VERMONT AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Air Pollution Control Division

TECHNICAL SUPPORT DOCUMENT FOR PERMIT TO CONSTRUCT AND OPERATE

#AOP-04-027
DEC#NS94-0007

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SOURCE:	Paperboard Manufacturing FiberMark North America, Inc. 161 Wellington Road Brattleboro, Vermont 05302
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1.0 INTRODUCTION

FiberMark, Inc. (hereinafter "FiberMark" and also referred to herein as "Owner/Operator") owns and operates a paperboard manufacturing facility at 161 Wellington Road in Brattleboro, Vermont (also referred to herein as "Facility").

The Facility currently operates under a combined construction and operating permit issued October 4, 2002 (#AOP-95-174). This permit required FiberMark to submit a hazardous most stringent emission rate (HMSER) analysis for the *Hazardous Air Contaminants* ("*HACs*") benzyl alcohol and formaldehyde. FiberMark submitted an application for renewal of their operating permit on August 5, 2004. This Technical Support Document details the Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division (hereinafter "Agency") review for renewal of the Facility's combined Air Pollution Control Permit to Construct and Operate and Title V permit modification resulting from incorporation of the Agency's HMSER determination.

The allowable emissions for the Facility are summarized below:

Table 1-1
Future Allowable Air Contaminant Emissions (tons/year)[1]

PM/PM_{10}	SO_2	NO_x	CO	VOC	Total Criteria	Total HAPs[2]
32.2	441.5	<100	7.6	<50	>10	<10/25

[1] PM/PM_{10} - particulate matter and particulate matter of 10 micrometers in size or smaller; SO_2 - sulfur dioxide; NO_x - oxides of nitrogen measured as NO_2 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. Actual total combined HAPs estimated at <1 tpy.

2.0 FACILITY DESCRIPTION AND LOCATION

2.1 Facility Locations and Surrounding Area

FiberMark owns and operates the paperboard manufacturing facility located at 161 Wellington Road in Brattleboro, Vermont. The area surrounding the Facility is primarily industrial and commercial with neighbors such as The Book Press, Fuller, and C&S Wholesale Warehouse. The Facility is located greater than 100 kilometers from the Great Gulf and Dry River Wilderness areas in New Hampshire and within 100 kilometer of the Lye Brook Wilderness Area in Manchester, Vermont. The Facility location and layout are depicted in Appendix A of this Technical Analysis.

2.2 Facility Description

The Facility is listed under the Standard Industrial Classification ("SIC") Code 2631 - Paperboard Mills. The regulated sources of air contaminant emissions at the Facility are the paper making processes, two (2) No. 6 fuel oil-fired Bigelow boilers rated at 38 million British Thermal Units per hour ("MMBTU/hr") each of heat input, and a temporary No. 2 fuel oil-fired supplemental boiler (hereinafter "supplemental boiler") rated at less than 15 MMBTU/hr of heat input. Specifications for emission sources are presented in Table 2-1.

Table 2-1:
Equipment Specifications

Equipment/Make/Model	capacity/size	fuel type	date of installation
Two (2) Bigelow boilers	38.2 (each) MMBTU/hr [1]	No. 6	1960
Cleaver Brooks Model 200-350 water tube boiler (rental)	14.8	No. 2	1997
Three (3) Safety-Kleen Model 16 parts cleaner	na	na	unknown
One (1) Safety-Kleen Model 81 parts cleaner	na	na	unknown
Paper Coating Line #1	na	na	1988
Paper Coating Line #2	na	na	1985
Two (2) Fuel Storage tanks	25,000 gallon	No. 6 (2% sulfur)	1989

[1] Mite/hr - Million British Thermal Units per hour maximum rated heat input.
na – not applicable

Boilers - The Boiler Room at the FiberMark facility contains two boilers. A third skid- mounted boiler is located outside the Boiler Room and feeds steam inside the boiler room to provide supplemental steam. The two boilers located in the boiler room are identical water tube boilers installed in 1960 and fire No. 6 fuel oil. The two boilers, manufactured by The Bigelow Company, are each equipped with one Model HT66 oil burner manufactured by Cone Company. Each Bigelow boiler has a heat input rating of 38.2 MMBTU/hr[1].

No. 6 fuel oil for the Bigelow boilers is delivered and stored in two underground storage tanks located outside the southeastern end of the facility building. Each underground storage tank has a capacity of 25,000 gallons. A fuel additive, Chemtreat BL-1544, is added to the fuel in the underground storage tanks at time of fuel delivery. The fuel oil is piped to the boiler room and preheated to a temperature of 210° F. A portion of the fuel oil piped to the boiler room is circulated back to the fuel storage tanks to keep the No. 6 fuel oil viscous in the storage tanks.

[1] There is a discrepancy between the heat input rating of 38.2 MMBTU/hr noted in the application, and the information which resides in the Agency's files and registration inventory. The Agency's files list a heat input of 37.5 MMBTU/hr for each unit, while the registration inventory lists 30 MMBTU/hr of heat input. For the purposes of this Technical Analysis, the Agency has utilized the heat input indicated in the operating permit application.

Each Bigelow boiler generates approximately 35,000 pounds per hour of steam at a pressure of 230 psig to the Facility. Approximately ten (10) percent of the steam is utilized for space heating, while the remaining ninety (90) percent is utilized in the manufacturing of paperboard. Process steam is employed by the paper machine and coating dryers.

As stated previously, FiberMark has installed a third boiler to supplement the steam production at the Facility during the higher heat demand months (i.e., winter). This unit is located outside the boiler room and is skid mounted. This unit is a rental boiler and was first installed in 1997. The heat input rating for the boiler is restricted to less than 15 MMBTU/hr. The supplemental boiler only fires No. 2 fuel oil. Historically, this unit has been identified as a Cleaver Brooks Model 200-350 water tube boiler. Fuel oil for this boiler is stored in an above ground portable storage tank located in the spill containment area next to the boiler room. No fuel additives are added to the No. 2 fuel oil.

Paper Production and Coating - Raw materials, including recyclable paper and treatment chemicals, are conveyed to the Facility and stored in the Materials Storage Area. Paper is transferred to a pulper and then pumped as a slurry through piping (located under the floor) to the Stock Prep area. The paper is mixed and cleaned in the Stock Prep area. Cleaning involves the physical separation of impurities (e.g., envelope windows, rubber bans, paper clips, etc.). Dyes for the paper, if necessary, are added at this point. Boil-out and neutralization chemicals may also be added here for cleaning purposes.

The cleaned paper slurry exits the Stock Prep area and is pumped to the "wet end" of the paper machine (identified as Paper Machine No. 1 by FiberMark). The paper is formed and pressed into a thin, continuous, and cohesive sheet of paper. Boil-out and neutralization chemicals may be added here as well as felt washes. The sheet of paper is conveyed through steam heated dryers to remove moisture. The dried paper is passed through calendars which impart physical properties to the paper. The continuous sheet of paper is then wound into a roll at the "Winder."

The roll of paper is either transported to the "Converting" area, the "Shipping" area, or to one of two coating lines.

Converting Area - The Converting Area includes cutting, slitting, winding, and packaging of the paper. The paper is packaged in stretch wrap and is loaded onto trucks for subsequent distribution.

Coating Lines - FiberMark employs two coating lines. Coating Line No. 1 (installed in 1988) consists of a roll coater that applies acrylic-based coatings. The applied coating is then dried using a steam heat dryer. Coating Line No. 2 (installed in 1985) utilizes a roll coater or rod coater to apply the acrylic-based coatings. Applied coatings on Coating Line No. 2 are also dried using a steam heated dryer.

Each coating line uses similar steps to process paper. The roll of paper exiting

the paper machine is unwound and passes through the coater which then applies an acrylic-based film to the surfaces of the paper sheeting. The paper then passes through an air flotation dryer and to an "embosser" which imprints and forms the paper sheeting into the desired format. The paper sheeting is finally rewound at the end of the coating line.

The acrylic-based film is mixed in batches of 60 gallons and consists of equal parts of Rhoplex HA-12 Dispersant and Tamol 165A Dispersant and transferred to the coating line. Dyes may also be mixed in with the coating film.

Parts Cleaning - FiberMark utilizes four (4) Safety-Kleen Parts Cleaning Systems (Three - Model #16 cleaners and one Model #81 cleaner) for cleaning various machine parts [referred to as cold cleaning in the *Regulations* - see §5-253.14(b)]. The units are serviced by Safety Kleen every twelve (12) weeks.

2.3 *Description of Existing Air Pollution Control Equipment*

This Facility is not equipped with air pollution control equipment.

2.4 *Description of Compliance Monitoring Devices*

This Facility is not equipped with devices to continuously monitor the emission of air contaminants to the ambient air.

2.5 *Proposed Modifications to Facility*

No modifications have been proposed for the Facility as part of the current permit renewal.

2.6 *Proposed Limitations*

The Facility presently operates under the limitations imposed by a Permit to Construct and Operate #AOP-95-174. Additional limitations were developed in order to implement the HMSER determination for formaldehyde. Below are summarized the primary limitations on the operation of this Facility and contained in the current permit:

1. No. 2 fuel oil sulfur content restricted to 0.5 percent by weight or less, and annual No. 2 fuel oil usage in the supplemental boiler is limited to 280,000 gallons per year[2].
2. Annual emissions of formaldehyde shall not exceed 65 pounds per year.[3]
3. Annual emissions of NO_x from the Facility shall not exceed 100 tons per year. [4]

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[2] The cap of 280,000 gallons per year on the use of No. 2 fuel oil in the supplemental boiler was imposed in Permit to Construct #AP-97-022b, issued on April 29, 1998. This cap was deleted from the Permit to Construct and Operate #AOP-95-174, issued on October 4, 2002, in error. The fuel cap of 280,000 gallons per year did not result in emissions of greater than 10 tons per year of any one pollutant, nor did the 80,000 gallon increase exceed 10 tons per year of all pollutants combined, as a result the Facility was not subject to modeling requirements prior to installation of the supplemental boiler.

[3] Hazardous Most Stringent Emission Rate determination, 2004.

[4] Emission cap implemented to avoid NO_x RACT.

2.7 Identification of Insignificant and Exempt Activities

Activities which qualify as an "insignificant activity" pursuant to §5-1002(h) of the *Regulations* need not be considered when determining the applicability of Subchapter X of the *Regulations* and must only be listed as such within the operating permit application. Additionally, guidance provided by the U.S. EPA (entitled "White Paper for Streamlined Development of Part 70 Permit Applications") lists activities which are considered as "trivial" sources of air contaminants, and may be presumptively omitted from operating permit applications.

Although not required for determining applicability with Subchapter X, quantifiable emissions from "insignificant activities" must be included for the purposes of establishing whether or not a source is subject to other air pollution control requirements, including, but not limited to: reasonably available control technology, major source status, and Title V operating permit applicability.

In its application, FiberMark has not identified any equipment or activities as insignificant or trivial. However, the Agency is aware of the following activities or equipment at the Facility:

1. Forklifts;
2. Repair and maintenance shop activities;
3. Soldering and welding equipment;
4. Ventilating units used for human comfort;
5. Fuel oil and propane storage tanks [No. 6 oil - (2) 25,000 gallon storage capacity (installed post 1984)
6. Chemical storage tanks (<10,000 gallon storage capacity each);
7. Paper testing laboratory; and
8. Intermittent construction activities.

Emissions were not quantified from the above insignificant activities because they are considered negligible or not quantifiable. The exclusion of emissions produced by the insignificant and trivial activities does not alter the applicability status of the Facility under Subchapter X of the *Regulations*.

3.0 QUANTIFICATION OF POLLUTANTS

The quantification of emissions from a stationary source is necessary in order to establish the regulatory review process necessary for the operating permit application and to determine applicability with various air pollution control requirements. These determinations are normally based upon allowable emissions. Allowable emission is defined as the emission rate calculated using the maximum rated capacity of the source and, if applicable, either: (a) the applicable emission standard contained in the Regulations, if any, or (b) the emission rate or design, operational or equipment standard specified in any order or agreement issued under the Regulations that is state and federally enforceable. An applicant may impose in its application an emission rate or design, or an operational or equipment limitation which may be incorporated in the Permit to restrict operation to a lower level. Such limitations may include fuel restrictions or production limits.

3.1 Designation of the Facility for the Permit to Operate

The designation of the Facility for the Permit to Operate is determined by its allowable emissions following issuance of the permit, taking into account any limitations contained in the permit that restrict the Facility's allowable emissions. The proposed Facility has annual allowable emissions greater then 10 tpy. The air contaminant sources at the Facility are presented in Table 2-1. The calculated allowable emissions for each source are detailed in Table 3-1, Table 3-2, and Table 3-3. An emissions summary is presented in Table 3-4.

Emissions from Boilers – To estimate emissions from the boilers, the Agency used emission factors published by the U.S. EPA in the *Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources* (5th Edition including Supplements), estimated fuel consumption in the two Bigelow boilers, and the annual fuel cap imposed on the supplemental boiler.

The boilers are the only sources of NO_x at this Facility and are therefore the only emission units affected by the 100 tpy emission cap. As stated previously, the Agency has limited NO_x emissions from the Facility to less than 100 tpy. The Agency has included monitoring, record keeping, and reporting requirements in the Permit to assure compliance with this emission cap.

The supplemental boiler is subject to a fuel cap of 280,000 gallons of No. 2 fuel oil. This emission cap was approved by the Agency in the Permit to Construct #AP-97-022b issued on April 29, 1998, and was imposed in order to keep emissions from the boiler below modeling thresholds.

Although a fuel cap has not been imposed on the fuel burned in the Bigelow boilers, 2,749,000 gallons of No. 6 fuel oil was used to estimate annual emissions from the boilers. This is the estimated quantity of No. 6 fuel that could be burned in the Bigelow boilers without exceeding the NO_x emissions cap.

Emissions from Paper Making and Paper Coating -- FiberMark currently submits annual VOC emission inventories in accordance with Subchapter VIII of the *Regulations*. The inventories detail the emissions produced by the paper coating operations, the board machine, and the cold cleaners. For paper coatings, FiberMark calculates the VOC emission rates assuming that 100% of each volatile constituent is emitted to the atmosphere. For board machine emissions, FiberMark relies on guidance published in the *Federal Register* (Vol. 63, No. 72, p. 18526) to assume that only 20% of each VOC constituent is emitted to the atmosphere. For cold cleaning units, FiberMark uses a mass balance (based on manifest data) to assume that 25% of the solvent is emitted to the atmosphere. FiberMark uses Material Safety Data Sheets to determine the composition of each chemical product and usage records to determine the amount of each product used at the Facility. The Agency also assumes that 100% of the fuel treatment is emitted as VOC.

The emission inventories indicate that the Facility emitted 11.5 tons of VOC in the year 2002 and 11.3 tons of VOC in the year 2003. The Agency assumes that the average of the VOC emission rates from the previous two years is representative of expected actual emissions. Based on the emission inventories,

the average actual VOC emissions are 11.4 tons per year.

Using a multiplying factor, the Agency scales actual emissions to represent the allowable emissions. The Agency examines operating schedule and production capacity to develop the scaling factor. First, based on the information listed in the application, the Agency assumes that FiberMark operates 8,760 hours per year. Second, the Agency assumes that the Facility operates at 50% production capacity. Based on these assumptions, the Agency has concluded that a multiplying factor of 2 is appropriate to calculate allowable emissions. Therefore, the Agency estimates the allowable VOC emissions from the paper making and coating operations to be 22.8 tons per year.

Table 3-1 : Estimated Criteria Pollutant Emissions: Two (2) Main Boilers					
Pollutant	**Emission Factor (lb/1000 gal)**	**Emission Rate (lbs/yr)**	**Emission Rate (tpy)**	**Source:**	**Calculation Base:**
PM/PM10	23.1	63,501.9	31.8	AP-42, Fuel Oil Combustion, Tables 1.3-1 and 1.3-2, No. 6 oil-fired. 10-96	Estimated annual fuel usage of 2,749,000 gallons No. 6 fuel oil, 2% sulfur.
SO_2	314	863,186.0	431.6		
NO_x[5]	72.74	199,962.3	100.0		
CO	5	13,745.0	6.9		
NMTOC (VOCs)	0.76	2089.2	1.0	AP-42, Fuel Oil Combustion, Tables 1.3-3, 10-96	
HAPs	0.15	412.4	0.2	AP-42, Fuel Oil Combustion, Tables 1.3-9 and 1.3-11, 10-96	

[5] The permit requires fuel certifications to state Nitrogen content of the No. 6 fuel oil. In the event that a fuel supplier does not state the nitrogen content of a specific delivery of No. 6 fuel oil, the Permittee shall assume that the No. 6 fuel oil contains 0.5% nitrogen, by weight. This value is a conservative estimate of the Nitrogen content of No. 6 fuel oil, as determined from a review of current (2000-2004) fuel certifications from regional fuel suppliers. This value should be reevaluated upon permit renewal. The emission factor of 72.74 pounds of NO_x per 1000 gallons of fuel burned is based on the following equation (AP-42 Table 1.3-2):

$$\frac{[20.54 + 104.39N]X}{[2x10^6]} = NO_x, (tons)$$

where: X = total monthly No. 6 fuel oil consumption, in gallons, and
N = monthly weighted average nitrogen content of the No. 6 fuel oil (e.g. if fuel contains 0.5% nitrogen by weight, N = 0.5).

Table 3-2 : Estimated Criteria Pollutant Emissions: Supplemental Boiler					
Pollutant	**Emission Factor (lb/1000 gal)**	**Emission Rate (lbs/yr)**	**Emission Rate (tpy)**	**Source:**	**Calculation Base:**
PM/PM10	3.2	896.0	0.45	AP-42, Fuel Oil Combustion, Tables 1.3-1 and 1.3-2, distillate fuel. 10-96	Annual fuel cap of 280,000 gallons No. 2 fuel oil, 0.5% sulfur.
SO_2	71	19,880.0	9.94		
NO_x	20	5,600.0	2.80		
CO	5	1,400.0	0.70		
NMTOC (VOCs)	0.34	95.2	0.05	AP-42, Fuel Oil Combustion, Tables 1.3-3, 10-96	
HAPs	0.04	11.5	0.01	AP-42, Fuel Oil Combustion, Tables 1.3-9 and 1.3-11, 10-96	

Summarized in Table 3-3 below are the future allowable emissions for the Facility.

Table 3-3: Summary of Future Allowable Criteria Pollutant Emissions (tons/year)						
Source	**PM/PM10**	**SO2**	**CO**	**NOx**	**VOCs**	**HAPs**
Boilers‡	32.2	441.5	7.6	<100	1.1	0.2
Paper Making and Coating	-	-	-	-	22.8	<0.01
Total:	32.2	441.5	7.6	<100	23.9	0.2

‡ Given that emission factors used to calculate emissions from the supplemental boiler burning No. 2 fuel oil are smaller then emission factors for the two Bigelow boilers firing No. 6 fuel oil, maximum allowable emissions from the Facility boilers were calculated assuming that the two Bigelow boilers consumed 2,749,000 gallons per year of No. 6 fuel, and that the supplemental boiler was not used.

3.2 Designation of Existing Stationary Source for the Permit to Construct

No modifications were proposed as part of the permit renewal application.

4.0 APPLICABLE REQUIREMENTS

The compliance analyses and determinations in this technical analysis rely on data and representations provided by the Owner/Operator. Any statements and conclusions regarding the compliance status contained herein are not binding against the state of Vermont in any future legal or administrative proceedings. The Agency will assess compliance with these standards during any inspections of the Facility. The inspections

will include confirmation of the proper operation and maintenance of equipment, visual observation of emission points, and review of written records required in the permit.

4.1 Vermont Air Pollution Control Regulations and Statutes

§5-201 and §5-202 - Open Burning Prohibited and Permissible Opening Burning

Open burning of materials is prohibited except in conformance with the requirements of this section. Based on the application submittal and information available to the Agency, the Facility is in compliance with this requirement.

§5-211(1) - Prohibition of Visible Air Contaminants - Installations constructed prior to April 30, 1970

This standard applies to the Bigelow boilers. FiberMark has stated that it complies with the standard based on their equipment maintenance.

To assure compliance with the particulate standard the Agency has included periodic monitoring and reporting requirements for the Bigelow boilers in the Permit. FiberMark must perform monthly testing to determine the CO and either CO_2 or O_2 concentrations in the exhaust gas streams of the Bigelow boilers. With these measurements, FiberMark must then compute boiler efficiency and make any operational or maintenance-related changes to assure that the boilers are running at peak efficiency. FiberMark is also required to file semi-annual reports to the Agency detailing the results of the boiler efficiency testing and any corrective measures taken.

§5-211(2) - Prohibition of Visible Air Contaminants - Installations constructed subsequent to April 30, 1970

This standard applies to the supplemental No. 2 oil-fired boiler and the paper making equipment. FiberMark has stated that it complies with the standard based on their equipment maintenance.

Due to the clean burning nature of No. 2 oil, the Agency expects this boiler to comply with the visible emission standard. For this reason, the Agency has concluded that it is unnecessary to apply periodic monitoring requirements to this boiler to assure compliance with the visible emission standard. Given the nature of operations, the paper making process is expected to produce negligible visible emissions.

§5-221(1) - Prohibition of Potentially Polluting Materials in Fuel; Sulfur Limitation in Fuel

This subsection prohibits the use of any fuel, in stationary fuel burning equipment, with a sulfur content more than 2.0% by weight. This prohibition applies to all stationary fuel burning equipment used on-site. Compliance with this standard is based on fuel analyses following the procedures prescribed by the American Society for Testing and Materials.

FiberMark has stated that it complies with this standard based on their

contract with fuel suppliers.

To provide a reasonable assurance of compliance with this standard, the Agency has included periodic monitoring and reporting requirements in the Permit. The Permittee is required to obtain fuel supplier certifications detailing the sulfur content of fuel oil delivered to the Facility, and submit semi-annual reports containing the fuel supplier certifications.

§5-231(3)(a) - Prohibition of Particulate Matter; Combustion Contaminants

Based on the application submitted and information available to the Agency, this Facility currently has fuel burning equipment subject to this regulation. The allowable emissions of particulate matter from the subject equipment are shown in Table 4-1.

Table 4-1: Equipment Subject to §5-231(3)(a)

Equipment ID	*Size/Capacity*	*Emission Standard*	*Allowable Emissions*
Bigelow – Boiler #1	38.2 MMBTU/hr	0.27 lb/MMBTU	10.3 lb/hr
Bigelow – Boiler #2	38.2 MMBTU/hr	0.27 lb/MMBTU	10.3 lb/hr
Supplemental boiler	<15 MMBTU/hr	0.43 lb/MMBTU	6.0 lb/hr

Compliance with the standard in §5-231(3)(a)(ii) of the *Regulations* is generally based on the use of Reference Method 5 (40 *CFR* Part 60, Appendix A).

FiberMark has stated that it complies with the standard based on their emission estimates, and the scheduled maintenance of the boilers.

The Agency has included periodic monitoring and reporting requirements for the Bigelow boilers in the Permit to assure compliance with the particulate standard. The Permittee must perform monthly testing to determine the CO and either CO_2 or O_2 concentrations in the exhaust gas streams of the Bigelow boilers. With these measurements, the Permittee must then compute boiler efficiency and make any operational or maintenance-related changes to assure that the boilers are running at peak efficiency. These requirements are premised on a correlation between boiler efficiency and particulate/visible emission rates. The Permittee is also required to file semi-annual reports to the Agency detailing the results of the boiler efficiency testing and any corrective measures taken.

Because of the clean burning nature of No. 2 oil, the Agency expects the No. 2 oil-fired supplemental boiler (Supplemental <15 MMBTU/hr) to comply with the particulate emission standard. For this reason, the Agency has concluded that it is unnecessary to apply periodic monitoring requirements to the supplemental boiler.

The Agency will also assess visible emissions from the fuel burning equipment during site inspections. If visible emissions are observed to be in excess of the respective standard, the Agency may require performance of stack testing.

§5-231(4) - Prohibition of Particulate Matter; Fugitive Particulate Matter

This section requires the use of fugitive PM control equipment on all process operations and the application of reasonable precautions to prevent PM from becoming airborne during the handling, transportation, and storage of materials, or use of roads. This requirement applies to the entire Facility, and the Facility is therefore expected to comply with the fugitive emission limitations of this section.

Based on the application submittal and information available to the Agency, the Facility currently is not considered a source of fugitive particulate matter subject to this regulation. The Facility is required to take reasonable precautions at all times to control and minimize emissions of fugitive particulate matter from the operations at the Facility.

The Agency will verify compliance with this standard in the future during any inspections of the Facility. The inspections will include confirmation of the proper operation of any fugitive particulate matter control measures and visual observations of any emission points.

§5-241(1) & (2) - Prohibition of Nuisance and Odor

This requirement applies to the entire Facility and prohibits the discharge of air contaminants that would be a nuisance to the public or the discharge of objectionable odors beyond the property-line of the Facility.

Based on the application submittal and information available to the Agency, the Facility currently is in compliance with this regulation. The Agency will verify compliance with this requirement in the future during any inspections of the Facility. Additionally, the Agency investigates all complaints that it receives in order to determine whether or not there is a violation of this requirement.

Section 5-251.3 – Control of Nitrogen Oxide Emissions

This regulation applies to stationary sources with NO_x emissions greater than 100 tons per year. NO_x emissions have been capped at 100 tons per year and the Facility is not required to comply with this regulation.

§5-253.10 - Control of Volatile Organic Compounds - Paper Coating.

This section regulates the release of VOCs from all paper coating units, except units within a paper coating source that have actual emissions without control devices from all paper coating units within the source of less than fifteen (15) pounds of VOCs per day ("lbs/day"). Once a source becomes subject to this subsection, it shall remain so even if emission levels subsequently fall below the applicable threshold.

Based on the registration data FiberMark submitted for the year 2001, the Agency estimates that VOC emissions resulting from the application of coatings and dyes totaled 8,745 pounds. Assuming that the Facility operates 365 days per year, the Agency estimates that the daily VOC emissions from the coating operations approach 24 pounds per day. Using this estimate, the Agency has determined that FiberMark is subject to §5-253.10 of the *Regulations*.

As a subject source, FiberMark shall not cause, allow or permit the daily-weighted average VOC content of paper coatings applied to exceed 2.9 pounds of VOCs per gallon (excluding water and exempt compounds).

To assure compliance with this standard, the Agency has included monitoring and record keeping requirements in the Permit. The Permittee is required to record the amount of each paper coating used monthly, as well as the density, the volatile organic compound content (expressed as a weight percentage and volume percentage), and the solids content (expressed as a weight percentage) of each paper coating. Additionally, the Permittee must submit a summary of the VOC and solids content for each coating used on a semi-annual basis.

§5-253.14 - Control of Volatile Organic Compounds - Solvent Metal Cleaning.

This subsection applies to all cold cleaning operations, open-top vapor degreasing operations with an open area of 10.8 square feet or greater, and conveyorized degreasing operations with an air/solvent interface 21.5 square feet or greater. The cold cleaning standards require the units to be designed and equipped with a cover easily operated with one hand if the vapor pressure of the solvent exceeds 0.3 psi and an internal drainage area and additional control measures if the vapor pressure of the solvent exceeds 0.6 psi. All cold cleaning operations regardless of solvent vapor pressure must:

(i) Provide a permanent, legible, conspicuous label, summarizing the operating requirements;
(ii) Store waste solvent in covered containers;
(iii) Close the cover whenever parts are not being handled in the cleaner;
(iv) Drain the cleaned parts until dripping ceases;
(v) Supply a solvent spray, if used, that ensures a solid fluid stream at a pressure that does not exceed 10 pounds per square inch gauge;
(vi) Degrease only materials that are neither porous nor absorbent; and
(vii) Cease operation of the unit upon the detection of any visible solvent leak until such solvent leak is repaired."

That applicant has stated that the Safety-Kleen cold cleaning unit and solvent used at the Facility has a vapor pressure (0.008 psi) less than the

applicable levels requiring controls other than the requirements of parts (iv) through (x) above and that the unit is designed and operated in accordance with those provisions.

The Agency will assess compliance with this regulation in the future during any inspections of the Facility. The inspections will include confirmation of the solvent used and the proper design and operation of the unit.

§5-261 - Control of Hazardous Air Contaminants
See Section 5.0 below.

§5-402 - Written Reports When Required
This section gives the Agency authority to require the Facility to submit reports summarizing records required to be maintained by the Agency.

§5-403 – Circumvention
This section prohibits the dilution or concealment of an air discharge in order to avoid air pollution control requirements. The Agency will assess compliance with this regulation in the future during any inspections of the Facility.

4.2 Federal Air Pollution Control Regulations and the Clean Air Act

***Clean Air Act*, Title I - Air Pollution Prevention and Control, Part A - Air Quality and Emission Limitations, §111 - Standards of Performance for New Stationary Sources.** FiberMark is subject to one applicable federal new source performance standard ("NSPS") and subject to a record keeping requirement in another NSPS established under §111 of the federal *Clean Air Act* and promulgated within 40 *CFR* Part 60.

40 C.F.R. Part 60 Subpart Dc – *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*
The supplemental boiler is considered an affected facility subject to 40 *CFR* Part 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. Subpart Dc specifies emission limitations for PM/PM_{10}, SO_2, and opacity, as well as monitoring, record keeping, notification and reporting requirements. Applicability of Subpart Dc also subjects FiberMark to the general notification, record keeping, and other requirements of 40 *CFR* Part 60 Subpart A.

FiberMark has stated that it complies with these requirements.

Permit conditions require FiberMark to monitor fuel consumption in the supplemental boiler, to obtain fuel supplier certifications stating the sulfur content of the fuel oil fired in the boiler, and to submit semi-annual reports detailing these records. These requirements provide a reasonable assurance of compliance with Subpart Dc.

40 C.F.R. Part 60 Subpart Kb – ***Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984***

"(a)Except as provided in paragraphs (b), (c), and (d) of this section, the affected facility to which this Subpart applies is each storage vessel with a capacity greater than or equal to 40 cubic meters (10,562 gallons) that is used to store volatile organic liquids for which construction, reconstruction, or modification is commenced after July 23, 1984."

For all storage vessels with a design capacity less than 75 m^3 (19,084 gallons) the only requirements of this regulations is to keep readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel. For storage vessels greater than 75 m^3 (19084 gallons) and storing a volatile organic liquid with a maximum true vapor pressure less than 15.0 kPa (2.18 psi), the only additional requirement of the regulation is notify the EPA Administrator within 30 days when the vapor pressure exceeds the respective value.

The record keeping requirements specified by Subpart Kb apply to the two 25,000 gallon storage tanks that FiberMark uses to store No. 6 fuel oil.

Section 112 of the Clean Air Act - ***National Emission Standards for Hazardous Air Pollutants (NESHAPs).***

NESHAPs are promulgated under 40 C.F.R. Part 61 and 63. No NESHAPs currently apply to the Facility. Total HAP emissions are estimated to be less than one (1) tpy.

40 C.F.R. Part 64 – Compliance Assurance Monitoring

Pursuant to requirements concerning enhanced monitoring and compliance certification under the *Clean Air Act ("CAA")*, EPA promulgated new regulation on October 22, 1997 and revised regulation on January 12, 2001. These new requirements implemented compliance assurance monitoring ("CAM") for major stationary sources of air pollution that are required to obtain operating permits under Title V of the *CAA*. Subject to certain exemptions, the new regulations require owners or operators of such sources to conduct monitoring that satisfies particular criteria established in the rule to provide a reasonable assurance of compliance with applicable requirements under the *CAA*. Monitoring is proposed to focus on emissions units that rely on pollution control device equipment to achieve compliance with the applicable standards. The regulations also provide procedures for coordinating these requirements with the operating permits program regulations.

Section 64.2 of 40 C.F.R. specifies that each pollutant specific emission unit at a facility that meets a three-part test is subject to the requirements for CAM. An emission unit must:

(1) be subject to an emission limit or standard;

(2) use a control device to achieve compliance;
(3) have **pre-control** emissions that exceed or are equivalent to the major source threshold in 40 *CFR* Part 70 (i.e., 10 tpy individual HAP, 25 tpy total HAP, 50 tpy VOCs, or 100 tpy for any other air contaminant).

Equipment at the Facility that meets the first criteria are the boilers. The Facility does have emissions of SO_2 in excess of major source thresholds. However, none of the equipment in use at the Facility, including the boilers, utilizes a control device, and therefore are not subject to CAM. As none of the equipment at the Facility meet the three criteria listed above the Facility is currently not subject to CAM.

4.3 Non-Applicable Requirements For Which a Permit Shield Provision Has Been Requested

Pursuant to §5-1015(a)(14) of the Regulations, an owner/operator may request to be shielded from potentially applicable state or federal requirements. The Facility has not requested a permit shield from any specific, potentially applicable requirement. Accordingly, the Agency has not granted any permit shields for the Facility.

5.0 CONTROL TECHNOLOGY REVIEW FOR MAJOR SOURCES AND MAJOR MODIFICATIONS

Pursuant to §5-261 of the Regulations each new major source and 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 emission increase, respectively. The Facility is not undergoing changes subject to new source review, therefore this section is not applicable.

6.0 AMBIENT AIR QUALITY IMPACT EVALUATION

An ambient air quality impact evaluation 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. The Agency's implementation procedures concerning the need for an ambient air quality impact evaluation under §5-406(1) of the Regulations, specifies that such analyses may be required when a project results in an allowable emissions increase of ten (10) tons per year or more of any air contaminant, excluding VOCs. Additionally, the Agency may require an air quality impact evaluation where the short-term allowable emission rates will significantly increase as a result of a project.

The Facility is not undergoing changes subject to new source review, therefore this section is not applicable.

7.0 HAZARDOUS AIR CONTAMINANTS

The emissions of hazardous air contaminants ("HACs") are regulated under to §5-261 of the Regulations. The Owner/Operator of a source must quantify its emissions of HACs regulated by this rule. Any Facility whose emission rate of a HAC exceeds its respective Action Level ("AL") is subject to the rule for the HAC, and the Owner/Operator must then demonstrate that the emissions of the HAC are minimized to the greatest extent practicable by achieving the Hazardous Most Stringent Emission Rate ("HMSER") for

that HAC. If the emission rate of any HAC after achieving HMSER is still estimated to exceed its action level after achieving HMSER, an air quality impact evaluation may be required to further assess the ambient impacts for compliance with the Hazardous Ambient Air Standard ("HAAS") or Stationary Source Hazardous Air Impact Standard ("SSHAIS"). The emission of hazardous air pollutants ("HAPs") may also be regulated separately under to §112 of the Federal Clean Air Act. Any applicable HAP regulations are discussed under Section 4 above.

7.1 Quantification of HAC Emissions

Solid fuel burning equipment (not including incinerators) installed or constructed prior to January 1, 1993, and all fuel burning equipment which combusts virgin liquid or gaseous fuel is exempted from review pursuant to §5-261(1)(b)(ii) of the *Regulations*. Additionally, fuel burning equipment burning waste oil that comply with the requirements of §5-221(2) of the *Regulations* are also not subject to the requirements of §5-261 of the *Regulations*. Consequently, no fuel burning equipment used at the Facility qualified for review of HAC emissions under §5-261 of the *Regulations*.

The production of paper products does result in the discharge of HACs at the Facility. The Agency has quantified and compared the HAC emissions to the respective Action Levels (found in Appendix C of the *Regulations*) in order to determine if §5-261 of the *Regulations* is applicable to the Facility.

As described in the Technical Analysis prepared for AOP-95-174 the Agency evaluated HAC emissions and determined that FiberMark's emissions of formaldehyde and benzyl alcohol were in excess of the respective ALs. As a result, FiberMark was subject to §5-261 of the *Regulations*, and was required to submit a HMSER determination to the Agency for formaldehyde and benzyl alcohol.

7.2 HMSER Selection

Pursuant to §5-261 of the *Vermont Air Pollution Control Regulations (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 shall achieve the HMSER for the respective HAC. FiberMark submitted an HMSER report to the Agency in March 2003, pursuant to a requirement of the Initial Operating Permit (#AOP-95-174) issued October 4, 2002. The permit required that FiberMark develop HMSER for two compounds, formaldehyde and benzyl alcohol, that were being emitted from the Facility at levels exceeding their respective Action Levels.

The Agency's review of the HMSER report indicated that subsequent to issuance of AOP-95-174, FiberMark discontinued the use of products containing benzyl alcohol. As a result, submittal of an HMSER determination for benzyl alcohol was not required.

Various control strategies for controlling formaldehyde were explored in FiberMark's HMSER report. Two compounds containing formaldehyde (Rhoplex HA-12 and Michem) are used in FiberMark's standard clear coating and standard pigment coating. As part of their research FiberMark reviewed the chemistry

associated with these products, and tested the hypothesis that formaldehyde scavenging occurs during the paper-coating process.

Scavenging reactions are based on the assumption that certain materials may react with (or scavenge) free formaldehyde to reduce formaldehyde emissions. Common formaldehyde scavengers include ammonia and urea. Approximately 95% of FiberMark's coating process utilizes the two formaldehyde-containing products (Rhoplex HA-12 and Michem) in combination with a product containing ammonia (Tamol). To test the hypothesis that formaldehyde scavenging was occurring in the coating processes, FiberMark had their vendor, RhomNova, perform analytical tests that conservatively replicated the dwell times and oven temperatures of their coating processes.

The two coatings of interest were the standard clear coating and the standard pigment coating. Approximately 95% of the coating used at FiberMark is the standard clear coating, the remainder is pigment coating. The general composition of each coating is shown in Table 7-1:

Table 7-1:
Composition of Standard Clear and Pigment Coating

Coating	Percent Rhoplex HA-12 (% by weight)	Percent Michem (% by weight)	Percent Tamol 165A (% by weight)
Standard Coating (SC)	49.4%	1.1% (maximum)	49.4%
Pigment Coating (PC)	23.5%	na	na
Compound of Interest	formaldehyde	formaldehyde	ammonia

Two headspace analyses of each of the coatings of interest were analyzed by GC/MS using a full evaporation technique. The testing parameters and results, as well as the operating temperatures used in FiberMark's coating process, are compared in Table 7-2.

Based on the analytical results it was assumed that the maximum concentration of formaldehyde emitted from the standard coating is equal to the method detection limit of 5 parts per million (ppm). Formaldehyde emissions from the pigment coating were estimated to be 43 ppm, the maximum concentration measured by analytical testing.

Table 7-2:
Analytical Conditions*

	Oven Temperature	Dwell Time (minutes)	Formaldehyde Emissions (ppm)	Method Detection Limit (ppm)
Standard Coating				
Headspace Test 1	302 °F	4	Non-detect	5
Headspace Test 2	302 °F	30	Non-detect	5
Pigment Coating				
Headspace Test 1	250 °F	2	36	5
Headspace Test 2	250 °F	2	43	5

** Actual Facility operating conditions are 180 to 220 °F for 6-18 seconds.*

In 2002 FiberMark used approximately 805,887 pounds of standard coating and 46,729 pounds of pigment coating; yielding approximately 4 and 2 pounds per year of formaldehyde emissions from each coating, respectively. Table 7-3 compares the annual formaldehyde emissions calculated assuming that all of the formaldehyde present in the coatings is being released (mass balance), to the laboratory test results which measured actual formaldehyde emissions from the coatings.

Table 7-3:
Comparison of Formaldehyde Emissions from Coatings

Coating Type	Annual Emission Estimates, lb/yr (based on 2002 annual usages)		Testing Results Emission Rate, lb/8-hr	Formaldehyde Action Level, lb/8-hr
	Mass Balance	Laboratory Testing		
Standard Coating	194.75	4.03	0.0037	
Pigment Coating	10.25	2.01	0.0018	
Total	***205***	***6.04***	***0.0055***	***0.0066***

Because the analytical results demonstrate that formaldehyde emissions from the standard and pigment coatings are significantly lower then emissions estimated using a mass balance approach, annual formaldehyde emissions should be calculated and reported using the formulas below:

Standard Coating:

$$Fa_{sc} = \frac{5 \times C_s}{1 \times 10^6}$$ Where:

Fa_{sc}= Annual Formaldehyde Emissions, in lbs/year, from the standard clear coating.
C_s = Annual Standard Coating Usage, in lbs/year

Pigment Coating:

$$Fa_{pc} = \frac{43 \times C_p}{1 \times 10^6}$$ Where:

Fa_{pc}= Annual Formaldehyde Emissions, in lbs/year, from the standard pigment coating.
C_p = Annual Pigment Coating Usage, in lbs/year

Despite the reduction in emissions resulting from scavenging reactions, formaldehyde emissions from the Facility remain in excess of the current Action Level of 0.0064 pounds per 8 hour period. According to 2003 registration information, formaldehyde emissions for the year were 17.7 pounds, or 0.016 pounds per 8 hour period. To account for future increases in coating usage, the Permittee has requested an annual cap on formaldehyde emissions of 65 pounds

per year.

Based on these results the Agency has determined HMSER for formaldehyde to be 65 pounds per year, which correlates to an emission rate of 0.059 pounds per 8 hour period.

If any of the formaldehyde-containing products utilized in these coatings are changed (unless that change involves only the reduction of formaldehyde) FiberMark is required to notify the Agency in writing of the change. Use of any new products shall not begin until the Permittee receives written approval from the Agency. Additional analysis of any new products may be required prior to use of any new product. Additional analysis of any new products may be required before an adjusted emission factor (such as those presented above) may be used for any new product.

If in the future FiberMark resumes the use of products containing benzyl alcohol, the Facility shall report (through annual registration) actual benzyl alcohol emissions. Benzyl alcohol emissions shall be based using mass balance methods, with the assumption that all benzyl alcohol contained in said products is emitted, unless an alternative method of calculating emissions is submitted by the Facility and approved by the Agency prior to submission of the annual registration report.

This HMSER evaluation 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.

8.0 REASONABLY AVAILABLE CONTROL TECHNOLOGY

At this time, the Agency has not established a Reasonably Available Control Technology ("RACT") requirement applicable to this Facility. Therefore, the source is currently in compliance with this requirement. The Agency will notify the source if any applicable RACT requirement applies to this Facility in the future. If such RACT should apply to the source in the future, the Agency will ensure that the source complies with such requirement at that time.

9.0 COMPLIANCE PLAN

Not applicable to this Facility.

Appendix A

Facility Location Map

A-5

VERMONT AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Air Pollution Control Division

TECHNICAL SUPPORT DOCUMENT FOR PERMIT TO CONSTRUCT AND OPERATE

#AOP-03-024

January 18, 2005

Prepared By: Evan Pilachowski

APPLICANT:

Cersosimo Lumber Company, Inc.
1103 Vernon Street
Brattleboro, Vermont 05301-8615

Tel: 802-254-4508
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SOURCE:

Cersosimo Lumber Company, Inc.
Sawmill and Kiln Drying of Lumber
1103 Vernon Street
Brattleboro, Vermont 05301-8615

1.0 INTRODUCTION

Cersosimo Lumber Company, Inc. (also referred to herein as "Permittee" and also as "Owner/Operator") owns and operates the sawmill referred to as the Main Yard (also referred to herein as "Facility") at 1103 Vernon Street in Brattleboro, Vermont. This is also Cersosimo Lumber's main corporate office location. The Facility saws hardwood and softwood logs into boards which are then kiln dried on site. The kiln dried boards are then planed, graded and stored for shipment. The Permittee has proposed to increase the annual fuel limit at the Facility from 18,000 to 20,000 tons of wood fuel. In addition the Permittee has proposed to burn green wood waste exclusively and separate the dry wood waste from the wood fuel for sale. The dry wood waste particulate emissions will be controlled with a new fabric filter. The existing pneumatic wood conveying system will be used as backup for the proposed dry wood waste line with the associated fabric filter.

This Technical Support Document details the Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division (hereinafter "Agency") review for the combined Air Pollution Control Permit to Construct and Operate the Facility. The Agency has combined the applications for the Permit to Construct the current modifications and the Permit to Operate for the Facility (#AOP-03-024).

The allowable emissions for the Facility are summarized below:

Allowable Air Contaminant Emissions (tons/year)[1]						
PM/PM_{10}	SO_2	NO_x	CO	VOCs	Total Criteria	HAPs[2]
150.8	2.2	19.4	52.8	35.4	>10	<10/25

[1] PM/PM_{10} - particulate matter and particulate matter of 10 micrometers in size or smaller; SO_2 - sulfur dioxide; NO_x - oxides of nitrogen measured as NO_2 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. Combined allowable HAP emissions equals 3.43 tpy.

2.0 FACILITY DESCRIPTION AND LOCATION

2.1 Facility Locations and Surrounding Area

The Permittee owns and operates the sawmill located at 1103 Vernon Street (Route 142) in Brattleboro, Vermont. The area surrounding the Facility is primarily undeveloped or industrial. The Facility is located less than 100 kilometers from the Lye Brook Wilderness area in Manchester, Vermont and greater than 100 kilometers from the Great Gulf and Dry River Wilderness areas in New Hampshire.

2.2 Facility Description

The Facility is a sawmill listed under the Standard Industrial Classification ("SIC") Code #2421, Sawmills and Planing Mills. The sources of air contaminant emissions at the Facility are the wood waste handling operations, the dry kilns, and the wood fired boilers.

The debarking operation removes 90% to 95% of the bark from the logs and is considered to have negligible emissions since the material is conveyed by auger rather than pneumatically. The bark is then sold to landscapers and is not burned in the boilers. Dried sawdust, planer shavings, and chipped wastes are pneumatically conveyed to the Torit fabric filter. The dried wood waste is then pneumatically conveyed to the feed box of a trailer. Air from the trailers is ducted back to the fabric filter. Dried wood waste is no longer burned in the boilers and is sold instead. A backup planer system has the ability to work with green or dried wood. Wood waste is collected in one of two cyclones (6,144 cfm and 13,771 cfm) and is sent to one of two locations. If dried wood is planed, an airlock will be used to duct the wood waste to the trailers. If green wood is planed, the airlock will be disengaged, and the waste will be pneumatically fed into the indoor wood waste storage bin. Additional green wood fuel will be delivered to the outdoor fuel storage bin. The outdoor bin cyclone is used to transfer green woodchips delivered by truck into the large indoor bin. This cyclone is used regularly since the facility does not generate enough of wood wastes on its own and therefore must purchase green woodchips for fuel. Since this is green wood waste with a high moisture content, particulate matter emissions from this cyclone are considered negligible.

The two 600 HP wood-fired boilers, each rated at 32 MMBTU/hr (input), are used for supplying steam heat to the kilns. The primary boiler is a 1985 Industrial Boiler Company Model #3-3900-200 fire tube 32 MMBTU/hr input (600 HP, 3,900 sq.ft.) wood waste boiler. The boiler is equipped with a spreader stoker and a single multiclone. Fly ash from the multiclone is automatically reinjected. The second boiler is a 1975 Dillon (manufactured by the Bigelow Company) fire tube 32 MMBTU/hr input (600 HP, 4,000 sq.ft.) wood waste boiler. The boiler also uses a spreader stoker and has a single multiclone. Both boilers also have primary fly ash reinjection, which collects large fly ash that impacts the back of the boiler and reinjects that into the fuel bed. The boilers are now proposed to operate only on wet wood wastes with an assumed heating value of 4,400 BTU/lb. By using only wet wood waste, the boilers should receive a consistent fuel source. Slugs of wet and dry wood fuel being burned in the boilers makes controlling combustion efficiency, opacity, and particulate emissions more challenging. A consistent fuel source should reduce the variability in emissions from the boilers. The maximum firing rate is estimated at 7,270 lbs/hour for each boiler. Cersosimo Lumber has proposed to limit operation of the wood boilers to a combined 20,000 tons per year of wet as-fired wood waste.

2.2.1 Description of Existing Equipment

Table 2-1: Existing Facility Equipment

Equipment:	***Description***
Dillon Boiler	32 MMBtu/hr, wood fuel, multiclone, installed 1975
IBC Boiler	32 MMBtu/hr, wood fuel, multiclone, installed 1985
Dry Kilns	26 kilns, 30 million board feet annual capacity, 3 kilns installed after 1979
Cyclones	Two cyclones handle dry wood waste (6,144 cfm and 13,771 cfm).

2.2.2 Description of Compliance Monitoring Devices

The stack used for the boilers is equipped with a Cleveland series 8000 opacity monitor. The opacity monitor is used to give the boiler operators feedback of how efficiently the boilers are operating and whether the oxygen trim meters are operating correctly.

The Dillon boiler is equipped with an oxygen trim system and variable speed fan. A computer system uses the data from the oxygen trim system to automatically control variable speed fan to maintain the proper range of oxygen values in the exhaust gas. By maintaining the proper oxygen range, the combustion efficiency and opacity are maintained to acceptable levels. This permit requires that the IBC boiler be equipped with an automatic excess air system that operates like the one on the Dillon boiler.

2.2.3 Proposed Modifications to Facility

The Permittee has proposed to install a separate dry wood waste handling system that will be controlled by a fabric filter. This wood waste handling system will allow the Permittee to separate dry wood waste from green wood waste. The boilers will only burn the green wood waste, and the dry wood waste will be sold. Previously the Permittee burned a combination of wet and dry wood in the boilers with a heating value assumed to be 4900 Btu/lb. The green wood waste has an approximate heating value of 4400 Btu/lb. Due to this decrease in the heating value of the fuel, the Permittee has requested an increased fuel limit. A new annual wood fuel limit of 20,000 tons is an increase from 18,000 tons, but the heating value of these limits (taking into account the differences in moisture content of the fuel) is very similar.

