

DRAFT 9/15/2011

#AP-11-015
DEC#RU10-0288

**State of Vermont
Agency of Natural Resources
Department of Environmental Conservation**



**Air Pollution Control Division
Waterbury, Vermont**

AIR POLLUTION CONTROL PERMIT TO CONSTRUCT

Date Draft Permit Issued: September 15, 2011

Owner/Operator:
Beaver Wood Energy Fair Haven, LLC
82 Village Street
Medway, MA 02053

Source:
Wood Fired Electrical Generation Unit
Wood Pellet Manufacturing
Route 4 – Exit 1
Fair Haven, VT 05261

FINDINGS OF FACT

(A) FACILITY DESCRIPTION

Beaver Wood Energy Fair Haven, LLC. (also referred to herein as "Permittee") owns and operates a property on Route 4 in the town of Fair Haven, Vermont (also referred to herein as "Facility"). The Permittee has proposed to construct a 34 MW (gross) biomass fuel electric generating facility with an integrated 115,000 ton per year wood pellet production facility at the Route 4 site in Fair Haven, Vermont.

Wood-fired power boiler:

The electric generating plant will process and combust approximately 362,000 tons per year of green wood chip fuel based on a 45% moisture content consisting of forest residue chips, bark and mill waste (clean untreated wood fragments). Construction/demolition waste and other contaminated biomass will not be used as fuel or feedstock. The proposed biomass boiler (also referred to as "Main Boiler") will consist of an Advanced Stoker Boiler with a maximum permitted gross heat input rating of 482 million British thermal units per hour (MMBtu/hr). The boiler will have over-fire air and combustion controls as well as superheaters, economizers, a water cooled vibrating conveyor grate and feedwater heating to maximize thermal efficiency. The boiler will provide steam to a condensing steam turbine generator to produce electrical power. The boiler will be equipped with two startup burners, each with a maximum heat input rate of 60 MMBtu/hr. Ultra-low sulfur diesel fuel oil will be fired in the boiler's startup burners during cold and hot startups until the boiler reaches approximately 45% load and for flame stabilization.

Exhaust gases from the boiler will pass through a multi-clone, followed by an electrostatic precipitator (ESP) or fabric filter for control of particulate matter. Note that this document uses the term 'fabric filter' for 'bag house.' Following the particulate control devices, the exhaust gas will pass through a Multi Pollutant Catalytic Reactor (MPCR). The MPCR is used to control the emission of oxides of nitrogen (NO_x), carbon monoxide (CO) and volatile organic compounds (VOC) from the boiler. Aqueous ammonia (19%) is used in conjunction with the selective catalytic reduction (SCR) functionality of the MPCR to control the emission of NO_x.

Wood Pellet Manufacturing:

The wood pellet plant will consist of a 60 foot long single pass rotary drum wood dryer, with an integral burner, hammermills, pellet mills, a pellet cooler, a pellet packaging system, raw wood chip storage silos and finished pellet silos. The dryer will be equipped with a wood fired burner which will have a maximum heat input capacity of 30 MMBtu/hr to dry the raw wet wood chips. At times, waste heat (estimated to be equivalent to approximately 12 MMBtu/hr) from the Main Boiler will be used to replace an equivalent amount of fuel input to the pellet plant wood fired burner. The wood fired burner will be a Coen low NO_x design using air staging technology. The rotary wood dryer will process a maximum of 15 oven dried tons of wood per hour. The particulate matter emissions in

the exhaust from the dryer shall be controlled by a cyclone followed by a fabric filter. The particulate matter emissions from the rest of the pellet manufacturing operations that follow the dryer (hammermills, pellet mills, pellet cooler, pellet packaging) are to be controlled with fabric filter(s).

This permit limits the Facility to 115,000 oven-dry (0% moisture content) tons/year of output from the rotary dryer. The dried material leaving the rotary dryer will actually have a moisture content of approximately 10% resulting in an output of 126,500 tons (at 10% moisture content). As the dried material is processed into pellets, some of it will become fines/dust that is separated from the other material and used on site as fuel. As the wood material from the dryer is processed into pellets, there is some further loss of moisture such that the total annual production of wood pellets is expected to be 114,880 tons at 7% moisture content. Unless noted otherwise in this permit, the weight of wood materials in the pellet manufacturing operation will be in terms of oven dry ton (ODT).

Cooling Tower:

The Permittee is also proposing a counter flow, mechanical draft cooling tower with two cells. The cells will be rectangular in shape with a separate fan for each cell. The circulating water system will include two vertical pumps to circulate the water from the cooling tower basin through the circulating water system. Each cell of the cooling tower will be equipped with a drift eliminator to reduce particulate matter emissions.

Diesel Engines:

The facility's fire protection system will include a diesel fired pump engine for emergency water needs. The engine will be 400 hp or less and will only operate during emergency situations, maintenance, and periodic testing.

Previously permitted (AOP-10-042) are several diesel engine generators:

- Two (2) 1,000 kW diesel engine generators for use as emergency generators at the future electric generating plant and integrated wood pellet manufacturing plant.
- Two (2) 500 kW diesel engine generators for use as emergency generators at the future electric generating plant and integrated wood pellet manufacturing plant, and to provide onsite power during the construction phase of the electrical generating plant and integrated pellet manufacturing plant.
- To cover the anticipated additional power needed at the site for construction, the Permittee is also proposing to use up to five (5) temporary 100 kW diesel engine generators during the construction phase of the larger project.
- The operation of all the diesel engines during the construction of the electrical generating plant and integrated wood pellet manufacturing plant will be restricted by a facility-wide fuel limitation of 300,000 gallons/year of ultra low sulfur diesel fuel.
- The diesel engine generators, after start up of the wood fired boiler, will each be limited to a total of 65 hours/year of operation for any ISO New England OP4

event or OP7 event (grid capacity deficiency events), and routine testing and maintenance of the engines.

During the construction phase of this project, the stationary diesel engines will be operated in accordance with the requirements in permit AOP-10-042. Upon the initial start up of the Main Boiler, permit AOP-10-042 will be terminated and the stationary diesel engines will be operated in accordance with the requirements in permit AP-11-015.

Temporary Rental Boiler:

During construction of the Facility a temporary boiler will be needed. This boiler will have a heat input of less than 10 MMBtu/hr and it will not be used after the main boiler is available for startup.

Upon issuance of this Permit, the approved operations at the Facility include the following air pollution related operations, equipment and emission control devices:

Equipment Specifications				
Equipment/Make/Model	Capacity/ Size	Fuel or input material	Air Pollution Control Equipment	Stack Height (feet)
Main Boiler: wood fired Advanced Stoker Boiler	482 MMBtu/hr ¹	wood	Multi-clone, ESP (or fabric filter), MPCR	180
Two auxiliary/start-up burners for the main boiler	60 MMBtu/hr (each)	Ultra low sulfur diesel (ULSD) ⁶		
Wood fired burner for rotary dryer.	30 MMBtu/hr	wood	Coen low NOx burner, cyclone & fabric filter	100
Rotary dryer – 60' long, single pass	15 ODT/hr ²	wood		
Wood pellet processing equipment (hammermill, conveyors, pellet mills, pellet cooler, pellet bagging)	115,000 ODT/yr ³	Wood / wood pellets	Fabric filter(s)	-
Fly ash storage silo	900 cfm (vent)	Wood ash	Fabric filter	80
Dry wood storage	25,000 ft ³	Dry wood	None	-
Pellet storage silos (2 silos)	22,500 ft ³ each	Wood pellets	None	-
Cooling Tower – 2 cells	25,000 gpm (nominal)	-	Drift Eliminator	-
Diesel Engine Fire Pump	400 bhp ⁴	ULSD ⁶	Tier 3 ⁷	-
Two (2): Caterpillar C32 Diesel Engine Generator – Tier 2	1,000 kW ⁵ (each)	ULSD ⁶	Tier 2 ⁷	-
Two (2): Caterpillar C15 Diesel Engine Generator – Tier 2	500 kW ⁵ (each)		Tier 2 ⁷	-
Temporary: Five (5) Diesel Engine Generators – for construction	100 kW ⁵ (each)		Tier 3 ⁷	-

Equipment Specifications				
Equipment/Make/Model	Capacity/ Size	Fuel or input material	Air Pollution Control Equipment	Stack Height (feet)
Temporary: Fuel oil boiler – for use during the construction phase of the project	< 10 MMBtu/hr	ULSD ⁶	None	-

¹ MMBtu/hr - Million British Thermal Units per hour maximum rated heat input.

² ODT/hr – oven-dry (0% moisture content) tons per hour

³ ODT/yr – oven-dry tons per year output from the dryer. Some of this material is recycled back to the burner as fuel.

⁴ bhp – brake horsepower rated output as specified by the manufacturer.

⁵ kW – kilowatt electrical output.

⁶ Ultra-Low Sulfur Diesel. Sulfur content not to exceed 15 ppm by weight

⁷ Depending upon the model year of the engine, the emission standards required by 40 *CFR* Part 60 Subpart IIII may be more restrictive than the Tier standard listed here.

(B) FACILITY CLASSIFICATION

The Facility is classified as a source of air contaminants pursuant to Title 10 of the *Vermont Statutes Annotated* (“10 VSA”) §555 and §5-401 of the *Vermont Air Pollution Control Regulations* (hereinafter “*Regulations*”). In addition, §5-101 of the *Regulations* defines a *stationary source* as any structure(s), equipment, installation(s), or operation(s), or combination thereof, which emit or may emit any air contaminant, which is located on one or more contiguous or adjacent properties and which is owned or operated by the same person or persons under common control. Based on this definition, all of the equipment, operations, and structures at the Facility are grouped together by the Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division (hereinafter “Agency”) as one stationary air contaminant source for purposes of review under the *Regulations*.

(C) PRIOR AGENCY ACTIONS/APPROVALS

The Facility has been issued the following “Permit to Construct” approvals pursuant to 10 VSA §556 and §5-501 of the *Regulations* and the following “Permit to Operate” approvals pursuant to 10 VSA §556a and Subchapter X of the *Regulations*.

Prior Agency Permit Approvals and Actions	
Date of Action	Description of Agency Approval/Action
November 23, 2010	#AOP-10-042 – Original Agency “Permit to Construct” and “Permit to Operate” approval for the installation of diesel generators.

(D) FACILITY PERMIT APPLICABILITY

As noted above, the Facility is classified as a source of air contaminants under §5-401 of the *Regulations*. Pursuant to 10 VSA §556 and §5-501 of the *Regulations* a Permit to

Construct, or an amendment to any existing Permit to Construct, must be obtained before commencing the construction, installation, modification or operation of an air contaminant source.

Pursuant to 10 VSA §556a and Subchapter X of the *Regulations* a Permit to Operate is required for any air contaminant source with allowable emissions of all air contaminants combined of ten (10) tons per year ("tpy") or more, or that is otherwise subject to Title 40 *Code of Federal Regulations* ("40 CFR") Part 70.

Allowable emissions from the Facility are estimated to be greater than ten (10) tpy combined and emissions of carbon monoxide (CO) are estimated to be in excess of the one-hundred (100) tpy threshold for the applicability of Title V of the federal Clean Air Act.

Therefore, pursuant to §§5-1002, 5-1003, and 5-1005 of the *Regulations* the Facility is classified as a "Title V Subject Source" and must obtain a Permit to Operate consistent with the requirements of Subchapter X of the *Regulations* and Title 40 *Code of Federal Regulations* ("40 CFR") Part 70.

The allowable emissions for the Facility are summarized below:

Future Allowable Air Contaminant Emissions (tons/year) ¹							
PM/PM ₁₀	SO ₂	NO _x	CO	VOCs	Total Criteria	HAPs ²	GHG ³
63.1	43.2	99.9	190.5	49.9	>10	<10/25	470,900

¹ PM/PM₁₀ - particulate matter and particulate matter of 10 micrometers in size or smaller; SO₂ - sulfur dioxide; NO_x - oxides of nitrogen measured as NO₂ equivalent; CO - carbon monoxide; VOCs - volatile organic compounds; HAPs - hazardous air pollutants as defined in §112 of the federal Clean Air Act.

