

Lane Regional Air Protection Agency
Standard Air Contaminant Discharge Permit

REVIEW REPORT

Seneca Sawmill Company

90201 Highway 99N
Eugene, Oregon 97402

Permit No. 207459

1. General Background Information

Seneca Sawmill processes logs and operates a lumber drying and sawmill and planing facility at 90201 Highway 99 North, Eugene, Oregon. The facility operates three (3) lumber kilns and two natural gas/oil-fired boilers that produce steam for the dry kilns. The facility uses six (6) cyclones, three (3) baghouses, and a chip bin target box to control the emissions of PM and PM₁₀.

For the purposes of Hazardous Air Pollutants (HAPs) under Title III of the Clean Air Act, this facility is considered the same source as the Seneca Sustainable Energy facility (permit number 206470). Both facilities are "contiguous" and "under common ownership or control" and are therefore are a single source under the definition of a "stationary source" in LRAPA's Title 12. However, because the two facilities do not share the same "2-digit" SIC code, and are not considered supporting facilities to one another, they are not considered a single source for purposes of criteria pollutants.

2. Reasons for Permit Action

Sawmill and planing mill activities are an operation listed in Table 1, Part B of LRAPA Title 37, therefore requiring an air permit. The previous permit was renewed on January 25, 2006 and was set to expire January 25, 2011. During the previous permit term, the facility requested to add one (1) new dry kiln and LRAPA issued a "Simple Technical Modification" to the permit to address that request. The primary reason for this permit action is to renew the expired permit and to incorporate the addendum for the new kiln into the permit.

3. Enforcement History

On April 19, 2011, LRAPA issued Notice of Non-Compliance (NON) No. 3287 to the facility for failure to submit a timely renewal application. The renewal application was due 60 days prior to the January 25, 2011 expiration date. On February 17, 2011 the facility requested, and LRAPA granted a 30-day extension. The facility submitted the application by fax on April 19, 2011 and the violation was closed.

On February 17, 2006, LRAPA issued NON No. 2855 to the facility for failure to submit report of distillate fuel oil used for quarter 1 of 2004. Report was required to have been received by LRAPA on April 30, 2004. Facility submitted report and violation was closed.

On February 5, 1999, LRAPA issued NON No. 1709 to the facility for exceeding the dry kiln throughput limits. Facility was required to calculate VOC emissions for wood processed through the dry kilns for a rolling 12-month period to include August and September of 1997 and submit the findings to LRAPA. The amount of VOCs emitted was not enough to trigger Title V and the violation was closed.

On January 25, 1996, LRAPA issued NON No. 96-1184 to the facility for installing process and pollution control equipment without receiving an authority to construct. Facility was required to not operate the equipment until a permit modification was issued and the violation was closed.

On October 17, 1994 LRAPA issued Stipulated Final Order (SFO) No. 94-65 to the facility ordering them to apply for a construction approval and permit modification. The facility fulfilled the order and the SFO was closed.

4. Performance Testing

No performance testing is known to have been conducted at this facility. Performance testing is not required at this time and the basis for the facility's emissions estimates (industry-specific emission factors) appears to be reasonable.

5. Plant Site Emission Limits (PSELS)

Below are the facility's PSELS as they appear in the permit. In accordance with LRAPA Title 42, these limits are based on the baseline plus one ton below the Significant Emission Rate (SER). The VOC PSEL in the previous permit contained a typographical error and was set at 57 tons/year. The VOC PSEL is set at 47 tons/year in the permit and as shown below.

Annual (12-month rolling) PSELS
 (tons/year)

Source	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Totals	49	27	53	48	99	47

Comparison of Baseline Emission Rates (BERs) and Significant Emission Rates (SERs)

The baseline emissions for the facility were established during the previous permitting action and were not revised with this permit action. Estimated emissions are based on emission factors from LRAPA's General Permit for Sawmills. The following table compares the baseline emissions with PSELS and SERs. In accordance with the definition of "Netting Basis" in LRAPA Title 12, the PM_{2.5} netting basis and PSEL will be established with the first public notice period that begins after July 1, 2011. Because public notice for this renewal began prior to July 1, 2011, the PM_{2.5} PSEL and netting basis were not established.