Table 2-2: Proposed Facility Equipment

Fabric Filter	Torit 156 RAW10-AW baghouse, 11,587 cfm, air to cloth ratio of 5.7:1, manufactured 2004

2.2.4 Proposed Limitations

The Permittee has proposed to limit the annual fuel usage to 20,000 tons of wood fuel. This limit keeps the emissions of particulate matter below the significance levels as defined in §5-101 of the *Regulations*. This eliminates the requirement to do MSER for this permit.

3.0 QUANTIFICATION OF POLLUTANTS

The quantification of emissions from a stationary source is necessary in order to establish the regulatory review process necessary for the operating permit application and to determine applicability with various air pollution control requirements. These determinations are normally based upon allowable emissions. Allowable emission is defined as the emission rate calculated using the maximum rated capacity of the source and, if applicable, either: (a) the applicable emission standard contained in the Regulations, if any, or (b) the emission rate or design, operational or equipment standard specified in any order or agreement issued under the Regulations that is state and federally enforceable. An applicant may impose in its application an emission rate or design, or an operational or equipment limitation which may be incorporated in the Permit to restrict operation to a lower level. Such limitations may include fuel restrictions or production limits.

3.1 Designation of Proposed Modification for the Permit to Construct

The designation of the proposed modification is determined by the designation of the existing Facility and the allowable emissions associated with the proposed modification. The existing Facility, before construction or installation of the proposed modification, is designated as a major stationary source of air contaminants, as defined in §5-101 of the *Regulations*. The modification's allowable emissions are calculated according to the following procedure.

Step a: Calculate the allowable emissions for each new piece of equipment or process being added.

Table 3-1: Dry Wood Waste Handling System (Torit 156 RAW10-AW)

Planer and wood grindings 11,587 cfm	Emission Factor			Allowable Emissions
	Factor	Units	Source	tons per year
PM	0.02	gr/dscf	Conservative emission rate determined by the Agency from the manufacturer's specifications	8.7

Step b: Calculate the allowable emissions for all existing processes that are affected by the modification.

Pneumatic Conveying of Wood Waste
Side Planer (#32) – 6,144 cfm
Hog-Planer cyclone (#38) – 13,771 cfm
Combined air flow rate – 19,915 cfm
Each cyclone is limited to 0.06 gr/dscf from §5-231(1)(b) of the *Regulations*.

Allowable PM emissions = 44.9 ton/year assuming maximum operations 8760 hours per year.

Total waste handling allowable PM emissions after modification = 44.9 + 8.7 tons per year
= 53.6 tons per year

Pneumatic Conveying of Wood Waste
Indoor bin cyclone (#8) – 1, 059 cfm
Outdoor bin cyclone (#18) – 5,339 cfm
Side Planer (#32) – 6,144 cfm
Hog-Planer cyclone (#38) – 13,771 cfm
Combined air flow rate – 26,313 cfm
Each cyclone is limited to 0.06 gr/dscf from §5-231(1)(b) of the *Regulations*.

Allowable PM emissions = 59.3 ton/year assuming maximum operations 8760 hours per year.

Total waste handling allowable PM emissions before modification = 59.3 tons per year

Since there is a net drop in PM emissions as a result of the installation of the dry wood waste handling system and associated fabric filter, this is not considered a modification. These emissions are not included in any of the further calculations to determine if the modification to the Facility will exceed a significance level.

Table 3-2: Dillon Wood Boiler[1]

32 MMBtu/hr, 20,000 tons/yr wood, 4400 Btu/lb, 550,000 dscf/hr, 5500 hr/year at max capacity	Emission Factor			Allowable Emissions
	Factor	Units	Source	tons per year
NOx	0.22	Lb/MMBtu	AP-42 Wood Residue Combustion in Boilers, Table 1.6-2 (9/03)	19.4
SO2	0.025			2.2
CO	0.60			52.8
PM	0.45	gr/dscf	§5-231(3)(b)(i) of the *Regulations*	97.2
PM10	0.20	Lb/MMBtu	AP-42 Wood Residue Combustion in Boilers, Table 1.6-1 (9/03)	17.6
VOC	0.017		AP-42 Wood Residue Combustion in Boilers, Table 1.6-3 (9/03)	1.5
HAP	0.039		AP-42 Wood Residue Combustion in Boilers, Table 1.6-3 and 1.6-4 (9/03)	3.4

[1] calculations are based on burning the entire fuel limit in the Dillon Wood Boiler. Emission estimates from the Dillon boiler of each pollutant are equal to or greater than emission estimates from the IBC Wood Boiler.

Table 3-3: IBC Wood Boiler

32 MMBtu/hr, 20,000 tons/yr wood, 4400 Btu/lb, 550,000 dscf/hr, 5500 hr/year at max capacity	Emission Factor			Allowable Emissions
	Factor	Units	Source	tons per year
NOx	0.22	Lb/MMBtu	AP-42 Wood Residue Combustion in Boilers, Table 1.6-2 (9/03)	19.4
SO2	0.025			2.2
CO	0.60			52.8
PM	0.20	gr/dscf	§5-231(3)(b)(ii) of the *Regulations*	43.2
PM10	0.20	Lb/MMBtu	AP-42 Wood Residue Combustion in Boilers, Table 1.6-1 (9/03)	17.6
VOC	0.017		AP-42 Wood Residue Combustion in Boilers, Table 1.6-3 (9/03)	1.5
HAP	0.039		AP-42 Wood Residue Combustion in Boilers, Table 1.6-3 and 1.6-4 (9/03)	3.4

Step c: Calculate the actual emissions from all existing processes that are affected by the modification (i.e., that were included in Step b) that were installed prior to 1979 or have already been reviewed as being major under §5-502 of the *Regulations*.

Table 3-4: Boiler Emissions

Column	1	2	3	3-1	3-2
Fuel Use (tpy)	14,400	18,000	20,000	-	-
Heating Value (Btu/lb)	4900	4900	4400	-	-
Source	Actual fuel use during previous MSER review	Previous Permit Limit #AOP-95-056	Proposed Permit Limit	-	-
PM/PM10	78.0/14.1	97.5/17.6	97.2/17.6	19.2/3.5	-0.3/0.0
SO2	1.8	2.2	2.2	0.4	0.0
NOx	15.5	19.4	19.4	3.9	0.0
CO	42.3	52.9	52.8	10.5	-0.1
VOC	1.2	1.5	1.5	0.3	0.0
HAP	2.8	3.4	3.4	0.6	0.0

The actual emissions are summarized in Column 1. The increase in emission of pollutants from the boilers since the MSER review is summarized in Column 3-1. This column contains the emissions entire allowable emissions from the boilers minus the emissions that have been a part of a MSER review.

Step d: Calculate the allowable emissions from all other equipment or processes at the facility modified since 1979 that have not been reviewed as being major in the past.

Table 3-5: Total Wood Kiln Emissions

26 dry kilns, 30 MM board feet	Emission Factor			Allowable Emissions
	Factor	Units	Source	tons per year
VOC	2.26	Lb/1000 BF	NCASI Emissions From Lumber Drying: Technical Bulletin 718 (7/1996)	33.9

Table 3-6: Emissions from 3 dry kilns installed after 1979

3 dry kilns, 3.5 MM board feet	Emission Factor			Allowable Emissions
	Factor	Units	Source	tons per year
VOC	2.26	Lb/1000 BF	NCASI Emissions From Lumber Drying: Technical Bulletin 718 (7/1996)	3.9

Step e: Calculate the size of the modification on a pollutant-by-pollutant basis using the following formula:

Results of[step a + step b – step c + step d] = size of modification

Table 3-7: Emissions increases (tpy) from 1979 and since prior MSER determination

Source	PM/PM10	SO2	NOx	CO	VOCs
Kilns	0	0	0	0	3.9
Boilers	19.2/3.5	0.4	3.9	10.5	0.3
Wood Waste	0	0	0	0	0
Total	19.2/3.5	0.4	3.9	10.5	4.2
Significance Level	25/15	40	40	50	40
Exceed Significance Level?	No	No	No	No	No

The proposed modification's allowable emissions plus all other modifications that have occurred since 1979 and not undergone MSER review are summarized in Table 3-7. The proposed modification's allowable emissions are estimated to result in an emissions increase less than significant levels for each air contaminant. Therefore, the proposed modification is designated as a non-major modification.

In the past the wood kilns had not been considered a source of emissions. Emission factors from NCASI for lumber drying were found and are now being applied to the Facility. Only three of the lumber kilns were constructed prior to 1979, and therefore these are the only kilns considered for determining if the modification exceeds the significance level.

4.0 APPLICABLE REQUIREMENTS

The compliance analyses and determinations in this technical analysis rely on data and representations provided by the Owner/Operator. Any statements and conclusions regarding the compliance status contained herein are not binding against the state of Vermont in any future legal or administrative proceedings.

4.1 Vermont Air Pollution Control Regulations and Statutes

§5-201 - Open Burning Prohibited and Permissible Opening Burning

Open burning of materials is prohibited except in conformance with the requirements of this section. Based on the application submittal and information available to the Agency, the Facility is in compliance with this requirement. The Agency will verify compliance with this standard in the future during any inspections of the Facility.

§5-211(2) - Prohibition of Visible Air Contaminants - Installations constructed subsequent to April 30, 1970

This emission standard applies to all installations at the Facility including the two wood fired boilers and the wood waste handling operations. The Agency will assess compliance with these emission standards in the future during any inspections of the Facility. The inspections will include confirmation of the proper operation and maintenance of equipment and visual observations of emission points.

§5-221(1) - Prohibition of Potentially Polluting Materials in Fuel; Sulfur Limitation in Fuel

This prohibition applies to all stationary fuel burning equipment used on-site, which is limited to the two wood fired boilers. Based on the application submittal, the applicant is expected to comply with this regulation based on the use of wood fuel, which is inherently low in sulfur.

The Agency will assess compliance with this regulation in the future during any inspections of the Facility. The inspections will include confirmation of the use of the proper fuels and review of fuel delivery certifications.

§5-231(1)(b) - Prohibition of Particulate Matter; Industrial Process Emissions

This emission standard applies to the pneumatically conveyed dry wood waste handling operations. Green wood wastes, such as sawdust, are not considered a source of emissions even when pneumatically conveyed. This regulation applies to the two cyclone used on the backup planer system and the fabric filter used in the primary dry wood waste handling system. The applicant is expected to comply with the particulate matter emission limit of this section based on the large particle size of the material and the use of cyclone collectors and the fabric filter, which are considered adequate for control of this size particle.

The Agency will assess compliance with this standard in the future during any inspections of the Facility. The inspections will include confirmation of the proper operation and maintenance of the required air pollution control devices and visual observations of the stack exhaust.

§5-231(3)(b) - Prohibition of Particulate Matter; Combustion Contaminants

Based on the application submitted and information available to the Agency, this Facility currently has applicable fuel burning equipment subject to this regulation. The allowable particulate emissions from the subject equipment is shown in Table 4-1.

Table 4-1: Equipment Subject to §5-231(3)(b)

Equipment ID	*Size/Capacity*	*Emission Standard*	*Allowable Emissions*
Dillon Boiler	32 MMBtu/hr	0.45 gr/dscf	78.0 tpy
IBC Boiler	32 MMBtu/hr	0.20 gr/dscf	34.7 tpy

These boilers were tested in 1995. Emissions from the Dillon boiler were 0.17 gr/dscf and emissions from the IBC boiler were 0.10 gr/dscf. This permit requires additional periodic particulate matter testing to verify that the boilers remain in compliance with this regulation. Based on these emission test results, the boilers are considered to be in compliance at this time.

The Agency will assess compliance with this standard in the future during any inspections of the Facility. The inspections will include confirmation of the proper operation and maintenance of the fuel burning equipment and the required multiclone control devices and visual observations of the stack exhaust.

§5-231(4) - Prohibition of Particulate Matter; Fugitive Particulate Matter
This section requires the use of fugitive PM control equipment on all process operations and the application of reasonable precautions to prevent PM from becoming airborne during the handling, transportation, and storage of materials, or use of roads. This requirement applies to the entire Facility, and the Facility is therefore expected to comply with the fugitive emission limitations of this section.

Based on the application submittal and information available to the Agency, the Facility currently is considered a source of fugitive particulate matter subject to this regulation. The Facility is required to take reasonable precautions at all times to control and minimize emissions of fugitive particulate matter from the operations at the Facility. This includes taking precautions to prevent the release of fugitive particulate matter during the handling and disposal of the wood waste material collected from the wood processing operations.

The Agency will verify compliance with this standard in the future during any inspections of the Facility. The inspections will include confirmation of the proper operation of any fugitive particulate matter control measures and visual observations of any emission points.

§5-241(1) & (2) - Prohibition of Nuisance and Odor
This requirement applies to the entire Facility and prohibits the discharge of air contaminants that would be a nuisance to the public or the discharge of objectionable odors beyond the property-line of the Facility.

Based on the application submittal and information available to the Agency, the Facility currently is in compliance with this regulation. The Agency will verify compliance with this requirement in the future during any inspections of the Facility. Additionally, the Agency investigates all complaints that it receives in order to determine whether or not there is a violation of this requirement.

§5-251 - Control of Nitrogen Oxide Emissions
Based on the application submittal and information available to the Agency, this Facility currently has no applicable fuel burning equipment subject to this regulation, nor does the Facility have allowable emissions of NOx in excess of 100 tons per year.

§5-252 - Control of Sulfur Dioxide Emissions
Based on the application submittal and information available to the Agency, this Facility currently has no applicable fuel burning equipment subject to this regulation.

§5-253.1 – 5-253.20 - Control of Volatile Organic Compounds
Based on the application submittal and information available to the Agency, this Facility currently has no applicable operations subject to this regulation.

§5-261 - Control of Hazardous Air Contaminants
See Section 7.0 below.

§5-402 - Written Reports When Required
This section gives the Agency authority to require the Facility to submit reports summarizing records required to be maintained by the Agency.

§5-403 – Circumvention
This section prohibits the dilution or concealment of an air discharge in order to avoid air pollution control requirements. The Agency will assess compliance with this regulation in the future during any inspections of the Facility.

4.2 Federal Air Pollution Control Regulations and the Clean Air Act

40 C.F.R. Part 60 Subpart Dc – *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*
"The affected facility to which this Subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 20 megawatts (MW) (100 million BTU per hour (BTU/hr)) or less, but greater than or equal to 2.9 MW (10 million BTU/hr)." The regulation limits fuel oil sulfur content to a maximum of 0.5 weight percent.

The Facility does not have any steam generating unit that has been constructed, modified, or reconstructed after 1989. No equipment at the Facility is subject to this regulation.

Clean Air Act §§114(a)(3), 502(b), and 504(a)-(c); 40 *CFR* Part 70 §§70.6(a)(3)(i)(B) and 70.6(c)(1); and 40 *CFR* Part 64 - *Compliance Assurance Monitoring*
Upon renewal of a Title V Permit to Operate, a facility must comply with enhanced monitoring and compliance assurance monitoring requirements for any emission controlled unit subject to an emission standard with uncontrolled emissions from the unit in excess of the Title V major source thresholds. The uncontrolled emissions of PM from the boilers and the uncontrolled (cyclone instead of a fabric filter) emissions from the dry wood waste handling system are each less than the Title V major source threshold for PM. Uncontrolled emissions from a boiler were calculated assuming the entire fuel limit was burned in one boiler, a 4400 Btu/lb heating value of the wood fuel, and an emission factor of 0.33 lb/MMBtu according to AP-42 Table 1.6-1 (9/03) wet wood fuel combustion with no control device. The uncontrolled emissions equal 29.0 tons per year under these assumptions, which is significantly below the 100 ton per year CAM applicability threshold. Therefore there is no equipment at the Facility that is subject to this regulation.

Section 112 of the Clean Air Act - *National Emission Standards for Hazardous Air Pollutants (NESHAPs).*
NESHAPs are promulgated under 40 C.F.R. Part 61 and 63. No promulgated NESHAPs in 40 CFR Part 61 or 63 currently are applicable to the Facility

4.3 Non-Applicable Requirements for Which a Permit Shield Provision Has Been Requested

Pursuant to §5-1015(a)(14) of the *Regulations*, an owner/operator may request to be shielded from potentially applicable state or federal requirements. The Facility has not requested a permit shield from any specific, potentially applicable requirement. Accordingly, the Agency has not granted any permit shields for the Facility.

5.0 CONTROL TECHNOLOGY REVIEW FOR MAJOR SOURCES AND MAJOR MODIFICATIONS

Pursuant to §5-261 of the *Regulations* each new major source and 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 emission increase, respectively. The proposed project is designated as a non-major modification of a stationary source and therefore is not subject to MSER review under §5-502 of the *Regulations*.

6.0 AMBIENT AIR QUALITY IMPACT EVALUATION

An ambient air quality impact evaluation 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. The Agency's implementation procedures concerning the need for an ambient air quality impact evaluation under §5-406(1) of the *Regulations*, specifies that such analyses may be required when a project results in an allowable emissions increase of ten (10) tons per year or more of any air contaminant, excluding VOCs. Additionally, the Agency may require an air quality impact evaluation where the short-term allowable emission rates will significantly increase as a result of a project. The emissions resulting from the increase in fuel cap and change to heating value of the fuel is summarized in Table 3-4 above. Column 3-2 of the table shows that the increase in allowable emissions resulting from this project will not be large enough to require the Permittee to perform an ambient air quality impact evaluation.

7.0 HAZARDOUS AIR CONTAMINANTS

The emissions of hazardous air contaminants ("HACs") are regulated under to §5-261 of the *Regulations*. The Owner/Operator of a source must quantify its emissions of HACs regulated by this rule. Any Facility whose emission rate of a HAC exceeds its respective Action Level ("AL") is subject to the rule for the HAC, and the Owner/Operator must then demonstrate that the emissions of the HAC are minimized to the greatest extent practicable by achieving the Hazardous Most Stringent Emission Rate ("HMSER") for that HAC. If the emission rate of any HAC after achieving HMSER is still estimated to exceed it's action level after achieving HMSER, an air quality impact evaluation may be required to further assess the ambient impacts for compliance with the Hazardous Ambient Air Standard ("HAAS") or Stationary Source Hazardous Air Impact Standard ("SSHAIS"). The emission of hazardous air pollutants ("HAPs") may also be regulated separately under to §112 of the Federal Clean Air Act. Any applicable HAP regulations are discussed under Section 4 above.

7.1 Applicability of HAC Emissions

The sources of HAC emissions at the Facility are limited to the combustion related emissions associated with the wood fired boilers and the dry lumber kilns. The wood waste handling operations are not considered to be a source of HAC emissions. Pursuant to §5-261(1)(b)(ii) of the *Regulations*, fuel burning equipment that combusts virgin liquid or gaseous fuels as well as wood fuel burning equipment installed prior to

January 1, 1993 are exempt from the requirements of §5-261. Table 3-5 has the total allowable VOC emissions from the dry lumber kilns. To be conservative the VOC emissions from the lumber kilns uses the highest emission factor of a species of wood that is processed at the Facility: white pine. Turpentine comprises some of the VOC emissions, but an emission factor for turpentine is not given. A conservative estimate is shown below assuming the entire allowable emission of VOCs from the lumber kilns is in the form of turpentine.

Turpentine emissions = (2.26 lb/1000 board feet) x (30,000,000 board feet/year) x (1 year/ 8760 hr) * 8hr = 61.9 lb/8 hr

The action level for turpentine is 69 lb/8 hr, and therefore the emissions of turpentine do not exceed the action level of §5-261 of the *Regulations.*

8.0 REASONABLY AVAILABLE CONTROL TECHNOLOGY

Pursuant to 10 *VSA* §556a(d) and §5-1010 of the *Regulations* the Agency may establish and include within any Permit to Operate emission control requirements based on Reasonably Available Control Technology ("RACT"). RACT for the wood fired boilers has been determined to be periodic combustion efficiency tests, annual boiler tune-up, and the development and implementation of an operation and maintenance plan (O&M plan). These RACT requirements were determined by the Agency to be reasonable procedures to ensure that the boilers are maintained to minimize emissions. Additional RACT requirements may be imposed in the future upon the renewal of this or any future operating permit for the Facility.

AS
Wood/ESP

VERMONT AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Air Pollution Control Division
Operating Permit Program

TECHNICAL ANALYSIS OF AN AIR CONTAMINANT SOURCE FOR A PERMIT TO OPERATE

#AOP-95-031
PIN# SJ95-0114

May 29, 1997
Updated: July 2, 1997

Prepared By: John L. Perreault, P.E.

APPLICANT:	Ryegate Associates, Incorporated RR 1, Box 4, U.S. Route 5 East Ryegate, Vermont 05042
SOURCE:	Ryegate Power Station U.S. Route 5 East Ryegate, Vermont 05042
RESPONSIBLE OFFICIAL:	Eric Heggeseth, Vice President Ryegate Associates, Incorporated
APPLICATION CONTACT:	Robert Blanchard Ryegate Associates, Incorporated Tel. - (802) 633-3500 Fax - (802) 633-3504
COUNTY:	Caledonia
AREA DESIGNATION:	Attainment for PM_{10}, SO_2, NO_x, CO, and Pb Unclassified for O_3
UTM COORDINATES:	$^{48}99^{580}$ m N, $^{7}35^{149}$ m E, Zone 18 (Main Boiler Stack)

I. INTRODUCTION

A. Administrative Milestones

Table 1-1: Administrative Summary

Administrative Item	Result or Date
Date Application Received:	11/03/95
Date Administratively Complete:	02/05/96
Date & Location Receipt of Application Noticed:	02/08/96 *The Caledonian Record*
Date Technically Complete:	05/29/97
Date Draft Decision:	05/29/97 Approved
Date & Location Draft Decision/Comment Period Noticed:	04/24/97 *The Caledonian Record*
Date & Location Public Meeting Noticed:	None requested
Date & Location of Public Meeting:	None requested
Deadline for Public Comments:	06/30/97
Date Proposed Decision:	07/02/97
Classification of Source Under §5-401:	§5-401(3): Electric power generation facilities
Classification of Application:	Title V Subject Source
New Source Review Designation of Source:	Major Stationary Source
Facility SIC Code(s):	4911
Facility SIC Code Description(s):	Electrical Services

Allowable Air Contaminant Emissions (tons/year)						
PM/PM_{10}	SO_2	NO_x	CO	VOCs	Other	HAPs
22	25	197	394	39	N/A	<5*

**All individual HAP emissions < 10 tpy.

B. Basis of Review

Ryegate Associates, Incorporated (hereinafter "Ryegate Associates" and also referred to herein as "Owner/Operator") owns and operates a twenty (20) megawatt (net) wood-fired power plant in East Ryegate, Vermont (hereinafter "Ryegate Power Station" and also referred to herein as "Facility"). Operations performed at the Ryegate Power Station are classified within the Standard Industrial Classification Code - 4911 (Electrical Services). The Ryegate Power Station is listed as a stationary source of air contaminants under §5-401(3), Electrical power generation facilities, of the *Vermont Air Pollution Control Regulations* ("*Regulations*"). Prior to commencing the construction and operation of the stationary source, Ryegate Associates was required to obtain approval from the Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division (hereinafter "Agency"). Agency approval was granted, in the form of an air pollution control permit to construct, pursuant to the requirements of Title 10 *Vermont Statutes Annotated* ("10 *V.S.A.*") §556 and §§5-501 and 5-502 of the

Regulations on January 11, 1988. Since this date, the Agency has issued seven (7) amendments to the original permit to construct. The most recent amendment was issued on February 25, 1997. These amendments have primarily been required in order to administratively modify the conditions of the permit.

Based upon its permit, allowable emissions of all air contaminants from the Ryegate Power Station are greater than 10 tons per year ("tpy"). Pursuant to §§5-1002, 5-1003, and 5-1005 of the *Regulations*, the Facility is classified as a "Title V Subject Source" and is subject to the requirement to obtain an air pollution control 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 applicable requirements for the Facility are contained in the *Regulations*, its existing permit, and 40 *CFR* Part 60 Subparts A and Db. Currently, the Facility is in compliance with these applicable requirements.

II. FACILITY DESCRIPTION AND LOCATION

A. Description of Plant Layout and Surrounding Area

The Facility is located off U.S. Route 5 just north of the village of East Ryegate, Vermont. The area surrounding the Facility property is rural and consists of primarily agricultural and residential uses. The Connecticut River borders the property to the East and U.S. Route 5 to the West. CPM, Incorporated, a paper manufacturing facility, is located within 500 meters to southeast of the Facility. The geographical area is complex terrain in all directions surrounding the site. Figure 1 in Appendix A of this Technical Analysis depicts the location of the Facility.

B. Explanation of Process (Including SIC Codes)

The operations performed at the Facility are described using the Standard Industrial Classification Code - 4911 (Electrical Services). The Ryegate Power Station is equipped with a wood-fired boiler (hereinafter "Main Boiler"), which is fired with whole wood tree chips delivered in standard chip vans. The fuel is primarily mixed hardwood and softwood, with some lesser amounts of sawdust, mill chips, and bark. The fuel chips ar stored in two (2) silos and an uncovered outside storage pile before being mechanically conveyed to the Main Boiler. Wood fuel is fed at a rate of approximately thirty-five (35) tons per hour into a single, high-pressure, boiler designed to burn green fuel. The Facility is operated as a base load plant at or close to 100% capacity at all times, excluding plant outages. The Main Boiler is fitted with with a propane (LPG) auxiliary burner having a maximum rated heat input of 50 million British Thermal Units per hour ("MMBTU/hr"). This burner is used primarily for plant start-up and for supplemental fuel. Steam produced by the Main Boiler is passed through a condensing turbine generator set with extraction steam utilized for feedwater heating. Condenser heat is removed via a closed loop circulating water system to a cooling tower structure. The Ryegate Power Station is also equipped with a 430 horsepower ("HP")/300 kilowatt ("kW") propane-fired engine generator set (hereinafter "Emergency Generator") for use during electric power outages, and an auxiliary propane-fired boiler rated at five (5) MMBTU/hr (hereinafter "Auxiliary Boiler"). The Auxiliary Boiler supplies steam for space heating purposes during plant outages.

Air contaminant emissions produced by the Main Boiler are controlled as follows: multicyclones in series with an electrostatic precipitator, flue gas reinjection, selective

non-catalytic reduction system (urea injection), and combustion air control with oxygen trim and underfire/overfire air ratio.

A diagram of the Facility layout may be found in Appendix A of this Technical Analysis.

C. Process Equipment and Stack Information

1. Description of Equipment

See Table 2-1 Equipment Information.

2. Description of Compliance Monitoring Devices

The Main Boiler is equipped with devices to continuously monitor the following air contaminants and operating parameters:

a. Visible emissions as opacity,
b. Oxides of nitrogen ("NO_x"),
c. Carbon monoxide ("CO"),
d. Carbon dioxide ("CO_2"),
e. Ammonia ("NH_3"),
f. Volumetric air flow rate; and
g. Miscellaneous boiler and steam turbine operational information in the control room.

Up until recently, the Main Boiler was required to continuously monitor emissions of volatile organic compounds ("VOCs") measured as total non-methane hydrocarbons. However, as part of the recent permit amendment for this Facility, the Agency eliminated this requirement based upon the minimal quantity of VOC emissions measured over a period of greater than three years of Facility operation and data collection.

In addition, the Auxiliary Boiler and Emergency Generator are equipped with hourly timers to track hours of operation of this equipment.

Table 2-1: Equipment and Stack Information

DESCRIPTION AND MODEL NUMBER*	STACK #	SIZE OR CAPACITY (MAX. ALLOWED)	FUEL TYPE(S) OR PROCESS INPUT	DATE INSTALLED	POLLUTION CONTROL EQUIPMENT (2)	FLOW RATE (ACFM)	STACK HEIGHT (FT Above Grade)	EXIT TEMP. (°K)	MAXIMUM ALLOWABLE EMISSION RATE (lbs/hr)						
									PM/ PM_{10}	SO_2	NO_x	CO	VOCs	Other	Total HAPs
Main Boiler Manuf.: Riley Stoker Corp.	1	300 MMBTU/hr	Wood	1992	Multicyclone, ESP, selective non-catalytic reduction	See Note (3).	212.3 ft (Stack Dia. = 79 inches)	329 °F	5.0	30 (4)	45.0	90.0 380 ppm	9.0	—	<1
Main Boiler (Auxiliary Burner) Manuf.: Coen Model 230/DAZ-22	1	50 MMBTU/hr (1 Burner)	LPG (propane)	1992	Uncontrolled										
Auxiliary Boiler Manuf.: Weil-McLain Boiler Model: 1688R-W Burner Model: WCR3-G-25B	2	5 MMBTU/hr	LPG (propane)	1992	Uncontrolled	1900 acfm	47.9 ft (Stack Dia. = 16 inches)	424 °F	0.025	0.05	0.75	0.11	0.028	—	N/D
Emergency Generator Engine Manuf: Cummins Engine Model: GTA-19 Gen. Manuf: Marathon Electric Gen. Model: 432RSL4015BP-310W	3	Engine Size: 3.7 MMBTU/hr; Operating Speed: 1800 rpm; 6 Cyl.; displace/cylinder - 18.8 liters; Spark ignited; Gen. Rating: 280 kW (Standby)	LPG (propane)	1992	Uncontrolled	600 cfm	47.9 ft (Stack Dia. = 12 inches)	459 °F	neg.	0.28	8.1	26.5	1.9	—	N/D
Diesel Fire Pump(1)	4	< 3 MMBTU/hr	No. 2 Fuel Oil	1992	Uncontrolled	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fuel Yard Maintenance Building Heater	5	< 3MMBTU/hr	No. 2 Fuel Oil	1992	Uncontrolled	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Main Maintenance Building Heater	6	< 3 MMBTU/hr	LPG (Propane)	1992	Uncontrolled	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Propane System Vaporizer	7	< 3 MMBTU/hr	LPG (Propane)	1992	Uncontrolled	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes:
(1) *Equipment listed in italics indicates that it is an insignificant activity.*
(2) C - Cyclone; S - Scrubber; ESP - Electrostatic Precipitator; FF - Fabric Filter; TO - Thermal Oxidizer; AM - Adsorption Media, CN - Condenser; SCR - Selective Catalytic Reduction; O - Other
(3) The original construction permit application indicated a maximum design air flow rate for the Main Boiler of 148,000 acfm at a temperature of 350 °F and 15% moisture content. This results in an air flow rate of approximately 84,000 dscfm. This value is within 1000 cfm of the air flow rate of 85,000 cfm listed in the current operating permit application. Therefore, it is assumed that the application identifies the air flow rate in dscfm. Note, compliance emission testing has indicated that the values of 148,000 acfm, 350 °F, and 15% moisture content were appropriate assumptions for this Facility in the air quality impact evaluation.
(4) Assumes Main Boiler at 100% load and burning 50 MMBTU/hr of propane fuel and remaining heat input from wood fuel.
N/A - Not applicable.
N/Q - Not quantifiable.
neg. - negligible.

III. QUANTIFICATION OF POLLUTANTS

A. Emission Related Information

Allowable emissions from the Ryegate Power Station have been estimated for the Main Boiler, Auxiliary Boiler, and Emergency Generator. Emissions produced from this fuel burning equipment include: particulate matter ("PM/PM_{10}"), sulfur dioxide ("SO_2"), NO_x, CO, and VOCs. VOCs from fuel burning equipment are also commonly referred to as non-methane hydrocarbons ("NMHCs") or total organic compounds ("TOCs").

The Facility also has the potential to generate emissions from the following list of other air contaminant generating equipment or processes:

1. VOCs from the cooling tower drift and boiler water deaerator vent;
2. Combustion contaminants from a diesel fire pump, Fuel Yard Maintenance Building Heater, Main Maintenance Building Heater, and propane system vaporizer;
3. Fugitive emissions of VOCs from chemical and fuel storage tanks, and two (2) degreasing/solvent tanks; and
4. Fugitive emissions of PM/PM_{10} from activities associated with the handling and storage of wood fuel and ash; and the use of haul roads on-site.

Individual constituents that makeup the categories of PM/PM_{10} and VOCs are also regulated by state and federal regulations, and must therefore be quantified. These individual constituents are referred to as hazardous air contaminants ("HACs") and/or hazardous air pollutants ("HAPs"). HAPs are defined as those chemicals listed in the Section 112(b) of the federal *Clean Air Act*, of which there are 189 chemicals. HACs are defined as those chemicals which are listed in Appendix B of the *Regulations*. All of the 189 HAPs are included as HACs.

Further information concerning the derivation of allowable emissions is contained in Appendix B of this Technical Analysis.

B. Enforceable Operating Restrictions

The Facility presently operates under the limitations imposed by a permit to construct. Ryegate Associates proposes to maintain these limitations. Below are summarized the limitations on the operation of this Facility.

1. Annual usage of propane fuel in the Main Boiler is restricted to 20 million cubic feet per year ("ft^3/yr") based on any rolling twelve (12) calendar month period;
2. Propane fuel sulfur content restricted to 10 grains per 100 ft^3 or less;
3. Annual hours of operation for the Auxiliary Boiler may not exceed 720 hours during any rolling twelve (12) calendar month period; and
4. Annual hours of operation for the Emergency Generator may not exceed 720 hours during any rolling twelve (12) calendar month period and may not operate simultaneously with the Main Boiler, except for periods of regularly scheduled Emergency Generator operation necessary for maintenance and testing of the performance of the emergency system.

C. Identification of Insignificant and Exempt Activities

Activities which qualify as an "insignificant activity" pursuant to §5-1002(h) of the *Regulations* need not be considered when determining the applicability of Subchapter X of the *Regulations* and must only be listed as such within the Operating Permit Application. In its application, Ryegate Associates has identified the below listed fuel burning equipment as having a heat input rating less than 3 MMBTU/hr, and thus being

classified as an "insignificant activitiy" pursuant to 5-1002(h)(1)(i):

1. diesel fire pump;
2. Fuel Yard Maintenance Building Heater;
3. Main Maintenance Building Heater; and
4. propane system vaporizer.

D. Allowable Emissions from Each Emission Point, Including Quantifiable Fugitive Emissions, As Necessary to Determine Applicable Requirements

Summarized in Table 3-1 below are the allowable emissions from each potential emission point at the Facility.

Table 3-1: Summary of Source Allowable Emissions

Air Contaminant Source	Maximum Allowable Air Contaminant Emissions						
	PM/PM_{10}		SO_2	NO_x	CO	VOC	HAPs
	lbs/ MMBTU*	lbs/hr	lbs/hr	lbs/hr	lbs/hr	lbs/hr	lbs/hr
Main Boiler	0.007 gr/dscf @12% CO_2	5.0	30.0	45.0	90.0	9.0	<1
Auxiliary Boiler	0.005	0.03	0.05	0.75	0.11	0.028	N/D**
Emergency Generator	negligible	neg.	0.28	8.1	26.5	1.9	N/D**
Cooling Towers & Deaerator Vents	---	---	---	---	---	neg.	neg.
Chemical and Fuel Storage Tanks	---	---	---	---	---	neg.	neg.
Degreasing/Solvent Tanks	---	---	---	---	---	neg.	neg.
Fugitive Dust from Wood Handling/Storage and Haul Roads	N/Q***	---	---	---	---	---	---

* Units in lbs/MMBTU of heat input unless otherwise noted.
** N/D - No data available, however, not anticipated to be a significant source of hazardous air pollutants.
*** N/Q - Not quantified, however, not anticipated to be a significant source of particulate matter, due to use of reasonable precautions to minimize the generation of fugitive dust.

IV. APPLICABLE REQUIREMENTS

A. Citation and Description of all Applicable Requirements

§5-1006(e)(4) of the *Regulations* requires the Owner/Operator of a stationary air contaminant source to submit a complete application including, but not limited to a demonstration of compliance with all applicable air pollution control requirements. These requirements include state and federal regulations, and the requirements of any construction permit issued under 10 *V.S.A.* §556. Note that compliance relative to §5-261 and §5-1010 of the *Regulations* will be discussed separately under paragraphs V. and VI. below.

The compliance analysis and determinations in this technical analysis rely on data and representations provided by the Owner/Operator. Any statements and conclusions

regarding the compliance status contained herein are not binding against the state of Vermont in any future legal or administrative proceedings.

Vermont Air Pollution Control Regulations

§5-211(2) and (3) - Prohibition of Visible Air Contaminants - Installations Constructed Subsequent to April 30, 1970. This standard applies to each emission point at the Facility and specifies that visible emissions ("V.E.") may not exceed 20% opacity for a period of six (6) minutes or more in any hour, and at no time may they exceed 60% opacity. Primarily this standard would affect any source of particulate matter including all fuel burning equipment on-site and the wood handling systems (e.g., conveyor belts and transfer points). An exception from this standard exists in §5-211(3) of the *Regulations* for the Main Boiler when burning wood fuel during normal start-up and soot blowing. During normal start-up and soot blowing V.E.s may not exceed 80% opacity. Compliance with this standard is based on Proposed Reference Method F-1 (51 *Federal Register*, Page 31076, August 29, 1986).

Ryegate Associates has stated that it complies with the standard based on their continuous opacity monitoring system for the Main Boiler exhaust, and their visual observation of equipment in use on-site.

The Agency will verify compliance with this standard in the future during any inspections of the Facility, and its receipt and review of quarterly excess emission reports from the opacity monitoring system installed on the Main Boiler exhaust.

§5-221(1)(a) - Prohibition of Potentially Polluting Materials in Fuel. This section prohibits the use of any fuel, in stationary fuel burning equipment, with a sulfur content more than 2.0% by weight. This prohibition applies to all stationary fuel burning equipment used on-site. Compliance with this standard is based on fuel analyses following the procedures prescribed by the American Society of Testing Materials ("ASTM").

Ryegate Associates has stated that it complies with this standard based on the use of wood, propane, or No. 2 fuel oil in its fuel burning equipment (Each fuel type has a maximum sulfur content below the 2.0 % by weight restriction.), and its contract with the fuel suppliers.

The continued use of these fuels in the stationary fuel burning equipment is sufficient to ensure compliance with this limitation in the future.

§5-231(3)(a)(i) - Prohibition of PM; Combustion Contaminants. This standard applies to the Auxiliary Boiler, Emergency Generator, Diesel Fire Pump, Fuel Yard Maintenance Building Heater, Main Maintenance Building Heater, and Propane System Vaporizer and specifies that PM emissions may not exceed 0.5 lbs/hr/MMBTU of heat input where the heat input is 10 MMBTU/hr or less. Compliance with this standard is based on the use of Reference Method 5 (40 *CFR* Part 60, Appendix A).

Ryegate Associates has stated that it complies with standard based on their emission estimates and their scheduled maintenance of the stationary fuel burning equipment.

The Agency will assess compliance with this standard in the future as follows: (1) Ryegate Associates will be required to properly operate and maintain it stationary fuel burning equipment, (2) visual observations of each exhaust will be conducted during

any Agency inspections of the Facility, and (3) if V.E.s are determined to be in excess of the limits specified in §5-211(2) of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standard.

§5-231(3)(a)(ii) - Prohibition of PM; Combustion Contaminants. The PM standard in this section is applicable to fuel burning equipment with a heat input greater than 10 MMBTU/hr but equal to or less than 250 MMBTU/hr. This PM standard is in units of lbs/hr/MMBTU and varies based upon the heat input of the individual unit. The actual value of the standard is derived using a formula. This standard applies to the Main Boiler when burning propane fuel, and specifies that PM emissions may not exceed 0.23 lbs/hr/MMBTU of heat input. Compliance with this standard is based on the use of Reference Method 5 (40 *CFR* Part 60, Appendix A).

Ryegate Associates has stated that it complies with standard based on their emission estimates, their PM control equipment, and the scheduled maintenance of the Main Boiler.

The Agency will assess compliance with this standard in the future as follows: (1) Ryegate Associates will be required to properly operate and maintain its Main Boiler and associated PM control devices, (2) perform visual observations of the exhaust during any Agency inspections of the Facility, (3) review quarterly excess emission reports for opacity, and (4) if V.E.s are determined to be in excess of the limits specified in §5-211(2) of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standard.

§5-231(3)(b)(iii) - Prohibition of PM; Combustion Contaminants. This standard applies to the Main Boiler when burning wood fuel and specifies that PM emissions may not exceed 0.10 gr/dscf corrected to 12% CO_2 where the rated output is 1300 horsepower (H.P.) or greater and the installation commences operation after December 5, 1997. Additionally, this standard applies when fossil fuel is burned in combination with wood fuel, and the fossil fuel contributes less than 50% of the total heat input. If the fossil fuel contributes greater than 50% of the total heat input, then the requirements of §5-231(3)(a) apply. Compliance with this standard is based upon the use of Reference Method 5 (40 *CFR* Part 60, Appendix A).

Ryegate Associates has stated that it complies with standard based on their emission estimates and their scheduled maintenance of the Main Boiler and its associated PM control equipment.

The Agency will assess compliance with this standard in the future as follows: (1) Ryegate Associates will be required to properly operate and maintain its Main Boiler and associated PM control equipment, (2) visual observations of each exhaust will be conducted during any Agency inspections of the Facility, (3) review quarterly excess emission reports of opacity, and (4) if V.E.s are determined to be in excess of the limits specified in §5-211(2) of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standard.

§5-231(4) - Prohibition of PM; Fugitive PM. This section requires the use of fugitive PM control equipment on all process operations and the application of reasonable precautions to prevent PM from becoming airborne during the handling, transportation, and storage of materials, or use of roads. This requirement applies to the entire Facility and is particular concern with the wood fuel handling and storage activities, and the use

of haul roads on-site.

Ryegate Associates has stated that it complies with this requirement based on the use of the fuel management plan and wet suppression (if found necessary).

The Agency will verify compliance with this requirement in the future as follows: (1) require the application of water or surfactants to the plant haul roads and yard as necessary, (2) assess compliance with this requirement during any inspections of the Facility, and (3) require the use of additional measures if found necessary during a compliance inspection.

§5-241 - Prohibition of Nuisance and Odor. This requirement applies to the entire Facility and prohibits the discharge of air contaminants that would be a nuisance to the public or be source of objectionable odors beyond the property-line of the Facility.

Ryegate Associates has stated that it complies with this requirement due to the remoteness of the Facility and their observation of dust and odors from their operations.

The Agency will verify compliance with this requirement in the future during any inspections of the Facility. Additionally, the Agency investigates all complaints that it receives in order to determine whether or not there is a violation of this requirement.

Subchapter VIII - Registration of Air Contaminant Source. This Subchapter requires the registration of a stationary source, with the Agency, if it produces five (5) tons per year or greater of actual emissions during the preceding calendar year. Sources are required to submit information regarding their operations and pay a fee based on the quantity of emissions they produce and the fuels that they use.

Ryegate Associates has stated that it complies with this requirement based on the information they have submitted and the fees they have paid for calendar year - 1996.

The Agency will ensure compliance with this requirement in the future during any inspections of the Facility.

Air Pollution Control Permit to Construct

Condition (1) - Construct and operate the Facility in accordance with plans and specifications submitted to the Agency.

Ryegate Associates has stated that it complies with requirement.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

Condition (2) - Limitations on wood fuel. Specifies the type and quality of wood fuel that may be used to feed the Main Boiler.

Ryegate Associates has stated that it complies with requirement based upon their daily monitoring and record keeping of delivered wood chips, and utilization of site forester for the procurement of wood fuel.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

Condition (3) - Limitations on propane fuel. Specifies the amount and quality (i.e., sulfur content) of propane fuel that may be used at the Facility.

Ryegate Associates has stated that it complies with requirement based upon their daily monitoring and record keeping of propane usage, the design of the propane burner, and delivery tickets from the propane fuel supplier.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

Condition (4) - Air pollution control equipment requirements. Specifies the systems that will be equipped and used to control air contaminant emissions from the Main Boiler.

Ryegate Associates has stated that it complies with requirement.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

Condition (5) - Particulate matter emissions limitations. Specifies the PM standard applicable to the Main Boiler.

Ryegate Associates has stated that it complies with requirement based upon their biennial compliance testing, opacity monitoring system, and operator training.

The Agency will assess compliance with this standard in the future as follows: (1) Ryegate Associates will be required to properly operate and maintain its Main Boiler and associated PM control equipment, (2) biennial emission testing will be performed to ensure continuing compliance, (3) the quarterly excess emission reports of opacity will be reviewed, and (4) if V.E.s are determined to be in excess of the limits specified in §5-211(2) of the *Regulations*, the Agency may require the performance of additional stack testing to verify compliance with the permitted PM standard.

Condition (6) - Visible air contaminant emissions limitations. This specifies the opacity limits that apply to Facility. This standard is based on the limits of §5-211(2) of the *Regulations*.

Ryegate Associates has stated that it complies with this requirement based upon their continuous opacity monitoring system.

The Agency will assess compliance with this standard in the future as follows: (1) Ryegate Associates will be required to properly operate and maintain all air contaminant generating equipment and pollution control systems, (2) visual observations of each exhaust will be conducted during any Agency inspections of the Facility, and (3) the Agency will review the quarterly excess emission reports of opacity for the Main Boiler.

Condition (7) - NO_x emission limitations. Specifies the NO_x emission standard that applies to the Main Boiler.

Ryegate Associates has stated that it complies with ths requirement based upon NO_x control system and continuous emission monitoring system.

The Agency will assess compliance with this standard in the future as follows: (1) Ryegate Associates will be required to properly operate and maintain its Main Boiler and

associated NO_x control system, and (2) the Agency will review the quarterly excess emission reports of NO_x from the Main Boiler.

Condition (8) - Limitations on other air contaminants. Specifies emission limitations for CO, VOCs, Benzo(a)pyrene, and ammonia that applies to the Main Boiler.

Ryegate Associates has stated that it complies with this requirement based on their initial performance testing and continuous monitoring systems for CO, VOCs, and ammonia.

The Agency will assess compliance with this standard in the future as follows: (1) Ryegate Associates will be required to properly operate and maintain its Main Boiler and associated control equipment, (2) biennial emission testing for VOCs, and (3) the Agency will review the quarterly excess emission reports of CO for the Main Boiler.

Condition (9) - Continuous emissions monitoring requirements for the Main Boiler. Requires the use of devices for the continuous measurement and determination of emission rates of visible air contaminants, NOx, CO, CO_2, VOCs, and ammonia.

Ryegate Associates has stated that it complies with this requirement based upon their system design and Quality Assurance Plan.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

Condition (10) - Compliance testing and determination of continuing compliance. Specifies the initial performance testing requirements, as well as requirements for the determination of continuing compliance using emission testing and continuous emissions monitoring systems.

Ryegate Associates has stated that it complies with this requirement.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

Condition (11) - Limitations on Auxiliary Boiler and Emergency Generator. Specifies the limitations on design and use of the Auxiliary Boiler and Emergency Generator.

Ryegate Associates has stated that it complies with this requirement based upon their hour meters on the boiler and generator, observation of the exhausts serving each unit, and operator training.

The Agency will verify compliance with these requirements in the future during any inspections of the Facility.

Condition (12) - Requirements for the control of fugitive PM. Specifies the precautions that will be used by the Owner/Operator to minimize the generation of fugitive PM at the Facility.

Ryegate Associates has stated that it complies with this requirement based upon their yard maintenance plan.

The Agency will verify compliance with this requirement in the future as follows: (1)

require the application of water or surfactants to the plant haul roads and yard as necessary, (2) assess compliance with this requirement during any inspections of the Facility, and (3) require the use of additional measures if found necessary during a compliance inspection.

Condition (13) - Requirements for the control of odors. Requires the Owner/Operator to submit a plan for the control of air contaminants released by the Facility and that may be a source of odors or nuisance to the general public.

Ryegate Associates has stated that it complies with this requirement based upon their wood chip management plan.

The Agency will verify compliance with this requirement in the future during any inspections of the Facility. Additionally, the Agency investigates all complaints that it receives in order to determine whether or not there is a violation of this requirement.

Condition (14) - Requirements for start-up, shutdown, and upset conditions. Requires the submittal of a plan to deal with start-up, shutdown, and upset conditions during the operation of stationary fuel burning equipment at the Facility.

Ryegate Associates has stated that it complies with this requirement based upon their start-up, shutdown, and malfunction plan.

The Agency will verify compliance with these requirements in the future during any inspections of the Facility.

Condition (15) - Requirements for operation, inspection, and maintenance. Requires the Owner/Operator to properly train individuals responsible for the operation and maintenance of fuel burning equipment and associated air pollution control equipment at the Facility.

Ryegate Associates has stated that it complies with this requirement based upon their inspection and maintenance plan.

The Agency will verify compliance with these requirements in the future during any inspections of the Facility.

Condition (16) - Record keeping and reporting requirements. Specifies the records that will be maintained by the Owner/Operator for the Facility, and when such records will be made available for Agency inspection.

Ryegate Associates has stated that it complies with these requirements.

The Agency will verify compliance with these requirements in the future during any inspections of the Facility.

Conditions (17) through (23) - Standard conditions.

Ryegate Associates has stated that it complies with these requirements.

The Agency will verify compliance with these requirements in the future during any inspections of the Facility.

Federal Air Pollution Control Regulations

Section 111 of the Clean Air Act. The Ryegate Power Station is subject to requirements within 40 *CFR* Part 60, Subpart Db, Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units. As a consequence of being subject to Subpart Db, the Facility is also subject to requirements within the General Provisions of 40 *CFR* Part 60 Subpart A.

