Maine Woods Pellet Company, LLC,
Athens Capital Holdings, LLC, &
Athens Energy LLC
Somerset County
Athens, Maine
A-989-71-E-A

Departmental
Findings of Fact and Order
Air Emission License
Amendment #1

FINDINGS OF FACT

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

I. REGISTRATION

A. Introduction

Maine Woods Pellet Company, LLC (MWP) was issued Air Emission License A-989-71-D-R/M on June 4, 2013 permitting the operation of emission sources associated with their wood pellet manufacturing facility.

Along with MWP, Athens Capital Holdings, LLC and Athens Energy LLC have requested to be added to this air emission license as co-applicants. Sufficient documentation has been provided to the Department to demonstrate Title, Right, or Interest for all three companies. Therefore, wherever "MWP" is used throughout this document, it is intended to refer to all three companies equally and jointly.

MWP has requested an amendment to their license in order to construct and operate a cogeneration facility and additional pellet processing equipment in support of the existing pellet production facility.

MWP has further requested that the particulate matter emission limits for the existing dryer be amended to include the condensable fraction not previously accounted for.

The equipment addressed in this license is located at 164 Harmony Road, Athens, Maine.

B. Emission Equipment

The following new equipment is addressed in this air emission license:

Furnace

Equipment	Maximum Capacity (MMBtu/hr)	Maximum Firing Rate (ton/hr)	Fuel Type, % sulfur	Date of Manuf.	Stack #
Furnace #1	149	16.6	biomass, negligible	2015	3

Process Equipment

Equipment	Production Rate	Pollution Control Equipment	Stack #
Pre-Dryer #1	6.5 ODT/hr	multi-cyclone	3

C. Definitions

Continuously: For purposes of the periodic monitoring requirements in this license, "continuously" means at least three (3) data points in each full operating hour with at least one (1) data point in each half-hour period.

Wood, Biomass, and Wood Waste: For the purposes of this license, the terms "wood", "biomass", or "wood waste" all mean forest products such as green wood chips, bark, limbs, tree tops, etc. These terms do not include any post-consumer products.

D. Application Classification

The installation of new emission units at an existing minor source is considered a major modification based on whether or not expected emission increases from the new equipment exceed the "Significant Emission" levels as defined in 06-096 CMR 100. The emission increases are determined by the maximum future license annual emissions for the new emission units, as follows:

Pollutant	Max. Future License (TPY)	Significant Emission Levels
PM, PM_{10}, $PM_{2.5}$	68.9	100
SO_2	15.2	100
NO_x	97.6	100
CO	243.5	100
VOC	49.2	50
CO_2e	121,874.6	100,000

Therefore, the modification is major for carbon monoxide (CO) and carbon dioxide equivalent (CO_2e).

MWP shall apply for a Part 70 license under Part 70 Air Emission License Regulation, 06-096 CMR 140, Section 3 (as amended), within 12 months of commencing operation, as provided in 40 CFR Part 70.5.

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 CMR 100 (as amended). Separate control requirement categories exist for new and existing equipment.

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

B. Process Description

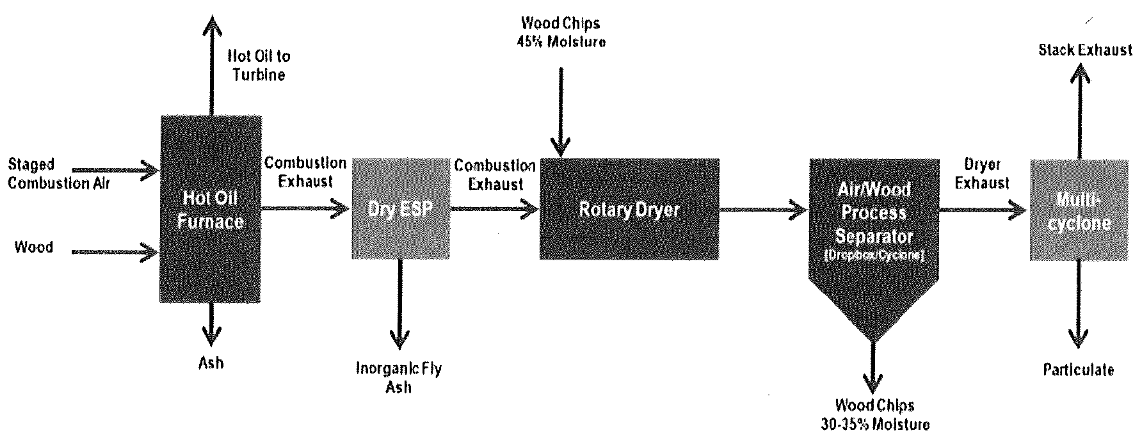
MWP plans to construct a cogeneration facility and install additional wood pellet processing equipment. The project consists of a 149 MMBtu/hr thermal oil furnace (Furnace #1) which fires biomass (primarily wood and wood waste such as bark). The furnace will heat thermal oil that will provide the energy to run an eight (8) megawatt Organic Rankin Cycle (ORC) electrical generation turbine. The ORC process is a closed loop cycle in which the organic working medium (thermal oil) is pre-heated in a regenerator/pre-heater and is then vaporized through an exhaust gas heat exchanger. The vapor is expanded in a turbine, driving a generator to produce electricity. The organic working medium is then passed through the regenerator that is used to pre-heat the organic liquid prior to vaporization.

The electricity produced will be used in the facility's wood pellet manufacturing operation and/or sold to the local utility.