Baseline Emissions (BERs) vs. PSELS and SERs

Pollutant	Baseline Emissions (tons/yr)	Proposed PSEL (tons/yr)	Increase from Baseline (tons/yr)	SER (tons/yr)
PM	25	49	24	25
PM ₁₀	13	27	14	15
SO ₂	14	53	39	100
NO _x	8.5	48	39	40
CO	1.7	99	99	40

Pollutant	Baseline Emissions (tons/yr)	Proposed PSEL (tons/yr)	Increase from Baseline (tons/yr)	SER (tons/yr)
VOC	7.5	47	39	40

6. PSEL Compliance Demonstration

In order to ensure that the 12-month rolling PSELs are not exceeded, the facility is required to perform emission calculations by the 15th day of each month and submit annual reports by March 31st of each year to LRAPA.

7. Continuous Compliance

To further ensure compliance with the PSELs, the facility is required to keep a record of the following information for a period of two (2) years after entry.

Item	Parameter (units)	Minimum Recording Frequency
A	Stud mill production (MBF)	Monthly
B	Mill A lumber production (MBF)	Monthly
C	Dry Kiln Throughput by species (MBF)	Monthly
D	Chips shipped from plant site, including to SSE (BDT)	Monthly
E	Sawdust shipped from plant site, including to SSE (BDT)	Monthly
F	Shavings shipped from plant site, including to SSE (BDT)	Monthly
G	Natural Gas Combusted (scf or therms)	Monthly
H	No. 2 Fuel Oil Combusted (gallons)	Monthly
I	Certification of sulfur content of No.2 fuel oil	Each delivery
J	Dry Kiln Temperature (degrees F)	Twice per charge

8. Reporting Requirements

The facility is required to submit an annual report as described in Condition 12 of the permit. A semi-annual report as described in Condition 13 of the permit is also required to document fuel combustion in the 400 Hp boiler subject to the NSPS Subpart Dc.

9. Additional Regulatory Considerations

The permit includes grain loading limitations in accordance with LRAPA 32-015 (0.1 grains per dscf) as well as general visible emissions limitations in accordance with LRAPA 32-010 (20% maximum opacity).

10. Hazardous Air Pollutants (HAPs)

As mentioned previously in this review report, for the purposes of Hazardous Air Pollutants (HAPs) under Title III of the Clean Air Act, this facility is considered the same source as the Seneca Sustainable Energy facility (permit No. 206470). Both facilities are “contiguous” and “under common ownership or control” and are therefore are a single source under the definition of a “stationary source” in LRAPA’s Title 12.

HAP emissions occur in small quantities from the subject raw material (wood). A conservative estimate of HAPs is 3.0 tons per year for the maximum single HAP (acetaldehyde) and 7.0 tons per year total HAPs based on the maximum projected operating conditions and the same methodology mentioned above (ODEQ emission factors). During routine operations, emissions of HAPs from the boiler will be mostly negligible from this facility because the sawmill boiler will not run when the Seneca Sustainable Energy, LLC boiler is running. These emissions are all VOCs and are, therefore, regulated by the VOC limitations and requirements given in the subject permit.

The HAP emission estimates for the dry kilns assume that all lumber is dried at temperatures less than 200 degrees Fahrenheit. A condition in the permit requires monitoring and recordkeeping of the dry kiln temperatures to further ensure the estimation assumption remains valid.

11. National Emission Standards for Hazardous Air Pollutants (NESHAPs)

The facility, in conjunction with the Seneca Sustainable Energy facility, is an “area source” of HAPs and therefore is not subject to the Plywood and Composite Wood Products NESHAP that is applicable only to major sources. The facility will be subject to the Area Source Boiler NESHAP (Subpart JJJJJJ, Subpart 6J) applicable requirements, but any such requirements will be added to the permit at a later time, if necessary.

12. Typically Achievable Control Technology (TACT)

LRAPA Title 32-008 requires an existing emission unit at a facility to meet TACT if: the emissions unit results in emissions of criteria pollutants greater than ten (10) tons per year of any gaseous pollutant or five (5) tons per year of PM; the emissions unit is not subject to the emissions standards under LRAPA Title 32, Title 33, Title 39, or Title 46 for the pollutants emitted; and if the facility is required to have a permit. The boilers are emit more than 10 tons of gaseous pollutants and are therefore required to meet TACT. The permit requires good combustion practices and LRAPA has determined that this meets TACT. The dry kilns emit more than 10 tons of gaseous pollutants and are therefore required to meet TACT. LRAPA has determined that there are no control technologies typically achieved for dry kilns.