40 *CFR* Part 60 Subpart A §60.7 - Notification and record keeping. Requires the written submittal of (or copies of such submittals to state/local agency) notifications of the commencement of construction, start-up, etc. to the Administrator; the maintenance of records related to start-up, shutdown, or malfunction of the affected facility, malfunction of an air pollution control system, or periods during which a continuous emissions monitoring system ("CEMS") is inoperative; the submittal of excess emission reports for those facilities equipped with a CEMS; and the maintenance of files of all measurements, etc. for a minimum of two (2) years following the date of such measurements.

§60.8 - Peformance tests. Requires a performance test and the submittal of a written report of the results of such testing; sampling ports and stack or duct free of cyclonic flow, a safe sampling platform, safe access to the platform, and utilities for the sampling/testing equipment.

§60.11 - Compliance with standards and maintenance requirements. Specifies methods to be used to determine compliance with standards within 40 *CFR* Part 60. Requires the owner or operator of a source to maintain and operate any affected facility, including associated air pollution control equipment, in a manner consistent with good air pollution control practice.

§60.12 - Circumvention. Prohibits the concealing of an emission which would otherwise constitute a violation of an applicable standard.

§60.13 - Monitoring requirements. Specifies that continuous monitoring systems ("CMS") required by an NSPS is subject to §60.13 upon promulgation of a performance specification under 40 CFR Part 60 Appendix B and, if the CMS is used to demonstrate compliance with emission limits on a continuous basis, Appendix F, unless otherwise noted in an NSPS or by the Administrator. All CMS must be installed and operational prior to conducting performance testing under §60.8. Requirements if continuous opacity monitoring system ("COMS") data are used for documenting compliance with opacity as provided in §60.11(e)(5). Requires daily checks of zero and span calibration drifts and adjustments, record and quantify, whenever specified, the amount of excess zero and span drift measured at the 24-hour interval checks; cleaning of optical surfaces exposed to effluent gases; all CMS will be in continuous operation and meet minimum frequency of operation requirements; all CMS will be installed such that representative measurements of emission or process parameters from the affected facility are obtained (procedures for locating CMS in 40 *CFR* Part 60 Appendix B); reduction of data for opacity monitoring; Adminstrator may approve alternative to monitoring procedures or requirements upon written application; alternative to relative accuracy testing specified in performance specification 2 of 40 *CFR* Part 60 may be requested if satisfy specific conditions.

§60.19 - General notification and reporting requirements.

Ryegate Associates has satisified the requirements of 40 *CFR* Part Subpart A based upon the requirements of its existing permit to construct, performance testing that has been conducted in the past, the design and construction of the affected facility, and the CEMS quality assurance plan required by existing permit.

40 *CFR* Part 60 Subpart Db §60.43b(c)(1) - Standard for particulate matter. PM emissions may not exceed 0.10 lbs/MMBTU of heat input if the affected facility has an annual capacity factor greater than 30% for wood. Per §60.43b(e), the annual capacity factor is determined by dividing the actual heat input to the steam generating unit during the calendar year from the combustion of wood, and any other fuels by the potential heat input to the steam generating unit if the steam generating unit has been operated 8,760 hours at the maximum design heat input capacity. §60.43b(f) - Standards for particulate matter. Visible emissions may not exceed 20% opacity (6-minute average), except for one 6-minute period per hour of not more than 27% opacity. Note: Per §60.43b(g), the particulate matter and opacity standards apply at all times, except during periods of startup, shutdown or malfunction.

§60.44b(a) - Standard for nitrogen oxides. Not applicable, since annual capacity factor for LPG usage restricted to 10 percent or less and the LPG rated heat input is less than 250 MMBTU/hr.

§60.46b - Compliance and performance testing for particulate matter. §60.46b(a) specifies that the PM and opacity limits apply at all times except, periods of startup, shutdown, or malfunction. §60.46b(b) and §60.46b(d) requires an initial performance test to be conducted to determine compliance with PM and opacity standards as required by §60.8 and procedures listed within §60.46b(d). The requirements of this section were incorporated into the permit to construct, and initial performance testing was performed in May of 1993. Therefore, Ryegate Associates has complied with this requirement.

§60.48b - Emission monitoring for particulate matter. §60.48b(a) requires the owner or operator subject to the opacity standard in §60.43b to install, calibrate, maintain, and operate a CMS for opacity and record the output of the system. §60.46b(e) specifies that the procedures in §60.13 shall be followed for installation, evaluation, and operation of CMS. Also, for facilities combusting wood the span value for the opacity CMS shall be between 60 and 80 percent.

§60.49b - Reporting and recordkeeping requirements. This section requires the Owner/Operator to record and submit the following information: §60.49b(a) notification of initial startup as provided in §60.7 including: design heat input of affected facility and fuels to be burned, copy of federally enforceable restrictions, and annual capacity factors on various fuels and of the affected facility itself; §60.49b(b) provide the Administrator with test data from the initial performance test and performance evaluation of the CEMS using the applicable performance specifications in 40 *CFR* Part 60 Appendix B; §60.49b(d) maintain and record amounts of each fuel burned during each day and calculate the annual capacity factor for each fuel and calendar quarter; §60.49b(f) maintain records of opacity; §60.49b(h) submit quarterly excess emission reports opacity; and §60.49b(o) maintain records for a period of two (2) years following the date of such record.

Ryegate Associates has satisified the requirements of 40 *CFR* Part Subpart Db based upon the requirements of its existing permit to construct, performance testing that has been conducted in the past, the design and construction of the affected facility, and the

CEMS quality assurance plan required by the permit to construct.

Section 504(b) and 114(a)(3) of the Clean Air Act. Applicability is undetermined at this time, since U.S. EPA has not finalized regulations implementing these requirements. If the Agency determines that Ryegate Associates is subject to any requirements within these regulations, the Agency will reopen the permit to incorporate any new applicable requirements.

B. Equivalency ans Streamlining

Particulate Matter Emission Standards

There are three applicable PM emission limits that apply to the Main Boiler: a federal standard of 0.10 lbs/MMBTU contained in 40 *CFR* Part 60, Subpart Db, Section 60.43b(b)(i), a state standard of 0.10 gr/dscf corrected to 12% CO_2 contained in §5-231(3)(b)(iii) of the *Regulations*, and an MSER limit of 0.007 gr/dscf corrected to 12% CO_2. The PM/PM_{10} limit specified by MSER is the most stringent, since it is equivalent to approximately 0.02 lbs/MMBTU of heat input. Ryegate Associates will be required to comply with the MSER emission limit. 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. §5-231(3)(b)(iii) of the *Regulations*, and 40 *CFR* Part 60 Section 60.43b(b)(i) are subsumed by MSER as set forth in this subsection.

Visible Air Contaminants

There are two limits which regulate visible air contaminant emissions for the Main Boiler. The state limit is contained in §5-211(2) of the *Regulations* prohibits visible emissions of 20% opacity for a period or period(s) aggregating to six (6) minutes or more 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 for 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, Section 60.43b(e) 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 proposed Reference Method F-1 (51 *Federal Register*, page 31076, August 29, 1986).

The Agency considers the state limit as more stringent that it subsumes the federal limit. Therefore, Ryegate Associates 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 results in underenforcement of an opacity regulation (see Page 31076 of the proposed Method F-1).

C. Description of Alternative Operating Scenarios and Related Applicable Requirements Not Previously Identified

Ryegate Associates has not requested any alternative operating scenarios as part of its application for a Permit to Operate.

V. HAZARDOUS AIR CONTAMINANTS

§5-261 of the *Regulations* addresses the release of HACs into the ambient air. Unless specifically exempted from §5-261, a source must quantify its emissions of HACs regulated by this rule. Any source whose actual emission rate of a HAC exceeds its respective Action Level ("AL") is subject to the rule for that HAC, and the source must then demonstrate that the emissions of the HAC are minimized to the greatest extent practicable. This process is termed the "Hazardous Most Stringent Emission Rate" or HMSER. An air quality impact evaluation may also be required to further assess the ambient impacts that may be attributable to the source. The evaluation of the air quality impacts is performed using the Hazardous Ambient Air Standards ("HAAS") or Stationary Source Hazardous Air Impact Standard ("SSHAIS") contained in the *Regulations*.

A. Quantification of Hazardous Air Contaminant ("HAC") Emissions

Solid fuel burning equipment (not including incinerators) installed or constructed prior to January 1, 1993, and all fuel burning equipment which combusts virgin liquid or gasesous fuel is exempted from review pursuant to §5-261(1)(b)(ii) of the *Regulations*. Based on this exemption, no fuel burning equipment used at the Facility qualified for review of its HAC emissions.

Nevertheless, the Ryegate Power Station may produce emissions of HACs from the usage of chemicals associated with its cooling tower. These emissions have been quantified and compared to their respective ALs in order to determine if review under §5-261 of the *Regulations* was warranted.

Emissions of these HACs are summarized in Table 5-1 below. Calculations supporting these emission rates may be found in Appendix B of this Technical Analysis.

Table 5-1: Hazardous Air Contaminant Emissions

Contaminant	CAS#	Estimated Emission Rate (lbs/8-hrs)	Action Level (lbs/8-hrs)
Chlorine	7782-50-5	0.036	1.3
Dodecylguanidine hydrochloride (DGH)	13590-97-1	0.026	0.025
Ethyl alcohol	64-17-5	0.005	2,330
Ethylene glycol	107-21-1	0.09	53
Hydroquinone	123-31-9	0.01	0.2
Isopropyl alcohol	67-63-0	0.019	4,120
Morpholine	110-91-8	0.006	30
Potassium hydroxide	1310-58-2	0.04	0.84
Sodium hydroxide	1310-73-2	0.024	0.84

Note - EPA HAP identified in italicized font.

Based upon the emissions summarized above, the Ryegate Power Station is not subject to §5-261 of the *Regulations*.

B. Federal Hazardous Air Pollutants

Although exempt from §5-261 of the *Regulations*, the U.S. EPA has identified fuel burning equipment as a potential source that will be regulated by a "Maximum Achievable Control Technology" ("MACT") standard in the future. Emissions of federally regulated HAPs have been estimated for the fuel burning equipment (see Table 1 in the Appendix B of this Technical Analysis). Total HAP emissions from the Ryegate Power Station are estimated to be less than 5 tons per year. Therefore, this Facility does not satisfy the criteria for a major HAP source pursuant to the federal thresholds of 10 tpy (individual HAP) and 25 tpy (total HAPs). A listing of federally regulated HAPs can be found in §112(b) of the federal *Clean Air Act*.

VI. REASONABLY AVAILABLE CONTROL TECHNOLOGY

At this time, the Agency has not established a Reasonably Available Control Technology ("RACT") requirement applicable to this Facility. Therefore, the source is currently in compliance with this requirement. The Agency will notify Ryegate Associates if any applicable RACT requirement applies to this Facility in the future. If such RACT should apply to the source in the future, the Agency will ensure that Ryegate Associates complies with such requirement at that time.

VII. COMPLIANCE PLAN & CERTIFICATION

A. Description of the Compliance Status for Each Applicable Requirement

See paragraph IV. above.

B. Description of Compliance Certification

Ryegate Associates will certify compliance with applicable requirements on an annual basis. Annual certification will be required as part of the annual registration of the Facility with the Agency pursuant to Subchapter VIII of the *Regulations*. Additionally, quarterly reports will be submitted based upon the requirements of the existing construction permit conditions and QA Plan for the CEMS.

C. Compliance Schedule For Each Applicable Requirement for Which the Source is Not in Compliance

Not applicable for this Facility.

VIII. PUBLIC PARTICIPATION

The Ryegate Power Station is classified as a "Title V Subject Source," and consequently any application for a Permit to Operate for this source is subject to the public participation requirements of §5-1007 of the *Regulations*.

The Agency published noticed on February 28, 1996, in the *Caledonian Record* that it had received an administratively complete application from Ryegate Associates. The affected state of New Hampshire was also notified in writing of the receipt of this application on February 16, 1996. On May 29, 1997, the Agency published notice in the *Caledonian Record* that it received a technically complete application from Ryegate Associates. This notice also informed the public of the Agency's draft decision to issue a Permit to Operate, and solicited comments and requests for an informational meeting. The affected state of New Hampshire and U.S. EPA were also notified of the draft decision. The public comment period closed at 4:30 p.m. on June 30, 1997. The Agency received no written request for an informational meeting, but written were received from U.S. EPA.

IX. CONCLUSIONS

A. Ryegate Associates has demonstrated the Facility is in compliance with all applicable air pollution control requirements.

B. Recommended Draft Permit Conditions (*Air Pollution Control Division comments italicized.*)

Consistent with 10 V.S.A. §556(e) and for the purposes of reducing the administrative burden of enforcing two separate permits, the Agency proposes to issue the Air Pollution Control Permit to Operate in conjuction with an administrative amendment of Air Pollution Control Permit to Construct #AP-90-029g. The result will be a combined Air Pollution Control Permit to Construct and Operate ("Combined Permit"). All conditions of the existing Air Pollution Control Permit to Construct #AP-90-029g will carry over into the new Combined Permit. As part of the administrative amendment of the construction permit, the Agency will update some of the conditions to correct errors or insert text that was inadvertly left out of the final document. None of these revisions will significantly alter the requirements of the construction permit. Note the list of standard conditions will be updated to include the most recent list of standard conditions prepared for the operating permit program. Revisions are noted as follows: additional text is noted in underlined and italicized font, while deletions are noted using strikeout font. ***NOTE: Some conditions were changed as a result of comments during the public comment period. See the attached response to comments for further detail regarding the changes.***

CHANGES TO CONSTRUCTION PERMIT CONDITIONS

() Continuous Emission Monitoring ("CEM")

Visible . . .

All systems, except the NH3 CEMS, shall be installed, calibrated, maintained and operated in such a manner as to meet the requirements of 40 CFR Part 60, Appendix B, Performance Specifications 1, 2, 3, *4* and 6, . . .Section ("TSS"). *The NH_3 CEMS shall meet the TSS CEM Requirements.* Ryegate Associates shall operate . . .

Correction to replace inadvertent deletion of reference to PS 4 while processing last amendment of construction permit. Additional reference to CEM requirements for ammonia monitoring system.

(a) . . .
(b) . . .
(c) . . .shall ~~inlcuded~~ *include* at a . . .

Correction of a typographical mistake.

() Compliance Testing and Monitoring

(a) Continuing compliance with the particulate matter. . . thereafter. Ryegate Associates shall conduct such testing and furnish the Agency with a written report of the results of such testing within ~~270~~ *90* days after the 7th of Sepetmber for those years when re-testing is required. At least . . .

Reduction in the allowable quantity of time for the completion and submittal of bi-ennial compliance test results.

() Operation, Inspection, and Maintenance Procedures

(a) All operators of the Facility shall be trained in the operation and maintenance of both the fuel burning and air pollution control equipment by ~~the manufacturers of the equipment~~ *qualified personnel.*

Revision of the condition in order to allow the training of personnel using qualified persons at the Facility as well as the manufacturer's of the equipment.

NEW OPERATING PERMIT CONDITIONS

- Operating Conditions and Limitations -

() The Owner/Operator shall operate the Ryegate Power Station in accordance with the plans and specifications submitted to the Agency on November 3, 1995, and January 29, 1996 and in accordance with the conditions set forth herein.

Requires applicant to operate their facility as described in the operating permit application and the terms and conditions of the Operating Permit.

- Record Keeping and Reporting -

() The Owner/Operator 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. 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.

Requirements of Subchapter V of the Regulations.

() All records, reports, and notifications that are required to be submitted to the Agency by this Permit shall be submitted to:

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

Purpose is the identify the appropriate contact for all reports and etc. that must be sent to the Agency for the permit.

() The Owner/Operator shall notify the Agency in writing within five (5) days of any violation, of which it is aware, of any condition of this Permit.

Requires the Owner/Operator to keep the Agency informed if it determines that an emission standard is being violated.

- Enhanced Monitoring/Compliance Assurance Monitoring -

() Based upon the applicability of regulations promulgated under authority granted to the U.S. Environmental Protection Agency pursuant to Sections 504(b) and/or 114(a)(3) of the federal *Clean Air Act*, the Agency reserves the right to reopen this Permit to include any necessary requirements contained in said regulations.

Notifies the Owner/Operator that the Agency will take action to amend the requirements of the permit in order to incorporate any applicable enhanced monitoring or compliance assurance monitoring requirements.

- Certification of Compliance -

() Ryegate Associates shall submit a compliance cetification at least annually, or more frequently if specified in the applicable requirement, which states the Ryegate Associates was in compliance with all terms and conditions of the Permit, including emission limitations, standards, and work practices. Such compliance certification shall include the following:

(a) Identification of each term or condition of the permit that is the basis of the certification;
(b) The compliance status;
(c) Whether compliance was continuous or intermittent;
(d) The methods used for determining the compliance status of Ryegate

Associates over the reporting period.

[§ 5-1015(a)(8) of the *Regulations*]

APPENDICES

Appendix A

Figure 1 - Plant Location (USGS Map)

Figure 2 - Schematic of Process Flow

Appendix B

ALL Support Calculations

Appendix C

Response to Comments

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Determination of Allowable Emissions for the Ryegate Power Station

Allowable emissions is defined under Section 5-101(11) of the *Regulations* as "...the emission rate calculated using the maximum rated capacity of the source and, if applicable, either:

(a) The applicable emission standard contained in the regulations, if any, or
(b) The emission rate or design, operational or equipment standard specified in any order or agreement issued under these regulations that is state and federally enforceable."

Determination of Existing Allowable Emissions: Pursuant to Section 5-101(11), allowable emissions must be based upon the limitations contained in Air Pollution Control Permit to Construct #AP-90-029g (issued February 25, 1997 and hereinafter "Permit"). Permit allowable emissions for the fuel burning equipment are defined by the worst case emissions scenario produced when evaluating the combination of fuel, operating load, and equipment being employed. For most combustion air contaminants, the peak emission rate will be produced when the Main Boiler is operating on a continuous operation (i.e., 8,760 hrs/yr) at full load (i.e., 100% of capacity). It is important to note that Condition (11) of existing Permit prohibits the simultaneous operation of the Main Boiler with the Emergency Generator.

Facility Restrictions and Assumptions
Wood Fuel BTU Content - 4,250 BTU/lb (green wood fuel)
Propane BTU Content - 2,507 BTU/cubic foot (90,625 BTU/gal)

	Main Boiler	Auxiliary Boiler	Emergency Generator
Maximum Rated Heat Input:	300 MMBTU/hr 50 MMBTU/hr (Propane)	5 MMBTU/hr	3.7 MMBTU/hr 300 kW; 430 bHP
Fuel:	Wood and/or Propane	Propane	Propane
Fuel Maximum Firing Rate:	35.3 tons/hr wood	33 ft^3/min.	25 ft^3/min.
Operational Restrictions:	None on wood fuel propane limited to 20 million ft^3/yr (Note 2)	720 hrs/yr (Note 1)	720 hrs/yr (Note 1)

Note 1 [per Condition (11) of Permit to Construct]
Note 2 [per Condition (3)(b) of Permit to Construct]

Main Boiler - Full load and continuous operation
Particulate Matter (PM/PM_{10}): Maximum PM Discharge Rate = 0.0070 grains/dscf corrected to 12%CO_2 and 5.0 lbs/hr [per Condition (5)(a) of Permit to Construct]. Applies at all times regardless of fuel(s) being fired in the Main Boiler.

PM/PM_{10} = (5.0 lbs/hr)(8760 hrs/yr)(ton/2000 lbs) = 22 tons/yr

Sulfur Dioxide (SO_2): Maximum SO_2 discharge rate based on fuel sulfur content limitations: wood = 0.07% by weight [per Findings of Fact (10)(d) and Condition (2) of APC Permit]; propane = 10 grains/100 ft^3 [per Condition (3)(c) of Permit to Construct]; Worst case allowable emissions produced while Main Boiler is firing propane to its maximum firing rate of 50 MMBTU/hr and 20 million ft^3/yr, and the remaining heat input (i.e., 250 MMBTU/hr) coming from wood. Usage limits of 50 MMBTU/hr and 20 million ft^3/yr are equivalent to 1000 hrs/yr operation on propane.

SO_2(wood) = 0.07 lbs/ton wood
SO_2(propane) = 0.0014 lbs/ft^3 propane

SO_2 Total = [SO_2(wood) + SO_2(propane)](1000 hrs/yr) + [SO_2(wood)](7,760 hrs/yr)

SO_2(wood) = [(0.07 lbs/ton)(250 MMBTU/hr)(lbs/4250 BTU)(10^6 BTU/MMBTU)(ton/2000 lbs)(1000 hrs/yr)] + [(0.07 lbs/ton)(300 MMBTU/hr)(lbs/4250 BTU)(10^6 BTU/MMBTU)(ton/2000 lbs)(7760 hrs/yr)]
= (2100 lbs/yr + 19,000 lbs/yr)(ton/2000 lbs)
= 11 tons/yr

SO_2(propane) = (0.0014 lbs/ft^3)(50 MMBTU/hr)(ft^3/2507 BTU)(10^6 BTU/MMBTU)(1000 hrs/yr) = (27,922 lbs/yr)(ton/2000 lbs)
= 14 tons/yr

SO_2 Total = 11 tons/yr + 14 tons/yr = 25 tons/yr

Oxides of Nitrogen (NOx): Maximum NOx Discharge Rate = 0.15 lbs/MMBTU and 45.0 lbs/hr [per Condition (7) of Permit to Construct]. Applies whenever wood fuel is contributing more than 30% of the BTU input to the Main Boiler. Worst case emissions assume wood fuel at maximum capacity and at continuous operation.

NOx = (45.0 lbs/hr)(8760 hrs/yr)(ton/2000 lbs) = 197 tons/yr

Carbon Monoxide (CO): Maximum CO Discharge Rate = 0.30 lbs/MMBTU and 90.0 lbs/hr [per Condition (8)(a) of Permit to Construct]. Applies whenever wood fuel is contributing more than 30% of the BTU input to the Main Boiler. Worst case emissions assume wood fuel at maximum capacity and at continuous operation.

CO = (90.0 lbs/hr)(8760 hrs/yr)(ton/2000 lbs) = 394 tons/yr

Volatile Organic Compounds (VOCs): Maximum VOC Discharge Rate = 0.03 lbs/MMBTU and 9.0 lbs/hr [per Condition (8)(a) of Permit to Construct]. Applies whenever wood fuel is contributing more than 30% of the BTU input to the Main Boiler. Worst case emissions assume wood fuel at maximum capacity and at continuous operation.

VOC = (9.0 lbs/hr)(8760 hrs/yr)(ton/2000 lbs) = 39 tons/yr

Auxiliary Boiler Contribution: Emission Rates based on Table 1.5-1; Section 1.5 of *AP-42, Compilation of Air Polluant Emission Factors, Volume I: Stationary Point and Area Sources, 4th Edition* and summarized in Application for Amendment to the Air Pollution Permit for Ryegate Power Station, April 1991.

	PM/PM_{10}	SO_2	NOx	CO	VOCs
Emission Factor (lbs/MMBTU)	0.005	0.01	0.15	0.021	0.0055
Emission Rate (lbs/hr)	0.025	0.05	0.75	0.11	0.028
(tpy) 0.009	0.02	0.27	0.04	0.01	

Emission Unit		Allowable Emissions (Main Boiler w/ Auxiliary Boiler)				
		Air Contaminant				
		PM/PM_{10}	SO_2	NOx	CO	VOCs
Main Boiler	Emission Rate (tpy)	22	25	197	394	39
	Fuel Combination	Wood	Wood+Propane	Wood	Wood	Wood
Auxiliary Boiler	Emission Rate (tpy)	0.009	0.02	0.27	0.04	0.01
Total Facility	Emission Rate (tpy)	22	25	197	394	39

Determination of Hazardous Air Pollutant Emission Rates: No HAP data available for propane fuel. Wood fuel HAP emissions based on AP-42 emission factors published in Table 1.6-4 of Section 1.6 Wood Waste Combustion in Boilers.

Maximum Wood Fuel Firing Rate in Main Boiler - 35.3 tons/hr
Main Boiler Operation - 100% Load and Continuous

Contaminant	Emission Factor (lbs/ton)	Emission Rate (lbs/hr)	(tpy)
Phenol	1.47 E-05	<0.01	0.0023
Polychlorinated dibenzo-p-dioxins	1.2 E-08	<0.01	1.8 E-06
Polychlorinated dibenzo-p-furans	5.3 E-08	<0.01	8.2 E-06
Acrolein	4.0 E-06	<0.01	0.0006
Formaldehyde	8.2 E-03	0.29	1.3
Acetaldehyde	1.92 E-03	0.07	0.3
Benzene	9.95 E-03	0.35	1.5
Naphthlene	3.39 E-03	0.12	0.5
2,3,7,8-Tetrachlorodibenzo-p-dioxin	3.6 E-11	<0.01	5.6 E-09
4-Nitrophenol	2.97 E-06	<0.01	0.0005
Total HAPs from Main Boiler	-------	<1	<4

Determination of Emissions From Other Air Contaminant Sources:

1. Release of Chemical Additives From Cooling Towers and Boiler Water Deaerator Vents: The Ryegate Power Station uses a mechanical draft cooling tower. Boiler blowdown water is transferred to the ccoling tower/circulating water. Chemical additives are applied to the boiler water and circulating water. Some of these additives may be emitted to the ambient air in the cooling tower drift. These same chemical additives may be released via the boiler deaerator vent. VOC emissions from these points are negligible. See Section E of the application for additional information regarding the derivation of potential HAC/HAP emission rates.

2. Other fuel burning equipment (including: Diesel Fire Pump, Fuel Yard Maintenance Building Heater, Main Maintenance Building Heater, Propane Vaporizer Heater). Each of these units are rated less than 3 MMBTU/hr of heat input, and are consequently classified as insignificant activities. Emissions need not be considered from this equipment for the purposes of determining the classification of the source or modification.

3. Release of VOCs from Chemical and Fuel Storage Tanks: The Ryegate Power Station uses tanks for chemical storage. Each tank is equipped with a static vent. The tanks function in a draw-down capacity to provide make-up to other systems for water treatment. Emissions from this activity are considered negligible.

4. Release of VOCs from Degreasing/Solvent Tanks: As part of its maintenance activities, Ryegate Power Station utilizes two (2) parts cleaning stations of 10 and 15 gallons in capacity, respectively. The solvent used drains to a catch sump and is periodically replaced with a new solution. Emissions from this activity are considered negligible.

5. Release of Fugitive Emissions from Wood Fuel/Ash Handling and Storage, and Haul Roads: Emissions of dust and VOCs from the wood chips are considered unquantifiable. Rather than estimating the emissions, the Agency has focused on the application of reasonable measures to minimize these emissions. These measures are prescribed in the Facility's "Wood Chip Management Plan." Additionally, transfer of wood fuel to the Main Boiler is conducted via enclosed conveyors Emissions of dust from vehicular traffic on-site are considered negligible, based on the use of wet suppression techniques.

   Ash- Two sources of wood ash: bottom and fly ash. The bottom ash from the furnace grates empties directly into a submerged (water trough) bottom ash conveyor and is transported directly to an enclosed ash bunker for storage. The fly ash is conveyed to an ash mixer and conditioner which wets and cools the ash prior to discharging to the ash bunker. Emissions from this activity are considered negligible due to the use of wet suppression and containment of the ash material.

AS-Word

VERMONT AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Air Pollution Control Division

TECHNICAL ANALYSIS OF AN AIR CONTAMINANT SOURCE FOR A TITLE V OPERATING PERMIT

#OP-95-032
PIN# SJ95-0113

December 1, 2000

Prepared By: Jennifer Bryan, Environmental Engineer

APPLICANT:	American Paper Mills of Vermont, Inc. Riverside Avenue Gilman, VT 05904
SOURCE:	Paper Making, Zurn Boiler American Paper Mills of Vermont, Inc. Riverside Avenue Gilman, Vermont
RESPONSIBLE OFFICIAL:	Jennifer Cusick, Plant Manager
APPLICATION CONTACT:	Donald Hallee American Paper Mills of Vermont Inc. Riverside Avenue Gilman, Vermont 05904 (802) 892-5515
COUNTY:	Essex
AREA DESIGNATION:	Attainment for PM_{10}, SO_2, NO_x, CO, and Pb Unclassified for O_3
UTM COORDINATES:	$^{49}20^{900}$ m N $^{02}83^{600}$ m E Zone 19

I. INTRODUCTION

A. Administrative Milestones

Table 1: Administrative Summary

Administrative Item	Result or Date
Date application received	11/1/95
Date application declared administratively complete	11/14/95
Location where receipt of application was noticed (date)	*The Caledonian Record* (11/16/95)
Affected State(s) noticed of application receipt (date)	New Hampshire (2/16/96)
Date application declared technically complete	September 29, 2000
Date of proposed decision	October 5, 2000 (approved)
Location where proposed decision and public comment period were noticed (date)	*The Caledonian Record* (October 5. 2000)
Affected State(s) noticed of draft decision (date)	New Hampshire, New York and Massachusetts (October 6, 2000)
Location where public meeting was noticed (date)	none requested
Location of public meeting (date)	none requested
Deadline for public comments	November 6, 2000
Date application was submitted to U.S. EPA	November 7, 2000
Classification of source under §5-401	§5-401(6)(b): Wood fuel burning equip.>90 Horsepower
Classification of operating permit	Title V source
Facility SIC code(s)	2621
Facility SIC code description(s)	Paper Mill

Allowable Air Contaminant Emissions (tons/year)						
PM/PM_{10}	SO_2	NO_x	CO	VOCs	Other	HAPs
414	85	251	2366	69	-	9

B. Basis of Review

American Paper Mills of Vermont, Inc. (hereinafter "APMV") operates a paper mill in the village of Gilman, Vermont. Emission sources at the mill include the wood fired boiler and the paper machine.

The mill is classified as an air contaminant source under §5-401(6)(b) of the *Vermont Air Pollution Control Regulations* ("*Regulations*"). Under this section, a facility is classified as an air contaminant

source if it operates wood fuel burning equipment larger than 90 Horsepower ("H.P.").

The mill is classified as a Title V subject source pursuant to §5-1002 of the *Regulations* because its allowable emissions of nitrogen oxides, particulates and carbon monoxide exceed 100 tons per year. As a result, APMV is required to obtain a state and federal operating permit.

The mill was in operation prior to 1979, and has not undergone any significant modifications. An ammended Nitrogen Oxide Reasonably Available Control Technology ("NO_x RACT") Administrative Order ("AO") was issued on January 9, 1996. The order requires the facility to limit and monitor emissions from the Zurn wood fired boiler. Therefore, the mill's allowable emissions are based on its administrative order emission limits, proposed operating restrictions, and the applicable requirements of the *Regulations* and the *Code of Federal Regulations* ("*CFR*").

II. FACILITY DESCRIPTION AND LOCATION

A. Description of Plant Layout and Surrounding Area

The mill is located in the village of Gilman, Vermont (see Appendix A for a site diagram). The mill complex consists of approximately 20 buildings, including the main building, various storage buildings, maintenance/garage building, boiler house, and a sludge building that serves the facility's wastewater treatment plant.

B. Explanation of Process

The mill is categorized under Standard Industrial Classification Code 2621 (Paper Mill). It produces a variety of specialty grade papers from both virgin and recycled fiber. The mill does not perform any primary pulping; it produces paper from fiber produced at other facilities rather than converting wood to pulp onsite. Types of paper produced include commodity bonds, security base papers, diazo (blueprint) paper, wallpaper, label papers, packaging tapes, latex specialty papers, text and cover papers, inkjet papers and indigo press papers.

C. Process Equipment and Stack Information

All of the process equipment at the mill have the potential to run continuously (i.e., 8,760 hours per year). The equipment parameters for significant emission points are summarized in Table 2. Other stacks and vents at the facility are listed in Table 3. Insignificant sources of emissions, as defined in §5-1002(h) of the *Regulations*, are listed in Table 4.

Boilers: The mill operates five boilers: a primary 180 Million British thermal units per hour heat input ("MMBtu/hr") Zurn wood fired boiler (installed in 1977) and four supplemental Babcock & Wilcox boilers. The Babcock & Wilcox boilers fire No. 6 fuel oil with a maximum sulfur content of 2.0% by weight. All boilers exhaust through a single stack (stack #1) having an outlet 225 feet above its base and 180 feet above the roofline. The operation of the boilers results in emissions of sulfur dioxide ("SO_2"), nitrogen oxides ("NO_x"), carbon monoxide ("CO"), particulate matter ("PM/PM_{10}"), volatile

organic compounds ("VOCs"), and federal Hazardous Air Pollutants* ("HAPs") to the ambient air.

The wood fired boiler is supported by a wood chip storage, processing and conveyance facility. Wood chips and bark are delivered to the facility and stockpiled prior to processing. The wood chips and bark are processed by a hammer mill (wood hog), reducing the size of the chips and bark. The hogged fuel is conveyed pneumatically, from the wood hog to the cyclones. The wood fuel is then stored prior to combustion in the boiler. The cyclones and the wood hog are a source of PM emissions.

Pulp Processes: The Pulp process begins in the Pulp Shed area where both virgin pulp and recycled paper are stored. The pulp purchased may be either hardwood or softwood pulp. The pulp enters the process at the pulpers. Virgin pulp enters the HILO Pulpers where pulp bales are mixed with water (hydrated), converting the pulp to a slurry. Two Morden Pulpers (2000 lb. capacity) are used to slurry the recycled paper. The pulp slurry is then pumped to the Blend Chest where the hydrated pulp is mixed with various additives, as needed, depending the type of paper being produced. The mixed pulp slurry is then fed into a series of centrifugal cleaners where heavier particles are removed. Sources of emissions in the pulp process are bleaches used to whiten recycled paper and chemicals added in the Blend Chest, resulting in the release of VOCs, HAPs and Hazardous Air Contaminants ("HACs") to the ambient air

Paper Machine Processes: The cleaned, blended pulp slurry enters the paper machine at the headbox. From the headbox, the pulp is distributed onto the forming wire ("fourdrinier") where the paper sheet begins to form. The fourdriner is a single layer, 166.75 inches wide, synthetic fabric that provides for water drainage and sheet formation. The fourdriner moves at speeds ranging from 500 to 1800 feet per minute. The moisture content of the sheet exceeds 99% at this stage of the process.

The paper sheet then passes into the press section where the formed sheet is pressed and smoothed. The first two presses are felted and remove water from the sheet. They are followed by an unfelted smoothing press which increases the smoothness of the sheet without removing water.

The pressed sheet then enters the main dryer section consisting of thirty 60 inch diameter rollers. The rollers are steam heated and range in temperature from 250 to 350 degrees F. Steam for the rollers is generated by the plant boiler. As the sheet passes through the rollers, the moisture content is reduced to 1.5 to 2.5%.

Following the dryers, the sheet enters the size press where various sizes and/or coatings can be applied to the sheet to enhance its strength and overall surface characteristics. The sizes and/or coatings may contain dyes, chemicals, starch, latex and clays.

The sheet is then further dried in the after dryer. This process removes moisture added in the

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* A "hazardous air pollutant" is defined as any air pollutant listed in Sec. 112(b) of the *Clean Air Act,* as amended in 1990.

coating process. The after dryer section is similar to the main dryer section and consists of ten steam heated rollers. The first two rollers are coated with an anti-stick material to prevent the sheet from sticking to the rollers.

The sheet then travels through the calendar stack where it passes through two to four rollers under pressure (500 to 1000 psi) to control the thickness of the final sheet. Finally, the sheets are wound onto individual size rolls for distribution to the customer.

Sources of emissions in the paper machine are the sizings and/or coatings applied which may contain VOCs, HAPs and/or Hazardous Air Contaminants (HACs).

Wastewater Treatment Plant: APMV operates a wastewater treatment plant on site to treat the wastewater generated by the paper making process. The treatment plant includes one aeration basin, a clarifier, an emergency settling basin and a 0.4 MMBtu/hr space heater. Sources of emissions at the treatment plant are volatile compounds (VOCs, HACs and HAPs) in the papermaking wastewater and the space heater combustion emissions. Volatile compounds in the wastewater are included in the emissions from the papermaking process and therefore do not need to be quantified again for the wastewater treatment plant. As the space heater is considered an insignificant emission source, the emissions are not quantified.

Table 2. Equipment Specifications

DESCRIPTION AND MODEL NUMBER	STACK #	SIZE OR CAPACITY (MAX. ALLOWED)	FUEL TYPE(S) OR PROCESS INPUT	DATE INSTALLED	POLLUTION CONTROL EQUIPMENT	FLOW RATE (ACFM)	STACK HEIGHT (FT Above Grade)	EXIT TEMP. (°F)
Main Boiler: Zurn Watertube Boiler	1	180 MMBTU/hr (input) 4500 Btu/lb Wood as Fired. 1,190 HP	Wood	1977	Multiclone	170,000 acfm	225 ft.(Stack Dia. = 9.17 ft.)	450°F
4 Babcock & Wilcox Watertube Boilers	1	@ 42.5 MMBTU/hr each	# 6 Fuel Oil	1920	Uncontrolled	50,000 acfm		350°F
Paper Machine	various vents	350 tons per day of finished paper	--	1920	Uncontrolled	--	see Table 3	--
Semco Starch Silo	Starch Silo Vent	210 tons	starch	1997	Scientific Dust Collector: Model SP-J-X4B8	482 acfm	55.1 feet	ambient
Jeffrey Wood Hog	--	56 tons/hour	wood chips and bark	1978	2 Radar Long Cone Design Cyclones	5720 acfm each	50 feet each	ambient
2 Safety-Kleen Basin Type Degreasers Model #34	--	30 gallon Solvent Basin	SK 150 Solvent	1994	Uncontrolled	–	–	ambient

DESCRIPTION AND MODEL NUMBER	STACK #	SIZE OR CAPACITY (MAX. ALLOWED)	FUEL TYPE(S) OR PROCESS INPUT	DATE INSTALLED	POLLUTION CONTROL EQUIPMENT	FLOW RATE (ACFM)	STACK HEIGHT (FT Above Grade)	EXIT TEMP. (°F)
1 Safety-Kleen Basin Type Degreaser Model #23	–	30 gallon Solvent Basin	SK 150 Solvent	1994	Uncontrolled	–	–	ambient

In addition to the equipment listed in Table 2, APMV has identified a number of other stacks and vents (see Table 3). These stacks and vents emit air contaminants from the paper making process in addition to the steam driven off as the paper is produced. These stacks and vents emit negligible quantities of air contaminants. Any VOCs, HAPs, or HACs emitted from these vents and stacks are quantified by the process source (ie. paper machine), on a mass balance basis, rather than by emission point.

Table 3: Other stacks and vents.

Stack	Stack Height, feet	Exhaust Flow Rate, acfm
Heatex Unit	25	120,000
Paper Machine Dryer 1- Section 1	50	30,000
Paper Machine Dryer 2- Main Section	50	30,000
Paper Machine Dryer 3- Main Section	50	30,000
Paper Machine Dryer 4 -Section 3	50	30,000
Room Vent -Section 1	50	20,000
Room Vent - Section 2 (1)	50	17,000
Room Vent - Section 2 (2)	50	17,000
Room Vent - Section 3	50	17,000
Winder Vent (1)	50	12,000
Winder Vent (2)	50	8,000
Sky Vent (1)	50	20,000
Sky Vent (2)	50	20,000
Exhaust Fan	50	6,000
Room Vent	50	7,000
PM Vacuum Pump	50	18,000

D. Description of Air Pollution Control Equipment

There are currently four air pollution control devices at the mill: three cyclones, one multiclone and one baghouse. Two of the cyclones control particulate emissions from the wood chip handling system. The multicyclone controls particlulate emissions from the exhaust of the Zurn boiler. The baghouse controls emissions from the starch silo.

E. Description of Compliance Monitoring Devices

The NO_x RACT Administrative Order requires the Facility to operate compliance monitoring devices on the Zurn boiler. The continuous emission monitoring system ("CEMS") measures both exhaust flow rate and concentrations of CO, NO_x, and oxygen in the flue gas exiting the boiler.

III. QUANTIFICATION OF POLLUTANTS

A. Operating Restrictions

1. Proposed in Permit Application

APMV has proposed to limit the mill's allowable emission of VOCs from the wet end of the paper machine to 49 tons per year in order to not be subject to §5-253.20 of the *Regulations*: VOC RACT. The applicant divided the paper machine into two sections, the wet end, where the paper manufacturing begins, and the dry end, where the finish coatings are applied. The permit application also stated that the dry end of the paper machine was subject to §5-253.10 of the *Regulations*: Paper Coating. The Agency has determined that APMV is not subject to §5-253.10 of the *Regulations*, Paper Coating, as this regulation applies to coating units that apply coatings to finished paper products. As APMV applies coatings as part of the paper making process, the Facility is not subject to this regulation. Consequently, the paper machine will be regulated as a single unit, not in two parts, the wet and dry ends. The Agency proposes to limit the paper machine to 49 tons per year of VOCs.

This VOC limit will be complied with by using the following reporting and recordkeeping procedures:

1. The mill would maintain a spreadsheet for each dye or process chemical containing VOCs. These spreadsheets would contain the VOC content and usage rate of each dye or chemical.

2. The mill would maintain an inventory of all process chemicals that could emit HACs. This inventory would contain the name of each process chemical, its HAC constituents, and the emission rate of each HAC.

3. The mill's environmental engineer would review the Material Safety Data Sheet (MSDS) for all new chemicals entering the mill. Any chemical containing VOCs or HACs would be evaluated for use and placed in the appropriate inventory (see (1) and (2) above). An estimate of hourly use would be given to determine the potential for an emissions violation.

4. The mill would maintain a 12-month rolling sum of emissions, and submit this information to the state by February 1 each year as a part of the annual emissions inventory submittal.

As long as APMV complies with the recordkeeping and reporting procedures proposed in its application, the proposed VOC limit will be practically enforceable. These recordkeeping and reporting procedures will be required under the Title V permit (however, the permit will require semiannual, rather than annual, reporting). It should be noted that the VOC emissions from the mill's boiler and degreasers will not count towards the 49 ton per year limit.

The approval of this VOC limit does not exempt APMV from the provisions of Subchapter V of the *Regulations*. In other words, any physical change or change in the method of operation of the mill that increases actual emissions of VOCs will continue to require Agency review in accordance with Subchapter V.

2. Existing Operating Restrictions: Administrative Order

The Administrative Order (AO) issued January 9, 1996 contains operating restrictions for the Zurn boiler and the four Babcock and Wilcox boilers. The AO limits NO_x emissions from the Zurn boiler to 0.3 lbs/MMBtu and a mass discharge rate of 54 lbs/hr, based on a twenty four hour rolling average (except during startup or shutdown). During start-up and shutdown the nitrogen oxide emissions from the Zurn wood-fired boiler are limited to 54 lbs/hr based on a one hour averaging time. The CO emissions from the boiler are limited to 3 lbs/MMBtu and 540 lbs/hr, based on a twenty four hour averaging time, except for start-up and shutdown. During startup and shutdown the CO emissions are limited to 1100 lbs/hr based on a one hour averaging time. Operation of the four Babcock and Wilcox boilers is limited to 5% of capacity (495,900 gallons). APMV is required to maintain records of fuel use in the Babcock and Wilcox boilers to demonstrate compliance with the 5% limit.

The AO required APMV to install, calibrate and operate a CEMS on the exhaust from the wood-fired boiler. APMV was required to develop, submit and follow a Quality Assurance Plan (QA Plan) for the CEMS. Data collected by the CEMS is submitted to the Air Pollution Control Division quarterly.

The AO required APMV to develop, submit and follow a Malfunction Abatement Plan to prevent, detect, and correct malfunctions or equipment failures that could result in excess emissions from the wood-fired boiler. APMV is also required to minimize the generation of air contaminants through good operating practices and optimization of overfire and underfire air.

B. Identification of Insignificant and Exempt Activities

Activities which qualify as "insignificant activities" under §5-1001(h) of the *Regulations* must be listed in the operating permit application, but the emissions from such activities need not be considered for determining the applicability of Subchapter X. The gasoline, diesel fuel, No. 6 fuel oil and propane tanks at the facility qualify as insignificant activities. In addition, the three distillate fuel space heaters, the mill analytic lab, screw press furnace, propane forklifts, vehicle storage and a maintenance areas and diesel tractors are also insignificant activities. Table 4 lists the specifications of the insignificant emission sources.

Table 4: Insignificant Emission Sources

Description	Size or Capacity	Fuel Type	Date Installed
Peerless Space Heater	0.12 MMBtu/hr	No. 2 Fuel Oil	1968
Powermatic Space Heater (WWTP)	0.4 MMBtu/hr combined	No. 2 Fuel Oil	1975
No. 6 Fuel Oil Storage Tank Fixed Roof Type w/ vent	150,000 gallons	No. 6 Fuel Oil	1967
Ecovault Diesel Fuel Storage Tank Fixed Roof Type w/ vent	10,000 gallons	Diesel Fuel	1993
Propane Storage Tank w/ pressure release vent	1,163 gallons	Propane	1979
Ecovault Gasoline Storage Tank Fixed Roof Type w/ vent	1,000 gallons	Gasoline	1993
Mill Analytical Lab	--	--	--
Propane Forklifts	--	--	--
Vehicle Maintenance and Storage Area	–	–	--
Diesel Tractors	--	--	--

It should be noted that a finding that a process or p iece of equipment is an "insignificant activity" does not relieve the owner or operator from the responsibility of complying with any applicable requirements associated with said process or equipment.

C. Allowable Emissions from Facility

Allowable emissions of SO_2, NO_x, CO, PM/PM_{10}, and HAPs generated by the mill's boilers, have been estimated using emission factors published by the EPA in its *Compilation of Air Pollutant Emission Factors. Volume I: Stationary Point and Area Sources, 5th Edition, AP-42,* NOx RACT Administrative Order and the *Regulations*. The emissions estimates for the mill are summarized in Table 5, and all supporting calculations are provided in Appendix B of this document.

Table 5: Summary of allowable emissions from all processes.

Process	Emissions (tons/year)					
	SO_2	NO_x	CO	PM/PM_{10}	VOCs	HAPs
Boiler: Wood	7	237	2365	366	19	4
Boilers: No 6 Fuel Oil	78	13.6	1.2	9.6	0.1	0.03
Fuel Wood Cyclones	--	--	--	26	--	--
Starch Silo	--	--	--	1.1	--	--
Degreasers	--	--	--	--	0.3	--
Paper Machine	--	--	--	--	49	5
Totals	**85**	**251**	**2366**	**414**	**69**	**9.0**

IV. APPLICABLE REQUIREMENTS

A. Citation and Description of all Applicable Requirements

Section 5-1006(e)(4) of the *Regulations* requires the owner/operator of a stationary air contaminant source to submit a demonstration of compliance with all applicable air pollution control requirements. These requirements include state and federal regulations and the requirements of any construction permit issued under 10 *V.S.A.* §556 and §5-501 of the *Regulations*.

Each applicable requirement (except §§ 5-261 and 5-1010 of the *Regulations*) is discussed below, including its test method and current compliance status. Compliance with §5-261 and §5-1010 of the *Regulations* is discussed separately in sections V and VI of this document, respectively.

The compliance analyses and determinations in this technical analysis rely on data and representations provided by the owner/operator. Any statements and conclusions regarding the compliance status contained herein are not binding against the state of Vermont in any future legal or administrative proceedings.

1. Vermont Air Pollution Control Regulations

§5-201 - Open Burning Prohibited: This regulation prohibits open burning of combustible materials except in conformity with Subchapter II of the *Regulations*.

APMV has stated that the mill is in compliance with this regulation, and will continue to comply in the future. APMV has a policy prohibiting onsite open burning. The Agency will verify compliance with this requirement in the future during its own inspections of the mill. Additionally, the Agency investigates all open burning complaints that it receives to determine if there is a violation.

§5-211(1) - Prohibition of Visible Air Contaminants - Installations constructed prior to April 30, 1970: This regulation applies to the four Babcock and Wilcox oil fired boilers. It states that APMV shall not emit any visible air contaminants for more than a period or periods aggregating six minutes in any hour having a shade, density, or appearance greater than 40% opacity. At no time shall visible air contaminants have a shade, density, or appearance greater than 60% opacity.

The test method used to determine compliance with this standard is Method F-1 (proposed) of Title 40 CFR, Part 52 (51 FR 31076; 8/28/86).

Compliance with this regulation will be determined the Continuous Opacity Monitoring System ("COMS") to be installed and operating within 180 days of Permit issuance.

§5-211(2)- Prohibition of Visible Air Contaminants - Installations constructed subsequent to April 30, 1970: This regulation applies to the Zurn wood fired boiler, cyclones and starch silo. It states that APMV shall not emit any visible air contaminants for more than a period or periods aggregating six minutes in any hour having a shade, density, or appearance greater than 20% opacity. At no time shall visible air contaminants have a shade, density, or appearance greater than 60% opacity.

Compliance with the opacity limit for the Zurn wood-boiler will be determined by the Continuous Opacity Monitor System ("COMS") that APMV is required to install and operate within 180 days of Permit issuance. Compliance for the cyclones and starch silo will be determined by weekly observations using Method F-1, (proposed) of Title 40 *CFR*, Part 52 (51 FR 31076; 8/28/86).