The combustion gases from the furnace will pass through an electrostatic precipitator (ESP) to remove particulate matter before being used to heat a direct-contact rotary drum dryer (Pre-Dryer #1) designed to partially dry the wood to be used in the pellet manufacturing process. Pre-Dryer #1 will not remove all of the moisture necessary to process the pellets and will not replace MWP's previously licensed Dryer #1.

After Pre-Dryer #1, the exhaust stream will pass through a cyclone to separate the larger material from the gas stream and then through a multi-cyclone to collect additional particulate matter prior to exhausting to the atmosphere through a 125-foot stack (Stack #3).

Below is a simplified block diagram of the process.



C. Furnace #1 and Pre-Dryer #1

MWP is proposing to install Furnace #1 which will heat thermal oil used to drive a turbine and produce electricity. It will have a maximum heat input capacity of 149 MMBtu/hr firing biomass which includes wood and wood waste such as bark. Furnace #1 will fire "green" fuel with an assumed moisture content of 50%.

As part of this project, MWP also proposes the installation of Pre-Dryer #1 which is a single-pass, direct-contact wood dryer with a maximum hourly throughput rate of approximately 6.5 oven-dried ton (ODT) per hour. The heat source for the pre-dryer will be the exhaust gases from Furnace #1.

MWP may operate Furnace #1 and the associated electrical generating equipment without processing chips in Pre-Dryer #1 as long as emissions continue to be exhausted through all permitted control equipment and Stack #3.

1. 40 CFR Part 63, Subpart JJJJJJ

   Furnace #1 is not subject to 40 CFR Part 63, Subpart JJJJJJ, *National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources,* which is applicable to all new, reconstructed, and existing boilers firing coal, biomass, or oil located at an area source of hazardous air pollutants (HAPs). MWP is an area source for HAPs, with the facility's potential to emit less than 10 tons per year of a single HAP and 25 tons per year combined HAPs.

   The definition of boiler in 40 CFR Part 63, Subpart JJJJJJ states:

   Boiler means an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam or hot water. Controlled flame combustion refers to a steady-state, or near steady-state, process wherein fuel and/or oxidizer feed rates are controlled. Waste heat boilers are excluded from this definition.

   Furnace #1 does not heat water to recover thermal energy; therefore, 40 CFR Part 63, Subpart JJJJJJ is not applicable to this unit since it is not considered a boiler.

2. 40 CFR Part 60, Subpart Db

   New Source Performance Standards (NSPS) 40 CFR Part 60, Subpart Db, *Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units* applies to steam generating units that commence construction, modification, or reconstruction after June 19, 1984 and have a heat input capacity greater than 100 MMBtu/hr.

   The definition of steam generating unit in 40 CFR Part 60, subpart Db states:

   Steam generating unit means a device that combusts any fuel or byproduct/waste and produces steam or heats water or heats any heat transfer medium. This term includes any municipal-type solid waste incinerator with a heat recovery steam generating unit or any steam generating unit that combusts fuel and is part of a cogeneration *system or a combined cycle system. This term does not include process heaters as they are defined in this subpart.*

A process heater is defined as:

Process heater means a device that is primarily used to heat a material to initiate or promote a chemical reaction in which the material participates as a reactant or catalyst.

The exhaust from Furnace #1 is used to remove moisture from wood chips. This is considered a physical and separation process and not a chemical reaction. Therefore, Furnace #1 does not meet the definition of a process heater. However, Furnace #1 transfers heat to a thermal oil which is considered a heat transfer medium. As such, Furnace #1 meets the definition of a steam generating unit and is subject to the requirements of 40 CFR Part 60, Subpart Db.

Subpart Db contains applicable emission standards for particulate matter and opacity. These standards apply only to Furnace #1 and not to the combined emissions of Furnace #1 and Pre-Dryer #1 unless the standards have been streamlined to the more stringent requirement.

3. BACT (Best Available Control Technology) Findings

The data obtained from the Reasonably Available Control Technology (RACT)/BACT/ Lowest Achievable Emission Rate (LAER) Clearinghouse (RBLC) and the review of licenses from similar sources, along with information on the economic impact, technical feasibility, and environmental impact of various control options was used to determine the available control technologies and corresponding levels of control for emissions from Furnace #1 and Pre-Dryer #1.

The following summarizes the BACT findings for Furnace #1 and Pre-Dryer #1:

a. <u>$PM/PM_{10}/PM_{2.5}$</u>

The principal components of the particulate matter (PM) emissions from the cogeneration project include filterable and condensable organic PM from the wood drying process in Pre-Dryer #1 and inorganic fly ash and unburned carbon resulting from incomplete combustion in Furnace #1. The organic portion of the PM emissions leave the dryer stack as vapor but condense at normal atmospheric temperature to form liquid particles or mist that can create a visible haze. Quantities emitted are dependent on wood species, dryer temperature, and other factors including season of the year, time between logging and processing, and wood storage time.

Potential PM controls for the cogeneration project consist of add-on controls, good combustion and operating practices, or a combination of options. The evaluation of add-on controls for this project included baghouses, thermal oxidizers, electrostatic precipitators (ESPs), wet electrostatic precipitators (WESPs), and a multiclone system.

Baghouses consist of a number of fabric bags placed in parallel that collect particulate matter on the surface of the filter bags 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, physical agitation of the bags, or by reversing the gas flow. Baghouse systems are capable of PM collection efficiencies greater than 98%. Baghouses can theoretically control PM emissions from wood dryers, but moisture considerations and the high organic content may cause the bags to plug up or "blind" resulting in lower gas flow, greater pressure drop, and a reduction in PM control efficiency. The gas stream's high moisture content in conjunction with the heavy molecular weight organic content of the gas stream cause baghouses to be technically infeasible for this project.

