STATEMENT OF BASIS
FOR
FINAL AIR OPERATING PERMIT NO. 13AQ-C181 FIRST REVISION
SDS LUMBER COMPANY
KLICKITAT COUNTY, WASHINGTON

PREPARED BY:
WASHINGTON STATE DEPARTMENT OF ECOLOGY
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LIST OF ABBREVIATIONS

AOP	Air Operating Permit
BDT	Bone dry tons
CAM	Compliance Assurance Monitoring
CFR	Code of Federal Regulations
CISWI	Commercial and industrial solid waste incineration unit
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
COMS	Continuous Opacity Monitoring System
DESP	Dry electrostatic precipitator
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
°F	Degrees Fahrenheit
FCE	Full Compliance Evaluation
FR	Federal Register
FRV	Federally Reportable Violation
GACT	Generally Achievable Control Technology
GHG	Greenhouse gas
gr/dscf	Grains per dry standard cubic foot
HAP	Hazardous Air Pollutant
HPV	High Priority Violation
IEU	Insignificant emission unit
lb	Pound
MACT	Maximum Achievable Control Technology
mbf	Thousand board feet
MeCL	Cloromethane, also called methyl chloride
MMBtu	Million British thermal units
MRRR	Monitoring, recordkeeping, and reporting requirement
MT/yr	Metric tons per year
NESHAP	National Emission Standards for Hazardous Air Pollutants
NHSM	Non-Hazardous Secondary Materials
NOC	Notice of Construction
NOP	Notice of Penalty
NOV	Notice of Violation
NO_X	Oxides of nitrogen
NSPS	New Source Performance Standards
O_2	Oxygen
PCHB	Pollution Control Hearings Board
PM_{10}	Particulate matter with aerodynamic diameter $\leq$ 10 micrometers
$PM_{2.5}$	Particulate matter with aerodynamic diameter $\leq$ 2.5 micrometers
PTE	Potential to emit
RCW	Revised Code of Washington
(S)	Washington State-only enforceable
SIC	Standard Industrial Classification
SO_2	Sulfur dioxide
sq ft	Square feet
TAP	Toxic Air Pollutant
tpy	Tons per year
TSP	Total suspended particles
VOC	Volatile organic compound
WAC	Washington Administrative Code
WESP	Wet electrostatic precipitator
WPP1	Wood Products Protocol 1
yr	Year

1.0 GENERAL INFORMATION

Company Name:	SDS Lumber Company
Source Name:	SDS Lumber Company
Unified Business Identification Number:	C201000457
Standard Industrial Classification Code:	2421, 2436
Mailing Address:	PO Box 266 Bingen, Washington 98605
Facility Address:	Walnut and Steuben Street Bingen, Washington 98605 (Klickitat County)
Responsible Official:	Jason Spadaro President PO Box 266 Bingen, Washington 98605 (509) 493-2155
Source Contact:	Vernon Buchanan Environmental Compliance Manager PO Box 266 Bingen, Washington 98605 (509) 493-2155

2.0 BACKGROUND

This document sets forth the legal and factual basis for the permit conditions in an AOP issued by the State of Washington, Department of Ecology, for a sawmill and plywood manufacturer located in Bingen, Washington. This document is called a "statement of basis." The statement of basis does not contain enforceable permit conditions. Enforceable permit conditions are contained in the AOP itself.

2.1 **Basis for Title V Applicability**:
SDS Lumber Company is subject to Title V, Air Operating Permit (AOP) Regulation, by virtue of the potential-to-emit greater than 100 tpy of carbon monoxide, oxides of nitrogen, particulate matter, volatile organic compounds, and 100,000 tpy of CO_2 equivalent emissions.

2.2 **Attainment Classification**:
SDS Lumber Company is located in an area which is unclassified for all criteria pollutants.

2.3 **Timeline**:

March 29, 2012	–	Ecology received SDS Lumber Company's AOP renewal application.
May 14, 2012	–	Ecology deemed AOP renewal application incomplete.
June 20, 2012	–	Ecology received SDS Lumber Company's revised AOP renewal application.
August 6, 2012	–	Ecology received SDS Lumber Company's revised AOP renewal application. Ecology deemed AOP renewal application complete.
January 21, 2013	–	Ecology received SDS Lumber Company's revised AOP renewal application.
June 25, 2013	–	Ecology issued the Draft Title V Air Operaing Permit renewal and began public comment period. Published in "Permit Register" on June 25, 2013. Published in: the Dalles Chronicle on June 26, 2013; The Enterprise on June

27, 2013; the Goldendale Sentinel on June 26, 2013; and the Hood River News on June 26, 2013. The comment period ended July 29, 2013.

August 5, 2013 – Ecology issued Proposed AOP renewal. Forty-five days elapsed without comment by the EPA.

September 30, 2013 - Ecology issued Final AOP renewal, effective October 22, 2013.

January 20, 2015 - Ecology received request to revise NOC No. 02AQCR-5091 and integrate review with associated AOP revision.

February 19, 2015 - Ecology deemed NOC/AOP revision application incomplete.

February 27, 2015 - Ecology received complete NOC/AOP revision application.

3.0 SOURCE DESCRIPTION

3.1 Physical Description

SDS Lumber Company is located at Walnut and Steuben Street in the City of Bingen, Klickitat County, Washington. SDS Lumber Company manufactures studs, dimensional lumber, plywood, and wood chips. The source consists of a hog fuel boiler, two (2) veneer dryers, two (2) drying kilns, two (2) stud mills, a wood chipper, miscellaneous wood processing equipment, and multiple emission control devices (i.e. baghouses, cyclones, wet electrostatic precipitator (WESP), dry electrostatic precipitator (DESP)). The overall production process includes four major process steps, namely; log preparation, plywood/veneer production, stud mills for dimensional lumber production, and steam production for heat and electricity.

The major process steps and a detailed plot plan of SDS Lumber Company are shown in Figures 1 and 2, respectively. The main products generated by SDS Lumber Company are summarized in Table 1.

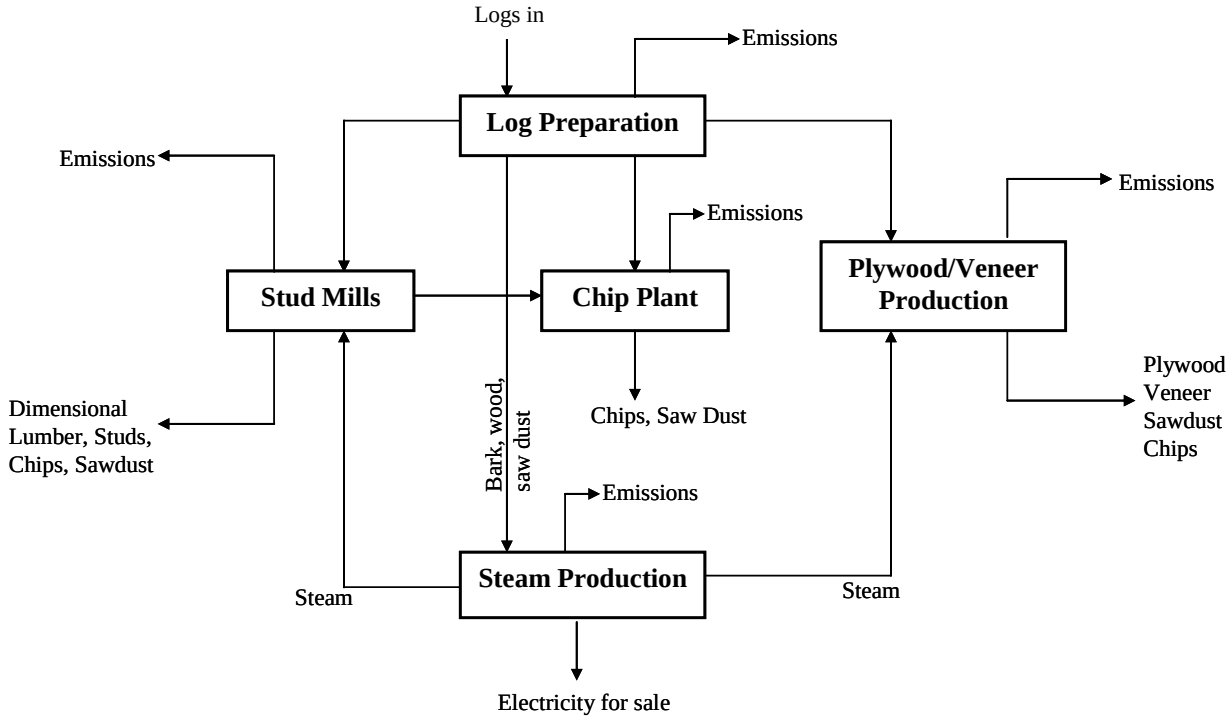

Figure 1: Simplified process flow diagram for SDS Lumber Company (Major unit operations only. See Figure 3 for a detailed flow diagram.)