13. New Source Review (NSR) and Prevention of Significant Deterioration (PSD)

Because the proposed increases above baseline rates for all regulated pollutants are below the Significant Emission Rates (SERs) in LRAPA Title 38, the facility is not subject to LRAPA’s New Source Review (NSR) requirements.

14. New Source Performance Standards (NSPSs)

Because the 400 Hp boiler’s rated capacity is between 10 MM BTU/hr and 100 MM BTU/hr (13.4 MM BTU/hour) and was constructed after June 9, 1989 (1996), the boiler is subject to the New Source Performance Standards for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR Part 60 Subparts A and Dc), including, but not limited to, record keeping of fuel usage and annual reporting.

As stated in the NSPS and LRAPA 32-065(2)(B), the sulfur content in the fuel oil may not exceed 0.5% by weight. The facility is allowed to demonstrate compliance with this rule by fuel supplier certification.

15. Public Notice

The draft permit was on public notice from June 27, 2011, to August 1, 2011. On August 1st, a group representing 10 or more individuals submitted written comments and requested a public hearing. A public hearing was held on September 15, 2011 at the LRAPA office. The final comment deadline was September 16, 2011 at 5pm.

16. Public Comment

This section contains the Presiding Officer's report in accordance with Section 31-0070 Hearing and Meeting Procedures. LRAPA held an informational session to summarize the proposed permit action at 530pm prior to the public hearing on at 545pm on September 15, 2011. The meeting and hearing location was the LRAPA office meeting room. In addition to five (5) LRAPA staff, the hearing was attended by one (1) person from the public (Margot Fetz) and one (1) person from the LRAPA Advisory Committee (Jim Daniels). Zero (0) individuals presented oral or written testimony at the hearing. Five (5) individuals and/or groups submitted written comments prior to the September 15, 2011 deadline.

The following is a summary of the comments received and LRAPA's response to those comments. The comments are grouped by the corresponding sections presented in the comments.

Comment Summary	LRAPA Response
<p>1. <i>COMMENT:</i> Two comments stated that the permit for Seneca Sawmill Company (207459) and Seneca Sustainable Energy (206470) should be under one permit for purposes of Title I of the Clean Air Act.</p>	<p><i>RESPONSE:</i> The determination that the two facilities are two separate sources for purposes of criteria pollutants (e.g. PM, NOx, etc.) under Title I of the Clean Air Act was established as part of the LRAPA issuance of the Seneca Sustainable Energy ("SSE") ACDP. Please see response number one (1) to this issue in the SSE Review Report:</p> <p>http://www.lrapa.org/downloads/permits/SSE_combined_RR.pdf</p>
<p>2. <i>COMMENT:</i> One commenter requested that LRAPA make the determination that the two facilities are a Major Source of HAPs. To support this, OTA questions the determination referenced in the comment/response number 1 above due to the fact that the two facilities are a single source for HAPs under Title III of the Clean Air Act. The commenter suggests that there are actual HAP reductions at the Seneca Sawmill Company that have occurred in order for both facilities to maintain a minor source status with</p>	<p><i>RESPONSE:</i> LRAPA disagrees with the comment that the two facilities are a major source of HAPs. As defined in LRAPA Rules and in the Clean Air Act, facilities that have the Potential To Emit above the major source thresholds of 10 tons/year of any single HAP and/or 25 tons/year of total HAPs are considered major sources of HAPs. The Clean Air Act and LRAPA rules allow facilities to request and obtain federally enforceable limits on the potential to emit for HAPs. Both facilities have permits with federally enforceable limits on HAPs and are therefore not considered major sources of HAPs.</p> <p>The commenter states that it appears there have been actual HAP emission reductions that have occurred at the Seneca Sawmill Company in order for the sawmill to obtain revised HAP limits that lowered the limits from 9 tons/yr for any single HAP and 24 tons/yr for total HAPs to 3.0 tons/yr for any single HAP and 7.0 for total HAPs. Furthermore, the commenter suggests that there is a dependent relationship between the two facilities that allows these apparent HAP reductions to be realized.</p>