Thermal oxidizers destroy condensable PM by burning the exhaust gas at high temperatures. Regenerative thermal oxidizers (RTOs) preheat the inlet emission stream with heat recovered from the incineration exhaust gases. The inlet gas stream is passed through preheated ceramic media and an auxiliary gas burner is used to reach temperatures between 1450ºF and 1600ºF at a specific residence time. The combusted gas exhaust then goes through a cooled ceramic bed where heat is extracted. The estimated annualized cost for an RTO to control roughly 61,500 scfm of exhaust would be $1,261,000. The RTO would only control condensable PM, of which Furnace #1 and Pre-Dryer #1 have estimated uncontrolled emissions of 25 ton/year. This would conservatively result in a cost of $50,460 per ton of condensable PM controlled. Therefore, the installation of a thermal oxidizer is not economically feasible for this project.

ESPs work by charging particles in the exhaust stream with a high voltage, oppositely charging a collection surface where the particles accumulate, removing the collected dust by a rapping process, and collecting the dust in hoppers. Dry ESPs work well in 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. Dry ESPs are not recommended for removing moist particles or those likely to adhere to the collection surface. A dry ESP installed between Furnace #1 and Pre-Dryer #1 would provide the maximum control of PM created from combustion. In addition, the installation of a dry ESP in this configuration would also serve as a process quality control measure to minimize the ash that may be picked up by the wood chips in the pre-dryer and subsequently incorporated into the final wood pellet product. The use of a dry ESP after Furnace #1 and prior to Pre-Dryer #1 has been determined to be feasible and has been selected as part of the BACT strategy for the proposed cogeneration project.

WESPs utilize a pre-quench to cool and saturate the gases prior to entering the ESP. WESPs collect only particles and droplets that can be electrostatically charged and 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. MWP does not currently have the onsite capability to treat the effluent produced from a WESP. The estimated annualized cost for a WESP alone (not including a wastewater treatment system) to control roughly 61,500 scfm of exhaust would be $1,783,500. This would conservatively result in a cost of $16,000 per ton of PM controlled and a cost of $69,130 per ton for control of emissions in excess of what can be achieved by multicyclones. This does not take into account the environmental impacts of wastewater production. Therefore, the installation of a WESP is not economically feasible for this project.

Cyclones, normally an integral part of rotary drum biomass dryers, are a very common particulate control device used in many applications. Cyclones utilize centripetal force to separate particles from gas streams, especially where relatively large particles need to be collected. Cyclones are commonly constructed of sheet metal, have relatively low capital cost, low operating costs, and no moving parts. Multiclones 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 cyclone/multiclone system after Pre-Dryer #1 has been determined to be feasible and has been selected as part of the BACT strategy for the proposed cogeneration project.

BACT for PM/PM_{10}/$PM_{2.5}$ emissions from Furnace #1 and Pre-Dryer #1 is the use of an ESP after Furnace #1, a cyclone/multiclone system after Pre-Dryer #1, an annual operation limit of 8,200 hr/year for Furnace #1, and an emission limit of 16.8 lb/hr from Stack #3. Furnace #1 is also subject to a filterable PM emission limit of 0.030 lb/MMBtu per 40 CFR Part 60, Subpart Db.

The exhaust from Stack #3 is a combination of PM/PM_{10}/$PM_{2.5}$ emissions from both fuel burning and process emissions. The BACT PM/PM_{10}/$PM_{2.5}$ limits above are determined to be more stringent than the combination of the particulate matter limits found in *Fuel Burning Equipment Particulate Emission Standard* 06-096 CMR 103 and *General Process Source Particulate Emission Standard* 06-096

CMR 105 and are therefore the only $PM/PM_{10}/PM_{2.5}$ limits contained in this license.

b. SO_2

Sulfur dioxide (SO_2) is formed from the combustion of sulfur present in the fuel. Control options for SO_2 include removing the sulfur from the flue gas by adding a caustic scrubbing solution or restricting the sulfur content of the fuel. The wood fuel fired in Furnace #1 is inherently a low sulfur fuel, with only trace amounts of sulfur available to combine with oxygen in the combustion process. Additional sulfur controls are not justified for this project.

BACT for SO_2 emissions from Furnace #1 and Pre-Dryer #1 is the firing of clean wood/biomass materials including wood chips, bark, shavings, and sawdust, an annual operation limit of 8,200 hr/year for Furnace #1, and emission limits of 3.7 lb/hr from Stack #3.

c. NO_x

Nitrogen oxide (NO_x) is a product of combustion and generated from fuel NO_x, thermal NO_x, and prompt NO_x. Oxidation radicals near the combustion flame forms prompt NO_x in insignificant amounts. Reducing NO_x formation from the two other NO_x generating mechanisms includes firing a low nitrogen content fuel to minimize fuel NO_x and maintaining combustion temperatures below 2000°F to minimize thermal NO_x. Potential control technologies for NO_x include selective catalytic reduction (SCR), selective non-catalytic reduction (SNCR), water/steam injection, and Flue Gas Recirculation (FGR).