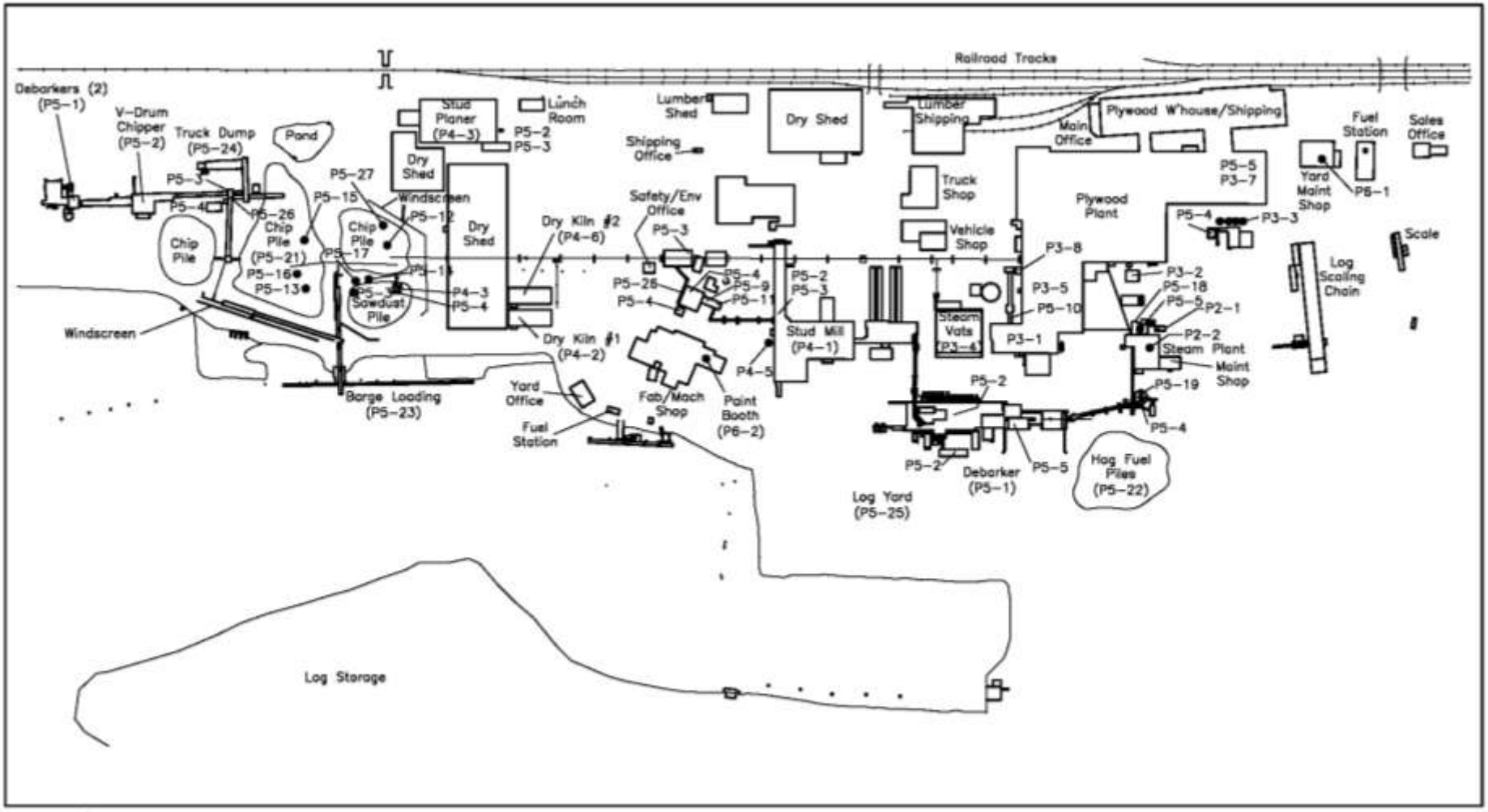

Figure 2: Plot plan of SDS Lumber Company (Submitted June 3, 2013 by Ken Fellows, GeoEngineers Inc.).

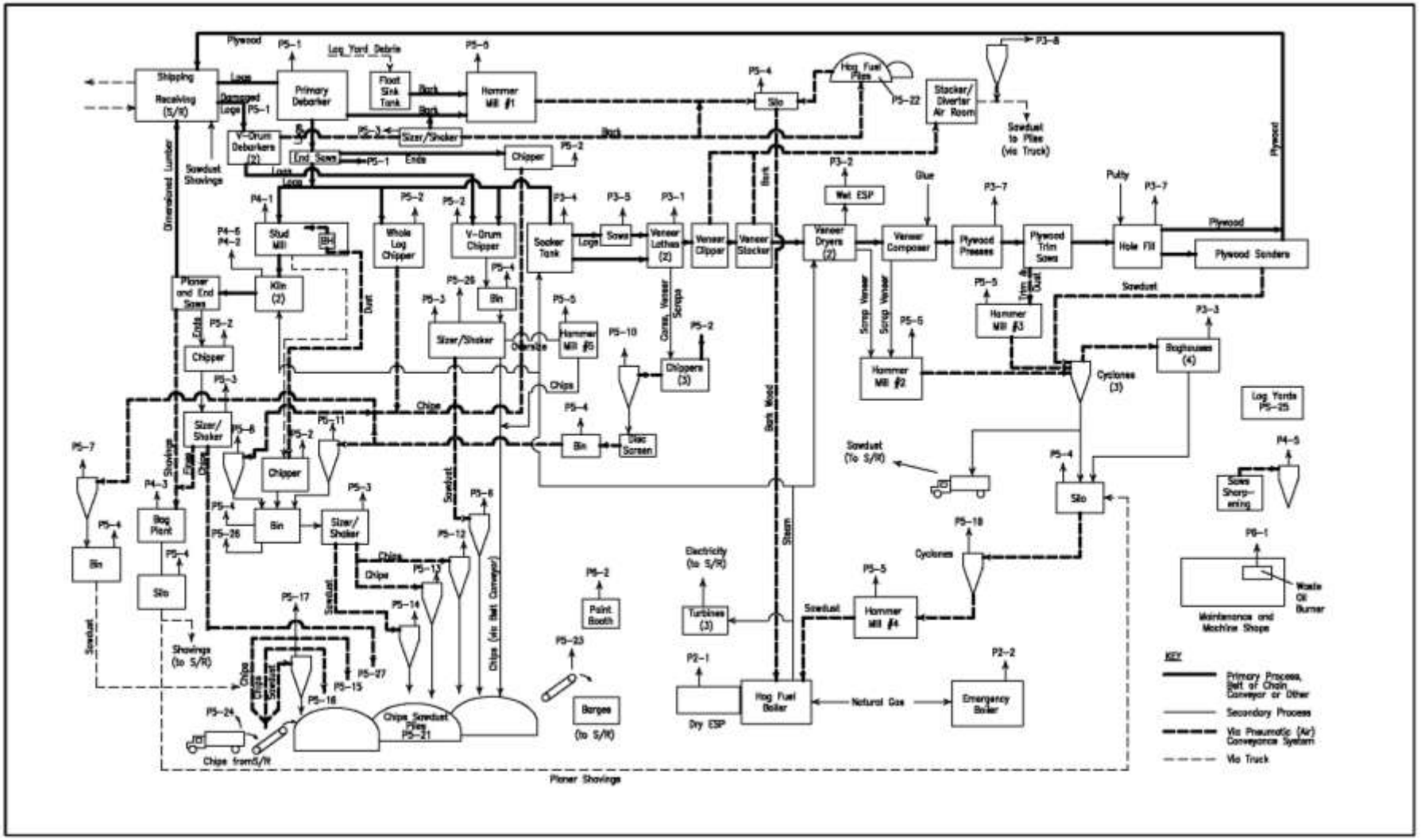

Figure 3: SDS Lumber Company process flow diagram (Submitted June 3, 2013 by Ken Fellows, GeoEngineers Inc.).

Table 1: Main Products Generated at SDS Lumber Company.

Product Name	Product Description	Maximum Annual Production[1]	Units of Measure
Dimensional Lumber	Wood (logs) sawn to specific widths, thicknesses, and lengths. May or may not be dried after sawing.	Stud Mill Sawn: 150,000,000[2] Kiln #1: 110,000,000 Kiln #2: 62,466,100[3]	board ft lumber
Veneer/ Plywood	Thin wood sheets (veneer), may or may not be dried. Some veneer may be glued together to form plywood.	Veneer: 86,400,000 of 3/8" equivalent Plywood: 83,027,000	sq ft
Chipped Wood	Wood cut into small pieces for use in paper production (pulp) or other use, as produced by facility operations or received from other facilities and transloaded.	448,000	BDT
Electricity	Electrical power delivered to utilities.	90,000,000	kilowatt-hours
Hog Fuel Scrap Wood	Scrap wood, bark, and/or sawdust.	142,000	tons
Sawdust	Fine particles of wood produced as a byproduct from facility operations, as produced by facility operations or received from other facilities and transloaded.	90,000	BDT

[1] Estimated maximum production rates (not regulatory limits). Maximum rates depend on variable material properties, production uncertainties, and weather conditions. Total logs debarked limited to 1,450,000 tons per 12-month period per AOP Condition 6.8.1.
[2] AOP Condition 6.6.3.
[3] AOP Condition 6.7.2.

3.2 Description of Processes

3.2.1 Process 1: Source-wide

Logs are transported to the source where they are stored on-site. Typically the logs are Douglas fir, white fir, or pine. Figure 3 displays a detailed process flow diagram for SDS Lumber Company. A listing of significant emission units and their estimated annual potential emissions is provided in Table 2. A listing of insignificant emission units and activities present at the source is provided in Section 11 of this document.

Logs begin processing by first being debarked and then are sent to the various manufacturing operations. Typically these debarked logs will be used in the manufacture of either plywood or studs. Those logs not used elsewhere are chipped or sold for other uses. Chipped logs are processed in a v-drum chipper. Chips and sawdust are conveyed to the chip and sawdust piles through a combination of pneumatic, belt, and bucket conveyors, where they are stored in piles that are partially surrounded by wind screens. These chips along with additional chips and sawdust produced throughout the source are sold. Steam, produced by the hog fuel boiler, is used for process heating of the veneer dryers, stud mill kilns, and the steam vats. The source also has three steam powered turbines used to produce electrical power for use within the source and for sale to electric utilities.

For plywood production (SIC Code = 2436), debarked logs are soaked in steam vats to soften them prior to being peeled in the veneer lathes. Veneers are then dried in one of two single chamber veneer dryers. Some dried veneer is coated with glue and pressed into plywood. The rough plywood edges are trimmed to size and knot holes are routed out and filled with putty. Some of the plywood is sanded. Trimmings are hammer milled and then combined with sander

residue. These residues are then size speciated in a cyclone with the finer material being exhausted through a baghouse. The larger material is generally used as hog fuel.

The stud mills process logs (SIC Code = 2421), into dimensional sizes such as 2x4s, 4x4s and 4x6s. Lumber produced in the stud mills is typically dried in any one of the dry kilns. These kilns are heated with steam from the hog fuel boiler. The dried lumber is then planed and sawn to the desired final dimensions.

