs were calculated using the amount of the fuel (wood) required at the production limit of 110,000,000 bd-ft/yr. A complete list of HAP emissions associated with the combustion of unadulterated wood is contained in Attachment 1. The HAP emissions of acrolein, acetaldehyde, formaldehyde, methanol, and phenol from wood drying were calculated from DAQ emission factors⁵ and the production limit of 110,000,000 bd-ft/yr for PSD avoidance.

Under 2Q .0702(a)(18) and 2Q .0703(6), combustion sources can be defined as process heaters burning only unadulterated wood/fossil fuel, and such sources are exempt from evaluation under the NC Air Toxics rules. The "kilns" at H.W. Culp meet this definition, and thus, potential emissions of TAPs from the kilns were based solely on the drying of lumber. The TAP emissions of acrolein, acetaldehyde, formaldehyde, and phenol were calculated from DAQ emission factors⁵ and the production limit of 110,000,000 bd-ft/yr for PSD Avoidance.

² For this permit review, the term "kiln" is defined as process heater for lumber drying.

³ Conservative emission factor referenced in DAQ letter dated 06/11/96 to Andy Counts of the AFMA.

⁴ DAQ's "Woodwaste Combustion Emissions Calculator Revision G 6/01/2006"

⁵ DAQ's emission factor spreadsheet (07/22/05).

Table 5. Potential Emissions from Lumber Kilns (ID No. ES-9 and K1)

Pollutant	Combustion of Wood*			Drying of Wood			Total
	Emission Factor	Potential Emissions (lb/hr)	Potential Emission (tpy)	Emission Factor	Potential Emissions (lb/hr)	Potential Emissions (tpy)	Potential Emissions (tpy)
PM ₁₀	0.377 lb/mmBTU	32.8	55.5	0	0	0	55.5
VOC	0.017 lb/mmBTU	1.48	2.5	3.8 lb/MBF	47.7	209.0	211.5
SO ₂	0.025 lb/mmBTU	2.18	3.7	--	--	--	3.7
NO _x	0.490 lb/mmBTU	42.63	72.2	--	--	--	72.2
CO	0.170 lb/mmBTU	14.79	25.0	--	--	--	25.0
Formaldehyde	4.4 E-03 lb/mmBTU	3.83 E-01	0.65	0.103 lb/MBF	1.3	5.7	6.3
Methanol** (largest HAP)	--	--	--	0.161 lb/MBF	2.0	8.9	8.9
Phenol	5.1 E-05 lb/mmBTU	4.44 E-03	0.0075	.010 lb/MBF	0.1	0.55	0.56
Acetaldehyde	8.3 E-04 lb/mmBTU	7.22 E-02	0.12	0.065 lb/MBF	0.8	3.6	3.72
Acrolein	4.0 E-03 lb/mmBTU	3.48 E-01	0.56	0.009 lb/MBF	0.1	0.5	1.06
Total HAPs***	--	3.38	5.7	--	--	19.1	24.9

* 13,687 tons of wood fuel was used to dry 83,088,397 bd-ft/yr in 2003. To calculate potential emissions at the production limit, the amount of fuel was scaled up to 110,000,000 bd-ft/yr.

** Methanol is not a TAP

*** Includes HAP emissions from combustion and emissions of acrolein, acetaldehyde, formaldehyde, methanol, and phenol from drying wood.

Applicable Regulatory Requirement

Table 6 provides a summary of limits and/or standards for the emission sources described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Table 6. Limits and Standards for ES-9 and K1

Regulated Pollutant	Limits/Standards	Applicable Regulation
Particulate matter	$E = 4.10 * P^{0.67}$ when $P < \text{or} = 30$ tons per hour $E = 55 * P^{0.11} - 40$ when $P > 30$ tons per hour where E = allowable emission rate in pounds per hour P = process weight in tons per hour	15A NCAC 2D .0515
Sulfur Dioxide	2.3 pounds per million Btu heat input.	15A NCAC 2D .0516
Visible emissions	20 percent opacity	15A NCAC 2D .0521
Volatile organic compounds	Total amount of lumber charged to kilns K1 and ES-9 shall not exceed 110,000,000 board-feet in any twelve-month period.	15A NCAC 2Q .0317 avoidance of 15A NCAC 2D .0530
Odors	State-enforceable only <i>See Section on VII on Multiple Emission Limits</i>	15A NCAC 2D .1806
Toxic air pollutants	State-enforceable only <i>See Section on VII on Multiple Emission Limits</i>	15A NCAC 2D .1100
Toxic air pollutants	State-enforceable only <i>See Section on VII on Multiple Emission Limits</i>	15A NCAC 2Q .0711

15A NCAC 2D .0515: Particulate from Miscellaneous Industrial Processes

i. Regulation Analysis

The kilns are subject to 2D .0515 since no other state regulation applies to the particulate emissions resulting from lumber drying. The allowable emission rate is a function of the process rate and is calculated by the following equations:

$$E = 4.10 * (P)^{0.67} \quad \text{for } P \leq 30 \text{ tons/hr, or}$$

$$E = 55.0 * (P)^{0.11} - 40 \quad \text{for } P > 30 \text{ tons/hr.}$$

where P = process throughput (tons/hr)
E = allowable emission (lbs/hr).

