STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION
17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017

DEPARTMENT ORDER

Robbins Lumber, Inc.	**Departmental**
Waldo County	**Finding of Fact and Order**
Searsmont, Maine	**New Source Review**
A-156-77-3-A	**NSR #3**

FINDINGS OF FACT

After review of the air emission license application, staff investigation reports, and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 Maine Revised Statutes (M.R.S.) § 344 and § 590, the Maine Department of Environmental Protection (the Department) finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	Robbins Lumber, Inc. (Robbins Lumber)
LICENSE TYPE	06-096 C.M.R. ch. 115, Major Modification
NAICS CODES	321912, 321113, 321999
NATURE OF BUSINESS	Lumber Manufacturing
FACILITY LOCATION	53 Ghent Road, Searsmont, Maine

B. NSR License Description

Although Robbins Lumber, Inc. is the owner of the facility, Georges River Energy, LLC, a wholly owned subsidiary of Robbins Lumber, will operate the proposed biomass cogeneration facility. References and requirements in this license for Robbins Lumber, Inc. will apply to both Georges River Energy, LLC and Robbins Lumber, Inc.

Robbins Lumber, Inc. (Robbins Lumber) has requested a New Source Review (NSR) license to construct a new biomass-fired cogeneration facility to support the existing lumber manufacturing facility at Robbins Lumber.

C. Emission Equipment

The following equipment is addressed in this NSR license:

Fuel Burning Equipment

Equipment	Maximum Capacity (MMBtu/hr)	Firing Rate	Fuel Type	Stack #
Biomass Boiler #3	167.3	*~446 tons/day	Wood/ Biomass	3

* Firing rate based on wood/biomass at 50% moisture, by weight

D. Definitions

Wood and Biomass: for the purposes of this license, the terms *wood* and *biomass* include, but are not limited to, wood residue and wood products (e.g., trees, tree stumps, tree limbs, bark, lumber, sawdust, sander dust, wood chips, scraps, slabs, millings, tree tops and shavings).

E. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the issued date of this license.

The application for Robbins Lumber does not violate any applicable federal or state requirements and does not reduce monitoring, reporting, testing, or recordkeeping requirements.

The installation of new emission units at an existing major source is considered a major or minor modification based on whether or not expected emissions increases exceed the "Significant Emission Increase" levels as given in *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100.

The emissions increases resulting from the installation and operation of Biomass Boiler #3 and an associated steam turbine were compared against Significant Emissions Increase Levels shown below:

Pollutant	Projected Licensed Emissions (ton/year)	Significant Emissions Increase Levels (ton/year)
PM	21.9	25
PM_{10}	34.4	15
$PM_{2.5}$	34.4	10
SO_2	18.3	40
NO_x	109.9	40
CO	219.8	100
VOC	12.5	40
CO_2e	146,167	75,000

Note: The values are for the new biomass cogeneration facility only. None of the other equipment at the facility is affected by this NSR license.

Projected licensed emissions of PM_{10}, $PM_{2.5}$, NO_x, CO and CO_2e are over the Significance levels; therefore, this NSR license is determined to be a major modification at a major source regulated under *Minor and Major Source Air Emission License Regulations,* 06-096 C.M.R. ch. 115. The changes being made are not addressed or prohibited in the Part 70 air emission license.

An application to incorporate the requirements of this NSR license into the Part 70 air emission license shall be submitted no later than 12 months from commencement of the requested operation.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in *Definitions Regulation*, 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

BPT for new sources and modifications requires a demonstration that emissions are receiving Best Available Control Technology (BACT), as defined in 06-096 C.M.R. ch. 100. BACT is a top-down approach to selecting air emission controls considering economic, environmental and energy impacts.

B. Project Description

Robbins Lumber is a lumber mill located on a 40-acre site. The facility currently consists of drying kilns with a total weekly capacity of 675,000 board feet (BF), two wood-fired boilers, a computerized sawmill, planing mills, 70,000 square feet of warehouse, and the company's general offices. Robbins Lumber owns and manages 30,000 forested acres and purchases logs from more than 150 independent loggers.

Georges River Energy, LLC, in conjunction with Robbins Lumber has proposed to construct a 167.3 MMBtu/hr biomass boiler and steam turbine in support of the existing lumber drying operations. The proposed modification will constitute a major modification for carbon monoxide (CO), particulate matter (PM_{10} and $PM_{2.5}$), nitrogen oxides (NO_x), and carbon dioxide equivalents (CO_{2e}) under 06-096 C.M.R. ch. 115.

The facility is located in an area that is either in attainment or classified as unclassifiable for all applicable national ambient air quality standards (NAAQS), including ozone. However, according to the U.S. Clean Air Act (C.A.A.), ozone non-attainment new source review (NNSR) requirements for ozone precursor pollutants nitrogen oxides (NO_x) and volatile organic compounds (VOC) apply to facilities located in the Northeast Ozone Transport Region (the OTR), as established per federal regulation; this includes the entire State of Maine.

EPA previously granted the state of Maine Clean Air Act (CAA) § 182 (f) Nitrogen Oxides (NO_x) Waivers under the 1-hour and 8-hour Ozone NAAQS. NO_x. Waivers have provided Maine facilities regulatory relief from requirements for NO_x emissions, which were applicable only because of the State's inclusion in the OTR. Maine has continued to remain in attainment with Ozone NAAQS while under NO_x Waivers.

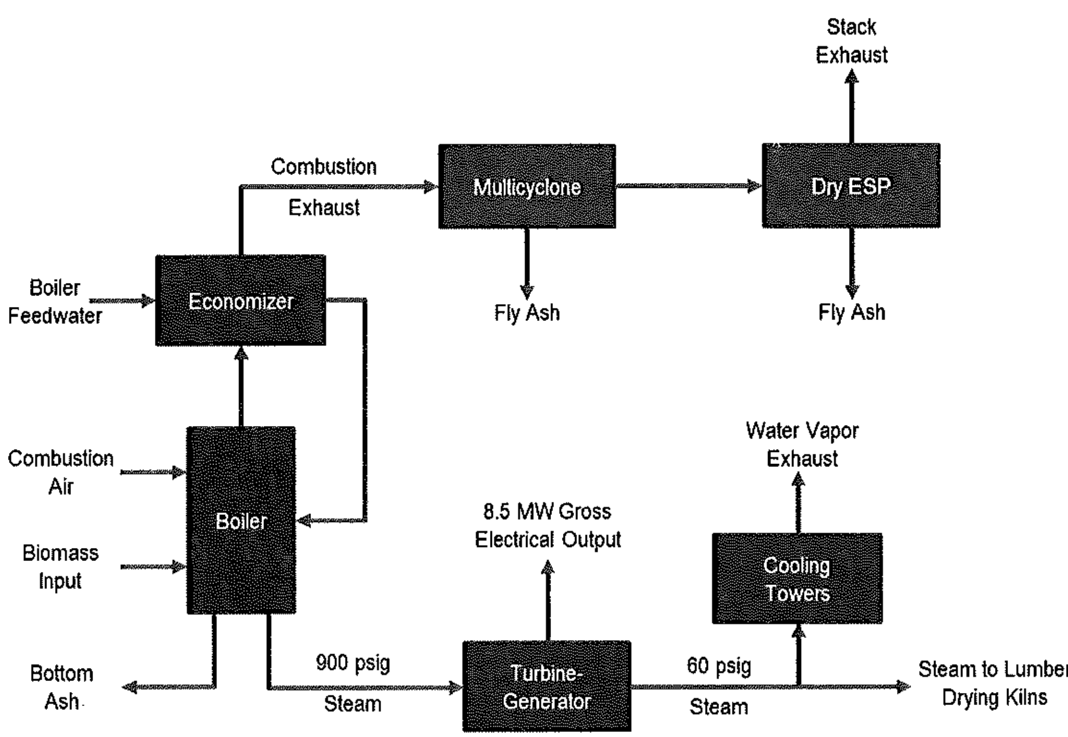
A NO_x waiver is currently in place within the State of Maine which exempts major modifications of NOx from being subect to NNSR requirements.

The proposed biomass power plant facility will generate high-pressure steam to drive a steam turbine. The generated electricity will support both the sawmill operation and be exported to the Central Maine Power (CMP) grid for sale. The remaining useful thermal energy generated from the system will provide steam for the existing lumber kiln. The proposed project will involve the construction of a woodchip storage area, a biomass boiler heat recovery steam generator, and a steam turbine for electrical cogeneration, plus associated buildings and site improvements.

The proposed biomass boiler, Boiler #3, will combust whole-tree chips supplied by local suppliers and sourced from Robbins Lumber's own forest as well as other wood and biomass from logging, timberland thinning operations, and sawmill operations. The biomass will be delivered via transport truck where hydraulic truck dumpers will be used to offload the fuel. The feedstock will then be conveyed into a disc screen where oversized material will be separated and routed through a hammer mill before being conveyed to the boiler. At full capacity, the biomass combustion process will consume approximately 446 tons/day of biomass fuel and generate up to 95,000 lbs/hour of steam at 900 pounds per square inch, gauge (psig), pressure. The steam will drive an 8.5 MW turbine-generator.

The biomass boiler will be equipped with primary and secondary combustion air injections, along with flue gas recirculation, with strategically placed injection nozzles. The boiler will have an oxygen (O_2) trim system used to optimize the air-to-fuel ratio. High and low pressure steam (roughly 240 and 60 psi) extracted from the turbine will be utilized in the kilns and for heating adjacent buildings. Any excess steam will be condensed, and heat will be dissipated using conventional cooling towers. The flue gas from the boiler will pass through a boiler feedwater economizer to recover additional useful thermal energy. The flue gas will then pass through a multi-cyclone to remove larger fly ash particles before passing through a dry electrostatic precipitator (ESP) to remove smaller particulate fly ash. A simplified process flow diagram is provided below:

Cogeneration Facility Process Flow Diagram



As part of this project, the existing Boiler #1 will be removed upon installation and commissioning of Boiler #3. The existing Boiler #1 and Boiler #2 combined fuel limit of 48,000 tons/year of 50% moisture biomass is equivalent to Boiler #2's potential operation at 8,760 hours per year; thus, the limit will no longer be necessary. In addition, Robbins Lumber is proposing to update the sulfur dioxide (SO_2) emission rate from Boiler #2 to the current AP-42 emission rate of 0.025 lb/MMBtu, equivalent to 1.2 lb/hr. In previous licenses, the SO_2 emission rate from Boiler #2 was 0.008 lb/MMBtu, which is equivalent to 0.4 lb/hr. The change in emission factor results in a license increase of 2.1 tons/year of SO_2.

C. Boiler #3

Robbins Lumber intends to operate Boiler #3 to provide steam for its steam turbine and heat for the lumber kilns. The boiler is rated at 167.3 MMBtu/hr and fires biomass. The boiler shall exhaust through its own stack.

Equipment	Maximum Design Capacity	Fuel Type	Control Equipment
Boiler #3	167.3 MMBtu/hr	Biomass	Multicyclone and Dry ESP

1. New Source Performance Standards (NSPS): 40 C.F.R. Part 60, Subpart Db

Due to the size and year of manufacture, the boiler is subject to *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units* 40 C.F.R. Part 60, Subpart Db for units greater than 100 MMBtu/hr manufactured after June 19, 1984. [40 C.F.R. § 60.40b]

a. NSPS Subpart Db Emission Limits

As a wood-fueled steam generating unit, Boiler #3 is subject to the emission limits established by NSPS Subpart Db summarized in the table below.

Pollutant	Standard	Averaging Period	Citation
Particulate Matter (PM)	0.030 lb/MMBtu	Does not apply during periods of startup, shutdown, or malfunction	§ 60.43b(h)(1)
Sulfur Dioxide (SO_2)	None	N/A	N/A
Nitrogen Oxides (NOx)	None	N/A	N/A
Opacity	20% except for one six-minute period per hour of no more than average of 27%	6-minute average Does not apply during periods of startup, shutdown, or malfunction	§ 60.43b(f)

b. NSPS Subpart Db Initial Compliance Testing

Robbins Lumber shall conduct initial performance testing to demonstrate compliance with the opacity and PM limits summarized above within 60 days of achieving maximum production, but not later than 180 days after initial startup. Notice of intent to conduct performance testing shall be submitted to EPA Region 1 and the Department at least 30 days prior to scheduled test date. Performance testing shall consist of triplicate 60-minute tests. Compliance with the PM standard shall be demonstrated using Method 5 in conjunction with Method 3A per § 60.46b(d).

Compliance with the opacity standard shall be demonstrated using Method 9 per § 60.46b(d)(7). The performance testing period for opacity observation may be reduced from 3 hours to 60 minutes if all 6-minute averages are less than 10% and all individual 15-section observations are less than or equal to 20% during the initial 60 minutes of observation. Frequency of subsequent opacity observations will depend on the results of the previous test. A summary of the subsequent performance testing requirements are provided below. If the maximum 6-minute opacity is less than 10%, Robbins Lumber may opt to perform subsequent monitoring using Method 22 per § 60.48b(a)(2).