§5-211(3) - Prohibition of Visible Air Contaminants - Installations constructed subsequent to April 30, 1970. Exceptions - *Wood Fuel Burning Equipment*. (a) During normal startup operations, *emissions* of visible *air contaminants* in excess of the limits specified above may be allowed for a period not to exceed one (1) hour; (b) During normal soot blowing operations, *emissions* of visible *air contaminants* in excess of the limits specified above may be allowed for a period not to exceed 30 minutes during any 24 hour period; (c) At no time shall the visible *air contaminants* allowed under this subsection have a shade, density, or appearance greater than 80% *opacity* (No. 4 of the *Ringelmann Chart*).; and (d) Any *wood fuel burning equipment* that has a rated output of 40 *H.P.* or less shall not be subject to this regulation.

Compliance with these opacity standards shall be determined by the COMS to be installed within 180 days of Permit issuance.

§5-221(1)(a) - Prohibition of Potentially Polluting Materials in Fuel, Sulfur Limitation: This regulation applies to the fuel combusted in the Babcock and Wilcox boilers and the propane forklifts. It prohibits the combustion of any fuel containing more than 2.0% sulfur by weight. The test method used to determine compliance with this standard is a fuel analysis using procedures prescribed by the American Society for Testing and Materials.

APMV has stated that it complies with this standard by purchasing No. 6 fuel oil containing less than 2.0% sulfur, and will continue to do so in the future. The propane combusted at the mill has a negligible sulfur content. APMV has stated that it can demonstrate compliance with this standard by maintaining records of fuel vendor certificates.

The continued use of these fuels, in conjunction with proper recordkeeping, is sufficient to ensure compliance with this regulation in the future.

§5-221(2) - Waste Oil. "No person shall cause or permit the use, purchase, sale or exchange in trade for use as a fuel in fuel burning equipment in Vermont of any waste oil unless: (i) ... (ii) The waste oil has properties and constituents within the allowable limits set forth in Table A prior to blending; and (iii) ...(iv) ...(v) ... and (vi) The seller and user comply with the requirements of (the waste oil section) of the Vermont Hazardous Waste Management Regulations."

APMV does not burn waste oil and therefore is not currently subject to this regulation. All waste oil generated at the facility is recycled for rerefinement.

§5-231(1)(b) - Prohibition of Particulate Matter; Industrial Process Emissions. "In cases where *process weight* is not applicable as determined by the *Air Pollution Control Officer*, the concentration of *particulate matter* in the effluent gas stream shall not exceed 0.14 grams per cubic meter (0.06 grains per cubic foot) of undiluted exhaust gas at *standard conditions* on a dry basis. In the case of wood processing operations, *process weight* is not applicable, and instead, the concentration standard specified in this subsection shall apply." Compliance with this emission standard shall be determined in accordance with Title 40 *CFR* Part 60, Appendix A, Reference Method 5 or an alternative method approved in writing by the Agency.

This emission standard applies to starch silo and the two wood chip cyclones.

The Agency will assess compliance with this section in the future as follows: (1) APMV will be required to properly operate and maintain its dust collection systems including fabric filter collector and cyclones; (2) visual observations of each exhaust will be conducted during Agency inspections of the Facility, and (3) weekly observation of the starch silo, and cyclones exhausts by staff at the Facility.

§5-231(3) - Prohibition of Particulate Matter (Combustion Contaminants): Section 5-231(3)(a)(ii) applies to the four (4) Babcock and Wilcox boilers rated at 42.5 MMBtu/hr each. It states that particulate emissions from fuel burning equipment having a rated heat input of greater than 10 MMBtu/hr but less than 250 MMBtu/hr may not exceed the limit determined using the following formula:

$$E_{PM}\left[\frac{lb}{hr \cdot MMBtu}\right] \leq 10^{[\leq 0.47039(\log_{10} HI) \leq 0.16936]}$$

Based on the formula, the boiler is limited to 0.25 pounds per hour per MMBtu and 11 pounds per hour per boiler.

The test method used to determine compliance with this standard is Reference Method 5 (40 *CFR* Part 60, App. A).

Compliance determinations will be based on the following:

(1) The Agency will conduct visual observations of the opacity of the exhaust during its own inspections of the mill in the future. If visible emissions are observed to be in excess of the limits specified in §5-211(2) of the *Regulations*, the Agency may require APMV to perform a stack test to verify compliance with the particulate emission standard or take other corrective measures.

§5-231(3)(b) - Prohibition of Particulate Matter; Combustion Contaminants. "A *person*

shall not discharge, cause, suffer, allow, or permit the *emission* of *particulate matter* caused by the combustion of *wood fuel* in *fuel burning equipment* from any *stack* or chimney:

(i) In excess of 0.45 grains per dry standard cubic foot (gr/DSCF) of exhaust gas corrected to 12% CO_2 in any combustion installation that has a rated output of greater than 90 H.P. which commenced operation prior to December 5, 1977.

(ii) In excess of 0.20 gr/DSCF corrected to 12% CO_2 in any combustion installation that has a rated output of greater than 90 *H.P.*, but less than 1300 *H.P.*, which commences operation after December 5, 1977."

Compliance with this emission standard shall be determined in accordance with Title 40 *Code of Federal Regulations* Part 60, Appendix A, Reference Method 5 or an alternative method approved in writing by the Agency.

This emission standard applies to the Zurn wood-fired boiler which is rated at 1,190 H.P. Pursuant to §5-101 of the *Regulations*, H.P. is defined as a unit that is equal to 10 square feet of boiler heating surface. Therefore, the emission standard of 0.20 gr/DSCF applies to this unit. The calculated permit allowable particulate emissions from the wood boiler is 0.20 gr/DSCF.

The Agency will assess compliance with this standard in the future during any inspections of the Facility. The inspections will include confirmation of the proper operation and maintenance of the fuel burning equipment and the multicyclone in addition to visual observations of the stack exhaust. AMPV will be required to perform a stack test within 180 days of Permit issuance and then retest every three years.

§5-231(4) - Prohibition of Particulate Matter; Fugitive Particulate Matter. "A *person* shall not cause, suffer, allow, or permit any process operation to operate that is not equipped with a *fugitive particulate matter* control system. A *person* shall not cause, suffer, allow, or permit any materials to be handled, transported, or stored; or a building, its appurtenances, or a road to be used, constructed, altered, repaired or demolished without taking reasonable precautions to prevent *particulate matter* from becoming airborne. Public roads will not be subject to this section unless a public nuisance is created."

This regulation applies to plant yard at the Facility. Based on the application submittal and information available to the Agency, the Facility is currently in compliance with this regulation.

The Agency will require the use of reasonable precautions such as the application of water or surfactants to the plant yard as necessary. The Agency will assess compliance with this requirement during any inspections of the Facility, and will require the use of additional measures if found necessary during a compliance inspection.

§5-241 (1) and (2) - Prohibition of Nuisance and Odor: These regulations apply to the entire

mill. Section 5-241(1) prohibits the emission of air contaminants in quantities which would cause injury, detriment, nuisance, or annoyance to any considerable number of people or to the public. Section 5-241(2) prohibits the discharge of objectionable odors beyond the property line of a premises.

APMV has stated that it complies with these regulations and will continue to comply in the future. APMV based this compliance determination on ongoing monitoring by mill personnel.

The Agency will verify compliance with this requirement in the future during its own inspections of the mill. Additionally, the Agency investigates all nuisance and odor complaints that it receives to determine if there is a violation.

§5-253.5 - Stage I Vapor Recovery Controls at Gasoline Dispensing Facilities. The owner or operator of a gasoline dispensing facility which receives deliveries from account trucks shall fill tanks by submerged fill only.

The gasoline storage tank at the facility is subject to this regulation. As the gasoline storage tank is filled by a submerged fill pipe, the facility is in compliance with this regulation.

§5-253.10 - Paper Coating: This regulation limits emissions of VOCs from paper coating units. It appears that it was intended to address coating units that apply coatings to finished paper products. Since APMV uses coatings as a part of its paper making process, this regulation does not apply to the mill.

§5-253.14 - Solvent Metal Cleaning: This regulation applies to the three Safety-Kleen Model degreasing units at the Facility. The degreasers are subject to the following work practice standards set forth in §§5-253.14(c)(1)(iv)-(x) of the *Regulations*.

(a) Provide a permanent, legible, conspicuous label, summarizing the operating requirements;
(b) Store waste solvent in covered containers;
(c) Close the cover whenever parts are not being handled in the cleaner;
(d) Drain the cleaned parts until dripping ceases;
(e) Supply a solvent spray, if used, that ensures a solid fluid stream at a pressure that does not exceed 10 pounds per square inch gauge;
(f) Degrease only materials that are neither porous nor absorbent; and
(g) Cease operation of the unit upon the detection of any visible solvent leak until such solvent leak is repaired.

APMV has stated that it is in compliance with all of the requirements of §5-253.14 of the *Regulations*

Subchapter VIII - Registration of Air Contaminant Source: This Subchapter requires the operator of a stationary source to register it with the Agency if it emits more than 5 tons of any and all air contaminants per year. The operator of a source subject to registration is required to submit information regarding its operations by February 1 of each year, and pay a fee based on its quantity of emissions.

APMV currently participates in the registration program and has stated that it will continue to comply in the future.

2. Administrative Order Issued January 9, 1996

1) AMPV shall properly operate and maintain its fuel burning equipment in order to minimize the generation of air contaminants.

a) The use of good operating practices for fuel fed into the wood boiler (including burning only uncontaminated wood with a moisture content not to exceed 60% by weight and with a size not to exceed two (2) inches by five (5) inches).

b) Optimization of overfire and underfire air system to minimize the generation of CO and NO_x. APMV submitted a report to the Agency determining operating parameters for this requirement on November 15, 1995 and March 7, 1996. The reports determined that the proper operating parameters for the Zurn wood-fired boiler at steam loads between 60,000 lb/hr and 90,000 lb/hr are:

Oxygen	6.5 to 8.0%
Overfire/Underfire Air Ratio:	40/60 to 70/30

2) Emission Limitations

Table 6: NO_x RACT Emission Limitations

Pollutant	Emission Limit	Averaging Period	Compliance Demonstration	When Applicable
NOx	0.3 lbs/MMBtu and 54 lbs/hr	Rolling 24 hour	Continuous Emission Monitoring System	At all times except start up and shutdown
	54 lbs/hr	1 hour average		Start up and shutdown
CO	3.0 lbs/MMBtu and 540 lbs/hr	Rolling 24 hour	Continuous Emission Monitoring System	At all times except start up and shutdown

	1100 lbs/hr	1 hour average		Start up and shutdown

3) Continuous Emission Monitoring ("CEM")

a) APMV shall equip he Zurn wood fired boiler with continuous emission monitoring equipment which will measure and record the concentrations of CO, NO_x,and CO_2 or O_2 in the flue gas exiting the Zurn boiler.

b) All CEMS shall be operated and maintained as specified below:

i) All CEMs shall be installed, calibrated, maintained and operated in accordance with 40 *CFR* Part 60, Appendix B, Performance Specifications 2,3,and 4; 40 CFR Part 60 Appendix F - Quality Assurance Procedures and the Air Pollution Control Division Technical Services Section's ("TSS") "Continuous Emission Monitoring Requirements", as amended.

ii) All CEMS shall be installed according to manufacturer's specifications and shall be operational on before January 15, 1995. The CEMS shall successfully complete the initial Performance Specification Test Procedures by May 1, 1995.

iii) All CEMS must record valid data during all source operating times except for periods of established quality assurance and quality control procedures, preventive maintainance, or unavoidable malfunction. Nevertheless, the CEMS must record valid data for at least 90% of the source operating time within any quarter of the calendar year.

iv) APMV shall develop, implement and maintain for the CEMS a Quality Assurance Plan which satisfactorily documents operations pursuant to state and federal requirements. APMV shall review the Plan annually.

v) AMPV shall submit summary reports for each calendar quarter within 30 days after the close of the quarter. CEMS data for NOx and CO shall be reported in units of lbs/MMBtu and lbs/hr, as 24 hour rolling averages calculated on an hourly basis.

4) AMPV shall not operate its four oil-fired boilers in excess of five (5) percent of their total capacity on a rolling twelve (12) calendar month basis.

5) AMPV shall develop and utilize a malfunction abatement plan for those systems/operations that affect regulated emissions for its Zurn wood-fired boiler.

3. Federal Air Pollution Control Regulations

NSPS and NESHAPs: No National Emissions Standards for Hazardous Air Pollutants (NESHAPs) or New Source Performance Standards (NSPS) apply to the mill.

EPA has proposed three MACT standards (also known as NESHAPs) for the pulp and paper industry. MACT I and MACT III were combined into one standard and signed into law in November 1997. This standard, known as the *National Emission Standards for Hazardous Air Pollutants from the Pulp and Paper Industry* (40 *CFR*, Part 63, Subpart S), regulates emissions from processes such as chemical and semichemical pulping, bleaching, wastewater treatment, mechanical pulping, secondary fiber deinking, nonwood pulping, and paper making. Subpart S applies to pulp, paper, and paperboard mills that are major hazardous air pollutant (HAP) sources. Although some of the activities at APMV's facility fall into the regulated categories, it is not subject to the regulation because it is not a major HAP source.

MACT II, which has not yet been finalized, will address combustion sources at pulp and paper mills (other than virgin fuel combustion). Since this facility does not have any such sources, MACT II will not apply to the mill.

40 *CFR* Part 64 - Compliance Assurance Monitoring: Pursuant to requirements concerning enhanced monitoring and compliance certification under the *Clean Air Act* ("*CAA*"), EPA promulgated new regulations and revised regulations on October 22, 1997. These new requirements implemented compliance assurance monitoring ("CAM") for major stationary sources of air pollution that are required to obtain operating permits under Title V of the *CAA*. Subject to certain exemptions, the new regulations require owners or operators of such sources to conduct monitoring that satisfies particular criteria established in the rule to provide a reasonable assurance of compliance with applicable requirements under the *CAA*. Monitoring is proposed to focus on emissions units that rely on pollution control device equipment to achieve compliance with applicable standards. The regulations also provide procedures for coordinating these new requirements with the operating permits program regulations.

As a result of comments received during the rule making process and the lengthy delay in the adoption of the CAM rule, U.S. EPA provided an extended implementation schedule for this rule. Facilities which had submitted a complete operating permit application prior to April 20, 1998, were not required to address CAM as part of their initial operating permit application unless they proposed to make significant changes to the facility subsequent to this date and the facility operated "large" pollutant specific emission units ("PSEU"). A "large PSEU" is defined as a unit with post control emissions greater than or equal to the major source threshold. APMV was not required to address CAM as it had submitted an administratively complete operating permit application prior to April 20, 1998.

§64.2 in 40 *CFR* Part 64 specifies that each pollutant specific emission unit at a facility that meets a three-part test is subject to the requirements for CAM. An emission unit must:

(A) be subject to an emission limitation or standard,
(B) use a control device to achieve compliance, and
(C) have **pre-control** emissions that exceed or are equivalent to the major source threshold in 40 *CFR* Part 70 (i.e., 10 tpy individual HAP, 25 tpy total HAPs, 50 tpy VOCs, or 100 tpy for any other air contaminant).

Note that the term "control device" means equipment, other than inherent process equipment, that is used to destroy or remove air pollutant(s) prior to discharge to the atmosphere. The term "control device" does not include passive methods such as lids or seals, use of low-polluting fuels or inherent process equipment provided for safety or material recovery. Additionally, the CAM rule provides some exemptions, such as an exemption for any affected facility subject to an NSPS or NESHAP promulgated after November 15, 1990.

The Zurn wood-fired boiler meets the three part test for CAM. APMV will need to address CAM for the Zurn wood-fired boiler upon operating permit renewal.

B. Citation and Identification of Requirements For Which a Permit Shield Provision Has Been Requested

Pursuant to §5-1015(a)(11) of the *Regulations*, an owner/operator may request to be shielded from specific state or federal requirements which do not apply to the subject source. If the applicability of a regulatory requirement is unclear to the applicant, when appropriate, the Agency may grant a permit shield stating that the requirement does not apply to the source. Once a permit shield is granted, the Agency may not initiate any enforcement action against the Facility based upon a regulation or standard covered by the permit shield. The Agency would be required to amend the Permit to Operate and incorporate the applicable requirement prior to initiating any enforcement action for non-compliance with the applicable requirement. The Agency's permit shield determinations are based upon the information submitted by the owner/operator in its operating permit application. The resulting permit shield shall be effective only with respect to activities disclosed in the application.

It is the Agency's procedure to grant permit shields only for those requirements or standards which conceivably could apply to the Facility, and the Agency has made a determination that such requirement does not in fact apply. The Agency does not intend to grant permit shields for those requirements that clearly do not apply to the Facility. For example, an asphalt plant will not be granted a permit shield from a regulation applying to a dry cleaning operation. Additionally, the Agency and the U.S. EPA do not favor granting permit shields from broad requirements such as a section of the *Clean Air Act* or an entire Subpart of the federal regulations in 40 *CFR*. In the words of the U.S. EPA, ". . . the intended purpose of a negative applicability determination is to memorialize a decision where applicability of a certain regulation is somewhat unclear without extensive knowledge of the regulations and investigation of the relevant facts."

APMV has requested to be shielded from several potentially applicable requirements. The Agency will grant a permit shield for the state and federal regulations listed in Table 7 below as granted. The permit shields shall be binding only with respect to the activities disclosed in APMV's application.

Table 7: Permit Shield Determinations

Requirement for Which a Permit Shield has been Requested	Description of Requirement	Agency's Determination	Explanation
40 *CFR*, Part 60.40 et seq. NSPS, Subpart D	Standards for Performance for Fossil Fuel-Fires Steam Generators (>250 MMBtu/hr)	Granted	No boilers >250 MMBtu/hr
40 *CFR*, Part 60.40 et seq. NSPS, Subpart Da	Standards for Performance for Electric Utility Steam Generators (>250 MMBtu/hr)	Granted	
40 *CFR*, Part 60.40a et seq. NSPS, Subpart Db	Standards of Performance for Industrial-Commercial Steam Generating Units (>100 MMBtu/hr and constructed or modified after June 19, 1984)	Granted	All Boilers were installed prior to June 19, 1984 and have not been modified.
40 *CFR*, Part 60.40a et seq. NSPS, Subpart Dc	Standards of Performance for Small Industrial-Commercial-institutional Steam Generating Units (10<MMBtu/hr<100 and constructed, reconstructed or modified after June 9, 1989)	Granted	All Boilers were installed prior to June 9, 1989 No modifications have taken place.
40 *CFR*, Part 60.280 et seq NSPS Subpart BB	Kraft Pulp Mills. This subpart applies to specific process in kraft pulp mills that were constructed, reconstructed or modified after September 24, 1976.	Granted	APMV is a non integrated paper mill which does not utilize these processes and was constructed prior to the effective date.
40 *CFR*, Part 60.110 et seq NSPS Subpart K	Petroleum Storage Vessels. (Capacity >40,000 gal and constructed on or after June 11, 1973)	Granted	The 150,000 gallon No. 6 Fuel Oil tank was installed in 1967.
40 *CFR*, Part 60.110a et seq NSPS, Subpart Ka	Petroleum Storage Vessels. (Capacity >40,000 and constructed or installed and or after May 18, 1978)	Granted	
40 *CFR*, Part 60.110b et seq NSPS Subpart Kb	Volatile Organic Liquid Storage Vessels. (Capacity >40 m^3 and constructed on or after July 23, 1984)	Granted	
40 *CFR*, Part 60.150, et seq. NSPS Subpart O	Sewage Treatment Plants (Applies to incinerators at sewage treatment facilities)	Denied	There are no incinerators at the Facility
40 *CFR*, Part 60, et seq. NSPS Subparts B through VVV	Facility specific New Source Performance Standards applying to sources of specific air emissions.	Denied	This is too broad a request.*
40 *CFR*, Part 61 NESHAPS Subparts A through FF	National Emission Standards for Hazardous Air Pollutants. This subpart applies to emission of specific hazardous air pollutants from seven specific source types.	Denied	This is too broad a request.*

40 *CFR*, Part 63 et seq	MACT Standards	Denied	This is too broad a request.*
40 *CFR* Parts 72 through 78	Acid Rain Program	Denied	This is too broad a request.*
40 *CFR* Part 82, et seq.	Stratospheric Ozone Protection.	Denied	This is too broad a request.*
§5-201 to 5-203 of the *Regulations*	Open Burning Prohibition	Denied	The facility is capable of open burning.
§5-222 of the *Regulations*	Prohibition of Potentially Polluting Materials in Fuel: Waste Oil Combustion	Denied	The facility is capable of burning waste oil.
§5-231(2) of the *Regulations*	Prohibition of Particulate Matter: Incinerator Emissions	Denied	The facility does not have an incinerator.
§5-231(5) of the *Regulations*	Prohibition of Particulate Matter: Asphalt Concrete Plants	Denied	The facility is not an asphalt concrete plant.
§5-241(3)(a) to (e) of the *Regulations*	Prohibition of Nuisance and Odor: Control of Odor from Industrial Processes	Denied	The facility is capable of producing odors from the industrial processes.
§5-251 of the *Regulations*	Control of Nitrogen Dioxide Emissions	Granted	The facility has no fuel burning equipment with a heat input >=250 MMBtu
§5-252 of the *Regulations*	Control of Sulfur Dioxide Emissions	Granted	
§5-253.1 of the *Regulations*	Control of Volatile Organic Compounds: Petroleum Liquid Storage in Fixed Roof Tanks: Tanks > 40,000 gallon and Vapor Pressure >=1.52 psi	Granted	The facility does not store liquids with vapor pressure >= 1.52 psi in tanks> 40,000 gallons.
§5-253.2 to 253.4 and 253.6 of the *Regulations*	Control of Volatile Organic Compounds: Bulk Gasoline Terminals, Bulk Gasoline Plants, Gasoline Tank Trucks	Denied	The facility does not meet the definition of Bulk Gasoline Terminals, Bulk Gasoline Plants, or Gasoline Tank Trucks
§5-253.13 of the *Regulations*	Coating of Miscellaneous Metal Parts	Granted	Metal parts coating at the facility is limited to maintenance operations.
§5-253.15 of the *Regulations*	Cutback and Emulsified Asphalt	Denied	The facility does not mix, store or manufacture cutback or emulsified asphalt.

§5-253.20 of the *Regulations*	Other Sources that Emit Volatile Organic Compounds (VOC RACT): Applies to operations or processes with allowable emissions of VOCs >=50 tpy, except for fuel burning or processes regulated under other subsections of §5-253 of the *Regulations*.	Denied	The paper machine is capable of being subject to this regulation. The current permit limits the machine 49 tpy however, the facility will be subject if the emissions exceed the current 49 tpy limit.
§5-405 of the *Regulations*	Required Air Monitoring: Requires air monitoring, recordkeeping and reporting.	Denied	The facility is required to perform recodkeeping and reporting.
§5-406 of the *Regulations*	Required Air Modeling	Denied	The facility is capable of being subject to this regulation.
§5-901 of the *Regulations*	Control of Ozone Depleting Chemicals: Definitions	Denied	
§5-911 of the *Regulations*	Control of Ozone Depleting Chemicals: Motor Vehicle Air Conditioning	Denied	The facility does not service or repair motor vehicle air conditioners
§5-921 of the *Regulations*	Control of Ozone Depleting Chemicals: Regulation of Ozone Depleting Products	Denied	The facility does not engage in the sale of ozone-depleting products.

*In light of a recent letter from U. S. EPA to the Agency on broad permit shields (dated March 31, 1999), the Agency is denying a shield from these requirements.

C. Description of Alternative Operating Scenarios

APMV has not requested approval for any alternative operating scenarios.

V. HAZARDOUS AIR CONTAMINANTS

Section 5-261 of the *Regulations* addresses emissions of hazardous air contaminants (HACs). The applicability of this section to an air contaminant source is determined by comparing the actual emissions of each HAC to its Action Level. If the actual emissions of any contaminant exceed its Action Level, the source must demonstrate compliance with §5-261. To calculate the emissions of a HAC, all sources of that contaminant at the facility must be aggregated.

Pursuant to §5-261(1)(b)(i) of the *Regulations*, all fuel burning equipment which combusts virgin liquid fuel is exempt from the requirements of §5-261. In addition, the Zurn wood-fired boiler is exempt based on §5-261(1)(b)(ii), as it was installed prior to January 1, 1993. Therefore, all of the mill's boilers are exempt from this section.

A. Hazardous Air Contaminant Emission Estimates

The mill uses several process chemicals and dyes that contain volatile HACs that are emitted to the

ambient air. The actual 1999 emission rates, scaled up to full time operation, of these HACs are listed and compared to their Action Levels in Table 8. The emission calculations are contained in Appendix B of this document.

Table 8: Emissions of HACs and comparisons to Action Levels.

Process Chemical	HAC	Emission Rate (lb/8hr)	Action Level (lb/8hr)	Action Level Exceedence?
Sodium Hypochlorite	Sodium Hydroxide	0.17	0.84	No
Blue GDF	Diethanolamine	0.10	5.4	No
Saf-T-Brite II	D-Limonene	0.09	60	No
Scriptset 720	Styrene Monomer	0.004	42.5	No
Elvanol 71-30	Methanol	6.8	322	No
Cortrol OS7780	hydroquinone	0.12	0.2	No

As shown in Table 8 above, APMV does not currently generate emissions of any HAC in exceed of its respective Action Level. Therefore, APMV is not subject to §5-261 of the *Regulations*.

VI. REASONABLY AVAILABLE CONTROL TECHNOLOGY

At this time, the Agency has not established an Operating Permit Reasonably Available Control Technology (RACT) (§5-1010 of the *Regulations*) applicable to the mill. The Agency will notify APMV if any applicable RACT requirement is developed in the future.

VIII. COMPLIANCE PLAN

A. Description of the Compliance Status for Each Applicable Requirement

A. Description of the Compliance Status for Each Applicable Requirement

See Part IV above.

B. Compliance Schedule for Each Applicable Requirement for Which the Source is Not in Compliance

Not applicable to this Facility.

IX. PUBLIC PARTICIPATION

The mill is classified as a Title V subject source, and consequently any operating permit application submitted for this facility is subject to the public participation requirements found in §5-1007 of the *Regulations*. The Agency published a notice in *The Caledonian Record* on November 16, 1995

stating that an administratively complete operating permit application had been received from APMV.

A second notice was published in *The Caledonian Record* on October 5, 2000 announcing that the Agency had declared the application technically complete and had issued a draft operating permit. This second notice also solicited comments regarding the draft permit and requests for an informational meeting. The deadline to request an informational meeting was October 30, 2000. The Agency did not receive a request for a public meeting. The public comment period closed on November 6, 2000. The agency received some minor comments from APMV and has incorporated them into the final permit.

On October 5, 2000 the Agency notified the U. S. EPA and the states of New Hampshire, New York and Massachusetts of the draft permit and requested comments. The states of New Hampshire, New York and Massachusetts were given a deadline of November 6, 2000 for comments on the draft permit. No comments were received from the states of New Hampshire, New York or Massachusetts.

On November 7, 2000 the proposed permit was forwarded to the EPA for a 45 day review and comment period. The EPA completed their review of the permit on November 14, 2000 and notified the Agency that they had no comments on the permit.

X. CONCLUSIONS

Based on the foregoing technical analysis, the following conclusions are made:

1. The Agency has determined that the Facility, subject to the recommended permit conditions, will meet all the applicable air pollution control requirements.

2. Pursuant to *10 V.S.A.* §556a and Subchapter X of the *Regulations,* the Facility is designated as a Subchapter X Major Source and as a Title V Subject Source.

3. Draft Permit Conditions (see draft permit)

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APPENDIX A

Site Map

Plot Plan

Process Flow Diagram

APPENDIX B

Emissions Calculations

APPENDIX B

Emissions Calculations

I. Allowable Emissions from Boilers

Allowable emissions is defined under Section 5-101(11) of the *Regulations* as "...the emission rate calculated using the maximum rated capacity of the source and, if applicable, either:

(a) The applicable emission standard contained in the regulations, if any, or
(b) The emission rate or design, operational or equipment standard specified in any order or agreement issued under these regulations that is state and federally enforceable."

A. Zurn Wood Boiler

Pursuant to the NO_x RACT order issued January 9, 1996, the Zurn Boiler exhaust emissions of nitrogen oxides and carbon monoxide are restricted. The emission limits for the boiler are listed in Table B.1 For most combustion air contaminants, the peak emission rate will be produced when the Zurn Boiler is operating on a continuous operation (i.e., 8,760 hrs/yr) at full load (i.e., 100% of capacity).

Table B.1: Zurn Emission Limitations from NO_x RACT

	Nitrogen Oxides (NO_x)		Carbon Monoxide (CO)	
	Emission Limit	**Averaging Period**	**Emission Limit**	**Averaging Period**
Start-Up/Shutdown	54 lbs/hr	1 hour average	1100 lbs/hr	1 hour average
Normal Operation	54 lbs/hr & 0.3 lbs/MMBtu	24 hour rolling average	540 lbs/hr & 3.0 lbs/MMBtu	24 hour rolling average

- The particulate (PM) emissions from the Zurn boiler are limited to 0.20 grains/dscf, corrected to 12% CO_2, by §5-231(3)(b)(ii) of the *Regulations*.
- Allowable Emissions of sulfur oxides (SO_x), volatile organic compounds (VOCs), and Hazardous Air Pollutants (HAPs) for the Zurn boiler were calculated based on emission factors from *AP-42* published by the EPA in its *Compilation of Air Pollutant Emission Factors. Volume I: Stationary Point and Area Sources, 5th Edition, Section 1.6 (2/99).*
- Wood Fuel BTU Content: 4,500 BTU/lb (green wood fuel)
- Maximum Rated Heat Input: 180 MMBTU/hr (Wood)
- Fuel Maximum Firing Rate: 480 tons/day (175,200 tpy)
- CO_2% at Maximum Capacity = 5.6% @ 104,865 dscfm (3/11/93 Source Test, Average of Runs 1-4)

Table B.2: Zurn Boiler Wood Firing Allowable Emissions

Pollutant	Emission Limit/Factor	Source of Limit/Factor	Allowable Emissions, tpy
NO_x	54 lbs/hr	NO_x RACT Administrative Order, 1/9/96	237
CO	540 lbs/hr	NO_x RACT Administrative Order, 1/9/96	2,365
SO_x	0.075 lb/ton	AP-42, Table 1.6-2, 2/99	7
VOC	0.22 lb/ton	AP-42, Table 1.6-3, 2/99	19
PM	0.2 grains/dcsf at 12% CO_2	§5-231 of the *Regulations*	366*
HAPs	4.52×10^{-2} lb/ton	AP-42, Tables 1.6-4&5, 2/99	4

* The allowable emissions of PM were based on 0.2 grains/dscf converted to 12% CO_2 using the results of a source test performed at maximum capacity on 3/11/93 (5.6% CO at a flow rate of 104,865 dscfm).

$$C_{actual} = C_s \left[\frac{CO_{2,\,actual}}{12\%} \right] = 0.093 gr/dscf$$

B. Babcock and Wilcox Boilers (4)

- APMV operates four Babcock and Wilcox boilers having a rated heat input of 42.5 MMBtu/hr each.
- The Babcock and Wilcox burn No. 6 fuel oil with a maximum sulfur content of 2.0% by weight.
- These boilers are limited to 5% of capacity by the NO_x RACT. Each boiler has a maximum fuel rate of 283 gal/hr, resulting a total maximum annual fuel use of 9.9 million gallons per year. 5% of 9.9 million gallons results in a fuel cap of 495,900 gallons per year, for the four boilers combined.
- Emissions of SO_2, NO_x, CO, VOCs, and HAPs are based on emission factors for fuel oil combustion in boilers less than 100MMBtu/hr published in EPA's *Compilation of Air Pollutant Emission Factors: Volume I: Stationary Point and Area Sources, AP-42, 1995.*
- According to AP-42, the SO_2 emission factors can be calculated according to the following formulas (where %S is the sulfur content by weight percent):

  F_{SO2} = (157 × %S) lb/10^3 gal = (157 × 2.0%) lb/10^3 gal = 314 lb/10^3 gal

- Allowable PM emissions were based on §5-231(3)(a)(ii) of the *Regulations*.

Table B.3: Allowable emissions from Babcock and Wilcox Boilers.

Pollutant	Emission Limit/Factor	Source of Limit/Factor	Allowable Emissions, tpy
NO_x	55 lbs/10^3 gallons	AP-42, Table 1.3-1, 9/98	13.6
CO	5 lbs/10^3 gallons	AP-42, Table 1.3-1, 9/98	1.24
SO_x	314 lbs/10^3 gallons	AP-42, Table 1.3-1, 9/98	78
VOC	0.28 lbs/10^3 gallons	AP-42, Table 1.3-3, 9/98	0.07
PM	0.25 lb/hr/MMBtu per Boiler (11 lb/hr per boiler) x 5%	§5-231 of the *Regulations*	9.6
HAPs	0.138 lb/10^3 gallons	AP-42, Table 1.3-9,10,&11, 9/98	0.03

II. Allowable Emissions from Starch Silo

- The maximum capacity of the starch silo baghouse is 482 cfm.
- The starch silo generates PM emissions. Allowable emissions are calculated based on §5-231(1)(b) of the *Regulations* and are limited to 0.06 grains/cf.
- Allowable PM emissions from the starch silo are 1.32 tons/year.

482 cfm x 0.06 gr/dscf x 8760 hr/yr x 60 min/hr x (7.14×10^{-8} ton/gr) = 1.1 tpy

III. Allowable Emissions from Wood Chip Handling System

- The wood handling system generates PM emissions. Allowable emissions are calculated based on §5-231(1)(b) of the *Regulations* and are limited to 0.06 grains/cf.
- The two cyclones have a maximum capacity of 5720 cfm each.
- Allowable PM emissions from the wood chip handling system are 26 tons/year.

11,440 cfm x 0.06 gr/dscf x 8760 hr/yr x 60 min/hr x (7.14×10^{-8} ton/gr) = 26 tpy

IV. Allowable Emissions from Degreasers

- APMV operates 3 Safety-Kleen degreasers (2 Model 34 and 1 Model 23).
- Solvent used is SK Premium 150, which contains solvent naphtha. Solvent naphtha is a VOC but not a HAP or HAC.
- Estimated annual solvent loss based on letter from Safety-Kleen (April 7, 1994) is approximately 604 lbs/year (0.30 tpy).

V. Allowable Emissions from Paper Machine

- APMV uses various chemical dyes, additives, sizings and coatings in the paper making process. These compounds emit VOCs, HACs, and HAPs into the ambient air. VOC emissions from the paper machine are limited to 49 tons per year. If the facility exceeds this limit APMV will be subject to §5-253.20 of the *Regulations* (VOC RACT).
- The potential VOC emissions are estimated for comparison to the 49 tpy limit. The estimate was based on the 1999 Registration information submitted to the Agency. The 1999 usage amounts were scaled up to full time, year round operation (9 Months operation x 1.33 = 12 months operation, 12 months operation x 1.39 = full time 12 month operation). Factor to scale up from 12 month operation to full time 12 month was developed with APMV.
- Estimated potential emissions of VOCs from the paper machine are listed below in Table B.4.

Table B.4: Potential Emissions of VOCs from Paper Machine

Compound Name	Annual Usage, lbs	% VOC from MSDS	Allowable VOC Emissions, lbs
Blue GDF	251	10.9	27
Elvanol 71-30	323,663	5	16,183
Protocol WB 8000	23,321	20.3	4,734
Caratarex FL	26,943	2.1	566
Yorksize 1030	223,436	8	17,875
Latex DL 233NA	34,984	0.05	17.5
Yellow Rw Liq	713	3.2	23
Blue 2AL	5,971	6	358
Leucophor B302	272,630	0.4	1,091
Perform PC 8138	64,074	30	19,222
WSM-935	18,798	44	8,271
Spectrum RX 8700	354	10	35
Saf-t-Brite	2,882	5	144
Total (34 tpy)			**68547**

VI. Allowable Emissions of Federal Hazardous Air Pollutants from Paper Machine

- Sources of Hazardous Air Pollutants (HAPs) at the facility are the chemicals added to the paper making process.
- Emission Data based on 1999 actual emissions reported to the Agency through the Registration Program.
- Actual emission data was scaled up from 9 months to 12 (multiplied by 1.33) and then scaled up to potential emissions (multiplied by 1.39).
- Table B.5 shows potential HAP emissions from process chemicals and dyes used at the facility.

Table B.5: Allowable HAP Emissions from Process Chemicals.

HAP	Emission Rate (lb/yr)	Emission Rate (ton/yr)
Styrene	6.7	0.003
Methanol	10,357	5.20
Totals	**10363.7**	**5.20**

VII. Actual Emissions of Hazardous Air Contaminants

- The mill uses several process chemicals and dyes that contain volatile HACs. The actual emissions of these HACs are estimated by assuming that 100% of each volatile HAC is emitted to the ambient air.
- HAC emission data based on 1999 Registration Data scaled up from 9 months to twelve (x 1.33).
- Boiler water conditioners were not included as they would not be released to the air.
- No compounds exceed their respective Action Level.

Table B.6: Emissions of hazardous air contaminants.

Process Chemical	HAC	Actual Use Rate (lb/yr)	% HAC	Emission Rate (lb/8hr)	Action Level (lb/8hr)
Sodium Hypochlorite	Sodium Hydroxide	9,310	2	0.17	0.84
Blue GDF	Diethanolamine	180	6	0.01	5.4
Saf-T-Brite II	D-Limonene	2,059	5	0.94	60
Scripset 720	Styrene	9,573	.05	0.004	42.5
Elvanol 71-30	Methanol	231,193	3.2	6.8	322

AS

VERMONT AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Air Pollution Control Division

TECHNICAL ANALYSIS OF AN AIR CONTAMINANT SOURCE FOR A PERMIT TO OPERATE

#AOP-00-024
DEC# SJ75-0002

November 6, 2000
(Revised: December 18, 2000)

Prepared By: John L. Perreault, P.E.

APPLICANT:	EHV Weidmann Industries, Incorporated P.O. Box 903 St. Johnsbury, VT 05819-0903
SOURCE:	Transformer Board Manufacturing and Assembly Facility EHV Weidmann Industries, Incorporated One Gordon Mills Way St. Johnsbury, VT 05819
RESPONSIBLE OFFICIAL:	Kenneth R. Linsley, VP of Manufacturing EHV Weidmann Industries, Inc.
APPLICATION CONTACT:	Larry Corrow *Environmental & Safety Director* EHV Weidmann Industries, Inc. Tel. - (802) 751-3407 Fax - (802) 751-3431
	Michael F. Morin, P.E. *Consultant* Neill and Gunter, Inc. 482 Payne Road Scarborough, ME 04103 Tel. - Fax -
COUNTY:	Caledonia
AREA DESIGNATION:	Attainment for PM_{10}, SO_2, NO_x, CO, and Pb Unclassified for O_3
UTM COORDINATES:	$^{7}37^{275}$ m E, $^{49}29^{725}$ m N, Zone 18 (Center of Main Manufacturing Building)

1.0 INTRODUCTION

On October 19, 2000, EHV Weidmann Industries, Incorporated (hereinafter "EHV Weidmann" also referred to herein as "Owner/Operator") submitted an application and $585.00 base application review fee to the Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division ("Agency"). EHV Weidmann's application requested an amendment of its existing Air Pollution Control Permit to Construct and Operate (#AOP-95-075) issued on May 19, 1999. EHV Weidmann proposed to install a new 500 horsepower ("HP") residual oil-fired boiler to replace its existing Boiler #2 located in the Main Building.

This Technical Analysis documents the Agency's review of the proposed project with respect to the *Vermont Air Pollution Control Regulations* ("*Regulations*").

1.1 Administrative Milestones

Table 1-1: Administrative Summary

Administrative Item	Result or Date
Date Application Received:	10/19/2000
Date Fee Received and Amount:	10/19/2000 $585.00
Date Administratively Complete:	10/20/2000
Date & Location Receipt of Application Noticed:	10/31/2000 *The Caledonian Record*
Date Technically Complete:	11/06/2000
Date Proposed Decision:	11/06/2000 Approved
Date & Location Proposed Decision & Public Comment Period Noticed:	11/09/2000 *The Caledonian Record*
Date & Location Public Meeting Noticed:	No request rec'd on or before 12/04/2000
Date & Location of Public Meeting:	No request rec'd on or before 12/04/2000
Deadline for Public Comments:	12/08/2000
Date Supplemental Fees Rec'd and Amount Rec'd:	12/18/2000 $3,210.00
Breakdown of Supplemental Fees	Engineering Review Fee $1,460.00 Observe & Review Emissions Testing $1,750.00 Total Fees $3,210.00
Classification of Source Under §5-401:	§5-401(6)(a) - Fossil fuel burning equipment of greater than 10 million BTU's per hour rated heat input; §5-401(11) - Manufacturing, processing, application of chemicals, including the processing or application of plastics, rubbers, or resins; §5-401(12) - Operations involving the handling or transferring of sand and dust producing materials of the *Regulations*.

Classification of Operating Permit Application:	Title V Subject Source
New Source Review Designation of Source:	Major Stationary Source
Designation of Modification	Non-Major Modification
Facility SIC Code(s):	2631
Facility SIC Code Description(s):	Paperboard Mills

Allowable Air Contaminant Emissions (tons/year)*							
PM/PM_{10}	**SO_2**	**NO_x**	**CO**	**VOCs**	**Pb**	**Acetone**	**Total HAP**
122	301	91	12	<50**	<0.1	<50**	<25**

* PM/PM_{10} - particulate matter and particulate matter of 10 micrometers in size or smaller, SO_2 - sulfur dioxide, NO_x - oxides of nitrogen, CO - carbon monoxide, VOCs - volatile organic compounds, Pb - lead, HAPs - hazardous air pollutants as defined in §112 of the federal *Clean Air Act.*

** Actual emissions have been estimated to be approximately 9, 25, and 7 tons per year for VOCs, Acetone, and Total HAPs, respectively.

1.2 Basis of Review

EHV Weidmann owns and operates a transformer board manufacturing and assembly facility located off U.S. Route 5 in St. Johnsbury, Vermont (hereinafter "Facility"). Operations performed at the Facility are classified within the Standard Industrial Classification Code - 2631 (Paperboard Mills). The operations performed by EHV Weidmann at the Facility are classified as a source of air contaminants under §5-401 of the *Regulations*, as follows: §5-401(6)(a) - Fossil fuel burning equipment of greater than 10 million BTU's per hour rated heat input; §5-401(11) - Manufacturing, processing, application of chemicals, including the processing or application of plastics, rubbers, or resins; and §5-401(12) - Operations involving the handling or transferring of sand and dust producing materials.

The Agency granted approval for the modifications to the Facility pursuant to the requirements of §556 of Title 10 *Vermont Statutes Annotated* ("10 *V.S.A.*") and §5-501 of the *Vermont Air Pollution Control Regulations* ("*Regulations*") on June 3, 1985. This Air Pollution Control Permit to Construct ("Permit to Construct") was amended on August 21, 1996, in order to allow the installation of a new fabric filter collector and increased exhaust air flow rates through two existing collectors. The fabric filter collectors control emissions of particulate matter ("PM/PM_{10}") generated by the board processing activities. On December 30, 1998, the Agency once again amended its approval to allow the installation of a fabric filter collector and make-up air heater in the Recycle Building.

Additionally, allowable emissions of all air contaminants from EHV Weidmann's operations have been estimated to be greater than ten (10) tons per year ("tpy") and allowable emissions of PM/PM_{10} and sulfur dioxide ("SO_2") greater than 100 tpy. Therefore, pursuant to §§5-1002, 5-1003, and 5-1005 of the *Regulations*, the Facility is classified as a "Title V Subject Source" and is subject to the requirement to secure an Air Pollution Control Permit to Operate ("Permit to Operate") consistent with the requirements of Subchapter X of the *Regulations* and Title V of the *Clean Air Act.* EHV Weidmann was granted its initial Permit to Operate, pursuant to these regulations, on

May 19, 1999. The Permit to Operate was issued simultaneously with an administrative amendment of EHV Weidmann's existing Permit to Construct in order to facilitate the issuance of one combined permit for the same Facility. The Air Pollution Control Permit to Construct and Operate ("Permit to Construct and Operate") was issued consistent with 10 *V.S.A.* §556(e) for the purposes of reducing the administrative burden of enforcing two separate permits for the same Facility.

As was stated previously, EHV Weidmann proposes to install and operate a new residual oil-fired boiler at its Facility. The proposed installation of this replacement boiler satisfies the definition of modification within §5-101 of the *Regulations*, since the project involves a physical change of the stationary source which would result in an actual emissions increase. Consequently, the proposed project is subject to Agency review and approval pursuant to 10 *V.S.A.* §556 and Subchapter V of the *Regulations*. Additionally, any modification of a Title V subject source is subject to review and approval pursuant to the requirements of 10 *V.S.A.* §556a and Subchapter X of the *Regulations*, as well as the federal operating permit regulations in Title 40 *Code of Federal Regulations* ("40 *CFR*") Part 70. The Agency proposes to combine its review for approval of the project under both the construction and operating permit requirements consistent with the authority in 10 *V.S.A.* §556(e).

1.3 Project Description

EHV Weidmann proposes to replace its existing Boiler #2 used to produce hot water for the board manufacturing line identified as BM2 at the Facility. Additionally, EHV Weidmann proposes to make other process changes to improve press operation, steam use, and boiler performance. Process changes will include the installation of a hot water accumulator. This device is intended to reduce boiler swings during periods when the BM2 has very high heat demands. EHV Weidmann is also proposing other process changes to reduce the heat load on Boiler #1 (i.e., switching "white water heating demands" to the replacement boiler).

The new boiler will be a 500 HP fire-tube boiler manufactured by Johnston (Model PFTA500-4). The new boiler will produce steam instead of hot water. According to EHV Weidmann, this will give them more flexibility in meeting the overall heating requirements of the Facility, since the new boiler will be connected to the mill-wide steam header. Hot water for the BM2 will be produced using a steam/water heat exchanger. The new boiler is proposed to have the below listed specifications:

Maximum Rated Heat Input:	19.4 million British Thermal Units per hour ("MMBTU/hr")
Maximum Oil Firing Rate:	130 gallons per hour ("gph");
Fuel:	No. 6 Fuel Oil with a maximum sulfur content not to exceed 0.5 % by weight;
Steam Pressure:	200 psig (maximum) 150 psig (design);
Maximum Steam Production:	17,250 pounds per hour ("lbs/hr");
Combustion Information:	One Low-NO_x burner, compressed air atomization of fuel, forced draft, staged air combustion.

The replacement boiler will be installed in the boiler room next to existing Boiler #2. EHV Weidmann proposes to continue to operate existing Boiler #2 until the replacement boiler is on-line. Once the new boiler is operational, EHV Weidmann proposes to shutdown and dismantle the old unit.

The existing Boiler #2 operated 6,384 hours and burned 266,264 gallons of No. 6 fuel oil (maximum sulfur content of 2% by weight) in 1999. With the proposed improvements, EHV Weidmann projects that the replacement boiler will pick up an additional heat load equivalent to 158,700 gallons of fuel oil per year.

2.0 FACILITY DESCRIPTION AND LOCATION

2.1 Description of Plant Layout and Surrounding Area

The Facility is located off U.S. Route 5 just north of St. Johnsbury, Vermont. The area surrounding the Facility property is rural and consists of primarily agricultural and residential uses. U.S. Route 5 and the Passumpsic River provide the eastern boundary for the plant property, while Interstate 91 provides the western boundary. The geographical area is complex terrain in all directions surrounding the site. Figures 1 and 2 in Appendix A of this Technical Analysis depict the location/property of the Facility.

2.2 Explanation of Process (Including SIC Codes)

The operations performed at the Facility are described using the Standard Industrial Classification Code - 2631 (Paperboard Mills). EHV Weidmann manufacturers transformer board and transformer board assemblies. The transformer boards are sold to businesses involved in the manufacturing and/or repairing of transformers, and are available in standard or special sizes.

The transformer board is manufactured from unbleached kraft pulp and/or recycled transformer board materials. A specialty transformer board, known as Nomex board, is also manufactured at the Facility. The Nomex board is produced using a synthetic fiber manufactured by DuPont.

The process begins by re-pulping material using a combination of water and "proprietary recipes" for the formulation of the pulp-type needed. A large "pulper" is used in this process (driven by an electric motor acting much like a large blender). The resulting mixture of water and fibers is then cleaned by centrifugal treatment of the fiber-water suspension. Next, it is applied via a screenroll to a felt belt in a manner conventional in paper-making. The wet material is accumulated in thin plies on an accumulating roll to thicknesses that vary between 0.25 to 1.25 inches. When the desired amount has been laid, the wet material is parted within the "making roll," and the flat sheet (approximately 20 feet by 10 feet) is conveyed to a drying station. One of two methods is employed to dry the material, either by convection in an oven, or by pressing it between heated plates.

When the end user needs transformer board that is thicker than what can be manufactured using the "making roll", individual board sheets are laminated together to

reach the required thickness. The laminating process utilizes polyester resin between layers of material. Sheets are cut and fed through a machine that applies a thin layer of polyester resin to the top surface. The sheets accumulate to a height of about 24 inches, and are then passed into a hydraulic press where they remain until the resin has cured. Subsequently, the pressed sheets are removed and cut to the required size and sent either to the external customer or internal for further processing.