Table 2: Potential Emissions from Significant Emission Units[a]

Emission Unit	Description	TSP (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	NO_X (tpy)	Lead (tpy)	HAP (tpy)[b]	CO_2e (tpy)
P1-2[c]	Usage of VOC-Containing Products	0.0	0.0	0.0	3.4	0.0	0.0	0.0		1.9	
P2-1	Hog Fuel Boiler	65.3	48.9	42.2	8.1	470	15.6	121.6		9.3	131,837[d]
P3-2	Veneer Dryers (2)	2.5	1.8	1.6	8.0	3.1	0.0	0.0		5.3	
P3-3	Plywood Plant Baghouses (4)	10.3	10.3	10.3	0.0	0.0	0.0	0.0	0.0	0.0	
P3-7	Plywood Glue and Putty Usage	0.0	0.0	0.0	3.6	0.0	0.0	0.0	0.0	3.6	
P3-8	Stacker/Diverter Cyclone	2.0	1.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	
P4-1A	1990 Stud Mill (a.k.a. Stud Mill #1)	2.0	2.0	1.0	8.0	0.0	0.0	0.0	0.0	0.0	
P4-1	New Stud Mill (a.k.a. Stud Mill #2)	1.2	1.2	0.6	4.8	0.0	0.0	0.0	0.0	0.0	
P4-2	Stud Mill Kiln #1[e]	4.5	4.5	4.5	60	0.0	0.0	0.0	0.0	8.5	
P4-3	Planer Mill Bagplant	5.3	5.3	5.3	0.0	0.0	0.0	0.0	0.0	0.0	
P4-6	Stud Mill Kiln #2[e]	4.1	4.1	4.1	34.2	0.0	0.0	0.0	0.0	7.8	
P5-1	Debarkers and End Saws	17.4	8.7	3.5	0.0	0.0	0.0	0.0	0.0	0.0	
P5-6	V-drum Chipper Cyclone	1.9	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	
P5-9	End Saw Chip Cyclone	3.0	1.5	0.9	0.0	0.0	0.0	0.0	0.0	0.0	
P5-10	Veneer Lathe Chipper Cyclone #1	3.4	1.7	1.0	0.0	0.0	0.0	0.0	0.0	0.0	
P5-11	Veneer Lathe Chipper Cyclone #2	5.0	2.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	
P5-12	Stud Mill Sizer/Shaker Chip Cyclone #1[f]	8.6	4.3	2.6	0.0	0.0	0.0	0.0	0.0	0.0	
P5-13	Stud Mill Sizer/Shaker Chip Cyclone #2[f]	8.6	4.3	2.6	0.0	0.0	0.0	0.0	0.0	0.0	
P5-14	Stud Mill Sizer/Shaker Sawdust Cyclone	3.0	1.5	0.9	0.0	0.0	0.0	0.0	0.0	0.0	
P5-17	Truck Sawdust Unload Discharge Cyclone #3	4.2	2.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	
P5-18	Hog Fuel Boiler Sawdust Cyclone	2.1	1.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	
P5-19	Hog Fuel Silo Cyclone	1.9	0.9	0.6	0.0	0.0	0.0	0.0	0.0	0.0	
P5-21	Wood Chip/Sawdust Piles	1.2	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	
P5-25	Logyard	60.0	17.1	2.6	0.0	0.0	0.0	0.0	0.0	0.0	
	TOTAL	**217.5**	**127.3**	**88.0**	**130.1**	**473.1**	**15.6**	**121.6**	**0.0**	**36.4**[b]	**131,837**[d]

[a] Source: *AOP Renewal Application, Form 2*, received 3/29/12; *AOP Renewal Application – Revision 1, Form 2*, received 6/20/12; *AOP Renewal Application – Revision 2, Form 2*, received 1/21/13; and draft *AOP review comments – Form 2*, received 6/3/13. Potential-to-emit totals consider permit required emissions control reductions and do not include emissions from insignificant emission units.
[b] HAP emissions are limited on a facility-wide basis to less than 10 tpy of any single HAP and less than 25 tpy of all HAPs by Ecology Order No. 07AQ-C061. See Section 6.2.1 and Section 8 for more information regarding 2012 HAP emissions and ongoing calculation of HAP emissions.
[c] Includes emissions for coatings applied in the paint booth, emission unit P6-2.
[d] 119,602 MT/yr
[e] EPA Region 10 dry kiln HAP and VOC emission factors as of December 20, 2012 were used.
[f] Stud mill sizer/shaker chip cyclone #1 and stud mill sizer/shaker cyclone #2 do not operate simultaneously.

3.2.2 **Process 2: Hog Fuel Boiler**

The hog fuel boiler is fueled by bark, wood waste, sander dust, and shavings. The boiler uses natural gas for startup and shutdown. Particulate matter emissions are controlled with two multiclones in series and a dry electrostatic precipitator. An oxygen trim system maintains the proper fuel-air ratio of the boiler as well. The boiler produces steam for use within SDS Lumber Company, as process heat, and to generate electrical power through three steam turbines (SIC Code = 2421). The electrical power generated is used within the source, and the remainder sold to electric utilities. The boiler is capable of producing up to 80,000 lb of steam per hour.

3.2.3 **Process 3: Veneer Dryers**

There are two veneer dryers used in the production of plywood (SIC Code 2436). The dryers are heated by steam produced by the hog fuel boiler. The emissions from these dryers are captured and routed through a wet electrostatic precipitator.

3.2.4 **Process 4: Plywood Sanding**

Some of the plywood sheets are sanded after being trimmed to size and having the knot holes routed out and filled with putty (SIC Code = 2436). Particulate matter emissions are controlled by use of cyclones and baghouses used in series.

3.2.5 **Process 5: Materials Handling and Storage**

Sawdust and wood chips are produced by facility operations or received from other facilities and transloaded (SIC Code = 2421). Chips and sawdust are conveyed, from various locations within the source, to a partially enclosed storage area by pneumatic, belt, and bucket conveyors. Some of the pneumatic conveyors terminate with cyclone collectors or baghouses to collect and minimize air emissions.

3.2.6 **Process 6: New Stud Mill**

The new stud mill (#2) (SIC Code = 2421) is located in the same building as the 1990 stud mill. The stud mill's total output is limited to 150,000,000 board feet of Douglas fir, true fir, or hemlock lumber sawn per 12-month period.

3.2.7 **Process 7, Stud Mill Kiln #2**

Stud Mill Kiln #2 (SIC Code = 2421) is located next to the previously existing Stud Mill Kiln #1. The dry kiln's total throughput is limited to 62,466,100 board feet of Douglas fir, true fir, or hemlock dried per 12-month period.

3.2.8 **Process 8, Debarker**

Up to 1,450,000 tons of logs may be debarked per 12-month period. Debarked logs are processed in the plywood plant, the sawmill, or are chipped.

3.2.9 **Process 9, Logyard**

Prior to processing, logs are stored in the log yard. Annual throughput is estimated at 1,450,000 tons of logs per year.

3.3 **Fuel Specifications**
Approximately 100,000 therms of natural gas are consumed annually, at SDS Lumber Company, by space heaters, water heaters, building furnace heaters, and during startup and shutdown of the hog fuel boiler.

SDS Lumber Company's current Order No. DE 80-184 is for the "hog fuel fired boiler." This order does not list allowable fuel types, however, Ecology maintains that the reference to "hog fuel fired boiler," means that only hog fuel may be burned in the boiler. For the purposes of this Air Operating Permit, "hog fuel" means wood pieces or particles generated as a by-product or waste from the manufacturing of wood products, and the handling and storage of raw materials, trees, and stumps. This definition includes but is not limited to sawdust, chips, shavings, bark, pulp, and log sort yard waste, but **does not** include wood pieces or particles containing chemical preservatives such as creosote, pentachlorophenol, or copper-chrome-arsenate.

4.0 NEW SOURCE REVIEW HISTORY

In Washington State, new sources of air pollution are potentially subject to four types of new source review (air quality permitting). Federal new source review includes Prevention of Significant Deterioration (Title 40 CFR Part 52.21 and WAC 173-400-700 through 750) and Nonattainment New Source Review (Title 40 CFR Part 52.24 and WAC 173-400-800 through 860). These Federal programs apply to large sources with potential emissions equal or greater than specified thresholds. Additionally, State new source review, referred to as Notice of Construction permitting, applies to smaller sources, and the lesser emissions at the larger sources. Notice of Construction permitting may be required for criteria pollutants (WAC 173-400-110) and/or toxic air pollutants (WAC 173-460-030).

4.1 **Plywood Plant**. The original plywood plant and its two veneer dryers existed prior to installation of the current hog fuel boiler, in 1977.

Installation and operation of a wet electrostatic precipitator, to control veneer dryer emissions, was approved under a control technology order, Notice of Construction Order No. DE 95AQ-C221, on August 4, 1995. Additionally, installation and operation of a six-headed plywood sander was approved under Notice of Construction Order No. DE 97AQ-C164 on October 23, 1997 (as subsequently revised on May 8, 1998).

4.2 **Hog Fuel Boiler**. Operation of the hog fuel boiler has been dictated by three Orders, an NOC, an enforcement order, and a "control technology" order, sequentially. The parameter that has received the most attention is the boiler's enforceable steam production rate.

4.2.1 The NOC application (April 5, 1977) originally submitted for SDS Lumber Company's boiler listed the maximum output per hour as 60,000 pounds of steam. NOC Order No. DE 80-184 (originally issued as Order No. DE 77-435) does not specifically state a steam production limitation, but does contain incorporation language: "All plans, specifications and other information submitted … relative to this project … and by such action shall be incorporated herein and made a part hereof."

4.2.2 Enforcement Order No. DE 87-C392 (April 15, 1988) allows for steam production at a rate of 66,000 lb/hr or more under the following condition: "A state-approved source test on December 2, 1987 has demonstrated that the company's Bingen boiler is capable of being operated in compliance with air pollution regulations while producing steam at a flow rate up to 66,000 lbs per hour. Operation of the boiler at steam flow rates above 66,000 lbs per hour would require that a state-approved source test be conducted while the boiler is operating at the higher steam flow rate."

4.2.3 NOC Order No. DE 98AQ-C143 (June 11, 1998), a control technology order, was issued allowing installation of a dry electrostatic precipitator on the existing hog fuel boiler. This order

contains the condition that, "operation of the hog fuel boiler shall be limited to 80,000 pounds of steam per hour."

Ecology's Air Quality Program commonly views information submitted as part of the Notice of Construction (air quality permit) process as enforceable parameters of source operation. This has been reiterated by the inclusion of "incorporation language" in most permits which states that "All plans, specifications and other information submitted…relative to this project…shall be incorporated herein and made a part hereof." In this specific instance, subsequent actions taken by Ecology, following original submittal of the NOC application, indicate that Ecology has not considered 60,000 lb/hr of steam to be an applicable limitation for operation of the hog-fuel boiler. At present, Ecology believes that 80,000 lb/hr of steam is the proper applicable limitation and has listed this steam production rate as an applicable requirement in the air operating permit.

4.3 **1990 Stud-Mill**. A new stud-mill was constructed in 1990. At the time of installation, Ecology determined that an NOC was required, under WAC 173-400-110 (1/3/89). The requirement to submit an NOC was also included in a stipulated compliance schedule, which expired 12/30/91. Ecology has no record that a complete application was ever submitted. On 9/5/97, SDS Lumber Company submitted information demonstrating that the new stud mill replaced an older stud mill. The new stud mill employs saws with smaller kerfs and particulate matter control equipment; which translates to less emissions than those produced by the old stud mill. Considering this information and Ecology's policy at the time (i.e. a 2/7/97 policy for addressing changes to equipment at existing sources), a stud-mill NOC is no longer being pursued by Ecology.