² Emissions of individual HAPs each < 10 tpy and emissions of total HAPs combined <25 tpy.

³ GHG – greenhouse gases. GHGs from the combustion of wood and fuel oil include: CO₂, CH₄, and N₂O. Based on the global warming potentials listed in 40 CFR 98, CO₂e is calculated as: (lb CO₂ * 1) + (lb CH₄ * 21) + (lb N₂O * 310) = lb CO₂e.

Total PM emissions from the Facility, including both filterable and condensable components, are conservatively assumed to also be categorized as PM_{2.5} and thus also PM₁₀. Filterable PM represents the PM that is in solid form in the heated exhaust gas at the point of sampling. Condensable PM represents pollutants that are in gaseous form in the heated exhaust at the point of sampling but will become PM upon cooling and condensing and includes high molecular weight organics.

(E) REVIEW FOR THE PERMIT TO CONSTRUCT

(a) New Source Review Designation

Any proposed facility with allowable emissions of fifty (50) tons per year or greater of any air contaminant, or five (5) tons per year or greater of lead, is

designated as a major stationary source and is subject to review under §5-501 and §5-502 of the *Regulations*. The proposed project identified in Findings of Fact (A) above will result in a major increase in emissions. Consequently, the proposed project is designated as a major stationary source and is subject to the requirements of §5-502 of the *Regulations*.

(b) Most Stringent Emission Rate

Pursuant to §5-502 of the *Regulations*, the owner/operator of each new major stationary source or major modification must apply control technology adequate to achieve the Most Stringent Emission Rate ("MSER") with respect to those air contaminants for which there would be a major or significant actual emissions increase, respectively, but only for those currently proposed physical or operational changes which would contribute to the increased emissions.

The proposed project is designated as a major stationary source and therefore is subject to review under the MSER requirements in §5-502 of the *Regulations*.

Refer to the Technical Support Document for further information on the MSER review for this permit. The following table summarizes the Agency's MSER determinations:

Most Stringent Emission Rate Determinations			
Date of Determination/ Permit #	Pollutant	Description/Emission limit	
Month xx, 2011 #AP-11-015	NO _x	<p><u>Main Boiler</u>: MSER is the use of combustion controls with a MPCR and the following NO_x emission rates: hourly average of 0.060 lb/MMBtu of heat input and a 12 month rolling average of 0.030 lb/MMBtu of heat input.</p> <p><u>Wood pellet burner/dryer</u>: MSER is the use of a Coen low NO_x burner and good combustion controls and an hourly average limit of 0.35 lb/MMBtu of burner heat input.</p>	
	PM/PM ₁₀	Total PM	<p><u>Main Boiler</u>: MSER for total PM is an hourly average limit of 0.019 lb/MMBtu.</p> <p><u>Wood pellet burner/dryer</u>: MSER is the use of a fabric filter and a total PM hourly average limit of 0.2 lb/ODT.</p>
		Filterable PM	<p><u>Main Boiler</u>: MSER for filterable PM is an hourly average limit of 0.010 lb/MMBtu.</p> <p><u>Wood pellet burner/dryer</u>: MSER is the use of a fabric filter and a filterable PM hourly average limit of 0.005 gr/dscf.</p>

Most Stringent Emission Rate Determinations		
Date of Determination/ Permit #	Pollutant	Description/Emission limit
	CO	<p><u>Main Boiler:</u> MSER is the use of combustion controls with a MPCR and limit of 0.075 lb/MMBtu of heat input as a 24 hour rolling average.</p> <p><u>Wood pellet burner/dryer:</u> MSER is the use of a Coen low NOx burner and good combustion controls with an hourly average emission rate of 0.35 lb/MMBtu of burner heat input.</p>
	SO ₂	<p><u>Main Boiler:</u> MSER is the use of wood as a low sulfur content fuel and a limit of 0.02 lb/MMBtu of heat input. If the facility is not required by the Acid Rain Program to operate an SO₂ CEMS, then the limit is an hourly average, otherwise the limit is based on an annual average,.</p> <p><u>Wood pellet burner/dryer:</u> MSER is the use of wood as a low sulfur content fuel and an hourly average limit of 0.025 lb/MMBtu of burner heat input.</p>
	VOC	<p><u>Main Boiler:</u> MSER for VOC is the use of combustion controls with an oxidation catalyst within the MPCR and an hourly average VOC limit of 0.005 lb/MMBtu of heat input.</p> <p><u>Wood pellet burner/dryer:</u> MSER is an hourly average emission rate of 0.69 lb/ODT. The Permittee must also establish the upper operating limit for the temperature at the inlet to the rotary dryer that can be used while still demonstrating compliance with the VOC emission rate of 0.69 lb/ODT.</p>
	GHG	<p><u>Main Boiler:</u> MSER for GHG is the use of biomass fuel and implementing energy efficiency and good operating and maintenance practices for CO₂ control. MSER is also a CO₂e emission limit of 2,993 lb CO₂e/MW-hr electrical output based on a 30-day rolling average.</p> <p><u>Wood pellet burner/dryer:</u> MSER for GHG is the use of biomass fuel, the use of waste heat recovered from the Main Boiler exhaust gases and a CO₂e emission limit of 427 lb CO₂e/ton of pellets produced based on a monthly average.</p> <p><u>Diesel Engines:</u> MSER for GHG is the use of new engines that are Tier certified in accordance with 40 CFR Part 60 Subpart IIII.</p>

(c) Ambient Air Quality Impact Evaluation

An ambient air quality impact evaluation (AQIE) is performed to demonstrate whether or not a proposed project will cause or contribute to violations of the

ambient air quality standards and/or significantly deteriorate existing air quality.

Based on the level of emissions from this Facility, the Agency required the Permittee to conduct an ambient air quality impact evaluation for NO_x, SO₂, PM₁₀, PM_{2.5}, and CO.

The Technical Support Document for this permit and the permit application contain further information regarding the details of the air dispersion modeling. Shown below is a summary of the AQIE.

The Permittee conducted the AQIE using the U.S. EPA's AERMOD air dispersion model. Six (6) different operating load scenarios were reviewed to help ensure that the maximum potential impacts were evaluated. In addition to the operating load scenarios, the Permittee also reviewed the impacts from a boiler startup scenario and the use of the emergency diesel engines.

Based on the above scenarios, the emissions from the facility were modeled to establish the significant impact area (SIA). The SIA is used to help identify nearby sources of air pollution with significant emission rates that should be included in the AQIE as interactive sources. The interactive source modeling included the following five sources: Telescope Casual Furniture in Granville, NY (NO_x); NYS Great Meadow Correctional Facility in Comstock, NY (SO₂); Finch Paper LLC in Glens Falls, NY (SO₂ & NO_x); International Paper in Ticonderoga, NY (NO_x & SO₂) and Lehigh Northeast Cement Company in Glens Falls, NY (NO_x). No nearby sources with significant emission rates of PM_{2.5} were identified.

The maximum emissions from the proposed Facility along with the emissions from the five facilities noted above were modeled to predict the maximum impacts to determine if there are any NAAQS violations. The results are summarized in the following table:

Air Quality Impact Evaluation – NAAQS Review			
Pollutant	Averaging Time	Total Impact (µg/m ³)	NAAQS (µg/m ³)
PM ₁₀	24-hour	38.5	150
	Annual ¹	14.2	50
PM _{2.5}	24-hour	32.2	35
	Annual	11.0	15
SO ₂	1-hour	2,001.5	196
	3-hour	916.5	1,300
	24-hour	318.9	365
	Annual	37.9	80

Air Quality Impact Evaluation – NAAQS Review			
Pollutant	Averaging Time	Total Impact ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)
NO ₂	1-hour	649.1	188
	Annual	28.2	100
CO	1-hour	3,727.6	40,000
	8-hour	2,419.6	10,000

¹ Note that effective 12/28/2006, the EPA revoked the PM₁₀ annual NAAQS standard. However, up until May 2011, in certain cases, the EPA allowed a PM₁₀ surrogate policy that allowed a project to demonstrate compliance with the PM₁₀ annual NAAQS as a means to also demonstrate compliance with the PM_{2.5} annual NAAQS. This permit demonstrated compliance with the PM_{2.5} annual NAAQS and did not propose to use the PM₁₀ surrogate policy. Since the application for this permit included information on the PM₁₀ annual NAAQS, we are including this information in this document.

With the exception of the 1-hr NO₂ and SO₂ standards, comparison of the total impacts to the NAAQS indicates that the Facility's emissions will not cause or contribute to a violation of the NAAQS.

For the 1-hr NO₂ and SO₂ standards it was necessary to identify the Facility's contribution to impacts at the receptors that had a total impact that is greater than the NAAQS. This analysis was done and it was determined that the predicted impacts from this proposed project at those receptors were well below the significant impact level. This review concluded that the Facility does not contribute to these predicted violations of the NAAQS.

Major new sources of air pollution must also demonstrate that the proposed project will not significantly deteriorate the existing air quality in regions that have been established as being in attainment of federal air quality standards. All of Vermont has been determined to be in attainment of the federal air quality standards. Significant deterioration is considered to have occurred if a comparison of the air quality impact concentration, produced by the total estimated increase in emissions in the project area, exceeded the remaining PSD increment value. Nearby sources that consume increment are to be included in the PSD increment analysis for the proposed project. There are no nearby sources that consume increment for NO₂, PM_{2.5}, or PM₁₀. Finch Paper and International Paper Ticonderoga both consume SO₂ increment, so these sources were included in this PSD increment analysis. The following table summarizes the maximum predicted impacts and the available increment for Class I & Class II Areas.

PSD Increment Impacts					
Pollutant	Averaging Time	Class I		Class II	
		Max Impact (µg/m ³)	Available Increment (µg/m ³) ¹	Max Impact (µg/m ³)	Available Increment (µg/m ³) ¹
PM ₁₀	24-hour	0.028	6	3.5	22.5
	Annual	0.002	1	0.6	4.25
PM _{2.5}	24-hour	0.028	1.5	3.5	6.75
	Annual	0.002	0.25	0.6	1
SO ₂	3-hour	0.87	18.76	84.1	384
	24-hour	0.16	3.75	14.4	68.25
	Annual	0	0.5	2.4	5
NO ₂	Annual	0.004	0.625	1.4	6.25

¹ Vermont allows major new sources to consume only 25% of the annual increment and 75% off the short term increment.

To evaluate potential Class I Area visibility impairment, the Permittee conducted a Level 1 Screening Procedure as outlined in EPA’s Workbook for Plume Visual Impact Screening and Analysis using EPA’s VISCREEN model. Based on the results, the proposed Facility’s plume visual impact will not cause an adverse impact.

Based on this analysis, the Permittee demonstrated that the proposed project will not cause or contribute to violations of the National Ambient Air Quality Standards (NAAQS), will not exceed Vermont’s Prevention of Significant Deterioration (PSD) increments, will not significantly impact any Class I areas, nor will it significantly deteriorate existing air quality.

As required by federal PSD regulations, 40 CFR 52.21(o), the Permittee also included in the permit application additional impact analysis of: (a) the impairment to visibility, soils and vegetation that would occur as a result of the new major source and general, commercial, residential, industrial, and other growth associated with the new major source, except that an analysis of the impact on vegetation having no significant commercial or recreational value is not required; (b) the air quality impact projected for the area as a result of the general commercial, residential, industrial, and other growth associated with the facility.

In accordance with Vermont’s *State Implementation Plan*, impacts on vegetation, soils and an assessment of secondary growth will be conducted through procedures established in Title 10 Chapter 151, *Vermont Statutes Annotated (Act 250)*.

(d) Applicable Requirements

The operations at the Facility are subject to the following state and federal laws and regulations, the requirements of which are embodied in the conditions of this Permit.