Boardmaking: EHV Weidmann has two "boardmaking" lines referred to as BM1 and BM2. Figures 4 and 5 in Appendix A of this Technical Analysis depict the process flow diagrams for the two boardmaking lines. Steam and particulates are the only emissions produced in the boardmaking process. Nearly all of the particulates are captured pneumatically through a duct connected to a fabric filter collector (#M41).

Recently EHV Weidmann has begun recycling ground laminated transformer board material in the pulping process. The recycling of this material is expected to produce emissions of styrene from the pulping activities. Emissions have been projected to be 0.03 lbs/hr and 207 lbs/yr from the recycling of this material (emissions increase of 1.6% above actual emissions from the existing lamination line).

Lamination Line: The lamination line is used to laminate boards produced from either BM1 or BM2 to produce thicker board. The board is laminated by means of a curtain coater. In the past, EHV Weidmann also utilized a reciprocator to laminate sheets. However, this device was eliminated from the production process in 1997. The majority of the laminating material (adhesive) used is a polyester resin which requires the addition of a hardener. Water-based adhesives (Casein glue and Dextrin glue) are also used. Figure 6 in Appendix A of this Technical Analysis depicts the process flow for the lamination line.

The curtain coater applies the adhesive similar to a shower. The adhesive is premixed with a hardener and then poured over the board. Once the board has gone through the adhesive application step, another board is placed on top and this continues until the desired board thickness has been achieved. The stack of boards is then compressed in a press for approximately four (4) hours. While the boards are being pressed, the adhesive applicator is cleaned. Acetone is used to clean the curtain coater laminating applicators after laminating with the polyester resin. Water is used to clean the laminating applicators after laminating with the water-based adhesives.

Nomex Boards: The Nomex boards are a specialty board produced on the BM2 line. The Nomex pulp has a different formulation than the wood pulp. Once the boards have been produced and cut, they may be sent to the Nomex process area or to other fabricating areas of the Facility.

In the Nomex process area the boards are heated in an oven and pressed together to form a bond. This process also uses a release agent called Monocoat 327W. During the thermal bonding process, the boards are heated up to approximately 550 °F.

Combustion Sources: EHV Weidmann operates two (2) No. 6 oil-fired boilers in the Main Building of the Facility. Boiler #1 is a 700 horsepower ("HP") boiler which is used

for 85% process heat and 15% space heat. Existing Boiler #2 is a 350 HP boiler used for 100% process heat. As stated previously, EHV Weidmann proposes to replace this unit with the new Johnston boiler. EHV Weidmann also operates three (3) No. 2 oil-fired boilers in the Fab North Building (each rated less than 3 MMBTU/hr of heat input), a No. 2 oil-fired boiler (rated less than 3 MMBTU/hr of heat input) in the Training Center, and a No. 2 oil-fired space heating unit (rated less than 3 MMBTU/hr of heat input) in the Recycle Building. Recently, EHV Weidmann obtained approval to install a make-up air duct heater for the Recycle Building. This additional heater was necessary to accommodate the expected increase in air transfer rates within the building associated with the installation of a new fabric filter control device. The fabric filter control device is planned to be installed within the next two years in order to capture PM/PM_{10} emissions produced by transformer board grinding and baling equipment located within the building. This make-up air heater is proposed to have a maximum rated heat input of 0.525 MMBTU/hr and will utilize No. 2 fuel oil.

Board Machining Operations: Various machines are employed to cut the boards to desired shapes and sizes. Depending upon the number of machines in use, dust produced by the machines may be vented to fabric filter collectors (#M51, #M41, #FN15, and Torit & Day collector). When a small number of machines are in use, EHV Weidmann may choose not to operate the collection system. During these instances, the majority of the dust material falls to the floor and is manually recovered (i.e., broom and dust pan).

Recycling Building Grinding Operations

As was stated previously, the Agency granted approval (on December 30, 1998) to EHV Weidmann for the installation of a new fabric filter collector in the Recycle Building. This collector is proposed to be employed to capture light airborne dust that is produced during the chipping of laminated transformer board and its subsequent baling. Besides dust, the exhaust air is also expected to contain a small quantity of styrene which is released from the resin-laminated product during the chipping process. Plans are that the exhaust air exiting the collector may be emitted directly to the ambient air or be optionally diverted through a heat exchanger prior to discharging outside. When the heat exchanger is in use, it will recover much of the heat content of the exhaust air to pre-heat make-up air for the building. In addition, the heat exchanger will be equipped with a duct heater fired with No. 2 fuel oil to provide supplemental heat for the make-up air.

The fabric filter is expected to be a model FT-64-D14 manufactured by the AGET Manufacturing Company. The unit is planned to have a maximum rated exhaust air flow rate of 4,900 actual cubic feet per minute. Note, EHV Weidmann intends on installing a used cyclone and fan in combination with the above identified dust collector. Currently, EHV Weidmann is in the process of investigating the feasibility of recycling its laminated transformer board product, and therefore, the actual installation date for this fabric filter collector is still questionable.

Gluing Operations: Glues and adhesives are used throughout the Facility. Nearly all emissions from gluing operations are considered fugitive emissions. EHV Weidmann has eliminated formaldehyde emissions from its use of adhesives on-site.

Miscellaneous Other Processes: EHV Weidmann operates an oil impregnation process which saturates the transformer boards with oil. This process is located in the Fab North Building. See Figure 9 in Appendix A of this Technical Analysis for a flow diagram of this process. Occasionally, Nomex boards are laminated together using a phenolic bonding film. Finally, a liquid product called Zipguard is applied to some fabricated parts, primarily static rings made in the Metallizing Department of the Fab North Building. When the Zipguard is dry, it acts as a moisture barrier.

2.3 Process Equipment and Stack Information

2.3.1 Description of Equipment

See Table 2-1: Equipment Information, for a list of the more important emission points at the Facility. See Tables 2 and 3 in Appendix B of this Technical Analysis for a complete listing of vents, stacks, and emission points at the Facility.

2.3.2. Description of Compliance Monitoring Devices

No devices have been proposed to continuously monitor emissions produced at this Facility.

Table 2-1: Equipment and Stack Information

DESCRIPTION AND MODEL NUMBER*	STACK #	SIZE OR CAPACITY (MAX. ALLOWED)	FUEL TYPE(S) OR PROCESS INPUT	DATE INSTALLED	POLLUTION CONTROL EQUIPMENT**	FLOW RATE (ACFM)	STACK HEIGHT (FT Above Grade)	EXIT TEMP (°F)	ALLOWABLE EMISSION RATE (lbs/hr)						
									PM/ PM_{10}	SO_2	NO_x	CO	VOCs	Other	HAPs
~~Boiler #1~~ - Main Bldg. ~~Manuf.~~ - Cleaver Brooks	M6	29.3 MMBTU/hr (700 HP)	No. 6 Oil (2.0%S by wt.)	Sept. 1970	Uncontrolled	7,210	54 (2.4 ft. in diameter)	N/P	6.2	60	14	2.2	1.0	—	0.029
~~Boiler #2 - Main Bldg. Manuf. - Cleaver Brooks~~	~~M23~~	~~14.6 MMBTU/hr (350 HP)~~	~~No. 6 Oil (2.0%S by wt.)~~	~~June 1976~~	~~Uncontrolled~~	~~3,600~~	~~53 (2 ft. in diameter)~~	~~N/P~~	~~3.1~~	~~.90~~	~~7.2~~	~~4.4~~	~~0.52~~	—	~~0.015~~
~~Boiler #3~~ - Main Bldg. Manuf. - Johnston	TBD	19.4 MMBTU/hr (500 HP)	No. 6 Oil (0.5%S by wt.)	Proposed	Low-NO_x Burner	6,500 (100% load)	53 (2.06 ft. in diameter)	400	2.35	10.1	10.2	0.78	0.2	—	0.02
~~Boiler #1~~ - Fab North Manuf. - Peerless	FN18	2.67 MMBTU/hr	No. 2 Oil (0.5%S by wt.)	1995	Uncontrolled	N/A	N/A	N/A	1	1.3	0.53	<0.04	0.078	—	neg.
~~Boiler #2~~ - Fab North Manuf. - Peerless	FN18	2.67 MMBTU/hr	No. 2 Oil (0.5%S by wt.)	1995	Uncontrolled	N/A	N/A	N/A	1	1.3	0.53	<0.04	0.078	—	neg.
~~Boiler #3 - Fab~~ North	FN18	1.05 MMBTU/hr	No. 2 Oil (0.5%S by wt.)	1995	Uncontrolled	N/A	N/A	N/A	05	0.54	0.15	~~0.04~~	0.0026	—	neg.
Space Heater - Recycling Bldg.	R1	0.10 MMBTU/hr	No. 2 Oil (0.5%S by wt.)	1995	Uncontrolled	N/A	N/A	N/A	0.05	0.06	0.017	0.004	0.0003	—	neg.
Boiler - Training Center	TC1	0.13 MMBTU/hr	No. 2 Oil (0.5%S by wt.)	1982	Uncontrolled	N/A	N/A	N/A	0.07	0.08	0.023	0.006	0.0004	—	neg.
Duct Heater - Recycling Bldg.	RB?	0.525 MMBTU/hr	No. 2 Oil (0.5%S by wt.)	Planned	uncontrolled	N/A	N/A	N/A	0.26	0.32	0.09	0.02	0.0015	—	neg.
Board Machining - Main Bldg.	M51		Paperboard	1974	Carter Day fabric filter (72RJ96)	15,000	Horizontal Vent	Ambient	7.7	—	—	—	—	—	—
Board Machining - Main Bldg.	M41		Paperboard	1970's	Carter Day fabric filter (72RJ60)	15,560	Horizontal Vent	Ambient	2.7	—	—	—	—	—	—
Board Machining - Fab North	FN15		Paperboard	1985	Carter Day fabric filter (232RFT8)	26,000	Horizontal Vent	Ambient	4.5	—	—	—	—	—	—
Board Machining - Fab North	FN?		Paperboard	1996	Torit & Day fabric filter (232RFW8)	25,000	Horizontal Vent	Ambient	4.3	—	—	—	—	—	—
Grinding/Bailing Equip. - Recycling Bldg.	RB?		Laminated Transformer Board	Planned	AGET fabric filter (FT-64-D1)	4,900	Horizontal Vent	Ambient	0.84	—	—	—	Styrene 0.66	—	Styrene 0.66
Laminating Line	M24, M37, M40		Paperboard, Resins, & Solvents	1970's	Uncontrolled	M24: 6,120 M37: 26,500 M40: N/P	M24: 50 (2.9 ft. dia.) M37 & M40: Horizontal Vent	N/P	—	—	—	—	Adhesive 3.6; Cleaning Solvent 4.6	Acetone 103	Styrene 3.5
Nomex Press Line	M10		Paperboard, Resins, & Solvents	1985	Uncontrolled	5,500	45.5 (2.5 ft x 2.5 ft)	N/P	—	—	—	—	0.65	—	—
Gluing Operations	Facility-wide		Various glues & adhesives	1970's	Uncontrolled	Fugitive	Fugitive	Ambient	—	—	—	—	0.042	—	0.005

Notes: N/A - Not applicable, since the equipment is classified as "insignificant activities" pursuant to §5-1002(h) of the *Regulations*.

N/Q - Not quantifiable. N/P - Not provided in the application. Neg. - negligible emissions. TBD - To be determined.
Equipment listed in ~~strikeout font~~ will be removed.

3.0 QUANTIFICATION OF POLLUTANTS

Emissions must be calculated for the Facility in order to establish the regulatory review process necessary for the construction and operating permit portions of the application and to determine applicability with various air pollution control requirements. These determinations are normally based upon allowable emissions. Allowable emission is defined as the emission rate calculated using the maximum rated capacity of the source and, if applicable, either: (a) the applicable emission standard contained in the *Regulations*, if any, or (b) the emission rate or design, operational or equipment standard specified in any order or agreement issued under the *Regulations* that is state and federally enforceable. In addition, §5-101 of the *Regulations* defines a "stationary source" as any structures, equipment, installations, or operations, 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 under common control. Based upon this definition, all of the equipment, operations, and structures at Facility are grouped together as one stationary air contaminant source.

Under the Agency's construction permit program (see Subchapter V of the *Regulations*), a source is classified as a major stationary source if allowable emissions of any air contaminant equal or exceed fifty (50) tons per year ("tpy"), except the air contaminant lead which is five (5) tpy. Additionally, any modification to an existing major stationary source which results in an emissions increase equal to or greater than the "significant" levels identified in §5-101 of the *Regulations*, is classified as a major modification and subject to the same review requirements as a new major source.

Under the Agency's operating permit program, a source is classified as a "Title V Subject Source" and subject to federal review of the Permit to Operate if the Facility satisfies any one of the following criteria:

1. The source has allowable emissions of oxides of nitrogen ("NO_x"), sulfur dioxide ("SO_2"), carbon monoxide ("CO"), particulate matter ("PM/PM_{10}") or any other air contaminant, except volatile organic compounds ("VOCs"), of 100 tpy or greater;

2. The source has allowable emissions of VOCs of fifty (50) tpy or greater;

3. The source is subject to a federal emission standard pursuant to §111 of the *Clean Air Act* ("*CAA*") and promulgated in 40 *CFR* Part 60 (Standards of Performance for New Stationary Sources);

4. The source is subject to a federal emission standard pursuant to §112 of the *CAA* and promulgated in 40 *CFR* Part 61or 63 (National Emission Standards for Hazardous Air Pollutants); or

5. The source has allowable emissions of any one hazardous air pollutant ("HAP") regulated by the U.S. EPA of ten (10) tpy or greater, or allowable emissions of a combination of HAPs regulated by the U.S. EPA of twenty-five (25) tpy or greater. The HAPs regulated by the U.S. EPA are identified in §112 of the *CAA*.

Note: Non-major stationary sources subject to a requirement in §111 or §112 of the CAA are currently not subject to the Title V operating permit program, since the U.S. EPA has deferred the requirement for a Title V operating permit for non-major sources pursuant to 40 CFR Part 70 §70.3(b)(1) and the fact that the U.S. EPA has not completed rulemaking establishing how the program should be structured for non-major sources.

Based upon its allowable emissions (see Table 3-1 below), the Facility is currently classified as a "major stationary source" under the construction permit program, and a "Title V subject source" under the operating permit program requirements. Upon completion of the proposed modifications, the Facility will retain these classifications.

Emissions produced from the combustion of fuels in the fuel burning equipment include: particulate matter ("PM/PM_{10}"), sulfur dioxide ("SO_2"), oxides of nitrogen ("NO_x"), carbon monoxide ("CO"), and volatile organic compounds ("VOCs"). VOCs from fuel burning equipment are also commonly referred to as non-methane hydrocarbons ("NMHCs") or total organic compounds ("TOCs"). The board machining operations and recycling equipment result in the discharge of PM/PM_{10} (i.e., dust), while VOCs are produced by the laminating lines, Nomex board production, and gluing operations.

As will be discussed in paragraph 3.5 below, the existing Permit to Construct and Operate places an enforceable restriction that limits emissions of VOCs to less than 50 tpy site-wide. A similar limit exists on emissions of acetone (a regulated air contaminant in Vermont). Record keeping requirements are utilized to verify compliance with these limits on a rolling twelve (12) consecutive calendar month period. For comparison purposes, the Agency has quantified actual emissions of VOCs and acetone from EHV Weidmann in a 1999 inspection report (most recent report on file). Based upon historical records, EHV Weidmann's actual emissions of VOCs and acetone are 7 and 18 tpy, respectively.

Individual constituents which makeup the categories of PM/PM_{10} and VOCs are also regulated by state and federal regulations, and must therefore be quantified. These individual constituents are referred to as hazardous air contaminants ("HACs") and/or hazardous air pollutants ("HAPs"). HAPs are defined as those chemicals listed in the §112(b) of the federal *Clean Air Act*, of which there are 188 chemicals. HACs are defined as those chemicals which are listed in Appendix B of the *Regulations*. All of the 188 HAPs are included as HACs.

3.1 Existing Designation of the Stationary Source

The first step in designating a modification as major or non-major (i.e., minor) is to classify the existing size of the source (i.e., major or minor). A source is considered major if it has allowable emissions of fifty (50) tons per year ("tpy") or greater for any air contaminant [Exception: five (5) tpy for lead]. Allowable emissions are developed using applicable emission standards in the *Regulations*, permit conditions, or emission estimates. Additionally, allowable emissions must be determined assuming continuous operation of the stationary source (i.e., 8760 hours per year) at maximum capacity, unless the owner or operator of a source operates under enforceable limits that restrict operations to a lower level.

Currently, EHV Weidmann operates under the confines of its existing Air Pollution Control Permit to Construct and Operate #AOP-95-075 issued on May 19, 1999. Summarized in Table 3-1 below are the allowable emissions for EHV Weidmann based upon the restrictions of its Permit to Construct and Operate. Additional information supporting the derivation of the allowable emissions may be found in Table 1, Appendix A of this Technical Analysis.

Table 3-1: Existing Allowable Emissions for EHV Weidmann

Source	Air Contaminant Emissions, tons per year						
	PM/PM_{10}	SO_2	NO_x	CO	VOCs	Acetone	HAPs
Fuel Burning Equipment	42	410	<100 See Note 2	15	7.5	---	0.2
Fabric Filter Collectors	89	---	---	---	---	---	---
Laminating Line, Nomex Board Production, and Fugitive Emissions of Adhesives	---	---	---	---	42 (+/-) See Note 1	<50 See Note 2	<25 See Note 2
Total Facility	131	410	<100	15	<50	<50	<25

Note 1: EHV Weidmann operates under the restriction to maintain VOC emissions below 50 tpy. The estimate of 7.5 tpy of VOCs from the fuel burning equipment assumes continuous operation of all fuel burning equipment on-site. Actual emissions of VOCs from the fuel burning equipment are approximately 2 tpy. Therefore, emissions of VOCs from the laminating line, Nomex board production, and adhesive usage are allowed to exceed 42 tpy, as long as total actual VOC emissions at the Facility remain less than 50 tpy. Record keeping and reporting conditions are in place to verify that annual VOC emissions do not equal or exceed 50 tpy. Actual emissions of VOCs are approximately 9 tpy.

Note 2: EHV Weidmann operates under the restriction to maintain NOx emissions below 100 tpy, actone below 50 tpy, and Total HAPs below 25 tpy.

As was stated previously, a facility is designated a major stationary source of air contaminants if its allowable emissions of any air contaminant equal or exceed fifty (50) tpy [Exception: five (5) tpy for lead). As described in Table 3-1 above, EHV Weidmann has allowable emissions greater than fifty (50) tpy for PM/PM_{10}, SO_2, and NO_x. Therefore, based upon its existing allowable emissions, EHV Weidmann is designated an existing major stationary source.

3.2 Designation of the Modification

The designation of an existing stationary source determines the appropriate levels for comparison when attempting to classify the size of the modification for new source review purposes. As an existing major source, any emissions increase resulting from modifications must be compared to the *Significant Levels* described in §5-101 of the *Regulations* in order to determine whether or not the proposed modifications are subjected to the new source review requirements of §5-502 of the *Regulations* (Major Source and Major Modifications). If a proposed modification or aggregation of minor modifications at the source equal or exceed the "significant" levels, then the modification is classified as major and subject to the requirements of §5-502 of the *Regulations*.

Additionally, it is also important to note that pursuant to §5-502(1), two forms of increases

must be compared to the *Significant Levels* for determining the applicability of this section. First, the allowable emissions attributable to the proposed modification, and second, the aggregated emissions increase from minor modifications constructed since July 1, 1979 (including the proposed modification). The purpose of the aggregated emissions comparison is to prevent the circumvention of major source review due to incremental minor increases in emissions over time. It should be noted that prior modifications at a source which have been reviewed under §5-502 of *Regulations* do not continue to be aggregated with proposed modifications for the purposes of determining the applicability of major modification review. This determination is performed on a pollutant-by-pollutant basis.

3.2.1 New Allowable Emissions Increase

The new allowable emissions are the allowable emissions associated with the proposed replacement boiler. The new allowable emissions are summarized in Table 3-2 below. Table 2 in Appendix A of this Technical Analysis summarizes the information used to determine these allowable emissions.

Table 3-2: Proposed Emissions Increase at EHV Weidmann

Source	Air Contaminant Emissions, tons per year				
	PM/PM_{10}	SO_2	NO_x	CO	NMHCs
Proposed Modification	5.1	21.8	22.0	1.7	0.4
Significant Level [per § 5-101 of the *Regulations*]	25/15	40	40	50	40

Table 3-2 above indicates the proposed modification by itself will not exceed any *Significant Level*.

3.2.2 Aggregated Allowable Emissions Increase

As was stated previously, prior minor modifications constructed subsequent to July 1, 1979, must be aggregated with the proposed modification for the purposes of determining applicability with §5-502 of the *Regulations*. An exception exists for those prior modifications which have previously been aggregated for the purposes of review pursuant to this section. As can be seen in the Agency's Technical Analysis dated July 17, 1996, EHV Weidmann is beginning with practically a "fresh slate" in terms of emission increases for PM/PM_{10}. Only one prior modification needs to be considered for emissions of PM/PM_{10} (i.e., Recycle Building fabric filter addition). Since the aggregation process is performed on a pollutant-by-pollutant basis, modifications constructed before 1998 must still be considered for SO_2, NO_x, CO, and VOCs. Table 3-3 below summarizes the aggregated emissions increase for comparison to the *Significant Levels*. Table 3 in Appendix A of this Technical Analysis summarizes the information used to determine the aggregated emissions increase.

Table 3-3: Aggregated Emissions Increase at EHV Weidmann

Source	Air Contaminant Emissions, tons per year				
	PM/PM_{10}	SO_2	NO_x	CO	VOCs
Proposed Modification	5.1	21.8	22.0	1.7	0.4
Emission Due to Prior Modifications	4.9	13.4	5.9	0.3	6.5
Aggregated Emissions Increase	10.0	35.2	27.9	2.0	6.9
Significant Level [per § 5-101 of the *Regulations*]	25/15	40	40	50	40

Table 3-3 above indicates the aggregated emissions increase for all air contaminants is less than the *Significant Levels*. Consequently, the proposed modification is classified as a non-major modification and is not subject to review under § 5-502 of the *Regulations*.

3.3 Designation of the Facility in the Future

Summarized in Table 3-4 below are the allowable emissions for EHV Weidmann for the future. Table 4 in Appendix A of this Technical Analysis summarizes the derivation of the future allowable emissions. Based upon the level of emissions identified in Table 3-4 below, EHV Weidmann will retain its classification as a major stationary source and Title V subject source.

Table 3-4: Future Allowable Emissions for EHV Weidmann

Source	Air Contaminant Emissions, tons per year						
	PM/PM_{10}	SO_2	NO_x	CO	VOCs	Acetone	HAPs
Fuel Burning Equipment	34.4	301	91	12	6	---	0.2
Fabric Filter Collectors	87.4	---	---	---	---	---	---
Laminating Line, Nomex Board Production, and Fugitive Emissions of Adhesives	---	---	---	---	43 (+/-) See Note 1	<50	<25
Total Facility	122	301	91	12	<50	<50	<25

Note 1 - EHV Weidmann has proposed to restrict VOC emissions below 50 tpy. The estimate of 6 tpy of VOCs from the fuel burning equipment assumes almost continuous operation of all fuel burning on-site. Actual emissions of VOCs from the fuel burning are expected to much lower than 6 tpy. Therefore, emissions of VOCs from the laminating line, Nomex board production and adhesive usage can exceed 43 tpy, as long as total actual VOC emissions at the site remain less than 50 tpy.

3.4 Enforceable Operating Restrictions

The Facility presently operates under the limitations imposed by a Permit to Construct and Operate. EHV Weidmann proposes to maintain these limitations, with the following

modifications.

1. Eliminate conditions pertaining to existing Main Building Boiler #2,

2. Residual oil sulfur content restricted to 0.5% by weight or less for the new boiler, and

3. Emission of combustion contaminants from the new boiler are limited as follows:

Unit	Emission Limitation Per Contaminant					
	lbs/MMBTU			lbs/hr		
	PM/PM_{10}	NO_x	CO	PM/PM_{10}	NO_x	CO
Main Bldg. Boiler #3 (Johnston) 19.4 MMBTU/hr	0.12	0.53	0.040	2.4	10	0.8

4. Restrict fuel consumption in the replacement boiler to 558,500 gallons per year or less.

Note the Agency proposes to eliminate an existing restriction within the Permit to Construct and Operate that limits total NO_x emissions at the site to less than 100 tpy. The purpose of this condition was to specifically keep EHV Weidmann from being subject to the reasonably available control technology ("RACT") requirements in §5-251(3) of the *Regulations*. This was necessary due to potential emissions being greater than 100 tpy based upon unrestricted fuel consumption. With the proposed replacement boiler and fuel use restriction noted in item 4. above, this condition will not longer be necessary since potential emissions will 91 tpy. Additionally, the Agency proposes to eliminate conditions regarding a monthly calculation of site-wide NO_x emissions and the semi-annual reporting of NO_x emissions. These emissions will still be reported annually as part of the Agency's annual registration process.

3.5 Identification of Insignificant and Exempt Activities

Activities which qualify as an "insignificant activity" pursuant to §5-1002(h) of the *Regulations* need not be considered when determining the applicability of Subchapter X of the *Regulations* and must only be listed as such within the operating permit application. In its application, EHV Weidmann has identified the below listed fuel burning equipment as having a heat input rating less than 3 MMBTU/hr and thus being classified as an "insignificant activity" pursuant to §5-1002(h)(1)(i):

1. Three (3) No. 2 oil-fired boilers located in Fab North Building;
2. Space Heater located in the Recycle Building;
3. Boiler located in the Training Center; and
4. Three propane-fired roof top mounted heating and cooling units installed in 1999. The rated heat input for each unit is less than 300,000 BTU/hr.

Other activities classified as producing insignificant emissions include: oil impregnation

process, Nomex board lamination process, and finishing application (i.e., use of Zipguard product). Based on the estimated emissions produced from these activities, the Agency concurs with EHV Weidmann that emissions from these activities need not be included and are considered insignificant activities pursuant to §5-1002(h)(1)(viii) of the *Regulations*.

Although considered "insignificant activities" within Subchapter X of the *Regulations*, emissions from the above identified activities and equipment must be quantified (if possible) for the purposes of establishing allowable emissions for determining applicability with other air pollution control requirements (e.g., reasonably available control technology, major source status, Title V operating permit applicability, etc.). Consequently, allowable emissions for the Facility, as summarized within this Technical Analysis, includes emissions produced from the above listed activities and equipment. Air contaminant emissions from the three roof mounted heating and cooling units was not explicitly calculated since they are considered negligible.

The exclusion of emissions produced by the insignificant activities does not alter the applicability status of the Facility under Subchapter X of the *Regulations*.

4.0 MOST STRINGENT EMISSION RATE

§5-502(3) of *Regulations* requires that applicable new major sources and major modifications achieve the Most Stringent Emission Rate ("MSER") with respect to those air contaminants for which it would have a "significant" increase in actual emissions. MSER must be achieved for each proposed physical or operational change which contributes to the increased emissions of the air contaminant. As calculated in item 3.2 above, the proposed modification is not subject to the requirements in §5-502 of the *Regulations*. However, it should be noted that a major modification at the Facility was approved in 1996. EHV Weidmann was required to achieve MSER for PM/PM_{10} from the discharge of three fabric filter collectors (#M41 in the Main Building and two Fab North collectors). MSER was established as an emission concentration of 0.02 grains per dry standard cubic foot ("gr/dscf") of undiluted exhaust.

5.0 APPLICABLE REQUIREMENTS

5.1 Citation and Description of all Applicable Requirements

§5-1006(e)(4) of the *Regulations* requires the owner/operator of a stationary air contaminant source to submit a complete application including, but not limited to a demonstration of compliance with all applicable air pollution control requirements. These requirements include state and federal regulations, and the requirements of any construction permit issued under 10 *V.S.A.* §556. Note that compliance relative to §5-261 and §5-1010 of the *Regulations* will be discussed separately under paragraphs 6.0 and 7.0 of this Technical Analysis.

The compliance analyses and determinations in this technical analysis rely on data and

representations provided by the Owner/Operator. Any statements and conclusions regarding the compliance status contained herein are not binding against the state of Vermont in any future legal or administrative proceedings.

Vermont Air Pollution Control Regulations

§5-201 and §5-202 - Open Burning Prohibited and Permissible Opening Burning. Open burning of materials is regulated within these requirements. EHV Weidmann periodically open burns natural wood pallets on-site after permission is received from local authorities.

EHV Weidmann has stated that it complies with these requirements.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

§5-211(2) - Prohibition of Visible Air Contaminants - Installations Constructed Subsequent to April 30, 1970. This standard applies facility-wide and specifies that visible air contaminant emissions may not exceed twenty (20) % opacity for a period of six (6) minutes or more in any hour, and at no time may they exceed sixty (60) % opacity. Primarily this standard affects any source of particulate matter emissions, such as fuel burning equipment and discharges from the board machining operations and recycling of laminated transformer board. Compliance with this standard is based upon the procedures contained in proposed Reference Method F-1 (51 *Federal Register*, page 31076, August 29, 1986).

EHV Weidmann has stated that it complies with the standard based on their equipment maintenance.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

§5-221(1)(a) - Prohibition of Potentially Polluting Materials in Fuel. This section prohibits the use of any fuel, in stationary fuel burning equipment, with a sulfur content more than 2.0% by weight. This prohibition applies to all stationary fuel burning equipment used on-site. Compliance with this standard is based on fuel analyses following the procedures prescribed by the American Society for Testing and Materials ("ASTM").

EHV Weidmann has stated that it complies with this standard based on the restrictions in their existing permit, their proposed limitation for the new boiler, and their contract with fuel suppliers.

The continued use of these methods are sufficient to ensure compliance with this limitation in the future. The Agency may require EHV Weidmann to perform oil sampling and analyses to confirm compliance.

§5-231(1) - Prohibition of PM; Industrial Process Emissions. This standard applies

to any stack or vent associated with an industrial process at the Facility. Primarily this standard is of consequence to any industrial process which includes a discharge of PM/PM_{10}, such as the fabric filter exhausts serving the board machining operations and the recycling of laminated transformer boards. §5-231(1) of the *Regulations* is divided into two subsections. The first subsection, subsection (a), specifies an emission rate limit based upon the process weight of the production process. Where the process weight is considered inappropriate, such as wood processing operations, subsection (b) identifies a PM/PM_{10} concentration limit of 0.06 grains per dry standard cubic foot ("gr/dscf") of undiluted exhaust. The limit of 0.06 gr/dscf has been previously determined to be applicable to the fabric filter discharges serving the board processing operations. Compliance with this standard is based upon the use of Reference Method 5 (40 *CFR* Part 60, Appendix A). Note, other methods, such as the use of pressure drop measurement devices on fabric filters, may be employed as a means of monitoring the performance of the control device and the likelihood that such limitation is being violated.

PM/PM_{10} emission limits for three fabric filter collectors (#M41 in the Main Building and two collectors in the Fab North Building) are subject to more stringent requirements due to the application of MSER. The MSER limits have been placed within the existing Permit to Construct and Operate and are specified as 0.020 gr/dscf. These permit restrictions overrule the limit derived from §5-231(1)(b) of the *Regulations* for the noted collectors.

EHV Weidmann has stated that it complies with this section based upon the use of fabric filter collectors and their emission estimates.

The Agency will assess compliance with this standard in the future as follows: (1) EHV Weidmann will be required to properly operate and maintain its fabric filter collectors, (2) visual observations of each exhaust will be conducted during any Agency inspections of the Facility, and (3) if visible emissions are observed to be in excess of the limits specified in §5-211(2) of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the applicable PM standard or that other corrective measures be taken.

§5-231(3)(a)(i) - Prohibition of PM; Combustion Contaminants. This standard applies to any fossil fuel burning equipment with a rated heat input of 10 MMBTU/hr or less. Specifically, this standard applies to the No. 2 oil-fired fuel burning equipment (i.e., three boilers in the Fab North Building, a space heater and make-up air duct heater in the Recycling Building, and a boiler in the Training Center) operated by EHV Weidmann. This standard specifies that PM emissions may not exceed 0.5 lbs/hr/MMBTU of heat input. Compliance with this standard is generally based on the use of Reference Method 5 (40 *CFR* Part 60, Appendix A).

EHV Weidmann has stated that it complies with the standard based on their emission estimates and their scheduled maintenance of the fuel burning equipment.

The Agency will assess compliance with this standard in the future as follows: (1) EHV Weidmann will be required to properly operate and maintain its fuel burning equipment, (2) visual observations of each exhaust will be conducted during any Agency inspections of the Facility, and (3) if visible emissions are observed to be in excess of the limits

specified in §5-211(2) of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standard or that other corrective measures be taken.

§5-231(3)(a)(ii) - Prohibition of PM; Combustion Contaminants. The PM standard in this section is applicable to fuel burning equipment with a heat input greater than 10 MMBTU/hr but equal to or less than 250 MMBTU/hr. The PM standard is in units of lbs/hr/MMBTU and varies based upon the heat input of the unit. The actual value of the standard is derived based upon the following formula:

$$E_{PM} ? 10^{[?0.47039(\log_{10} HI)?0.16936]}$$

Where HI is the maximum rated heat input of the unit in MMBTU/hr; and
E_{PM} is the emission rate in lbs/hr/MMBTU.

In accordance with the above formula, the following emission standards apply to Main Building Boiler #1 and the proposed replacement boiler:

E_{PM} for Cleaver Brooks 29.3 MMBTU/hr Boiler = 0.30 lbs/hr/MMBTU; and
E_{PM} for Johnston 19.4 MMBTU/hr Boiler = 0.37 lbs/hr/MMBTU.

Compliance with the standard in §5-231(3)(a)(ii) of the *Regulations* is generally based on the use of Reference Method 5 (40 *CFR* Part 60, Appendix A). Note: A PM/PM_{10} emission limit for Main Building Boiler #1 is identified in the existing Permit to Construct and Operate which is more stringent than the above limitation. This permit restriction overrules the limit derived from §5-231(3)(a)(ii) of the *Regulations*. Similarly, EHV Weidmann has proposed a more stringent emission limitation for the replacement boiler. This limitation will also overrule the standard derived from §5-231(3)(a)(ii) of the *Regulations*.

EHV Weidmann has stated that it complies with the standard based on their emission estimates, and the scheduled maintenance of the boilers.

Emissions of PM/PM_{10} will result from the burning of fuel in the boilers at the Facility. The quantity of these emissions produced will depend upon the quality of their operation, maintenance, and the quality of the fuel being burned. In an effort to maintain compliance with this requirement the Agency will require EHV Weidmann to properly maintain and operate its fuel burning equipment following the manufacturer's recommendations, and that EHV Weidmann perform periodic maintenance tuneups on its equipment. The Agency will also assess visible emissions from the fuel burning equipment while on-site performing inspections of the Facility, and if visible emissions are observed to be in excess of the limits specified in §5-211(2) of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standards or that other corrective measures be taken.

§5-231(4) - Prohibition of PM; Fugitive PM. This section requires the use of fugitive PM control equipment on all process operations and the application of reasonable

precautions to prevent PM from becoming airborne during the handling, transportation, and storage of materials, or use of roads. This requirement applies to the entire Facility and is of particular concern with the board machining operations and recycling of laminated transformer boards.

EHV Weidmann has stated that it complies with this requirement based on the use of their fabric filter control devices on the board machining operations.

The Agency will verify compliance with this requirement in the future as follows: (1) require the proper operation and maintenance of the fabric filter control devices, (2) require the use of reasonable precautions to minimize the generation of PM/PM_{10} during the handling, transportation, storage and disposal of PM/PM_{10} collected by the fabric filter collectors, (3) application of water or surfactants to the haul roads and plant yard as necessary, (4) assess compliance with this requirement during any inspections of the Facility, and (5) require the use of additional measures if found necessary during a compliance inspection.

§5-241(1) & (2) - Prohibition of Nuisance and Odor. This requirement applies to the entire Facility and prohibits the discharge of air contaminants that would be a nuisance to the public or be source of objectionable odors beyond the property-line of the Facility.

EHV Weidmann has stated that it complies with this requirement due to their observation of dust and odors from the operations.

The Agency will verify compliance with this requirement in the future during any inspections of the Facility. Additionally, the Agency investigates all complaints that it receives in order to determine whether or not there is a violation of this requirement.

§5-701 - Maintenance and Removal of Control Devices. This section prohibits the alteration or removal of a motor vehicles air pollution control system, as well as the proper maintenance of such systems. These requirements apply to any motor vehicles owned and operated by EHV Weidmann.

EHV Weidmann has stated that it complies with these requirements.

The Agency will verify compliance with this requirement in the future.

§5-702 - Excessive Smoke Emissions from Motor Vehicles. Prohibits the discharge of excessive visible air contaminants from a motor vehicle for longer than five (5) consecutive seconds. This requirement applies to any motor vehicle owned and operated by EHV Weidmann.

EHV Weidmann has stated that it complies with this requirement.

The Agency will verify compliance with this requirement in the future.

Subchapter VIII - Registration of Air Contaminant Source. This Subchapter requires the owner or operator of a stationary source register with the Agency if the source

produces five (5) tons per year or greater of actual emissions during the preceding calendar year. The owner or operator of a source is required to submit information regarding their operations and pay a fee based upon the quantity of emissions they produce and the fuels that they use at the source.

EHV Weidmann has stated that it complies with this requirement based on the information they have submitted and the fees they have paid in preceding years.

The Agency will ensure compliance with this requirement in the future during any inspections of the Facility.

§5-911 - Motor Vehicle Air Conditioning. Requirements pertaining to repair and service of motor vehicle air conditioners and the use of chlorofluorocarbons ("CFCs"). These requirements apply to the maintenance of any air conditioning equipment present in any motor vehicle owned and operated by EHV Weidmann.

EHV Weidmann has stated that it complies with these requirements.

The Agency will verify compliance with these requirements in the future.

§5-921 - Regulation of Ozone-Depleting Products. Prohibits the selling of fire extinguishers containing halons and ozone depleting products, except for commercial or industrial usage or unless sold to fire departments for their own use in fighting fires.

EHV Weidmann has stated that it complies with these requirements.

The Agency will verify compliance with these requirements in the future.

Air Pollution Control Permit to Construct

Pursuant to §5-1002(d)(1) of the *Regulations*, the conditions of any permit issued under the authority in 10 *V.S.A.* §556 and its regulations are considered applicable requirements. EHV Weidmann operates under the confines of an existing site-wide Permit to Construct and Operate issued on May 19, 1999. The conditions of this Permit to Construct and Operate will carryover into any new permit issued to EHV Weidmann approving the proposed boiler replacement. Some changes in the existing permit conditions will be necessary to acknowledge the replacement of Main Building Boiler #2. Summarized below are the existing permit conditions.

Condition (1) - Modify and operate the Facility in accordance with plans and specifications submitted to the Agency.

EHV Weidmann has stated that it complies with this requirement.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

Condition (2) - Requires the control of PM from the board machining operations and recycling of laminated transformer boards by installing, operating, and maintaining fabric

filter collectors.

EHV Weidmann has stated that it complies with this requirement.

The Agency will verify compliance with this requirement in the future during any inspections of the Facility.

Condition (3) - Limitations on PM/PM_{10} emissions from equipment served by fabric filter collectors.

EHV Weidmann has stated that it complies with this requirement based upon their emission estimates.

The Agency will assess compliance with this standard in the future as follows: (1) EHV Weidmann will be required to properly operate and maintain its fabric filter collectors, (2) visual observations of each exhaust will be conducted during any Agency inspections of the Facility, and (3) if visible air contaminant emissions are observed to be in excess of the limits specified in §5-211(2) of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standards or that other corrective measures be taken.

Condition (4) - Limitations on combustion contaminants from two boilers located in the Main Building and the planned new make-up air duct heater to be located in the Recycling Building.

EHV Weidmann has stated that it complies with this requirement based upon their emissions estimates, and their maintenance and operation of their fuel burning equipment.

The Agency will assess compliance with this standard in the future as follows: (1) EHV Weidmann will be required to properly operate and maintain its fuel burning equipment, (2) perform visual observations of the exhaust during any Agency inspections of the Facility, and (3) if visible air contaminant emissions are observed to be in excess of the limits specified in §5-211(2) of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced standards or other corrective measures be taken.

Conditions (5) and (6) - Emissions of VOCs and acetone from the Facility are limited to less than 50 tpy.

EHV Weidmann has stated that it complies with this requirement.

The Agency will ensure compliance with this requirement in the future during any inspections of the Facility. The Agency will also require the submittal of semi-annual reports summarizing production data in order to verify compliance with these limits, and EHV Weidmann will be obligated to certify compliance with this requirement at least once each year as part of the Agency's registration program required under Subchapter VIII of

the *Regulations.*

Condition (7) - Emissions of NO_x from the Facility are limited to less than 100 tpy.

EHV Weidmann has stated that it complies with this requirement.

The Agency will ensure compliance with this requirement in the future during any inspections of the Facility. The Agency will also require the submittal of semi-annual reports summarizing fuel use data in order to verify compliance with this limit, and EHV Weidmann will be obligated to certify compliance with this requirement at least once each year as part of the Agency's registration program required under Subchapter VIII of the *Regulations.*

Condition (8) - Visible air contaminant emissions limitations. This specifies the opacity limits that apply to Facility. This standard is based on the limits of §5-211(2) of the *Regulations*.

EHV Weidmann has stated that it complies with this requirement based on their observation of the operations and equipment maintenance.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

Condition (9) - Restricts the sulfur content of fuel oil burned in the boilers located in the Main Building. Boilers may not burn fuel oil with a sulfur content greater than 2.0% by weight. Note, this condition will be revised in order to specify a more stringent sulfur content limitation for the replacement boiler.

EHV Weidmann has stated that it complies with this standard based on the restrictions in their Permit to Construct and their contract with fuel suppliers.

The continued use of these methods are sufficient to ensure compliance with this limitation in the future. The Agency may require EHV Weidmann to perform oil sampling and analyses as appropriate to confirm compliance.

Condition (10) - Restricts the sulfur content of fuel oil burned in the No. 2 oil-fired fuel burning equipment located at the Facility. No. 2 oil-fired fuel burning equipment may not burn fuel oil with a sulfur content greater than 0.5% by weight.

EHV Weidmann has stated that it complies with this standard based on the restrictions in their Permit to Construct and their contract with fuel suppliers.

The continued use of these methods are sufficient to ensure compliance with this limitation in the future. The Agency may require EHV Weidmann to perform oil sampling and analyses as appropriate to confirm compliance.

Condition (11) - Requires EHV Weidmann to notify the Agency in writing of the initial start-up of the planned fabric filter to be located within the Recycling Building.

EHV plans to comply with this requirement.

The Agency will ensure compliance with this requirement in the future during any inspections of the Facility.

Condition (12) - Requires EHV Weidmann to maintain a logbook of maintenance performed and monthly observations of the pressure drop across each fabric filter.

EHV Weidmann has stated that it complies with this requirement.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

Condition (13) - Requires EHV Weidmann to maintain a logbook of maintenance performed on the fuel burning equipment at the Facility.

EHV Weidmann has stated that it complies with this requirement.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

Condition (14) - Record keeping requirements for material usage, fuel consumption, and board production.

EHV Weidmann has stated that it complies with this requirement.

The Agency will ensure compliance with this requirement in the future during any inspections of the Facility. The Agency requests the submittal of above noted records as part of the Agency's registration program required under Subchapter VIII of the *Regulations.*

Condition (15) - Requirement to register if actual emissions are greater than or equal to 5 tpy for the preceding calendar year.

EHV Weidmann has stated that it complies with this requirement based on the information they have submitted and the fees they have paid for preceding calendar years.

The Agency will ensure compliance with this requirement in the future during any inspections of the Facility.

Condition (16) - Required to notify the Agency of any proposed physical or operational change at the Facility which may increase air contaminant emissions.

EHV Weidmann has stated that it complies with this requirement.

The Agency will ensure compliance with this requirement in the future during any inspections of the Facility.

Condition (17) - Required to notify the Agency in writing within ten (10) days of any violation.

Conditions (18) - (22) - Miscellaneous reporting and record keeping requirements, including compliance certifications.

EHV Weidmann has stated that it complies with this requirement.

The Agency will ensure compliance with this requirement in the future during any inspections of the Facility.

Condition (23) - Requires the use of reasonable precautions to minimize the generation of fugitive emissions of PM/PM_{10} and VOCs from the Facility.

EHV Weidmann has stated that it complies with this requirement.

The Agency will ensure compliance with this requirement in the future during any inspections of the Facility.

Conditions (24) and (25) - Prohibits the discharge of air contaminants that would be a nuisance to the general public or a source of objectionable odors.

EHV Weidmann has stated that it complies with this requirement due to their observation of dust and odors from their operations.

The Agency will verify compliance with this requirement in the future during any inspections of the Facility. Additionally, the Agency investigates all complaints that it receives in order to determine whether or not there is a violation of this requirement.

Condition (26) - Prohibition of circumvention.

Condition (27) and (28) - Prohibition of opening burning and permissible open burning.

Condition (29) - Motor vehicle requirements.

Condition (32) - Stratospheric ozone protection measures.

Condition (33) - Permit shield condition.

EHV Weidmann has stated that it complies with the requirements in conditions (26) through (33).

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

Conditions (34) through (48) - Agency standard conditions.

Federal Air Pollution Control Regulations

***Clean Air Act*, Title I - Air Pollution Prevention and Control, Part A - Air Quality and Emission Limitations, §111 - Standards of Performance for New Stationary Sources.** EHV Weidmann is subject to one applicable federal new source performance standards established under §111 of the federal *Clean Air Act* and promulgated within Title 40 *Code of Federal Regulations* ("*CFR*") Part 60.

40 *CFR* Part 60 Subpart Dc - The replacement boiler (19.4 MMBTU/hr boiler) is considered an affected facility subject to 40 *CFR* Part 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. Subpart Dc specifies emission limitations for PM/PM_{10}, SO_2, and opacity, as well as monitoring, record keeping, notification and reporting requirements. Applicability to Subpart Dc also subjects EHV Weidmann to the general notification, record keeping, and other requirements of 40 *CFR* Part 60 Subpart A.

EHV Weidmann has stated that it complies with these requirements.

The Agency will incorporate the applicable requirements of 40 *CFR* Part 60 Subpart A and Dc within any permit issued to EHV Weidmann approving the proposed modifications.

Section 112 of the Clean Air Act - National Emission Standards for Hazardous Air Pollutants (NESHAPs)

No promulgated NESHAPs in 40 *CFR* Part 61 currently apply to EHV Weidmann.

There are currently no promulgated NESHAPs in 40 *CFR* Part 63 that apply to EHV Weidmann. The NESHAPs in 40 *CFR* Part 63 identify the "maximum achievable control technology" ("MACT") standards for major sources of hazardous air pollutants ("HAPs").

Although there is currently no MACT standard that applies to EHV Weidmann, the U.S. EPA has proposed a MACT standard for the pulp and paperboard industry. Also, the U.S. EPA has identified EHV Weidmann as a potential source subject to this proposed MACT standard. In response to U.S. EPA's proposed NESHAP, EHV Weidmann investigated its emissions from the pulping operations and stated that the proposed MACT standard for the pulp and paperboard industry does not apply to them. This determination was based upon the fact that the Facility engages in no pulping, no bleaching, and the boardmaking operations result in negligible emissions (only trace amounts of acetone released). The Agency concurs with this assessment, and therefore, this Facility does not qualify as a major source for the pulp and paperboard MACT standard.

Although EHV Weidmann is not a major source from the paperboard making lines, it should be noted that "allowable" emissions of styrene (a federal HAP) exceed 10 tpy from the laminating operations. Since these emissions are from board laminating and not the board making lines, these emissions do not qualify the Facility under the pulp and

paperboard MACT standard. Ultimately, EHV Weidmann will be required to achieve MACT for styrene at sometime in the future if either the U.S. EPA adopts a MACT standard that applies to the laminating operations, or a case-by-case MACT determination is required as a consequence of new source review (i.e., Subchapter V of the *Regulations* - Permit to Construct/Modify). The proposed modification will not result in an emissions increase of styrene from the Facility, and therefore, does not trigger the case-by-case MACT determination.

40 *CFR* Part 64 - Compliance Assurance Monitoring. Pursuant to requirements concerning enhanced monitoring and compliance certification under the *Clean Air Act* ("*CAA*"), EPA promulgated new regulations and revised regulations on October 22, 1997. These new requirements implemented compliance assurance monitoring ("CAM") for major stationary sources of air pollution that are required to obtain operating permits under Title V of the *CAA*. Subject to certain exemptions, the new regulations require owners or operators of such sources to conduct monitoring that satisfies particular criteria established in the rule as a means of providing a reasonable assurance of compliance with applicable requirements. Compliance assurance monitoring is proposed to focus on emissions units that rely on pollution control equipment to achieve compliance with applicable standards. The regulations also provide procedures for coordinating these new requirements with the operating permit program regulations. As a result of comments received during the rule making process and the lengthy delay in the adoption of the CAM rule, U.S. EPA provided an extended implementation schedule for this rule. Facilities which had submitted a complete operating permit application prior to April 20, 1998, were not required to address CAM as part of their initial operating permit application, unless they proposed to make significant changes to the facility subsequent to this date and the facility operated "large" pollutant specific emission units ("PSEU"). A "large PSEU" is defined as a unit with post control emissions greater than or equal to the major source threshold.