4.4 **1995 NOC Application**. An NOC application was submitted 4/10/95, to cover cyclones and baghouses which emit directly to the atmosphere from different processes. This application was interpreted, by Ecology, as a control technology order application. This NOC application was deemed to be "approved without conditions," due to Ecology taking no action within 30 days of receipt, as provided in RCW 70.94.153.

4.5 **2002 Dry Kiln & Studmill**. Installation and operation of a 2nd studmill and 2nd drying kiln was approved under Notice of Construction Order No. 02AQCR-5091, on December 30, 2002. This project increased the quantity of logs the mill as a whole could saw into green-lumber studs and the quantity of green-lumber studs that could be dried. As a result of the installation of these new units, the quantity of logs debarked, in the existing debarker, was expected to increase. Because this modification has the potential to increase the total amount of incoming logs and logs debarked, this Order contains conditions which are applicable to the logyard and the debarker. Additionally, since the amount of steam available for all uses mill-wide did not increase under this approval, the drying kiln will use steam, produced by the hog fuel boiler, previously employed by other equipment (i.e., the plywood plant). This NOC was revised, on July 28, 2015, to incorporate new dry kiln emission factors. Specifically, NOC No. 02AQCR-5091 First Revision, decreases the allowable throughput to the dry kiln without modifiying the associated allowable emissions.

4.6 **Klickitat Energy Partners**. In 1995 Ecology issued an NOC for a separate source to be located within the boundaries of SDS Lumber Company. Ecology determined that construction of Klickitat Energy Partners' turbine, permitted by Order No. DE 95AQ-C102, was not commenced within 18 months after receipt of final approval, and therefore the Order became void. Subsequently, on April 2, 1998, Ecology rescinded Order No. DE 94AQ-C193, issued to SDS Lumber Company. This order contained requirements which would have been triggered by the operation of the proposed Klickitat Energy Partners power generation project.

5.0 AIR OPERATING PERMIT HISTORY

Title V of the 1990 Federal Clean Air Act Amendments required all states to develop a renewable operating permit program for industrial and commercial sources of air pollution. Congress structured the air operating

permit system as an administrative tool for applying existing regulations to individual sources. The goal is to enhance accountability and compliance by clarifying in a single document which requirements apply to a given business or industry.

The Washington State Clean Air Act (Chapter 70.94 Revised Code of Washington) was amended in 1991 and 1993 to provide the Department of Ecology and local air agencies with the necessary authority to implement a state-wide operating permit program. The law requires all sources emitting one hundred tons or more per year of a criteria pollutant, or ten tons of a hazardous air pollutant, or twenty-five tons in the cumulative of hazardous air pollutants, to obtain an operating permit. Criteria pollutants include sulfur dioxide, nitrogen oxides, particulate matter, carbon monoxide, and volatile organic compounds.

Ecology authored Chapter 173-401 of the Washington Administrative Code (WAC), which specified the requirements of Washington State's Operating Permit Regulation. This regulation became effective on November 4, 1993. On November 1, 1993, this regulation was submitted to the United States Environmental Protection Agency (EPA), for program approval. On December 9, 1994, the EPA granted interim approval of Chapter 173-401 WAC. This interim approval was extended until the EPA granted final approval on August 13, 2001. The current version of this regulation was filed on August 10, 2011.

On January 28, 1994, Ecology notified the permittee that records indicated that SDS Lumber Company would be required to obtain an Air Operating Permit (AOP). On December 9, 1994, Ecology notified the permittee of their obligation to submit an AOP application. The permittee submitted an initial draft application on June 6, 1995, and a complete application on December 7, 1995. On October 9, 1998, Ecology issued AOP No. DE 98AOP-C164 (effective term was 10/9/98 through 10/8/03).

The AOP was renewed on October 6, 2003, per WAC 173-401-710(1), with the issuance of AOP No. 03AQ-C004 (renewal term of 10/9/03 through 10/8/08). The permit was again renewed on October 22, 2008 with the issuance of AOP No. 08AQ-C073 (term of 10/22/08 through 10/22/13).

A complete renewal application was due on October 9, 2012. An incomplete application was received by Ecology on March 29, 2012. On May 14, 2012, Ecology requested supplemental application information from SDS Lumber Company. Ecology asked that SDS Lumber Company provide supporting calculations for the annual potential emissions of greenhouse gasses for some emission units. Ecology also requested that SDS Lumber Company reassess the applicability of 40 CFR Part 63 Subpart JJJJJJ to the hog fuel boiler, and to make revisions to the submitted compliance schedule. The requested information was received by June 20, 2012 and August 6, 2012. Ecology deemed the renewal application complete on August 6, 2012.

On January 11, 2013, Ecology again requested supplemental information from SDS Lumber Company. Ecology asked that the source update their potential to emit HAPs and VOCs using the updated dry kiln emission factors EPA Region 10 recently compiled. Ecology also requested that the source determine the applicability of the Standards of Performance for New Stationary Sources and Emissions Guidelines for Existing Sources: Commercial and Industrial Solid Waste Incineration Units, Final Rule (Title 40 CFR Part 241 Subpart B, the "CISWI Rule") and the Non-Hazardous Secondary Material, Final Rule (Title 40 CFR Part 241 Subpart B, the "NHSM Rule") to the existing used oil burner. The requested information was received by January 21, 2013.

See also "Timeline" in Section 2.0.

6.0 FEDERAL REGULATIONS

6.1 **New Source Performance Standards (NSPS)**.

6.1.1 **Title 40 CFR Part 60 Subpart D**

On July 25, 1977, the EPA promulgated Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction is Commenced After August 17, 1971 (Title 40 CFR Part 60 Subpart D). This NSPS applies to wood-residue-fired steam generating units capable of firing fossil fuel

at a heat input rate of more than 73 megawatts (MW) (250 million British thermal units per hour (MMBtu/hr)). SDS Lumber Company's hog fuel boiler was installed in 1980. However, it has a maximum heat input rate of approximately 150 MMBtu/hr. Therefore, the NSPS is not applicable to this boiler.

6.1.2 **Title 40 CFR Part 60 Subpart Da**

On June 11, 1979, the EPA promulgated Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978 (Title 40 CFR Part 60 Subpart Da). This NSPS applies to electric utility steam generating units capable of combusting more than 73 MW (250 MMBtu/hr) heat input of fossil fuel (either alone or in combination with any other fuel). SDS Lumber Company's hog fuel boiler was installed in 1980. However, it has a maximum heat input rate of approximately 150 MMBtu/hr and does not combust fossil fuel. Therefore, the NSPS is not applicable to this boiler.

6.1.3 **Title 40 CFR Part 60 Subpart Db**

On December 16, 1987, the EPA promulgated Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (Title 40 CFR Part 60 Subpart Db). This NSPS applies to steam generating units that commence construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 MW (100 MMBtu/hr). SDS Lumber Company's hog fuel boiler has a maximum heat input rate of approximately 150 MMBtu/hr. However, the boiler was installed in 1980. Therefore, the NSPS is not applicable to this boiler.

6.1.4 **Title 40 CFR Part 60 Subpart Dc**

On September 12, 1990, the EPA promulgated Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (Title 40 CFR Part 60 Subpart Dc). This NSPS applies to steam generating units that commence construction, modification, or reconstruction after June 9, 1989, and that have a maximum design heat input capacity of 29 MW (100 MMBtu/hr) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr). SDS Lumber Company's hog fuel boiler was installed in 1980. It has a maximum heat input rate of approximately 150 MMBtu/hr. Therefore, the NSPS is not applicable to this boiler.

6.1.5 **Title 40 CFR Part 60 Subpart CCCC**

On December 1, 2000, the EPA promulgated Standards of Performance for Standards of Performance for Commercial and Industrial Solid Waste Incineration Units (Title 40 CFR Part 60 Subpart CCCC). This NSPS applies to CISWI that commence construction after November 30, 1999, or commence modification or reconstruction after June 1, 2001. According to the NHSM Rule, the boiler combusts clean cellulosic biomass and incidental quantities of natural gas, not solid waste. Therefore, the Subpart CCCC is not applicable to this boiler. See Section 6.3 for further discussion of the NSHM rule.

6.2 **National Emission Standards for Hazardous Air Pollutants (NESHAP)**

6.2.1 **Title 40 CFR Part 63 Subpart DDDD, the "Plywood MACT"**

On July 30, 2004, the EPA promulgated National Emission Standards for Hazardous Air Pollutants for Plywood and Composite Wood Products Manufacture, Final Rule (Title 40 CFR, Part 63, Subpart DDDD, the "Plywood MACT"), with a compliance deadline of October 1, 2007 for existing major sources. On February 16, 2006, the EPA published amendments to the final Plywood MACT that, among other things, extended the compliance deadline to October 1, 2008. On June 19, 2007, the United States Court of Appeals for the District of Columbia Circuit vacated the EPA's provisions in the Plywood MACT that established an October 1, 2008 compliance deadline and that created and de-listed a low risk subcategory of plywood and composite wood products facilities. On October 29, 2007, the EPA promulgated ministerial amendments incorporating the Court of Appeal's decision into the CFR, and re-establishing an October 1, 2007 compliance deadline.

On May 1, 2002, Ecology received notice from SDS Lumber Company that the NESHAP, as originally proposed, would potentially apply to their facility. On September 26, 2003, Ecology received

notification, on behalf of SDS Lumber Company, based in part upon July 2003 source testing of the hog fuel boiler, that the source was not major for hazardous air pollutants and therefore the NESHAP would not apply.

On August 24, 2007, Ecology notified SDS Lumber Company that the EPA was using new emission factors for HAP emissions from lumber drying kilns, and that if the new emission factors were applied to SDS Lumber Company's dry kilns, potential facility-wide HAP emissions would make the source subject to the Plywood and Boiler MACTs.

On August 29, 2007, Ecology received SDS Lumber Company's request for a voluntary order to limit their HAP emissions below major source thresholds. A Synthetic Minor Order No. 07AQ-C061, approving this request, was issued to the source on September 30, 2007. This Order limits facility-wide emissions of any single HAP to less than 10 tpy, and total HAP emissions to less than 25 tpy, quantified as a 12-month rolling total. The voluntary limits keep SDS Lumber Company out of mandatory compliance with the Plywood MACT. In 2012, the facility reported 18.9 tpy of HAP emissions, with 5.3 tpy of methanol as the single highest HAP emissions.