<p>respect to HAPs.</p>	<p>LRAPA disagrees with the commenter that there are actual HAP reductions required at the Seneca Sawmill Company (“Seneca Sawmill”, “the sawmill”, or “the facility”) plant in order to accommodate the lower HAP limits in their permit. LRAPA rules require setting the HAP limits at the Generic PSEL level (9 tons/yr for any single HAP and 24 tons/yr combined HAPs) and those are the levels used to initially establish the federally enforceable limits on potential to emit. The lower HAP limits established in the permit (3.0 tons/yr any single HAP and 7.0 tons/yr total HAPs) did not require the facility to reduce actual emissions. For example, it was not the case that the facility had actual emissions of any single HAP that were on the order of 9 tons/year. The revised permit condition merely established the HAP limits at a source-specific level, with respect to each permit (SSE and Seneca Sawmill), rather than “Generic”.</p> <p>Furthermore, there are no reductions to the sawmill throughput limits specified in permit Condition 14. For example, the total lumber dried at the sawmill (dry kilns are the primary source of HAPs) retains the 90,866 thousand board feet (MBF) limit that has been in the permit at least since it was renewed in 2006 – well before SSE applied for a permit.</p>
<p>3. <i>Comment:</i> The commenter suggested that the Best Available Control Technology (“BACT”) determination for SSE was not thorough.</p>	<p><i>Response:</i> There are no BACT determinations being established or revised with the proposed permit renewal for the Seneca Sawmill Company permit. Please refer to the SSE permit and the responses to comments on the issue of BACT.</p>
<p>4. <i>Comment:</i> The commenter suggests revisions are needed in the SSE permit with regard to emission limits, sampling and standards for PM.</p>	<p><i>Response:</i> There are no permit conditions being established or revised for SSE with the proposed permit renewal for the Seneca Sawmill Company permit. Please refer to the SSE permit and the responses to comments on the issue of those topics.</p>
<p>5. <i>Comment:</i> Oregon Toxics Alliance (OTA) suggests that Environmental Justice and public health have not been properly evaluated with respect to SSE.</p>	<p><i>Response:</i> Please refer to the SSE permit and the responses to comments on the issue of those topics. These issues were thoroughly evaluated during the course of the SSE permit issuance. The commenter continues earlier false assertions that LRAPA commissioned maps to purposefully contain inaccuracies so as to diminish the Environmental Justice issue. For example, if one looks at the dates on the Lane Council of Governments (LCOG) maps it is clear that the LCOG maps were not commissioned by LRAPA and certainly not prepared to refute OTA claims that occurred years later.</p>
<p>6. <i>Comment:</i> The commenter concludes by suggesting that SSE was improperly permitted and that the pollution controls utilized are insufficient.</p>	<p><i>Response:</i> Please refer to the SSE permit and the responses to comments on the issue of those topics as referenced in comment/response number 1 above.</p>
<p>7. <i>Comment:</i> My concern is the amount of new pollution introduced into our air by the plant, and possibility of fueling the power plant component with new timber cutting. I would like to see the permit pollution-limited and</p>	<p><i>Response:</i> LRAPA shares your concern about any and all new pollution introduced into our air, however the Seneca Sawmill has been at its existing location since the 1950’s. It is presumed the commenter is referring to the emissions and permit related to the SSE facility. Please refer to the responses to comments to the SSE permit noted in comment/response number 1 above.</p>

time-limited, recallable if pollution increases or is found to be more hazardous than anticipated.	
--	--

Max/cmw
9/20/11

1. This attachment contains emission factors for both criteria pollutants and hazardous air pollutants (HAPs). Because many HAP emission factors remain under development, the emission factors provided in this attachment represent the best available data at the time of permit renewal. The use of HAP emission factors in this attachment do not guarantee that facilities will be in compliance with federal requirements for major sources of HAPs. Facilities should use the most reliable emission factors as they become available in the future.
2. Emission Factors (EF) for Boilers
 - a. PM, PM10, SO2, NOX, CO and VOC