(i) Vermont Air Pollution Control Regulations:

Applicable Requirements from the Vermont Air Pollution Control Regulations
Section 5-201 – Prohibition of Open Burning
Section 5-211(2) and (3)- Prohibition of Visible Air Contaminants, Installations Constructed Subsequent to April 30, 1970. Exceptions – Wood Fuel Burning Equipment.
Section 5-221(1) - Prohibition of Potentially Polluting Materials in Fuel, Sulfur Limitation in Fuel.
Section 5-231(1) - Prohibition of Particulate Matter; Industrial Process Emissions.
Section 5-231(3) - Prohibition of Particulate Matter; Combustion Contaminants.
Section 5-231(4) - Prohibition of Particulate Matter; Fugitive Particulate Matter.
Section 5-241 – Prohibition of Nuisance and Odor.
Section 5-261(3) – Control of Hazardous Air Contaminants - Hazardous Most Stringent Emission Rate.
Section 5-271 – Control of Air Contaminants from Stationary Reciprocating Internal Combustion Engines.
Section 5-402 – Written Reports When Requested.
Section 5-403 – Circumvention.
Section 5-406 – Required Air Modeling
Section 5-502 – Major Stationary Sources and Major Modifications
Subchapter VIII – Registration of Air Contaminant Sources.
Subchapter X – Operating Permits.

(i) Existing Air Pollution Control Permit to Construct and/or Operate

The Facility was issued, on November 23, 2010, a Permit to Construct and Operate (#AOP-10-042) for the operation of diesel engines to provide electrical power for the construction phase of the main project. AOP-10-042 will continue to be a valid permit until the startup of the Main Boiler, at which time AOP-10-042 will be terminated and the diesel engine

generators and fire pump will be operated in accordance with permit AP-11-015 herein.

(ii) Federal Requirements:

Applicable Requirements from Federal Regulations and the Clean Air Act
40 <i>CFR</i> Part 60, New Source Performance Standards, Subpart A - General Provisions.
40 <i>CFR</i> Part 60, Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units: §60.42b Standards for sulfur dioxide; §60.43b Standards for particulate matter; §60.44b Standards for nitrogen oxides; §60.49b Reporting and recordkeeping requirements. Applicable to all units of 100 MMBtu per hour or greater constructed after June 19, 1984.
40 <i>CFR</i> Part 60 - Appendix B to Part 60—Performance Specifications
40 <i>CFR</i> Part 60 - Appendix F to Part 60—Quality Assurance Procedures
40 <i>CFR</i> Part 60, Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE). Applies to CI RICE model year 2007 and later as well as those ordered after July 11, 2005 and with an engine manufacture date after April 1, 2006. This standard also applies to stationary CI RICE that are modified or reconstructed after July 11, 2005. This regulation established emission rates for affected engines, requires routine engine maintenance and sets maximum sulfur content for the diesel fuel. Beginning October 1, 2010 applicable engines shall only use diesel fuel with a maximum sulfur content of 15 ppm (ULSD).
40 <i>CFR</i> Part 63, Subpart JJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers. This regulation will apply to new and existing fuel oil and solid fuel fired boilers located at area sources (major sources are subject to Subpart DDDDD). It does not apply to natural gas or propane fired boilers. The final rule became effective 3/21/2011. Boilers that commenced construction on or before June 4, 2010 are considered an existing source.
40 <i>CFR</i> Part 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines. Applies to <u>new</u> engines that commenced construction (installed) on or after June 12, 2006 at area sources of HAPs. Requires such engines to comply with NSPS Subpart IIII or JJJJ, as applicable
Clean Air Act §§114(a)(3), 502(b), and 504(a)-(c); 40 <i>CFR</i> Part 70 §§70.6(a)(3)(i)(B) and 70.6(c)(1); and 40 <i>CFR</i> Part 64 - Compliance Assurance Monitoring (CAM). Upon issuance of a Title V Permit to Operate, a facility must comply with enhanced monitoring and CAM requirements for any emission unit with uncontrolled emissions in excess of the Title V major source threshold and which is subject to an emission standard and which is equipped with an emission control device. <i>The CAM requirements apply to this Facility for the emissions of PM, NOx, and CO from the wood fired boiler, and they will be part of the Title V Permit to Operate. An application for a Title V Permit to Operate must be submitted within 12 months of commencing operation.</i>
40 <i>CFR</i> Parts 72, 73, 75, 76, and 77 Acid Rain Program <i>A permit application for an Acid Rain Permit must be submitted at least 24 months before the facility commences operation.</i>

Applicable Requirements from Federal Regulations and the Clean Air Act
40 <i>CFR</i> Part 98, Mandatory Greenhouse Gas Reporting. §98.2(a)(1) – reference to Table A-3: Electricity generation units that report CO ₂ mass emissions year round through 40 <i>CFR</i> part 75 (subpart D).

(e) Non-Applicable Requirements

Pursuant to §5-1015(a)(14) of the *Regulations*, an owner or operator of a Facility may request a permit shield from specific state or federally enforceable regulations and standards which are not applicable to the source. The applicant has not requested such a permit shield in accordance with the requirements of §5-1015(a)(14) of the *Regulations*.

(f) Enforceability

This section delineates which permit conditions are federally enforceable and which conditions are state only enforceable. All federally enforceable conditions are subject to federal citizen suit provisions. All conditions of this Permit are enforceable by both state and federal authorities.

(g) Compliance Certification

The Permittee is required by this Permit to certify compliance with the Agency pursuant to the requirements of §5-402(1) of the *Regulations*. Additionally, this Permit requires the submission of quarterly reports of monitoring records used to demonstrate compliance with the limitations contained in this Permit.

(G) HAZARDOUS MOST STRINGENT EMISSION RATE

Pursuant to §5-261 of the *Regulations*, any stationary source whose current or proposed actual emission rate of a hazardous air contaminant ("HAC") is equal to or greater than the respective Action Level (found in Appendix C of the *Regulations*) shall achieve the Hazardous Most Stringent Emission Rate ("HMSER") for the respective HAC.

The Agency has determined that the Facility will have regulated emissions of multiple HACs in excess of their respective Action Levels. The Agency has divided these HACs into 5 categories and then determined HMSER for each of these categories. These HMSER evaluations shall be subject to re-evaluation five (5) years from the date of its determination and shall remain in effect until revised by the Agency. The HMSER determinations for this Facility are presented below.

Hazardous Most Stringent Emission Rate Determinations		
Date of Determination /Permit #	Pollutant	Description/Emission limit
month xx, 2011 #AP-11-015	<u>Non-mercury metallic HACs:</u> arsenic, barium, beryllium, cadmium, chromium-hexavalent, copper (dusts & mists), iron oxides (dusts & fumes), lead compounds, manganese, nickel compounds, vanadium pentoxide and zinc oxide.	<u>Main Boiler:</u> HMSER for non-mercury metallic HACs from the Main Boiler is the use of a fabric filter or ESP and a filterable PM surrogate emission limit of 0.010 lb/MMBtu (hourly average). <u>Wood pellet burner/dryer:</u> HMSER for non-mercury metallic HACs from the wood pellet burner/dryer is the use of a fabric filter and a filterable PM surrogate emission limit of 0.005 gr/dscf (hourly average).
	<u>Organic HACs:</u> 1,2-dichloroethane (ethylene dichloride), 1,2-dichloropropane (propylene dichloride), acetaldehyde, acrolein, benzene, benzo(a)pyrene, bromodichloromethane, chloroform, dichloromethane (methylene chloride), 2,4-dinitrotoluene, formaldehyde, hexachlorobenzene, naphthalene, tetrachloroethylene (perchloroethylene), trichloroethylene, and vinyl chloride.	<u>Main Boiler:</u> HMSER for organic HACs is good combustion control and the use of an oxidative catalyst in the MPCR, and a CO surrogate emission limit of 0.075 lb/MMBtu (24 hour rolling average), and a VOC surrogate emission limit of 0.005 lb/MMBtu (hourly average). <u>Wood pellet burner/dryer:</u> HMSER for organic HACs is proper burner design and good combustion practices as well as a VOC surrogate emission rate of 0.69 lb/ODT (hourly average). The Permittee must also establish the upper limit for the inlet and outlet temperature to the rotary dryer and then demonstrate that the VOC emissions are below this VOC emission limit.
	<u>Acid gases:</u> sulfuric acid mist and chlorine	HMSER for both the Main Boiler and the wood pellet burner/dryer is the use of natural wood which has an inherently low level of sulfur and chlorine.
	<u>Ammonia</u>	HSMER is an ammonia slip limit of 10 ppm NH3 @ 7% O ₂ for the wood fired boiler (24 hour rolling average).
	<u>CDD/CDF:</u> chlorodibenzodioxins/ chlorodibenzofurans	HMSER for CDD/CDFs to be good combustion practices and properly operated air pollution control equipment.

(H) EQUIVALENCY DETERMINATIONS

Visible Emission Standards: There are two limits which regulate visible air contaminant emissions for the source. The state limit is contained in §5-211(2) of the *Regulations*. This limit prohibits visible emissions of greater than 20% opacity for more than a period or period(s) aggregating six (6) minutes in any hour and at no time may visible emissions exceed 60% opacity. There is an exception in §5-211(3) of the *Regulations* which allows visible emissions to exceed the 20% and 60% limits during periods of start-up and soot blowing for the wood-fired boiler. However, at no time may visible emissions during periods of startup and soot blowing exceed 80% opacity. The federal limit in 40 *CFR* Part 60, Subpart Db §60.42b(f) limits visible emissions to 20% opacity or less, except for one 6-minute period in any hour where emissions may not exceed 27% opacity. The federal opacity limits do not apply during periods of startup, shutdown, or malfunction. Compliance with the state and federal limit are measured differently. The federal standard is based upon the use of Reference Method 9 (40 *CFR* Part 60 Appendix A), while the state limit is assessed using Methods 203B and 203C (40 *CFR* Part 51, Appendix M).

The Agency considers the state limit to be equivalent to the applicable federal limit. Therefore, the Permittee will be required to comply with the state opacity limit. This determination is based upon the following: (1) all periods of source operation are covered by the state opacity limits, and (2) the six-minute averaging technique in federal Reference Method 9 may result in under-enforcement of an opacity regulation.

Particulate Matter Emission Standards: There are five applicable PM emission limits that apply to the Main Boiler:

1. Filterable PM limit of 0.030 lbs/MMBTU required by 40 *CFR* Part 60, Subpart Db, §60.43b(h)(1)
2. Filterable PM limit of 0.03 lb/MMBTU required by 40 *CFR* Part 63, Subpart JJJJJ §63.11201
3. Total PM limit of 0.10 gr/dscf corrected to 12% CO₂ contained in §5-231(3)(b)(iii) of the *Regulations*. (roughly equivalent to 0.2 lb/MMBTU)
4. Total PM limit based on the MSER of 0.019 lb/MMBTU.
5. Filterable PM limit based on the MSER of 0.010 lb/MMBTU.

The MSER limits are the most stringent. The Permittee will be required to comply with the total PM and filterable PM MSER emission limits.

Compliance with the MSER emission limit shall be determined consistent with the procedures identified within 40 *CFR* Part 60 Subpart Db for determining compliance with the federal emission standard (filterable PM as determined by Reference Method 5, total PM as determined by Reference Methods 5 & 202). §5-231(3)(b)(iii) of the *Regulations*, and 40 *CFR* Part 60 §60.43b(h)(1) are subsumed by MSER as set forth in this subsection.