Opacity Testing Frequency Requirements

Result of Previous Test:	Next Test Must be Completed by:
No visible emissions observed	Within 12 calendar months of previous test
Maximum 6-minute average opacity ≤ 5%	Within 6 calendar months of previous test
Maximum 6-minute average opacity > 5%, ≤ 10%	Within 3 calendar months of previous test
Maximum 6-minute average opacity > 10%	Within 30 calendar days of previous test

c. NSPS Subpart Db Emission Monitoring

To demonstrate continuous compliance with the continuous opacity standard, Robbins Lumber may choose one of the following options:

(1) Install, calibrate, maintain, and operate a continuous opacity monitoring system (COMS) to demonstrate compliance with the opacity standard established above per § 60.48b(a).
(2) Install a PM Continuous Emission Monitoring Systems (CEMS) instead of a COMS per § 60.48b(j)(1).
(3) Use an ESP predictive model to monitor the performance of the ESP per § 60.48b(j)(6).

Robbins Lumber intends to choose the option 3, and as such, shall comply with the following requirements established in § 60.48Da(o)(3):

(1) Robbins Lumber shall calibrate the ESP predictive model operating under normal conditions; [40 C.F.R. § 60.48Da(o)(3)(i)]

(2) Robbins Lumber shall develop a site-specific monitoring plan that includes a description of the ESP predictive model used, the model input parameters, and the procedures and criteria for establishing monitoring parameter baseline levels indicative of compliance with the PM emissions limit. The plan must be submitted for approval by the Department. See the *Compliance Assurance Monitoring (CAM) Protocol for an Electrostatic Precipitator (ESP) Controlling Particulate Matter (PM) Emissions from a Coal-Fired Boiler* available from the U.S. Environmental Protection Agency (U.S. EPA); Office of Air Quality Planning and Standards; Sector Policies and Programs Division; Measurement Policy Group (D243-02), Research Triangle Park, NC 27711. This document is also available on the Technology Transfer Network (TTN) under Emission Measurement Center Continuous Emission Monitoring. [40 C.F.R. § 60.48Da(o)(3)(ii)]

(3) Robbins Lumber must run the ESP predictive model using the applicable input data each boiler operating day and evaluate the model output for the preceding boiler operating day excluding periods of affected facility startup, shutdown, or malfunction. If the values for one or more of the model parameters exceed the applicable baseline levels determined according to the approved site-specific monitoring plan, Robbins Lumber must initiate investigation of the relevant equipment and control systems within 24 hours of the first discovery of a model parameter deviation and take the appropriate corrective action as soon as practicable to adjust control settings or repair equipment to return the model output to within the applicable baseline levels. [40 C.F.R. § 60.48Da(o)(3)(iii)]

(4) Robbins Lumber must record the ESP predictive model inputs and outputs and any corrective actions taken. The record of corrective action taken must include the date and time during which the model output values exceeded the applicable baseline levels, and the date, time, and description of the corrective action.
[40 C.F.R. § 60.48Da(o)(3)(iv)]

(5) If after seven (7) consecutive days a model parameter continues to exceed the applicable baseline level, Robbins Lumber must conduct a new PM performance test within 60 calendar days of the date that the model parameter was first determined to exceed its baseline level unless a waiver is granted by the Department.
[40 C.F.R. § 60.48Da(o)(3)(v)]

d. NSPS Subpart Db Reporting and Recordkeeping

(1) Robbins Lumber shall submit notification to EPA and the Department of the date of construction and actual start-up. This notification shall include the design heat input capacity of the boiler and the type of fuel to be combusted. [40 C.F.R. § 60.49b(a)]

(2) Robbins Lumber shall record and maintain records of the amounts of each fuel combusted each calendar month. [40 C.F.R. § 60.49b(d)(2)]

(3) Robbins Lumber shall maintain all records associated with opacity observations. Robbins Lumber shall submit excess emissions reports for any excursions.

(4) Robbins Lumber shall submit semi-annual reports to EPA and to the Department. These reports shall include the calendar dates covered in the reporting period. The semi-annual reports are due within 30 days

of the end of each six-month period. [40 C.F.R. § 60.48c(j) and 06-096 C.M.R. ch. 115, BPT]

(5) The following address for EPA shall be used for any reports or notifications required to be copied to them:

U.S. Environmental Protection Agency, Region I
5 Post Office Square, Suite 100 (OES04-2)
Boston, MA 02109-3912
Attn: Air Compliance Clerk

2. National Emission Standards for Hazardous Air Pollutants (NESHAP): 40 C.F.R. Part 63, Subpart JJJJJJ

Boiler #3 is subject to the *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*, 40 C.F.R. Part 63, Subpart JJJJJJ. The unit is considered a new biomass boiler rated greater than 30 MMBtu/hr.
[40 C.F.R. § 63.11193 and § 63.11195]

A summary of the currently applicable federal 40 C.F.R. Part 63, Subpart JJJJJJ requirements is listed below.

a. The following are the Emission and Operating Limits

	Operating Limits
New biomass-fired boilers with heat input capacity greater than 30 MMBtu/hr	- Limit emissions of PM (filterable) to less than or equal to 0.030 lb/MMBtu except for periods of startup and shutdown (40 C.F.R. Part 63, Subpart JJJJJJ, Table 1); - Minimize the boilers' startup and shutdown periods and conduct startups and shutdowns according to the manufacturer's recommended procedures. (40 C.F.R. Part 63, Subpart JJJJJJ, Table 2); - Maintain the 30-day rolling average total secondary electric power of the ESP at or above the lowest hourly average total secondary electric power determined from the values of secondary voltage and secondary current to the ESP measured during the most recent performance stack test demonstrating compliance with the PM limit; (40 C.F.R. Part 63, Subpart JJJJJJ, Table 3); - Maintain the 30-day rolling average operating load of the boiler such that it does not exceed 110 percent of the average operating load recorded during the most recent performance stack test. (40 C.F.R. Part 63 Table 3).

b. Boiler Tune-up Program

(1) Initial Notification

An Initial Notification shall be submitted to EPA within 120 days after boiler start up. [40 C.F.R. § 63.11225(a)(2)]

(2) Boiler Tune-Up Program

(i) A boiler tune-up program shall be implemented. [40 C.F.R. § 63.11223]

(ii) Boiler #3 shall be equipped with an oxygen trim system thus may conduct tune-ups every 5 years thereafter, as specified in 40 C.F.R. § 63.11223 (c) and Table 2 (15.).

(iii)Boiler #3's first tune-up shall be no later than 61 months after the initial startup. Robbins Lumber may delay the burner inspection specified in § 63.11223(b)(1) and the inspection of the system controlling the air-to-fuel ratio specified in § 63.11223 (b)(3) of this section until the next scheduled unit shutdown; however, Robbins Lumber shall inspect each burner and system controlling the air-to-fuel ratio at least once every 72 months. [40 C.F.R. § 63.11223 (c)].

(iv)If a continuous oxygen trim system that maintains an optimum air to fuel ratio is utilized on a boiler to reduce the tune-up frequency to once every 5 years, the oxygen level shall be set no lower than the oxygen concentration measured during the most recent tune-up. [40 C.F.R. § 63.11223 (c)].

(v) The boiler tune-up program, conducted to demonstrate continuous compliance, shall be performed as specified below:

1. <u>As applicable</u>, inspect the burner, and clean or replace any component of the burner as necessary. Delay of the burner inspection until the next scheduled shutdown is permitted, not to exceed 72 months from the previous inspection. [40 C.F.R. § 63.11223(b)(1)]
2. Inspect the flame pattern, <u>as applicable</u>, and adjust the burner as necessary to optimize the flame pattern, consistent with the manufacturer's specifications. [40 C.F.R. § 63.11223(b)(2)]
3. Inspect the system controlling the air-to-fuel ratio, <u>as applicable</u>, and ensure it is correctly calibrated and functioning

properly. Delay of the inspection until the next scheduled shutdown is permitted, not to exceed 72 months from the previous inspection. [40 C.F.R. § 63.11223(b)(3)]

4. Optimize total emissions of CO, consistent with manufacturer's specifications. [40 C.F.R. § 63.11223(b)(4)]
5. Measure the concentration in the effluent stream of CO in parts per million by volume (ppmv), and oxygen in volume percent, before and after adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer. [40 C.F.R. § 63.11223(b)(5)]
6. If a unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 days of start-up. [40 C.F.R. § 63.11223(b)(7)]

(vi) Tune-Up Report: A tune-up report shall be maintained onsite and, if requested, submitted to EPA. The report shall contain the following information:

1. The concentration of CO in the effluent stream (ppmv) and oxygen (volume percent) measured at high fire or typical operating load both **before** and **after** the boiler tune-up;

2. A description of any corrective actions taken as part of the tune-up of the boiler; and

3. The types and amounts of fuels used over the 12 months prior to the tune-up of the boiler, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel use by each unit. [40 C.F.R. § 63.11223(b)(6)]

c. The Electrostatic Precipitator shall be operated and maintained to meet the following:

(1) Maintain visible emissions of less than or equal to 10 percent opacity (daily block average); OR
(2) Maintain the 30-day rolling average total secondary electric power of the electrostatic precipitator at or above the minimum total secondary electric power. Minimum total secondary electric power is defined as the lowest hourly average total secondary electric power determined from the values of secondary voltage and secondary current to the electrostatic precipitator measured according to Table 6 of Subpart JJJJJJ, during the most recent performance stack test demonstrating

compliance with the applicable emission limits. [40 C.F.R. Part 63, Subpart JJJJJ, Table 3]

d. Continuous Monitoring System (CMS) – Electrostatic Precipitator

(1) If a COMS is not installed, Robbins Lumber shall install, operate, and maintain a CMS for the Electrostatic Precipitator for Boiler #3. [40 C.F.R. § 63.11222(a)]
(2) Robbins Lumber shall establish a site specific minimum total secondary electric power operating limit per 40 C.F.R. Part 63, Subpart JJJJJ, Table 6.
(3) Robbins Lumber shall establish unit-specific limits for maximum operating load (fuel feed rate or steam generation data) per 40 C.F.R. Part 63, Subpart JJJJJ, Table 6.
(4) Robbins Lumber shall continuously monitor the total secondary electric power and reduce this data to 30-day rolling averages to demonstrate compliance with the limitations on the minimum total secondary electric power per 40 C.F.R. Part 63, Subpart JJJJJ, Table 7.
(5) Robbins Lumber shall continuously monitor the boiler operating loads and reduce this data to 30-day rolling averages to demonstrate compliance with the limitations on the maximum operating load per 40 C.F.R. Part 63, Subpart JJJJJ, Table 7.
(6) Robbins Lumber shall prepare a site-specific monitoring plan that addresses the requirements outlined in 40 C.F.R. § 63.11224(c).
(7) The CMS shall be continuously operated in accordance with the site-specific monitoring plan at all times that Boiler #3 is operating and firing biomass except for periods of monitoring system malfunctions or out-of-control periods, repairs associated with monitoring system malfunctions or out-of-control periods, and required monitoring system quality assurance or quality control activities including, as applicable, calibration checks, required zero and span adjustments, and scheduled CMS maintenance as defined in Robbins Lumber site-specific monitoring plan. [40 C.F.R. § 63.11221(b)]
(8) The CMS shall complete a minimum of one cycle of operation every 15 minutes. Robbins Lumber shall have data values from a minimum of four successive cycles of operation representing each of the four 15-minute periods in an hour, or at least two 15-minute data values during an hour when CMS calibration, quality assurance, or maintenance activities are being performed, to have a valid hour of data. [40 C.F.R. § 63.11224(d)(1)]
(9) Robbins Lumber shall calculate hourly arithmetic averages from each hour of CMS data and determine the 30-day rolling average of all recorded readings. [40 C.F.R. § 63.11224(d)(2)]

e. Start-Up/Shutdown Procedures

Robbins Lumber shall develop and implement a written startup and shutdown plan within 365 days of initial startup.

Robbins Lumber shall comply with all applicable emissions limits at all times except for startup or shutdown periods complying with the startup/shutdown work practices described below.

(1) For Startup of Boiler #3, Robbins Lumber shall use one or a combination of the following clean fuels: paper, cardboard, and clean dry biomass. For the purposes of this license, "clean dry biomass" means any biomass-based solid fuel that has not been painted, pigment stained, or pressure treated; does not contain contaminants at concentrations not normally associated with virgin biomass materials; has a moisture content of less than 20 percent; and is not a solid waste.

(2) Robbins Lumber shall engage and operate PM controls within one hour of first feeding fuels that are not the clean fuels defined above. Robbins Lumber shall engage all required control devices as expeditiously as possible, but no later than four hours from the start of supplying useful thermal energy from Boiler #3.