On January 11, 2013, Ecology notified SDS Lumber Company that EPA Region 10 is now using updated emission factors for VOC and HAP emissions from lumber drying kilns. Ecology requested that the source update their potential emissions according to the new emission factors and, starting March 1, 2013, use the updated factors as part of their calculations of ongoing HAP emissions. Section 18.2 discusses the ramifications of the use of the updated emission factors, as well as how SDS Lumber Company avoids triggering applicability of the Plywood MACT.

6.2.2 **Title 40 CFR Part 63 Subpart DDDDD, the "Boiler MACT"**

On September 13, 2004, the EPA promulgated National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters, Final Rule (Title 40 CFR Part 63 Subpart DDDDD, the "Boiler MACT"), with a compliance deadline of September 13, 2007 for existing major sources. The final rule also put in place multiple compliance alternatives. On December 28, 2005, the EPA published amendments to the final Boiler MACT that, among other things, clarified the eligibility criteria for the health-based compliance alternative. On December 6, 2006, the EPA clarified the procedures for implementing the emissions averaging provision and for conducting compliance testing when boilers are vented to a common stack. On July 30, 2007, the United States Court of Appeals for the District of Columbia Circuit issued a formal mandate fully vacating the Boiler MACT, and rendering it unenforceable.

On May 1, 2002, Ecology received notice from SDS Lumber Company that the NESHAP, as originally proposed, would potentially apply to their facility. On September 26, 2003, Ecology received notification, on behalf of SDS Lumber Company, based in part upon July 2003 source testing of the hog fuel boiler, that the source was not major for hazardous air pollutants and therefore the NESHAP would not apply. As discussed in Section 6.2.1, SDS Lumber Company has since taken voluntary limits keep SDS Lumber Company out of mandatory compliance with the Boiler MACT.

On January 31, 2013, the EPA promulgated the revised National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters, Final Rule (Title 40 CFR Part 63 Subpart DDDDD, the "Boiler MACT"), with a compliance deadline of January 31, 2016 for existing major sources. However, the voluntary limits associated with Order No. 07AQ-C061 keeps SDS Lumber Company not major for hazardous air pollutants; therefore, the revised Boiler MACT continues not to apply to the source.

6.2.3 **Title 40 CFR Part 63 Subpart HHHHHH, "GACT 6H"**

On January 9, 2008, the EPA promulgated National Emission Standards for Hazardous Air Pollutants: Paint Stripping and Miscellaneous Surface Coating Operations at Area Sources; Final Rule (Title 40 CFR Part 63 Subpart HHHHHH), with a compliance deadline of January 10, 2011 for existing sources, and upon startup after January 9, 2008 for new affected sources. On September 16, 2008, Ecology notified SDS Lumber Company that Ecology believed subpart HHHHHH might apply to the source.

On September 24, 2008, Ecology received notice from SDS Lumber Company that the source is not subject to 40 CFR part 63, subpart HHHHHH based upon the following:

- SDS Lumber Company does not use paint strippers containing MeCl.
- All paint stripping and surface coating performed at SDS Lumber Company qualifies as "facility maintenance" as defined at 40 CFR 63 §63.11180. SDS Lumber Company only paints stationary equipment, buildings and other fixed items, and vehicles that always remain on site. Other vehicles are painted by a commercial off-site paint shop
- SDS Lumber Company emits much less than one ton per year of MeCl from painting/solvent use operations, based on coating use records and Material Safety Data Sheets.

Additionally, SDS Lumber Company has proposed the following voluntary measures to prevent triggering future applicability of 40 CFR part 63, subpart HHHHHH:

- Prepare a "policy memo" stating that "coating of vehicles is limited to vehicles that always stay on site, and stationary equipment like tanks, buildings, machinery, etc." The policy memo will note any specific types of vehicles/equipment that must be painted only at an off-site paint shop, and will prohibit use of MeCl-based paint strippers.
- Maintain receipts for vehicles like log trucks/chip trucks that have been painted off-site.

6.2.4 **Title 40 CFR Part 63 Subpart JJJJJJ, the "Boiler GACT" or "Area Source Boiler Rule"**
On March 11, 2011, the EPA promulgated the National Emission Standards for Hazardous Air Pollutants: Industrial, Commercial, and Institutional Boilers final rule (Title 40 CFR Part 63 Subpart JJJJJJ). The rule affects industrial, commercial, and institutional boilers located at area sources of HAPs; therefore, SDS Lumber Company's hog fuel boiler is subject to Subpart JJJJJJ.

On March 21, 2011, the EPA published a notice to initiate the reconsideration of certain aspects of the rule for area source industrial, commercial and institutional boilers. On March 13, 2012, the EPA issued a No Action Assurance to all owners and/or operators of existing industrial boilers and commercial and institutional boilers at area sources of HAP emissions stating that the EPA would not enforce the requirement to conduct an initial tune-up by March 21, 2012. Therefore, AOP 08AQ-C073 was not reopened for cause to address Subpart JJJJJJ.

SDS Lumber Company's Mach 29, 2012 renewal AOP application listed Subpart JJJJJJ as an inapplicable requirement. On May 14, 2012, Ecology notified SDS Lumber Company that Ecology believed that Title 40 CFR Part 63 Subpart JJJJJJ might apply to the source. In a revision to the AOP renewal application dated June 20, 2012, SDS Lumber Company agreed that Subpart JJJJJJ was applicable to the hog fuel boiler; however, the source maintained that the hog fuel boiler is not subject to the emission limits or emissions testing in Subpart JJJJJJ.

On January 25, 2013, SDS Lumber Company provided a statement that Subpart JJJJJJ does not apply to the existing used oil burner at the source. The burner classifies as a process heater under Subpart JJJJJJ; process heaters are excluded from the definition of a boiler.

On February 1, 2013, the EPA promulgated a revised Subpart JJJJJJ, with a compliance deadline of March 14, 2014 for existing sources. The hog fuel boiler remains subject to the revised rule. AOP Conditions 6.2.11 through 6.2.13 detail the applicable requirements for compliance with Subpart JJJJJJ.

6.3 **Title 40 CFR Part 241, Solid Wastes Used as Fuels or Ingredients in Combustion Units, the "NHSM Rule"**

On March 21, 2011, the EPA promulgated the Solid Wastes Used as Fuels or Ingredients in Combustion Units rule (Title 40 CFR Part 241). The rule identifies which non-hazardous secondary materials, when used as fuels or ingredients in combustion units, are "solid wastes" under the Resource Conservation and Recovery Act. The solid waste definition determines whether a combustion unit is required to meet the emissions standards for solid waste incineration units issued under Section 129 of the Clean Air Act or the emissions standards for commercial, industrial, and institutional boilers issued under the same section.

Subpart A of the Non-Hazardous Secondary Materials (NHSM) Rule defines traditional fuels; the definition includes fossil fuels and addresses alternative fuels as a subset of traditional fuels. Alternative fuels, developed from virgin materials that can now be used as fuel products, includes used oil which meets the specifications outlined in Title 40 CFR 279.11 and clean cellulosic biomass. The rule states that traditional fuels are not secondary materials or solid wastes unless discarded.

On January 11, 2013, Ecology requested that SDS Lumber Company determine the applicability of the NHSM Rule to the existing used oil burner. In a letter dated January 25, 2013, SDS Lumber Company stated that used oil qualifies as an alternative fuel listed under the traditional fuel definition and is not a solid waste. In a letter dated March 16, 2013, Ecology responded that, without testing, the used oil cannot be classified as an alternative fuel and would be considered off-specification used oil. On March 7, 2013, SDS Lumber Company identified to Ecology language in the preamble of the March 11, 2011 revision of the NSHM Rule which exempts used oil combusted in an oil fired space heater that meets the provisions of 40 CFR 279.23 from testing. The used oil burner at the source meets the provisions of 40 CFR 279.23; therefore, the NHSM Rule does not apply to the burner.

SDS Lumber Company's hog fuel boiler burns traditional fuels, clean cellulosic biomass, resinated wood scraps from facilities operations, and incidental quantities of natural gas. Therefore, according to the NHSM Rule, these fuels are not solid wastes.

7.0 GREENHOUSE GAS REPORTING

7.1 **Federal Greenhouse Gas Reporting**.

On October 30, 2009, the EPA published a rule for the mandatory reporting of greenhouse gases (GHG) (also referred to as 40 CFR part 98) from large GHG emissions sources. The rule applies to certain facilities, including those which emit 25,000 metric tons (MT) CO_2e or more per year in combined emissions from all stationary fuel combustion sources. SDS Lumber Company's potential GHG emissions are approximately 121,239 MT of CO_2e per year. Therefore, SDS Lumber Company may be subject to the Mandatory Greenhouse Gas Reporting rule.

Regardless of applicability of the Mandatory Greenhouse Gas Reporting rule to SDS Lumber Company, Title 40 CFR Part 98, Federal Mandatory Reporting of Greenhouse Gases, is not an AOP applicable requirement. According to EPA guidance, as published in the Federal Register (56288 FR 74:209, Friday, October 30, 2009), the requirements imposed by this rule are not applicable requirements under the Title V operating permit program. Therefore, requirements of the rule have not been included in this permit.

7.2 **State Greenhouse Gas Reporting**.

On December 1, 2010, Ecology promulgated Chapter 173-441 WAC – Reporting of Emissions of Greenhouse Gases. The WAC incorporates by reference certain, but not all, calculation methods and other requirements from 40 CFR Part 98, the federal Mandatory Greenhouse Gas Reporting rule. The WAC applies to any facility that emits 10,000 MT of CO_2e or more per calendar year in total GHG emissions, including biogenic CO_2, from all applicable source categories listed in WAC 173-441-120.

SDS Lumber Company may be subject to the requirements of chapter 173-441 WAC if actual GHG emissions are greater than 10,000 MT of CO_2e per year. Potential GHG emissions at SDS Lumber Company are 121,239 MT of CO_2e per year. As owner and operator of the affected facility, SDS Lumber Company is required to demonstrate compliance with all applicable provisions of chapter 173-441 WAC; AOP Condition 3.10 addresses compliance requirements for state GHG reporting..

8.0 VOLUNTARY PROCESS TO LIMIT EMISSIONS

As discussed in Section 6.2.1 above, Synthetic Minor Order No. 07AQ-C061, 9/30/07, limits facility-wide HAP emissions from SDS Lumber Company to below the major source thresholds. In the absence of source-specific emission factors, SDS Lumber Company will use approved generic emission factors ("designated emission factors") to quantify HAP emissions. Currently-recognized HAP emission factors for wood-fired boilers and lumber drying kilns are shown in Appendix A of this Statement of Basis. SDS Lumber Company may propose other HAP emission factors for review and approval by Ecology, including factors developed using source specific testing. Upon submission to Ecology, the proposed new emission factors will be considered "designated emission factors" for purposes of compliance with the AOP, unless Ecology specifically rejects those emission factors. If Ecology rejects the proposed emission factors, the permittee must demonstrate compliance using approved emission factors for the period when the new emission factors were being used.