Applicable Particulate Matter Emission Standards, Main Boiler		
Most Stringent	Regulatory Authority	Standard or Limit
	40 <i>CFR</i> Part 60 Subpart Db §60.43b(h)(1)	0.030 lb/MMBtu Filterable PM
	40 <i>CFR</i> Part 63 Subpart JJJJJ	0.03 lb/MMBtu Filterable PM
	§5-231(3)(b)(iii) of the <i>Regulations</i>	0.10 gr/dscf Total PM
X	MSER: AP-11-015, Month xx, 2011	0.010 lb/MMBtu Filterable PM
X	MSER: AP-11-015, Month xx, 2011	0.019 lb/MMBtu Total PM

Based on the Agency's review of the Facility's application and the above Findings of Fact, the Agency concludes that the Facility, subject to the following Permit conditions, complies with all applicable state and federal air pollution control laws. Therefore, pursuant to 10 VSA §§556, as amended, the Agency hereby issues a Permit approving the Facility, as described in the above Findings of Fact, subject to the following:

PERMIT CONDITIONS

- Construction and Equipment Specifications -

- (1) The Permittee shall construct and operate the Facility in accordance with the plans and specifications submitted to the Agency and in accordance with the conditions set forth herein, including the equipment specifications as listed in Findings of Fact (A) or their equivalent as approved by the Agency. [10 V.S.A. §556(c)] [§5-501(1) of the *Regulations*]
- (2) The Main Boiler's two fuel oil auxiliary burners shall not exceed sixty (60) million British Thermal Units per hour ("MMBTU/hr") of heat input, each. [10 V.S.A. §556(c)][Application for AP-11-015]
- (3) The heat input rating of the temporary fuel oil boiler shall not exceed ten (10) million British Thermal Units per hour ("MMBTU/hr"). [10 V.S.A. §556(c)][Application for AP-11-015]
- (4) Air Pollution Control Equipment – Main Boiler
 - (a) The Main Boiler shall be equipped with a particulate matter control system consisting of multi-clones in series with an ESP, or an equivalent air pollution control device such as a fabric filter as approved in writing by the Agency, capable of complying with the PM emission limits established in this permit. The multi-clones and ESP (or equivalent) shall be maintained in good working order and properly operated whenever the Main Boiler is combusting fuel, except as provided below. During periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate the multi-clones and ESP in a manner consistent with good air pollution control practice for minimizing emissions.
 - (b) The Main Boiler shall be equipped with a selective catalytic reduction (SCR) system for controlling nitrogen oxides. All elements of the SCR system shall be maintained in good working order and shall be operating whenever the Main Boiler is running, except during the startup of the Main Boiler. The startup period for the Main Boiler ends when the SCR catalyst has reached full operating temperature.
 - (c) The Main Boiler shall be equipped with an oxidation catalyst system for controlling the emission of CO, VOCs, and organic HACs. All elements of the oxidation catalyst system shall be maintained in good working order and shall be operating whenever the Main Boiler is running, except during the startup of the

Main Boiler. The startup period for the oxidation catalyst system ends when the Main Boiler has reached full operating temperature.

[10 V.S.A. §556(c)][Application for AP-11-015] [40 CFR §60.11d]

(5) Air Pollution Control Equipment – Wood Pellet burner / rotary dryer

- (a) The burner shall be equipped with a Coen low NO_x burner using staged combustion air.
- (b) The PM in the exhaust gases from the rotary dryer shall be controlled with a cyclone followed by a fabric filter. The burner and fabric filter shall be maintained in good working order and properly operated whenever the burner and/or rotary dryer are operating, except as provided below. During periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate the burner and fabric filter in a manner consistent with good air pollution control practice for minimizing emissions.

[10 V.S.A. §556(c)][Application for AP-11-015]

(6) The Permittee shall install a continuous temperature monitoring system (CTMS) to measure and permanently record the temperature at the inlet of the rotary dryer. The Permittee shall operate and maintain such system in good working order and as specified below:

- (a) The CTMS must be installed, operated, calibrated, and maintained following written procedures in a manner consistent with the manufacturer's written specifications.
- (b) The CTMS must be operated continuously recording temperature data at least every 10 seconds during all periods of rotary dryer operation except for periods of CTMS inspection, calibration, preventive maintenance, performance verification or uncontrolled malfunction. Nevertheless the CTMS must record temperature data for at least 95% of rotary dryer operating time during any calendar quarter.
- (c) The CTMS must have a minimum manufacturer's stated accuracy of ±5% (of reading).
- (d) The CTMS must be equipped with a device to permanently record the system output electronically, generate 1-hour averages and automatically flag averages that exceed the limit established in Condition (16). Recorded 1-hour averages must contain continuous temperature measurements (minimum of every 10 seconds) for at least 75% of any operating hour.
- (e) The CTMS must be equipped with an audible and visual alarm system that will activate automatically when the rotary dryer inlet temperature exceeds the limit established in Condition (16).
- (f) In conjunction with the periodic VOC emission testing as required in condition (36), the CTMS must be inspected and its performance verified.
- (g) A dedicated permanent log book or electronic logging system will be maintained for the CTMS which will be used to document all system related activities, including at a minimum, sensor inspection and preventive maintenance,

corrective action and periodic performance verification.

[10 V.S.A. §556(c)] [§5-405(1) of the *Regulations*]

- (7) The Permittee shall control PM emissions from the wood pellet manufacturing equipment located after the rotary dryer by installing and operating one or more fabric filter(s). The processes to be controlled include the pellet mills, pellet cooler, hammer mill, and pellet packaging system. Collected particulate matter from a fabric filter if pneumatically conveyed shall utilize a closed loop system where the conveying air is returned to the blower such that there is no indoor or outdoor exhaust. All elements of these air pollution control system(s) shall be maintained in good working order at all times and shall be operated in accordance with the manufacturer's operation and maintenance recommendations. Each air pollution control system shall be in operation whenever the respective emission source is in operation. [10 V.S.A. §556(c)] [Application for #AP-11-015]
- (8) The Permittee shall control emissions from the fly ash silo by installing and operating a fabric filter on the silo vent. All elements of this air pollution control system shall be maintained in good working order at all times and shall be operated in accordance with the manufacturer's operation and maintenance recommendations. The air pollution control system shall be in operation whenever the respective emission source is in operation. [10 V.S.A. §556(c)] [Application for #AP-11-015]
- (9) Each fabric filter collector, with an exhaust flow greater than 1000 acfm, shall be equipped with a pressure drop measurement device which continuously measures, displays and permanently records the pressure drop across the fabric filter collector. The Permittee shall use the pressure drop measurement device to maintain the pressure drop across each fabric filter within acceptable ranges as specified by the manufacturer. [10 V.S.A. §556(c)]
- (10) The Permittee shall install a bag leak detection system on each of the following fabric filter emission control systems: (1) the fabric filter(s) serving the main power boiler, (2) the fabric filter(s) serving the pellet plant rotary dryer, and (3) each fabric filter vented to the outdoor air that serves a process or processes that collectively have potential uncontrolled PM emissions of 50 tons per year or more. The Permittee shall operate and maintain such systems in good working order and as specified below:
 - (a) Each bag leak detection system must be designed, installed, operated, calibrated, and maintained following written procedures in a manner consistent with the manufacturer's written specifications and recommendations and in accordance with the U.S. EPA's "Fabric Filter Bag Leak Detection Guidance:" EPA-454/R-98-015.
 - (b) The bag leak detection system must be operated continuously recording particulate matter levels whenever each applicable fabric filter is in operation.
 - (c) The bag leak detection system must be certified by the manufacturer to be capable of detecting particulate matter emissions at concentrations of 1 milligram per actual cubic meter or less.
 - (d) The bag leak detection system sensor must provide a continuous analog output of relative or absolute particulate matter levels.

- (e) The bag leak detection system must be equipped with a device to permanently record the output signal from the sensor electronically.
- (f) The bag leak detection system must be equipped with an audible and visual alarm system that will activate automatically when an increase in relative particulate matter emissions over a preset normal operating background level is detected. The alarm must be located where it is easily heard and seen by plant operating personnel.
- (g) For positive pressure fabric filter systems that do not duct all compartments of cells to a common stack, a bag leak detection system must be installed in each fabric filter compartment or cell.
- (h) Where multiple bag leak detectors are required, the system's instrumentation and alarm may be shared among detectors.
- (i) A dedicated permanent log book will be maintained for each bag leak detection system which will be used to document all system related activities, including at a minimum, sensor inspection and preventive maintenance, monthly drift and response checks and annual setup.

[10 V.S.A. §556(c)]

- (11) Stack heights: The exhaust gases from each emission source specified below shall be discharged at elevations measured above grade, greater than or equal to their respective elevations specified below. No stack shall be equipped with any device that would obstruct the vertical discharge of the exhaust gases. [10 V.S.A. §556(c)] [§5-406 of the Regulations]

Stack Outlet Elevations and Designations			
Unit Identification	Heat Input, MMBtu/hr	Stack Designation Number	Stack Outlet Elevation, feet above grade
Biomass Boiler	482	S1	180
Wood burner & dryer exhaust	30	S2	100

- Operational Limitations -

- (12) The Permittee shall submit a complete Title V Permit application within 12 months of the initial startup of either the Main Boiler, or the wood pellet manufacturing operation. [Subchapter X of the Regulations] [40 CFR Part 70]
- (13) Wood Fuel: When wood fuel is used, only natural wood as defined in the Regulations may be used as fuel in the wood fuel burning equipment. In addition, the wood fuel burning equipment shall only be used when there is a need for space or process heat and shall not be used as an *incinerator* where the primary purpose is the reduction in volume and/or weight of an unwanted material. [10 V.S.A. §556(c)] [§§5-101 and 5-231(2) of the Regulations] [Application for #AP-11-015]
- (14) Fuel Oil: When fuel oil is used, only No. 2 fuel oil or lighter grade fuel oils with a maximum sulfur content not to exceed 15 ppm by weight may be used as fuel in the

Main Boiler, the temporary boiler, or any of the diesel engines unless the Permittee obtains prior written approval from the Agency to use another type of fuel. [10 V.S.A. §556(c)] [§§5-501 and 5-221(1)(a) of the *Regulations*] [Application for #AP-11-015]

- (15) The production of dried wood material from the rotary dryer shall not exceed 115,000 oven-dry tons per rolling 12 month period. [10 V.S.A. §556(c)] [Application for #AP-11-015]
- (16) Rotary Dryer: To limit the emission of VOCs from the drying of wood in the rotary dryer, the Permittee shall establish the maximum rotary dryer inlet temperature and demonstrate that the dryer meets the VOC emission limit at this temperature. Thereafter, the Permittee shall control the operation of the burner and rotary dryer such that the hot air, before coming in contact with the wood material to be dried at the dryer inlet, does not exceed this established maximum inlet temperature. When established, compliance with this temperature limit shall be based on an hourly average.
[10 V.S.A. §556(c)] [§§5-261 and 5-502 of the *Regulations*]
- (17) Open Burning: Open burning is prohibited except as provided for in §5-202 of the *Regulations*. Prior to conducting open burning of any material, other than leaves, brush, or tree cuttings from normal grounds maintenance, the Permittee shall contact the Air Pollution Control Officer and obtain approval for such burning, if required. [§5-202 of the *Regulations*]
- (18) In accordance with 40 *CFR* Part 63 Subpart JJJJJJ (National Emission Standards for Hazardous Air Pollutants: Industrial, Commercial and Institutional Boilers at area sources), the Permittee shall comply with the following applicable requirements for oil and wood fired boilers as well as all other applicable requirements of this regulation. This condition applies to the Main Boiler and the temporary boiler.
- (a) Work Practice Standards, Emission Reduction Measures, and Management Practices:
- (i) Biennial tune-ups of the Main Boiler and temporary boiler as required by 40 *CFR* §63.11223. For boilers installed on or after June 4, 2010 the first tune-up is required within 180 days after installation. Subsequent tune-ups must be completed no later than 25 months after the prior tune-up.
- (ii) [§63.11201 – Table 2, item 1] Minimize the Main Boiler's startup and shutdown periods following the manufacturer's recommended procedures.
- (b) Emission Limits:
- (i) [§63.11201 – Table 1] For the Main Boiler: particulate matter emission limit of 0.03 lb/MMBtu of heat input must be achieved at all times, except during periods of startup and shutdown.
- (c) Operating Limits:
- (i) [§63.11201 – Table 3, items 1 and/or 2] The opacity from the Main Boiler stack must be less than or equal to 10 percent opacity (daily block average).
- (ii) [§63.11201 – Table 3, Item 7] The operating load of the Main Boiler shall not exceed 110 percent of the average operating load recorded during the most recent particulate matter performance stack test.