§64.2 in 40 *CFR* Part 64 specifies that each PSEU at a facility that meets a three-part test is subject to the requirements for CAM. An emission unit must:

(A) Be subject to an emission limitation or standard,
(B) Use a control device to achieve compliance, and
(C) Have **pre-control** emissions that exceed or are equivalent to the major source threshold in 40 *CFR* Part 70 (i.e., 10 tpy individual HAP, 25 tpy total HAPs, 50 tpy VOCs, or 100 tpy for any other air contaminant).

Note that the term "control device" means equipment, other than inherent process equipment, that is used to destroy or remove air pollutant(s) prior to discharge to the atmosphere. The term "control device" does not include passive methods such as lids or seals, use of low-polluting fuels or inherent process equipment provided for safety or material recovery. Additionally, the CAM rule provides some exemptions, such as an exemption for any affected facility subject to an NSPS or NESHAP promulgated after November 15, 1990.

Since EHV Weidmann does not meet the above three part test for its boilers and transformer board manufacturing operations, it is not subject to the requirements for

CAM.

5.2 Citation and Identification of Requirements For Which a Permit Shield Provision Has Been Requested

Pursuant to §5-1015(a)(11) of the *Regulations*, an owner/operator may request to be shielded from specific state or federal requirements which do not apply to the subject source. If the applicability of a regulatory requirement is unclear to the applicant, when appropriate, the Agency may grant a permit shield stating that the requirement does not apply to the source. Once a permit shield is granted, the Agency may not initiate any enforcement action against the Facility based upon a regulation or standard covered by the permit shield. The Agency would be required to amend the Permit to Operate and incorporate the applicable requirement prior to initiating any enforcement action for non-compliance with the applicable requirement. The Agency's permit shield determinations are based upon the information submitted by the owner/operator in its operating permit application. The resulting permit shield shall be effective only with respect to activities disclosed in the application.

It is the Agency's procedure to grant permit shields only for those requirements or standards which conceivably could apply to the Facility, and the Agency has made a determination that such requirement does not in fact apply. The Agency does not intend to grant permit shields for those requirements that clearly do not apply to the Facility. For example, an asphalt plant will not be granted a permit shield from a regulation applying to a dry cleaning operation.

EHV Weidmann has requested to be shielded from several potentially applicable requirements. These are identified in Exhibit D of the operating permit application filed on February 12, 1996. For the reasons stated in the preceding paragraph, the Agency did not grant a permit shield, in the subsequently issued operating permit, for each of the requirements requested in EHV Weidmann's application. The Agency granted a permit shield for the state and federal regulations listed in Table 5-1 below. These permit shields will be continued into any permit issued by the Agency granting approval for the proposed boiler replacement, with one exception. The Agency will remove the permit shield granted for 40 *CFR* Part 60 Subpart Dc, since the new boiler will be subject to this requirement. The permit shields shall be binding only with respect to the activities disclosed in EHV Weidmann's application. Where the Agency has denied a shield, the basis for the determination is explained in the Agency's Technical Analysis dated May 11, 1999.

Table 5-1: Permit Shield Determinations

Requirement for Which a Permit Shield has been Requested	Description of Requirement	Agency's Permit Shield Determination
§5-241(3) of *Regulations*	Prohibition of Nuisance and Odor - Control of Odor from Industrial Processes	Granted

Requirement for Which a Permit Shield has been Requested	Description of Requirement	Agency's Permit Shield Determination
§5-251(1) of *Regulations*	Control of Nitrogen Oxide Emissions	Granted
§5-251(3) of *Regulations*	Control of Nitrogen Oxide Emissions - Reasonably Available Control Technology for Large Stationary Sources	Granted
§5-252 of *Regulations*	Control of Sulfur Dioxide Emissions	Granted
§5-253.10 of *Regulations*	Control of VOCs - Paper Coating	Granted
§5-253.14 of *Regulations*	Control of VOCs - Solvent Metal Cleaning	Granted
§5-253.20 of *Regulations*	Control of VOCs - Other Sources That Emit Volatile Organic Compounds	Granted

5.3 Description of Alternative Operating Scenarios and Related Applicable Requirements Not Previously Identified

EHV Weidmann requested the below listed alternative operating scenarios as part of its application for a Permit to Operate.

1. EHV Weidmann projects that boardmaking production will increase 10% annually for the next seven (7) years. At the seventh year (2002) total production of boards will be approximately 45.7 million pounds of board. This is a 114% increase in production from 1994.

2. EHV Weidmann projects that the laminating line will increase production a maximum of 50% over the next seven (7) years. EHV Weidmann expects to add another shift to accommodate the increase in production.

3. The production of NOMEX boards has the potential to triple over the next seven (7) years. To compensate for the increase in production, the NOMEX production will either be operating more hours per day or more days per year. In either case, the maximum production rate will still be 130.4 lbs/hr.

4. With the projected increase in boardmaking production, the demand for process steam will also increase. It is assumed that the quantity of process steam produced is linearly proportional to the pounds of boards produced. Since an overall increase in board production is projected to be approximately 114%, a 114% increase in fuel usage and steam production is anticipated.

5. The projected increase in boardmaking production may result in the installation of new machining equipment and a corresponding increase in the quantity of PM/PM_{10} emissions being vented to the existing fabric filter collectors. The increase in production may also necessitate the installation of a new collector.

6. With the projected increase in boardmaking production, the usage of adhesives is anticipated to increase. It is assumed that the quantity of adhesive usage is linearly proportional to the pounds of boards produced. Since an overall increase in board production is projected to be approximately 114%, a 114% increase in adhesive usage is projected.

The following summarizes the Agency's determination regarding the incorporation of the above identified alternative operating scenarios within the Permit to Operate. Increases in the hours of operation and/or production need not be included as an alternative operating scenario within the Permit to Operate, if such changes are made without the installation of new equipment and are not prohibited by a term or condition of a Permit. The definition of modification in §5-101 of the *Regulations* allows such changes in the method of operation without triggering new source review pursuant to 10 *V.S.A.* §556 and §5-501 of the *Regulations*. If such changes will necessitate the installation of additional equipment or will result in an exceedance of a permit term or limit, then EHV Weidmann must contact the Agency in order to determine if such modification would qualify for new source review.

The current Permit to Construct and Operate provides some operational flexibility for the source to accommodate an increase in production at the Facility. The Permit to Construct and Operate limits VOC and acetone emissions to less than 50 tpy each, allowable emissions from the boilers assume nearly continuous operation, and the fabric filters are limited based upon maximum discharge rates. There are no limits on the production rate of any equipment or hours of operation. As long as VOC, acetone, and fabric filter PM/PM_{10} discharge rates remain below their respective limits, and no new equipment is installed, EHV Weidmann may increase its board production. If increased production will, for example, require a new boiler or an increase in the emissions limits, then EHV Weidmann will be required to amend its existing Permit to Construct and Operate and be subjected to the requirements of new source review.

5.4 Equivalency and Streamlining

Particulate Matter

PM/PM_{10} emission limits for the residual oil-fired boilers are identified in Condition (4) of the existing Permit to Construct and Operate for the Facility. The limits within Condition (4) are more stringent and therefore overrule the limits derived from §5-231(3)(a)(ii) of the *Regulations*.

PM/PM_{10} emission limits for three fabric filter collectors (#M41 in the Main Building and two collectors at the Fab North Building) are identified in Condition (3) of the existing Permit to Construct and Operate for the Facility. The limits within Condition (3) are more stringent and therefore overrule the limits derived from §5-231(1)(b) of the *Regulations*.

Sulfur Content

For the replacement boiler, EHV Weidmann proposes to comply with 40 *CFR* Part 60 through the purchase and use of low sulfur residual oil (maximum sulfur content of 0.5% by weight or less). This restriction will be incorporated as a condition of any permit

issued approving the installation of the replacement boiler. This proposed restriction is more stringent than and therefore overrules the limit specified in §5-221(1) of the *Regulations*.

6.0 HAZARDOUS AIR CONTAMINANTS

§5-261 of the *Regulations* addresses the release of hazardous air contaminants ("HACs") into the ambient air. Unless specifically exempted from §5-261, the owner or operator of a source must quantify its emissions of HACs regulated by this rule. Any source whose actual emission rate of a HAC exceeds its respective Action Level ("AL") is subject to the rule for that HAC, and the owner or operator of the source must then demonstrate that emissions of the HAC are minimized to the greatest extent practicable. This process is termed the "Hazardous Most Stringent Emission Rate" or HMSER. An air quality impact evaluation may also be required to further assess the ambient impacts that may be attributable to the source. The evaluation of the air quality impacts is performed using the Hazardous Ambient Air Standards ("HAAS") or Stationary Source Hazardous Air Impact Standard ("SSHAIS") contained in the *Regulations*.

6.1 Quantification of Hazardous Air Contaminant ("HAC") Emissions

Solid fuel burning equipment (not including incinerators) installed or constructed prior to January 1, 1993, and all fuel burning equipment which combusts virgin liquid or gaseous fuel is exempted from review pursuant to §5-261(1)(b)(ii) of the *Regulations*. Based on this exemption, no fuel burning equipment used at the Facility qualified for review of HAC emissions under §5-261 of the *Regulations*.

The production of transformer boards does result in the discharge of HACs from the laminating line, Nomex board production, and general usage of adhesives on-site. These emissions have been quantified and compared to their respective Action Levels in order to determine applicability to §5-261 of the *Regulations*. Emissions of PM/PM_{10} resulting from the board machining equipment were not considered, since such emissions are not classified as a HAC in Appendix B of the *Regulations*.

Summarized in Table 6-1 are the estimated HAC emissions resulting from the production process, as well as a comparison to the respective AL. The values in Table 6-1 were derived from a 1999 inspection report conducted by the Agency (last report on file). It should be noted that with the anticipated increase in production identified in paragraph 5.3 above, the actual emission rate of any particular HAC may increase over the next seven (7) years. In order to address the Agency's concern with any potential exceedance of an AL in the future, EHV Weidmann will be required to certify at least once each year that it complies with the requirements of §5-261 of the *Regulations.*

Table 6-1: Comparison of HAC Emission Rates to Action Levels

Constituent	CAS#	Emission Rate (lbs/8-hrs)	Action Level (lbs/8-hrs)
Vinyl acetate	108-05-4	0.3	14.7
Styrene	100-42-5	24	42.5
Acetone	67-64-1	68	7,480

Dimethyl acetamide	127-19-5	0.8	N/A

Based upon the information in Table 6-1 above, EHV Weidmann does not currently produce emissions in excess of any AL. Therefore, EHV Weidmann is not subject to §5-261 of the *Regulations*.

6.2 Federal Hazardous Air Pollutants

Although exempt from §5-261 of the *Regulations*, the U.S. EPA has identified industrial-institutional-commercial boilers as a potential source that will be regulated by a "maximum achievable control technology" ("MACT") standard in the future. Emissions of federally regulated HAPs have been estimated for the No. 6 oil-fired boilers, the units most likely to be regulated by the federal MACT standard, and summed with VOC HAPs produced by the board production process. See Table 6-2 below for a summary of HAP emissions from the Facility. Currently, total HAP emissions from the Facility are estimated to be less than 25 tpy, and no individual HAP is emitted at a rate of 10 tpy or greater. It should be noted, however, that with the anticipated increase in production identified in paragraph 5.3 above, the actual emission rates of HAPs will increase. It is anticipated that EHV Weidmann may produce emissions of styrene in excess of 10 tpy in the future, and thus may be subject to achieving the MACT for styrene. Based upon maximum potential emissions of HAPs from the boilers, it does not appear that EHV Weidmann will be a major source of HAPs due to fuel combustion.

Table 6-2: HAP Emission Rates

Constituent	CAS#	Emission Rate (tpy)
Antimony	0	0.0067
Arsenic	0	0.0017
Benzene	71-43-2	0.00027
Beryllium	0	0.000036
Cadmium	0	0.00051
Chromium	0	0.00083
Cobalt	0	0.0077
Ethylbenzene	100-41-4	0.00082
Formaldehyde	50-00-0	0.001
Lead	0	0.0019
Manganese	0	0.0039
Mercury	0	0.00015
Naphthalene	91-20-3	0.0015

Constituent	CAS#	Emission Rate (tpy)
Nickel	0	0.11
o-Xylene	1330-20-7	0.00014
Polycyclic Organic Matter (POM)	0	0.0017
Selenium	0	0.00088
Styrene	100-42-5	7*
1,1,1-Trichloroethane	71-55-6	0.00030
Toluene	108-88-3	0.0080
Vinyl acetate	108-05-4	0.07*
TOTAL	---	7

* Includes the actual emission rate from 1999.

7.0 REASONABLY AVAILABLE CONTROL TECHNOLOGY

At this time, the Agency has not established a Reasonably Available Control Technology ("RACT") requirement applicable to this Facility under §5-1010 of the *Regulations*. Therefore, the Facility is currently in compliance with this requirement. The Agency will notify EHV Weidmann if any applicable RACT requirement applies to this Facility in the future. If such RACT should apply to the source in the future, the Agency will ensure that EHV Weidmann complies with such requirement at that time.

8.0 AMBIENT AIR QUALITY IMPACT EVALUATION (Criteria Pollutants)

An air quality impact evaluation 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. The Agency's implementation procedures concerning the need for an ambient air quality impact evaluation under §5-501 of the *Regulations*, specifies that such analyses shall be performed when project results in allowable emissions increase of ten (10) tpy or more of any air contaminant, excluding VOCs. Additionally, the Agency may require an air quality impact evaluation where the short-term allowable emission rates will significantly increase as a result of a project. The Agency has not required an air quality impact evaluation as part of the application for the proposed modifications, since site-wide allowable emissions will decrease.

9.0 COMPLIANCE PLAN

9.1 Description of the Compliance Status for Each Applicable Requirement

See paragraph 5.0 above.

9.2 Compliance Schedule For Each Applicable Requirement for Which the Source is Not in Compliance

Not applicable to this Facility.

10.0 PUBLIC PARTICIPATION

The Facility operated by EHV Weidmann is classified as a "Title V Subject Source," and consequently, any application for a Permit to Operate this Facility is subject to the public participation requirements of §5-1007 of the *Regulations*. As required by this section, the Agency published noticed on October 31, 2000, in the *Caledonian Record* that it had received an administratively complete application from EHV Weidmann. Additionally, the Agency notified the affected states of New Hampshire, Massachusetts, and New York of the receipt of this application on October 26, 2000. On November 6, 2000, the Agency determined it received sufficient information to declare the application technically complete.

On November 9, 2000, the Agency published notice in the *Caledonian Record* informing the public of the Agency's plans to issue a draft Air Pollution Control Permit to Construct and Operate. The notice solicited comments and requests for an informational meeting on the matter. Requests for an informational meeting had to be received in writing on or before December 4, 2000. The Agency notified the affected states (i.e., New Hampshire, New York, and Massachusetts) and the U.S. EPA of its draft decision on November 6, 2000. The public comment period closed on December 8, 2000, without the Agency receiving comments or a request for an informational meeting.

11.0 CONCLUSIONS

Based on the foregoing technical analysis of the proposed modification, the following conclusions are made:

A. The proposed modification, subject to the recommended permit conditions, will meet the applicable emission standards contained in state and federal regulations. Furthermore, it is expected that emissions from the proposed modification will not significantly deteriorate air quality, nor will they cause or contribute to a violation of an ambient air quality standard.

B. Pursuant to regulatory definition, the proposed project is designated as a non-major modification to an existing major stationary source.

C. Recommended Permit Conditions - See draft permit.

Consistent with 10 V.S.A. §556(e) and for the purposes of reducing the administrative burden of enforcing two separate permits, the Agency proposes to issue a combined the issuance of the Air Pollution Control Permit to Construct with the Air Pollution Control Permit to Operate.

APPENDICES

Appendix A

Figure 1 - Plant Location (USGS Map)

Figure 2 - Plant Layout

Figure 4 - Boardmaking Line #1 Process Flow

Figure 5 - Boardmaking Line #2 Process Flow

Figure 6 - Laminating Line Process Flow

Figure 7 - Fab West Activities

Figure 8 - Fab North Activities

Figure 9 - Oil Impregnation Process Flow

Appendix B

Table 1 - Allowable Emissions Estimates

Tables 2 & 3 - Complete List of Stacks, Vents and Emission Points

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Table 1 - Existing Allowable Emissions

Facility: EHV Weidmann Industries, Inc., St. Johnsbury Author: JLP
Date: 10/20/2000

FUEL COMBUSTION EMISSIONS

Location:	Main Bldg.	Main Bldg.	Fab North	Fab North	Fab North	Recycle	Training	Recycle
ID. #:	Boiler #1	Boiler #2	Boiler #1	Boiler #2	Boiler #3	Heater #1	Boiler #1	Duct Heater
Fuel	No. 6 Oil	No. 6 Oil	No. 2 Oil	No. 2 Oil	No. 2 Oil	No. 2 Oil	No. 2 Oil	No. 2 Oil
Unit Type:	Boiler	Boiler	Boiler	Boiler	Boiler	Heater	Boiler	Heater
Manuf.:	Clv-Brks	Clv-Brks	Peerless	Peerless				Cox Manuf.
Rated Output (HP):	700	350				25		
Rated HI (MMBTU/hr):	29.3	14.6	2.67	2.67	1.05	0.1	0.13	0.525
Fuel Sulfur (% by wt.):	2	2	0.5	0.5	0.5	0.5	0.5	0.5
Fuel BTU (MMBTU/gal):	0.15	0.15	0.14	0.14	0.14	0.14	0.14	0.14
Max. Firing Rate (gph):	195.5	97.5	19	19	7.58	0.85	1.15	4.5
Potential Hrs. of Operation:	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760
Load (%):	100	100	100	100	100	100	100	100
Potential Fuel Combustion:	1,712,580	854,100	166,440	166,440	66,401	7,446	10,074	39,420
Allowable Fuel Combustion:								

Facility Total Fuel Consumption:

No. 6 Oil	2,566,680
No. 2 Oil	456,221

Emissions of all combustion contaminants based on emission factors - Emissions from Cleaver Brooks and Peerless equipment based upon manufacturers emission factors, while the heaters and boilers < 25 hp based upon U.S. EPA emission factors published in AP-42 Section 1.3. (Exception: Duct heater PM emission rate based upon PM limit specified in Section 5-231 of the Regulations and continuous operation)

	Clv-Brks No. 6 Factors lbs/1000 gals	Peerless No. 2 Factors lbs/1000 gals	AP-42 Factors No. 2 Commercial lbs/1000 gals	No. 6 Oil tpy	Peerless No. 2 Oil tpy	Other No. 2 Oil tpy	Total tpy
PM/PM10	31.8	4.2	2	40.8	0.7	1.5	43.0
SO2	307.2	71	71	394.2	11.8	4.4	410.4
Nox	73.4	28	20	94.2	4.7	1.2	100.1
CO	11.2	neg.	5	14.4	neg.	0.3	14.7
NMHCs	5.3	4.1	0.34	6.8	0.7	0.0	7.5
HAPs							

EPA HAP Emissions from Residual Oil-Fired Boilers. Quantified in order to determine whether or not EHV Weidmann is a potential major HAP source and applicability to future MACT standard for industrial fossil fuel-fired boilers. Emissions from distillate oil-fired equipment were not considered, since these units would not likely be considered within the MACT standard (i.e., too small). Emissions derived from AP-42 emission factors published in Table 1.3-8. Emission based upon unlimited operation at full load (equivalent to 2,566,680 gpy of No. 6 Oil)

POLLUTANT	AP-42 EMISSION FACTOR (lbs/1000 gals)	BOILER #1 EMISSION RATE (lbs/hr)	BOILER #2 EMISSION RATE (lbs/hr)	TOTAL EMISSION RATE (tpy)
POM	0.0013	0.00	0.00	0.00
Formaldehyde	0.033	0.01	0.00	0.04
Benzene	0.000214	0.00	0.00	0.00
Ethylbenzene	0.0000636	0.00	0.00	0.00
Naphthalene	0.00113	0.00	0.00	0.00
1,1,1-Trichloroethane	0.000236	0.00	0.00	0.00
Toluene	0.0062	0.00	0.00	0.01
o-Xylene	0.000109	0.00	0.00	0.00
Antimony	0.00525	0.00	0.00	0.01
Arsenic	0.00132	0.00	0.00	0.00
Beryllium	0.0000278	0.00	0.00	0.00
Cadmium	0.000398	0.00	0.00	0.00
Chromium	0.000845	0.00	0.00	0.00
Cobalt	0.00602	0.00	0.00	0.01
Lead	0.00151	0.00	0.00	0.00
Manganese	0.003	0.00	0.00	0.00
Mercury	0.000113	0.00	0.00	0.00
Nickel	0.0845	0.02	0.01	0.11
Selenium	0.000683	0.00	0.00	0.00
TOTAL HAPs	0.15			0.19

PROCESS EMISSIONS

Fabric Filter Collectors: Emissions have been estimated based on a maximum permitted PM discharge concentration for each fabric filter collector.

ID#	Collector ID.	Air Flow Rate, acfm	Discharge Rate gr/dscf	Hours of Operation	PM (lbs/hr)	PM (tpy)
Proposed	AGET FT-64-D1	4,900	0.02	8,760	0.84	3.7
FN	232RFW8	25,000	0.02	8,760	4.3	18.8
M51	72RJ96	15,000	0.06	8,760	7.7	33.8
M41	72RJ60	15,560	0.02	8,760	2.7	11.7
FN15	232RFT8	26,000	0.02	8,760	4.5	19.5
				Total PM from Fabric Filter Collectors:		87.4 tpy

Laminating Line/NOMEX boards/Gluing Operations: Allowable emissions to be limited based on facility-wide restrictions of <50 tpy VOCs and <50 tpy acetone. For comparison purposes, actual emissions of VOCs and acetone were 6.9 tpy and 18 tpy in 1998 (Data used in last inspection report).

TOTAL FACILITY ALLOWABLE EMISSIONS, tons/year

	PM/PM10	SO2	Nox	CO	VOCs	Acetone	Total HAPs	
Fuel		43.0	410.4	100.1	14.7	7.5	0	0.19
Fabric Filters		87.4	0	0	0	0	0	0
Process		0	0	0	0	+/- 42.5	49	24
TOTAL		130.4	410.4	100.1	14.7	<50	<50	<25

Table 2 - New Allowable Emissions

Facility: EHV Weidmann Industries, Inc., St. Johnsbury Author: JLP

Date: 10/20/2000

FUEL COMBUSTION EMISSIONS

Location:	Main Bldg.	
ID. #:	Boiler #2	(replacement for existing Boiler #2)
Fuel	No. 6 Oil	
Unit Type:	Fire tube boiler	
Manuf.:	Johnston	
Model:	PFTA500-4	
Rated Output (HP):	500	
Rated HI (MMBTU/hr):	19.4	
Fuel Sulfur (% by wt.):	0.5	
Fuel BTU (MMBTU/gal):	0.15	
Max. Firing Rate (gph):	130	
Potential Hrs. of Operation:	8,760	
Load (%):	100	
Potential Fuel Combustion:	1,138,800	
Proposed Fuel Use Limit:	558,500	

Emissions of all combustion contaminants based on emission factors - Emissions from Cleaver Brooks and Peerless equipment based upon manufacturers emission factors, while the heaters and boilers < 25 hp based upon U.S. EPA emission factors published in AP-42 Section 1.3. (Exception: Duct heater PM emission rate based upon PM limit specified in Section 5-231 of the Regulations and continuous operation)

	Johnston Emission Rates lbs/hr	Emission Rates No. 6 Oil lbs/MMBTU	tpy
PM/PM10	2.35	0.121	5.1
SO2	10.1	0.521	21.8
Nox	10.2	0.526	22.0
CO	0.78	0.040	1.7
NMHCs	0.2	0.010	0.4

Table 3: Aggreagted Emissions Increase

Step a) Calculate allowable emissions for new equipment.

Air Contaminant Emissions, tons/year				
PM/PM10	SO2	Nox	CO	NMHCs
5.1	21.8	22	1.7	0.4

Step b) Calculate allowable emissions for all existing processes that are affected by the modification.

Not applicable.

Step c) Calculate actual emissions for existing equipment that are affected by the modification but which were installed prior to 7/1/79 or have been previously reviewed under § 5-502.

Not applicable.

Step d) Calculate allowable emissions from all other equipment at the site added to the site since 7/1/79 or have not been reviewed under § 5-502.

(2) Peerless Boilers; 25 HP Boiler; Recycling Center Heater; Training Center Heater; Nomex Board Manufacturing Line approved 8/21/1996. See Agency's Technical Analysis dated July 17, 1996.

Air Contaminant Emissions, tons/year				
PM/PM10	SO2	Nox	CO	NMHCs
0	12	5.5	0.2	3.6

NOTE: PM/PM10 emissions are not counted, since were included in determine previous modification as major.

Recycle Bldg. Fabric Filter and Duct Heater approved 12/30/1998. See Agency's Technical Analysis dated same date.

Air Contaminant Emissions, tons/year				
PM/PM10	SO2	Nox	CO	NMHCs
4.9	1.4	0.39	0.1	2.9

Total Emissions Increase From Prior Modifications

Air Contaminant Emissions, tons/year				
PM/PM10	SO2	Nox	CO	NMHCs
4.9	13.4	5.89	0.3	6.5

Step e) Calculate size of modification - Step a) + Step b) - Step c) + Step d)

Aggregated PM/PM10 Emissions Increase =	5.1 +	0 +	0 +	4.9 =	10 tons/year
Aggregated SO2 Emission Increase =	21.8 +	0 +	0 +	13.4 =	35.2 tons/year
Aggregated NOx Emission Increase =	22 +	0 +	0 +	5.89 =	27.9 tons/year
Aggregated CO Emission Increase =	1.7 +	0 +	0 +	0.3 =	2 tons/year
Aggregated VOCs Emission Increase =	0.4 +	0 +	0 +	6.5 =	6.9 tons/year

Table 4 - Future Allowable Emissions

Facility: EHV Weidmann Industries, Inc., St. Johnsbury Author: JLP

Date: 10/20/2000

FUEL COMBUSTION EMISSIONS

Location:	Main Bldg.	Main Bldg.	Fab North	Fab North	Fab North	Recycle	Training	Recycle
ID. #:	Boiler #1	Boiler #2	Boiler #1	Boiler #2	Boiler #3	Heater #1	Boiler #1	Duct Heater
Fuel	No. 6 Oil	No. 6 Oil	No. 2 Oil	No. 2 Oil	No. 2 Oil	No. 2 Oil	No. 2 Oil	No. 2 Oil
Unit Type:	Boiler	Fire Tube	Boiler	Boiler	Boiler	Heater	Boiler	Heater
Manuf.:	Clv-Brks	Johnston	Peerless	Peerless				Cox Manuf.
Rated Output (HP):	700	500			25			
Rated HI (MMBTU/hr):	29.3	19.4	2.67	2.67	1.05	0.1	0.13	0.525
Fuel Sulfur (% by wt.):	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Fuel BTU (MMBTU/gal):	0.15	0.15	0.14	0.14	0.14	0.14	0.14	0.14
Max. Firing Rate (gph):	195.5	130	19	19	7.58	0.85	1.15	4.5
Potential Hrs. of Operation:	8,760	8,760	8,760	8,760	8,760	8,760	8,760	8,760
Load (%):	100	100	100	100	100	100	100	100
Potential Fuel Combustion:	1,712,580	1,138,800	166,440	166,440	66,401	7,446	10,074	39,420
Allowable Fuel Combustion:		558,500						

Facility Total Fuel Consumption:

No. 6 Oil	2,271,080
No. 2 Oil	456,221

Emissions of all combustion contaminants based on emission factors - Emissions from Cleaver Brooks, Johnston and Peerless equipment based upon manufacturers emission factors, while the heaters and boilers < 25 hp based upon U.S. EPA emission factors published in AP-42 Section 1.3. (Exception: Duct heater PM emission rate based upon PM limit specified in Section 5-231 of the Regulations and continuous operation)

	Clv-Brks	Johnston	Peerless	AP-42 Factors	CB + Jhnston	Peerless	Other	
	No. 6 Factors	No. 6 Factors	No. 2 Factors	No. 2 Commercial	No. 6 Oil	No. 2 Oil	No. 2 Oil	Total
	lbs/1000 gals	lbs/hr	lbs/1000 gals	lbs/1000 gals	tpy	tpy	tpy	tpy
PM/PM10	31.8	2.35	4.2	2	32.3	0.7	1.5	34.4
SO2	307.2	10.1	71	71	284.7	11.8	4.4	300.9
Nox	73.4	10.2	28	20	84.8	4.7	1.2	90.7
CO	11.2	0.78	neg.	5	11.3	neg.	0.3	11.6
NMHCs	5.3	0.2	4.1	0.34	5.0	0.7	0.0	5.7

EPA HAP Emissions from Residual Oil-Fired Boilers. Quantified in order to determine whether or not EHV Weidmann is a potential major HAP source and applicability to future MACT standard for industrial fossil fuel-fired boilers. Emissions from distillate oil-fired equipment were not considered, since these units would not likely be considered within the MACT standard (i.e., too small). Emissions derived from AP-42 emission factors published in Table 1.3-8. Emissions based upon unlimited operation at full load for Boiler #1 and proposed fuel use limit for Boiler #3.

POLLUTANT	AP-42 EMISSION FACTOR (lbs/1000 gals)	BOILER #1 EMISSION RATE (lbs/hr)	BOILER #2 EMISSION RATE (lbs/hr)	TOTAL EMISSION RATE (tpy)
POM	0.0013	0.00	0.00	0.00
Formaldehyde	0.033	0.01	0.00	0.04
Benzene	0.000214	0.00	0.00	0.00
Ethylbenzene	0.0000636	0.00	0.00	0.00
Naphthalene	0.00113	0.00	0.00	0.00
1,1,1-Trichloroethane	0.000236	0.00	0.00	0.00
Toluene	0.0062	0.00	0.00	0.01
o-Xylene	0.000109	0.00	0.00	0.00
Antimony	0.00525	0.00	0.00	0.01
Arsenic	0.00132	0.00	0.00	0.00
Beryllium	0.0000278	0.00	0.00	0.00
Cadmium	0.000398	0.00	0.00	0.00
Chromium	0.000845	0.00	0.00	0.00
Cobalt	0.00602	0.00	0.00	0.01
Lead	0.00151	0.00	0.00	0.00
Manganese	0.003	0.00	0.00	0.00
Mercury	0.000113	0.00	0.00	0.00
Nickel	0.0845	0.02	0.01	0.10
Selenium	0.000683	0.00	0.00	0.00
TOTAL HAPs	0.15			0.17

PROCESS EMISSIONS

Fabric Filter Collectors: Emissions have been estimated based on a maximum permitted PM discharge concentration for each fabric filter collector.

ID#	Collector ID.	Air Flow Rate, acfm	Discharge Rate gr/dscf	Hours of Operation	PM (lbs/hr)	PM (tpy)
Proposed	AGET FT-64-D1	4,900	0.02	8,760	0.84	3.7
FN	232RFW8	25,000	0.02	8,760	4.3	18.8
M51	72RJ96	15,000	0.06	8,760	7.7	33.8
M41	72RJ60	15,560	0.02	8,760	2.7	11.7
FN15	232RFT8	26,000	0.02	8,760	4.5	19.5
				Total PM from Fabric Filter Collectors:		87.4 tpy

Laminating Line/NOMEX boards/Gluing Operations: Allowable emissions to be limited based on facility-wide restrictions of <50 tpy VOCs and <50 tpy acetone.

TOTAL FACILITY ALLOWABLE EMISSIONS, tons/year

	PM/PM10	SO2	Nox	CO	VOCs	Acetone	Total HAPs	
Fuel	34.4		300.9	90.7	11.6	5.7	0	0.17
Fabric Filters	87.4		0	0	0	0	0	0
Process	0		0	0	0	+/- 42.5	49	24
TOTAL	121.9		300.9	90.7	11.6	<50	<50	<25

AS

VERMONT AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Air Pollution Control Division

TECHNICAL ANALYSIS OF AN AIR CONTAMINANT SOURCE FOR A PERMIT TO OPERATE

#OP-95-066
DEC# NS94-0008

April 19, 2006

OWNER/OPERATOR:	Putney Paper Company, Inc. P.O. Box 226 Putney, VT 05346
SOURCE:	Putney Paper Company, Inc. U.S. Route 5 and Mill Street Putney, VT 05346
RESPONSIBLE OFFICIAL:	Mr. Paul Mallet, Vice President Operations
CONTACTS:	Mr. Bruce Raymond, Environmental Manager Putney Paper Company, Inc. Tel: (802) 387-5571 Fax: (802) 387-5297
+++++ COUNTY:	Windham
AREA DESIGNATION:	Attainment for PM_{10}, SO_2, NO_x, CO, & Pb Unclassified for O_3
UTM COORDINATES:	$^{7}02^{100}$ m E, $^{47}60^{900}$ m N, Zone 18 - Boiler Room Stack

1.0 INTRODUCTION

1.1 Administrative Milestones

Table 1-1: Administrative Summary

Administrative Item	Result or Date
Date Application Received:	01/30/1996
Date Administratively Complete:	02/14/1996
Date & Location Receipt of Application Noticed:	02/15/1996 *The Brattleboro Reformer*
Date Technically Complete:	05/23/2001
Date Draft Decision:	06/21/2001 Approved
Date & Location Draft Decision/Comment Period Noticed:	06/21/2001 *The Brattleboro Reformer*
Date U.S. EPA and Affected States Notified of Draft Decision:	06/21/2001
Date & Location Public Meeting Noticed:	7/16/2001, *The Brattleboro Reformer*
Date & Location of Public Meeting:	8/6/2001, Putney, VT
Deadline for Public Comments:	10/15/2001
Written Response to Public Comments	1/23/2006
Classification of Source Under §5-401:	§5-401(6)(a)(ii) – Fossil fuel burning installation with aggregated heat input of 10 MMBTU/hr or greater.
Operating Permit Classification:	Title V Subject Source
New Source Review Designation of Facility:	Major Stationary Source
Facility SIC Code(s) and Description(s):	2621 (Paper Mills) 2676 (Sanitary Paper Products)

Future Allowable Air Contaminant Emissions (tons/year)*					
PM/PM_{10}	SO_2	NO_x	CO	VOCs	Total HAPs
55	361	84	6	26	<1

* PM/PM_{10} - particulate matter, SO_2 - sulfur dioxide, NO_x - oxides of nitrogen, CO - carbon monoxide, VOCs - volatile organic compounds, HAPs - hazardous air pollutants as listed in §112 of the *Clean Air Act.*

1.2 Basis of Review

Putney Paper Company, Inc. (hereinafter "Putney Paper" and also referred to herein as "Owner/Operator") owns and operates a tissue paper manufacturing facility located off U.S. Route 5 and Mill Street in the town of Putney, Vermont (referred to herein as "Facility"). The operations performed by Putney Paper at the Facility are classified as a stationary source of

air contaminants under §5-401(6)(a)(ii) of the *Vermont Air Pollution Control Regulations* ("*Regulations*"). Additionally, pursuant to §5-101 of the *Regulations*, "stationary source" is defined as any structures, equipment, installations, or operations, 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 under common control. Based upon this definition, all of the equipment, operations, and structures at Facility are grouped together as one stationary air contaminant source.

This Facility was constructed prior to July 1, 1979, and has not undergone any modifications that required Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division (hereinafter "Agency") review and approval pursuant to Title 10 *Vermont Statutes Annotated* ("10 *V.S.A.*") §556 and §5-501 of the *Regulations*. Based upon information provided by Putney Paper, allowable emissions of all air contaminants from the Facility are estimated to be greater than ten (10) tons per year ("tpy"). Furthermore, allowable emissions of sulfur dioxide ("SO_2") exceed 100 tpy. Therefore, pursuant to §§5-1002, 5-1003, and 5-1005 of the *Regulations*, the Facility is classified as a "Title V Subject Source" and Putney Paper must obtain an Air Pollution Control Permit to Operate ("Permit to Operate") consistent with the requirements of Subchapter X of the *Regulations* and Title 40 *Code of Federal Regulations* ("40 *CFR*") Part 70.

2.0 FACILITY DESCRIPTION AND LOCATION

2.1 Description of Plant Layout and Surrounding Area

The Facility is located in the town of Putney, Vermont. The area surrounding the Facility is primarily mixed commercial and residential. The Facility is located within a mile of the Putney Central School. The Facility is located within 100 kilometers of the Lye Brook Wilderness area in Manchester, Vermont and greater than 100 kilometers from the Great Gulf and Dry River Wilderness areas in New Hampshire.

2.2 Explanation of Process

The operations performed at the Facility are described using the Standard Industrial Classification Codes - 2621 (Paper Mills) and 2627 (Sanitary Paper Products).

Putney Paper's Facility is a 100% recycled deink facility with a primary function of manufacturing tissue and other various grades of disposable papers. Within this primary function there exist five (5) individual processes: repulping, deinking and cleaning, formation, drying and wastewater treatment. The manufacturing facility operates twenty-four (24) hours per day, seven (7) days per week and produces approximately 110 tons per day of finished paper products.

The repulping process is located in the Mill #2 area. This process employs pulpers to physically change various grades of wastepaper, using water and horsepower, to a pulp like material. The repulping process varies from ten (10) to fifty (50) minutes in duration. Historically the Facility has also added to the repulping process a 50% solution of sodium hydroxide ("NaOH"), a12.5% solution of sodium hypochlorite ("NaOCl") and a non-ionic surfactant to the slurry. More recently the facility has been assessing their operation without the use of the sodium hypochlorite solution. The chemicals are added to aid in fiber

separation and preparing the fiber for the next phase. Steam heat is also employed in this step in the production, and is supplied by two (2) No. 6 oil-fired boilers located on-site.

The deinking and cleaning process is also located in the Mill #2 work space. Within this process the repulped fiber is highly diluted with water (1% fiber consistency). This process uses physical means such as screening, velocity, centrifugal forces, air injection and fine mesh fabrics to separate and remove any impurities and/or contaminants from the fiber. No process aids are introduced in this stage of the process. Occasionally, the equipment must be cleaned using a 30% solution of hydrogen chloride ("HCl") and/or sulfuric acid ("H_2SO_4"). Inhibitor chemicals are also used to eliminate the deposition of calcium, barium, and other crystal scale growth on the equipment.

The formation process consists of dispersing the pulp slurry at a 1% consistency onto a fabric, forming the pulp fibers through velocity and force and removing the water quickly to retain the physical form achieved. During this stage several process aids may be introduced depending upon the grade of product being manufactured. Materials used include: dyes for shade enhancement, polyglycols for foam control, wet strength resins to enhance the strength of the final product. Wet strength resins consist of hydrochloric acid ("HCl") and 1,3-dichloropropane. Low molecular weight polymers are applied to the forming fabrics to repel built up of sticky substances and thereby reduce the need for equipment cleanup. The formation process equipment is also periodically cleaned using refined pine terpene hydrocarbons and/or potassium hydroxide.

The final stage in the manufacturing process involves drying of the formed sheet. The formed sheet is passed through a dryer section which is enclosed by a hood. The drying stage is also served by steam produced by the two (2) oil-fired boilers. The temperature of the steam varies from 220 °F to 280 °F. Hot air and water vapors captured by the hood are released to the ambient air.

Steam is produced on-site by the two (2) No. 6 oil-fired boilers both manufactured by Cleaver Brooks. The boilers are identical and are served by a common breaching entering into a single stack.

The final stage of the process is the treatment of the water that has been used throughout the various manufacturing stages. This is accomplished through the use of both physical and biological waste water treatment systems.

2.3 Process Equipment and Stack Information

2.3.1 Description of Equipment

See Table 2-1: Equipment Information, in Appendix A of this Technical Analysis for a list of the more important emission points at the Facility. See Table 2-2 in Appendix A of this Technical Analysis for a listing of stack and vent parameters at the Facility.

2.3.2. Description of Compliance Monitoring Devices

No devices have been proposed to continuously monitor emissions produced at this Facility.

3.0 QUANTIFICATION OF EMISSIONS

Emissions must be calculated for the Facility in order to establish the regulatory review process for the operating permit portions and to determine applicability with various air pollution control requirements. These determinations are normally based upon allowable emissions. Allowable emission is defined as the emission rate calculated using the maximum rated capacity of the source and, if applicable, either: (a) the applicable emission standard contained in the *Regulations*, if any, or (b) the emission rate or design, operational or equipment standard specified in any order or agreement issued under the *Regulations* that is state and federally enforceable. In addition, §5-101 of the *Regulations* defines a "stationary source" as any structures, equipment, installations, or operations, 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 under common control. Based upon this definition, all of the equipment, operations, and structures at Facility are grouped together as one stationary air contaminant source.

Under the Agency's operating permit program, a source is classified as a "Title V Subject Source" and subject to federal review of the Permit to Operate if the Facility satisfies any one of the following criteria:

1. The source has allowable emissions of oxides of nitrogen ("NO_x"), sulfur dioxide ("SO_2"), carbon monoxide ("CO"), particulate matter ("PM/PM_{10}") or any other air contaminant, except volatile organic compounds ("VOCs"), of 100 tpy or greater;

2. The source has allowable emissions of VOCs of fifty (50) tpy or greater;

3. The source is subject to a federal emission standard pursuant to §111 of the *Clean Air Act* ("*CAA*") and promulgated in Title 40 *Code of Federal Regulations* ("40 *CFR*") Part 60 (Standards of Performance for New Stationary Sources);

4. The source is subject to a federal emission standard pursuant to §112 of the *CAA* and promulgated in 40 *CFR* Part 61 or 63 (National Emission Standards for Hazardous Air Pollutants); or

5. The source has allowable emissions of any one hazardous air pollutant ("HAP") regulated by the United States Environmental Protection Agency ("U.S. EPA") of ten (10) tpy or greater, or allowable emissions of a combination of HAPs regulated by the U.S. EPA of twenty-five (25) tpy or greater. The HAPs regulated by the U.S. EPA are identified in §112 of the *CAA*.

Note: Non-major stationary sources subject to a requirement in §111 or §112 of the CAA are currently not subject to the Title V operating permit program, since the U.S. EPA has deferred the requirement for a Title V operating permit for non-major sources pursuant to 40 CFR Part 70 §70.3(b)(1) and the fact that the U.S. EPA has not completed rulemaking establishing how the program should be structured for non-major sources.

3.1 Emission Related Information

Based upon its allowable emissions (see Table 3-1 below), the Facility is currently classified as a "Title V subject source" under the operating permit program requirements.

Since there is no existing permit for this Facility, allowable emissions have been estimated from all fuel burning equipment on-site and the paper machines. Allowable emissions have been estimated based upon continuous operation and maximum rated capacity for the equipment on-site. The facility has a maximum production capability of 110 tons per day.

Emissions produced from the combustion of fuels in the fuel burning equipment include: particulate matter ("PM/PM_{10}"), sulfur dioxide ("SO_2"), oxides of nitrogen ("NO_x"), carbon monoxide ("CO"), and volatile organic compounds ("VOCs"). VOCs from fuel burning equipment are also commonly referred to as non-methane total organic compounds ("NMTOCs"). The operation of the paper lines results in the discharge of VOCs resulting from the volatilization of materials added during the production of the paper products.

Individual constituents which makeup the categories of PM/PM_{10} and VOCs may also be regulated by state and federal regulations, and must therefore be quantified. These individual constituents are referred to as hazardous air contaminants ("HACs") and/or hazardous air pollutants ("HAPs"). HAPs are defined as those chemicals listed in the §112(b) of the federal *Clean Air Act*, of which there are 188 chemicals. HACs are defined as those chemicals which are listed in Appendix B of the *Regulations*. All of the 188 HAPs are included as HACs.

3.2 Enforceable Operating Restrictions

The Facility does not presently operate under any enforceable limitations imposed by an Air Pollution Control Permit. However, emissions have been estimated based upon a production rate of 110 tons per day. Based upon 1994 usage rates (56 gallons per ton of product) in the application, fuel use in the boilers was projected to be less than 2,300,000 gallons per year at this maximum production rate. This value was utilized to estimate emissions from the boilers, rather than the potential usage rate derived by assuming full load operation for the entire year. This fuel use will be placed as a restriction within any Permit to Operate issued to Putney Paper.

3.3 Identification of Insignificant and Exempt Activities

Activities which qualify as an "insignificant activity" pursuant to §5-1002(h) of the *Regulations* need not be considered when determining the applicability of Subchapter X of the *Regulations* and must only be listed as such within the operating permit application. Additionally, guidance provided by the U.S. EPA (entitled "White Paper for Streamlined Development of Part 70 Permit Applications") lists activities which are considered as "trivial" sources of air contaminants, and may be presumptively omitted from operating permit applications.

Although not required for determining applicability with Subchapter X, quantifiable emissions from "insignificant activities" must be included for the purposes of establishing whether or not a source is subject to other air pollution control requirements, including, but not limited

to: reasonably available control technology, major source status, and Title V operating permit applicability.

In its application, Putney Paper has not identified any equipment or activities as insignificant or trivial. However, the Agency is aware of the following insignificant or trivial activities at the site:

1. Propane fueled forklifts;
2. Repair and maintenance shop activities;
3. Soldering and welding equipment;
4. Ventilating units used for human comfort;
5. Fuel oil storage tanks
6. Paper testing laboratory;
7. Diesel fire pump;
8. Propane electrical generator set (65 kW) manufactured by Onan;and
9. Intermittent building maintenance activities.

Emissions were not quantified from the above insignificant activities because they are considered negligible or not quantifiable. The exclusion of emissions produced by the insignificant and trivial activities does not alter the applicability status of the Facility under Subchapter X of the *Regulations*.

3.4 Allowable Emissions from Each Emission Point, Including Quantifiable Fugitive Emissions, As Necessary to Determine Applicable Requirements

Summarized in Table 3-1 below are the allowable emissions for Putney Paper. Table 1 in Appendix A of this Technical Analysis summarizes the derivation of the allowable emissions.

Table 3-1: Allowable Emissions for Putney Paper

Source	Air Contaminant Emissions, tons per year					
	PM/PM_{10}	SO_2	NO_x	CO	VOCs	HAPs
Boilers	55.2	361.1	83.7	5.8	0.3	0.18
Paper Production	---	---	---	---	25.7	<0.01
TOTAL	55.2	361.1	83.7	5.8	26.0	<0.2

4.0 APPLICABLE REQUIREMENTS

4.1 Citation and Description of all Applicable Requirements

§5-1006(e)(4) of the *Regulations* requires the owner/operator of a stationary air contaminant source to submit a complete application including, but not limited to a demonstration of compliance with all applicable air pollution control requirements. These requirements include state and federal regulations, and the requirements of any construction permit issued under 10 *V.S.A.* §556. Note that compliance relative to §5-261 and §5-1010 of the

Regulations will be discussed separately under paragraphs 5.0 and 6.0 below.

The compliance analyses and determinations in this technical analysis rely on data and representations provided by the Owner/Operator. Any statements and conclusions regarding the compliance status contained herein are not binding against the state of Vermont in any future legal or administrative proceedings.

Vermont Air Pollution Control Regulations

§5-201 and §5-202 - Open Burning Prohibited and Permissible Opening Burning. Open burning of materials is regulated within these requirements.

Putney Paper has stated that it complies with these requirements.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

§5-211(1) - Prohibition of Visible Air Contaminants - Installations Constructed Prior to April 30, 1970. This standard applies one of the boilers manufactured by Cleaver Brooks (Boiler #1) which was installed in 1967, and specifies that visible air contaminant emissions may not exceed forty (40) % opacity for a period of six (6) minutes or more in any hour, and at no time may they exceed sixty (60) % opacity. Compliance with this standard is generally based upon the procedures contained in proposed Reference Method F-1 (51 *Federal Register*, page 31076, August 29, 1986).

Putney Paper has stated that it complies with the standard based on their equipment maintenance.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

§5-211(2) - Prohibition of Visible Air Contaminants - Installations Constructed Subsequent to April 30, 1970. This standard applies to the second boiler manufactured by Cleaver Brooks, the emergency generator set, and diesel fire pump. The limitations of this section specify that visible air contaminant emissions may not exceed twenty (20) % opacity for a period of six (6) minutes or more in any hour, and at no time may they exceed sixty (60) % opacity. Compliance with this standard is generally based upon the procedures contained in proposed Reference Method F-1 (51 *Federal Register*, page 31076, August 29, 1986).

Putney Paper has stated that it complies with the standard based on their equipment maintenance.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

§5-221(1)(a) - Prohibition of Potentially Polluting Materials in Fuel - Sulfur Limitation in Fuel. This subsection prohibits the use of any fuel, in stationary fuel burning equipment, with a sulfur content more than 2.0% by weight. This prohibition applies to all stationary fuel

burning equipment used on-site. Compliance with this standard is based on fuel analyses following the procedures prescribed by the American Society for Testing and Materials ("ASTM").

Putney Paper has stated that it complies with this standard based on their contract with fuel suppliers.

The continued use of these methods is sufficient to ensure compliance with this limitation in the future. As part of a compliance inspection, the Agency may require Putney Paper to perform oil sampling and analyses to confirm compliance with the 2.0% limit.