SCR reduces NO_x emissions through the injection of ammonia in the gas exhaust stream 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. The installation of an SCR system prior to Pre-Dryer #1 is not technically feasible, because unreacted ammonia emissions (ammonia slip) in the exhaust gas has the potential to foul the pre-dryer through the precipitation of ammonia salts which would alter the wood chip pH and hinder pellet bonding. An SCR system cannot be installed after the pre-dryer since the effectiveness of an SCR system is directly dependent upon the exhaust temperature. The ideal exhaust temperature range for SCR operation is between 550°F and 750°F. With the expected exhaust temperature from Pre-Dryer #1 of 180°F, an SCR system is not technically feasible without the installation of an exhaust re-heat system. The installation of an exhaust re-heat system would require additional fuel input to the system and subsequently increase NO_x emissions. The technical limitations as well as the energy and environmental impacts associated with an SCR system make it infeasible for this project.

SNCR reduces NO_x to nitrogen and water by reacting the exhaust gas with a reagent such as ammonia or urea, similar to SCR. However, the use of a catalyst is negated when the chemical reaction takes place at temperatures ranging between 1600°F and 2100°F. The NO_x reduction efficiency decreases rapidly at temperatures outside this temperature window. Operation below this temperature range results in emissions of unreacted ammonia (a criteria pollutant). Even under optimal conditions, there will be some amount of unreacted ammonia that passes through to the pre-dryer. As for SCR, the installation of an SNCR system prior to Pre-Dryer #1 is not technically feasible, because unreacted ammonia can foul the pre-dryer and have significant negative effects on the pelletizing process. Exhaust temperatures from the pre-dryer will be well below the required temperature range. Therefore, the use of SNCR for control of NO_x is determined to be technically infeasible for this project.

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. This lowers the combustion temperature, minimizing the formation of thermal NO_x. However, introducing additional moisture into a process designed to dry material would be counterproductive to the purpose of the pre-dryer. Therefore, water/steam injection has been determined to be technically infeasible for this project.

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 injected back into the furnace. 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. The use of FGR in Furnace #1 has been determined to be feasible and has been selected as part of the BACT strategy for the proposed cogeneration project

BACT for NO_x emissions from Furnace #1 and Pre-Dryer #1 is the use of FGR in Furnace #1, an annual operation limit of 8,200 hr/year for Furnace #1, and an emission limit of 23.8 lb/hr from Stack #3.

d. <u>CO</u>

Carbon monoxide (CO) emissions are a result of incomplete combustion, caused by conditions such as insufficient residence time or limited oxygen availability. Potential control strategies for CO emissions from units with burners are typically minimized by good combustion, although oxidation catalyst systems have been used on larger units. Thermal oxidation is also an option for add-on CO control.

An oxidation catalyst lowers the activation energy needed for CO to react with available oxygen in the exhaust to produce CO_2. In order to prevent the occurrence of particulate contamination in a biomass system, the oxidation catalyst would need to be located downstream of the ESP. However, the process exhaust gas would then need to be preheated prior to contact with the catalyst bed. The operating temperature window of an oxidation catalyst is approximately 4,000°F – 11,000°F. The cost of the oxidation catalyst, the associated need for a preheat burner, and the biomass plugging potential does not result in an oxidation catalyst as a feasible option for this project.

Thermal oxidation reduces CO emissions in the flue gas with high temperature post combustion. The application of a thermal oxidizer would require additional fuel usage, would result in additional secondary emissions, and would have a large economic impact on the project. Therefore, thermal oxidation for CO control is not a feasible option for this project.

Good combustion efficiency and proper equipment operation and maintenance incorporate various techniques to minimize CO emissions. Proper combustion techniques include maintaining optimum combustion conditions within the system via optimization of residence time, temperature, and mixing. The use of an oxygen trim control system to maintain adequate and optimum combustion air-to-fuel ratios is considered part of good combustion techniques.

BACT for CO emissions from Furnace #1 and Pre-Dryer #1 is the use of good combustion techniques, proper equipment maintenance, an annual operation limit of 8,200 hr/year for Furnace #1, and an emission limit of 59.4 lb/hr from Stack #3.

e. VOC

Volatile Organic Compounds (VOCs) are generated in Furnace #1 as a result of incomplete combustion and in Pre-Dryer #1 from the evaporation of the naturally occurring VOCs in the wood. Quantities of VOCs emitted are dependent on wood species and operating parameters such as temperature, residence time, and oxygen present. During the drying process, the water in the wood chip material is driven off first. If additional heat is applied after the water is removed, the temperature of the wood subsequently increases, and the VOCs in the wood begin to be liberated. Wood chips must be dried to a moisture content of 8-10% prior to the pellet forming process. Pre-Dryer #1 is designed to reduce the moisture of the chips from approximately 45% down to 30-35%. VOC emissions from Pre-Dryer #1 are estimated to be relatively low at 0.76 lb/ODT (4.9 lb/hr) as significant water will still be present in the chips.

The options for controlling VOCs from high concentration VOC gas streams include thermal oxidation (RTO), wet electrostatic precipitators (WESP), and adsorption systems (wet scrubbers).

Thermal oxidizers destroy VOC by burning them at high temperatures reducing them to water and CO_2. As discussed above for PM, the average annualized cost for an RTO to control 61,500 scfm of exhaust would be about $1,261,000. The cost of controlling VOCs from this project would be $25,316/ton and is therefore determined to be economically infeasible for this project.