- (d) Demonstrating Continuous Compliance – Main Boiler:
 - (i) [§63.11222 – Table 7, item 1] The Permittee must demonstrate continuous compliance with opacity by:
 - a. Collecting the opacity monitoring system data according to §63.11224(e) and §63.11221; and
 - b. Reducing the opacity monitoring data to 6-minute averages; and
 - c. Maintaining opacity to less than or equal to 10 percent (daily block average).
 - (e) Notification, reporting and recordkeeping requirements as specified in §63.11225. This includes:
 - (i) §63.11225(a)(2): Initial Notification – temporary boiler and Main Boiler:
 - a. For boilers installed on or after June 4, 2010 the initial notification must be sent to the EPA no later than 120 days after installation.
 - (ii) §63.11225(a)(4): Notification of Compliance Status:
 - a. Notification of the initial tune-up of the boiler must be submitted no later than 60 days after completing the tune-up.
 - (iii) §63.11225(b): By March 1 of each year, prepare and, upon request, submit an annual compliance certification report. For boilers only subject to a requirement to conduct biennial tune-up and not subject to emission limits or operating limits, the Permittee may prepare only a biennial compliance report.

[40 *CFR* Part 63 Subpart JJJJJJ] [40 *CFR* Part 63]

- (19) Diesel Engines: For stationary diesel engines that are subject to 40 *CFR* Part 60 Subpart IIII, the Permittee must:
 - (a) Comply with the emission standards in §60.4204 and/or §60.4205 as applicable.
 - (b) As required in §60.4206, operate and maintain the engines according to the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer.
 - (c) As required in §60.4207, only Ultra Low Sulfur Diesel fuel with a maximum sulfur content not to exceed 0.0015% by weight (15 ppm) may be used in the affected diesel engines.

[10 *V.S.A.* §556(c)] [§5-501 of the *Regulations*][40 *CFR* Part 60 Subpart IIII]

- (20) Diesel Engine: The stationary emergency diesel engine(s) shall be equipped with a non-resettable hour meter. [10 *V.S.A.* §556(c)] [40 *CFR* Part 60 Subpart IIII §60.4209(a)]
- (21) Engines: The Permittee shall not install or operate a stationary reciprocating internal combustion engine, as defined in the *Regulations*, unless the engine complies with §5-271 of the *Regulations* as may be applicable as well as any federal regulations including NSPS Subpart IIII and NESHAP ZZZZ, as may be applicable. All engines greater than 450 bhp, including emergency engines, installed on or after July 1, 2007 must comply with the applicable emission standards (Tier 2) of §5-271 immediately upon installation. Installation of any size engine, even those below 450 bhp, may still require approval from the Agency in the form of an amended permit prior to installation. Stationary reciprocating internal combustion engines include those used to power electric generator

sets or to provide shaft power for other equipment such as compressors but does not include engines used to power motor vehicles. [§§5-271 and 5-501 of the *Regulations*] [40 CFR Part 60 Subpart IIII and Part 63 Subpart ZZZZ]

- (22) Emergency Engines: To comply with the requirement of the State of Vermont, the emergency engines may only be used as follows:
- (a) During emergency power failures. Emergency power failures are defined as those times when the normal power source is temporarily unavailable due to circumstances beyond the reasonable control of the Permittee.
 - (b) When requested by the Independent Systems Operator for New England (ISO New England) for an OP 4 event or OP 7 event, and;
 - (c) For periods of routine testing and maintenance:
 - (i) Routine testing and maintenance of each engine is limited to 65 hours per year.
 - (ii) Unless required for system testing, the engines shall not be operated simultaneously.
 - (iii) The testing and maintenance of the engines shall not be conducted on days that have a forecast air quality index of 101 or higher: "Unhealthy for Sensitive Groups."

In the event the Permittee must take action to restore the normal power source, the Permittee must take such action in a reasonable period of time. Emergency engines shall not be operated as part of any other ISO or utility peaking or load shedding activities.

Note that under 40 *CFR* Part 60 Subpart IIII diesel engines that operate during an OP4 or OP7 event may be considered as a non-emergency engine and be subject to additional requirements.

[10 V.S.A. §556(c)] [§§5-401(6)(c) and 5-501 of the *Regulations*]

- Emission Limitations -

- (23) Nitrogen Oxides [Facility Wide]: The Permittee shall limit emissions of nitrogen oxides from the entire Facility, including the Main Boiler, the burner for the rotary dryer, and the stationary diesel engines, to less than one-hundred (100) tons per year based on any rolling twelve (12) consecutive calendar month period. [Application for #AP-11-015] [10 V.S.A. §556(c)] [§5-502 of the *Regulations*]
- (24) Main Boiler – emission limits
- (a) The emission limits for the main boiler are shown in the following table:

Main Boiler Emission Limitations				
Pollutant	Emission Limitations			Compliance Test Method ¹
	Emission Limit		Averaging period	
NO _x	0.060 lb/MMBtu ²	28.9 lb/hr	Hourly average	Reference Method 7E and PS-2 NO _x CEMS
	0.030 lb/MMBtu	60.8 ton/yr	12 month rolling average	
	0.33 lb/MMBtu	Boiler startup limit	8-hr rolling average	PS-2 NO _x CEMS
CO	0.075 lb/MMBtu	36.2 lb/hr	24-hr rolling average	Reference Method 10 and PA-4A CO CEMS
Total PM	0.019 lb/MMBtu	9.2 lb/hr	Hourly average	Reference Method 5 and 202
Filterable PM	0.010 lb/MMBtu	4.8 lb/hr	Hourly average	Reference Method 5
SO ₂	0.02 lb/MMBtu	9.6 lb/hr	For Method 6C: hourly average. For CEM: annual average	Reference Method 6C and, if required by the Acid Rain Program, an SO ₂ CEMS compliant with 40 CFR Part 75, Appendix A
VOC	0.005 lb/MMBtu	2.4 lb/hr	Hourly average	Reference Method 18 or 25
NH ₃	10 ppm @ 7% O ₂	-	24-hr rolling average	CTM-027 and NH ₃ CEMS compliant with Appendix F and Vermont CEM Requirements
GHG	2993 lb CO ₂ e/ MW-hr (gross) electrical output	-	30-day rolling average	Reference Method 3A and PS-3 O ₂ or CO ₂ CEMS

¹ All test methods and performance specifications are from 40 CFR part 60 unless otherwise specified. Any emission testing conducted to demonstrate compliance with the above emission limits shall be performed in accordance with methods shown in this condition, or an alternative method which has been published in 40 CFR, provided the federally approved alternative method has been accepted in writing by the Agency before testing.

² This limit applies at all times except during the startup of the Main Boiler when the SCR has not reached full operating temperature.

- (b) Continuing compliance with the CO lb/MMBtu, CO lb/hr, NO_x lb/MMBtu, NO_x lb/hr and NH₃ ppm (corrected to 7% O₂) emission standards specified in this Permit shall be determined by means of a CEMS as required by Condition (41).

[10 V.S.A. §556(c)] [§5-502 of the Regulations] [Application for #AP-11-015]

- (25) Wood Pellet Burner/Rotary Dryer – the emission limits for the pellet manufacturing burner and rotary dryer are shown in the following table:

Burner/ Rotary Dryer Emission Limitations				
Pollutant	Emission Limitations			Compliance Test Method ¹
	Emission Limit		Averaging period	
NO _x	0.35 lb/MMBtu	5.25 lb/hr	Hourly average	Reference Method 7E
CO	0.35 lb/MMBtu	5.25 lb/hr	Hourly average	Reference Method 10
Total PM	0.2 lb/ODT	3.0 lb/hr	Hourly average	Reference Method 5 and 202
Filterable PM	0.005 gr/dscf ²	2.3 lb/hr	Hourly average	Reference Method 5
SO ₂	0.025 lb/MMBtu	0.75 lb/hr	Hourly average	Reference Method 6C
VOC	0.69 lb/ODT	10.3 lb/hr	Hourly average	Reference Method 18 or 25
GHG	427 lb CO ₂ e/ ton finished pellets	-	Monthly average	Calculation based on wood fuel usage and pellet production.

Any emission testing conducted to demonstrate compliance with the above emission limits shall be performed in accordance with methods shown above, or an alternative method which has been published in 40 CFR, provided the federally approved alternative method has been accepted in writing by the Agency before testing.

² Emission limit for undiluted exhaust gas.

[10 V.S.A. §556(c)] [§5-502 of the Regulations] [Application for #AP-11-015]

- (26) Particulate Matter: Emissions of particulate matter from the fabric filters shown below shall not exceed the following limits:

Particulate Matter Emission Limitations		
Source	Emission Limitations	
	gr/dscf ¹	lbs/hour ²
Fabric filter(s) serving the pellet mills, pellet cooler, hammer mill and pellet packaging.	0.005 gr/dscf	1.9 ³
Fabric filter serving the fly ash silo vent	0.02 gr/dscf	0.14

¹ gr/dscf equals grains of pollutant emitted per dry standard cubic foot of undiluted exhaust gas.

² lbs/hour equals pounds of pollutant emitted per hour.

³ This limit is for total emissions from the listed operations. If there are multiple fabric filters in use for controlling the PM emissions from these operations, the sum of the PM emission rate from all of the fabric filters must not exceed this limit.

Any emission testing conducted to demonstrate compliance with the above emission limits shall be performed in accordance with 40 CFR Part 60, Appendix A, Reference Method 5 or an alternative method which has been published in 40 CFR, provided the federally approved alternative method has been accepted in writing by the Agency before testing. [10 V.S.A. §556(c)] [§5-404 of the Regulations]

- (27) **Diesel Engines:** To meet the requirements of Vermont’s regulations, the emissions of the following pollutants from the engine generators shall not exceed the following limits:

Diesel Engine - Pollutant Emission Limitations	
Caterpillar C32 Diesel Engine Generator – 1,000 kW (EPA Tier 2 Emission Certified Engine)	Emission Limitations (g/bhphr ¹)
Nitrogen oxides (as NO ₂)	4.8
Carbon monoxide	2.6
Particulate matter	0.15
Caterpillar C15 Diesel Engine Generator – 500 kW (EPA Tier 2 Emission Certified Engine)	Emission Limitations (g/bhphr ¹)
Nitrogen oxides (as NO ₂)	4.8
Carbon monoxide	2.6
Particulate matter	0.15
Fire Pump – less than 400 hp (EPA Tier 3 Emission Certified Engine)	Emission Limitations (g/bhphr ¹)
Nitrogen oxides (as NO ₂)	3.0
Carbon monoxide	2.6
Particulate matter	0.15

¹g/bhphr equals grams of pollutant emitted per brake horsepower hour at rated load and speed.

The diesel engine generators must also meet the applicable emission standards required by 40 *CFR* Part 60 Subpart IIII. Depending upon the year the engine is manufactured and if the engine is operated as an emergency engine in accordance with Subpart IIII, Subpart IIII may require an engine with lower emission rates than those shown above.

Any emission testing conducted to demonstrate compliance with the above emission limits shall be performed in accordance with 40 *CFR* Part 60, Appendix A, Reference Methods 5, 7E, and 10 or equivalent methods approved in writing by the Agency at the rated load and speed of the engine. Alternatively, compliance may be demonstrated by verifying that the engine has met the engine certification requirements of 40 *CFR* Part 89 for the Tier 2 emission standards or better for the 1000 kW and 500 kW engines. [10 V.S.A. §556(c)] [§§5-271(b) and 5-404 of the *Regulations*] [40 *CFR* Part 60 Subpart IIII §60.4202]

- (28) **Particulate Matter:** Emissions of particulate matter ("PM") from any fossil fuel burning device, except motorized vehicles, with a heat input rating of less than ten (10) million British Thermal Units per hour ("MMBTU/hr") shall not exceed 0.5 pounds per MMBTU. This emission limit applies to the temporary boiler.