(3) Robbins Lumber shall minimize the boiler's startup and shutdown periods and conduct startups and shutdowns according to the manufacturer's recommended procedures.

f. Performance Tests

Robbins Lumber shall conduct performance testing for PM emissions from Boiler #3 in accordance with 40 C.F.R. Part 63, Subpart JJJJJJ, Table 4. [40 C.F.R. § 63.11210(a) & (d) and 40 C.F.R. § 63.11220(b)]

Robbins Lumber shall conduct all applicable performance tests on a triennial basis unless specified otherwise below. Triennial performance tests must be completed no more than 37 months after the previous performance test.

(1) If the performance test results show that PM emissions are equal to or less than half of the PM emission limit when demonstrating initial compliance, Robbins Lumber may choose to conduct performance tests for PM every fifth year while continuing to comply with all applicable operating limits and monitoring requirements. Each such

performance test shall be conducted no more than 61 months after the previous performance test. [40 C.F.R. § 63.11220(c)(1)]

(2) If the performance test results show that PM emissions are greater than half of the PM emission limit, Robbins Lumber must conduct subsequent performance tests on a triennial basis. [40 C.F.R. § 63.11220(c)(3)]

g. Notifications and Reports

Robbins Lumber shall submit to EPA all reports required by 40 C.F.R. Part 63, Subpart JJJJJJ including, but not limited to, the following:

(1) An Initial Notification submittal to EPA and the Department is due within 120 days after source startup. [40 C.F.R. § 63.11225(a)(2)]
(2) Within 60 days after the date of completing each performance test, Robbins Lumber shall submit the results of the performance test as referenced in 40 C.F.R. § 63.11225(e)(1)(i) and (ii). Robbins Lumber shall also submit results to the Department in accordance with Standard Condition (11)(C) of air emission license A-156-70-D-R (8/11/15).
(3) A Notification of Compliance Status shall be submitted to EPA no later than 60 days following the completion of the performance stack test. [40 C.F.R. § 63.11225(a)(4)]
(4) Compliance Reports
A compliance report shall be prepared by March 1st of each year. The report shall be maintained by the source and submitted to the Department and to the EPA upon request, unless the source experiences any deviations from the applicable requirements of this Subpart JJJJJJ during the previous calendar year, in which case the report must be submitted to the Department and to the EPA by March 15th. The report must include the items contained in § 63.11225(b)(1) through (4), including the following: [40 C.F.R. § 63.11225(b)]

(i) Company name and address;
(ii) A statement of whether the source has complied with all the relevant requirements of this Subpart;
(iii) A statement certifying truth, accuracy, and completeness of the notification and signed by a responsible official and containing the official's name, title, phone number, email address, and signature;
(iv) The following certifications, as applicable:
1. "This facility complies with the requirements in 40 C.F.R. § 63.11223 to conduct tune-ups of each boiler in accordance with the frequency specified in this Subpart."

2. "No secondary materials that are solid waste were combusted in any affected unit."
3. "This facility complies with the requirement in 40 C.F.R. §§ 63.11214(d) to conduct a tune-up of each applicable boiler according to 40 C.F.R. § 63.11223(b)."

(v) If the source experiences any deviations from the applicable requirements during the reporting period, include a description of deviations, the time periods during which the deviations occurred, and the corrective actions taken; and

(vi) The total fuel use by each affected boiler subject to an emission limit for each calendar month within the reporting period.

h. Recordkeeping

Records shall be maintained consistent with the requirements of 40 C.F.R. Part 63, Subpart JJJJJJ including the following [40 C.F.R. § 63.11225(c)]:

(1) Copies of notifications and reports with supporting compliance documentation;
(2) Identification of each boiler, the date of tune-up, procedures followed for tune-up, and the manufacturer's specifications to which the boiler was tuned;
(3) Records of monthly fuel use including the type(s) of fuel and amount(s) used;
(4) Records of the occurrence and duration of each malfunction of each applicable boiler; and
(5) Records of actions taken during periods of malfunction to minimize emissions, including corrective actions to restore the malfunctioning boiler.

Records shall be in a form suitable and readily available for expeditious review.

3. BACT Findings

Potentially applicable emission control technologies were evaluated as identified by researching technical literature, control equipment vendor information, and the U.S. EPA control technology database. The Reasonably Available Control Technology (RACT)/BACT/Lowest Achievable Emission Rate (LAER) Clearinghouse (RBLC), a database made available to the public through the U.S. EPA's Office of Air Quality Planning and Standards (OAQPS) Technology Transfer Network (TTN), lists technologies and corresponding emission limits that have been approved by regulatory agencies in permit actions. A search of the RBLC database was conducted for emission sources comparable to the biomass boiler. The Biomass Industrial Sized

Boilers/Furnaces >100 MMBtu/hr, <250 MMBtu/hr (RBLC Code 12.120) category was queried to include installations of boilers during the previous 10 years. The comprehensive report as downloaded from the RBLC database and a summary table are included in the Robbins Lumber's major modification NSR application dated March 1, 2017.

The following summarizes the BACT findings for Boiler #3:

a. $PM/PM_{10}/PM_{2.5}$

Biomass boiler particulate emissions result from the combustion of wood and are primarily inorganic fly ash, the quantity of which depends on the composition of the wood burned, moisture content of the wood, and the combustion conditions. The majority of the particulate matter created during biomass fuel combustion is fine particulate with diameters less than 2.5 μm ($PM_{2.5}$). The PM formed from combustion also includes a condensable portion and some coarse particulate with diameters less than 10 μm (PM_{10}).

Potential controls of PM emissions from the biomass boiler are summarized and ranked in the following Table. A description of each control technology and the feasibility determination are summarized in the subsequent sections.

Review of Control Technologies for PM

Control Technology	% Control	Feasibility
Dry ESP	99%	**SELECTED**
Wet ESP	99%	Technically feasible but environmentally and economically prohibitive
Baghouse	98+	Technically feasible
Multi-cyclone System	50+	**SELECTED**

Dry Electrostatic Precipitators

Dry electrostatic precipitators (dry ESP) control PM emissions using the force of an induced electrostatic charge. The particulate particles in the exhaust stream are negatively charged using high voltage electrodes and then drawn onto a positively charged collection surface. At periodic intervals, the collection surfaces (plates) are cleaned by "rappers" that deliver a blow to the surface header, creating a vertical shock wave that causes the collected particulate to dislodge and fall into the hopper below.

Dry ESP are ideal for exhaust streams with minimal organic particulate. Organic particulate tends to adhere to the positively charged collection surface, subsequently requiring additional "rapping" to dislodge the particulate and reducing control efficiency. A dry ESP is a technically feasible control option and has been selected as part of the BACT strategy for this project.

Wet Electrostatic Precipitator

The principal component of a wet ESP is an array of vertical collection tube bundles. Above the collection tubes are spray headers that continuously wet the collection tube bundles. Exhaust gas enters a pre-quench section to cool and saturate the gases before they enter the ESP. The pre-quench section is essentially a low-energy scrubber that sprays water into the incoming gas stream. Some fraction of the highly water-soluble compounds may be scrubbed by the pre-quench and collected. However, the wet ESP collects only particles and droplets that can be electrostatically charged; vaporous components of the gas stream that do not condense are not collected by the device. In addition, the ability of the wet ESP to absorb water-soluble compounds diminishes as the recirculating liquid becomes saturated with these compounds; therefore, the disadvantage of the wet ESP is that it generates a significant wastewater effluent which must be addressed. Wet ESPs have PM control efficiencies of at least 80%.

The installation of a wet ESP is a technically feasible control technology for PM emissions. However, Wet ESPs consume significant water quantities during operation. The resulting effluent requires treatment and must be discharged to a solids-removing clarifying system prior to final disposal. The effluent may require additional sludge removal, pH adjustment, and/or additional treatment to remove dissolved solids. Robbins Lumber does not currently have the onsite capability to treat the effluent produced from a wet ESP.

According to the US-EPA Air Pollution Control Technology Fact Sheet (EPA-452/F-03-029) for a 61,500 SCFM system, the average annualized cost to install a wet ESP alone (not including a wastewater treatment system) is estimated to be roughly $1,783,500. This does not take into account the environmental impacts of wastewater production. The cost to install a wet ESP and the associated wastewater treatment system is environmentally and economically infeasible as compared to the selected PM control options.

Baghouse/Cartridge System

Baghouses (i.e. fabric filters) consist of a number of fabric bags placed in parallel that collect particulate on the surface of the bag as the exhaust stream passes through the fabric membrane. The collected particulate is periodically dislodged from the bags' surface to collection hoppers via short blasts of high-pressure air (pulsejet), physical agitation of the bags, or by reversing gas flow. Baghouse systems are capable of PM collection efficiencies greater than 98%.

Baghouses are theoretically possible to control PM emissions from biomass boilers; however, the moisture content of the exhaust gas in conjunction with the high organic content would routinely plug or "blind" the fabric filter resulting in lower gas flow, greater pressure drop, and subsequent reduction in PM control efficiency. The fabric filters also pose a high fire risk. Due to these factors, the bags would require significant maintenance and replacement resulting in high operational costs and system downtime. However, baghouses are a technically feasible control technology.

Although technically feasible, a baghouse system would pose a high fire risk and have operational issues associated with the moisture content and the organic content in the exhaust stream. The baghouse system would require significant maintenance and replacement resulting in high operational costs and system downtime while providing PM control equivalent to the dry ESP control option.

<u>Multi-Cyclones</u>
Cyclones typically are an integral part of the post-biomass boiler separation process and are also a very common particulate control device used in many applications, especially those where relatively large particles need to be collected. Cyclones are very simple devices that utilize centripetal force to separate particles from gas streams. The incoming exhaust gas enters the cyclone at a high velocity along the inner wall at the top of the cyclone. Gravity pulls the spinning gas down and the taper of the cyclone body helps keep the cyclonic effect in motion until the particle drops out the bottom of the cyclone into a hopper. They are commonly constructed of sheet metal and have a relatively low capital cost, very low operating costs, and no moving parts. Multi-cyclones are smaller diameter cyclone units operating in parallel or in series and designed to achieve high efficiency PM collection using the same operational principals as the single cyclone. The use of a multi-cyclone to control PM emissions from the proposed system is technically feasible and has been selected as part of the BACT strategy for this project.

Due to the economic, environmental, and operational constraints associated with the use of a baghouse system or a wet ESP, Robbins Lumber is proposing to install a multi-cyclone for collection of large fly-ash and a dry ESP for collection of the remaining PM emissions from the biomass boiler. The use of these pollution control devices will allow Robbins Lumber to achieve a filterable PM emission rate of 5.0 lb/hr.

The Department has determined that BACT for $PM/PM_{10}/PM_{2.5}$ emissions from Boiler #3 is the use of multi-cyclones and a dry ESP with an emission limit is 5.0 lb/hr for PM and 7.9 lb/hour for PM_{10} and $PM_{2.5}$. PM_{10} and $PM_{2.5}$ include condensables and filterable PM.

The biomass boiler shall also comply with a filterable PM emission limit of 0.03 lb/MMBtu as established in NSPS Subpart Db and in NESHAP Subpart JJJJJJ.

The exhaust from Stack #3 is a combination of PM $PM/PM_{10}/PM_{2.5}$ emissions from fuel burning. The BACT limits above are determined to be more stringent than the particulate matter limits found in *Fuel Burning Equipment Particulate Emission Standard* 06-096 C.M.R. ch. 103 and are therefore the only $PM/PM_{10}/PM_{2.5}$ standards contained in this license.

b. Sulfur Dioxide

Sulfur dioxide (SO_2) is formed from sulfur inherent of the fuel used during combustion. The quantity of SO_2 released is entirely dependent upon the sulfur content of the fuel and is independent of the boiler size or design. The SO_2 emissions associated with the Robbins Lumber biomass boiler are incidental as there are only trace amounts of sulfur contained in the wood which combines with oxygen in the combustion process and exhausts through the stack. Additional sulfur controls are not justified for this project.

The Department has determined that BACT for SO_2 emissions from Boiler #3 is the firing of clean wood/biomass materials including wood chips, bark, shavings, and sawdust and SO_2 emission limit of 4.2 lb/hr from Stack #3.

c. Nitrogen Oxides

Nitrogen oxides (NO_x) are a product of combustion in the biomass boiler. NO_x is generated in one of three mechanisms: fuel NO_x, thermal NO_x, and prompt NO_x. Fuel NO_x is produced by oxidation of nitrogen in the fuel source. Combustion of fuels with high nitrogen content produces greater amounts of NO_x than those with low nitrogen content. Thermal NO_x is formed by the fixation of nitrogen (N_2) and oxygen (O_2) at temperatures greater than 3600°F. Prompt NO_x forms from the oxidation of hydrocarbon radicals near the combustion flame and produces an insignificant amount of NO_x.

The biomass boiler design will incorporate flue gas recirculation (FGR) to reduce the temperature of combustion, in turn reducing thermal NOx formation. In addition, the recirculated flue gas lowers the average oxygen concentration in the combustion zone, which lowers the oxygen available to react with nitrogen to form NO_x. Based on vendor information, it is expected the use of FGR will allow the biomass boiler to achieve a NO_x emission rate of 0.15 lb/MMBtu (25.1 lb/hr based on a maximum heat input of 167.3 MMBtu/hr).