The process weight used in the equations above is determined from both the maximum rate of fuel (ground wood)⁶ to the kilns and the maximum charge rate of the kilns. For each kiln, the maximum fuel rate was determined from the maximum heat input of the kilns (K1 at 27 mmBTU/hr and ES-9 at 60 mmBTU/hr) divided by the typical fuel heating value for wood of 8000 BTU/lb wood.⁴ The maximum charge rate of the kilns was provided by the company as kiln K1 at 10,632 bd/ft-hr and kiln ES-9 at 17,105 bd-ft/hr.

The PM and PM₁₀ emissions from the kilns were assumed to be entirely from the combustion of wood and were calculated from DAQ's spreadsheet⁴ based on the maximum heat input of the kilns. The PM emission limits and the maximum calculated emissions are included in Table 7. As shown in the table, the PM emissions from the kilns will never exceed the limit allowable under 2D .0515.

Table 7. PM and PM₁₀ Emission Limit for ES-9 and K1

Kiln	Kiln Capacity (mm BTU/hr)	Fuel Process Rate (lb/hr)	Max. Lumber Production Rate (lb/hr)	Emission Limit of PM/PM ₁₀ (lb /hr)	Emission Rate of PM (lb/hr)	Emission Rate of PM10 (lb/hr)
ES-9	60	3.75	33.5	43.5	25.0	22.6
K1	27	1.69	19.4	37.2	11.3	10.2
Total	87	5.44	52.9	47.9	36.3	32.8

ii. Monitoring, Recordkeeping, and Reporting

This source is inherently compliant with 2D .0515 because the potential emissions are below the emission limits. No monitoring, recordkeeping, or reporting is required for PM/ PM₁₀ emissions from the firing of wood in the direct-fired lumber kilns.

15A NCAC 2D .0516: Sulfur Dioxide Emissions from Combustion Sources

i. Regulation Analysis

Emissions of sulfur dioxide from the wood waste direct-fired lumber kilns shall not exceed 2.3 pounds per million Btu heat input. Emissions of sulfur dioxide were calculated using an emission factor for sulfur dioxide of 0.025 pounds per million Btu heat input.⁴ As long as wood is being burned in the kiln, the facility will be in compliance with 2D .0516.

⁶ Per 2D .0515, solid fuels charged are considered as part of the process weight, but liquid and gaseous fuels and combustion air are not.

ii. Monitoring, Recordkeeping, and Reporting

This source is inherently compliant with 2D .0516, and no monitoring, recordkeeping, or reporting is required for sulfur dioxide emissions from the firing of wood in the direct-fired lumber kilns.

15A NCAC 2D .0521: Control of Visible Emissions

i. Regulation Analysis

These sources (ID Nos. K1 and ES-9) were established after July 1, 1971 and therefore are subject to 2D .0521(d). Per this regulation, visible emissions shall not be more than 20 percent opacity when averaged over a six-minute period except that six-minute period averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period. Compliance with this regulation is expected because the facility has no history of visible emission non-compliance from these emission sources.

ii. Testing

Testing is not required at this time. If the DAQ finds that the facility cannot meet the visible emission standards, a testing condition will be added to the permit.

iii. Monitoring, Recordkeeping, and Reporting

Visual observations from the lumber kilns, recordkeeping, and reporting will NOT be required to do to the difficulty in accurately determining the opacity from the kilns. Large quantities of steam are produced with much smaller amounts of particulate emissions.

15A NCAC 2Q .0317: Avoidance Condition for 15A NCAC 2D .0530: Prevention of Significant Deterioration

i. Regulation Analysis

The maximum lumber production rate for both kilns is 243×10^6 bd-ft/yr,⁷ and at this capacity with an emission factor of 3.8 lbs VOC/MBF, the potential VOC emissions from the kilns are 462 tons per year. The facility has requested a production limit of 110×10^6 bd-ft/yr to avoid PSD applicability. As shown in Table 5, the VOC emissions from the kilns at this production limit are 209 tons per year. When the VOCs from the wood combustion are added, the potential VOC emissions from the facility are 215.5 tons per year, which are below the 250 tons per year level for applicability to PSD.

ii. Monitoring and Recordkeeping

The facility will be required to track and record the total amount of lumber produced for each month and to calculate the monthly VOC emissions on a 12-month rolling basis. The VOC emissions will be calculated by multiplying the total amount of lumber dried in the kilns by an emission factor of 3.8 pounds of VOC emissions per thousand board feet of lumber dried.

⁷ Determined from the maximum charge rate of the kilns and assuming 8,760 hours per year of operation.

iii. Reporting

The facility is required to submit a semi-annual summary report of monitoring and recordkeeping activities by January 30th and July 30th of each year. In the summary report, the facility must calculate the VOC emissions for each of the 12-month periods over the previous 17 months.