A WESP's primary function is to control particulate matter. However, secondary VOC control may be achieved. Dry ESPs control emissions by charging particles in the exhaust stream with a high voltage, oppositely charging a collection surface where the particles accumulate, removing the collected dust by a rapping process, and collecting the dust in hoppers. WESPs utilize a pre-quench to cool and saturate the gases prior to entering the collection chamber. The pre-quench section of the WESP may scrub and quench some fraction of the highly water-soluble compounds. WESPs 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. MWP does not currently have the onsite capability to treat the effluent produced from a WESP. As discussed above for PM, the average annualized cost to install a WESP alone (not including the wastewater treatment system) would be roughly $1,783,500. The cost of controlling VOCs from this project would conservatively be $35,800/ton and is therefore determined to be economically infeasible for this project.

Good combustion efficiency and proper equipment operation and maintenance incorporate various techniques to minimize VOC emissions from Furnace #1. Proper combustion techniques include maintaining optimum combustion conditions within the system via optimization of residence time, temperature, and mixing. The use of an oxygen trim control system to maintain adequate and optimum combustion air-to-fuel ratios is considered part of good combustion techniques.

BACT for VOC emissions from Furnace #1 and Pre-Dryer #1 is the use of good combustion techniques, proper equipment maintenance, an annual operation limit of 8,200 hr/year for Furnace #1, and an emission limit of 12.0 lb/hr from Stack #3.

f. Greenhouse Gases

Greenhouse gases (GHGs) are the aggregate group of the following gases: carbon dioxide (CO_2), nitrous oxide, methane, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. At this time, there are no add-on controls utilized at similar facilities for the control of GHGs.

The Environmental Protection Agency (EPA) has released two recent documents on biogenic CO_2 emissions: the November 19, 2014 EPA memo titled *Addressing Biogenic Carbon Dioxide Emissions from Stationary Sources* and the November 2014 *Framework for Assessing Biogenic $C0_2$ Emissions from Stationary Source.* Biogenic CO_2 emissions are defined as CO_2 emissions related to the natural carbon cycle, as well as those resulting from the production, harvest, combustion, digestion, fermentation, decomposition, and processing of biologically based materials. EPA plans to propose revisions to the Prevention of Significant Deterioration (PSD) rules to include an exemption from the BACT requirement for GHGs from waste-derived feedstocks and from non-waste biogenic feedstocks derived from sustainable forest or agricultural practices. The raw materials and fuels for Furnace #1 and Pre-Dryer #1 could be considered biogenic for the purposes of CO_2 emissions, and therefore, may be exempt from BACT requirements in the future.

g. Opacity

Furnace #1 is subject to an opacity standard per 40 CFR Part 60, Subpart Db. Per Subpart Db, visible emissions from Furnace #1 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 a combination of emissions from both fuel buring and process emissions. There are additional opacity requirements for Furnace #1 and Pre-Dryer #1 contained in *Visible Emissions* rule 06-096 CMR 101. However, the standards above are determined to be more stringent. Therefore, emissions from Stack #3 shall be limited to the opacity requirements for Furnace #1 above.

Within 180 days of startup of Furnace #1 and Pre-Dryer #1, MWP shall submit to the Department a startup and shutdown protocol and apply to amend their license to incorporate definitions for both startup and shutdown as well as address an opacity limit for periods of startup and shutdown.

4. Periodic Monitoring

MWP shall keep records of the number of operating hours of Furnace #1 on a monthly and 12-month rolling total basis.

MWP shall keep records of the tons of wood fired in Furnace #1 on a monthly basis. It is assumed that the green wood fired in Furnace #1 has an average moisture content of 45%.

MWP shall monitor Furnace #1 for PM and/or opacity as required by 40 CFR Part 60, Subpart Db, §60.48b.

MWP shall monitor the secondary voltage on the ESP continuously and record the reading at least once per 8-hour shift whenever Furnace #1 is in operation.

MWP shall conduct initial performance testing on Furnace #1 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 CFR Part 60, Subpart Db.

MWP shall perform subsequent performance tests for opacity using 40 CFR Part 60, Appendix A, Method 9 per the schedule contained in 40 CFR Part 60, Subpart Db.

Within 180 days of startup of Furnace #1 and Pre-Dryer #1, MWP 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). When performing stack testing for compliance purposes, Furnace #1 and Pre-Dryer #1 shall be operated under normal operating conditions.

Records shall be maintained documenting startups, shutdowns, and malfunctions for Furnace #1 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, including conveyors for wood fuel and wood chips to be processed in Pre-Dryer #1 as well as an ash handling system.

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

Stockpiles, 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 MWP's existing license in Conditions (18) and (19).

E. Inventory Calculations

For the purposes of submissions of annual emissions inventory per 06-096 CMR 137, *Emission Statements*, MWP shall estimate actual emissions for the system (i.e. Furnace #1 and Pre-Dryer #1 combined). If the electronic reporting system used to report emissions lists these units separately, MWP shall report all emissions for the system under Furnace #1 and report zero emissions from Pre-Dryer #1.

Inventory emissions for all pollutants shall be calculated by multiplying the hours of operation of Furnace #1 by the lb/hr emission limit contained in the air emission license.

F. Existing Dryer #1 PM Limits

In 2011 the Department redefined PM_{10} to include both filterable and condensable materials. When the particulate matter emission limits for Dryer #1 were established, they were intended to include only filterable PM. MWP has proposed a new PM_{10} limit of 12.8 lb/hr which is based on the previous limit of 8.5 lb/hr plus an additional 4.3 lb/hr of condensables. The Department agrees that a higher PM_{10} limit of 12.8 lb/hr to include condensables is appropriate.