There are several potential control technologies for NO_x emissions from wood combustion including add-on controls such as selective catalytic reduction (SCR) and selective non-catalytic reduction (SNCR), combustion control techniques such as staged combustion, low excess air firing, flue gas recirculation, and combustion of clean fuels. Methods to control NO_x emissions from wood combustion are summarized below. A description of each control technology and the feasibility determination are summarized in the subsequent sections.

Review of Control Technologies for NOx

Control Technology	% Control	Feasibility
Selective Catalytic Reduction (SCR)	56%[1]	Technically feasible but cost prohibitive
Selective Non-Catalytic Reduction (SNCR)	50%[2]	Technically feasible
Water/Steam Injection	VARIABLE	Technically feasible
Flue Gas Recirculation	VARIABLE	**SELECTED**
Good Combustion Practices	VARIABLE	**SELECTED**

[1] Percent control for low temperature catalyst located after PM controls
[2] Average NOx reduction from urea injection in wood boilers, *EPA Air Pollution Control Cost Manual*, Chapter 1, Table 1.1

Selective Catalytic Reduction

The Selective Catalytic Reduction (SCR) process employs the reaction of NO_x with ammonia in the presence of a catalyst to produce nitrogen and water. The reduction is considered "selective" because the catalyst selectively targets NO_x reduction in the presence of ammonia. One mole of ammonia is required to reduce one mole of NO and two moles are required to reduce one mole of NO_2 as shown in the following reactions:

$$4NO + 4NH_3 + O_2 \rightarrow 4N_2 + 6H_2O$$
$$2NO_2 + 4NH_3 + O_2 \rightarrow 3N_2 + 6H_2O$$

A SCR system requires a reactor vessel, a catalyst, and an ammonia storage and injection system. As a toxic substance, the storage of ammonia above certain quantities requires the development of a Risk Management Plan (RMP) and imposes a risk of release of ammonia. In addition, SCR catalysts are sensitive to particulate matter emissions. In high ash environments, the SCR catalyst can become deactivated from poisoning, fouling, plugging, and erosion. Poisoning is a chemical deactivation of the catalyst surface, fouling is the blockage of the catalyst through the buildup of ash, plugging is the blockage of catalyst pores, and erosion is the wearing away of the catalyst surface due to the abrasiveness of the ash.

The destruction of catalyst efficiency can only be avoided by placing the SCR system after the PM control equipment. This would require the use of a low temperature catalyst which generally have lower NO_x destruction efficiencies.

The use of a low temperature SCR located after PM controls is a technically feasible control technique for reducing NO_x emissions. The installation of an SCR could achieve of NO_x emissions rate of 0.065 lb/MMBtu, equivalent to 56% control efficiency. The capital cost associated with an SCR system capable of this emission reduction is $1,981,000, as provided by the boiler manufacturer. The installation of SCR would reduce NO_x emissions by 62.3 tons per year based on maximum operation, resulting in a pollutant reduction cost of at least $6,000 per ton of NO_x reduced. Therefore, the installation of SCR is not economically feasible.

Selective Non-Catalytic Reduction

The Selective Non-Catalytic Reduction (SNCR) process is a method of post combustion control that selectively reduces NOx into nitrogen and water vapor by reacting the exhaust gas with a reagent such as ammonia or urea, similar to the SCR system. However, the use of a catalyst is negated when the chemical reaction takes place at temperatures ranging between 1600 and 2100°F. The NO_x reduction efficiency decreases rapidly at temperatures outside the optimum temperature window. Operation below this temperature window results in excessive unreacted ammonia slip, and operation above this temperature window results in increased NO_x emissions.

The reagent solution (either ammonia or urea) are typically injected along the post-combustion section of the boiler. Injection sites must be optimized for reagent effectiveness and must balance residence time with flue gas stream temperature. The potential for unreacted ammonia slip emissions is greater with SNCR than with SCR, and the overall NO_x reduction is less.

When dry PM emission control is utilized (dry ESP), opacity issues may arise from ammonium chloride and ammonium sulfate in the stack gas formed from the unreacted ammonia slip.

The use of SNCR to control NO_x emissions from the Robbins Lumber biomass boiler is a technically feasible option, but its use may cause particulate matter and opacity issues from the formation of ammonia salts. The ability to install SNCR has been designed into Robbins Lumber biomass boiler equipment and will be installed, if necessary, to achieve a BACT NO_x emissions rate of 0.15 lb/MMBtu.

Water/Steam Injection

Water/steam injection is the process of injecting water or steam into the combustion chamber to act as a thermal ballast in the combustion process. The ballast lowers the combustion temperature, minimizing thermal formation of NO_x. Water/steam injection can reduce NO_x emissions at a rate equivalent to flue gas recirculation (FGR). The Robbins Lumber biomass boiler has FGR inherent in its design, thus the addition of water/steam injection would not further reduce NO_x emissions and is not considered a feasible option to control NO_x emissions.

Flue Gas Recirculation

Flue gas recirculation (FGR) is a combustion design technique used to reduce the temperature of combustion, in turn reducing thermal NO_x formation. A portion of the flue gas is extracted and reinjected into the boiler combustion area. The recycled flue gas consists of combustion products which act as inert heat sinks during combustion of the fuel/air mixture. This reduces NO_x emissions by two mechanisms; primarily, the recirculated gas acts as a diluent to reduce combustion temperatures, lowering peak flame temperatures, thus suppressing thermal NO_x. In addition, the recirculated flue gas lowers the average oxygen concentration in the combustion zone, which lowers the oxygen available to react with nitrogen to form NO_x. Flue gas recirculation is a technically feasible control option for NO_x emissions.

The Robbins Lumber biomass boiler has been designed with flue gas recirculation and will employ good combustion practices.

The Department has determined that BACT for NO_x emissions for Boiler #3 is the use of FGR. Based on discussions with the Boiler #3 manufacturer, Robbins Lumber anticipates that the biomass boiler design, the use of flue gas recirculation, and good combustion practices will enable Boiler #3 to achieve a NO_x emission rate of 0.15 lb/MMBtu. However, according to the BACT review of other biomass boilers similar in size, many of these units employ SNCR to achieve the 0.15 lb/MMBtu NO_x level. Due to the uncertainty of the ability to achieve the proposed BACT limit upon initial startup and shakedown of the unit, The Department has determined that a two phase NO_x limit approach is reasonable during the first year of operation of the unit. Initially, Boiler #3 shall be limited to 0.25 lb/MMBtu for one year from the date of initial startup. Due to the inverse relationship between NO_x and CO, CO shall be limited to 0.6 lb/MMBtu during this one-year period. This is to provide flexibility during startup and for Robbins Lumber to determine if the NO_x limit can be achieved without added SNCR controls.

Robbins Lumber shall submit a plan to be approved by the Department for the monitoring and recordkeeping of NO_x and CO readings during the first year of operation. The plan shall include the frequency and methods of NO_x and CO diagnostic testing. Nine months after the startup of Boiler #3, Robbins Lumber shall submit a progress report to the Department which contains a summary of the results of the diagnostic testing and a discussion as to whether the 0.15 lb/MMBtu NO_x limit can be met without added SNCR controls. Robbins Lumber shall file an amendment, as needed, if operating experience shows a ppm limit is a better compliance indicator than the lb/MMBtu limit.

If Robbins Lumber cannot demonstrate compliance with the 0.15 lb/MMBtu NO_x limit, a selective non-catalytic reduction system shall be installed. Ammonia emissions when this system is in operation shall be limited to 40 ppmdv @ 12% CO_2 based on a 3-run emissions test. The test shall be conducted every two calendar years using EPA's Conditional Test Method for Ammonia (CTM-027).

d. Carbon Monoxide

Carbon monoxide (CO) is a colorless, odorless, relatively inert gas formed as an intermediate product of combustion. CO emissions result when there is insufficient residence time or if there is insufficient oxygen available near the hydrocarbon molecule during combustion to complete the final step in hydrocarbon oxidation. In addition, combustion modifications taken to reduce NO_x emissions may result in increased CO emissions.

The optimum air-to-fuel ratio required for complete combustion changes with certain conditions including combustion air temperature, pressure, and humidity. The proposed biomass boiler has integral automatic controls to adjust the amount of combustion air required to achieve the optimum level for efficient and low carbon monoxide producing combustion based on an oxygen sensor in the exhaust gas stream. This control technique is commonly referred to as oxygen trim. The use of this combustion control design enables the boiler to achieve a CO emissions rate of 0.30 lb/MMBtu (50.2 lb/hr based on a maximum heat input of 167.3 MMBtu/hr).

CO emissions can be controlled through combustion control techniques or by add-on technologies including oxidation catalysts and thermal oxidation, as summarized below:

Review of Control Technologies for CO

Control Technology	% Control	Feasibility
Oxidation Catalyst	98%	Technically infeasible
Thermal Oxidizer	95%	Technically feasible but cost prohibitive
Oxygen Trim	VARIABLE	**SELECTED**

<u>Oxidation Catalyst</u>
Catalytic oxidation is a post combustion control technology that has been used extensively with gas turbines and internal combustion engines. Catalysts are typically based on a noble metal and operate by decreasing the temperature at which oxidation of CO will occur. The catalyst lowers the activation energy necessary for CO to react with available oxygen in the exhaust to produce CO_2. Despite the decreased oxidation temperature, process exhaust gas must typically be preheated prior to contact with the catalyst bed. An oxidation catalyst is located within the heat recovery section of the system, or in a downstream location where the exhaust gases are reheated to meet the proper temperature environment. The operating temperature window of an oxidation catalyst is between approximately 4,000 and 11,000 degrees Fahrenheit. Because the catalyst has much of its surface area contained in relatively small pores, catalytic oxidation is very sensitive to particulate contamination from combustion exhaust gases such as those from biomass systems. Location downstream of the ESP involves additional emissions and capital expense associated with operation of a reheat burner. Despite the efficient PM control proposed above, the potential for catalyst binding, poisoning, plugging, or masking can still occur which would significantly reduce the efficiency of the oxidizer. Typically, oxidation catalysts are used on "clean" exhaust streams; therefore, an oxidation catalyst is not a technically feasible option to control CO.

<u>Thermal Oxidation</u>
Thermal oxidation is a control technology that reduces CO emissions in the flue gas using high temperature post combustion. Thermal oxidation has been reported to achieve up to 95% reduction of CO in the exhaust gas

on other types of industrial facilities. Thermal oxidization is a technically feasible control technology for reducing CO emissions from the boiler.

Thermal oxidizers reduce CO emissions by completing combustion and turning CO into CO_2. Thermal oxidation has been reported to achieve up to 95% reduction of CO in the exhaust gas on other types of industrial facilities. Regenerative thermal oxidizers (RTOs) are designed to preheat the inlet emission stream with heat recovered from the incineration exhaust gases. Gases entering the RTO are heated by passing through preheated beds packed with a ceramic media. A gas burner brings the preheated emissions up to an incineration temperature between 788° and 871°C (1450° and 1600°F) in a combustion chamber with sufficient gas residence time to complete the combustion. Combustion gases then pass through a cooled ceramic bed where heat is extracted. By reversing the flow through the beds, the heat transferred from the combustion exhaust air preheats the gases to be treated, thereby reducing auxiliary fuel requirements. Thermal oxidization is a technically feasible control technology for reducing CO emissions from the boiler.

According to the US-EPA Air Pollution Control Technology Fact Sheet (EPA-452/F-03-021) for RTOs, posted 7/15/03, the average annualized cost for an RTO to control roughly 53,000 SCFM of exhaust will be roughly $1,085,620. This would conservatively result in a cost of $5,200 per ton of CO controlled; therefore, the installation of a thermal oxidizer is cost prohibitive. Further, the modeling demonstration shows that the project easily meets ambient air quality standards for CO, which supports the assertion that this additional $5,200 cost per ton of CO is not warranted.

<u>Oxygen Trim</u>

Oxygen trim systems monitor the amount of oxygen in the exhaust gas and adjust the inlet flow of combustion air in order to achieve an optimum air-to-fuel ratio. By monitoring the oxygen level in the exhaust gas, fine adjustments can be applied to the combustion air ratio to compensate for combustion variables such as barometric pressure change, air humidity, and variances in fuel quality. If insufficient combustion air is available in the combustion chamber, incomplete combustion occurs resulting in increased CO emissions. An oxygen trim system ensures adequate combustion air is present for complete combustion.

The use of an oxygen trim control system to maintain adequate and optimum combustion air-to-fuel ratio is a technically feasible control technique for minimizing CO emissions as a result of incomplete combustion.