C. Woodworking operations including:

- **One wood planing operation (ID No. ES1) and transfer cyclone (ID No. C1) in series with bagfilter (ID No. 4B)**
- **One wood dust collection system (ID No. ES2) and associated cyclone (ID No. C2)**
- **One hammermill operation (ID No. ES4) and associated cyclone (ID No. C4)**

Description

The rough lumber is transferred to the two direct-fired kilns, and after drying, the lumber enters the planer, where the rough lumber is trimmed and planed. The wood shavings/dust from the planer are captured by the simple cyclone (ID No. C1) in series with a pulse-jet type bagfilter (ID No. 4B). The dry wood shavings/dust from the transfer cyclone and bagfilter are pneumatically transported to another simple cyclone (ID No. C2). Emissions from the cyclone are vented to the atmosphere. A valve located on the bottom of the cyclone diverts the wood dust/shavings to either a storage bin and truck or to the hammermill (ID No. ES4).

In the hammermill (ID No. ES4), the dry wood shavings/dusts are ground into fuel for the kilns. The ground wood waste is then transported to a simple cyclone (ID No. C4) and deposited into two storage silos (referred by this company as the "blue bins"). The ground wood shavings/dust from the two blue storage silos are sent via an enclosed auger to two metering bins (metered fuel pipes) to the two kilns (ID Nos. K1 and ES-9) to be used as fuel.

Emissions

Only particulate matter is emitted from the woodworking operations, and the potential emissions for PM and PM₁₀ are given in Table 8.

PM emissions from the planer operation were calculated from the amount of actual shavings from the planer produced in 2003 and scaled up to the production limit for PSD avoidance. The particle size distribution of the shavings was based on DAQ memorandum,⁸ which indicated that no PM₁₀ is generated from the planing operations. The PM emissions from the planer are controlled by a transfer cyclone (ID No. C1, 168 inches in diameter) in series with one bagfilter (ID No. 4B, 5,992 square feet of filter area). As a conservative estimate, all the PM (2.6% of wood waste per DAQ) was assumed to be transferred to the bagfilter. The bagfilter has a removal efficiency of 99.9% for PM. The DAQ bagfilter evaluation spreadsheet indicates that this bagfilter control efficiency is reasonable.

The bottoms from the bagfilter and the transfer cyclone are feed to the wood dust collection system (ID No. ES2), and PM emissions are controlled by the associated cyclone (ID No. C2, 51 inches in diameter). Since the wood shavings/dust are generated from the planer operation, no PM₁₀ is produced, per the DAQ memorandum.⁸ In the Title V permit application, the cyclone (ID No. C2) was assumed to have a removal efficiency of 90% for PM. The cyclone was replaced in 2005, and

⁸ DAQ, PM Emissions from Planing and Other Woodworking Operations, April 26, 1995 and DAQ, PM10 Emissions from Planing and Other Woodworking Operations, April 18, 1996.

the dimensions of the new cyclone were used in DAQ's cyclone evaluation spreadsheet. The spreadsheet results indicate that the control efficiency is reasonably conservative for a cyclone with the given dimensions.

The bottoms from wood handling cyclone (ID No. C2) are either diverted to trucks for sale or diverted to the hammermill (ID No. ES4) and associated cyclone (ID No. C4) for processing into fuel for the kilns. PM and PM₁₀ emissions from the cyclone on the hammermill were calculated from the amount of actual amount of fuel feed to the kilns in 2003 and scaled up to the production limit for PSD. In the Title V permit application, the cyclone (ID No. C4) was assumed to have a removal efficiency of 90% for PM and PM₁₀. The cyclone was replaced in 2005, and the dimensions of the new cyclone were used in DAQ's cyclone evaluation spreadsheet. The result indicates that this control efficiency is reasonable for a cyclone with the given dimensions. An emission rate for PM₁₀ established during 2001 stack testing at the facility was used for PM₁₀ emission from the cyclone on the hammermill.

Table 8. PM emissions from the Woodhandling Operations including ES1, ES2, and ES4

Emission Source	Emission Factor	Control Efficiency	Potential PM Emissions (tpy)	Potential PM ₁₀ Emissions (tpy)
Planer Operations (ID No. ES1)*	0.026 ton of PM /ton shavings 0 tons of PM ₁₀ from planing	99.9%	0.57	0
Woodwaste collection (ID No. ES2)	0.026 ton of PM /ton shavings 0 tons of PM ₁₀ from planing	90%	57.1	0
Hammermill (ID No. ES4)	0.026 ton of PM /ton shavings 0.223 lb PM ₁₀ per hour **	90%	47.9	0.49

* 16,239 tons of shavings (2,642 tons sold and 13,687 tons of kiln fuel) were generated at a lumber production rate of 83,088,397 bd-ft/yr in 2003. To calculate potential emissions, the generated amounts were scaled up to 110,000,000 bd-ft/yr.