Fuel type	Boiler type or controls	EF units	PM	PM ₁₀	SO ₂	NO _x	CO	VOC
Natural Gas	Uncontrolled	lb/million cubic feet	2.5	2.5	1.7	100	84	5.5
	“Low NO _x ” burners	lb/million cubic feet	2.5	2.5	1.7	50	84	5.5
	Flue gas recirculation	lb/million cubic feet	2.5	2.5	1.7	32	84	5.5
Propane	All	lb/1000 gallons	0.6	0.6	0.10S ⁽¹⁾	19	3.2	0.5
Butane	All	lb/1000 gallons	0.6	0.6	0.09S ⁽¹⁾	21	3.6	0.6
#1 distillate oil	All	lb/1000 gallons	3.3	1.7 ⁽²⁾	142S ⁽¹⁾	18	5	0.2 ⁽³⁾
#2 distillate oil	All	lb/1000 gallons	3.3	1.7 ⁽²⁾	142S ⁽¹⁾	20	5	0.2 ⁽³⁾
#4 residual oil	All	lb/1000 gallons	8.5	7.3 ⁽⁴⁾	150S ⁽¹⁾	20	5	0.2 ⁽³⁾
#5 & #6 residual oil	All	lb/1000 gallons	11.5	9.9 ⁽⁴⁾	157S ⁽¹⁾	55	5	0.28 ⁽³⁾
Wood	Dutch oven – uncontrolled	lb/1000 lb of steam	0.4 ⁽⁵⁾	0.2 ⁽⁵⁾	0.014	0.31	3.0	0.13
	Spreader/stoker – uncontrolled	lb/1000 lb of steam	0.4 ⁽⁵⁾	0.2 ⁽⁵⁾	0.014	0.31	2.0	0.13
	Fuel cell - uncontrolled	lb/1000 lb of steam	0.4 ⁽⁵⁾	0.2 ⁽⁵⁾	0.014	0.31	1.0	0.13

(1) The sulfur dioxide emission factor is based on the sulfur content of the fuel expressed as a percent by weight.

For example, if the sulfur content of #1 distillate oil is 0.3%, the emission factor is 142 x 0.3 = 42.6 lb/1000 gallons of oil burned.

- (2) PM₁₀ is 50% of total PM. Total PM is the sum of filterable PM and condensible PM. [AP-42 tables 1.3-1, 1.3-2, and 1.3-6]
- (3) VOC reported as non-methane total organic carbon (NMTOC).
- (4) PM₁₀ is 86% of total PM. Total PM is the sum of filterable PM and condensible PM. [AP-42 tables 1.3-1, 1.3-2, and 1.3-5]
- (5) Emission factors for boilers with PM control devices can be determined using the procedures in the section below titled "Wood-fired boiler PM control efficiencies and PM₁₀ fractions".

b. HAPS

Pollutant	Emission Factor lb/MMlbSteam ⁽¹⁾	Reference
Acrolein	4.40	AP-42; 9/03
Formaldehyde	1.43	NCASI TB 858; 2/03
Acetaldehyde	0.91	AP-42; 9/03
Benzene	3.63	NCASI TB 858; 2/03
Styrene	2.09	AP-42; 9/03
Toluene	1.01	AP-42; 9/03
Methanol	0.91	NCASI TB 858; 2/03

⁽¹⁾ Assumes 1100 Btu per pound of steam

c: Wood fired boiler PM control efficiencies and PM₁₀ fractions:

Use the following information to make adjustments to the PM emission factors given in Condition 1 for wood-fired boilers. For example, the PM and PM₁₀ emission factors for a Dutch Oven boiler with a high pressure multiclone would be:

$$\begin{aligned}
 EF_{PM} &= 0.40 \times (1 - 70\%/100) = 0.12 \text{ lb/1000 lb of steam} \\
 EF_{PM10} &= 0.12 \times 95\%/100 = 0.11 \text{ lb/1000 lb of steam}
 \end{aligned}$$

Control Device	Estimated Efficiency (%)	PM ₁₀ Fraction (%)
Uncontrolled	NA	50
Multiclone (low pressure)	50	50
Multiclone (high pressure)	70	95
Wet scrubber (low pressure)	70	80
Wet scrubber (medium to high pressure)	80	95
Electrostatic precipitator (wet or dry)	95	100

3. Emission Factors for Cyclones and Target Boxes

Process Equipment	Type	Description	Units	PM (lb/BDT)	PM ₁₀ (lb/BDT)
Cyclone	Medium Efficiency	Dry & Green Chips, Shavings, Hogged Fuel/Bark, Green Sawdust	Bone Dry Tons (BDT)	0.5	0.25
	High Efficiency			0.2	0.16
	Baghouse Control			0.001	0.001
	Medium Efficiency	Sanderdust		NA	NA
	High Efficiency			2.0	1.6
	Baghouse Control			0.04	0.04
Target Box	Medium Efficiency	Sanderdust	Bone Dry Tons (BDT)	0.1	0.05