The Department has determined that BACT for CO emissions from Boiler #3 is the use of an oxygen trim control system for minimizing CO emissions. In addition, BACT includes good combustion practices such as having the proper air and fuel pressures and maintaining the combustion air pressure at correct levels to control CO emissions and a CO emissions rate of 50.2 lb/hr. However with the diagnostic testing of NO_x and the inverse relationship between NO_x and CO, the Department has determined that a CO limit of 0.60 lb/MMBtu CO during the first year of operation is appropriate.

e. Volatile Organic Compounds

Volatile organic compounds (VOCs) are generated in the biomass boiler as a result of incomplete combustion. Quantities of VOCs emitted are dependent on wood species and pyrolysis operating parameters such as temperature, residence time, and oxygen content.

The oxygen trim system described previously will also reduce VOC emissions from the boiler by ensuring adequate air is present in the combustion zone, thereby promoting complete combustion. The biomass boiler is anticipated to emit 0.017 lb/MMBtu of VOCs (2.8 lb/hr based on a maximum heat input of 167.3 MMBtu/hr).

Methods of controlling VOC emissions include good combustion practices and boiler design, or add-on pollution control such as thermal destruction or absorption systems/wet scrubbers. Add-on pollution control for such a low VOC exhaust gas would not be technically feasible.

The Department has determined that BACT for VOC emissions for Boiler #3 is the use of an oxygen trim control system for minimizing VOC emissions. The use of an oxygen trim system will allow the Robbins Lumber boiler to achieve a VOC emissions rate of 2.8 lb/hr.

f. Hazardous Air Pollutants (HAP)

HAP emissions from this project were determined using AP-42 emission factors with the exception of hydrochloric acid (HCl), the factor for which the Department considers to not be representative of emissions from biomass sources in the Northeast. The National Council for Air and Stream Improvement (NCASI) has developed an emission factor for HCl which is more consistent with stack test results from biomass fired sources in Maine. Therefore NCASI's HCl emission factor of 0.00034 lb/MMBtu was used for determining HAP emission rates from the biomass fired boilers at the facility.

HCl emissions of 10 TPY or more would make Robbins Lumber a major HAP source. Using the NCASI HCl emission factor and the maximum fuel input for Boiler #2 and the new Boiler #3, worst case HCl emissions from the facility are 0.323 TPY, which is well below the major source threshold for a single HAP. Robbins Lumber shall conduct HCl emissions testing (using EPA Test Method 26 or 26A) on Boiler #3 within two years of initial startup to demonstrate that HCl emissions are consistent with the NCASI emission factor and that the potential to emit levels for HCl are confirmed to be well below the major source threshold for a single HAP (10 TPY).

g. Visible Emissions

Boiler #3 is subject to an opacity standard per 40 C.F.R. Part 60, Subpart Db. Per Subpart Db, visible emissions from Boiler #3 shall not exceed 20% opacity on a six (6)-minute block average except for no more than one (1) six (6)-minute block average per hour of not more than 27% opacity except for periods of startup and shutdown.

The exhaust from Stack #3 is composed of emissions from fuel burning. There are additional opacity requirements for Boiler #3 contained in *Visible Emissions,* 06-096 C.M.R. ch. 101. However, the standards above are determined to be more stringent. Therefore, emissions from Stack #3 shall be limited to the opacity requirements for Boiler #3 above.

Robbins Lumber shall minimize the boiler's startup and shutdown periods and conduct startups and shutdowns according to the manufacturer's recommended procedures. If manufacturer's recommended procedures are not available, you must follow recommended procedures for a unit of similar design for which manufacturer's recommended procedures are available.
[40 C.F.R. Part 63, Subpart JJJJJJ, Table 2]

Based on ESP manufacturer recommendations, the ESP cannot be put into operation until the unit is up to temperature and the oxygen levels have dropped below potentially explosive condition levels. This is intended to prevent ignition of potentially explosive gases that may be present in the precipitator chamber during startups, shutdowns and boiler malfunctions.

h. Greenhouse Gases

Greenhouse gas emissions are produced during combustion in the biomass boiler. The greenhouse gas constituents produced include carbon dioxide

(CO_2), methane (CH_4), and nitrous oxide (N_2O) and are measured by carbon dioxide equivalents (CO_2e). The conversion of fuel carbon to CO_2 during combustion is relatively independent of combustion design and firing configuration. The formation of N_2O and CH_4 are highest during periods of low-temperature or incomplete combustion. These periods will be minimal in the biomass boiler due to the various combustion controls that are integral to boiler operation. CO_2 is an unavoidable product of the chemical reaction between fuel and oxygen that occurs during combustion. All fuels contain significant amounts of carbon. If the carbon is not fully oxidized to form CO_2, carbon monoxide (CO) is emitted and energy efficiency of the system is reduced. CO is a regulated air pollutant with significant adverse health impacts; in addition, emitted CO gradually oxidizes to CO_2 in the atmosphere.

The emission rate of greenhouse gases from the biomass boiler is anticipated to be 199.5 lb/MMBtu based on CO_2e (33,371 lb/hr based on a maximum heat input of 167.3 MMBtu/hr). Based on a maximum operation of the biomass boiler of 8,760 hours per year, the resulting annual project emissions will be 146,167 TPY, therefore it is not technically feasible to consider a carbon capture and storage (CCS) system. Robbins Lumber is proposing the efficient operation of operate the biomass boiler to reduce unnecessary fuel use and thereby minimize CO_2e emissions as BACT for greenhouse gases.

4. Emission Limit Compliance

The table below lists the compliance methods and testing frequencies:

Emission Limit Compliance Methods

Pollutant	Emission Limit	Compliance Method	Frequency
PM	0.030 lb/MMBtu (filterable)	EPA Method 5 (Performance Test)	Initial performance test within 180 days of startup and subsequent testing as requested
		ESP Predictive Model (Continuous Compliance Method)	Continuous (in accordance with 40 C.F.R. Part 60)
	5.0 lb/hr (filterable)	EPA Method 5	Every 3 years (maybe reduced per 40 C.F.R. § 63.11220(c)(1))

Pollutant	Emission Limit	Compliance Method	Frequency
PM_{10}	7.9 lb/hr (filterable + condensable)	EPA Method 5 and 202	Initial performance test within 730 days of startup and subsequent testing as requested
$PM_{2.5}$	7.9 lb/hr (filterable + condensable)	EPA Method 5 and 202	Initial performance test within 730 days of startup and subsequent testing as requested
CO	50.2 lb/hr	EPA Method 10	Initial performance test within 730 days of startup and subsequent testing as requested
NO_x	25.1 lb/hr	EPA Method 7E	Initial performance test within 730 days of startup and subsequent testing as requested
SO_2	4.2 lb/hr	EPA Method 6C	As requested
VOC	2.8 lb/hr	EPA Method 25 or 25A	Initial performance test within 730 days of startup and subsequent testing as requested
Opacity	20% except for one six-minute period per hour of no more than average of 27%	EPA Method 9	Initial within 180 days of startup, periodic based on proceeding test results

5. Periodic Parameter Monitoring

For a predictive monitor, Robbins Lumber shall comply with the parameter monitoring requirements, methods, and frequencies as summarized in the table below. Additional monitored parameters may be necessary, as required for inputs for the ESP predictive model, and will be determined and finalized upon unit commissioning.

Periodic Parameter Monitoring

Parameter	Units	Monitoring Method	Frequency
ESP Voltage	Volts	Volt-meter	Continuous
ESP Current	Amps	Amp-meter	Continuous
Biomass Feed Rate or BTU Production Rate	TBD	TBD	Hourly, daily, 12-month rolling
Combustion Chamber Temperature	°F	Thermocouple	Continuous
Exhaust Flow	CFM	Flow Meter or F-Factor	Continuous

Periodic monitoring for Boiler #3 shall include recordkeeping to document the tons of wood fired on a monthly basis and 12-month rolling total basis. It is estimated that the green wood fired in Boiler #3 has an average moisture content of 50%.

Robbins Lumber shall keep records of the number of operating hours of Boiler #3 on a monthly and 12-month rolling total basis.

Robbins Lumber shall monitor Boiler #3 for PM and/or opacity as required by 40 C.F.R. Part 60, Subpart Db, § 60.48b.

Robbins Lumber shall monitor the secondary voltage on the ESP continuously and as specified in 40 C.F.R. Part 63 Subpart JJJJJJ whenever Boiler #3 is in operation.

Robbins Lumber shall conduct initial performance testing on Boiler #3 to demonstrate compliance with the opacity and NSPS PM emission limits (lb/MMBtu) within 60 days of achieving maximum production, but not later than 180 days after initial startup, in accordance with 40 C.F.R. Part 60, Subpart Db and 40 C.F.R. Part 63, Subpart JJJJJJ.

Robbins Lumber shall perform subsequent performance tests for opacity using 40 C.F.R. Part 60, Appendix A, Method 9 per the schedule contained in 40 C.F.R. Part 60, Subpart Db.

Within 2 years of startup of Boiler #3, Robbins Lumber shall perform stack testing on Stack #3 for PM_{10}, $PM_{2.5}$, NO_x, CO, and VOC to determine compliance with the licensed emission limits (lb/hr). When performing stack testing for compliance purposes, Boiler #3 shall be operated under normal operating conditions unless otherwise specified in the applicable federal regulation.

Records shall be maintained documenting startups, shutdowns, and malfunctions for Boiler #3 and its associated control equipment. These records shall include dates, times, duration, cause, and method utilized to minimize duration of the event and/or to prevent reoccurrence.

D. Material Handling

This Project will involve the installation of new material handling equipment which will include conveyor belts and a reclaimer. The biomass will be delivered via transport truck where hydraulic truck dumpers will be used to offload the fuel. The feed stock will then be conveyed into a disc screen where oversized material will be separated and routed through a hammer mill before being conveyed to Boiler #3.

Biomass conveyors will be either enclosed or covered. Ash handling systems will be enclosed and will convey ash to totes or a covered bunker. Bottom ash will be conditioned with water. Ash will be transferred to covered containers and trucked off-site for disposal.

Stock piles, roadways, conveyors, transfer points, and building vents shall be subject to the fugitive emissions and general process sources visible emissions limits, as applicable, already contained in conditions (17) A. and (21) of Robbins Lumber's existing license A-156-70-D-R (8/11/2015).

E. Boiler #2 SO_2 Correction

As part of this NSR licensing action, Robbins Lumber has requested to update the SO_2 emission limit on Boiler #2. The original SO_2 emission limit was developed as part of Robbins Lumber's license A-156-72-C-A/R (4/28/1988). The SO_2 emission limit was based on a AP-42 emission factor of 0.009 lb/MMBtu equivalent to 0.4 lb/hr. The factors have since been updated; Robbins Lumber would like to use the 0.025 lb/MMBtu SO_2 emission factor found in AP-42, Table 1.6-2 (dated 9/03). This equates to 1.2 lb/hr SO_2.

Robbins Lumber shall be subject to both the emission limit in this NSR license and the limit in their Part 70 license, until it is amended.

F. Incorporation Into the Part 70 Air Emission License

The requirements in this 06-096 C.M.R. ch. 115 New Source Review license shall apply to the facility upon installation and startup of Boiler #3. Per *Part 70 Air Emission License Regulations*, 06-096 C.M.R. ch. 140 § 1(C)(8), for a modification at the facility that has undergone NSR requirements or been processed through 06-096 C.M.R. ch. 115, the source must apply for an amendment to their Part 70 license within one year of commencing the proposed operations, as provided in 40 C.F.R. Part 70.5.

G. Annual Emissions

1. Emission Totals

Robbins Lumber shall be restricted to the following annual emissions, based on a 12-month rolling total. The tons per year limits were calculated based on the following:

- firing 48,000 tons/year of biomass/wood in Boiler #1 and Boiler #2 (4,500 Btu/lb at 50% moisture)
- Boiler #3 operating 8,760 hours per year firing biomass/wood (4,500 Btu/lb at 50% moisture)
- Emergency Generator operation for 100 hr per year
- A kiln throughput of 40 MMBF/year
- A limit of 0.9 tpy VOC from the Boicide Dip Tank

Total Licensed Annual Emissions for the Facility
Tons/year
(used to calculate the annual license fee)

	PM	PM_{10}	SO_2	NO_x	CO	VOC
Boilers #1 & #2	43.4	43.4	5.4*	65.0	161.1	21.5
Boiler #3	21.9	34.4	18.3	109.9	219.8	12.5
Emergency Generator	0.1	0.1	0.05	1.8	0.8	0.09
Drying Kilns	-	-	-	-	-	45.2
Biocide Dip Tank	-	-	-	-	-	0.9
Total TPY	**65.4**	**77.9**	**23.8**	**176.7**	**381.7**	**80.2**

* SO_2 calculation updated to use most recent AP-42 factors.