** Stack test on cyclone (ID No. C4) exhaust indicated that 0.223 lb PM₁₀ /hour emissions were generated at a shaving production rate of 4.18 ton/hr. The rate was scaled up to correspond to a shaving generation rate at 110,000,000 bd-ft/yr.

Applicable Regulatory Requirement

Table 9 provides a summary of limits and/or standards for the emission sources described above. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Table 9. Limits and Standards for ES1, ES2, and ES4

Regulated Pollutant	Limits/Standards	Applicable Regulation
Particulate matter	Adequate ductwork and properly designed collectors	15A NCAC 2D .0512
Visible emissions	ES2 40 percent opacity	15A NCAC 2D .0521
	ES1 and ES4 20 percent opacity	
Odors	State-enforceable only <i>See Section on VII on Multiple Emission Limits</i>	15A NCAC 2D .1806

15A NCAC 2D .0512: Particulates from Wood Products Finishing Plants

i. Regulation Analysis

This regulation requires adequate ductwork and properly designed collectors on woodworking processes. The control efficiencies for the cyclones (ID Nos. C1, C2, and C4) and bagfilter (ID

No. C4) presented in the Title V permit application and confirmed by the DAQ spreadsheets show that the control equipment is adequately designed. The facility has had no violations related to improper design or control of PM emissions from these sources over the past five years. Compliance with 2D .0512 is anticipated.

ii. Monitoring and Recordkeeping

To ensure that optimum control efficiency of particulate matter is obtained by the cyclones and bagfilters, inspections will be conducted monthly and maintenance will be performed as recommended by the equipment manufacturers. As a minimum, the inspections will include a monthly external inspection of the cyclones, bagfilter, and ductwork, and an annual internal inspection of the bagfilter to ensure structural integrity. The results of the inspections and any maintenance activities will be kept in a logbook.

iii. Reporting

A summary report of the monitoring and recordkeeping activities will be submitted by January 30th and July 30th of each year. All instances of deviations must be clearly identified in the summary report. The results of any maintenance to the control devices shall be reported within 30 days of a written request by DAQ.

15A NCAC 2D .0521: Control of Visible Emissions

i. Regulation Analysis

The wood dust collection system (ID No. ES2) was established prior to July 1, 1971 and therefore are subject to 2D .0521(c). Per this regulation, visible emissions shall not be more than 40 percent opacity when averaged over a six-minute period except that six-minute period averaging not more than 90 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period.

The wood planer operation and the hammermill (ID Nos. ES1 and ES4, respectively) were established after July 1, 1971 and therefore are subject to 2D .0521(d). Per this regulation, visible emissions shall not be more than 20 percent opacity when averaged over a six-minute period except that six-minute period averaging not more than 87 percent opacity may occur not more than once in any hour nor more than four times in any 24-hour period

Compliance with 2D .0521 is expected because the facility has no history of visible emission non-compliance from these emission sources.

ii. Testing

Testing is not required at this time. If the DAQ finds that the facility cannot meet the visible emission standards, a testing condition will be added to the permit.

iii. Monitoring and Recordkeeping

The Permittee will observe the emission points of the woodworking operations emission sources every week above the normal operating conditions. The results of the observations will be maintained in a logbook.

iv. Reporting Requirements

A summary report of the monitoring and recordkeeping activities will be submitted by January 30th and July 30th of each year. All instances of deviations must be clearly identified in the summary report. The results of any maintenance to the control devices shall be reported within 30 days of a written request by DAQ

VII. Multiple Emission Source Limits

A. All emission sources

Table 10 provides a summary of limits and/or standards from multiple emission sources. A review of the information in the application was performed to ensure the appropriate limits and associated calculations used to show compliance were correct.

Table 10. Multiple Source Limits and Standards

Regulated Pollutant	Limits/Standards	Applicable Regulation
Odors	State-enforceable only Odorous emissions must be controlled	15A NCAC 2D .1806
Toxic air pollutants	See Section 2.2 A. 2. - State-enforceable only	15A NCAC 2D .1100
Toxic air pollutants	See Section 2.2 A. 3. - State-enforceable only	15A NCAC 2Q .0711

15A NCAC 2D .1806: Control and Prohibition of Odorous Emissions

The Permittee shall not cause, allow, or permit the emission sources to be operated without employing suitable measures for control of odorous emissions.

Wood kilns tend to have a slight odor but not generally an offensive one. No odor concerns were indicated during the last inspection. Additionally, the DAQ has not received any odor complaints regarding this facility in the last five years. Compliance is anticipated.

15A NCAC 2D .1100: Control of Toxic Air Pollutants and

i. Regulation Analysis

The wood drying kilns previously triggered a toxics demonstration. DAQ has determined that emissions from the combustion of unadulterated woodwaste in the “kilns” are exempt from toxics evaluation, and only TAP emissions from the wood drying process kilns are included in the demonstration. Since the date the toxics demonstration was first triggered, the DAQ has adopted new emission factors from wood drying kilns, and as a result, the previous demonstration is no longer valid.