4. Emission Factors for Steam and Electric Heated Kilns (lb/1000 board feet)¹

Wood species	PM/PM ₁₀	VOC ⁽²⁾	Methanol	Formaldehyde	Acetaldehyde
Ponderosa Pine	0.02 ⁽³⁾	1.7 ⁽⁴⁾	0.07 ⁽⁴⁾	0.003 ⁽⁴⁾	0.113 ⁽¹⁰⁾
Lodgepole Pine	0.02 ⁽³⁾	1.3 ⁽⁴⁾	0.06 ⁽⁴⁾	0.004 ⁽⁴⁾	0.113 ⁽¹⁰⁾
Douglas Fir	0.02 ⁽⁵⁾	0.6 ⁽⁶⁾	0.02 ⁽⁴⁾	0.001 ⁽⁴⁾	0.057
White Fir	0.05 ⁽⁷⁾	0.33 ⁽⁴⁾	0.12 ⁽⁴⁾	0.003 ⁽⁴⁾	0.113 ⁽¹⁰⁾
Hemlock	0.05 ⁽⁵⁾	0.39 ⁽⁸⁾	0.128 ⁽⁸⁾	0.003 ⁽⁹⁾	0.113 ⁽¹¹⁾

- (1) Use source specific data, if available
- (2) VOC emissions factors are based on propane, using the carbon based results from the cited studies and multiplying by 44/36.
- (3) No data, use Douglas Fir
- (4) Oregon State University (OSU) kiln study, 2000 (NCASI)
- (5) OSU kiln study, 1998 (WI)
- (6) University of Idaho kiln study, 1996 (NCASI), average of heart and sap results
- (7) No data, use Hemlock
- (8) Emissions from Western Hemlock lumber during drying, Milota & Mosher (2006)
- (9) No data, use White Fir
- (10) No data, use Hemlock
- (11) Average of Rosboro and Hampton tests at OSU

5. Emission Factors for Veneer Dryers (lb/1000 square feet, 3/8" basis)

1. PM/PM₁₀, NO_x, and CO:

Process Equipment	Description	PM/PM ₁₀	NO _x	CO
Veneer Dryer - Gas heat	Douglas Fir (uncontrolled)	0.52	0.12	0.02
	(Burley or 45% control)	0.29		
	Hemlock, White Fir (uncontrolled)	0.15		
	(Burley or 45% control)	0.10		
Veneer Dryer - Steam heat	Douglas Fir (uncontrolled)	1.01	none	
	(Burley or 45% control)	0.56		
	Hemlock, White Fir (uncontrolled)	0.25		
	(Burley or 45% control)	0.15		

6. VOC and Hazardous Air Pollutants: These factors are based on recent studies performed on **softwoods** by NCASI. EPA incorporated NCASI's data into AP-42, but did not distinguish between southern and northwest softwood species. Therefore, the highest average test result is included in this permit as a conservative estimate of emissions. The VOC emission factors have been adjusted to a propane basis by the multiplying the carbon basis by a factor of 44/36. All emission factors are in units of pounds per 1000 square feet on a 3/8" basis (lb/MSF).

Dryer type/activity	Pollutant	Steam heated	Direct Wood-Fired	Direct Natural Gas-Fired
Veneer Dryers	VOC	1.8	1.0	3.1
	Acetaldehyde	0.022	ND ⁽¹⁾	0.062
	Acrolein	0.001	ND	0.0009
	Formaldehyde	0.03	0.045	0.064
	Methanol	0.04	ND	0.036
	Phenol	0.003	ND	0.006
	Propionaldehyde	0.0044	ND	0.0016
	Benzene	0.0012		
	Toluene	0.0032	ND	ND
	m, p-xylene	0.0012	ND	ND

(1) ND = No Data

Dryer type/activity	Pollutant	Steam heated	Direct Wood-Fired	Direct Natural Gas-Fired
Cooling Section	VOC	0.08	ND ⁽¹⁾	0.05

Dryer type/activity	Pollutant	Steam heated	Direct Wood-Fired	Direct Natural Gas-Fired
	Acetaldehyde	0.004	ND	0.003
	Acrolein	0.008	ND	BDL
	Formaldehyde	0.002	ND	0.002
	Methanol	0.005	ND	0.006
	Phenol	0.0003	ND	BDL
	Propionaldehyde	0.002	ND	0.002
Fugitives	VOC	0.06	ND	0.046
	Acetaldehyde	0.005	ND	0.003
	Formaldehyde	0.001	ND	0.002
	Methanol	0.01	ND	0.006
	Phenol	0.006	ND	0.01