Any emission testing conducted to demonstrate compliance with the above emission

limit shall be performed in accordance with 40 *CFR* Part 60, Appendix A, Reference Method 5 and 202 or an alternative method which has been published in 40 *CFR*, provided the federally approved alternative method has been accepted in writing by the Agency before testing. [§§5-231(3)(a)(i) and 5-404 of the *Regulations*]

- (29) Visible Emissions [Facility Wide]: Emissions of visible air contaminants from any installation at the Facility, except where otherwise noted in this Permit, shall not exceed twenty (20) percent opacity for more than a period or periods aggregating six (6) minutes in any hour and at no time shall visible emissions exceed sixty (60) percent opacity. For wood fuel burning equipment, the exceptions as provided in paragraphs (a) and (b) of this condition shall apply.
- (a) During normal startup operations of the wood fuel burning equipment, emissions of visible air contaminants in excess of the limits specified above may be allowed for a period not to exceed one (1) hour; however, at no time shall such emissions exceed eighty (80) percent opacity.
- (b) During normal soot blowing operations of the wood fuel burning equipment, emissions of visible air contaminants in excess of the limits specified above may be allowed for a period not to exceed thirty (30) minutes during any twenty-four (24) hour period; however, at no time shall such emissions exceed eighty (80) percent opacity.

Any emission testing conducted to demonstrate compliance with the above emission limits shall be performed in accordance with 40 *CFR* Part 51, Appendix M, Methods 203B and 203C, respectively, or equivalent methods approved in writing by the Agency. [§§5-211(2), 5-211(3) and 5-404 of the *Regulations*]

- (30) Volatile Organic Compounds: Emissions of volatile organic compounds from the Facility shall not equal or exceed fifty (50) tons per calendar year per year based on any rolling twelve (12) consecutive calendar month period. [§5-502 of the *Regulations*]
- (31) Hazardous Air Pollutants: Emission of federally regulated hazardous air pollutants (HAPs) from the Facility shall not equal or exceed ten (10) tons per year of any single HAP or twenty-five (25) tons per year of all HAPs combined per calendar year per year based on any rolling twelve (12) consecutive calendar month period. [40 *CFR* Part 63]
- (32) Hazardous Air Contaminants: Emissions of state hazardous air contaminants (HACs) from the applicable operations at the Facility shall not equal or exceed their respective Action Level (found in Appendix C of the *Regulations*) unless the Agency has reviewed and approved such HAC emission under §5-261(3) of the *Regulations*. [§5-261 of the *Regulations*]
- (33) Fugitive Emissions: The Permittee shall take reasonable precautions at all times to control and minimize emissions of fugitive particulate matter from the operations at the Facility. This shall include but not be limited to the following:
- (a) Taking precautions to prevent emissions of fugitive particulate matter (ie. wood dust) during the handling of wood fuel as well as handling and disposal of the

wood waste material collected from the wood processing operations. Any drop loading of wood waste material from a silo, storage bin or similar unit into a receiving vehicle or trailer for subsequent removal shall be done in an area enclosed on at least three sides in order to prevent wind currents from reentraining the material. The Agency may require additional dust control measures, such as requiring an enclosed chute or stocking be used to limit the drop distance, based on Agency inspections of the actual operations; and

- (b) Primarily during the construction phase but not necessarily limited to such times, use wet suppression, calcium chloride applications or other dust control measures as necessary to minimize fugitive dust emissions from all unpaved roads and traffic areas, aggregate handling operations and storage piles at the Facility. The paved portions of the haul roads and traffic areas shall be periodically sprayed with water and swept to prevent buildup of material that may generate fugitive dust emissions.

[10 V.S.A. §§556(c)] [§5-231(4) of the *Regulations*]

- (34) Nuisance and Odor: The Permittee shall not discharge, cause, suffer, allow, or permit from any source whatsoever such quantities of air contaminants or other material which will cause injury, detriment, nuisance or annoyance to any considerable number of people or to the public or which endangers the comfort, repose, health or safety of any such persons or the public or which causes or has a natural tendency to cause injury or damage to business or property. The Permittee shall not discharge, cause, suffer, allow, or permit any emissions of objectionable odors beyond the property line of the premises. [§5-241(1) and (2) of the *Regulations*]

- Compliance Testing and Monitoring -

- (35) Main Boiler:
- (a) The Permittee shall perform emission testing on the main boiler for NO_x, CO, total PM, filterable PM, SO₂ and VOC and shall furnish the Agency with a written report of the results within sixty (60) days after achieving the maximum production rate at which the main boiler will be operated, but not later than one-hundred eighty (180) days after the initial startup of the main boiler. The emission testing shall be performed in order to demonstrate compliance with the emission limitations specified in condition (24) of this Permit. At least thirty (30) days prior to performing the emission testing required above, the Permittee shall submit to the Agency a pretest report prepared in accordance with the Agency's "Source Emission Testing Guidelines".
- (b) After the initial stack test, ongoing compliance for NO_x, and CO shall be demonstrated based on the data from the continuous emissions monitoring system required by condition (41).
- (c) After the initial stack test, ongoing compliance for SO₂ shall be demonstrated based on either:
- (i) A periodic compliance stack testing conducted every five (5) years.
 - (ii) The data from a SO₂ CEMS if required by the Acid Rain Program.
- (d) After the initial stack test, ongoing compliance for total PM and filterable PM shall

be demonstrated by a periodic compliance stack test:

- (i) If the test result from any of the three most recent complete stack compliance tests was greater than or equal to half the permit limit, or if three compliance tests have not yet been completed, then the next stack compliance test is required within 12 months.
 - (ii) If each of the test results from the three most recent complete stack compliance tests are less than half the permit limit, then the next stack test is required within 24 months.
- (e) After the initial stack test, ongoing compliance for VOC shall be demonstrated by a periodic compliance stack test:
- (i) If the previous test result was greater than or equal to half the permit limit, then the next stack test is required within 12 months.
 - (ii) If the previous test result was less than half the permit limit, then the next stack test is required within 24 months.
- (f) Monitoring of ESP: Until the Permittee develops a Continuous Assurance Monitoring (CAM) plan as required in the Title V permit, the Permittee shall electronically record the ESP transformers/rectifiers ("T/R") primary and secondary voltage and current readings at least hourly, and this data must be available for review by the Agency.

[§§5-402(1), 5-404(1) and 5-405(1) of the *Regulations*] [40 CFR 60.8]

(36) Wood Pellet burner/dryer:

- (a) The Permittee shall perform emission testing on the wood pellet burner/dryer exhaust for NO_x, CO, total PM, filterable PM, SO₂ and VOC and shall furnish the Agency with a written report of the results within sixty (60) days after achieving the maximum production rate at which the dryer will be operated, but not later than one-hundred eighty (180) days after the initial startup of the dryer. The emission testing shall be performed in order to demonstrate compliance with the emission limitation(s) specified in condition (25) of this Permit. At least thirty (30) days prior to performing the emission testing required above, the Permittee shall submit to the Agency a pretest report prepared in accordance with the Agency's "Source Emission Testing Guidelines".
- (b) During the VOC emission testing, the average temperature at the inlet to the rotary dryer shall be used to establish the upper limit for the rotary dryer's inlet temperature as required by the VOC MSER and organic HACs HMSER determinations.
- (c) After the initial stack test, ongoing compliance for total PM, filterable PM and SO₂ shall be demonstrated by periodic compliance stack testing conducted every five (5) years.
- (d) After the initial stack test, ongoing compliance for NO_x, CO, and VOC shall be demonstrated by periodic compliance stack testing:
 - (i) If the previous test result was greater than or equal to half the permit limit, then the next stack test is required within 24 months.
 - (ii) If the previous test result was less than half the permit limit, then the next stack test is required within five (5) years.

[§§5-402(1), 5-404(1) and 5-405(1) of the *Regulations*] [40 CFR 60.8]

- (37) Operation and Maintenance Plan [Coen burner/rotary dryer]: The Permittee shall develop an operation and maintenance plan (O&M Plan) for its wood fired Coen Burner and submit a copy of said plan to the Agency for its review within one (1) year after the initial start-up date of the burner. The Permittee shall make any changes to the plan requested by the Agency and resubmit a copy of the revised plan to the Agency within 30 days of its receipt of the Agency's written comments on the plan. The purpose of said O&M Plan shall be to ensure the proper operation and maintenance of the burner in order to ensure optimum performance and continuous compliance with the respective conditions and emission limits of this Permit. Additionally the O&M Plan shall help ensure good control of carbon monoxide emissions. The O&M Plan shall include, but not be limited to:
- (a) In accordance with condition (38), methods for determining a combustion efficiency trigger level for the Coen burner while firing wood fuels. The trigger level shall be based on a minimum of 12 CE tests performed during operating conditions that are representative of the typical operating range of the burner. The initial CE trigger level shall be established within one-hundred eighty (180) days after the initial start-up date of the burner;
 - (b) The procedures to be followed to increase combustion efficiency whenever the combustion efficiency is determined to be less than the trigger level;
 - (c) Provisions for calibration and maintenance of any testing instruments and/or equipment used to measure the concentrations of CO₂ and CO in the dryer exhaust gases.
 - (d) Methods for establishing the maximum operating temperature at the inlet of the rotary dryer that must not be exceeded to help ensure that the VOC emission limit of 0.69 lb/ODT is not exceeded.
 - (e) Descriptions of routine maintenance and inspection procedures;
 - (f) Provisions for maintaining records of maintenance and inspection activities, including both routine activities and corrective actions taken in response to observations of low combustion efficiency; and

Said O&M Plan shall be present at the Facility at all times and shall be made available to representatives of the Agency upon request. The Permittee shall revise said O&M Plan at the Agency's request or as necessary to keep the plan up to date based on operating experience or to reflect equipment or operational changes. [10 V.S.A. §556(c)] [§5-405(1) of the *Regulations*]

- (38) Wood Pellet Plant Coen Burner combustion efficiency: The Permittee shall perform combustion efficiency testing of the Coen burner by measuring the concentrations of carbon dioxide ("CO₂") and carbon monoxide ("CO") in the exhaust gases. This measurement is to be taken before the exhaust gases are diluted with exhaust gas from the wood boiler, or ambient air used to control the temperature of the gases before they contact the wet wood to be dried in the rotary dryer. Said testing shall be performed monthly at a minimum except more frequent testing shall be performed initially to develop the trigger level required as part of the O&M plan permit condition. The Permittee shall perform said testing of the CO₂ and CO concentrations using methods which have been approved in writing in advance by the Agency. The CO₂ and CO

concentrations may be on a wet or dry basis as long as they are both on the same basis. Any instruments and/or equipment used for said testing shall be calibrated and maintained in accordance with the manufacturer's recommendations. Each time testing of the burner exhaust gas is conducted to determine the concentrations of CO₂ and CO, the Permittee shall calculate and record the combustion efficiency of the boiler using methods approved in writing in advance by the Agency. For the purposes of this Permit combustion efficiency shall be determined using the following equation:

$$\text{CE (\%)} = \frac{\text{CO}_2}{\text{CO}_2 + \text{CO}} \times 100$$

Where;

CE = Combustion efficiency,
 CO₂ = % by volume of carbon dioxide in the flue gas, and
 CO = % by volume of carbon monoxide in the flue gas.

[§§5-404(1) and 5-405(1) of the *Regulations*]

- (39) Operation and Maintenance Plan [Wood Waste Dust Collection System Fabric Filters]: The Permittee shall develop and implement an operation and maintenance plan (O&M Plan) for the wood waste dust collection system fabric filters within 180 days after the initial start-up date of the units. The purpose of said O&M Plan shall be to ensure the proper operation and maintenance of the fabric filters in order to ensure optimum performance and continuous compliance with the respective conditions and emission limits of this Permit. The O&M Plan shall include, but not be limited to:
- (a) A description of the planned response(s) to an alarm from the bag leak detection system required in condition (10);
 - (b) A description of the methods used to install, operate, calibrate, and maintain the bag leak detection system(s).
 - (c) A description of routine maintenance and inspection procedures;
 - (d) Provisions for maintaining records of such maintenance and inspections as well as findings of those inspections and any corrective actions which were taken.