For this review, emissions from the kilns were calculated based on the new DAQ emission factors.⁵ and the maximum hourly lumber production rate of the kilns (K1 at 10,625 bd-ft/hr and ES-9 at 17,105 bd-ft/hr).⁹ As seen Table 11, potential emissions of acrolein, formaldehyde, and phenol were above the Toxics Permitting Emission Rate (TPER) at the maximum hourly production rate, and air modeling is required to demonstrate compliance with the Acceptable Ambient Levels (AALs) for these TAPs. Because this regulation is a state-enforceable only, the

⁹ Maximum hourly rates used in previously modeling demonstration.

permit will go forward to public notice. A condition will be placed in the permit that requires the facility to submit an evaluation demonstrating compliance with 2D .1100 for these TAPs no later than March 31, 2007 (approximately 60 days from permit issuance).

Table 11. TPERs and Potential Emissions of TAPS from Kilns K-1 and ES-9

Pollutant (CAS Number)	Carcinogens (lb/yr)	Chronic Toxicants (lb/day)	Acute Systemic Toxicants (lb/hr)	Acute Irritants (lb/hr)	Potential Emissions (lb/hr)
Acetaldehyde (75-07-0)				6.8	1.80
Acrolein (107-02-8)				0.02	0.25
Formaldehyde (50-00-0)				0.04	2.86
Phenol (108-95-2)			0.24		0.28

15A NCAC 2Q .0711: Emission Rates Requiring a Permit

i. Regulation Analysis

The wood drying kilns previously triggered a toxics demonstration. DAQ has determined that emissions from the combustion of unadulterated woodwaste in the “kilns” are exempt from toxics evaluation, and only TAP emissions from the wood drying process kilns were included in the demonstration. As seen in Table 11, emissions from acetaldehyde were below the TPERs at the maximum lumber production rate of the kilns and the revised DAQ emission factors. Thus, no air modeling is required for acetaldehyde. The facility will be operated and maintained in such a manner that emissions of acetaldehyde, including fugitive emissions, will not exceed its TPER without the Permittee first demonstrating compliance with 2D .1100 and obtaining a permit to emit this TAP.

ii. Monitoring, Recordkeeping, and Reporting Requirements

No monitoring, recordkeeping, or reporting is required since the maximum emissions of acetaldehyde are below its corresponding TPER.

VIII. MACT Applicability and Requirements

Sawmills with lumber kilns (SIC Code 2421) are potentially subject to the National Emission Standards for Hazardous Air Pollutants for the Plywood and Composite Wood Products (i.e., the Plywood MACT) (40 CFR 63 Subpart DDDD). For lumber kilns to be applicable to this MACT, they have to be a major source of HAPs and emit 10 tpy of any single HAP or 25 tpy of any combination of HAPs. H.W. Culp is not subject to the Plywood MACT because it is not a major source of HAPs at the production limit of 110,000,000 bd-ft/yr, as shown in Table 2.

IX. Permit Shield (including non-applicable requirements)

In accordance with 2Q .0512 the permit will contain a provision stating that compliance with the terms, conditions, and limitations of the Title V permit shall be deemed in compliance with applicable requirements specifically identified in the permit, as of the date of permit issuance. If the permit does not expressly state that a permit shield exists then it shall be presumed not to provide such a shield.

X. Other Applicable Requirements

CAM

The applicability of the compliance assurance monitoring (CAM) rule (40 CFR Part 64) to the facility was evaluated. The facility does have pollutant specific emission units (PSEUs) with potential pre-control emissions greater than the Title V major source thresholds. However, the potential post-control emissions are all less than Title V major thresholds. Under 40 CFR 64.5, CAM plans for PSEUs with post-control emissions less than Title V major thresholds are due as part of the application for the first Title V permit renewal. Therefore, a CAM plan is not due for the facility at this time.

XI. General Conditions

The “General Conditions” section of the Title V Operating Permit lists additional applicable rule requirements that the Permittee must adhere to, as with any other permit condition. These requirements in general are common to all Title V facilities. The general conditions include provisions such as annual fee payment, permit renewal and expiration, transfer of ownership or operation, property rights, submission of documents, inspections and entry procedures, reopen for cause, and severability.

XII. Insignificant Activities

The insignificant activities listed in the Title V permit application have been reviewed and verified. Because an emission source or activity is insignificant does not mean that the emission source or activity is exempted from any applicable requirement or that the owner or operator of the source is exempted from demonstrating compliance with any applicable requirement. The list of insignificant activities for H.W. Culp is shown in Table 12. Two specific insignificant activities – sawmill operations (ID No. IES-10) and sharpening operations (ID No. IES-11) – are discussed below in more detail.