Pollutant	Tons/Year
Single HAP	9.9
Total HAP	24.9

2. Greenhouse Gases

Greenhouse gases are considered regulated pollutants as of January 2, 2011, through 'Tailoring' revisions made to EPA's *Approval and Promulgation of Implementation Plans,* 40 C.F.R. Part 52, Subpart A, § 52.21, *Prevention of*

Significant Deterioration of Air Quality rule. Greenhouse gases, as defined in 06-096 C.M.R. ch. 100 are the aggregate group of the following gases: carbon dioxide, nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. For licensing purposes, greenhouse gases (GHG) are calculated and reported as carbon dioxide equivalents (CO_2e).

The quantity of CO_2e emissions from this facility is greater than 100,000 tons per year, based on the following:

- worst case emission factors from the following sources: U.S. EPA's AP-42, the Intergovernmental Panel on Climate Change (IPCC), and *Mandatory Greenhouse Gas Reporting,* 40 C.F.R. Part 98,; and
- global warming potentials contained in 40 C.F.R. Part 98.

As defined in 06-096 C.M.R. ch. 100, any source emitting 100,000 tons/year or more of CO_2e is a major source for GHG. This license includes applicable requirements addressing GHG emissions from this source, as appropriate.

III. <u>AMBIENT AIR QUALITY ANALYSIS</u>

A. Overview

A refined modeling analysis was performed to show that emissions from Robbins Lumber, in conjunction with other sources, will not cause or contribute to violations of National Ambient Air Quality Standards (NAAQS) for SO_2, PM_{10}, $PM_{2.5}$, NO_2 or CO or to Class II increments for SO_2, PM_{10}, $PM_{2.5}$ or NO_2.

Based upon the magnitude of proposed SO_2, PM_{10} and NO_2 emissions increases and the distance from the source to any Class I area, the affected Federal Land Managers (FLMs) and Maine Department of Environmental Protection, Bureau of Air Quality (MEDEP-BAQ) have determined that an assessment of Class I Air Quality Related Values (AQRV) is not required.

B. Model Inputs

The AERMOD-PRIME refined dispersion model was used to address NAAQS and increment impacts. The modeling analysis accounted for the potential of building wake and cavity effects on emissions from all modeled stacks that are below their calculated formula Good Engineering Practice (GEP) stack heights.

All modeling was performed in accordance with all applicable requirements of the MEDEP-BAQ and the United States Environmental Protection Agency (USEPA).

A valid five-year hourly off-site meteorological database was used in the AERMOD-PRIME refined modeling analysis. The following parameters and their associated heights were collected at MEDEP's Owl's Head meteorological monitoring site, located at the Knox County Regional Airport, during the five-year period 2005-2009:

TABLE III-1 : Meteorological Parameters and Collection Heights

Parameter	Sensor Height
Wind Speed	15 meters
Wind Direction	15 meters
Standard Deviation of Wind Direction (Sigma Θ)	15 meters
Temperature	3 meters

When possible, surface data collected at the Knox County Regional Airport Automated Weather Observatory System (AWOS) site were substituted for missing surface data. All other missing data were interpolated or coded as missing, per USEPA guidance. In addition, hourly Knox County Regional Airport data, from the same time period, were used to supplement the primary surface dataset for any required variables that were not explicitly collected at the Owl's Head meteorological monitoring site.

Surface meteorological data was combined with concurrent hourly cloud cover and upper-air data obtained from the Gray National Weather Service (NWS). Missing cloud cover and/or upper-air data values were interpolated or coded as missing, per USEPA guidance.

All necessary representative micrometeorological surface variables for inclusion into AERMET (surface roughness, Bowen ratio and albedo) were calculated using the AERSURFACE utility program and from procedures recommended by USEPA.

Point-source parameters, used in the modeling for Robbins Lumber are listed in Table III-2.

TABLE III-2 : Robbins Lumber Point Source Stack Parameters

Stack	Stack Base Elevation (m)	Stack Height (m)	GEP Stack Height (m)	Stack Diameter (m)	UTM Easting NAD83 (m)	UTM Northing NAD83 (m)
CURRENT/PROPOSED						
• Stack #2	68.37	30.48	51.20	0.91	483,953	4908,919
• Stack #3	68.92	32.00	50.65	1.52	483,935	4908,915
2012 BASELINE ($PM_{2.5}$ INCREMENT)						
• Stack #2	68.37	30.48	51.20	0.91	483,953	4908,919
1987 BASELINE (NO_2 INCREMENT)						
• Robbins Lumber conservatively assumed no credit for sources existing in the 1987 baseline year.						
1977 BASELINE (SO_2/PM_{10} INCREMENT)						
• Robbins Lumber conservatively assumed no credit for sources existing in the 1977 baseline year.						

Emission parameters for Robbins Lumber for NAAQS and Class II increment modeling are listed in Table III-3. Emission parameters for Robbins Lumber are based on the maximum license allowed operating configuration.

For the purpose of determining maximum predicted impacts, the following assumptions were used:

- all NO_x emissions were conservatively assumed to convert to NO_2 (USEPA Tier I Method),
- all particulate emissions were conservatively assumed to convert to PM_{10} and $PM_{2.5}$

TABLE III-3 : Stack Emission Parameters

Stack	Averaging Periods	SO_2 (g/s)	PM_{10}/ $PM_{2.5}$ (g/s)	NO_x (g/s)	CO (g/s)	Stack Temp (K)	Stack Velocity (m/s)
MAXIMUM LICENSE ALLOWED							
• Stack #2	All	0.16	1.35	1.87	9.20	450.00	19.56
• Stack #3 (Maximum)	All	0.53	1.00	3.16	12.65	422.00	19.93
• Stack #3 (Interim)	All	-	-	5.27	-	422.00	19.93
2012 BASELINE ($PM_{2.5}$ INCREMENT)							
• Stack #2	24-Hour	-	-0.70	-	-		
	Annual	-	-0.30	-	-		
1987 BASELINE (NO_2 INCREMENT)							
• Robbins Lumber conservatively assumed no credit for sources existing in the 1987 baseline year.							
1977 BASELINE (SO_2/PM_{10} INCREMENT)							
• Robbins Lumber conservatively assumed no credit for sources existing in the 1977 baseline year.							

C. Single Source Modeling Impacts

Refined modeling was performed for a total of four operating scenarios that represented a range of boiler/turbine operations.

The AERMOD-PRIME model results for Robbins Lumber alone are shown in Table III-4. Maximum predicted impacts that exceed their respective significance level are indicated in boldface type. For comparison to the Class II significance levels, the impacts for all pollutants/averaging periods were conservatively based on the maximum High-1st-High predicted values. No additional refined modeling was required for pollutants that did not exceed their respective significance levels.

TABLE III-4 : Maximum AERMOD-PRIME Impacts from Robbins Lumber Alone

Pollutant	Averaging Period	Max Impact (μg/m³)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Class II Significance Level (μg/m³)	Class II Significance Distance (km)	Load Case
SO_2	1-hour	**14.32**	483,500	4909,800	135.07	**10**[a]	5.7	Maximum
	3-hour	13.90	483,600	4909,900	132.68	**25**	-	Maximum
	24-hour	**6.43**	483,750	4908,560	75.96	**5**	0.6	Maximum
	Annual	0.28	484,260	4909,130	68.08	**1**	-	Maximum
PM_{10}	24-hour	**29.11**	483,770	4908,580	74.51	**5**	6.0	Maximum
	Annual	**1.51**	493,960	4909,130	67.14	**1**	0.5	Low
$PM_{2.5}$	24-hour	**16.04**	483,800	4908,640	73.81	**none**[b]	-	Maximum
	Annual	**1.12**	484,260	4909,150	68.11	**none**[b]	-	Maximum
NO_2	1-hour	**110.58**	486,400	4906,400	145.77	**10**[a]	36.8	Interim
	Annual	**2.50**	484,260	4909,120	68.00	**1**	3.5	Maximum
CO	1-hour	658.92	483,790	4909,110	68.98	**2,000**	-	Maximum
	8-hour	368.06	483,760	4908,570	75.36	**500**	-	Maximum

[a] Interim Significant Impact Level (SIL) adopted by Maine
[b] Previous $PM_{2.5}$ Significant Impact Levels (SIL) remanded by USEPA in 2013

D. Combined Source Modeling Impacts

As indicated in boldface type in Table III-4, other sources not explicitly included in the modeling analysis must be accounted for by using representative background concentrations for the area.

Background concentrations, listed in Table III-5, are derived from representative rural background data for use in the Central Maine region.

TABLE III-5 : Background Concentrations

Pollutant	Averaging Period	Background Concentration (μg/m³)	Date	Monitoring Site
SO_2	1-hour	24	2009-2011	Presque Isle
	3-hour	18	2009-2011	Acadia National Park
	24-hour	11		
	Annual	1		
PM_{10}	24-hour	42	2011-2013	Acadia National Park
	Annual	10		
$PM_{2.5}$	24-hour	17	2008-2010	Greenville
	Annual	5		
NO_2	1-hour	43	2009-2012	Presque Isle
	Annual	4	2010-2012	
CO	1-hour	365	2010-2012	Acadia National Park
	8-hour	322		

The Department examined other nearby sources to determine if any impacts would be significant in or near the Robbins Lumber significant impact area. Due to the location of Robbins Lumber, extent of the predicted significant impact area and other nearby source's emissions, MEDEP has determined that no other sources would be included in combined-source refined modeling.

The maximum AERMOD-PRIME modeled impacts, which were explicitly normalized to the form of their respective NAAQS, were added with conservative rural background concentrations to demonstrate compliance with NAAQS, as shown in Table III-6.

Because all pollutant/averaging period impacts using this method meet NAAQS, no further NAAQS modeling analyses need to be performed.

TABLE III-6 : Maximum Combined Source Impacts (μg/m³)

Pollutant	Averaging Period	Max Impact (μg/m³)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Back-Ground (μg/m³)	Total Impact (μg/m³)	NAAQS (μg/m³)
SO_2	1-hour	12.68	486,400	4906,400	145.77	24	36.68	196
	3-hour	10.01	483,740	4908,540	75.99	18	28.01	1,300
	24-hour	3.84	483,680	4908,820	74.79	11	14.84	365
	Annual	0.28	484,260	4909,130	68.08	1	1.28	80
PM_{10}	24-hour	19.08	484,040	4909,120	61.49	42	61.08	150
	Annual	1.49	484,260	4909,120	38.00	10	11.49	50
$PM_{2.5}$	24-hour	7.96	484,260	4909,140	68.11	17	24.96	35
	Annual	1.12	484,260	4909,150	68.11	5	6.12	12
NO_2	1-hour	114.06	486,400	4906,400	145.77	43	157.06	188
	Annual	3.01	484,260	4909,130	68.08	4	7.01	100
CO	1-hour	512.71	483,810	4909,100	70.61	365	877.71	40,000
	8-hour	351.17	483,770	4909,100	70.61	322	673.17	10,000

E. Secondary Formation of $PM_{2.5}$

Since proposed $PM_{2.5}$ emissions for this modification are greater than 15 TPY and the increase in NO_x emissions is expected to be greater than 40 TPY, a qualitative review of secondary impacts due to $PM_{2.5}$ precursor emissions (secondary $PM_{2.5}$) is required.

The $PM_{2.5}$ compliance demonstration must account for both primary $PM_{2.5}$ from a source's direct PM emissions, as well as secondarily formed $PM_{2.5}$ from a source's precursor emissions of NO_x and SO_2. The formation of secondary $PM_{2.5}$ is dependent on the concentrations of precursor and relative species, atmospheric conditions and the interactions of precursors with other entities, such as particles, rain, fog or cloud droplets.

Since the contribution from secondary formation of $PM_{2.5}$ is not explicitly accounted for in dispersion models such as AERMOD-PRIME, the impacts of secondarily formed $PM_{2.5}$ from Robbins Lumber was determined using a Tier I qualitative analysis following methodologies prescribed in *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program* (DRAFT, dated December 2, 2016).

For a Tier I assessment, the applicant sources use technically-credible empirical relationships between precursor emissions and secondary impacts, based upon USEPA modeling. Specifically, USEPA has performed single-source photochemical modeling to examine the range of modeled estimated impacts of secondary $PM_{2.5}$ formation for different theoretical source types (based on pollutant, stack height and location) for facilities in different geographical locations around the United States.

Using methodologies and values found in Appendix A of *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program*, Robbins Lumber estimated potential secondary $PM_{2.5}$ impacts due to precursor emissions by using a ratio of 'predicted secondary $PM_{2.5}$ concentration per ton of precursor emission', expressed in $\mu g/m^3$ per TPY. Using the results from USEPA's modeling, the 'predicted secondary $PM_{2.5}$ concentrations per ton of precursor emission' from the most conservative hypothetical sources in Maine were multiplied by the TPY precursor emissions from Robbins Lumber. This procedure was followed for both NO_x and SO_2 precursors and the results summed to achieve a final estimated potential secondary $PM_{2.5}$ concentration.

Using this method, the total estimated secondary $PM_{2.5}$ impact due to Robbins Lumber's NO_x and SO_2 precursor emissions were predicted to be extremely low ($<0.09\ \mu g/m^3$) and are not expected to contribute significantly to the $PM_{2.5}$ NAAQS or Class II increment impacts.