9.0 COMPLIANCE ASSURANCE MONITORING (CAM)

9.1 **Criteria.**
On October 22, 1997, the EPA promulgated the Compliance Assurance Monitoring rule (Title 40 CFR Part 64). This Rule requires specialized pollutant-specific monitoring for those emission units which meet the following criteria:

9.1.1 The unit is located at a Title V Air Operating Permit source

9.1.2 The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or surrogate thereof), other than an emission limitation or standard that is exempt.

9.1.3 The unit uses a control device to achieve compliance with any such emission limitation or standard; and

9.1.4 The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tpy, required for a source to be classified as an Air Operating Permit source.

9.2 **Applicability.**
The emission unit considered for CAM applicability was the hog fuel boiler. Following is a summary of how the hog fuel boiler matches up with the above listed criteria:

9.2.1 SDS Lumber Company is a Title V Air Operating source (see Basis for Title V Applicability, on page 5).

9.2.2 The boiler is subject to WAC 173-400-050(1) which limits particulate matter emissions to 0.2 gr/dscf. Additionally, NOC Order No. DE 98AQ-C143 limits particulate matter emissions, from the dry electrostatic precipitator exhaust, to 0.040 gr/dscf. These are emission limitations for an applicable regulated air pollutant, particulate matter.

9.2.3 The hog fuel boiler employs a multiclone followed by a dry electrostatic precipitator to control particulate matter emissions.

9.2.4 Prior to installation of the dry electrostatic precipitator, a source test resulted in particulate matter emissions of 48.7 pounds per hour, when operating at a steam production rate of 66,000 pounds of steam per hour. If this emission rate is extrapolated up to the current steam production limit of 80,000 pounds per hour and multiplied by the number of hours in a year (8760), the pre-control particulate matter emissions are approximately 259 tpy. The trigger for a source to be classified as an Air Operating Permit source is 100 tons of particulate matter per year.

Therefore, CAM is an applicable requirement for the hog fuel boiler.

CAM requirements are located under the MRRR for AOP Condition 6.2.1. CAM includes the use of parametric monitoring. In a letter dated June 13, 2003, PPC Industries, manufacturer of SDS Lumber Company's dry electrostatic precipitator, states that, "the secondary voltage of the third field of the electrostatic precipitator…should be maintained at a minimum average of 28,000 volts in order to meet the performance level of 0.04 grains per dry standard cubic foot corrected to 7% O_2." Additional detail can be found in the *Compliance Assurance Monitoring Plan for Particulate Matter from Hog Fuel Boiler*, received June 23, 2003 (updated March 29, 2012).

10.0 SIGNIFICANT EMISSION UNITS AND ACTIVITIES

SDS Lumber Company's significant emission units and activities are identified as processes #1 through #9, in Section 3.2. The requirements which apply to these processes are identified in the tables of Section 6 of the AOP. The tables include six columns. The first column identifies the permit specific condition numbers. The second column identifies the location of the underlying applicable requirements. Column three simply identifies whether the requirement is state or federally enforceable. (See Section 15, for further discussion on enforceability.) Column four is an unenforceable description of the underlying requirement identified in the first column. The description is, in most cases, a paraphrase or summary of the underlying requirement(s) and has been included for informational purposes only. The fifth column specifies the recognized monitoring and analysis procedure or method to use for the applicable requirement. The last column specifies the monitoring, record keeping, and/or reporting that SDS Lumber Company must perform to demonstrate their compliance status. Elements required in the last column must be addressed in the semi-annual monitoring report(s) required by AOP Condition 3.6.1.

11.0 INSIGNIFICANT EMISSION UNITS AND ACTIVITIES

Source-wide combustion of natural gas (P1-1), a 5 MMBtu/hr emergency backup boiler (P2-2), veneer lathes (P3-1), steam vats (P3-4), plywood end saws (P3-5), saw blade sharpening room cyclone (P4-5), wood chippers (P5-2), sizer/shakers (P5-3). wood chip and sawdust silos (P5-4), four (4) hammer mills (P5-5), trucking of chip and sawdust unload discharge (P5-15 and P5-16), hog fuel piles (P5-22), chip and sawdust barge loading (P5-23), chip and sawdust truck dump (P5-24), truck sawdust loading (P5-26), the lumber kiln planer mill chip discharge (P5-27), and paint booth (P6-2), are insignificant emission units or activities because their actual emission of all regulated pollutants are less than the emissions thresholds of WAC 173-401-530(4). The emissions thresholds for insignificant emission units are provided in Table 3. [WAC 173-401-530(1)(a), 8/10/11]

Table 3: Insignificant Emissions Units Thresholds. [WAC 173-401-530(4)]

TSP	PM_{10}	VOC	CO	SO_2	NO_X	Lead
0.5 tpy	0.75 tpy	2 tpy	5 tpy	2 tpy	2 tpy	0.005 tpy

Dust from vehicle traffic is insignificant on the basis that these activities generate only fugitive emissions. [WAC 173-401-530(1)(d), 8/10/11]

Categorically insignificant activities at the source, include oil storage, aqueous parts washers, storage tanks, solids storage, building vents and openings, recreational fireplaces, brazing, soldering, welding, plant upkeep and housekeeping, cleaning, sweeping of streets and paved areas, laundering, steam cleaning, food preparation,

portable drums and totes, lawn and landscaping activities, general vehicle maintenance, heat/air conditioning, restroom vents, office activities, sampling connections, fire fighting activities, infirmary activities, vehicle exhaust, saws sharpening cyclone, metal cutting and machining, structural changes, photographic equipment and copiers, sample gathering, preparation and management, non-emission unit installation, repair, and maintenance activities, solid waste containers, totally enclosed conveyors, steam vents and safety valves, air compressors and pneumatic equipment, electric equipment, laboratory drying ovens and autoclaves, and wastewater pumping and conveying systems. [WAC 173-401-532(3), (4), (6), (9), (11), (12), (33), (35), (38), (39), (41), (42), (43), (45), (46), (48), (49), (51), (52), (53), (54), (55), (67), (70), (73), (74), (79), (86), (87), (88), (118), (119), (120), 5/7/94]; Welding (< 1 ton/day welding rod), maintenance shop used oil burner (0.5 MMBtu/hr), administration building furnace (< 5 MMBtu/hr, natural gas fired), above ground gasoline, diesel, oil, and propane storage tanks, and steel cutting burning are insignificant on the basis of size or production rate. [WAC 173-401-533(2)(c), (e), (h), (i), 8/10/11]

12.0 GAPFILLING

Section 6 of the air operating permit identifies requirements that are applicable to existing emission units at the source. The air operating permit must contain emission limitations and standards, including those operational requirements and limitations that assure compliance with all applicable requirements at the time of permit issuance. Where the applicable requirement does not require periodic testing or monitoring, periodic monitoring sufficient to yield reliable data has been identified and included in the permit. This action is termed gapfilling.

The last column of the tables in Section 6, of the AOP, contains the monitoring, recordkeeping, and reporting to be performed by the permittee (MRRR). This column identifies the periodic action that must be taken to demonstrate compliance with the applicable requirement. In addition to the MRRR, a source must consider all other credible evidence when certifying to their compliance status.

For some applicable requirements no action is warranted and instead the permittee will annually certify their compliance status. These requirements are identified with, "no additional monitoring required," in the MRRR column.

Many applicable requirements specify periodic MRRR, while gapfilling is used for the remainder. The source of the MRRR is identified in brackets for each MRRR requirement. Those that reference WAC 173-401-615(1) are gapfilled. Table 4 provides a brief explanation of the basis for each instance of gapfilling.

Table 4: Identification and Basis of "Gapfilled" Items.

Condition(s)	Gapfilling Basis
6.1.3, 6.1.5, 6.1.6, 6.1.7, 6.1.10	This source has not had a recent history of violating these "nuisance" requirements. Since these could be subjective, we determined it is appropriate to consider complaints in MRRR.
6.1.4, 6.3.2, 6.4.3, 6.4.5, 6.7.3	This source has not had a history of visible emissions, from these units, and is not expected to have problems complying with established visible emission standards. Monthly MRRR is determined to be appropriate. Additionally, action is required when visible emissions are observed at times other than the monthly survey.
6.1.6, 6.1.7, 6.1.10, 6.2.6, 6.4.2, 6.6.2, 6.6.5, 6.7.4, 6.7.5, 6.7.7	MRRR required for other similar condition(s) should sufficiently demonstrate compliance with the specified condition.
6.1.8, 6.1.11, 6.1.14, 6.2.3, 6.3.2, 6.3.4, 6.9.1	A CFR promulgated test method has been added to this condition in case testing is required to determine compliance.
6.1.14, 6.1.16, 6.1.18, 6.2.3, 6.2.5, 6.2.7, 6.2.9, 6.2.10, 6.3.4, 6.4.6, 6.6.7, 6.10.1	Simple records, generally already kept, will be helpful in proving such operations.

Condition(s)	Gapfilling Basis
6.2.4, 6.2.8, 6.3.1, 6.3.3, 6.4.4, 6.4.7, 6.6.4, 6.6.8, 6.7.6, 6.7.10, 6.8.2	Development and implementation of these documents fulfill the condition. Periodic review/inspections will aid in assuring that the contents of the documents are being followed.
6.6.3, 6.7.2, 6.8.1	The underlying NOC Order No. 02AQCR-5091, 12/30/02, requires SDS Lumber Company to quantify sawn lumber, dried lumber and debarked logs, respectively, on a quarterly basis. This condition has been gap-filled to require quantification on a monthly basis so as to assure compliance with the 12 month production limit required by Order No. 02AQCR-5091.
6.9.1	This condition has been gap-filled to require application of an adequate volume of water or chemical dust suppressant to the log yard, on a frequency such that application is apparent at all times. Such application aids in determination of the performance of the source's fugitive dust control efforts.

13.0 STREAMLINING

Streamlining is the combination of two or more similar applicable requirements. The resulting applicable requirement is stated as the most stringent of those streamlined. This permit appears to contain streamlining from the perspective that the "description" columns of Section 6, of the AOP, describe only the most stringent requirement, while all of the similar requirements are listed as applicable. All of the underlying requirements, listed in the "applicable requirement" columns of Section 6, remain as enforceable conditions which must be complied with. However, to avoid confusion, only the most stringent requirement is described. This "streamlining" like process was used as specified in Table 5.