§5-231(1)(a) - Prohibition of Particulate Matter; Industrial Process Emissions. "No person shall discharge, cause, suffer, allow, or permit in any one hour from any stack whatsoever particulate matter in excess of the amount shown in Table 1 (of the *Regulations*). For purposes of this regulation the total process weight entering a process unit shall be used to determine the maximum allowable emissions of particulate matter which may pass through the stack associated with the process unit. When two or more process units exhaust through a common stack, the combined process weight of all of the process units, served by the common stack, shall be used to determine the allowable particulate matter emission rate." Compliance with this emission standard shall be determined in accordance with 40 *CFR* Part 60, Appendix A, Reference Method 5 or an alternative method approved in writing by the Agency.

Based on the application and information available to the Agency, the paper making operations are potentially subject to this regulation. However, given the nature of the paper making operations, it unlikely that significant quantities of particulate matter may be generated from these operations and therefore it is expected that Putney Paper is in compliance with the particulate matter emission limit of this section.

The Agency will assess compliance with this emission standard in the future during any inspections of the Facility. The inspections will include confirmation of the proper operation and maintenance of the required air pollution control devices and visual observations of the stack exhaust.

§5-231(3)(a)(i) - Prohibition of PM; Combustion Contaminants. This standard applies to any fossil fuel burning equipment with a rated heat input of ten (10) MMBTU/hr or less. Specifically, this standard applies to the small stationary propane-fired emergency generator and the diesel fire pump identified in item 3.3 of this Technical Analysis. This standard specifies that PM emissions may not exceed 0.5 lbs/hr/MMBTU of heat input. Compliance with this standard is generally based on the use of Reference Method 5 (40 *CFR* Part 60, Appendix A).

Putney Paper has stated that it complies with the standard based on their maintenance of the fuel burning equipment.

The Agency will assess compliance with this standard in the future as follows: (1) Putney Paper will be required to properly operate and maintain its fuel burning equipment, (2) visual observations of each exhaust will be conducted during any Agency inspections of the Facility, and (3) if visible emissions are observed to be in excess of the limits specified in

§5-211 of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standard or that other corrective measures be taken.

§5-231(3)(a)(ii) - Prohibition of PM; Combustion Contaminants. The PM standard in this section is applicable to the two No. 6 oil-fired boilers manufactured by Cleaver Brooks, since they each have a heat input rating greater than ten (10) MMBTU/hr but equal to or less than 250 MMBTU/hr. The PM standard is in units of lbs/hr/MMBTU and varies based upon the heat input of the unit. The actual value of the standard is derived based upon the following formula:

$$E_{PM} = 10^{[-0.47039(\log_{10} HI)+0.16936]}$$

Where HI is the maximum rated heat input of the unit in MMBTU/hr; and
E_{PM} is the emission rate in lbs/hr/MMBTU.

In accordance with the above formula, the following emission standards apply to the boilers operated by Putney Paper:

E_{PM} for Cleaver Brooks 25.1 MMBTU/hr Boiler #1 = 0.32 lbs/MMBTU and 8.0 lbs/hr
E_{PM} for Cleaver Brooks 25.1 MMBTU/hr Boiler #2 = 0.32 lbs/MMBTU and 8.0 lbs/hr

Emissions of PM/PM_{10} will result from the burning of fuel oil in the boilers at the Facility. The quantity of these emissions produced will depend upon the quality of the operation and maintenance of the fuel burning equipment, and the quality of the fuel being burned. In an effort to maintain compliance with this requirement the Agency will require Putney Paper to maintain and operate its equipment following the manufacturer's recommendations, and that Putney Paper perform annual maintenance tune-ups on its equipment. The Agency is also requiring the facility to routinely monitor the combustion efficiency of the boilers. The Agency will also assess visible emissions from the fuel burning equipment while on-site performing an inspection of the Facility, and if visible emissions are observed to be in excess of the limits specified in §5-211 of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standards or that other corrective measures be taken.

Putney Paper has stated that it complies with the standard based on their emission estimates, emission performance data from Cleaver-Brooks, the boiler manufacturer, and the scheduled maintenance of the boilers.

Compliance with the standard in §5-231(3)(a)(ii) of the *Regulations* is generally based on the use of Reference Method 5 (40 *CFR* Part 60, Appendix A). Based on available emission data, emission performance data from the boiler manufacturer, and fuel properties, the estimated PM emissions from the boilers at the Facility are anticipated to be well below the regulatory limit thereby ensuring compliance with the standard. Therefore the Agency is not, at this time, requiring emissions testing for the boilers.

§5-231(4) - Prohibition of PM; Fugitive PM. This section requires the use of fugitive PM control equipment on all process operations and the application of reasonable precautions to prevent PM from becoming airborne during the handling, transportation, and storage of materials, or use of roads. This requirement applies to the entire Facility.

The Agency will require the use of reasonable precautions such as the application of water or surfactants to the haul roads and plant yard as necessary. Additionally, the Agency will assess compliance with this requirement during any inspections of the Facility, and will require the use of additional measures if found necessary during a compliance inspection.

§5-241(1) & (2) - Prohibition of Nuisance and Odor. This requirement applies to the entire Facility and prohibits the discharge of air contaminants that would be a nuisance to the public or be source of objectionable odors beyond the property-line of the Facility.

Putney Paper has stated that it complies with this requirement due to their observation of dust and odors from the operations.

The Agency will verify compliance with this requirement in the future during any inspections of the Facility. Additionally, the Agency investigates all complaints that it receives in order to determine whether or not there is a violation of this requirement.

§5-253.14 - Control of Volatile Organic Compounds - Solvent Metal Cleaning. This subsection applies to all cold cleaning operations, open-top vapor degreasing operations with an open area of 10.8 square feet or greater, and conveyorized degreasing operations with an air/solvent interface 21.5 square feet or greater. The cold cleaning standards require the units to be designed and equipped with a cover easily operated with one hand if the vapor pressure of the solvent exceeds 0.3 psi and an internal drainage area and additional control measures if the vapor pressure of the solvent exceeds 0.6 psi. All cold cleaning operations regardless of solvent vapor pressure must...

"...(iv) Provide a permanent, legible, conspicuous label, summarizing the operating requirements;
(v) Store waste solvent in covered containers;
(vi) Close the cover whenever parts are not being handled in the cleaner;
(vii) Drain the cleaned parts until dripping ceases;
(viii) Supply a solvent spray, if used, that ensures a solid fluid stream at a pressure that does not exceed 10 pounds per square inch gauge;
(ix) Degrease only materials that are neither porous nor absorbent; and
(x) Cease operation of the unit upon the detection of any visible solvent leak until such solvent leak is repaired."

That applicant has stated that the cold cleaning unit and solvent used at the Facility has a vapor pressure less than the applicable levels requiring controls other than the requirements of parts (iv) through (x) above and that the unit is designed and operated in accordance with those provisions.

The Agency will assess compliance with this regulation in the future during any inspections of the Facility. The inspections will include confirmation of the solvent used and the proper design and operation of the unit.

§5-403 - Circumvention. "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."

Based on the application submittal and information available to the Agency, the Facility is currently in compliance with this regulation.

Subchapter VIII - Registration of Air Contaminant Source. This Subchapter requires the owner or operator of a stationary source register with the Agency if the source produces five (5) tons per year or greater of actual emissions during the preceding calendar year. The owner or operator of a source is required to submit information regarding their operations and pay a fee based upon the quantity of emissions they produce and the fuels that they use at the source.

Putney Paper has stated that it complies with this requirement based on the information they have submitted and the fees they have paid in preceding years.

The Agency will ensure compliance with this requirement in the future during any inspections of the Facility.

Federal Air Pollution Control Regulations

Section 111 of the Clean Air Act - New Source Performance Standards (NSPS)

No promulgated NSPS in 40 *CFR* Part 60 currently apply to Putney Paper.

Section 112 of the Clean Air Act - National Emission Standards for Hazardous Air Pollutants (NESHAPs)

No promulgated NESHAPs in 40 *CFR* Part 61 currently apply to Putney Paper.

The Pulp and Paper Production MACT in 40 *CFR* Part 63 Subpart S applies to pulp and paper facilities that are major HAP sources. Based upon its estimated emissions of HAPs regulated by the U.S. EPA, Putney Paper does not generate HAP emissions in excess of the federal thresholds for a major source. Consequently, the pulp and paperboard industry NESHAP does not apply to Putney Paper.

Furthermore, although exempt from §5-261 of the *Regulations*, the U.S. EPA has identified industrial-institutional-commercial boilers as a potential source that will be regulated by a "maximum achievable control technology" ("MACT") standard in the future. Emissions of federally regulated HAPs have been estimated for the boilers. Total HAP emissions from the Facility are estimated to be less than 0.2 tpy, and no individual HAP is emitted at a rate of 0.2 tpy or greater. Based upon maximum potential emissions of HAPs from the boilers, it does not appear that Putney Paper will be a major source of HAPs due to fuel combustion. The federal definition of major source of HAPs is any facility which generates 25 tpy or more of total HAPs or 10 tpy or more of any individual HAP. The federally regulated HAPs are

listed in §112(b) of the *Clean Air Act*.

40 *CFR* Part 64 - Compliance Assurance Monitoring. Pursuant to requirements concerning enhanced monitoring and compliance certification under the *Clean Air Act* ("*CAA*"), EPA promulgated new regulations and revised regulations on October 22, 1997. These new requirements implemented compliance assurance monitoring ("CAM") for major stationary sources of air pollution that are required to obtain operating permits under Title V of the *CAA*. Subject to certain exemptions, the new regulations require owners or operators of such sources to conduct monitoring that satisfies particular criteria established in the rule as a means of providing a reasonable assurance of compliance with applicable requirements. Compliance assurance monitoring is proposed to focus on emissions units that rely on pollution control equipment to achieve compliance with applicable standards. The regulations also provide procedures for coordinating these new requirements with the operating permit program regulations. As a result of comments received during the rule making process and the lengthy delay in the adoption of the CAM rule, U.S. EPA provided an extended implementation schedule for this rule. Facilities which had submitted a complete operating permit application prior to April 20, 1998, were not required to address CAM as part of their initial operating permit application, unless they proposed to make significant changes to the facility subsequent to this date and the facility operated "large" pollutant specific emission units ("PSEU"). A "large PSEU" is defined as a unit with post control emissions greater than or equal to the major source threshold.

§64.2 in 40 *CFR* Part 64 specifies that each PSEU at a facility that meets a three-part test is subject to the requirements for CAM. An emission unit must:

(A) Be subject to an emission limitation or standard,
(B) Use a control device to achieve compliance, and
(C) Have **pre-control** emissions that exceed or are equivalent to the major source threshold in 40 *CFR* Part 70 (i.e., 10 tpy individual HAP, 25 tpy total HAPs, 50 tpy VOCs, or 100 tpy for any other air contaminant).

Note that the term "control device" means equipment, other than inherent process equipment, that is used to destroy or remove air pollutant(s) prior to discharge to the atmosphere. The term "control device" does not include passive methods such as lids or seals, use of low-polluting fuels or inherent process equipment provided for safety or material recovery. Additionally, the CAM rule provides some exemptions, such as an exemption for any affected facility subject to an NSPS or NESHAP promulgated after November 15, 1990.

Since Putney Paper does not meet the above three part test for its boilers and paper manufacturing operations, it is not subject to the requirements for CAM.

***Clean Air Act*, Title VI - Stratospheric Ozone Protection.** The requirements of Title VI of the *CAA* are implemented through regulations and standards within 40 *CFR* Part 82 Subparts A through F. Of these regulations, Putney Paper is subject to Subpart F - Recycling and Emissions Reduction. This requirement is applicable to any facility that owns services, maintains, repairs, and disposes of appliances containing ozone depleting substances. Putney Paper utilizes such refrigeration systems at the Facility. The Agency will incorporate the applicable requirements of 40 *CFR* Part 82 Subpart F into any permit

issued to Putney Paper.

4.2 Citation and Identification of Requirements For Which a Permit Shield Provision Has Been Requested

Pursuant to §5-1015(a)(11) of the *Regulations*, an owner/operator may request to be shielded from specific state or federal requirements which do not apply to the subject source. If the applicability of a regulatory requirement is unclear to the applicant, when appropriate, the Agency may grant a permit shield stating that the requirement does not apply to the source. Once a permit shield is granted, the Agency may not initiate any enforcement action against the Facility based upon a regulation or standard covered by the permit shield. The Agency would be required to amend the Permit to Operate and incorporate the applicable requirement prior to initiating any enforcement action for non-compliance with the applicable requirement. The Agency's permit shield determinations are based upon the information submitted by the owner/operator in its operating permit application. The resulting permit shield shall be effective only with respect to activities disclosed in the application.

It is the Agency's procedure to grant permit shields only for those requirements or standards which conceivably could apply to the Facility, and the Agency has made a determination that such requirement does not in fact apply. The Agency does not intend to grant permit shields for those requirements that clearly do not apply to the Facility. For example, an asphalt plant will not be granted a permit shield from a regulation applying to a dry cleaning operation. Additionally, the Agency and the U.S. EPA do not favor granting permit shields from broad requirements such as a section of the *Clean Air Act* or an entire Subpart of the federal regulations in 40 *CFR*. In the words of the U.S. EPA, ". . . the intended purpose of a negative applicability determination is to memorialize a decision where applicability of a certain regulation is somewhat unclear without extensive knowledge of the regulations and investigation of the relevant facts."

Putney Paper has not requested in its application to be shielded from any potentially applicable requirements. Therefore, the Agency has not proposed to grant any permit shields to Putney Paper in its Permit to Operate.

4.3 Description of Alternative Operating Scenarios and Related Applicable Requirements Not Previously Identified

Putney Paper has not identified any alternative operating scenarios as part of its application for a Permit to Operate.

4.4 Equivalency and Streamlining

On February 10, 1982 the Federal EPA approved, as part of Vermont's State Implementation Plan, §5-261 of the Vermont Air Pollution Control Regulations. As

approved, §5-261 required a "most stringent emission rate" (MSER), as defined for major stationary sources for the control of hazardous air contaminants. The current State of Vermont hazardous air contaminants regulation, as amended on January 20, 1993, employs both an action level and a "hazardous most stringent emission rate" (HMSER) for the control of hazardous air contaminants. Both MSER and HMSER are established on a case-by-case basis and are based on the lowest emission rate achieved in practice by such category of source.

The Agency has determined that the use of an action level in conjunction with a HMSER is at least as stringent as the MSER as adopted by the EPA.

5.0 HAZARDOUS AIR CONTAMINANTS

§5-261 of the *Regulations* addresses the release of hazardous air contaminants ("HACs") into the ambient air. Unless specifically exempted from §5-261, the owner or operator of a source must quantify its emissions of HACs regulated by this rule. Any source whose actual emission rate of a HAC exceeds its respective Action Level ("AL") is subject to the rule for that HAC, and the owner or operator of the source must then demonstrate that emissions of the HAC are minimized to the greatest extent practicable. This process is termed the "Hazardous Most Stringent Emission Rate" or HMSER. An air quality impact evaluation may also be required to further assess the ambient impacts that may be attributable to the source. The evaluation of the air quality impacts is performed using the Hazardous Ambient Air Standards ("HAAS") or Stationary Source Hazardous Air Impact Standard ("SSHAIS") contained in the *Regulations*.

Solid fuel burning equipment (not including incinerators) installed or constructed prior to January 1, 1993, and all fuel burning equipment which combusts virgin liquid or gaseous fuel is exempted from review pursuant to §5-261(1)(b)(ii) of the *Regulations*. Consequently, no fuel burning equipment used at the Facility qualified for review of HAC emissions under §5-261 of the *Regulations*.

The production of tissue paper does result in the discharge of some HACs at the Facility. These emissions have been quantified as part of the Agency's registration program. This data has been compared to the Action Levels in order to determine applicability to §5-261 of the *Regulations*.

Summarized in Table 5-1 are the estimated actual HAC emissions resulting from the paper production process, as well as a comparison to the respective AL. The data for dipropylene glycol methyl ether and 1,2-propanediol was obtained from the registration files for year 2004. The emission estimates assume 100% discharge to the ambient air of the ingredients included in the products used by Putney Paper that contain dipropylene glycol methyl ether and 1,2-propanediol.

The use of sodium hypochlorite as a process chemical in the papermaking process will produce chloroform as a by product. The emission rate of chloroform has been estimated based on a study by the National Council of the Paper Industry for Air and Stream Improvement, Inc. (NCASI). The estimated emission rate shown in Table 5-1 is based on an annual usage of 500 gallons of a 12.5% solution of sodium hypochlorite.

If the Permittee proposes to continue the use of more than 500 gallons per year of sodium hypochlorite at the Facility, then the chloroform Action Level will be exceeded. In this event, within 180 days of the permit issuance, the Permittee shall conduct and submit to the Agency a Hazardous Most Stringent Emission Rate evaluation for the hazardous air contaminant chloroform resulting from the use of chlorinated oxidants/bleaching agents in their papermaking processes.

Table 5-1: Comparison of HAC Emission Rates to Action Levels

Constituent	CAS#	Emission Rate (lbs/8-hrs)	Action Level (lbs/8-hrs)
Dipropylene glycol methyl ether	34590-94-8	0.24	252
1,2-Propanediol	57-55-6	0.01	67
Chloroform	66-66-3	0.0033	0.0034

6.0 REASONABLY AVAILABLE CONTROL TECHNOLOGY

At this time, the Agency has not established a Reasonably Available Control Technology ("RACT") requirement applicable to this Facility under §5-1010 of the *Regulations*. Therefore, the Facility is currently in compliance with this requirement. The Agency will notify Putney Paper if any applicable RACT requirement applies to this Facility in the future. If such RACT should apply to the source in the future, the Agency will ensure that Putney Paper complies with such requirement at that time.

7.0 COMPLIANCE PLAN

7.1 Description of the Compliance Status for Each Applicable Requirement

See paragraph 4.0 above.

7.2 Compliance Schedule For Each Applicable Requirement for Which the Source is Not in Compliance

Not applicable to this Facility.

8.0 PUBLIC PARTICIPATION

The Facility operated by Putney Paper is classified as a "Title V Subject Source," and consequently, any application for a permit modification is subject to the public participation requirements of §5-1007 of the *Regulations*. As required by this section, the Agency published noticed on February 15, 1996, in the *Brattleboro Reformer* that it had received an administratively complete application from Putney Paper. On May 23, 2001, the Agency determined it received sufficient information to declare the application technically complete.

On June 21, 2001, the Agency published a notice in the *Brattleboro Reformer* informing the public of the Agency's plans to issue a draft Air Pollution Control Permit to Operate. The

notice solicited comments on the draft decision and requests for an informational meeting on the matter. The public comment period was tentatively set to close on July 20, 2001. Requests for an informational meeting were received by the Agency. On August 6, 2001, a public meeting was held. The public comment period closed on October 15, 2001.

The U.S. EPA and affected states of New York, Massachusetts, and New Hampshire were notified of the draft decision on June 21, 2001.

9.0 CONCLUSIONS

9.1 Putney Paper has demonstrated that the Facility is in compliance with all applicable air pollution control requirements.

APPENDICES

Appendix A

Table 2-1: Equipment Information

Table 2-2: Stack Information

Table 2-1: Equipment Information

PARAMETER	BOILER #1	BOILER #2
Boiler Manufacturer:	Cleaver Brooks	Cleaver Brooks
Model No.:	655-600	655-600
Serial No.:	L-42356	L-36070
Purpose of boiler:	Steam production	Steam production
Boiler Type:	Fire tube	Fire tube
Boiler Maximum Rated Heat Input (MMBTU/hr):	25	25
Boiler Maximum Rated Heat Output: (horsepower):	600	600
Boiler Design Heat Transfer Efficiency:	76%	76%
Maximum & Design Operating Pressures (psig):	150/120	150/120
If purpose of the boiler is for steam production, indicate maximum and design steam production rate (lbs of steam/hr):	20,000/18,400	20,000/18,400
Fuel Type:	No. 6 Fuel Oil	No. 6 Fuel Oil
Assumed Fuel Higher Heating Values (MMBTU/gal):	0.15	0.15
Fuel Sulfur Content (% by weight):	2.0	2.0
Fuel Nitrogen Content (% by weight)	0.5	0.5
Number of Burners:	1	1
Burner Manufacturer:	Cleaver Brooks	Cleaver Brooks
Model No.:	655-600?	655-600
Serial No.:	L-42356?	L-42356?
Burner Type or Fuel Feeding Mechanism:	Air atomizing (low pressure) nozzle	Air atomizing (low pressure) nozzle
Maximum Fuel Firing Rate (gals/hr):	167.5	167.5
Forced draft or atmospheric boiler:	Forced draft	Forced draft
Combustion air blower capacity in actual cubic feet per minute:	7,097	7,097
% Excess Air	30-50%	30-50%
Oxygen Content of Flue Gas (% by volume, wet):	4.4%	4.4%
Carbon Dioxide (CO_2) Content of Flue Gas (% by volume, wet):	13%	13%
Moisture Content of the Flue Gas (% by volume):	N/A	N/A
Will flue gas recirculation (FGR) be employed?	No	No
Will staged air combustion or staged fuel combustion be used?	No	No
Will the combustion air be preheated?	No	No
Will low-NOx burners be utilized?	No	No
Soot blowing frequency and duration:	2 times per day	2 times per day
Will the steam be utilized for electrical generation?	No	No

Table 2-2: Stack Information

PARAMETER	Stack #1
Stack height above base, feet:	60 (Stack Base Elev.: 364 ft above MSL)
Internal Diameter of Stack, feet:	3
Exit Flow Rate, acfm:	5,089
Exit Flow Rate, dscfm:	7,097?
Exhaust Temperature, °F:	394
Exhaust Moisture Content, % by vol.:	N/A
Exhaust Velocity, ft/sec:	12
Exhaust Static Pressure, inches of water:	N/A
UTM Coordinates, meters:	702100 m E, 4760900 m N, Zone 18
Lack or presence of rain cap:	No rain cap
Orientation of stack:	Vertical

AS

#AOP-05-018a
DEC#EJ96-0028
Operating Permit Expiration Date: January 11, 2011

State of Vermont
Agency of Natural Resources
Department of Environmental Conservation

Air Pollution Control Division
Waterbury, Vermont

TITLE V
AIR POLLUTION CONTROL PERMIT
TO CONSTRUCT AND OPERATE

Date Permit Issued: January 11, 2006

Owner/Operator:	Rock-Tenn Converting Company P.O. Box 4098 Norcross, GA 30091
Source:	Rock-Tenn Company – Missisquoi Mill 369 Mill Street Sheldon Springs, VT 05485

FINDINGS OF FACT

(A) FACILITY DESCRIPTION

Rock-Tenn Company (also referred to herein as "Permittee") owns and operates a paperboard manufacturing facility located off Mill Street in the town of Sheldon, Vermont (also referred to herein as "Facility"). The facility currently operates under an Air Pollution Control Permit to Construct and Operate (AOP-95-148a) issued on March 8, 2001. Concurrent with the renewal of this prior Permit to Construct and Operate the Agency is also incorporating as a technical amendment into the permit herein approval of the Permittee's request to increase annual fuel oil usage by 4,800 gallons per year. This increase, in conjunction with prior increases, is the maximum the Facility may increase fuel oil usage and remain a minor modification.

Upon issuance of this permit the Facility will consist of the following equipment:

Equipment Specifications			
Equipment/Make/Model	Capacity/size MMBTU/hr[1]	Fuel type	Date of installation
Paperboard Machine #1	5	Natural Gas	1969
Paperboard Machine #1b	2.98		2001
Paperboard Machine #2	Steam supplied from Boilers		1996
Paperboard Machine #2b	3.264	Natural Gas	1998
	1.67		2001
Wickes Boiler #1	89	Fuel Oil	1950
	80	Natural Gas	
Wickes Boiler #2	27	Fuel Oil	
B&W Boiler #3	33	Fuel Oil	
		Natural Gas	
B&W Boiler #4	31	Fuel Oil	
		Natural Gas	

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

Equipment Specifications			
Equipment/Make/Model	bhp[2]	Fuel Type	Date of installation
Diesel Emergency Generator	16	Diesel	1950

[2] bhp - Brake Horsepower

(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 and/or 5-502 of the *Regulations* and the following "Permit to Operate" approvals pursuant to 10 *VSA* §556a and Subchapter X of the *Regulations*.

Prior Agency Approvals and Actions	
Date of Action	Description of Agency Approval/Action
March 8, 2001	AOP-95-148a – Modification of two paper machines, including additional coating stage and drying.
July 16, 1999	AOP-95-148 – Initial Operating Permit.
December 30, 1998	AP-96-019b – Application requesting approval for a new coating stage w/ infrared drying on existing paper machine (Machine #2).
June 13, 1996	AP-96-019a – Administrative amendment made.
December 2, 1996	AP-96-019 – Use existing boilers to supply heat to coating oven.

(D) FACILITY PERMIT APPLICABILITY

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 subject to a standard, limitation or other requirement under §111 and/or §112 of the Clean Air Act.

The Facility currently operates under a Permit to Construct and Operate issued on March 8, 2001. The allowable emissions from the Facility are estimated to be greater than ten (10) tpy. Pursuant to §§5-1002, 5-1003, and 5-1005 of the *Regulations* the Facility is classified as a "Title V Subject Source". In accordance with §5-1009 of the *Regulations*, the agency is issuing the Permit to Operate herein as a renewal of the previous Permit to Construct and Operate for the Facility and the Permit herein supercedes all prior Permits for the Facility.

In accordance with 10 *VSA* §556(e) the Agency has combined the Permit to Construct and the Permit to Operate for this Facility into one combined Permit to Construct and Operate. 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
18.6	161.3	<100	49.9	35.0	>10	6.1

[1] PM/PM_{10} - particulate matter and particulate matter of 10 micrometers in size or smaller; SO_2 - sulfur dioxide; NO_x - oxides of nitrogen measured as NO_2 equivalent; CO - carbon monoxide; VOCs - volatile organic compounds; HAPs - hazardous air pollutants as defined in §112 of the federal Clean Air Act.

(E) REVIEW FOR THE PERMIT TO CONSTRUCT

(a) New Source Review Designation

The Permittee has proposed to increase the allowed fuel oil usage by 4,800 gallons per year, which combined with prior minor modifications will result in an increase of just less than 40 tons per year of the pollutant sulfur dioxide. Thus the modification is considered minor and is being processed as a technical amendment under the New Source Review requirements in §5-501 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 Permittee has not proposed any major modifications to the Facility in conjunction with the review for this Permit to Operate and therefore is not subject to review under the MSER requirements in §5-502 of the *Regulations* at this time.

(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. The Agency's implementation procedures concerning the need for an ambient air quality impact evaluation under §5-406(1) of the *Regulations*, specifies that such analyses may be required when a project results in an allowable emissions increase of ten (10) tons per year or more of any air contaminant, excluding VOCs. Additionally, the Agency may require an air quality impact evaluation where the short-term allowable emission rates will significantly increase as a result of a project.

The Permittee has not proposed any significant modifications to the Facility in conjunction with the review for this Permit to Operate and therefore is not subject to an air quality impact analysis under §5-501 of the *Regulations* at this time.

The Facility was previously required to conduct an AQIE for modifications to the Facility on August 2, 1995. An AQIE was conducted for the pollutants SO_2, NO_X, PM_{10} and CO. The results of the AQIE concluded that in order for the Facility to meet short term ambient standards, the Facility may not run more than two of it's boilers at any given time on 2% sulfur fuel oil.

(F) REVIEW FOR THE PERMIT TO OPERATE

(a) 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 5-211(1) - Prohibition of Visible Air Contaminants, Installations Constructed Prior to April 30, 1970. *Applicable units: Coating Dryer #1, Wickes Boiler #1, #2, B&W Boiler #3, #4, Diesel Emergency Generator.*
Section 5-211(2) - Prohibition of Visible Air Contaminants, Installations Constructed Subsequent to April 30, 1970. *Applicable units: Coating Dryer #1B, 2, and 2b.*
Section 5-221(1) - Prohibition of Potentially Polluting Materials in Fuel, Sulfur Limitation in

Applicable Requirements from the Vermont Air Pollution Control Regulations
Fuel.
Section 5-221(2) – Prohibition of Potentially Polluting Materials in Fuel, Waste Oil.
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 5-253.10 - Control of Volatile Organic Compounds from Paper Coating.
Section 5-402 – Written Reports When Requested.
Section 5-403 – Circumvention.
Subchapter VIII – Registration of Air Contaminant Sources.
Subchapter X – Operating Permits.

(ii) Reasonably Available Control Technology - §5-1010 of the *Regulations*

Pursuant to 10 *VSA* §556a(d) and §5-1010 of the *Regulations* the Agency may establish and include within any Permit to Operate emission control requirements based on Reasonably Available Control Technology ("RACT"). The Agency has not imposed any RACT requirements on this Facility under this authority at this time.

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

The Facility currently operates under the confines of a Permit to Construct issued on March 8, 2001 (#AOP-95-148a). The conditions within that existing permit are considered applicable requirements pursuant to §5-1002 of the *Regulations*. The requirements of that permit which are not being modified herein are incorporated into this new combined Permit to Construct and Operate (#AOP-05-018).

(b) Non-Applicable Requirements

(i)

Non-Applicable Requirements from Federal Regulations and the Clean Air Act
Clean Air Act §§114(a)(3), 502(b), and 504(a)-(c); 40 *CFR* Part 70 §§70.6(a)(3)(i)(B) and 70.6(c)(1); and 40 *CFR* Part 64 - Compliance Assurance Monitoring. Upon renewal of a Title V Permit to Operate, a facility must comply with enhanced monitoring and compliance assurance monitoring requirements for any emission controlled unit subject to an emission standard with uncontrolled emissions from the unit in excess of the Title V major source thresholds. There are no emission control devices used by the Facility, therefore this Federal Regulation is non-applicable.

(ii) Pursuant to §5-1015(a)(14) of the Regulations, an owner/operator may request to be shielded from potentially applicable state or federal requirements. The applicant has requested a permit shield. The Agency determined that all regulations from which the applicant has requested to be shielded from are non-applicable. Therefore, the Agency is not granting a permit shield from any regulations. (Example: §5-251(3) – Control of Nitrogen Oxide Emissions – The Facility is capped at 100 tons per year of NO_X therefore this regulation is not applicable. A permit shield is meant for situations which a Regulation could or could not potentially apply. In this situation, there are no Regulations that are in question on whether or not they could potentially apply.)

(c) Enforceability

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

(d) Compliance Certification

The Permittee is required by this Permit to certify compliance as part of its annual registration with the Agency pursuant to the requirements of Subchapter X of the *Regulations*. Additionally, this Permit requires the submission of semi-annual 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. Pursuant to §5-261(1)(b)(ii) of the *Regulations*, all fuel burning equipment which combusts virgin liquid or gaseous fuel is exempt from this section. The Facility is not expected to have regulated emissions of any HAC in excess of an Action Level. Therefore, the Facility is not subject to §5-261 of the *Regulations* at this time.

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 and regulations or is subject to an acceptable schedule of compliance. Therefore, pursuant to 10 *VSA* §§556 and 556a, 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 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). [10 *V.S.A.* §§556(c) and 556a(d)] [§5-501(1) of the *Regulations*]

(2) Except as provided below, the Facility at no time shall operate more than two (2) of its four (4) boilers on residual fuel oil concurrently. For the purpose of this condition, a third boiler may be available in "standby" mode while the other two (2) boilers are operational. Standby mode shall be defined as a mode of operation which does not produce a measurable steam output. The Facility may operate three (3) of its four (4) boilers on fuel oil concurrently if the Facility exclusively burns fuel oil having a sulfur content of 1% by weight or less in the three boilers. [10 V.S.A. §556(c)] [§5-406 of the *Regulations*]

(3) Each boiler shall be equipped with a steam output chart or equivalent recording device. Each steam chart or recording device shall be operational whenever the boilers are operated. The steam output record shall be made available to the Agency upon request. [10 V.S.A. §556(c)] [AP-96-019]

(4) The Facility shall vent exhaust from its equipment, vertically through stacks of the following heights:

Exhaust Source	Stack Height (Feet)
Coating Oven #1	44
Coating Oven #2	46
Coating Oven #2b	
Wickes Boiler #1	193
Wickes Boiler #2	167
B&W Boiler #3	
B&W Boiler #4	
Coating Mixer	12
Cylinder Exhaust #1	29
Cylinder Exhaust #2	39
Dryer Hood #1	40
Dryer Hood #2	

[AP-96-019] [§5-406 of the *Regulations*]

- Operational Limitations -

(5) The Facility shall not burn more than 1,024,800 gallons of residual fuel oil with a sulfur content of 2.0 percent by weight in all boilers combined based on any rolling twelve (12) consecutive calendar month period commencing with the issuance of this permit. Should the Facility choose to burn fuel oil with a sulfur content less than 2.0 percent by weight, then the quantity of fuel oil shall be limited by the following formula based on any rolling twelve (12) consecutive calendar month period commencing with the issuance of this permit:

$$(GPY) \times (\%S) < 2{,}049{,}600$$

Where "GPY" means gallons of fuel oil, "%S" means the weighted average sulfur content of the fuel expressed as percent by weight. [10 *V.S.A.* §§556(c)] [AP-96-019] [§5-502 avoidance of the *Regulations*]

(6) The fuel oil burned at the Facility shall not exceed a maximum sulfur content of 2.0 percent by weight. [§5-221(1)(a) of the *Regulations*]

(7) Waste Oil Used as a Fuel

(a) The combustion efficiency of any boiler burning waste oil, either alone or in combination with any other fuel, shall be ninety-nine (99) % or greater. Combustion efficiency shall be determined using the following equation:

$$CE\ (\%) = \frac{CO_2}{CO_2 + CO} \times 100$$

Where;
CE = Combustion efficiency,
CO2 = % by volume of carbon dioxide in the flue gas on a dry basis, and
CO = % by volume of carbon monoxide in the flue gas on a dry basis.

(b) The Permittee shall comply with all necessary requirements for handling, storage, and disposal of waste oil specified in the Vermont Hazardous Waste Management Regulations.

(c) The Permittee shall only burn waste oil which has properties and constituents within the allowable limits set forth in Table A of the *Regulations* as reproduced on the next page:

Table A Waste Oil Constituents and Properties (Prior to Blending)	
Constituent/Property	Allowable
Polychlorinated Bephenyls (PCBs)	<2 ppm maximum [1]
Total Halogens	1000 ppm maximum
Arsenic	5 ppm maximum
Cadmium	2 ppm maximum
Chromium	10 ppm maximum
Chlorine	500 ppm maximum
Lead	100 ppm maximum
Net Heat of Combustion	8000 BTU/lb minimum
Flash Point	140 degree F minimum

Note: [1]units of parts per million (ppm) are by weight on a water free basis.
[§5-221(2) of the *Regulations*]

(8) The Permittee shall not install or operate a stationary reciprocating internal combustion engine, as defined in the *Regulations*, that is 450 bhp or greater unless the engine complies with §5-271 of the *Regulations*, as applicable. Engines installed after July 1, 1999 or leased after July 1, 2003 must comply with the emission standards of §5-271 of the *Regulations* immediately upon installation, including those engines installed for emergency only operation. Engines installed prior to July 1, 1999 must comply with the emission standards of §5-271 of the *Regulations* by no later than July 1, 2007 or those engines must be limited to emergency only operation thereafter. The new installation of any size stationary reciprocating internal combustion 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 generator sets or to provide shaft power for equipment but does not include engines used to power motor vehicles. [§§5-501 and 5-271 of the *Regulations*]

(9) The emergency generator(s) at the Facility shall be used only during emergency power failures except for a maximum period of up to 100 hours per year each for routine testing and maintenance. Emergency power failures are defined as those times when the normal power source for the Facility is temporarily unavailable due to circumstances beyond the reasonable control of the Permittee. In the event the Facility must take action to restore the normal power source, the Facility shall take such action in a reasonable period of time. The emergency generator(s) shall not be used as part of any peaking or load shedding activities without the prior written approval of the Agency. [10 *V.S.A.* §§556(c) and 556a(d)] [§§5-401(6)(c) and 5-501

of the *Regulations*]

(10) The Permittee shall burn only natural wood in any open burn pile and shall only burn in accordance with this Permit and the *Regulations*. For the purposes of this Permit, natural wood shall be defined as trees, including logs, boles, trunks, branches, limbs, and stumps, lumber including timber, logs or slabs, especially when dressed for use. This definition shall also include pallets which are used for the shipment of various materials so long as such pallets are not chemically treated with any preservative, paint, or oil. This definition shall not extend to other wood products such as sawdust, plywood, particle board and press board. Prior to conducting any open burning of natural wood, the Permittee shall notify the Air Pollution Control Officer and shall obtain approval from the Air Pollution Control Officer to conduct open burning at the Facility, if required. [§5-202 of the *Regulations*]

- Emission Limitations -

(11) In order to maintain Facility emissions of nitrogen oxides (NO_x) below the threshold of §5-251(3) of the *Regulations*, the Permittee shall limit emissions of nitrogen oxides from the entire Facility to less than one-hundred (100) tons per year based on any rolling twelve (12) consecutive calendar month period commencing with the issuance of this permit. [10 V.S.A. §556a(d)] [§5-251(3) avoidance of the *Regulations*]

(12) Total emissions of VOCs from the Facility shall not equal or exceed fifty (50) tons per rolling twelve (12) consecutive calendar month period without prior Agency review and approval. Compliance with this limit shall be determined based upon the products employed, monthly usage rates, and VOC contents of the various products used by Rock-Tenn at the Facility. [10 V.S.A. §556a(d)] [§5-253.20 avoidance of the *Regulations*]

(13) Emissions of particulate matter shall not exceed the following limits:

Particulate Matter Emission Limitations				
Equipment	Capacity (MMBtu/hr)	Emission Limitations		
		lbs/MMBtu[1]	lbs/hour[2]	Source
Coating Dryer #1	5	0.5	2.5	§5-231(3)(a)(i)
Coating Dryer #1b	2.98		1.49	
Coating Dryer #2b	3.264		1.632	
	1.67		0.835	
Wickes Boiler #1	89	0.18	16.0	§5-231(3)(a)(ii)
Wickes Boiler #2	27	0.31	8.8	
B&W Boiler #3	33	0.29	9.6	
B&W Boiler #4	31	0.29	9.0	
Diesel Emergency Generator	16	0.40	3.7	

[1] lbs/MMBTU equals pounds of pollutant emitted per million British Thermal Units of heat input.
[2] lbs/hour equals pounds of pollutant emitted per hour.

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 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.* §556a(d)] [§5-404 of the *Regulations*]

(14) (a) With the exception of the paragraph below, the Facility shall not cause or allow the application of any coatings on its paper coating lines with a VOC content in excess of 2.9 pounds per gallon of coating, (excluding water and exempt compounds), as applied. [10 V.S.A. §556(c) and §5-253.10 of the regulations]

(b) If multiple coatings are applied during the same day, the Facility shall not cause or allow the application of coatings whose daily-weighted average VOC content exceeds 2.9 pounds per gallon ("lbs/gallon"), excluding water and exempted compounds, as applied. The daily-weighted average VOC content shall be calculated as follows:

$$E_{VOC} = \frac{\sum_{i=1}^{i=n} M_i C_i}{\sum_{i=1}^{i=n} M_i}$$

Where:

E_{VOC} Is the daily weighted average VOC content in lbs/gallon, excluding water and exempted compounds, as applied.

M_i The total mass usage of an individual coating applied in 24-hour period in units of gallons per day.

C_i The VOC content of the individual coating applied during the 24-hour period in units of lbs/gallon, excluding water and exempted compounds, as applied.

i Each individual coating applied in the 24-hour period.

(c) Any testing that is conducted to demonstrate compliance with the above VOC contents limits shall be performed in accordance with Reference Method 24 of Appendix A of 40 CFR Part 60 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. §556a(d)] [AOP-95-148]

(15) Emissions of visible air contaminants from any process stack 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.

Any emission testing conducted to demonstrate compliance with the above emission limits shall be performed in accordance with the proposed Federal Reference Method F-1 contained in the Federal Register Vol.51, No.168, pp. 31076-31081, August 29, 1986 or an equivalent method approved in writing by the Agency. [AP-96-019] [§§5-211(2), 5-211(3) and 5-404 of the *Regulations*]

(16) Emissions of visible air contaminants from the Coating Dryer #1, #2, Wickes Boiler #1, #2, B&W Boiler #3, and #4,shall not exceed forty (40) 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.

Any emission testing conducted to demonstrate compliance with the above emission limits shall be performed in accordance with the proposed Federal Reference Method F-1 contained in the Federal Register Vol.51, No.168, pp. 31076-31081, August 29, 1986 or an equivalent method approved in writing by the Agency. [§§5-211(1), 5-211(3) and 5-404 of the *Regulations*]

(17) Emissions of visible air contaminants from any boiler stack where waste oil is being fired shall not exceed twenty (20) percent opacity for a period or periods aggregating six (6) minutes in any hour and at no time shall visible emissions exceed sixty (60) percent opacity.

Any emission testing conducted to demonstrate compliance with the above emission limits shall be performed in accordance with the proposed Federal Reference Method F-1 contained in the Federal Register Vol.51, No.168, pp. 31076-31081, August 29, 1986 or an equivalent method approved in writing by the Agency. [AP-96-019] [§§5-211(2), 5-211(3) and 5-404 of the *Regulations*]

(18) 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 of the *Regulations*. [§5-261 of the *Regulations*]

(19) 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 -

(20) The Permittee shall perform emission testing on the Wickes Boiler #1 for NO_X, PM, and Combustion Efficiency and shall furnish the Agency with a written report of the results within thirty (30) days after the completion of the testing. The initial emission testing shall be performed during calendar year 2006; emission testing shall be conducted at a minimum once every five years. The emission testing shall be performed in order to demonstrate compliance with the emission limitations specified within the conditions 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". [§§5-402(1), 5-404(1), 5-405(1) and 5-1015(a)(3) and (4) of the *Regulations*]

- Record Keeping and Reporting -

(21) The Permittee shall maintain records of the total quantity of fuel oil consumed in the boilers, in gallons, each month. At the beginning of each month, the Permittee shall calculate the total quantity of fuel oil consumed in the boilers, in gallons, during the previous twelve (12) consecutive month period commencing with the issuance of this permit. [10 *V.S.A.* §§556(c) and 556a(d)] [§5-405(1) of the *Regulations*]

(22) 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) and 556a(d)] [§5-405(1) of the *Regulations*]

(23) Whenever the Facility adds waste oil to its boiler's fuel tank, it shall record the date and approximate amount of waste oil added. [10 V.S.A. §556(c)] [AP-19-019]

(24) In addition to the record keeping requirements above, the Facility shall maintain the following records:

(a) For its paper coating lines each day the name and identification number of each coating, as applied, on each paper coating unit.

(b) The mass of VOC per volume of each coating (excluding water and exempt compounds), as applied, used each day on each paper coating unit.

(c) Monthly usage rate of VOC containing material used in the production of paperboard in units of gallons or pounds.

(d) Monthly consumption of natural gas and fuel oil in gallons.

For the purpose of condition the paragraphs above, "coating unit" shall be defined as a coating application station and its associated flash off area, drying area and/or oven, where coating is applied and dried or cured on a paper coating line. A paper coating line may include more than one paper coating unit.

At the beginning of each month, the Facility shall calculate and record the total quantity of VOC's and NO_X emissions during the previous (12) consecutive calendar month period. [10 V.S.A. §556(c) and §§5-253.10 and 5-405(1) of the *Regulations*]

(25) The Permittee shall maintain records of the results of any combustion efficiency testing conducted on the boilers during the burning of waste oil. These records shall at least include the test date, identification of boiler tested, a measurement of the load on the boiler (such as fuel feed rate or steam production rate), the concentrations of oxygen, carbon monoxide and carbon dioxide in the exhaust gas as well as the calculated combustion efficiency. [10 *V.S.A.* §§556(c) and 556a(d)] [§§5-405(1) and 5-1015(a)(3) and (4) of the *Regulations*] [§5-221(2)(b)(iv)]

(26) The Permittee shall obtain from the fuel supplier, for each shipment of fuel oil received at the Facility, a certification or invoice stating the sulfur content of the fuel oil. The certification or invoice shall include the name of the fuel oil supplier, date of delivery, fuel type, quantity of fuel oil delivered, and a statement from the fuel oil supplier that the oil complies with the specifications for fuel oil numbers 1 or 2, as defined by the American Society of Testing and Materials in ASTM D396, "Standard Specifications for Fuel Oils" or a statement as to the sulfur content of the fuel oil in percent sulfur by weight. [10 *V.S.A.* §§556(c)

and 556a(d)] [§5-405(1) of the *Regulations*]

(27) Within thirty (30) days after July 1 and January 1 of each year, the Permittee shall submit to the Agency, signed by a responsible official of the Facility, a report containing the following information regarding the preceding six (6) months:

(a) A summary of any periodic emission testing completed during the 6 month period;
(b) A summary of the fuel usage records required by this Permit; and
(c) A statement of the sulfur content of any and all fuel delivered to the Facility during the reporting period.
(d) A summary of the VOC and NO_X emissions records required by conditions of this permit.

[§§5-402(1), 5-405(1) and 5-1015(5) of the *Regulations*]

(28) 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), 5-405(1) and 5-1015(5) of the *Regulations*]

(29) 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), 5-405(1) and 5-1015(a)(7) of the *Regulations*]

(30) 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*]

(31) 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. [10 *V.S.A.* §556(c)] [§§5-402(1) and 5-501 of the *Regulations*]

(32) The Facility shall develop and implement an operation and maintenance plan for its boilers. The Facility shall revise this plan at the Agency's request or on its own motion to reflect equipment or operational changes. Said operation and maintenance plan shall be present at

the Facility at all times and shall be made available to representatives of the Agency upon request. The operation and maintenance plan shall include, but not be limited to, provisions for annual boiler tune-up, and provisions for maintaining records of routine maintenance inspections, findings of those inspections, and any corrective actions which were taken. [10 V.S.A. §556(c), §§5-405(1) and 5-1015(a)(3) of the *Regulations* and 40 CFR Part 70 §70.6(a)(3)(i)(B)]

(33) The Facility shall take reasonable precautions at all times to control and minimize emissions of fugitive particulate matter and volatile organic compounds from the operations at the Facility. This shall include but not be limited to the following:

(a) Taking reasonable precautions to prevent fugitive particulate matter.
(b) The covering of all containers which contain VOC when not in use.
[10 V.S.A. §556a(d)]

(34) By February 1st of each year, the Permittee shall submit an annual certification of compliance for the previous calendar year which ascertains and identifies the compliance status of the Facility with respect to all terms and conditions of this Permit, including but not limited to the following:

(a) Identification of each term or condition of the permit that is the basis of the certification;
(b) The compliance status;
(c) Whether compliance was continuous or intermittent; and
(d) The methods used for determining the compliance status of the Facility over the reporting period.
(e) Emissions of federal HAPs from the Facility are less than ten (10) tons per year for each individual HAP and less than twenty-five (25) tons per year for total HAPs; and
(f) Emissions of each regulated state HACs is less than its respective Action Level (found in Appendix C of the *Regulations*) or the emission of the respective HAC has previously been reviewed and approved by the Agency under §5-261(3) of the *Regulations*.

A copy of the compliance certification shall also be sent to the U.S. Environmental Protection Agency at the following address:

Air Technical Unit (Mail Code SEA)
Office of Environmental Stewardship
U.S. Environmental Protection Agency
John F. Kennedy Federal Building
Boston, MA 02203

[§114(a)(3) of the CAA] [§§5-402(1) and 5-1015(a)(11) of the *Regulations*]

(35) 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*]

(36) 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*]

- Standard Permit Conditions -

(37) 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 re-opened. 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 and §556a, as amended. [10 *V.S.A.* §§556(d) and 556a(g)] [§§5-1008(a) and 5-1008(e) of the *Regulations*]

(38) Cause for reopening, modification, termination and revocation of this Permit includes, but is not limited to:

(a) Inclusion of additional applicable requirements pursuant to state or federal law;
(b) A determination that the permit contains a material mistake or that inaccurate information was used to establish emissions standards or other terms or conditions of the operating permit;
(c) A determination that the operating permit must be modified or revoked to ensure compliance with applicable requirements;
(d) A determination that the subject source has failed to comply with a permit condition;
(e) For Title V subject sources, a determination by U.S. EPA that cause exists to terminate, modify, revoke or reissue an operating permit;
(f) Those causes which are stated as grounds for refusal to issue, renew or modify an operating permit under §5-1008(a) of the *Regulations*; or
(g) If more than three (3) years remain in the permit term and the source becomes subject to a new applicable requirement.