G. Annual Emissions

1. Total Annual Emissions
   MWP 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:

   - Operation of Furnace #1 and Pre-Dryer #1 at full capacity for 8,200 hr/year;
   - Operation of Dryer #1 at full capacity for 7,950 hr/year; and
   - Operation of the Cyclone Baghouse for 7,950 hr/year.

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

	PM	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO	VOC
Dryer #1	33.8	50.9	50.9	20.3	19.9	60.0	49.7
Cyclone Baghouse	2.0	2.0	2.0	–	–	–	–
Furnace #1 & Pre-Dryer #1	68.9	68.9	68.9	15.2	97.6	243.5	49.2
Total TPY	**104.7**	**121.8**	**121.8**	**35.5**	**117.5**	**303.5**	**98.9**

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 CFR Part 52, Subpart A, §52.21, *Prevention of Significant Deterioration of Air Quality* rule. Greenhouse gases, as defined in 06-096 CMR 100 (as amended), 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:

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

As defined in 06-096 CMR 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. AMBIENT AIR QUALITY ANALYSIS

A. Overview

A refined modeling analysis was performed to show that emissions from MWP, 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 emissions increase and the distance from the source 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 (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 GEP stack heights.

All modeling was performed in accordance with all applicable requirements of the Maine Department of Environmental Protection, Bureau of Air Quality (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 the Madison Paper Industries meteorological monitoring site, located in Madison, during the five-year period 1991-1995:

TABLE III-1 : Meteorological Parameters and Collection Heights

Parameter	Sensor Height(s)
Wind Speed	10 meters, 70 meters
Wind Direction	10 meters, 70 meters
Standard Deviation of Wind Direction (Sigma A)	10 meters, 70 meters
Temperature	10 meters, 70 meters

When possible, surface data collected at the Augusta NWS site were substituted for missing surface data. All other missing data were interpolated or coded as missing, per USEPA guidance. In addition, hourly Augusta NWS 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 Madison meteorological monitoring site.

Surface meteorological data was combined with concurrent hourly cloud cover and upper-air data obtained from the Caribou 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 MWP are listed in Table III-2.

TABLE III-2 : MWP Point Source Stack Parameters

MWP Stacks	Stack Base Elevation (m)	Stack Height (m)	GEP Stack Height (m)	Stack Diameter (m)	UTM Easting NAD83 (m)	UTM Northing NAD83 (m)
CURRENT/PROPOSED						
• Existing Dryer Line Stack	127.10	18.59	43.32	0.91	447,729	4977,137
• New TOF/Dryer Stack	126.19	38.10	68.62	1.52	447,850	4977,116
2012 BASELINE ($PM_{2.5}$ INCREMENT)						
• Existing Dryer Line Stack	127.10	18.59	43.32	0.91	447,729	4977,137
1987 BASELINE (NO_2 INCREMENT)						
• No MWP sources existed in the 1987 baseline year; no NO_2 baseline credit to be taken.						
1977 BASELINE (SO_2/PM_{10} INCREMENT)						
• No MWP sources existed in the 1977 baseline year; no SO_2 or PM_{10} baseline credit to be taken.						

Emission parameters for MWP for NAAQS and Class II increment modeling are listed in Table III-3. The emission parameters for MWP Pellets 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 : MWP Stack Emission Parameters

MWP Stacks	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							
• New TOF/Dryer Stack	All	0.47	2.12	3.00	7.49	355.37	14.09
• Existing Dryer Stack (Maximum)	All	0.64	1.61	0.63	1.90	352.59	11.89
• Existing Dryer Stack (Typical)	All	0.48	1.21	0.47	1.43	352.59	8.92
2012 BASELINE ($PM_{2.5}$ INCREMENT)							
• Existing Dryer Line Stack	All	-	-1.61	-	-	352.59	11.89
1987 BASELINE (NO_2 INCREMENT)							
• No MWP sources existed in the 1987 baseline year; no NO_2 baseline credit to be taken.							
1977 BASELINE (SO_2/PM_{10} INCREMENT)							
• No MWP sources existed in the 1977 baseline year; no SO_2 or PM_{10} baseline credit to be taken.							

C. Single Source Modeling Impacts

Refined modeling was performed for a total of five operating scenarios that represented a range of MWP operations.

The AERMOD-PRIME model results for MWP 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 further modeling was required for pollutants that did not exceed their respective significance levels.

TABLE III-4 : Maximum AERMOD-PRIME Impacts from MWP Alone

Pollutant	Averaging Period	Max Impact ($\mu g/m^3$)	Receptor UTM E (m)	Receptor UTM N (m)	Receptor Elevation (m)	Class II Significance Level ($\mu g/m^3$)	Load Case
SO_2	1-hour	**30.87**	447,720	4977,010	127.85	**10**[a]	Minimum
	3-hour	**31.65**	447,720	4977,010	127.85	**25**	Minimum
	24-hour	**12.48**	447,820	4976,910	127.04	**5**	Maximum
	Annual	**1.12**	447,740	4976,940	126.65	**1**	Maximum
PM_{10}	24-hour	**33.23**	447,630	4977,230	128.22	**5**	Maximum
	Annual	**2.90**	447,740	4976,940	126.65	**1**	Maximum
$PM_{2.5}$	24-hour	**23.48**	447,720	4976,970	127.11	**none**[b]	Typical
	Annual	**2.64**	447,760	4976,920	127.21	**none**[b]	Maximum
NO_2	1-hour	**48.93**	449,000	4979,100	198.29	**10**[a]	Maximum
	Annual	**1.46**	447,750	4977,350	128.00	**1**	Maximum
CO	1-hour	376.46	449,100	4979,000	193.07	**2,000**	Maximum
	8-hour	79.86	447,640	4977,230	128.79	**500**	Maximum

[a] Interim Significant Impact Level (SIL) adopted by Maine
[b] Previous 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 Eastern Maine region.