Said O&M Plan shall be present at the facility at all times and shall be made available to representatives of the Agency upon request. The Permittee shall revise said O&M Plan at the Agency's request or on its own motion based on operating experience or to reflect equipment or operational changes. [10 V.S.A. §556(c)] [§5-405(1) of the *Regulations*]

- Continuous Emissions Monitoring -

- (40) Acid Rain Program – Monitoring: the Permittee shall comply with all applicable requirements of 40 *CFR* Part 75.
- (41) Prior to commencing facility operations, the Permittee shall install a continuous emission monitoring system (CEMS) and continuous opacity monitoring system (COMS) approved

by the Agency, to measure and permanently record emissions of NO_x, ppm, lb/hr, lb/MMBtu, CO ppm, lb/hr, lb/MMBtu, NH₃ ppm corrected to 7% O₂, CO₂ or O₂ concentration (%), stack gas volumetric flow rate (scfh) and visible emissions (% opacity) discharged to the atmosphere from the Main Boiler exhaust. The Permittee shall install a CEMS approved by the Agency to measure and permanently record the gas volumetric flow rate (scfh) in the boiler exhaust heat recovery duct that is used to direct main boiler exhaust to the rotary dryer. The Permittee shall operate and maintain such systems in good working order, within manufacturer's specifications and as specified below:

- (a) Except for NH₃, the CEMS and COMS shall be designed, installed, calibrated, maintained and operated in such a manner as to meet the requirements of *40 CFR Part 60, Standards of Performance for New Stationary Sources, Subpart A, Subpart Db, 40 CFR Part 60, Appendix B, Performance Specification 1, 2, 3, 4A, and 6, 40 CFR Part 60, Appendix F- Procedure 1 Quality Assurance Requirements for Gas Continuous Emission Monitoring Systems Used for Compliance Determination* and the latest revision of the Agency's *Continuous Emission Monitoring Requirements* (CEM Requirements).
- (b) The NH₃ CEMS shall be designed, installed, calibrated, maintained operated and audited in such a manner as to meet the requirements of *40 CFR Part 60, Appendix F- Procedure 1 Quality Assurance Requirements for Gas Continuous Emission Monitoring Systems Used for Compliance Determination*, and the latest revision of the Agency's *Continuous Emission Monitoring Requirements* (CEM Requirements).
- (c) Prior to the initial installation of the CEMS and COMS, the Permittee shall submit a CEMS and COMS Monitoring Plan (CEM Plan) to the Agency for approval. The CEM Plan must identify how the Permittee proposes to meet Permit condition (41). The CEM Plan must be in accordance with the Agency's CEM Requirements and shall include at a minimum: general information on facility/source and monitoring program, (contacts, system components, installation/certification timelines, etc.); design and installation description and specifications of all components of the proposed CEMS and COMS measurement and data acquisition equipment; proposed procedures for calibration, performance and certification testing; and data acquisition/handling.
- (d) The CEMS and COMS shall be operated, calibrated and maintained continuously, independent of the Main Boiler operations. The Permittee must measure and record valid continuous emission data for the parameters listed in this condition during all periods of the Main Boiler's operation including periods of boiler startup, shutdown, malfunction or emergency conditions, except for periods of CEMS and COMS quality assurance/quality control (QA/QC) activities identified in the approved Quality Assurance Plan, specified in (f) below, routine maintenance, out-of-control operation or uncontrolled malfunction. Nevertheless, the Permittee must obtain valid emissions data for all CEMS parameters listed in this condition and COMS for a minimum of 90% of the Main Boiler's operating hours, based on the calendar quarter.

- (e) To cover the period of operations from the initial startup of the Main Boiler to development of a full CEMS/COMS Quality Assurance Plan, the Permittee shall develop an Interim Quality Assurance Plan (Interim QA Plan) for the above CEMS and COMS that is in accordance with the latest version of CEM Requirements and acceptable to the Agency.
- (f) The Permittee shall develop a Quality Assurance Plan (QA Plan) for the above CEMS and COMS that is in accordance with the CEM Requirements and acceptable to the Agency. Said QA Plan shall incorporate components of both the CEM Plan and Interim QA Plan specified in this condition (c) and (e) and shall satisfactorily document instrumentation, installation, monitoring procedures, calibration procedures, QA/QC procedures, preventive maintenance, data acquisition and reporting procedures as required to demonstrate compliance with this Permit. The Permittee shall formally review the QA Plan annually. The Permittee shall revise and update the QA Plan as necessary, based on the results of this review, or at the request of the Agency or at any other appropriate time to accurately document CEMS and COMS operations. The Permittee shall notify the Agency in writing of the results of the annual QA Plan review. All QA Plan modifications are subject to Agency review and shall not be implemented until approval has been received from the Agency.
- (g) The Permittee shall submit a summary report for each calendar quarter, within thirty (30) days after the close of the quarter, in accordance with the Agency's CEM Requirements and in a format acceptable to the Agency. The report shall include at a minimum, all NO_x and CO, lb/MMBtu, NO_x and CO lb/hr, NH₃ ppm corrected to 7% O₂, CO₂ lb/hr and visible emissions (% opacity) in excess of the emissions limits specified in this Permit, as well as a frequency distribution summary of all valid NO_x and CO lb/MMBtu, NO_x and CO lbs/hr and NH₃ ppm corrected to 7% O₂ data collected, a summary of valid CEMS and COMS data capture, periods of CEMS and COMS downtime and invalid data, and CEMS and COMS calibration, and QA/QC results.
- (h) The NO_x CEMS data shall be recorded in ppm and converted to units of lb/MMBtu (of heat input) and lb/hr, (as NO₂) in terms of 1-hour block averages for reporting.
- (i) The CO CEMS data will be recorded in ppm and converted to units of lb/MMBtu (of heat input) and lb/hr for reporting and the NH₃ data will be recorded and reported in units of ppm, corrected to 7% O₂. The CO and NH₃ CEMS data will both be in terms of 24-hour rolling averages. Valid CO and NH₃ 24-hour rolling averages recorded during operation of the Main Boiler must be calculated on an hourly basis from valid CEMS 1-hour block average data representing at least 75% of the previous 24-hour Main Boiler operating period.
- (j) The CEMS CO and NO_x lb/hr recorded and reported for the Main Boiler will include emissions from the boiler exhaust heat recovery duct to the rotary dryer based on the volumetric flow rate results from the CEMS installed on the heat

recovery duct combined with the volumetric flow rate and the CO and NO_x concentrations measured by the CEMS in the Main Boiler stack.

- (k) COMS shall measure and record visible emissions at least every 10-seconds. COMS data shall be reported in whole numbers in units of % Opacity in terms of 1-minute block averages. Valid COMS 1-minute block averages during source operation must be calculated from at least 5, 10-second measurements. Valid one (1)-minute block averages shall be used for determining compliance with the daily ten (10) % opacity limit, the hourly twenty (20) % opacity time-exception and the instantaneous sixty (60) % opacity and eighty (80) % opacity limits in conditions (18)(d)(i) and (29).
- (l) The Permittee shall maintain records of all measurements, calibrations, QA/QC, maintenance, malfunction, corrective action and downtime associated with the CEMS and COMS monitoring system in a permanent form suitable for inspection as well as copies of all information reported in the quarterly summaries for a period of 5 years following the date of collection of such data or record of submission of such summaries.

[§5-405 of the *Regulations*][40 CFR Part 60]

- Record Keeping and Reporting -

- (42) The Permittee shall notify the Agency and the U.S. EPA in writing of the date construction of the Main Boiler commenced, postmarked no later than thirty (30) days after such date. [10 V.S.A. §556(c)] [40 CFR §60.7(a)(1)]
 - (43) The Permittee shall notify the Agency and the U.S. EPA in writing of the actual date of initial start-up of the Main Boiler postmarked no later than fifteen (15) days after such date. For the purposes of this Permit, the date of initial start-up for the boiler shall be defined as the date on which fuel is first burned in the boiler. Along with this notification, the Permittee shall include the following information: This notification shall include the following information:
 - (a) The design heat input capacity of the boiler(s);
 - (b) Identification of the fuel(s) to be burned in the boiler(s); and
 - (c) The annual capacity factor at which the Permittee anticipates operating the boiler based on all fuels fired and based on each individual fuel fired.
- [10 V.S.A. §556(c)] [40 CFR §60.7(a)(3)] [40 CFR Part 60 Subpart Db §60.49b(a)]
- (44) The Permittee shall notify the Agency in writing of the date of initial start-up of the wood pellet manufacturing operation within fifteen (15) days after such date. [§5-402(1) of the *Regulations*]
 - (45) Record Keeping and Reporting: the Permittee shall maintain records of the following data and submit periodic reports as indicated:

Record Keeping and Reporting Summary				
Record	Recording frequency	Reporting Frequency	Report to:	Authority
Main Boiler wood fuel usage (tons)	Daily	Semi-annually	Agency	40 CFR Part 60 Subpart Db, §5-405(1) of the Regulations
Main Boiler fuel oil (ULSD) usage in gallons	Daily	Semi-annually	Agency	40 CFR Part 60 Subpart Db, §5-405(1) of the Regulations
Main Boiler biennial tune-up	Biennial	Upon Request	U.S. EPA & Agency	40 CFR Part 63 Subpart JJJJJJ
Main Boiler very low sulfur fuel certification as required in Condition (49)	-	Semi-annually	U.S. EPA & Agency	40 CFR Part 60 Subpart Db, §5-405(1) of the Regulations
Coen burner wood fuel usage (tons)	Daily	Semi-annually	Agency	§5-405(1) of the Regulations
Total quantity of wood dried in the rotary dryer (oven dry tons)	Monthly	Semi-annually	Agency	§5-405(1) of the Regulations
Rotary Dryer inlet average temperature	Hourly	None	Maintain on site	
ULSD fuel used during each calendar month in each of the following units: <ul style="list-style-type: none"> • Emergency generators • Diesel fire pump; • Temporary boiler; 	Monthly	Annually	Agency	
Records of sulfur content/certification of ULSD fuel as required by Condition (47)	Each delivery	None	Maintain on site	
Total hours of operation of each of the emergency generators	Monthly	None	Maintain on site	§5-405(1) of the Regulations
For each fabric filter, the pressure drop across the fabric filter	Continuous	None	Maintain on site	
For each fabric filter required to have a bag leak detection system, the bag leak detection system signal of relative level of PM	Continuous	None	Maintain on site	

Record Keeping and Reporting Summary				
Record	Recording frequency	Reporting Frequency	Report to:	Authority
Date, time and description of any corrective action taken in response to the indication of a fabric filter bag leak.	As needed	Semi-annually	Agency	§5-405(1) of the Regulations
Electricity supplied and used by each field of the electrostatic precipitator pursuant monitoring required in Condition (35).	Hourly average	Quarterly	Agency	
CTMS – rotary dryer inlet temperature	Hourly average	None	Maintain on site	
Date and time and description of corrective action taken as a result of any exceedance of the rotary dryer inlet temperature limit.	Per occurrence	Quarterly	Agency	
Date, time and description of any Main Boiler startup that exceeds 24 hours to reach full operating temperature of the SCR and/or oxidative catalyst.	Per occurrence	Within 72 hours of event	Agency	
CEMS periodic reporting required in Condition (41).	Varies	Quarterly	Agency	
Reporting and Recordkeeping required by the Acid Rain Program.	Varies	Varies	U.S. EPA & Agency	
NO _x annual emission limit – 12 month rolling average.	Monthly	Quarterly	Agency	
GHG emissions from Main Boiler, burner/dryer, and diesel engines.	Monthly	Annually	U.S. EPA & Agency	40 CFR Part 98
Annual Registration information as required by condition (50)	Annually	Annually	Agency	§5-802 of the Regulations

A report, signed by a responsible official of the Facility and containing summaries of such records shall be submitted to the Agency for each periodic report within thirty (30) days after the close of each reporting period. [10 V.S.A. §556(c)] [§5-405(1) of the Regulations] [40 CFR Part 60 Subpart Db §60.49b(d)(1)]

- (46) Records of Emergency Diesel/Generator Usage: The Permittee shall maintain records in a log book of all hours of operation of each emergency generator and shall make such records available to the Agency upon request. The records shall include: the dates on which each engine was operated; the number of hours the engine was operated on the

respective date, including the starting and ending time shown on the engine's elapsed hour meter; the purpose of the operation be it emergency, testing or maintenance; and, if the purpose of the operation was for an emergency, the records shall include a brief description of the emergency and its cause. [10 V.S.A. §556(c)] [§5-405(1) of the *Regulations*]

- (47) Records of Fuel Oil Certifications: The Permittee shall obtain from the fuel supplier, for each shipment of fuel oil received at the Facility for use in the diesel engines, temporary boiler and main boiler, a certification or invoice regarding the sulfur content of the fuel oil. The certification or invoice shall include the date of delivery, name of the fuel oil supplier, fuel type, quantity of fuel oil delivered, and a statement from the fuel oil supplier that the oil complies with the specifications for Ultra Low Sulfur Diesel per 40 CFR Part 80 80.510(b) or a statement as to the sulfur content of the fuel oil in percent sulfur by weight. [10 V.S.A. §556(c)] [§5-405(1) of the *Regulations*] [40 CFR Part 60 Subpart III] [40 CFR Part 60 Subpart Db §§60.45b(j), 60.47b(f) and 60.49b(r)(1)]

- (48) Records of all required compliance testing shall include the following:

- (a) the date, place, and time of sampling or measurements;
- (b) the date analyses were performed;
- (c) the company or entity that performed the analyses;
- (d) the analytical techniques or methods used;
- (e) the results of all such analyses; and
- (f) the operating conditions existing at the time of sampling or measurement.