Table 12. Insignificant Activities under 15A NCAC 2Q.0503(8)

Emission Source ID	Description	Basis for Exemption
IES-1, IES-2, IES-3, IES-4, and IES-5	Five (5) propane storage tanks (500, 330, 330, 123, and 123 gallons each, respectively)	Emissions before controls are < 5 tpy
IES-6 and IES-7	Two (2) Safety-Kleen parts washers	Emissions before controls are < 5 tpy
IES-8	One (1) 12,000 gallon diesel fuel underground storage tank	Emissions before controls are < 5 tpy
IES-9	One (1) 2,000 gallon gasoline underground storage tank	Emissions before controls are < 5 tpy
IES-10	One (1) log sawing operation (sawmill)	Emissions before controls are < 5 tpy
IES-11	One (1) saw sharpening operation and associated bagfilter (689 sq. ft. of filter area)	Emissions before controls are < 5 tpy

In the Title V permit application, the facility included the sawmill as a significant activity because it had a potential to emit 26.1 tons PM10 year based on the lumber production limit for PSD avoidance. However, the sawmill is completely enclosed, and the particulate emissions from the process are not released to the ambient air. For this reason, the sawmill was listed as an insignificant activity beginning with permit R07, and it will continue to be listed as insignificant on the Title V permit. The facility has been reporting PM10 emissions from this source in excess of 20 tpy for the last several years, even though the source is insignificant. It is recommended that the Region discuss this issue with the facility so that inaccurate PM10 emissions will not be reported in future emission inventories.

On previous permits, the saw sharpening operation (ID No. IES-11: formerly ID No. ES-5) and associated bagfilter (ID No. 5) were included as permitted equipment. At one time, the facility was using a dry grinder to sharpen knives and blades. Previous permits included a maximum process rate for the “dry” sharpening operations at 222.11 pounds per hour. The facility has since modified its process, and bandsaw blades, cutter knives, saw guides, and chipper knives are now repaired and sharpened using wet-technology. This change greatly reduces the PM emissions from the sharpening operations.

PM emissions are now primarily generated from Babbitt and material guide used in the saw sharpening operations. In the saw shop, a bench grinder, guide grinder, sander, and Babbitt pot are connected to the pulse-jet type bagfilter (ID No. 5). The Babbitt contains antimony (a HAP), and a hood above the Babbitt is required for ventilation to reduce worker exposure. The particulate emissions are now much less than five tons per year as shown in Table 13, and this emission source will be listed as an insignificant activity in the Title V permit.

Table 13. PM Emissions from the Saw Sharpening Operations

Material	Amount Purchased (2003) (lb/yr)	Maximum Amount That Can Be Processed (lb/yr)	Control Efficiency of Bagfilter	Emissions Based on Typical Operation Hours (lb/yr)	Maximum Emissions Based on 8,760 Operation Hours (lb/yr)
Babbitt	120	160.8	99%	1.6	34.1
Material Guide	60	75	99%	0.75	65.7
Total PM/PM10	180	235.8	99%	2.4	99.8
Antimony in Babbitt*	9.6	12.9	0%	12.9	272.9

* MSDS for Babbitt indicated that it contains up to 8% antimony

The emission calculations were based on the maximum amount of Babbitt and guide material purchased annually and the control efficiency of the pulse-jet bagfilter (ID No. 5). As specified in the Title V permit application, the bagfilter has a control efficiency of 99% for PM and assumed 0% control for HAPs and TAPs (conservative estimate).

XIII. Public Notice

Pursuant to 15A NCAC 2Q .0521, a notice of the draft Title V Operating Permit was placed in a newspaper of general circulation in the area where the facility is located. The notice provided for a 30 day comment period, with an opportunity for a public hearing. Copies of the public notice were sent to persons on the Title V mailing list, the following affected states, Virginia, and EPA.

XIV. Recommendations

The first-time Title V application for H.W. Culp Lumber Company has been reviewed by the DAQ to determine compliance with all procedures and requirements under 15A NCAC 2Q .0500 and 40 CFR Part 70. The DAQ has made a preliminary determination that the facility is complying or will achieve compliance as specified in the draft permit with all applicable requirements. The public comment and EPA review expired with no comments received. Therefore, the DAQ recommends issuance of the Title V Operating Permit.

ATTACHMENT 1

Potential Emission Calculations

Facility-Wide Summary of Emissions

Pollutant	Source	Emissions	Units
PM-10	ES-10	5.7	tons/yr
	ES-11	4.1	tons/yr
	KILNS	55.5	tons/yr
	ES1	0.0	tons/yr
	ES2	0.0	tons/yr
	ES4	0.5	tons/yr
	Insignificant	0.6	tons/yr
	Total	66.4	tons/yr
VOC	KILNS	2.5	tons/yr
	Drying Lumber	209.0	tons/yr
	Total	211.5	tons/yr
NOX	KILNS	72.2	tons/yr
SO2	KILNS	3.7	tons/yr
CO	KILNS	25.0	tons/yr
HAPS	Drying Lumber	19.14	tons/yr
	KILNS	5.72	tons/yr
	Sb in Babbitt	0.14	tons/yr
	Total	24.99	tons/yr
Largest HAP Methanol	KILNS	8.9	tons/yr