F. Secondary Formation of Ozone

The compliance demonstration must also account for the formation of ozone, which is a secondary pollutant formed through non-linear photochemical reactions, primarily driven by precursor emissions of NO_x and VOCs in the presence of sunlight.

NO_x and VOC precursor contributions to the 8-hour daily maximum ozone are considered together to determine if the applicant source's air quality impact would exceed the critical air quality threshold. The proposed emissions increase can be expressed as a percent of the lowest MERP for each precursor and then the individual contributions summed. A value less than 100% indicates that the critical air quality threshold will not be exceeded when considering the combined impacts of these precursors on 8-hour daily maximum ozone levels.

Using methodologies from *Guidance on the Development of Modeled Emission Rates for Precursors (MERPs) as a Tier 1 Demonstration Tool for Ozone and $PM_{2.5}$ under the PSD Permitting Program* and from values in Table 7.1 (*Most Conservative (Lowest) Illustrative MERP Values by Precursor, Pollutant and Region*), Robbins Lumber demonstrated compliance as follows:

(109.9 TPY NO_x increase / 170 TPY NO_x 8-hour daily maximum O_3 MERP)
+
(12.5 TPY VOC increase / 1159 TPY default VOC 8-hour daily maximum O_3 MERP) =

0.65 + 0.01 = 0.66

The final calculated value is 0.66 (66%). A value less than 100% indicates that the USEPA's critical air quality threshold value of 1 part per billion (ppb) for ozone will not be exceeded. Therefore, the proposed NO_x and VOC emissions are not expected to contribute to any new significant ozone formation.

G. Class II Increment

The AERMOD-PRIME refined model was used to predict maximum Class II increment impacts.

Results of the Class II increment analysis are shown in Table III-7. All modeled maximum increment impacts were below all increment standards. Because all predicted increment impacts meet increment standards, no additional Class II SO_2, PM_{10}, $PM_{2.5}$ and NO_2 increment modeling needed to be performed.

TABLE III-7 : Class II Increment Consumption

Pollutant	Averaging Period	Max Impact (μg/m³)	Receptor UTM E (km)	Receptor UTM N (km)	Receptor Elevation (m)	Class II Increment (μg/m³)
SO_2	3-hour	10.52	483,770	4909,090	68.00	512
	24-hour	4.23	483,680	4908,820	38.90	91
	Annual	0.34	484,260	4909,120	74.79	20
PM_{10}	24-hour	17.35	484,040	4909,120	61.49	30
	Annual	0.98	484,260	4909,120	68.00	17
$PM_{2.5}$	24-hour	7.68	483,890	4909,090	73.12	9
	Annual	0.36	484,270	4909,130	69.51	4
NO_2	Annual	2.30	484,260	4909,130	68.08	25

Federal guidance and 06-096 C.M.R. ch. 115 require that any major new source or major source undergoing a major modification provide additional analyses of impacts that would occur as a direct result of the general, commercial, residential, industrial and mobile-source growth associated with the construction and operation of that source.

GENERAL GROWTH: Some increases in local emissions due to construction related activities are expected to occur for several months, with the majority of emissions due to truck and construction-vehicle traffic (such as soil removal, concrete delivery/pouring/finishing, delivery of materials, etc.). Increases in potential emissions of NO_x and $PM_{2.5}$ due to vehicle traffic will likely be temporary and short-lived. Emissions of dust from construction related activities will be minimized by the use of "Best Management Practices" for construction on-site.

RESIDENTIAL, COMMERCIAL AND INDUSTRIAL GROWTH: Population growth in the general area of Robbins Lumber can be used as a surrogate factor for the growth in emissions from residential combustion sources. The manpower requirements, operations and support required for the construction and operation of Robbins Lumber will be available from the surrounding communities. Therefore, no new significant residential, commercial and/or industrial growth will follow from the modification associated with Robbins Lumber.

MOBILE SOURCE GROWTH: Since area and mobile sources are considered minor sources of NO_2, their contribution to increment has to be considered. Technical guidance from USEPA points out that screening procedures can be used to determine whether additional detailed analyses of minor source emissions are required. Compiling a source inventory may not be required if it can be shown that little or no growth has taken place in the impact area of the proposed source since the pollutant baseline dates (1977/1988) were established.

MEDEP-BAQ has compiled Vehicle Miles Travelled (VMT) data for all counties in Maine from 1987 through 2015. The calculated growth in VMT over that time period (+38%), combined with the increasingly stringent federal NO_x emission requirements for mobile sources and the concurrent decrease in NO_2 background concentrations, indicate that mobile sources are not expected to significantly impact the available increment.

Therefore, additional analyses of mobile source NO_x emissions are not warranted.

H. Impacts on Plants, Soils & Animals

In accordance with guidance prescribed in USEPA's 1990 Prevention of Significant Deterioration manual, Robbins Lumber evaluated the impacts of its emissions using procedures described in *A Screening Procedure for the Impacts of Air Pollution on Plants, Soils and Animals*.

Maximum predicted impacts from the AERMOD-PRIME modeling were compared to USEPA's 'Screening Concentrations' (see Table III-8), which represent the minimum concentration at which adverse growth effects or tissue injury in sensitive vegetation can be expected.

TABLE III-8 : Maximum Impacts on Plants, Soils & Animals (μg/m³)

Pollutant	Averaging Period	Max Impact (μg/m³)	Screening Concentration (μg/m³)
SO_2	1-hour	14.32	917
	3-hour	13.90	786
	Annual	0.28	18
NO_2	4-hour	102.01	3,760
	8-hour	80.91	3,760
	Month	6.65	564
	Annual	2.50	94
CO	Week	238.62	1,800,000

Because all predicted impacts for all pollutants and averaging periods were below Screening Concentrations, no further assessment of the impacts to plants, soils and animals is required, per USEPA guidance.

I. Class I Impacts

Based upon the magnitude of proposed emissions increases and the distance from Robbins Lumber to any Class I area, the affected Federal Land Managers (FLMs) and MEDEP-BAQ have determined that an assessment of Class I Air Quality Related Values (AQRVs) is not required.

J. Summary

In summary, it has been demonstrated that Robbins Lumber in its proposed configuration will not cause or contribute to a violation of any SO_2, PM_{10}, $PM_{2.5}$, NO_2 or CO ambient air quality standards or to Class II increments for SO_2, PM_{10}, $PM_{2.5}$ or NO_2.

ORDER

Based on the above Findings and subject to conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants New Source Review License A-156-77-3-A pursuant to the preconstruction licensing requirements of 06-096 C.M.R. ch. 115 and subject to the specific conditions below.

Severability. The invalidity or unenforceability of any provision of this License or part thereof shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

(1) **Boiler #1**

Upon start up and stable operation of Boiler #3, Boiler #1 shall be removed from service. Once Boiler #1 is removed from service, the 48,000 ton/year of biomass combustion in Boilers #1 and #2 limitation shall no longer apply.

(2) **Boiler #2**

SO_2 Emissions from Boiler #2 shall not exceed the following:

Emission Unit	Pollutant	Lb/hr	Origin
Boiler #2	SO_2	*1.2	06-096 C.M.R. ch. 115, BPT

* Robbins Lumber shall continue to be subject to the SO_2 limit in A-156-70-D-R until this Title V license is amended.

(3) **Boiler #3**

A. Boiler #3 shall combust biomass/wood fuel only.
[06-096 C.M.R. ch. 115, BACT]

B. Emissions shall not exceed the following:

Unit	Pollutant	lb/MMBtu	Origin and Authority
Boiler #3	PM	0.030	40 C.F.R. Part 60, § 60.43b(h)(1), 40 C.F.R. 63, Subpart JJJJJ, Table 1

C. Emissions shall not exceed the following [06-096 C.M.R. ch. 115, BPT]:

Emission Unit	PM (lb/hr)	*PM_{10} (lb/hr)	*$PM_{2.5}$ (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Boiler #3	5.0	7.9	7.9	4.2	25.1	50.2	2.8

* filterable and condensables

D. Boiler #3 shall exhaust through Stack #3 which shall have a minimum height of 105-feet above ground level. [06-096 C.M.R. ch. 115, BACT]

E. Visible emissions from Stack #3, serving Boiler #3, shall not exceed 20% opacity on a six-minute block average basis, except for no more than one six-minute average of 27% per hour. This limit does not apply during periods of start- up and shutdown. License condition (3)F.1.a shall apply during periods of start-up and shutdown. [40 C.F.R. § 60.43b(f)]

F. Area Source Boiler NESHAP (40 C.F.R. Part 63, Subpart JJJJJJ) Requirements for Boiler #3
[06-096 C.M.R. ch. 115, BACT]

1. Emission Limits and Work Practice Standards
   a. Boiler #3 is subject to the following requirements:
      (1) Minimize the boiler's startup and shutdown periods and conduct startups and shutdowns according to the manufacturer's recommended procedures.
      [40 C.F.R. Part 63, Subpart JJJJJJ, Table 2]

      (2) Maintain visible emissions less than or equal to 10 percent opacity (daily block average); OR

Maintain the 30-day rolling average total secondary electric power of the ESP at or above minimum total secondary electric power determined from the values of secondary voltage and secondary current to the ESP measured during the most recent performance stack test demonstrating compliance with the PM limit.
[40 C.F.R. Part 63, Subpart JJJJJ, Table 3 (3.)]

(3) Maintain the 30-day rolling average operating load of the boiler such that it does not exceed 110 percent of the average operating load recorded during the most recent performance stack test. [40 C.F.R. Part 63, Subpart JJJJJ, Table 3 (7.)]

b. Boiler Tune-Up Program

(1) A boiler tune-up program shall be implemented.
[40 C.F.R. § 63.11223]

(2) Tune-ups for Boiler #3 shall be conducted every five years with no more than 61 months between tune-ups. [40 C.F.R. § 63.11223(c) and 40 C.F.R. Part 63, Subpart JJJJJ, Table 2]

(3) The boiler tune-up program shall be performed as specified below:

(i) As applicable, inspect the burner, and clean or replace any component of the burner as necessary. Delay of the burner inspection until the next scheduled shutdown is permitted; not to exceed 72 months from the previous inspection. [40 C.F.R. § 63.11223(b)(1) & (c)]

(ii) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern, consistent with the manufacturer's specifications. [40 C.F.R. § 63.11223(b)(2)]

(iii) Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure it is correctly calibrated and functioning properly. Delay of the inspection until the next scheduled shutdown is permitted; not to exceed 72 months from the previous inspection.
[40 C.F.R. § 63.11223(b)(3) & (c)]

(iv) Optimize total emissions of CO, consistent with manufacturer's specifications. [40 C.F.R. § 63.11223(b)(4)]

(v) Measure the concentration in the effluent stream of CO in parts per million by volume (ppmv), and oxygen in volume percent, before and after adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis

before and after the adjustments are made). Measurements may be taken using a portable CO analyzer.
[40 C.F.R. § 63.11223(b)(5)]

(vi) If a unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 days of start-up.
[40 C.F.R. § 63.11223(b)(7)]

(4) Tune-Up Report: A tune-up report shall be maintained onsite and, if requested, submitted to EPA. The report shall contain the following information:

(i) The concentration of CO in the effluent stream (ppmv) and oxygen (volume percent) measured at high fire or typical operating load both **before** and **after** the boiler tune-up;

(ii) A description of any corrective actions taken as part of the tune-up of the boiler; and

(iii) The types and amounts of fuels used over the 12 months prior to the tune-up of the boiler, but only if the unit was physically and legally capable of using more than one type of fuel during that period. Units sharing a fuel meter may estimate the fuel use by each unit.