[§5-402(1) and 5-405(1) of the *Regulations*]

- (49) 40 CFR Subpart Db reporting of fuel oil sulfur content: the Permittee shall submit semi-annual reports to the Agency and the U.S. EPA postmarked by the 30th day following the end of each reporting period. The reporting periods shall cover operations from January 1st through June 30th and July 1st through December 31st. Such semi-annual reports shall include the following information:

- (a) Calendar dates covered in the reporting period;
- (b) A certified statement signed by a responsible official of the Facility that only very low sulfur diesel fuel and wood were combusted in the Main Boiler during the reporting period.

[10 V.S.A. §556(c)] [40 CFR Subpart Db §§60.49b(k)(1), 60.49b(r)(1) and 60.49b(w)]

- (50) Annual Registration: The Permittee shall calculate the quantity of emissions of air contaminants from the Facility annually. If the Facility emits more than five (5) tons of any and all air contaminants per year, the Permittee shall register the source with the Secretary of the Agency (hereinafter "Secretary"), and shall renew such registration annually. Each day of operating a source which is subject to registration without a valid, current registration shall constitute a separate violation and subject the Permittee to civil penalties. The registration process shall follow the procedures set forth in Subchapter VIII of the *Regulations*, including the payment of the annual registration fee on or before May 15 of each year. [Subchapter VIII §§5-802, 5-803, 5-807, 5-808 of the *Regulations*]

- (51) The Permittee shall notify the Agency in writing of any proposed physical or operational change at the Facility which may increase the emission rate of any air contaminant to the ambient air regardless of any concurrent emission reductions that may be achieved. This notification requirement includes, but is not limited to, the proposed installation of any new equipment that is a source of air pollution, including the replacement of an existing permitted air pollution source. If the Agency determines that a permit amendment is required, a new application and the appropriate application fee shall be submitted. The permit amendment shall be obtained prior to commencing any such change except as may otherwise be allowed by the *Regulations*. [10 V.S.A. §556(c)] [§§5-402(1) and 5-501 of the *Regulations*]
- (52) The Permittee shall notify the Agency in writing within ten (10) days of any violation, of which it is aware, of any requirements of this Permit. This notification shall include, at a minimum, the cause for the violation and corrective action or preventative maintenance taken to correct the violation. [§§5-402(1) and 5-1015(a)(6) of the *Regulations*]
- (53) All records shall be retained for a minimum period of five (5) years from the date of record and shall be made available to the Agency upon request. [§§5-402(1) and 5-405(1) of the *Regulations*]
- (54) All records, reports, and notifications that are required to be submitted to the Agency by this Permit shall be submitted to:

Agency of Natural Resources
Air Pollution Control Division
103 South Main Street, Bldg 3 South
Waterbury, Vermont 05671-0402.

[§5-402(1) of the *Regulations*]

- (55) All records, reports and notifications that are required to be submitted to the U.S. EPA by this Permit shall be submitted to:

Air Compliance Clerk
U.S. EPA-New England
5 Post Office Sq. Suite 100 (OES04-2)
Boston, MA 02109-3912

[§5-402(1) of the *Regulations*]

- Standard Permit Conditions -

- (56) At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Agency which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. [10 V.S.A. §556(c)]
- (57) Approval to construct or modify under this Permit shall become invalid if construction or modification is not commenced within eighteen (18) months after issuance of this Permit, if construction or modification is discontinued for a period of eighteen (18) months or more, or if construction is not substantially completed within a reasonable time. The Agency may extend any one of these periods upon a satisfactory showing that an extension is justified. The term "commence" as applied to the proposed construction or modification of a source means that the Permittee either has:
- (a) Begun, or caused to begin, a continuous program of actual on-site construction or modification of the source, to be completed within a reasonable time; or
 - (b) Entered into binding agreements or contractual obligations, which cannot be cancelled or modified without substantial loss to the Permittee, to undertake a continuous program of actual on-site construction or modification of the source to be completed within a reasonable time.
- [10 V.S.A. §556(c)] [§5-501 of the *Regulations*]
- (58) These Permit conditions may be suspended, terminated, modified, or revoked for cause and reissued upon the filing of a written request with the Secretary of the Agency (hereinafter "Secretary") or upon the Secretary's own motion. Any modification shall be granted only with the written approval of the Secretary. If the Secretary finds that modification is appropriate, only the conditions subject to modification shall be reopened. The filing of a request for modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated non-compliance does not stay any terms or conditions of this Permit. The Secretary may provide opportunity for public comment on any proposed modification of these conditions. If public comments are solicited, the Secretary shall follow the procedures set forth in 10 V.S.A. §556, as amended. [10 V.S.A. §556(d)]
- (59) The Permittee shall furnish to the Agency, within a reasonable time, any information that the Agency may request in writing to determine whether cause exists to modify, revoke, reissue, or terminate the Permit or to determine compliance with this Permit. Upon request, the Permittee shall also furnish to the Agency copies of records required to be kept by this Permit. [10 V.S.A. §§556(c) and 556a(d)] [§5-402(1) of the *Regulations*]
- (60) By acceptance of this Permit, the Permittee agrees to allow representatives of the State of Vermont access to the properties covered by the Permit, at reasonable times, to

ascertain compliance with Vermont environmental and health statutes and regulations and with this Permit. The Permittee also agrees to give the Agency access to review and copy any records required to be maintained by this Permit, and to sample or monitor at reasonable times to ascertain compliance with this Permit. [10 V.S.A. §§556(c) and 557] [§§5-402(1) and 5-404 of the *Regulations*]

- (61) All data, plans, specifications, analyses and other information submitted or caused to be submitted to the Agency as part of the application for this Permit or an amendment to this Permit shall be complete and truthful and, for Title V permit applications, certified by a responsible official whose designation has been approved by the Secretary. Any such submission which is false or misleading shall be sufficient grounds for denial or revocation of this Permit, and may result in a fine and/or imprisonment under the authority of Vermont statutes. [10 V.S.A. §556(c)] [§5-505 of the *Regulations*]
- (62) For the purpose of establishing whether or not a person has violated or is in violation of any condition of this Permit, nothing in this Permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed. [10 V.S.A. §556(c)]
- (63) Any permit noncompliance could constitute a violation of the federal Clean Air Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. [10 V.S.A. §556(c)]
- (64) It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity to maintain compliance with the conditions of this Permit. [10 V.S.A. §556(c)]
- (65) No person shall build, erect, install or use any article, machine, equipment or other contrivances, the use of which, without resulting in a reduction in the total release of air contaminants to the atmosphere, reduces or conceals an emission which otherwise would constitute a violation of these *Regulations*. [§5-403 of the *Regulations*]
- (66) The provisions of this Permit are severable. If any provision of this Permit, or its application to any person or circumstances is held invalid, illegal, or unenforceable by a court of competent jurisdiction, the invalidity shall not apply to any other portion of this Permit which can be given effect without the invalid provision or application thereof. [10 V.S.A. §556(c)]
- (67) This Permit does not convey any property rights of any sort or any exclusive privilege, nor does it authorize any injury to private property or any invasion of personal rights. [10 V.S.A. §556(c)]
- (68) All subsequent owners and/or operators of this Facility must request an amendment and transfer of this Permit prior to commencing any operations covered by this Permit. All subsequent owners and/or operators shall submit to the Agency as part of the request for amendment all such information the Agency deems necessary to establish legal ownership and/or interest in the property and all such information the Agency deems necessary to ensure the new owners and/or operators will construct and operate the

Facility in compliance with the *Regulations* and this Permit. The terms and conditions of this Permit shall remain in full force and effect after submittal of the request for amendment and until the issuance of an amended Permit or denial. Should the Secretary deny the request, the new owner and/or operator must take whatever action is necessary to comply with the denial. [10 V.S.A. §556] [§5-501 of the *Regulations*]

- (69) Renewable Energy Projects – Right to Appeal to Public Service Board. If this decision relates to a renewable energy plant for which a certificate of public good is required under 30 V.S.A. §248, any appeal of this decision must be filed with the Vermont Public Service Board pursuant to 10 V.S.A. §8506. This section does not apply to a facility that is subject to 10 V.S.A. §1004 (dams before the Federal Energy Regulatory Commission), 10 V.S.A. §1006 (certification of hydroelectric projects) or 10 V.S.A. Chapter 43 (dams). Any appeal under this section must be filed with the Clerk of the Public Service Board within 30 days of the date of this decision; the appellant must file with the Clerk an original and six copies of its appeal. The appellant shall provide notice of the filing of an appeal in accordance with 10 V.S.A. 8504(c)(2), and shall also serve a copy of the Notice of Appeal on the Vermont Department of Public Service. For further information, see the Rules and General Orders of the Public Service Board, available on line at www.psb.vermont.gov. The address for the Public Service Board is 112 State Street, Montpelier, Vermont, 05620-2701 (Tel. # 802-828-2358).
- (70) All Other Projects – Right to Appeal to Environmental Court. Pursuant to 10 V.S.A. Chapter 220, any appeal of this decision must be filed with the clerk of the Environmental Court within 30 days of the date of the decision. The Notice of Appeal must specify the parties taking the appeal and the statutory provision under which each party claims party status; must designate the act or decision appealed from; must name the Environmental Court; and must be signed by the appellant or their attorney. In addition, the appeal must give the address or location and description of the property, project or facility with which the appeal is concerned and the name of the applicant or any permit involved in the appeal. The appellant must also serve a copy of the Notice of Appeal in accordance with Rule 5(b)(4)(B) of the Vermont Rules for Environmental Court Proceedings. For further information, see the Vermont Rules for Environmental Court Proceedings, available on line at www.vermontjudiciary.org. The address for the Environmental Court is 2418 Airport Road, Suite 1, Barre, VT 05641 (Tel. # 802-828-1660).
- (71) Upon the initial startup of the Main Boiler, the conditions of this Permit as set forth above shall supersede all conditions contained in Air Pollution Control Permit to Construct and Operate #AOP-10-042 issued by the Agency to the Permittee for this Facility. [10 V.S.A. §§556(c) and 556a(d)]

The Agency's issuance of this Air Pollution Control Permit relies upon the data, judgment, and other information supplied by the Permittee. The Agency makes no assurances that the air contaminant source approved herein will meet performance objectives or vendor guarantees supplied to the source Permittee. It is the sole responsibility of the Permittee to operate the source in accordance with the conditions herein and with all applicable state and federal standards and regulations.

Dated this _____ day of _____, 2011, in the town of Waterbury, county of Washington, state of Vermont.

Agency of Natural Resources

David K. Mears, Commissioner
Department of Environmental Conservation

By: _____
Richard A. Valentinetti, Director
Air Pollution Control Division

skS
A2 File – Beaver Wood Energy Fair Haven, LLC – Fair Haven