Based on 110,000,000 bd-ft/yr of lumber

Potential Facility-Wide Emissions of HAPs

Wood Drying from Kilns

Pollutant	Emission Factor (lbs/MBF)	From Kilns ton/yr
Formaldehyde	0.103	5.7
Methanol	0.161	8.9
Phenol	0.01	0.55
Acetaldehyde	0.065	3.6
Acrolein	0.009	0.5
Total HAPs	--	19.1

Facility-Wide

Total HAPs from Facility	ton/yr
Wood Drying	19.1
Kiln Combustion	5.7
Antimony from Babbitt	0.1
Total	24.99

Potential Emissions of HAPS from Combustion of Wood Fuel in Kilns K1 and ES-9

HAZARDOUS AIR POLLUTANT	lb/yr	tons/yr
Acetaldehyde	244.4	0.12
Acetophenone	9.42E-04	4.71E-07
Acrolein	1178.0	0.59
Antimony & Compounds	2.33	1.16E-03
Arsenic & Compounds	6.48	3.24E-03
Benzene	1237.0	0.62
Beryllium metal (un-reacted) (Also include in BEC)	0.32	1.62E-04
Cadmium Metal (elemental un-reacted) –(Add w/CDC)	1.21	6.04E-04
Carbon tetrachloride	13.25	6.63E-03
Chlorine	232.7	0.12
Chlorobenzene	9.72	4.86E-03
Chloroform	8.25	4.12E-03
Chromium–Other compds(add w/chrom acid to get CRC)	5.15	2.58E-03
Chromic acid (VI) (Add as comp. of solCR6 and CRC)	1.03	5.15E-04
Cobalt compounds	1.91	9.57E-04
Dinitrophenol, 2,4-	0.05	2.65E-05
Di(2-ethylhexyl)phthalate (DEHP)	1.38E-02	6.92E-06
Ethyl benzene	9.13	4.56E-03
Ethylene dichloride (1,2-dichloroethane)	8.54	4.27E-03
Formaldehyde	1295.9	0.65
Hydrogen chloride (hydrochloric acid)	5595.7	2.80
Lead and Lead compounds	14.14	7.07E-03
Manganese & compounds	471.2	0.24
Mercury, vapor (Include in Mercury&Compds)	1.03	5.15E-04
Methyl bromide (bromomethane)	4.42	2.21E-03
Methyl chloride (chloromethane)	6.77	3.39E-03
Methyl chloroform (1,1,1 trichloroethane)	9.13	4.56E-03
Methylene chloride (dichloromethane)	85.41	0.043
Naphthalene	28.57	0.014
Nickel metal (Component of Nickel & Compounds)	9.72	4.86E-03
Nitrophenol, 4-	3.24E-02	1.62E-05
Pentachlorophenol	1.50E-02	7.51E-06
Perchloroethylene (tetrachloroethylene)	11.19	5.60E-03
Phenol	15.02	7.51E-03
Phosphorus Metal, Yellow or White	7.95	3.98E-03
Polychlorinated biphenyls	2.40E-03	1.20E-06
Polycyclic Organic Matter	36.81	0.018
Propionaldehyde	17.97	8.98E-03
Propylene dichloride (1,2 dichloropropane)	9.72	4.86E-03
Selenium compounds	0.82	4.12E-04
Styrene	559.6	0.28
Tetrachlorodibenzo-p-dioxin, 2,3,7,8-	2.53E-06	1.27E-09
Toluene	271.0	0.14
Trichloroethylene	8.84	4.42E-03
Trichlorophenol, 2,4,6-	6.48E-03	3.24E-06
Vinyl chloride	5.30	2.65E-03
Xylene	7.36	3.68E-03
* Highest HAP (Hydrogen chloride (hydrochloric acid))	5595.7	2.80
* Total HAPs	11433.6	5.72

Determining Compliance with 2D .0515 for the Kilns (ID Nos. K1 and ES-9)

<u>Maximum Heat input of Kilns</u>				
ES9	60	mmBtu/hr		
K1	27	mmBtu/hr		
Total	87	mmBtu/hr		
<u>Rate of Fuel to Kiln</u>				
Heat Capacity of Wood	8,000	BTU/lb		
ES9	7,500	lb fuel max/hour	3.75	Tons per Hour
K1	3,375	lb fuel max/hour	1.69	Tons per Hour
Total	10,875	lb fuel max/hour	5.44	Tons per Hour
<u>Maximum Charge Rate</u> K1 = 10,632 bd-ft/hr and ES9 = 17,105 bd-ft/hr				
Weight of lumber	4.75	lb/bd-ft		
ES9 Charge Rate	40.6	tons/hr		
K1 Charge Rate	25.2	tons/hr		
Total Charge Rate	65.8	tons/hr		
<u>Total Process Rate [P] (Charge Rate + Fuel Rate)</u>				
ES9	44.4	Tons per Hour		
K1	26.9	Tons per Hour		
Total	71.2	Tons per Hour		
<u>Emission Limit (2D .0515) E = 4.1xP^{0.67} where P = ton/hr (P<30)</u>				
<u>E = 55xP^{0.11-40} where P = ton/hr (P>30)</u>				
ES9	43.5	lb/hr		
K1	37.2	lb/hr		
Total	47.9	lb/hr		
<u>Calculated Emissions from Kilns (based on Max. Heat Input of Kilns)</u>				
PM10 Emission Factor	0.377	lb/mmBTU		
ES9	22.6	lb/hr		
K1	10.2	lb/hr		
Total PM10 Emissions	32.8	lb/hr		
PM Emission Factor	0.417	lb/mmBTU		
ES9	25.0	lb/hr		
K1	11.3	lb/hr		
Total PM Emissions	36.3	lb/hr		
Emission Source	Emission Limit (lb/hr)	PM Emission Rate (lb/hr)	PM10 Emission Rate (lb/hr)	Compliance Demonstrated
ES9	43.47	25.02	22.62	YES
K1	37.20	11.26	10.18	YES
Total PM Emissions	47.93	36.28	32.80	YES