TABLE III-5 : Background Concentrations

Pollutant	Averaging Period	Background Concentration ($\mu g/m^3$)	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	20	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		

MEDEP examined other nearby sources to determine if any impacts would be significant in or near MWP's significant impact area. Due to MWP's location, 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 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	26.46	447,730	4977,020	128.02	24	50.46	196
	3-hour	24.65	447,640	4977,250	128.11	18	42.65	1,300
	24-hour	10.59	447,740	4976,890	124.28	11	21.59	365
	Annual	1.12	447,740	4976,940	126.65	1	2.12	80
PM_{10}	24-hour	26.80	447,740	4976,900	124.54	20	46.80	150
	Annual	2.90	447,740	4976,940	126.65	10	12.90	50
$PM_{2.5}$	24-hour	13.71	447,740	4976,940	126.65	17	30.71	35
	Annual	2.64	447,760	4976,920	127.21	5	7.64	12
NO_2	1-hour	27.62	447,670	4977,220	130.66	43	70.62	188
	Annual	1.46	447,750	4977,350	128.00	4	5.46	100
CO	1-hour	279.30	449,000	4979,100	198.29	365	644.30	40,000
	8-hour	77.59	447,620	4977,250	127.16	322	399.59	10,000

E. Secondary Formation of $PM_{2.5}$

Since proposed $PM_{2.5}$ emissions for this modification are greater than 15TPY and SO_2/NO_x emissions are expected to be greater than 40TPY, a qualitative review of secondary impacts due to $PM_{2.5}$ precursor emissions (secondary $PM_{2.5}$) is required. In accordance with *Guidance for $PM_{2.5}$ Permit Modeling* (USEPA 454/B-14-001, 2014), a $PM_{2.5}$ 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.

A detailed qualitative assessment of secondary formation was submitted which analyzed the following factors: fuels being used at MWP, historic atmospheric and meteorological conditions, existing background air quality data, $PM_{2.5}$ speciation, quantity of NO_x and SO_2 precursor emissions and the physical/temporal alignment at predicted maximum impacts from the AERMOD-PRIME modeling.

Based on the data presented in the $PM_{2.5}$ qualitative assessment addressing secondary formation, MEDEP-BAQ has determined that no significant secondary $PM_{2.5}$ formation is likely to occur. Therefore, no additional review of NO_x and SO_2 precursor emissions, in relation to NAAQS or Class II increment modeling, is required.

F. 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 Tables 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	24.65	447,640	4977,250	128.11	512
	24-hour	10.59	447,740	4976,890	124.28	91
	Annual	1.12	447,740	4976,940	126.65	20
PM_{10}	24-hour	26.80	447,740	4976,900	124.54	30
	Annual	2.90	447,740	4976,940	126.65	17
$PM_{2.5}$	24-hour	6.16	447,900	4979,500	126.60	9
	Annual	2.90	447,740	4976,940	126.65	4
NO_2	Annual	1.46	447,750	4977,350	128.00	25

Federal guidance and 06-096 CMR 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, delivery of materials, etc.). Increases in potential emissions of NO_x and $PM_{2.5}$ due to vehicles 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 impact area of the proposed source 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 MWP will, for the most part, be available from the surrounding communities. It is expected that no new significant residential, commercial and industrial growth will follow from the modification associated with MWP.

MOBILE SOURCE AND AREA 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 minor 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. Very little growth has taken place in the surrounding area of MWP since the baseline dates. In addition, no significant long-term increase in Vehicle Miles Travelled (VMT) is expected as a result of the modification. No further analyses of mobile or area source growth are needed.

G. Impacts on Plants, Soils & Animals

In accordance with guidance provided in USEPA's Prevention of Significant Deterioration manual, MWP evaluated the impacts of its emissions using procedures described in *A Screening Procedure for the Impacts of Air Pollution on Plants, Soils and Animals* (USEPA, 450/2-81-078, 1980).

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. For comparison to the Screening Concentrations, the model impacts for all pollutants/averaging periods were conservatively based on the maximum High-1st-High predicted values.

TABLE III-8 : Maximum Impacts on Plants, Soils & Animals (μg/m^3)

Pollutant	Averaging Period	Max Impact (μg/m^3)	Screening Concentration (μg/m^3)
SO_2	1-hour	47.11	917
	3-hour	31.65	786
	Annual	1.12	18
NO_2	4-hour	48.15	3,760
	8-hour	31.08	3,760
	Month	3.18	564
	Annual	1.46	94
CO	Week	53.36	1,800,000

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

H. Class I Impacts

Based upon the magnitude of proposed emissions increase and the distance from MWP 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.

I. Summary

In summary, it has been demonstrated that MWP in its proposed configuration will not cause or contribute to a violation of any 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.

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, and
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants Air Emission License A-989-71-E-A subject to the conditions found in Air Emission License A-989-71-D-R/M and in the following conditions.

Severability. The invalidity or unenforceability of any provision, or part thereof, of this License 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.