(1) ND = No Data

7. Plywood Presses (lb/MSF⁽¹⁾)

Pollutant	Softwood Emission Factor
VOC	0.07
Acetaldehyde	0.007
Formaldehyde	0.002
Methanol	0.04
Phenol	0.006
Propionaldehyde	0.003

(1) MSF = 1000 ft²

8. Miscellaneous Plywood Activities

Pollutant	I-J CC ⁽¹⁾ (lbs/MLF)	I-J Saw ⁽²⁾ (lbs/MLF)	Log Vats (lbs/MSF 3/8")	Trim Chip (lbs/MLF 3/8")	Sander (lbs/MSF)	Skin Saw (lbs/MSF)
VOC	0.003	0.11	ND ⁽³⁾	0.068	0.18	0.088
Acetaldehyde	BDL ⁽⁴⁾	BDL	0.005	BDL	0.003	0.0009
Formaldehyde	0.0002	BDL	BDL	BDL	0.002	0.0003
Methanol	0.0006	0.016	0.007	0.008	0.012	0.012

(1) I-Joist Conditioning Chamber

(2) I-Joist Saw

(3) ND=No Data

(4) BDL=Below Detection Limits

9. Emission Factors for Surface Coating Operations Consult manufacturer or Material Safety Data Sheet for required information needed to calculate emissions.

400 Hp Boiler-Natural Gas w/No.2 Oil Backup

Pollutant	Max Design capacity (cubic ft/hr)	Emission Factor (lbs/10 ⁶ ft ³)	Conversion Factor (tons/lb)	8760 hours per year	
				Annual Emissions (tons)	Hourly Emissions (pounds)
PM/PM10	13,400	2.5	0.0005	0.1	0.0
SO2	13,400	1.7	0.0005	0.1	0.0
NOx	13,400	100	0.0005	5.9	1.3
CO	13,400	84	0.0005	4.9	1.1
VOC	13,400	5.5	0.0005	0.3	0.1

Boiler has a maximum design rate of 13.4 million BTU/hr or 13,400 cuft of gas/hr
Emission factors are from AP-42 Tables 1.4-1 and 1.4-2, 7/98 for small, uncontrolled boilers
Boiler is a Cleaver-Brooks boiler which was constructed in 1996.

Pollutant	Max Design capacity (gallons/hr)	Emission Factor (lbs/1000 gallons)	Conversion Factor (tons/lb)	8760 hours per year	
				Annual Emissions (tons)	Hourly Emissions (pounds)
PM	96	3.3	0.0005	1.4	0.3
PM10	96	1.7	0.0005	0.7	0.2
SO2	96	71	0.0005	29.8	6.8
NOx	96	20	0.0005	8.4	1.9
CO	96	5	0.0005	2.1	0.5
VOC	96	0.2	0.0005	0.1	0.0

The Cleaver-Brooks boiler is also capable of burning No. 2 Diesel.
Boiler has a maximum design capacity of 96 gallons/hour based on 140,000 BTU/gal for No. 2 oil
#2 Oil factors are from AP-42 Tables 1.3-1 and 1.3-3 dated 9/98.

Backup 200 Hp Gas and Oil-fired Boiler

Pollutant	Max Design capacity (cubic ft/hr)	Emission Factor (lbs/10 ⁶ ft ³)	Conversion Factor (tons/lb)	8760 hours per year	
				Annual Emissions (tons)	Hourly Emissions (pounds)
PM/PM10	6,700	2.5	0.0005	0.1	0.0
SO2	6,700	1.7	0.0005	0.0	0.0
NOx	6,700	100	0.0005	2.9	0.7
CO	6,700	84	0.0005	2.5	0.6
VOC	6,700	5.5	0.0005	0.2	0.0

Boiler has a maximum design rate of 6.7 million BTU/hr or 6,700 cuft of gas/hr
Emission factors are from AP-42 Tables 1.4-1 and 1.4-2, 7/98 for small, uncontrolled boilers
Boiler is a Cleaver-Brooks boiler which was constructed in 1996.