Potential Emissions for Debarking and Sawdust Handling

<u>LOG DEBARKING (TV LIMIT)</u>		
Max. Capacity	110,000,000	bd-ft/yr
Weight Factor	4.75	lb log/bd-ft
PM EF	0.02	lb PM/ton log
Potential PM	5,225	lb PM/yr
Potential PM	2.6	ton PM/yr
PM10 EF	0.011	lb PM10/ton log
Potential PM10	2,874	lb PM10/yr
Potential PM10	1.4	ton PM10/yr
<u>BARK HANDLING</u>		
Measured Tons	18000	tons/yr @ 83,088,397 bd-ft/yr
Max. Capacity	23,830	tons/yr @ 110x106 bd-ft/yr
PM EF	1	lb PM/Ton bark
Potential PM	23,830	lb PM/yr
Potential PM	11.9	ton PM/yr
PM10 EF	0.36	lb PM10/ton log
Potential PM10	8,579	lb PM10/yr
Potential PM10	4.3	ton PM10/yr
<u>TOTAL PM FROM DEBARKING</u>		
Potential PM	14.5	ton PM/yr
Potential PM10	5.7	ton PM10/yr
<u>Saw Dust Handling</u>		
Measured Tons	17150	tons/yr @ 83088397 bd-ft/yr
Max. Capacity	22,705	tons/yr @ 110x106 bd-ft/yr
PM EF	1	lb PM/Ton bark
Potential PM	22,705	lb PM/yr
Potential PM	11.4	ton PM/yr
PM10 EF	0.36	lb PM10/ton log
Potential PM10	8,174	lb PM10/yr
Potential PM10	4.1	ton PM10/yr

Potential Emissions from Woodwaste Operations

<u>Shavings Generated from Planer at TV Limit</u>	
Sold	3,553 tons/yr @110x106 bd-ft/yr
Kilns	18,407 tons/yr @110x106 bd-ft/yr
Total	21,961 tons/yr @110x106 bd-ft/yr
<u>PM Emissions from Bagfilter on Planer</u>	
PM EF	0.026 Tons PM/Ton shavings
Bagfilter (ID No. 4B) Eff	99.9 %
Total PM emitted	0.571 tons/yr
<u>PM Emissions from Woodwaste Collection</u>	
PM EF	0.026 Tons PM/Ton shavings
Cyclone (ID No. C2) Eff	90.0 %
Total PM emitted	57.1 tons/yr
<u>PM Emissions from Hammermill Cyclone</u>	
PM EF	0.026 Tons PM/Ton Milling
Cyclone (ID No. C4) Eff	90.0 %
Total PM emitted	47.9 tons/yr
<u>PM10 from Hammermill</u>	
PM-10	0.223 lb PM10/hr
Process rate	4.18 ton shavings/hr
PM-10 emissions	0.491 ton/yr

Emissions from Sawmill Sharpening Operations (ID No. IES-11)

Emission Source	Typical Production Rate (lb/yr)	Maximum Production Rate (lb/yr)	Control Eff	Emissions (lb/yr)	Hours of Operation 2003	Max. Emissions @ 8760 hours of Operation (lb/yr)	Max. Emissions @ 8760 hours of Operation (tons/yr)
Babbit Purchased (2003)	120	160.8	99	1.61	413	34.11	0.02
Antimony in Babbitt (8%)	9.6	12.9	0	12.86	413	272.85	0.14
Guide Material Purchased (2003)	60	75.0	99	0.75	100	65.70	0.03
Total	180	235.8	--	15.22	--	372.66	0.19
Source is Insignificant because Emissions of PM < 5 tons per year and HAPs (Sb) < 1,000 lbs/yr							

Emissions from Handling and Loading of Shaving from Planer: Insignificant Activity

<u>Emissions from Unloading/Storage of Shavings from Planer</u>		
Measured Tons	3,498	tons/yr @110,000,000 bd-ft/yr
PM EF	1	lb PM/Ton bark
Potential PM	3,498	lb PM/yr
Potential PM	1.7	ton PM/yr
Assume no PM10 generated from Planer		