The following shall replace Condition (16)(F) of Air Emission License A-989-71-D-R/M:

(16) **Dryer #1**

F. Emissions from Dryer #1 shall not exceed the following [06-096 CMR 115, BPT]:

Emission Unit	PM (lb/hr)	PM_{10} (lb/hr)	SO_2 (lb/hr)	NO_x (lb/hr)	CO (lb/hr)	VOC (lb/hr)
Dryer #1	8.5	12.8	5.1	5.0	15.1	12.5

The following shall replace Condition (16)(I) of Air Emission License A-989-71-D-R/M:

I. MWP shall test the wet scrubber exhaust stack for PM_{10} once every three years (with the next test completed by 12/31/15) to demonstrate compliance with the licensed emission limit. If MWP fails a stack test, MWP shall test annually until compliance is demonstrated for three consecutive years before returning to testing once every three years. [06-096 CMR 115, BPT]

The following are New Conditions:

(22) **Furnace #1 and Pre-Dryer #1**

A. Furnace #1 is licensed to fire wood/biomass materials. [06-096 CMR 115, BACT]

B. MWP shall not exceed an annual operating limit of 8,200 hr/year for Furnace #1. [06-096 CMR 115, BACT]

C. Furnace #1 and Pre-Dryer #1 shall both exhaust through Stack #3 which shall have a minimum height of 125-feet above ground level. [06-096 CMR 115, BACT]

D. Control Equipment

1. Emissions of $PM/PM_{10}/PM_{2.5}$ from Furnace #1 shall be controlled by the operation and maintenance of an ESP except for periods of startup and shutdown. During normal operation, MWP 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 CMR 115, BACT]

2. Emissions of $PM/PM_{10}/PM_{2.5}$ from Furnace #1 and Pre-Dryer #1 shall be controlled by the operation and maintenance of a cyclone and multiclone. [06-096 CMR 115, BACT]

3. Emissions of NO_x from Furnace #1 shall be controlled by the operation and maintenance of an FGR system. [06-096 CMR 115, BACT]

E. Emissions shall not exceed the following:

Emission Unit	Pollutant	lb/MMBtu	Origin and Authority
Furnace #1	PM	0.030	40 CFR Part 60, §60.43b(h)(1)

F. Emissions shall not exceed the following [06-096 CMR 115, BACT]:

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)
Furnace #1 & Pre-Dryer #1 (Combined)	16.8	16.8	16.8	3.7	23.8	59.4	12.0

*Expressed as propane

G. Visible emissions from Stack #3 shall not exceed 20% opacity on a six (6) minute block average basis, except no more than one (1) six minute period per hour of not more than 27% opacity except for periods of startup and shutdown.
[40 CFR Part 60, §60.43b(f) and 06-096 CMR 115, BACT]

H. Within 180 days of startup of Furnace #1 and Pre-Dryer #1, MWP shall submit to the Department a startup and shutdown protocol and apply to amend their license to incorporate definitions for both startup and shutdown as well as address an opacity limit for periods of startup and shutdown. [06-096 CMR 115, BACT]

I. Stack Testing

1. MWP shall conduct initial performance testing on Furnace #1 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 CFR Part 60, Subpart Db.
[40 CFR Part 60, §60.46b(d)]

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

3. Within 180 days of startup of Furnace #1 and Pre-Dryer #1, MWP 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). When performing stack testing for compliance purposes, Furnace #1 and Pre-Dryer #1 shall be operated under normal operating conditions. [06-096 CMR 115, BACT]

J. Periodic Monitoring

1. MWP shall keep records of the number of operating hours of Furnace #1 on a monthly and 12-month rolling total basis. [06-096 CMR 115, BACT]

2. MWP shall keep records of the tons of wood fired in Furnace #1 on a monthly basis. It is assumed that the green wood fired in Furnace #1 has an average moisture content of 45%. [40 CFR Part 60, §60.49b(d)(2)]

3. MWP shall monitor Furnace #1 for PM and/or opacity as required by 40 CFR Part 60, Subpart Db, §60.48b.

4. MWP shall monitor the secondary voltage on the ESP continuously and record the reading at least once per 8-hour shift whenever Furnace #1 is in operation. [06-096 CMR 115, BACT]

5. Records shall be maintained documenting startups, shutdowns, and malfunctions for Furnace #1 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 CMR 115, BACT]

6. MWP shall maintain a log documenting maintenance activities performed on the major equipment located at the facility, including Furnace #1, Pre-Dryer #1, the ESP, and all facility cyclones/multiclones. [06-096 CMR 115, BACT]

K. Reporting

1. MWP shall submit notification of the date of initial startup to the Department and the Environmental Protection Agency (EPA) per the requirements of 40 CFR Part 60, §60.49b(a).

2. MWP shall submit to the Department and EPA the test data from the initial performance test per the requirements of 40 CFR Part 60, §60.49b(b).

3. MWP shall submit to the Department and EPA semiannual excess emission reports per the requirements of 40 CFR Part 60, §60.49b(h).

(23) MWP shall apply for a Part 70 license within 12 months of commencing operation under the proposed scenario as provided in 40 CFR Part 70.5. [06-096 CMR 140, Section 3]

DONE AND DATED IN AUGUSTA, MAINE THIS 13 DAY OF May, 2015.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Cone for
PATRICIA W. AHO, COMMISSIONER

The term of this amendment shall be concurrent with the term of Air Emission License A-989-71-D-R/M.

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: 2/20/15
Date of application acceptance: 2/20/15

Date filed with the Board of Environmental Protection:

Filed
MAY 13 2015
State of Maine
Board of Environmental Protection

This Order prepared by Lynn Muzzey, Bureau of Air Quality.