[40 C.F.R. § 63.11223(b)(6)]

2. Continuous Monitoring System (CMS) and Continuous Parameter Monitoring System (CPMS)
   a. If a COMS is not installed, Robbins Lumber shall install, operate, and maintain a CPMS for the Electrostatic Precipitator on Boiler #3.
   [40 C.F.R. § 63.11222(a)]
   b. Robbins Lumber shall establish a site specific minimum total secondary electric power operating limit per 40 C.F.R. Part 63, Subpart JJJJJJ, Table 6.
   c. Robbins Lumber shall establish unit-specific limits for maximum operating load (fuel feed rate or steam generation data) per 40 C.F.R. Part 63, Subpart JJJJJJ, Table 6.
   d. Robbins Lumber shall continuously monitor the total secondary electric power and reduce this data to 30-day rolling averages to demonstrate compliance with the limitations on the minimum total secondary electric power per 40 C.F.R. Part 63, Subpart JJJJJJ, Table 7.
   e. Robbins Lumber shall continuously monitor the boiler operating loads and reduce this data to 30-day rolling averages to demonstrate compliance with the limitations on the maximum operating load per 40 C.F.R. Part 63, Subpart JJJJJJ, Table 7.
   f. Robbins Lumber shall prepare a site-specific monitoring plan that addresses the requirements outlined in 40 C.F.R. § 63.11224(c).

g. The CPMS shall be continuously operated in accordance with the site-specific monitoring plan at all times that Boiler #3 is operating and firing biomass/wood except for periods of monitoring system malfunctions or out-of-control periods, repairs associated with monitoring system malfunctions or out-of-control periods, and required monitoring system quality assurance or quality control activities including, as applicable, calibration checks, required zero and span adjustments, and scheduled CMS maintenance as defined in Robbins Lumber's site-specific monitoring plan. [40 C.F.R. § 63.11221(b)]

h. The CPMS shall complete a minimum of one cycle of operation every 15 minutes. Robbins Lumber shall have data values from a minimum of four successive cycles of operation representing each of the four 15-minute periods in an hour, or at least two 15-minute data values during an hour when CMS calibration, quality assurance, or maintenance activities are being performed, to have a valid hour of data. [40 C.F.R. § 63.11224(d)(1)]

i. Robbins Lumber shall calculate hourly arithmetic averages from each hour of CPMS data and determine the 30-day rolling average of all recorded readings.
[40 C.F.R. § 63.11224(d)(2)]

j. The Electrostatic Precipitator shall be operated and maintained to meet the following:
   (1) Maintain visible emissions of less than or equal to 10 percent opacity (daily block average); OR
   (2) Maintain the 30-day rolling average total secondary electric power of the electrostatic precipitator at or above the minimum total secondary electric power. Minimum total secondary electric power is defined as the lowest hourly average total secondary electric power determined from the values of secondary voltage and secondary current to the electrostatic precipitator measured according to Table 6 of Subpart JJJJJ, during the most recent performance stack test demonstrating compliance with the applicable emission limits.
   (40 C.F.R. Part 63, Subpart JJJJJ, Table 3)

3. Start-Up/Shutdown Procedures

   a. Robbins Lumber shall develop and implement a written startup and shutdown plan within 365 days of initial start-up.

   b. Robbins Lumber shall comply with all applicable emissions limits at all times except for startup or shutdown periods complying with the startup/shutdown work practices described below.

(1) For Startup of Boiler #3, Robbins Lumber shall use one or a combination of the following clean fuels: paper, cardboard, and clean dry biomass. For the purposes of this license, "clean dry biomass" means any biomass-based solid fuel that has not been painted, pigment stained, or pressure treated; does not contain contaminants at concentrations not normally associated with virgin biomass materials; has a moisture content of less than 20 percent; and is not a solid waste.

(2) Robbins Lumber shall engage and operate PM controls within one hour of first feeding fuels that are not the clean fuels defined above. Robbins Lumber shall engage all required control devices as expeditiously as possible, but no later than four hours from the start of supplying useful thermal energy from Boiler #3.

(3) Robbins Lumber shall minimize the boiler's startup and shutdown periods and conduct startups and shutdowns according to the manufacturer's recommended procedures.

4. Notifications and Reports

Robbins Lumber shall submit to EPA all reports required by 40 C.F.R. Part 63, Subpart JJJJJJ including, but not limited to, the following:

a. Within 60 days after the date of completing each performance test, Robbins Lumber shall submit the results of the performance test as referenced in 40 C.F.R. § 63.11225(e)(1)(i) and (ii). Robbins Lumber shall also submit results to the Department in accordance with Standard Condition (11)(C) within thirty (30) days of test completion per A-156-70-D-R (8/11/2015). [40 C.F.R. § 63.11225(e)(1)]
b. A Notification of Compliance Status shall be submitted to EPA no later than 60 days following the completion of the performance stack test. [40 C.F.R. § 63.11225(a)(4)]
c. Compliance Reports
A compliance report shall be prepared by March 1st of each year. The report shall be maintained by the source and submitted to the Department and to the EPA upon request, unless the source experiences any deviations from the applicable requirements of this Subpart during the previous calendar year, in which case the report must be submitted to the Department and to the EPA by March 15th. The report must include the items contained in § 63.11225(b)(1) through (4), including the following: [40 C.F.R. § 63.11225(b)]
(1) Company name and address;

(2) A statement of whether the source has complied with all the relevant requirements of this Subpart;
(3) A statement certifying truth, accuracy, and completeness of the notification and signed by a responsible official and containing the official's name, title, phone number, email address, and signature;
(4) The following certifications, as applicable:
   (i) "This facility complies with the requirements in 40 C.F.R. § 63.11223 to conduct tune-ups of each boiler in accordance with the frequency specified in this Subpart."
   (ii) "No secondary materials that are solid waste were combusted in any affected unit."
   (iii) "This facility complies with the requirement in 40 C.F.R. § 63.11214(d) to conduct a tune-up of each applicable boiler according to 40 C.F.R. § 63.11223(b)."
(5) If the sources experiences any deviations from the applicable requirements during the reporting period, include a description of deviations, the time periods during which the deviations occurred, and the corrective actions taken; and
(6) The total fuel use by each affected boiler subject to an emission limit for each calendar month within the reporting period.

5. Recordkeeping
   Records shall be maintained consistent with the requirements of 40 C.F.R. Part 63, Subpart JJJJJ including the following [40 C.F.R. Part § 63.11225(c)]:
   a. Copies of notifications and reports with supporting compliance documentation;
   b. Identification of each boiler, the date of tune-up, procedures followed for tune-up, and the manufacturer's specifications to which the boiler was tuned;
   c. Records of monthly fuel use including the type(s) of fuel and amount(s) used;
   d. Records of the occurrence and duration of each malfunction of each applicable boiler; and
   e. Records of actions taken during periods of malfunction to minimize emissions, including corrective actions to restore the malfunctioning boiler.
   f. Records shall be in a form suitable and readily available for expeditious review.

G. Control Equipment

1. Emissions of $PM/PM_{10}/PM_{2.5}$ from Boiler #3 shall be controlled by the operation and maintenance of an ESP except for periods of startup and shutdown. Startup and shutdown procedures are outlined in Condition

3.F.3. During normal operation, Robbins Lumber shall operate, at a minimum, the number of ESP chambers and number of fields per chamber that operated during the most recent demonstration of compliance with the licensed particulate matter emission limits. [06-096 C.M.R. ch. 115, BACT]

2. NO_x Control
   a. Emissions of NO_x from Boiler #3 shall be controlled by the operation and maintenance of a flue gas recirculation system and if in accordance with Condition (3)G.2.d., the operation and maintenance of a selective non-catalytic reduction (SNCR) system.
   [06-096 C.M.R. ch. 115, BACT]
   b. Boiler #3 shall be limited to 0.25 lb/MMBtu of NO_x and 0.60 lb/MMBtu of CO for 365 days from the date of initial startup.
   [06-096 C.M.R. ch. 115, BACT]
   c. If Robbins Lumber can demonstrate compliance with the 0.15 lb/MMBtu limit without add-on controls, the NO_x limit shall become 0.15 lb/MMBtu, and the CO limit shall become 0.3 lb/MMBtu) 365 days from the date of initial startup.
   [06-096 C.M.R. ch. 115, BACT]
   d. If Robbins Lumber cannot demonstrate compliance with the NO_x limit of 0.15 lb/MMBtu without add-on controls, Robbins Lumber shall install an SNCR system within 545 days from initial startup . Until the SNCR is operational but no later than 730 days from initial startup, NO_x emissions shall be limited to 0.25 lb/MMBtu and CO emissions shall be limited to 0.60 lb/MMBtu. Once the SNCR is operational, but no later than 730 days after initial startup, NO_x emissions shall be limited to 0.15 lb/MMBtu and CO emissions shall be limited to 0.30 lb/MMBtu. Robbins Lumber shall be limited to 40 ppmdv of ammonia @ 12% CO_2 based on a 3-run emissions test during the operation of the SNCR. The test shall be conducted every two calendar years using EPA's Conditional Test Method for Ammonia (CTM-027).
   [06-096 C.M.R. ch. 115, BACT]
   e. Robbins Lumber shall submit a plan to be approved by the Department for the monitoring and record keeping of NO_x and CO readings during the first year of operation. The plan shall include the frequency and methods of NO_x and CO diagnostic testing. Nine months after the startup of Boiler #3, Robbins Lumber shall submit a progress report which contains a summary of the results of the diagnostic testing and any boiler adjustments based on the results of the diagnostic testing.

H. Stack Testing

1. Robbins Lumber shall conduct initial performance testing on Boiler #3 to demonstrate compliance with the opacity (%) limit, NSPS and 40 C.F.R. Part 63, Subpart JJJJJJ, PM (lb/MMBtu), emission limits within 60 days of achieving maximum production, but not later than 180 days after initial startup, in accordance with 40 C.F.R. Part 60, Subpart Db and 40 C.F.R. Part 63, Subpart JJJJJJ.
[40 C.F.R. Part 60, § 60.46b(d), 40 C.F.R. § 63.11210(a) & (d) and 40 C.F.R. § 63.11220(b)]

2. Robbins Lumber shall perform subsequent performance tests for opacity using 40 C.F.R. Part 60, Appendix A, Method 9 per the schedule contained in 40 C.F.R. Part 60, Subpart Db. [40 C.F.R. Part 60, § 60.48b(a)]

3. Within 2 years of startup of Boiler #3, Robbins Lumber shall perform stack testing on Stack #3 for PM, PM_{10}, $PM_{2.5}$, NO_x, CO, and VOC to determine compliance with the licensed emission limits (lb/hr) in Condition (3) C. When performing this stack testing for compliance purposes, Boiler #3 shall be operated under normal operating conditions unless otherwise specified in the applicable federal regulation.
[06-096 C.M.R. ch. 115, BACT]

4. Robbins Lumber shall conduct PM (lb/MMBtu) performance tests on a triennial basis unless specified otherwise below. Triennial performance tests shall be completed no more than 37 months after the previous performance test.
   a. If the performance test results show that PM emissions are equal to or less than half of the PM emission limit when demonstrating initial compliance, Robbins Lumber may choose to conduct performance tests for PM every fifth year while continuing to comply with all applicable operating limits and monitoring requirements. Each such performance test shall be conducted no more than 61 months after the previous performance test. [40 C.F.R. § 63.11220(c)(1)]
   b. If the performance test results show that PM emissions are greater than half of the PM emission limit, Robbins Lumber shall conduct subsequent performance tests on a triennial basis.
   [40 C.F.R. § 63.11220(c)(3)]

5. Robbins Lumber shall conduct HCl stack test, utilizing EPA Test Method 26 and 26A, within 2 years of initial startup for the purpose of validating the HCl emission factor used to demonstrate that HCl emissions from the

boilers remain below the single HAP major source threshold of 10 TPY. [06-096 C.M.R. ch. 115, BACT]

I. Periodic Monitoring

1. Robbins Lumber shall maintain records of the amount of each fuel combusted in Boiler #3 during each calendar month.
[40 C.F.R. Part 60, § 60.48c (g)(2)]

2. Robbins Lumber shall calibrate, maintain, and operate one of the methods below to demonstrate compliance with the opacity standard on Boiler #3:
   a. Install a continuous monitoring system (COMS) to demonstrate compliance with the opacity standard establish above per 40 C.F.R. § 60.48(j)(1).
   b. Install a PM CEMS instead of a COMS per § 60.48b(j)(1)
   c. Utilize an ESP predictive model to monitor the performance of the ESP per 40 C.F.R. § 60.48(j)(6). Robbins Lumber shall comply with the requirements established in 40 C.F.R. § 60.48Da(o)(3).

3. Records shall be maintained documenting startups, shutdowns, and malfunctions for Boiler #3 and its associated control equipment. These records shall include dates, times, duration, cause, and method utilized to minimize duration of the event and/or to prevent reoccurrence. [06-096 C.M.R. ch. 115, BACT]

J. Reporting

1. Robbins Lumber shall submit notification to EPA and the Department of the date of construction and actual start-up. This notification shall include the design heat input capacity of the boiler and the type of fuel to be combusted. [40 C.F.R. § 60.49b(a)]

2. Robbins Lumber shall submit to the Department and EPA the test data from the initial performance test per the requirements of 40 C.F.R. Part 60, § 60.49b(b).

3. Robbins Lumber shall submit to the Department and EPA semiannual excess emission reports per the requirements of 40 C.F.R. Part 60, § 60.49b(h). Robbins Lumber shall maintain all records associated with opacity observations. Robbins Lumber shall submit excess emissions reports for any excursions.

(4) Robbins Lumber shall submit an application to incorporate this NSR license into the facility's Part 70 air emission license no later than 12 months from commencement of the requested operation. [06-096 C.M.R. ch. 140 § 1(C)(8)]

DONE AND DATED IN AUGUSTA, MAINE THIS 30 DAY OF June , 2017.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for
PAUL MERCER, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: March 2, 2017
Date of application acceptance: March 2, 2017

Date filed with the Board of Environmental Protection:

Filed
JUN 30 2017
State of Maine
Board of Environmental Protection

This Order prepared by Lisa P. Higgins, Bureau of Air Quality.