Oil

Pollutant	Max Design capacity (gallons/hr)	Emission Factor (lbs/1000 gallons)	Conversion Factor (tons/lb)	Annual Emissions (tons)	Hourly Emissions (pounds)
PM		48	3.3	0.0005	0.7
PM10		48	1.7	0.0005	0.4
SO2		48	71	0.0005	14.9
NOx		48	20	0.0005	4.2
CO		48	5	0.0005	1.1
VOC		48	0.2	0.0005	0.0

1 boiler HP = 33,472 BTU/hour and 1 gallon No. 2 oil = 140,000 BTU
#2 Oil Factors are from AP-42 Tables 1.3-1 and 1.3-3 dated 9/98

Dry Kilns (2)

Pollutant	Max throughput (bd feet/year)	Emission Factor (lb/1000 bd feet)	Conversion Factor (ton/lb)	Annual Emissions (tons)	Monthly Emissions (pounds)
VOC	91,000,000		0.6	0.0005	27.3
PM/PM10	91,000,000		0.05	0.0005	2.3

Operate a maximum of 8,760 hours per year.

Dries a maximum of 91 million board feet per year. Total remains unchanged from previous permit.

Emission factors are from General Permit Emission Factors

Baghouses and Cyclones

Emission Point	Emission Desc.	Pollutant	Max Annual Throughput (BDT/year)	Emission Factor (lbs/BDT)	Annual Emissions (tons/year)
EP-01	Main Baghouse	PM/PM10	163,538	0.001	0.1
EP-02	Planer Baghouse	PM/PM10	163,538	0.001	0.1
EP-03	Planer Chiper Cyc	PM	25,824	0.5	6.5
EP-03	Planer Chiper Cyc	PM10	25,824	0.25	3.2
EP-04	Planer Knife GRCyc	PM	unknown*	0.5	
EP-04	Planer Knife GRCyc	PM10	unknown*	0.25	
EP-05	Stud Mill Sawdust Cyc	PM	38,716	0.5	9.7
EP-05	Stud Mill Sawdust Cyc	PM10	38,716	0.25	4.8
EP-06	Stud Mill Planer Shav B	PM/PM10	38,716	0.001	0.0
EP-07	Mill A GR Cyclone	PM	unknown*	0.5	
EP-07	Mill A GR Cyclone	PM10	unknown*	0.25	
EP-08	Mill A Sawdust Cyclone	PM	25,824	0.5	6.5
EP-08	Mill A Sawdust Cyclone	PM10	25,824	0.25	3.2
EP-10	Mill A Edger Cyclone	PM	25,824	0.5	6.5
EP-10	Mill A Edger Cyclone	PM10	25,824	0.25	3.2
EP-11	Rail Chip Bin Target Box	PM	137,442	0.1	6.9
EP-11	Rail Chip Bin Target Box	PM10	137,442	0.05	3.4

* controls metal grinding, assumed to be minimal

PM Total	36.1
PM10 Total	18.1

Emission factors are from Sawmill General Permit (assume medium efficiency cyclones).

Emission sources emit through common control devices and difficult to get exact estimations of inputs

Throughput estimates are therefore conservative and likely over-estimate the emissions (double count).

Pollutant	Total (tons/yr)	Baseline (tons/yr)	Increase over BL	PSEL
PM	40.5	25.2	15.3	49
PM10	21.5	13.3	8.2	27
SO2	44.7	13.7	31.0	53
NOx	12.6	8.5	4.1	48
CO	7.4	1.7	5.7	99
VOC	27.8	7.5	20.3	47

Boilers

Natural Gas and Diesel

	Emission Factor (lb/MM lb steam)	Annual Throughput (MM lb steam/year)	Annual Emission (tons/year)
Acrolein	4.400	383	0.8
Formaldehyde	1.430	383	0.3
Acetaldehyde	0.910	383	0.2
Benzene	3.630	383	0.7
Styrene	2.090	383	0.4
Toluene	1.010	383	0.2
Methanol	0.910	383	0.2

Dry Kilns (Hemlock)

	Emission Factor (lb/1000 BF)	Annual Throughput (1000 BF/year)	Annual Emission (pounds/year)
Methanol	0.128	9,000	0.6
Formaldehyde	0.003	9,000	0.0
Acetaldehyde	0.113	9,000	0.5

Dry Kilns (Doug Fir)

	Emission Factor (lb/1000 BF)	Annual Throughput (1000 BF/year)	Annual Emission (pounds/year)
Methanol	0.020	81,000	0.8
Formaldehyde	0.001	81,000	0.0
Acetaldehyde	0.057	81,000	2.3

Tons/year

Highest HAPs - Acetaldehyde	3.0
Highest HAPs - Methanol	1.6
Total HAPs	7.0

Emission factors are from General Permit Emission Factors for highest species (hemlock, white fir) for drying temps less than 200F