



**STIMSON LUMBER COMPANY**  
**Environmental Management**  
520 SW Yamhill, Suite 700  
Portland, Oregon 97204-1330  
(503) 306-4655

September 30, 2020

Ms. Kenzie Billings  
Oregon Department of Environmental Quality  
700 NE Multnomah Street, Suite 600  
Portland, OR 97232

**Re: Stimson Lumber Company – Forest Grove Complex  
Cleaner Air Oregon Toxic Air Contaminant Emissions Inventory Submittal**

Dear Ms. Billings:

On July 1, 2020, the Stimson Lumber Company (Stimson) Forest Grove Complex (the facility) received a letter from the Oregon Department of Environmental Quality (DEQ) providing written notice, pursuant to Oregon Administrative Rule (OAR) 340-245-0050, that the facility was being called into the Cleaner Air Oregon (CAO) risk assessment process. OAR 340-245-0030(1)(a)(A) specifies that a toxic air contaminant (TAC) emissions inventory must be submitted no later than 90 days after the DEQ notice date (in our case, by September 30, 2020). Based on this requirement, we are submitting the TAC emissions inventory in a spreadsheet document (Microsoft Excel format) accompanying this cover letter.

The facility operates under Title V permit No. 34-2066 (existing permit) and is currently working with DEQ to update the existing permit for the facility. We operate a sawmill (standard industrial classification code [SIC] 2421) and a wet process hardboard plant (SIC 2493) at the facility. In general, our manufacturing processes include a combination of log debarking, sawing, lumber drying, forming, and pressing with resin. We process two species of raw wood at the facility; Douglas Fir and Hemlock. Most of our TAC emissions are generated in processes where heat is applied such as kilns and presses. Other than the heated processes, most of the emissions generated are naturally occurring compounds emitted during drying and can vary by wood species processed.

The facility employs two hog fuel-fired boilers that combine exhaust streams and vent to the atmosphere through two stacks. A common exhaust manifold and damper system allows the exhaust from both boilers to travel through two ducts, one east and one west. The west duct routes exhaust through a multicyclone, fuel dryer cyclone, fan, and stack that is controlled by a wet scrubber. The east duct exhausts to a multi-clone, fan, and stack which is controlled by a dry-electrostatic precipitator. The hogged fuel used for combustion is primarily generated from wood residuals manufactured during facility operations. Steam from the boilers is used for the lumber dry kilns and for the hardboard plant.

The hardboard plant has two pressurized refiners, which use steam to provide heat and pressure to wood fibers. The refined fiber slurry is piped to a forming machine, where fibers pack together to form a wet mat. Water drains below the mat, assisted by a vacuum pump. The press is a wet process 250 pounds per square inch (psi) steam heated press. Emissions from the hardboard press are contained by a hooded enclosure and then propagate via sealed duct to a Tri-Mer scrubber control system.

Additionally, the facility employs a wastewater treatment plant (WWTP) to repurpose wastewater from the hardboard plant operations. The WWTP utilizes an aeration basin and secondary clarifier to reduce the total suspended solids (TSS) from the wastewater. Once treated, the wastewater is repurposed back to the facility for use in the hardboard plant.

### **EMISSIONS CALCULATION METHODOLOGY**

To help quantify TAC emissions from the facility, Stimson has retained Maul Foster & Alongi, Inc. (MFA) to assist with the CAO permitting process. Using calculation methods discussed later in this letter, MFA estimated daily and annual TAC emission from the following toxic emission units (TEUs) that were included in the TAC emissions inventory Stimson submitted to DEQ in September 2017:

- Hogged Fuel-Fired Boilers #1 and #2 (TEU ID BLR\_ESP, BLR\_SCR)
- Lumber Kilns (TEU ID KILN\_DF, KILN\_HL)
- Hardboard Press (TEU ID PRESS)
- Refiner (TEU ID RF12)
- Former (TEU ID FORMER)
- Fuel Dryer (TEU ID DRYER)
- Surface Coatings (TEU ID BASECOAT, TOPCOAT, SURFACE)

In addition to these sources, MFA has identified the following processes in the WWTP as TEUs and has included these sources in the attached emissions inventory:

- Aeration Basin (TEU ID ABASE)
- Secondary Clarifier (TEU ID CLAR)
- Sludge Pond (TEU ID S\_POND)
- Sludge Pit Conveyor (TEU ID PIT)
- Reuse Pond (TEU ID R\_POND)
- East Pond (TEU ID E\_POND)

On September 28, 2018, DEQ provided Stimson with a revised version of the TAC emissions inventory that was submitted to DEQ as part of the initial TAC emissions inventory call-in process in September of 2017. Emission factors from the revised inventory were used to estimate daily and annual TAC emissions for the lumber kilns, hardboard press, refiner, former, fuel dryer, and the two hogged fuel-fired boilers. Additionally, a material balance model was used to estimate TAC emissions from the surface coatings used at the facility.

Daily and annual TAC emissions were estimated from the TEU's in the WWTP using the U.S. Environmental Protection Agency Water 9 Software (Water 9). Water 9 is a DEQ approved method for modeling the fate and transport of toxic chemicals that are typically found in the wastewater treatment process. The Water 9 model relies on user inputs of physical characteristics of the different wastewater processes to calculate the quantity of each chemical as it goes through biodegradation, volatilization, or stays in the waste stream. A water sample was collected at the hardboard wastewater effluent and sent to APEX laboratories for a volatile organic compound (VOC) analysis. The concentrations derived from the samples were used as inputs into the Water9 model.

As a result of ongoing investigation by MFA and Stimson into modeling of the WWTP, requested potential-to-emit (PTE) wastewater throughputs (currently overestimated as approximately twice the actual wastewater flowrate) and daily and annual TAC emission estimates from the WWTP are subject

to change based on new information not available at this time. In the event it is determined by MFA a revision is required for the existing emission estimates from the WWTP, MFA will provide DEQ with an updated version of the TAC emissions inventory.

### **2019 EMISSIONS CALCULATIONS**

Annual production rates for the 2019 calendar year were used to estimate the actual annual facility-wide emissions for 2019. As the quantity and species of wood can vary from day to day operations, actual daily emissions were estimated by assuming the maximum daily production rate. In effect, this calculation method results in the estimated daily emissions being equal to the PTE scenario discussed below.

### **POTENTIAL-TO-EMIT EMISSIONS CALCULATIONS**

PTE annual emissions were estimated by using the proposed annual PTE production rates of 111,600 thousand board-feet per year (Mbdft/yr) and 75,000 thousand square feet at 1/8<sup>th</sup> inch (Msf 1/8-in/yr) for the sawmill and hardboard plant, respectively. The facility estimates that on average, 81.2 percent of wood processed through the lumber kiln is Douglas fir, while the remaining 18.8 percent is Hemlock. This ratio results in PTE annual throughputs of 90,566 Mbdft/yr and 21,034 Mbdft/yr of Douglas fir and Hemlock, respectively.

The annual PTE aggregate steam production of 350,000 thousand pounds of steam per year (Mlb-steam/yr) was used for the two boilers. The facility estimates that, on average, 59.6 percent of the steam generated by the two boilers exhausts through the electrostatic precipitator (ESP) stack, while the other 40.4 percent exhausts through the scrubber. This results in an estimate of exhaust (i.e. emissions) through the ESP and scrubber commensurate with PTE annual steam production of 252,851 Mlb-steam/yr and 171,349 Mlb-steam/yr, respectively.

PTE daily emissions were estimated by assuming the maximum hourly throughput for each process device, over a 24-hour consecutive period. To estimate a worst-case daily emissions scenario for the lumber kilns, the maximum daily production rate was used for both wood species, Douglas fir and Hemlock. The highest daily emission rate for each TAC between the two species was used to create a hybrid species that, while unrealistic, results in a true worst-case emissions scenario.

We look forward to working with DEQ on the CAO permitting process. If you have any questions, please contact me at (503) 306-4655 or Mr. Andrew Rogers at MFA: (970) 682-5969.

Sincerely,



Steven Petrin  
Environmental Manager

Attachments:  
DEQ AQForm405 (MS Excel)

cc: Jim Skuzeski, Stimson Lumber Co.  
Chad Darby, Maul Foster & Alongi, Inc.