Table 5: Identification and Basis of "Streamlined" Items.

AOP Condition	Most Stringent Requirement Included in Description	Less Stringent Requirement(s) Left Out of the "Description"
6.2.2	PM shall not exceed 0.040 gr/dscf, corrected to 7% O_2, from the DESP outlet. PM shall not exceed 14.9 lb/hr. [Order No. DE 98AQ-C143, 6/11/98, Condition 2.2.1, 2.4.4, 2.4.5, 2.4.6, 2.4.7, 2.4.9 (S)]	PM emissions shall not exceed 0.2 gr/dscf corrected to 7% O_2. [WAC 173-400-050(1), (3), 8/20/93; WAC 173-400-050(1), (3), 11/28/12 (S)]
6.2.3	Opacity as calculated by using a six (6) minute averaging time shall not exceed 10%. [Order No. DE 98AQ-C143, 6/11/98, Condition 2.2.2, 2.2.3, 2.3.2, 2.3.4 (S)]	Hog fuel boilers shall meet all provisions of WAC 173-400-040 & WAC 173-400-050(1), except that opacity may exceed 20% for up to fifteen (15) consecutive minutes once in any eight (8) consecutive hours for grate cleaning and soot blowing. Grate cleaning and soot blowing shall be scheduled for the same specific times each day and Ecology shall be notified of the schedule or any changes. [WAC 173-400-070(2)(a), 8/20/93; Order No. DE 87-C392, 4/15/88, Condition 2; WAC 173-400-070(2)(a), 11/28/12 (S)]
6.2.4	All equipment associated with the boiler and the pollution control equipment shall be maintained in good condition and properly operated. [NOC Order No. DE 80-184, 2/27/80, Condition 2]	DESP shall be operated & maintained according to an Operation and Maintenance Manual. [Order No. DE 98AQ-C143, 6/11/98, Condition 2.3.1, 2.3.4, 2.5.1, 2.5.2 (S)]
6.2.9	Operation of the hog fuel boiler shall be limited to 80,000 pounds of steam per hour. [Order No. DE 98AQ-C143, 6/11/98, Condition 2.1.1, 2.3.3 (S)]	Operation of boiler steam flow rate > 66,000 lb/hr requires source test prior to operation. [Order No. DE 87-C392, 4/15/88, Condition 1]

14.0 COMPLIANCE CERTIFICATION

By virtue of the Air Operating Permit application and the issuance of this permit, the reporting frequency for compliance certification for this source shall be annual.

15.0 ENFORCEABILITY

Unless specifically designated otherwise, all terms and conditions of the Air Operating Permit, including any provisions designed to limit the source's potential to emit, are enforceable by Ecology, the EPA, and citizens under the Federal Clean Air Act. Those terms and conditions which are designated as state-only enforceable, by (S), are enforceable only by Ecology. State-only terms and conditions will become federally enforceable upon approval of the requirement in the Washington State Implementation Plan. Federal regulations which have not been formally delegated to Ecology, or adopted by reference under WAC 173-400-075 or WAC 173-400-115, are only federally enforceable. The most recent revisions of the Boiler MACT and the NHSM Rule of have not been delegated to Ecology or adopted by reference.
The following is an example of how to identify a state-only enforceable condition. At the end of Condition 3.7.2 the following notation occurs: "[WAC 173-400-107(3), 8/20/93, 11/28/12 (S)]." If a version of the regulation is cited with no reference to enforceability, it is federally enforceable. Thus, this notation means that the authority for this permit condition is contained in the 8/20/93 version of WAC 173-400-107(3) (this is the version of WAC 173-400-107(3) that is in the Washington State Implementation Plan and is federally enforceable) and in the 11/28/12 version of WAC 173-400-107(3). The (S) after 11/28/12 means that the 11/28/12 version of WAC 173-400-107(3) is State-only enforceable.

16.0 OPERATIONAL FLEXIBILITY

The permittee did not request or specify any alternative operating scenarios.

In the event that an emission unit is not operated during a period equal to or greater than the monitoring period designated, no monitoring is required. (ex. A monthly visible emission survey is not required if the emission unit is not operated during the month that the survey covers. A monthly visible emission survey is required if the emission unit is operated for any portion of the month that the survey covers.) Recordkeeping and reporting must note the reason why, and length of time, the emission unit was not operated.

17.0 OTHER PERMITTING ISSUES

17.1 **Chapter 173-433 WAC**. A literal reading of WAC 173-433 and RCW 70.94.453(5) could lead to the conclusion that all solid fuel burning devices, without consideration of size, fall under the definition of this regulation/statute. The definition of solid fuel burning device is, "any device for burning wood, coal, or any other nongaseous and non-liquid fuel, including a wood stove and a fireplace." However, this definition, when read together with the policy statement of RCW 70.94.450 clearly indicates that the concern of the Washington State Legislature was emissions from wood stoves. RCW 70.94.450 and RCW 70.94.453 are two adjacent sections in Chapter 405 of the Laws of 1987. While it might be reasonable for the policy statement of RCW 70.94.450 to lead the Legislature to regulate other solid fuel burning space heating devices similar to wood stoves, it does not seem reasonable that such a policy statement would lead to regulation of a large industrial unit such as the hog fuel boiler. Based upon this interpretation of the intention of RCW 70.94.453, WAC 173-433 was found to be inapplicable to SDS Lumber Company. WAC 173-433 would be applicable if a wood stove, fireplace, or similar device were present at the source.

17.2 **State Ambient Air Quality Standards**. The following regulations are ambient air quality standards that apply generally to all areas of the state. There are no on-going monitoring, recordkeeping, or reporting requirements specific to the source to prove compliance with the ambient air quality standards. Compliance with the ambient air quality standards is required, and the following regulations are triggered for any source when undergoing New Source Review for Notice of Construction or

Prevention of Significant Deterioration permitting and are generally reported in the permits as findings as required, or when an actual or suspected violation of an ambient air quality standard is found locally.

WAC 173-470-010, -020, -030, -100, -160, 1/3/89
WAC 173-470-110, -150, 1/3/89 (S)
WAC 173-474, 9/30/87 (S)
WAC 173-475, 2/29/80 (S)

18.0 COMPLIANCE SUMMARY

18.1 **Compliance Status**. A Full Compliance Evaluation (FCE)[1] was completed for SDS Lumber Company on February 1, 2012. The FCE showed that as of December 19, 2011[2], the source was ***out of compliance***[3]. Some records of continuous opacity monitoring were missing due to the computerized continuous opacity monitoring system's ability to retain records of opacity one-minute averages for three years. SDS Lumber began keeping routine copies of the measurements to correct this situation. SDS Lumber reported that they have regained compliance with Conditions 2.5.3 as of May 5, 2013; five years of opacity monitoring is now on record. Documents related to this and other FCEs completed for the source are available for public viewing from the Ecology's Central Regional Office.

18.2 **Compliance History**. Table 6 summarizes violations for which Ecology has taken formal action.

Additional violations have occurred for which Ecology has not been compelled to issue a Notice of Violation, or for more recent events, has not yet concluded evaluation of whether an Notice of Violation will be issued. Under this permit, and the preceding Air Operating Permit, SDS Lumber Company submits Semi-Annual Monitoring Reports and Annual Compliance Certifications. These documents, along with Ecology inspection records, do identify violations of various air quality requirements which have occurred at SDS Lumber Company. While a majority of these violations have not caused adverse environmental impacts, the underlying requirements are necessary for determining SDS Lumber Company's compliance status with conditions that do limit environmental impacts.

SDS Lumber Company is currently out of compliance with NOC Order No. 02AQCR-5091 Condition 2.9.8, due to operation of stud mill kiln #2 in a manner differing from the plans, specifications, and other information submitted to Ecology during permitting of the unit. Specifically, the source is using updated EPA emission factors to compute VOC and HAP emissions, per Ecology and EPA direction. Use of the updated emission factors, without reduction of the original 100,135,480 board feet throughput limit for Kiln #2, would result in a potential to emit for the kiln of 54.8 tpy VOC. PTE for the Kiln #2 project, permitted by NOC Order No. 02AQCR05091, would then be greater than 40 or more tons of VOC per year, and the project would have triggered Prevention of Significant Deterioration (PSD) permitting, at the time of original construction.

To avoid triggering PSD, a Schedule of Compliance, AOP Condition 5.4, has been added and a temporary reduction in allowable kiln #2 production has been specified (as proposed by the permittee) in AOP Condition 6.7.2. The temporary production limit for the unit is 62,466,100 board feet of Douglas fir, true fir, or hemlock dried, calculated on a rolling 12-month basis. The reduced production limit will reduce potential emissions at or below 34.2 tpy VOC for the kiln. Between January 2004 and March 2013, SDS Lumber reported that the highest annual throughput for Kiln #2 was 52,104,896

[1] An FCE is a comprehensive evaluation of the compliance status of a source. It evaluates all regulated pollutants at all regulated emission units, and it addresses the compliance status of each unit, as well as the source's continuing ability to maintain compliance at each emission unit.

[2] This is the most recent date (i.e., end of time period covered) of a document used in making the compliance status determination.

[3] Defined per: HPV criteria from "The Timely and Appropriate (T&A) Enforcement Response to High Priority Violations (HPVs)", issued by the EPA 12/22/98; and FRV criteria from the memorandum "Clarification Regarding Federally-Reportable Violations for Clean Air Act Stationary Sources", issued by the EPA 3/22/10.

Table 6: Identification of Violations for Which Ecology has Taken Formal Action

Date of Violation	Summary of Violation	Ecology Action Taken	Penalty Assessed	Resolution
1974	Blowing sawdust			Order #DE 74-744, 12/3/74
7/17/85	Blowing sawdust	NOV #DE 85-651, 9/6/85		
1986	Blowing sawdust	NOV #DE 86-188, 4/8/86		NOV #DE 86-523, 5/15/86
1986	Blowing sawdust	NOV #DE 86-523, 5/15/86		Appealed to PCHB 86-93 & 86-95 – Stipulation and Agreed Order of Dismissal
1986	Blowing sawdust	NOP #DE 86-544, 6/3/86	$ 1,000	Appealed to PCHB 86-93 & 86-95 – Stipulation and Agreed Order of Dismissal
9/16/87	Excess steam production	NOV #DE 87-C392 10/6/87		Order #DE 87-C392, 11/14/88
10/26/88	Excess boiler opacity	NOP #DE 88-C455, 4/15/88	$ 500	Penalty paid
1989	Blowing sawdust	NOP #DE 89-C104, 5/23/89; NOP #DE 89-C172 5/23/89; Order #DE89-C105, 5/23/89	$ 2,000; $ 1,000	Appealed to PCHB 89-77 & 89-97 –Stipulated Compliance Schedule and Order of Dismissal
8/17/89	Excess boiler opacity	NOV #DE 89-C357, 10/6/89		
2/21/90	Excess boiler opacity	NOP #DE 90-C149, 3/30/90	$ 400	Penalty paid
2/21/90	Excess veneer dryer opacity	NOP #de 90-C150, 3/30/90	$ 400	Penalty appealed to PCHB - Penalty rescinded
9/8/92	Excess veneer dryer opacity	NOV #DE 92AQ-C430, 9/17/92		WESP installed on veneer dryers September 1998
12/15/93	Excess veneer dryer opacity	NOV #DE 94AQ-C163, 4/5/94	$ 3,000	Penalty paid - WESP installed on veneer dryers September 1998
2/10/98	Excess boiler opacity	NOV #DE 98AQ-C112, 3/10/98	$ 3,000	Penalty paid - DESP installed on boiler August 1998
3/24/98	Excess boiler opacity	NOV #DE 98AQ-C137, 5/7/98	None	DESP installed on boiler August 1998
Fall 1998	No COMS on boiler	NOV #DE 98AQ-C167, 10/5/98	None	COMS installed 10/9/98
7/1/08	Source test plan submitted less than 30 days prior to 7/15/08 test.	NOV No. 5998	None	Source test conducted as planned in order to maintain compliance with 5 year test cycle.

board feet; therefore, Ecology is confident that the PSD significance thresholds have not been exceeded. Further, as discussed in Section 6.2.1, HAP emissions are limited on a facility-wide basis to less than 10 tpy of any single HAP and less than 25 tpy of all HAPs by Ecology Order No. 07AQ-C061.

In addition to Ecology's duty to evaluate SDS Lumber Company's compliance status, a majority of the Air Operating Permit is federally enforceable which means that it is enforceable by the EPA and citizens. Citizens interested in evaluating SDS Lumber Company's compliance with their Air Operating Permit, may wish to become familiar with the conditions of the Air Operating Permit and make a habit of reviewing the submittals required by their Air Operating Permit (i.e., Semi-Annual Monitoring

Report and Annual Compliance Certification). Obtaining a copy of the permit and/or viewing our files (including the submittals) may be arranged by contacting Ecology's Public Disclosure Coordinator at (509) 575-2490.

Complaints may be filed with the Department of Ecology's Central Regional Office in Yakima by calling (509) 575-2490 and asking for the complaint tracker. Times, dates, and circumstances of alleged violations are important information to have available when placing the call. Ecology generally attempts to investigate complaints received from the public.

18.3 **Violation Remedies**. Air Quality violations, including violations of the Air Operating Permit, may be subject to any of the remedies provided in Chapter 70.94 RCW, the Washington Clean Air Act. These remedies include notice of violation, order, civil penalty up to $10,000 per day per violation, and criminal sanctions. Ecology has signed an agreement with the U.S. Environmental Protection Agency wherein we commit to responding to violations according to EPA guidance. That commitment includes taking enforcement actions in response to violations within certain timeframes. For example, Ecology has committed to issuing a Notice of Violation for "High priority violations," (as defined in the guidance) within 45 days of determining that a violation occurred. We have also agreed to assess penalties in accordance with EPA guidance for significant violations. According to that guidance, penalties must consider the economic benefit to a company as a result of the violation.

19.0 APPENDIX A. ACCEPTABLE EMISSION FACTORS (AS OF PERMIT ISSUANCE)

Table A1: Wood Waste-Fired Boilers Emission Factors[1]

Compound	Emission Factor[2] (lb/MMBtu unless specified)	Compound	Emission Factor[2] (lb/MMBtu)
Acetaldehyde	8.30E-04	Tetrachloroethene	3.80E-05
Acetophenone	3.20E-09	1,1,1-Trichloroethane (methyl chloroform)	3.10E-05
Acrolein	Not Detected[(3)]	Trichloroethene	3.00E-05
Benzene	1.0E-02[(3)]	Toluene	9.20E-04
bis(2-Ethylhexyl) phthalate (DEHP)	4.70E-08	2,4,6-Trichlorophenol	2.20E-08
Bromomethane (methyl bromide)	1.50E-05	Vinyl Chloride	1.80E-05
Carbon tetrachloride	4.50E-05	o-Xylene	2.50E-05
Chlorine	7.90E-04	Polycyclic Organic Matter	
Chlorobenzene	3.30E-05	Benzo(a)anthracene	6.50E-08
Chloroform	2.80E-05	Benzo(a)pyrene	2.60E-06
Chloromethane (methyl chloride)	2.30E-05	Benzo(b)fluoranthene	1.00E-07
Dibenzo furans		Chrysene	3.80E-08
Heptachlorodibenzo-p-furans	2.40E-10	Benzo(k)fluoranthene	3.60E-08
Hexachlorodibenzo-p-furans	2.80E-10	Dibenzo(a,h)anthracene	9.10E-09
Octachlorodibenzo-p-furans	8.80E-11	Indeno(1,2,3,c,d)pyrene	8.70E-08
Pentachlorodibenzo-p-furans	4.20E-10	Acenaphthene	9.10E-07
2,3,7,8-Tetrachlorodibenzo-p-furans	9.00E-11	Fluorene	3.40E-06
Tetrachlorodibenzo-p-furans	7.50E-10	Anthracene	3.00E-06
1,2-Dichloroethane (ethylene dichloride)	2.90E-05	Phenanthrene	7.00E-06
Dichloromethane (methylene chloride)	2.90E-04	Fluoranthene	1.60E-06
1,2-Dichloropropane (propylene dichloride)	3.30E-05	Pyrene	3.70E-06
2,4-Dinitrophenol	1.80E-07	Perylene	5.20E-10
Ethylbenzene	3.10E-05	Benzo(g,h,i)perylene	9.30E-08
Formaldehyde	6.0E-03[(3)]	Acenaphthylene	5.00E-06
Hydrogen chloride	4.0E-04[(3)]	Benzo(e)pyrene	2.60E-09
Naphthalene	9.70E-05	2-Methylnaphthalene	1.60E-07
Pentachlorophenol	5.10E-08	Benzo(j,k)fluoranthene	1.60E-07
4-Nitrophenol	1.10E-07	2-Chloronaphthalene	2.40E-09
Phenol	5.10E-05	Antimony	7.90E-06
Polychlorinated biphenyls		Arsenic	2.20E-05
Decachlorobiphenyl	2.70E-10	Beryllium	1.10E-06
Dichlorobiphenyl	7.40E-10	Cadmium	4.10E-06
Heptachlorobiphenyl	6.60E-11	Chromium (Total)	2.10E-05
Hexachlorobiphenyl	5.50E-10	Chromium (VI)	3.50E-06
Pentachlorobiphenyl	1.20E-09	Cobalt	6.50E-06
Trichlorobiphenyl	2.60E-09	Lead	4.80E-05
Tetrachlorobiphenyl	2.50E-09	Manganese	1.60E-03
Propionaldehyde	6.10E-05	Mercury	3.50E-06
Styrene	Not Detected[3]	Nickel	3.30E-05
2,3,7,8-Tetrachlorodibenzo-p-dioxins	8.60E-12	Selenium	2.80E-06

[1] SDS Lumber Company may use site-specific emission factors from an approved source test in place of any of these generic emission factors.

[2] AP-42, September 2003, Tables 1.6-3 and 1.6-4, unless otherwise specified.

[3] Source test emission factors **in lb/1,000 lb Steam**. "Hogged Fuel Boiler Determination of HCl, Formaldehyde, Acrolein, Benzene, Styrene, and Visible Emissions" at SDS Lumber Company, July 15-16, 2003.

Table A2: EPA Region 10 Dry Kiln HAP and VOC Emission Factors as of December 20, 2012

Species	Max Kiln Temp (˚F)	WPP1 VOC[1] (lb/mbf)	Total HAP (lb/mbf)	Methanol[2] (lb/mbf)	Formaldehyde[2] (lb/mbf)	Acetaldehyde (lb/mbf)	Propionaldehyde (lb/mbf)	Acrolein (lb/mbf)
Non-Resinous Softwood Species								
White Fir[3]	≤ 200	0.8388	0.2107	0.1480	0.0034	0.0550	0.0018	0.0026
	> 200	1.0902	0.4956	0.4200	0.0163			
Western Hemlock	≤ 200	0.5253	0.2921	0.1484	0.0016	0.1378	0.0018	0.0026
	> 200	0.6615	0.3661	0.2196	0.0044			
Western Red Cedar	≤ 200	0.3631	0.2939	0.1484	0.0034	0.1378	0.0018	0.0026
	> 200	1.1453	0.5784	0.4200	0.0163			
Resinous Softwood Species (Non-Pine Family)								
Douglas Fir	≤ 200	1.1576	0.1409	0.0690	0.0019	0.0682	0.0007	0.0011
	> 200	1.6969	0.1913	0.1170	0.0043			
Engelmann Spruce	≤ 200	0.1775	0.0640	0.0250	0.0013	0.0360	0.0007	0.0010
	> 200	0.2161	0.1201	0.0780	0.0044			
Larch	≤ 200	1.1576	0.1409	0.0690	0.0019	0.0685	0.0007	0.0011
	> 200	1.6969	0.1914	0.1170	0.0044			
Resinous Softwood Species (Pine Family)								
Lodgepole Pine	≤ 200	1.5293	0.1166	0.0628	0.0041	0.0420	0.0032	0.0045
	> 200							
Ponderosa Pine	≤ 200	2.3450	0.1271	0.0740	0.0034	0.0420	0.0032	0.0045
	> 200	3.8087	0.2029	0.1440	0.0092			
Western White Pine	≤ 200	2.3450	0.1271	0.0740	0.0034	0.0420	0.0032	0.0045
	> 200	3.8087	0.2029	0.1440	0.0092			

[1] VOC emissions approximated consistent with EPA's Interim VOC Measurement Protocol for the Wood Products Industry - July 2007 (WPP1 VOC). WPP1 VOC underestimates emissions when the mass-to-carbon ratio of unidentified VOC exceeds that of propane. Ethanol and acetic acid are examples of compounds that contribute to lumber drying VOC emissions (for some species more than others), and both have mass-to-carbon ratios exceeding that of propane.

[2] Because methanol and formaldehyde emissions appear to be dependent upon drying temperature, separate values are calculated for low and high-temperature drying.

[3] White fir in this context refers to a common name for a mixture of several species of true fir grown in the West. This mixture includes the following species: white fir, grand fir, noble fir, and subalpine fir.