[§5-1008(e)(4) of the *Regulations*]

(39) 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*] [40 *CFR* Part 70 §70.6(a)(6)(v)]

(40) 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), 556a(d) and 557] [§§5-402(1), 5-404, and 5-1015(a)(10) of the *Regulations*]

(41) 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) and 556a(d)] [§§5-505 and 5-1006(f) of the *Regulations*]

(42) 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) and 556a(d)]

(43) 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) and 556a(d)] [§§5-1008(a) and 5-1008(e) of the *Regulations*]

(44) 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) and 556a(d)]

(45) 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*]

(46) 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) and

556a(d)]

(47) 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) and 556a(d)]

(48) 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 and 556a] [§§5-501, 5-1004, and 5-1013(a) of the *Regulations*]

(49) With the exception of conditions (1), (2), (3), (5), (11), and (12) above, this Operating Permit shall expire January 11, 2011. The Permittee shall submit to the Agency a complete application for renewal of the Operating Permit at least twelve (12) months before the expiration of the Operating Permit. If a timely and administratively complete application for an operating permit renewal is submitted to the Secretary, but the Secretary has failed to issue or deny such renewal before the end of the term of this Operating Permit, then the Permittee may continue to operate the subject source and all terms and conditions of this Operating Permit shall remain in effect until the Secretary has issued or denied the operating permit renewal. However, this Operating Permit shall automatically expire if, subsequent to the renewal application being determined or deemed administratively complete pursuant to §5-1006 of the *Regulations*, the Permittee fails to submit any additional information required by the Secretary as well as information pertaining to changes to the Facility within thirty (30) days or such other period as specified in writing by the Secretary. [§§5-1011 and 5-1012(a) of the *Regulations*] [§§5-1005(c) and 5-1012 of the *Regulations*]

(50) The conditions of this Permit as set forth above supercede all conditions contained in all prior Permits 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 _____, 200__, in the town of Waterbury, county of Washington, state of Vermont.

Agency of Natural Resources

Jeffrey Wennberg, Commissioner
Department of Environmental Conservation

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

JR/jr
A2 – Rock-Tenn Company – Sheldon Springs.

AS

#AOP-04-005

State of Vermont
Agency of Natural Resources
Department of Environmental Conservation

Air Pollution Control Division
Waterbury, Vermont

Technical Support Document
For:

Title V
Air Pollution Control Permit to Construct and Operate
#AOP-04-005

Ethan Allen, Inc.
Beecher Falls Division
Main Street
Beecher Falls, Vermont 05902-0217

This document is intended to provide additional technical information and clarification in support of the Permit. It is not intended to provide a comprehensive review of the Facility or permit process or duplicate the information contained in the Permit.

▫ FACILITY AND PERMIT SUMMARY:

Ethan Allen, Inc. - Beecher Falls Division ("Ethan Allen") owns and operates a wood furniture manufacturing facility at 1280 VT Route 253 (Main Street) in the town of Beecher Falls, Vermont ("Facility"). Operations at the Facility include a rough mill, drying kilns, woodworking processes, wood gluing, traditional spray wood finishing, ultra-violet (UV) roll coat wood finishing, and boilers for process and space heat. This Permit is the initial Title V Permit to Operate for the Facility and incorporates an emission limitation on federally regulated hazardous air pollutants (HAPs) to a level below the federal major HAP source threshold as requested by Ethan Allen, Inc. The Permit also incorporates minor modifications recently completed to the "System A" and "System B" dust collection systems.

▫ PROCESS DESCRIPTION:

The Facility is a typical wood furniture manufacturing and finishing plant that receives raw logs that are debarked and sawed into boards in the saw mill and sent to the onsite kilns for drying. The boards are then planed in the rough mill and ready for further processing in the finishing mill bldg. Here the boards may be further processed into furniture parts with saws, shavers, shapers, molders, lathes, tenors, drills, and sanders. Some furniture pieces are then partially assembled and sent on to finish coating operations. Some pieces are sent directly to finishing before assembly, such as flatwood pieces including drawer bottoms and back panels that go to the UV flatline finishing system. The pieces then undergo final assembly including the addition of hardware.

▫ EQUIPMENT SPECIFICATIONS: see Permit

▫ EMISSION CALCULATIONS:

▫Emissions from the facility are from three main sources: boilers, wood waste handling (cyclones and fabric filters), and finishing operations.

▫ Boilers:

Boiler	Capacity on wood (MMBTU)	Capacity on Oil (MMBTU)
Bigelow #240	59.5	Na
Wickes #239	31.8	24.9
Bigelow #232	Na	19.5
CB #238	Na	21.0
Dravo	Na	2.5
Rettew	3.6	na
Total Wood/Oil Capacity (MMBTU/hr)	94.9	67.9
Total MMBTU/yr (x8760)	831,324	594,804
Max possible fuel usage (tons/yr or gal/yr)	94,468 wet/54,692 dry[1]	4,248,600 No.2[2] 3,965,360 No.4[2]

[1] Based on a higher heating value of 4400 BTUs/lb at 50% moisture for wet wood and 7600 BTUs/lb at 12% moisture for dry wood. These values represent the same heat content for wood and are simply adjusted for the weight percent of moisture in the fuel.

[2] Based on a higher heating value of 140,000 BTU/gal for No.2 oil and 150,000 BTU/gal for No.4 oil.

Thus if the Permittee were to run at full capacity for 8760 hours per year it could burn 94,468 tons of wet wood or 54,692 tons of dry wood. However, as a result of the fuel usage restrictions to keep NOx below 100 tpy, the Permittee is more restrictively limited for dry wood usage to 26,845 tons per year. Below are the maximum amounts of each fuel that can be burned and the facility still remain below 100 tpy NOx. In the case of No.2 and No.4 oil and wet wood, the facility does not have the capacity in its existing boilers to consume this much fuel.

No.2 oil: 0.02 lbs NOx/gal x "X" gal/yr = 100 tpy NOx "X" = 10 million gal/yr
No.4 oil: 0.02 lbs NOx/gal x "X" gal/yr = 100 tpy NOx "X" = 10 million gal/yr
Wet wood: 1.94 lbs NOx/ton x "X" tons/yr = 100 tpy NOx "X" = 103,093 tons/yr
Dry wood: 7.45 lbs NOx/ton x "X" tons/yr = 100 tpy NOx "X" = 26,845 tons/yr

Worst case emission scenarios for each fuel case:

1. Maximized wet fuel usage scenarios:
   94,468 tons wet wood (=91.6 tpy NOx) + 2,255 tons dry wood (=8.4 tpy NOx) #1
   94,468 tons wet wood (=91.6 tpy NOx) + 840,000 gal No.2 oil (=8.4 tpy NOx) #2
   94,468 tons wet wood (=91.6 tpy NOx) + 840,000 gal No.4 oil (=8.4 tpy NOx) #3

"Boiler" Allowable Air Contaminant Emissions (tons/year)[1]					
PM/PM_{10}	SO_2	NOx	CO	VOCs	HAPs
248	11	<100	260	7	17
242	40	<100	251	7	16
245	73	<100	252	7	16

[1] PM/PM_{10} - particulate matter and particulate matter of 10 micrometers in size or smaller; SO_2 - sulfur dioxide; NO_x - oxides of nitrogen measured as NO_2 equivalent; CO - carbon monoxide; VOCs - volatile organic compounds; HAPs - hazardous air pollutants as defined in §112 of the federal Clean Air Act. **HCl is the largest single HAP with a potential of 8.2 tpy.**

2. Maximized dry fuel usage scenario:
   26,845 tons dry wood (=100 tpy NOx) #4

"Boiler" Allowable Air Contaminant Emissions (tons/year)[1]					
PM/PM_{10}	SO_2	NOx	CO	VOCs	HAPs
86	5	<100	122	3	8

3. Maximized No.2 oil scenarios:
   4,248,600 gal No.2 oil (=42.5 tpy NOx) + 59,278 tons wet wood (=57.5 tpy NOx) #5
   4,248,600 gal No.2 oil (=42.5 tpy NOx) + 15,436 tons dry wood (=57.5 tpy NOx) #6

"Boiler" Allowable Air Contaminant Emissions (tons/year)[1]					
PM/PM_{10}	SO_2	NOx	CO	VOCs	HAPs
158	157	<100	167	5	10
56	154	<100	81	3	5

4. Maximized No.4 oil scenarios:
   3,965,360 gal No.4 oil (=39.7 tpy NOx) + 62,165 tons wet wood (=60.3 tpy NOx) #7
   3,965,360 gal No.4 oil (=39.7 tpy NOx) + 16,188 tons dry wood (=60.3 tpy NOx) #8

"Boiler" Allowable Air Contaminant Emissions (tons/year)[1]					
PM/PM_{10}	SO_2	NOx	CO	VOCs	HAPs
175	304	<100	174	5	11
68	300	<100	84	3	5

5. Worst Case Boiler Emissions of All Fuels

Max Worst Case "Boiler" Allowable Air Contaminant Emissions (tons/year)[1]					
PM/PM_{10}	SO_2	NOx	CO	VOCs	HAPs
248	304	<100	260	7	17

▫ **Wood Waste Handling Systems:**

Wood Waste Handling System Particulate Matter Emission (tons/year)				
Unit	Emission Limitations			
	AirFlow (acfm)	gr/dscf [1]	lbs/hour [2]	Tons/year [3]
Fuel Metering bin Cyclone #6	Na - Closed loop blower			
Sawmill Cyclone #7 and #8	Na - green material only [4]			
Sawmill/Grinding Room Fabric Filter #9	2,700	0.06	1.4	6.1
System B – Pneumafil #4	48,800	0.02	8.4	36.8
System B – MAC #1	31,300	0.02	5.4	23.7
System A – MAC #2	50,400	0.02	8.7	38.1
System A – Cyclone #5	58,200	0.06	29.9	131.0
System A – Pneumafil #1	35,200	0.06	18.1	79.3
Silo #1 with cyclone #30	Na – air returned to System B Pneumafil #4			
Silo #4 with cyclone #2	Na – green material only			
UV Flat Line Sander Pneumafil #3	30,450	0.02	5.3	13.3@5000hrs
Main Plant Grinding Room Cyclone #1	3,000	0.06	1.5	6.6
Total				334.9

[1] gr/dscf equals grains of pollutant emitted per dry standard cubic foot of undiluted exhaust gas. See discussion of condition (30) of permit for basis for emission limitations.
[2] lbs/hour equals pounds of pollutant emitted per hour based on the air flow rates as given in Findings of Fact A.
[3] TPY based on 8760 hours of operation unless noted otherwise.
[4] Conveying of green wood wastes are not considered to be a particulate matter emission due to its weight and rapid settling out of the air per APCD policy.

▫ **Finishing Operations:**

Since the Facility finishing operations were installed prior to the inception of the new source review permitting requirements there is no tons per year emission cap on the VOC emissions from these operations. The potential emissions are thus stated simply as greater than 50 tons per year which is the threshold for determining major source status under both the Permit to Construct and the Title V Permit to Operate regulations. Any modifications to the finishing operations in the future could subject those modifications to the new source review permitting requirements of section 5-501 of the Regulations. Actual VOC emissions from the Facility have ranged as high as 300 tons per year in 1992 to as low as 146.6 tons in 2003 as they have implemented lower VOC coatings and improved coating transfer efficiency. A historical summary of actual VOC emissions is provided below.

Historical Actual VOC and Acetone Emissions (tons per year)		
Year	VOC[1] (tons per year)	Acetone (tons per year)
1987	253[2]	--
1988	268[2]	--
1989	292[2]	--
1990	284[2]	--
1991	266[2]	--
1992	300[2]	--
1993	255.6	4.4
1994	251.6	4.4
1995	264.2	11.8
1996	224.7	40.3
1997	239.1	54.9
1998	222.8	48.2
1999[3]	219.4	51.6
2000[4]	219.0	47.0
2001	184.1	45.9
2002	177.0	44.0
2003	146.6	29.4

[1] The registration database includes all hydrocarbons in its VOC total, including acetone. Where acetone data is available, the VOC total above DOES NOT include acetone.
[2] Acetone data is not available for these years but is assumed to be negligible since its usage did not become widespread in the industry until it was delitsted by EPA as a VOC on June 16, 1995.
[3] Installation of flatline UV rollcoat unit.
[4] Installation of high solids hot spray for sealer and topcoat application.

▫ **Total Facility Emissions:**

Facility Allowable Air Contaminant Emissions (tons/year)[1]					
PM/PM_{10}	SO_2	NOx	CO	VOCs	HAPs
582.9	304	<100	260	>50	<10/25

▫ **APPLICABLE REQUIREMENTS DISCUSSION:**

Section 5-211(1) - Prohibition of Visible Air Contaminants, Installations Constructed Prior to April 30, 1970 - Bigelow Boiler #240 and Wickes Boiler #239. While the Facility was constructed prior to 1970, only the above two boilers are considered subject to the above VE limits since all other boilers at the Facility were installed or modified after this date. Records indicate that the Bigelow Boiler #232 was installed in 1970 but absent any additional records it is reasonable to assume that it did not commence operations until after April 30th. All dust collection equipment is assumed to have undergone either modifications, reconfigurations, or replacements including the tools ducted to them since 1970 and therefore are subject to the more stringent VE limitations of 5-211(2).

Section 5-253.16 – Wood Furniture Manufacturing. This state regulation incorporates the requirements of both the Control Techniques Guideline for VOC emissions and the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Wood Furniture Manufacturing Operations (40 CFR Part 63 Subpart JJ), commonly referred to as the MACT (maximum achievable control technology) standard for wood furniture manufacturing operations. As of the issuance of this Permit, Vermont has not accepted delegation of this NESHAP and instead intends to submit our rule to EPA for approval in lieu of the MACT. In the interim, the Facility is subject to both the state and federal regulations which are functionally equivalent. The Facility will remain subject to both regulations despite the imposition in this Permit of a cap on HAP emissions that will no longer classify the Facility as a major HAP source since EPA's "once-in, always-in" policy on applicability to their NESHAP regulations applies and the authority under HMSER enables continued applicability to the state rule.

Section 5-261 – Control of Hazardous Air Contaminants. See below.

40 CFR Part 63, Subpart JJ - National Emission Standards for Wood Furniture Manufacturing Operations. See above Section 5-253.16.

40 CFR Part 63, Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, Institutional Boilers and Process Heaters. Ethan Allen has requested a cap on the HAP emissions that will no longer classify the Facility as a major HAP source. While the MACT standard was finalized on February 26, 2004 before issuance of this Permit restricting HAP emissions, the Permit is being issued prior to the compliance date contained in the regulation for existing boilers which is three years after promulgation. Therefore the facility is not subject to this regulation provided the permit is issued and the cap remains in place thereafter.

▫ HAZARDOUS MOST STRINGENT EMISSION RATE DISCUSSION (HMSER):

As discussed further in the Finding of Fact of the Permit, the Agency has determined that the Facility has regulated emissions, namely from the finishing operations, of the following HAC compounds in excess of their respective Action Levels and those emissions are now being reviewed under §5-261:

Crystalline silica (14808-60-7)
isobutyl acetate (110-19-0)
isobutyl alcohol (78-83-1)
1,2,4-trimethyl benzene (95-63-6)
methyl amyl ketone (110-43-0)
1-butoxy-2-propanol (syn. butyl propasol) (5131-66-8)

The Agency has determined that the Permittee has achieved HMSER for the respective HACs through implementation of several emission reduction measures over the past several years. These measures are discussed more fully in the Findings of Fact but are comprised of the following five measures:

(1) coating reformulations to reduce VOCs and TRI reportable toxics and thus replace more toxic HACs and HAPs with less toxic compounds;
(2) continued reformulation measures specifically focused on increased use of acetone in place of more toxic components;
(3) more extensive use of high volume low pressure (HVLP) spray guns to improve coating transfer efficiency and reduce coating usage;
(4) use of high solids "hot spray" coatings (sealer 3.8 lbs VOC/gal; topcoat 4.8 lbs VOC/gal) in place of the previous conventional and precatalyzed coatings (sealer 4.0 - 4.3 lbs VOC/gal; topcoat 3.6 - 6.0 lbs VOC/gal). The high solid hot spray coatings use heat to increase viscosity of higher solids coatings with less solvent. Due to the increased solids content, these coatings also attain the necessary film build thickness with two coats instead of the previous standard of three coats; and
(5) the installation of the UV flatline rollcoat finishing system that uses 100% solids (solvent free) coatings where high quality finishes are not necessary such as drawer bottoms and backs.

In addition, the HMSER determination requires the Permittee to continue to comply with the state wood furniture regulation, regardless of that regulation's applicability section.

Emissions of silica are also reduced by measures that decrease coating usage such as HVLP spray guns, high solids coatings and UV coating applications. In addition, overspray filters are used to capture a minimum of 95% of the overspray in the exhaust air. It should also be noted that while the silica in the coatings is in the crystalline silica form it is not emitted with the hazardous properties of free crystalline silica since it is encapsulated in the overspray coatings.

As part of the HMSER determination, an emission cap on each of the respective HACs is being established. These emission caps are based on the highest level of respective HAC emission since year 2000 (first full year after implementation of HMSER measures) plus a factor of growth of 33% which is equivalent to the addition of an additional production shift which could reasonably be accomplished without triggering a permit modification.

The following table provides a summary of actual HAC emissions over the past several years. The year 2000 was selected as the oldest year representing actual emissions under normal

operations since it reflects the first year after full implementation of all the emission reduction measures. The year 2000 also represents the highest production year since 1991 at the facility in terms of sq.ft. of product finished (8,362,097 sq.ft.). Subsequent years show a decline in production due to the national economic decline and are not considered fully representative of normal operations.

Hazardous Air Contaminant Emissions						
			Annual Emission in lbs/yr			
Contaminant	ActionLevel	Avg.period	2000	2001	2002	2003
Crystalline silica	0.01[1]	Annual	34.0	24.0	42	41
1,2,4-Trimethyl benzene	0.013[2]	Annual	280	170	36	1
Isobutyl acetate	294	8 hr	76000	64000	61200	43565
Methyl amyl ketone	98	8 hr	77800	64200	55000	41832
Butyl propasol	7.4	24 hr	4380	3440	3220	2658
Isobutanol	63	8 hr	16720	16580	16160	12688

[1] Action Level is slated to be revised to 0.02 and moved from Category II to Category I (known or suspected carcinogens) based on review of latest toxicological data.
[2] Action Level is slated to be revised to 24.7 based on review of latest toxicological data and Facility will no longer exceed AL at that time.

Since the year 2000, the above hazardous air contaminants are the only ones that have approached or exceeded their respective Action Levels at the Facility, even if emissions of all other contaminants were to increase by 17.8% which is representative of the 39 ton VOC increase being approved over the existing baseline of 219 tons VOC per year. On an annual average basis, only silica and TMB exceed their Action Levels. However, since the remaining HAC Action Levels are based on 8 hr or 24 hr exposures, it is not appropriate to annualize the emissions but rather base the comparison on the operating hours during which the emission actually occur. Thus for those HACs one must compare the respective Action Level to the annual emissions divided by the operating hours (not 8760 which is used to annualize the emissions) and then multiplied by 8. These HACs all exceed their respective Action Level when 2000 hours of operation is assumed. No ambient air quality impact evaluation was required given the respective emissions are not significantly exceeding their respective Action Levels.

Note regarding federal enforceability and equivalency: On February 10, 1982 the Federal EPA approved, as part of Vermont's State Implementation Plan, §5-261 of the Vermont Air Pollution Control Regulations. As approved, §5-261 required a "most stringent emission rate" (MSER), as defined for major stationary sources for the control of hazardous air contaminants. The current State of Vermont hazardous air contaminants regulation, as amended on January 20, 1993, employs both an action level and a "hazardous most stringent emission rate" (HMSER) for the control of hazardous air contaminants. Both MSER and HMSER are established on a case-by-case basis and are based on the lowest emission rate achieved in practice by such category of source. The Agency has determined that the use of an action level in conjunction with a HMSER is at least as stringent as the MSER as adopted by the EPA.

▫ **MOST STRINGENT EMISSION RATE DISCUSSION (MSER):** Not applicable

▫ **AMBIENT AIR QUALITY IMPACT EVALUATION DISCUSSION (AQIE):** Not applicable

▫ **PERMIT CONDITIONS DISCUSSION:**

(2) Boilers:

▫Flyash reinjection is allowed on those boilers that have historically used it but since it increases PM emissions it would not be allowed on other boilers. The only other solid fuel boiler here is the sawmill's Rettew furnace at 3.6 MMBTU so this is not a significant issue.

(3) Wood Waste Dust Collection Systems:

▫The main concern here is that the total air flow not increase above the values provided to us since PM emissions are directly calculated from those air flow rates. In addition, as the air to cloth ratios start to increase above 10:1 it is more likely that they will not achieve the 0.02 gr limit if so limited.

(6) Stack Heights: The exhaust gases from the Bigelow Boiler #240 and the Wickes Boiler #239 shall be vented vertically through a stack or stacks which extends a minimum of seventy-nine (79) feet above the stack base grade elevation. The stack shall not be equipped with any device that may obstruct the upward discharge of the exhaust gases such as a fixed raincap. [10 *V.S.A.* §§556(c) and 556a(d)] [§5-406 of the *Regulations*]

▫These stack heights are taken from the OP application and are not based on a Permit to Construct or a modeling analysis requirement. This condition is intended to establish the base conditions at the facility. Under the authority of 5-406, the Agency may require modeling if these stack heights were ever to be decreased in the future.

(7) In order to maintain emissions of nitrogen oxides (NO_x) below the one hundred (100) tons per year threshold of §5-251(3), the Permittee shall not burn fuel in all boilers combined located at its Facility in quantities greater than the following limit during any rolling twelve (12) consecutive calendar month period:

$$0.02*X + 1.94*Y + 7.45*Z < 200{,}000$$

where:

X = quantity of No. 4 and No. 2 fuel oil burned in units of gallons;
Y = quantity of wet wood fuel burned in units of tons (as fired including moisture);
Z = quantity of dry wood fuel burned in units of tons (as fired including moisture).

The NOx emission rates of 1.94 lbs per ton of wet wood and 7.45 lbs per ton of dry wood in the above formula may be revised by the Agency based on the results of any stack emission testing on the Facility boilers or other credible emission data as approved by the Agency.

[10 *V.S.A.* §§556(c) and 556a(d)] [§5-251(3) of the *Regulations*]

▫The Permittee burns a combination of bark, wet wood chips, wet and dry sawdust, and

dry wood wastes. The fuel oil emission factor in the equation above is from AP42 Section 1.3 Fuel Oil Combustion (9/98) Table 1.3-1 which provides a value of 20 lbs/1000 gallons for both No.2 and No.4 fuel oil. The formula to account for nitrogen content of residual oil was not used. The wood fuel emission factors are from AP42 Section 1.6 - Wood Residue Combustion in Boilers (9/03) which provides a value of 0.22 lbs/MMBTU for wet wood and 0.49 lbs/MMBTU for dry wood. A heat value of 4400 BTU/lb is assumed for wet wood at 50% moisture. A heat value of 7600 BTU/lb is assumed for dry wood at 12% moisture. The values both assume the same heat value of the wood and are simply adjusted by the weight of the moisture (4400 is to 50% solids as 7600 is to 88% solids). Thus 0.22 lbs NOx/MMBTU x 0.0044MMBTU/lb wood x 2000 = 1.94 lbs NOx/ton of wet wood burned. The NOx emission factors for wet wood and dry wood may be revised upward or downward, decreasing or increasing allowed annual fuel usage respectively, based on actual stack emission testing of these boilers.

(14) Solvent Metal Cleaning:

▫Most large facilities have a maintenance shop that contains a small Safety-Kleen type degreaser so this condition is added for completeness.

(15) Stage I Vapor Recovery Controls:

▫The Facility has a small gasoline tank for refueling some on-site equipment. While it is unlikely that they would receive deliveries from tank trucks instead of account trucks, this condition is added for completeness since any non account truck delivery must be done with Stage I vapor recovery.

(28) ▫Incorporates several of the HMSER measures the Permittee has taken to achieve HMSER. Other measures are contained in the requirements to require overspray filters, specifically to address silica emissions (condition [5]) and require use of HVLP (condition [24]).

(29) PM [Boilers]

▫The wood boiler emission limits are both based on 5-231(3)(b)(i) since they were both installed prior to 1977. The oil boiler limits are based on 5-231(3)(a). With respect to the Wickes boiler #239 which may burn both wood and No.4 oil, the wood emission limit shall apply when wood fuel comprises 50% or more of the heat input to the boiler.

(30) PM [Wood Waste Dust Collection Systems]

▫Those dust collection systems that have historically never been modified are subject only to the 0.06 gr/dscf emission limitation of 5-231(1)(b). For those dust collection systems which have been modified, a lower allowed emission rate has been imposed to maintain any associated emission increase below the "significant" emission increase thresholds of 5-502. The new System B units, which qualify as modifications under the Regulations, are limited to 0.02 gr/dscf which is readily achievable by a well maintained unit with air to cloth ratios below 10:1, thus no stack emission compliance test is being required at this time for these units.

AS

VERMONT AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Air Pollution Control Division

TECHNICAL SUPPORT DOCUMENT FOR PERMIT TO CONSTRUCT AND OPERATE

#AOP-02-024

December 21, 2004

Prepared By: Beth Eliason, P.E.

APPLICANT:	Agrimark-Cabot, Inc. 1 Home Farm Way Montpelier, Vermont 05602
SOURCE:	Agrimark-Cabot, Inc. Cheese Manurfacturing 869 Exchange Street Middlebury, Vermont 05753
APPLICATION CONTACT:	Ray Dyke, Vice President of Technology Agrimark-Cabot, Inc. 1 Home Farm Way Montpelier, Vermont 05602 Tel - (802) 229-9361

1. INTRODUCTION

Agrimark-Cabot, Inc. (also referred to herein as "Permittee") owns and operates a cheese manufacturing facility located at 869 Exchange Street in the town of Middlebury, Vermont (also referred to herein as "Facility").

The Facility currently operates under a combined construction and operating permit issued June 22, 2001 (#AOP-99-014a). This permit expired July 17, 2003. Agrimark-Cabot submitted an application for renewal of their operating permit on May 31, 2002. This Technical Support Document details the Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division (hereinafter "Agency") review for renewal of the Permit to Construct and Operate.

Table 1-1
Future Allowable Air Contaminant Emissions (tons/year)[1]

PM/PM_{10}	SO_2	NO_x	CO	VOCs	Total Criteria	HAPs[2]
49	174	64	14	<50	>100	<10/25

[1] PM/PM_{10} - particulate matter and particulate matter of 10 micrometers in size or smaller; SO_2 - sulfur dioxide; NO_x - oxides of nitrogen measured as NO_2 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. Actual total combined HAPs estimated at <1 tpy.

2. FACILITY DESCRIPTION AND LOCATION

2.1 Facility Locations and Surrounding Area

Agrimark-Cabot, Inc. owns and operates the cheese plant located at 869 Exchange Street, Middlebury, Vermont. The area surrounding the Facility is primarily industrial. The closest residences to the Facility are at a distance greater than one-half a kilometer. The Facility is located 97 kilometers from the Lye Brook Wilderness area, and greater than 100 kilometers from the Great Gulf and Dry River Wilderness areas in New Hampshire. The Facility location and layout are depicted in Appendix A of this document.

2.2 Facility Description

The operations performed at the Facility are classified within the Standard Industrial Classification Code 2022 (Production of Natural, Processed or Imitation Cheese). The regulated sources of air contaminant emissions at the Facility are two 27 MMBTU/hour Nebraska boilers, two propane-fired whey dryers, a whey powder conveying system, two cooling towers, and two Cummins emergency generators. Specifications for emission sources are presented in Table 2-1.

Boilers: The Facility operates two Nebraska boilers for space and process heat. The boilers burn No. 6 fuel oil and each unit has an estimated heat input of approximately 27 MMBTU/hr. Both boilers were installed in 1974. Approximately 90% of the steam

demand at the facility is for process heat, so seasonal variation in fuel consumption is minimal. Both boilers exhaust through a common stack that is 115 feet above grade and 48 inches in diameter. Emissions from the boilers consist of combustion products.

Whey Dryers: The two propane-fired whey dryers are rated at 8 MMBTU/hr and 12 MMBTU/hr maximum heat input. The 8 MMBTU/hr whey dryer spray-dries whey protein concentrate ("WPC"). Emissions from this dryer are controlled by cyclones and fabric filters. The 12 MMBTU/hr whey dryer is used to spray dry whey permeate. Following the spray dryer, permeate drying is completed in a fluidized bed. The emissions from the permeate dryer are controlled by cyclones followed by a wet venturi-style scrubber system. The fluidized bed emissions are controlled by fabric filters. Emissions from the whey dryers include both products of combustion and whey particulates.

Whey Powder Transport System: The whey vacuum filtration system is used to transfer, store, and package the finished whey product. The system transports dry whey permeate to a holding bin which gravity feeds to the packaging machine. Emissions from the system are controlled by a fabric filter and then discharge into the building. As the whey powder transport system discharges inside the building it is not a source of ambient air contaminants.

Evapco Cooling Tower: The Evapco cooling tower is used for process cooling. The flow rate of the Evapco cooling tower is 1200 gallons per minute ("gpm"). Although the cooling tower emits particulate matter, calculations demonstrate that the emissions are negligible (see Table 3-3).

Lilly Hoffman Cooling Tower: The Lilly Hoffman cooling tower is used for process cooling. The cooling tower has a flow rate of 1,100 gpm. The operation of the cooling tower results in negligible emissions of particulate matter (see Table 3-3).

Cheese Production: The cheese-making process begins with the pasteurization of raw milk. Following pasteurization, the milk is pumped to a coagulation tank, mixed with rennin, and cooked at approximately 100 degrees Farenheit. During coagulation milk solids begin to separate from the liquid, which is known as whey. Both the pasteurization and coagulation tanks are heated using steam from the boilers.

After coagulation, the cheese is chopped into curds and salted. The whey is removed by vacuum in a packing tower. The packed cheese is then cut into 40-pound blocks, shrink-wrapped, and packaged for shipping.

According to the U.S. EPA *Compilation of Air Pollutant Emission Factors, Fifth Edition, Volume I: Stationary Point and Area Sources* ("AP-42") VOCs may be emitted during coagulation and ripening. However, emissions cannot be estimated at this time because AP-42 does not provide any VOC emission factors. It is unlikely that VOC emissions from these process steps would be great enough to cause the Facility to be classified as a major source of VOCs.

Whey Concentration Processes: The whey is removed from the cheese and passed through a whey separator to remove the butter fat. The whey is then processed through an ultrafiltration system to separate the protein from the permeate. The whey protein stream is dried in the 8 MMBTU/hr whey dryer. The whey permeate stream is condensed in the evaporator and dried in the 12 MMBTU/hr whey permeate dryer.

2.3 Description of Existing Air Pollution Control Equipment

See Table 2-1 for a listing of air pollution control equipment at the Facility.

2.4 Description of Compliance Monitoring Devices

This Facility is equipped with "broken bag detectors" on all fabric filters to monitor compliance. The broken bags are designed to alert the operator of potential exceedance of the particulate emission limit by an audible or visual alarm.

2.5 Proposed Modifications to Facility

No modifications were proposed in conjunction with the operating permit renewal application.

2.6 Proposed Limitations

The Permittee has proposed to limit the annual fuel consumption in the two Nebraska boilers to 2,200,000 gallons of residual fuel oil with a maximum sulfur content of 1% by weight.

3. QUANTIFICATION OF POLLUTANTS

The quantification of emissions from a stationary source is necessary in order to establish the regulatory review process necessary for the operating permit application and to determine applicability with various air pollution control requirements. These determinations are normally based upon allowable emissions. Allowable emission is defined as the emission rate calculated using the maximum rated capacity of the source and, if applicable, either: (a) the applicable emission standard contained in the Regulations, if any, or (b) the emission rate or design, operational or equipment standard specified in any order or agreement issued under the Regulations that is state and federally enforceable. An applicant may impose in its application an emission rate or design, or an operational or equipment limitation which may be incorporated in the Permit to restrict operation to a lower level. Such limitations may include fuel restrictions or production limits.

3.1 Designation of the Facility for the Permit to Operate

The designation of the Facility for the Permit to Operate is determined by its allowable emissions following issuance of the permit, taking into account any limitations contained in the permit that restrict the Facility's allowable emissions. The proposed Facility has annual allowable emissions greater then 10 tpy. The air contaminant sources at the Facility are presented in Table 2-1. The calculated allowable emissions for each source are detailed in Table 3-1, Table 3-2, Table 3-3, Table 3-4 and Table 3-5. An emissions summary is presented in Table 3-6.

Table 3-1: Nebraska Boiler Estimated Allowable Emissions
(Two 27 MMBTU/hour boilers)

Pollutant	Emission Factor (lbs /1000 gallons)	Emission Rate (lbs/hr)	(tpy)[2]	Source
PM	9.19(S) + 3.22	3.1	13.7	AP-42 Table 1.3-1 (9/98)
SO_2[1]	157(S)	39.4	172.7	
NO_x	55	13.8	60.5	
CO	5	1.3	5.5	
VOCs	1.13	0.3	1.2	
HAPs	0.155	0.04	0.2	AP-42 Table 1.3-9 and 1.3-11 (9/98)

[1]Fuel Sulfur content 1% by weight (S)
[2]Based on 8760 hours of operation per year and a facility imposed maximum of 2,200,000 gallons fuel oil per year

Table 3-2: Cummins Diesel Generator Set Estimated Allowable Emissions[1,2]
(100 kW/166 hp and 250 kW/390 hp)

Pollutant	Emission Factor	Emission Rate		Source
	lb/hp-hr	(lbs/hr)	(tpy)	
PM/PM10	2.2×10^{-3}	1.2	0.1	AP-42. Table 3.3-1 (10/96)
SO_2	2.05×10^{-3}	1.1	0.1	
NO_x	3.1×10^{-2}	17.2	1.7	
CO	6.68×10^{-3}	3.7	0.4	
VOCs	2.47×10^{-3}	1.4	0.1	
HAPs	6.45×10^{-3}	3.6	0.4	AP-42. Table 3.3-2 (10/96)

[1]Maximum capacity: (166 hp + 390 hp) x 200 hrs/year = 111,200 hp-hr/year
[2]Based on a facility imposed maximum of 100 hours of operation per year for routine maintenance and repair, and an estimated 100 hours of emergency use per year.

Table 3-3: Allowable Particulate Matter Emissions from Cooling Towers[1]

Source	Design Flowrate (gpm)[2]	Maximum Solids Content (ppm)[3]	Emission Factor		Emission Rate (lb/yr)	Source
			lb solid/lb drift	lbs PM drift/gal cooling water		
Lilly Hoffman[4]	1100	1000	0.001	1.90×10^{-5}	11.0	AP-42. Table 13.4-1 (1/95)
Evapco[5]	1200	0.125	1.25×10^{-7}	1.90×10^{-5}	0.0015	

[1]Based on 8760 hours of operation per year
[2]gpm – gallons per minute
[3]ppm – parts per million
[4]Maximum solids content of water is controlled by conductivity meter
[5]Maximum solids content of water is based on an original mineral content of 5000 ppm treated by reverse osmosis (efficiency of 95%) twice.

Table 3-4: Estimated Allowable Emissions from Whey Protein Concentrate Dryer[1] and Fabric Filters (EP-8, EP-9, EP-10, EP-11, EP-12)

Pollutant	Emission Factor	Units	Source	Emission Rate (tons/year)
SO_2[2]	0.1(S)	lb/1000 gal	AP-42 Table 1.5-1 (10/96)	0.3
NO_x	4.5	lb/1000 gal	Manufacturer data	1.3
PM	0.01	gr/dscf	MSER[3]	13
CO	12.6	lb/1000 gal	Manufacturer data	3.5
VOC	0.5	lb/1000 gal	AP-42 Table 1.5-1 (10/96)	0.14

[1]8 MMBTU/hr propane fired burner. Maximum capacity: 64 gallons per hour, 560,650 gallons propane per year.
Potential source of contaminants from propane combustion: NO_2, CO, SO_2, VOC.
Whey particulates are a source of PM_{10} emissions.
[2]Sulfur content of propane (S): 10 grams per 100 cubic feet.
[3]MSER for dried whey powder emissions is 0.01 grains per dry standard cubic foot.
[34,600 dscfm x 0.01 gr/dscf x 7.14×10^{-8} $^{ton}/_{gr}$ x 525,600 $^{min}/_{yr}$ = 13 $^{tons}/_{year}$

Table 3-5: Estimated Allowable Emissions from Permeate Dryer[1] and Wet Scrubber (EP-13)

Pollutant	Emission Factor	Units	Source	Emission Rate (tons/year)
SO_2[2]	0.1(S)	lb/1000 gal	AP-42 Table 1.5-1 (10/96)	0.3
NO_x	4.5	lb/1000 gal	Manufacturer data	1.4
PM	0.02	gr/dscf	MSER[3]	21
CO	12.6	lb/1000 gal	Manufacturer data	3.9
VOC	0.5	lb/1000 gal	AP-42 Table 1.5-1 (10/96)	0.16

[1]12 MMBTU/hr Propane fired burner. Maximum capacity: 71 gallons per hour, 6210,960 gallons propane per year.
Potential source of contaminants from propane combustion: NO_2, CO, SO_2, VOC.
Whey particulates are a source of PM_{10} emissions.
[2]Sulfur content of propane (S): 10 grams per 100 cubic feet.
[3]MSER for dried whey powder emissions is 0.02 grains per dry standard cubic foot.
[28,000 dscfm x 0.02 gr/dscf x 7.14×10^{-8} $^{ton}/_{gr}$ x 525,600 $^{min}/_{yr}$ = 21 $^{tons}/_{year}$

Table 3-6: Summary of Facility Allowable Emissions

Pollutant	Emission Rate (tons/year)
SO_2	173
NO_x	65
PM	48
CO	13
VOC	2

3.2 Designation of Existing Stationary Source for the Permit to Construct

No modifications were proposed as part of the permit renewal application.

4. APPLICABLE REQUIREMENTS

The compliance analyses and determinations in this technical analysis rely on data and representations provided by the Owner/Operator. Any statements and conclusions regarding the compliance status contained herein are not binding against the state of Vermont in any future legal or administrative proceedings. The Agency will assess compliance with these standards during any inspections of the Facility. The inspections will include confirmation of the proper operation and maintenance of equipment, visual observation of emission points, and review of written records required in the permit.

4.1 Vermont Air Pollution Control Regulations and Statutes

§5-211(2) - Prohibition of Visible Air Contaminants - Installations constructed subsequent to April 30, 1970

This emission standard applies to all installations at the Facility. Emissions of visible air contaminants 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.

The permeate wet scrubber system is subject to periodic monitoring of visible emissions to demonstrate compliance with the visible emission limits contained in the permit.

§5-221(1)(a) - Prohibition of Potentially Polluting Materials in Fuel; Sulfur Limitation in Fuel (2% by weight)

This prohibition applies to all stationary fuel burning equipment at the Facility. The applicant is expected to comply with this regulation based on the use of No. 6 oil certified by the supplier to contain no more 1.0% sulfur by weight. Natural gas and distillate oil, by their official fuel specification definition, comply with this requirement.

§5-231(1)(a) - Prohibition of Particulate Matter; Industrial Process Emissions

This emission standard applies to both the whey protein concentrate dryer and the whey permeate dryer. For each dryer, the total process weight entering the dryer is based on the dry weight of the material entering the process.

For the whey protein concentrate dryer, the maximum process throughput of 2,250 pounds per hour corresponds to a particulate matter emission limit from Table 1 of the *Regulations* of 4.4 pounds per hour.

For the permeate whey dryer, the maximum process throughput of 5,235 pounds per hour corresponds to a particulate matter emission limit from Table 1 of the *Regulations* of 6.9 pounds per hour.

Particulate matter emissions from the whey protein concentrate and whey permeate dryers are subject to a MSER determination. The MSER emission limit for particulate matter emissions from the wet scrubber/venture control system on the permeate whey dryer is 0.02 grains per dry standard cubic foot. The MSER emission limit for particulate matter emissions from the fabric filter control device on the whey protein concentrate and whey permeate dryers is 0.01 grains per dry standard cubic foot. These emission limits are below the emission limit standards found in Table 1 of the *Regulations* and described

above. Additional discussion of MSER for the Facility can be found in Section 5 of this Technical Support Document.

The Agency will assess compliance with this standard as follows: (1) The Permittee is required to properly operate and maintain its dust collection systems including fabric filter collectors, fabric filter monitoring devices and wet scrubbers; (2) the Permittee is required to conduct periodic particulate matter testing of emissions from the wet scrubber; (3) visual observations of each exhaust will be conducted during Agency inspections of the Facility; and, (3) the Facility has performed stack tests to verify compliance with the above referenced particulate matter standard.

§5-231(3)(a(i)) - Prohibition of Particulate Matter; Combustion Contaminants

This emission standard applies to emissions from the installations where the heat input is 10 million BTU's or less per hour. This standard applies to the two Cummins diesel engine generators. The allowable particulate emissions from the generators are:

Diesel Engine #1 (250 kw)	0.5 lbs/MMBTU	1 lb/hr
Diesel Engine #2 (100 kw)	0.5 lbs/MMBTU	0.6 lb/hr

The Permittee has stated that they are in compliance with this regulation.

§5-231(3)(a(ii)) - Prohibition of Particulate Matter; Combustion Contaminants

This emission standard applies to emissions from combustion installations where the heat input is greater than 10 million BTU's per hour. This standard applies to the two Nebraska oil-fired boilers. The boilers are rated at 27 MMBTU/hr. The allowable particulate emissions from the boilers are calculated using the formula:

$$E_{PM}=10^{[-0.47039(\log_{10} HI) + 0.16936]}$$

where:

E_{PM} - is the particulate matter emission limit, expressed to the nearest hundredth pound per hour per million BTU's;

HI - is the heat input in millions of BTU's per hour.

The allowable emissions from the generators are 0.31 pounds/MMBTU and 8.5 pounds/hour. The Permittee has stated that they are in compliance with this regulation.

§5-231(4) - Prohibition of Particulate Matter; Fugitive Particulate Matter

This section requires the use of fugitive PM control equipment on all process operations and the application of reasonable precautions to prevent PM from becoming airborne during the handling, transportation, and storage of materials, or use of roads. Based on the application submittal and information available to the Agency, the Facility is not considered a source of fugitive particulate matter subject to this regulation. The Facility is required to take reasonable precautions at all times to control and minimize emissions of fugitive particulate matter from the operations at the Facility.

§5-241(1) & (2) - Prohibition of Nuisance and Odor
This requirement applies to the entire Facility and prohibits the discharge of air contaminants that would be a nuisance to the public or the discharge of objectionable odors beyond the property-line of the Facility. Based on the application submittal and information available to the Agency, the Facility currently is in compliance with this regulation.

§5-402 - Written Reports When Required
This section gives the Agency authority to require the Facility to submit reports summarizing records required to be maintained by the Agency.

§5-403 – Circumvention
This section prohibits the dilution or concealment of an air discharge in order to avoid air pollution control requirements.

§5-502(3) – Most Stringent Emission Rate ("MSER")
As part of obtaining approval for modifications made as part of AOP-99-014a, the Agency required the Facility to achieve MSER pursuant to §5-502(3) of the *Regulations*. See Section 5 of this report for more information regarding the applicability of MSER.

4.2 Federal Air Pollution Control Regulations and the Clean Air Act

40 C.F.R. Part 60 Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984
This regulation applies to the 30,000 gallon storage tank for No. 6 fuel oil. The Facility is required to keep readily accessible records showing the dimensions of the storage vessel and an analysis showing the capacity of the vessel. In addition, the Facility is required to notify the EPA Administrator within 30 days when the vapor pressure exceeds 15 kPa.

40 C.F.R. Part 64– Compliance Assurance Monitoring
Pursuant to requirements concerning enhanced monitoring and compliance certification under the *Clean Air Act ("CAA")*, EPA promulgated new regulations and revised regulation on October 22, 1997. These new requirements implemented compliance assurance monitoring ("CAM") for major stationary sources of air pollution that are required to obtain operating permits under Title V of the *CAA*. Subject to certain exemptions, the new regulations require owners or operators of such sources to conduct monitoring that satisfies particular criteria established in the rule to provide a reasonable assurance of compliance with applicable requirements under the *CAA*. Monitoring is proposed to focus on emissions units that rely on pollution control device equipment to achieve compliance with the applicable standards. The regulations also provide procedures for coordinating these requirements with the operating permits program regulations.

Section 64.2 of 40 C.F.R. specifies that each pollutant specific emission unit at a facility that meets a three-part test is subject to the requirements for CAM. An emission unit must:

(1) be subject to an emission limit or standard;
(2) use a control device to achieve compliance;

(3) have **pre-control** emissions that exceed or are equivalent to the major source threshold in 40 *CFR* Part 70 (i.e., 10 tpy individual HAP, 25 tpy total HAP, 50 tpy VOCs, or 100 tpy for any other air contaminant).

Equipment at the Facility that meets the first criteria are the boilers and the exhausts for the two whey dryers. As the boilers do not use control devices (criteria #2), the are not subject to CAM. The cyclones and baghouses collecting product from the whey dryers are not considered pollution control devices as they are inherent process equipment that collect product (40 *CFR* §64.1). The wet scrubber on the whey permeate line does meet the first two criteria, consequently the pre-control emissions from the wet scrubber have been calculated for comparison to the third criteria. As stated in the 16 November 2001 Agrimark Trip Report from C.E. Rogers Company, the dry solids flow rate to the wet scrubber are between 17 and 18.8 lbs/hr. This results in 82 tpy of particulate entering the wet scrubber [(18.8 lb/hr) x (8760 hr/yr) / (2000 lb/ton)], which is less than the major source threshold for particulates of 100 tpy.

As none of the equipment at the Facility meet the three criteria listed above the Facility is currently not subject to CAM.

40 C.F.R. Part 68– Chemical Accident Prevention Provisions (CAA 112(r): Risk Management Plan)

Pursuant to 40 *CFR* §68.215, facilities storing quantities of chemicals greather than threshold amounts are required to file a Risk Management Plan with the EPA. Agrimark-Cabot Inc. has filed such a plan for storage of anhydrous ammonia at the Middlebury facility.

4.3 Non-Applicable Requirements For Which a Permit Shield Provision Has Been Requested

Pursuant to §5-1015(a)(14) of the Regulations, an owner/operator may request to be shielded from potentially applicable state or federal requirements. The Facility has not requested a permit shield from any specific, potentially applicable requirement. Accordingly, the Agency has not granted any permit shields for the Facility.

5. CONTROL TECHNOLOGY REVIEW FOR MAJOR SOURCES AND MAJOR MODIFICATIONS

Pursuant to §5-261 of the Regulations each new major source and 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 emission increase, respectively. As determined in AOP-99-014, the Facility must achieve MSER for PM/PM_{10}.

MSER has been applied to the whey dryer emission points. The whey protein concentrate ("WPC") dryer has three emission points: two baghouses (#1 and #2) and a WPC conveyor/receiver baghouse. The permeate dryer also has three emission points: the permeate fluid bed baghouse, permeate conveyor/receiver baghouse, and the permeate venturi-style wet scrubber system. Except for the permeate wet scrubber system, particulate emissions at these points are controlled by fabric filters. The emissions from the permeate wet scrubber system are very hygroscopic and are controlled with the venturi-style wet scrubber followed by a wet cyclonic scrubber.

Table 5-1
Most Stringent Emission Rate for PM_{10} Emissions

Emission Unit	Emission Limit (gr/dscf undiluted exhaust)	Emission Limit (lb/hour)
WPC Baghouse #1	0.01	0.81
WPC Baghouse #2	0.01	0.85
WPC Conveyor/Receiver Baghouse	0.01	0.22
Permeate Fluid Bed Baghouse	0.01	1.05
WPC Conveyor/Receiver Baghouse	0.01	0.21
Permeate Wet Scrubber System	0.02	4.02

The mass loading emission limits were calculated using average stack conditions (flow rate, temperature, percent moisture) measured during stack testing of the six emission points during the late winter and spring of 2001 to convert the MSER emission rate in grains per dry standard cubic foot (gr/dscf) to pounds per hour (lb/hour). The mass emission limits were calculated using the following formula:

$$[\text{Mass emission limit, lb/hr}] = \frac{[\text{Emission limit, gr/dscf}] \times [\text{Stack flow rate, dscf/min}] \times [60 \text{ min/hr}]}{[7000 \text{ grains/lb}]}$$

The average conditions for each emission unit are presented in Table 5-2.

Table 5-2
Most Stringent Emission Rate for PM_{10} Emissions

Emission Unit	Average Stack Temperature (F)	Average Stack Flow Rate (dscfm)	Average Stack Moisture (%)
WPC Baghouse #1	164	9455	5.6
WPC Baghouse #2	158	9876	5.6
WPC Conveyor/Receiver	84	2588	0.6
Permeate Fluid Bed	117	12239	3.1
Permeate Conveyor/Receiver	89	2478	0.8
Permeate Wet Scrubber	93	23476	5.5

6. AMBIENT AIR QUALITY IMPACT EVALUATION

An ambient air quality impact evaluation 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. The Agency's implementation procedures

concerning the need for an ambient air quality impact evaluation under §5-406(1) of the Regulations, specifies that such analyses may be required when a project results in an allowable emissions increase of ten (10) tons per year or more of any air contaminant, excluding VOCs. Additionally, the Agency may require an air quality impact evaluation where the short-term allowable emission rates will significantly increase as a result of a project.

The Facility is not undergoing changes subject to new source review as part of this operating permit renewal, therefore an impact evaluation is not necessary to assess compliance with the ambient air quality standards.

The Facility performed extensive modeling in order to demonstrate compliance with National Ambient Air Quality Standards ("NAAQS") and Prevention of Significant Deterioration ("PSD") increments for modifications approved in AOP-99-014. The results of that modeling effort were scaled for comparison with NAAQS and PSD increments for modifications approved in AOP-99-014a. The model results demonstrated compliance with the NAAQS and PSD increments.

7. HAZARDOUS AIR CONTAMINANTS

The emissions of hazardous air contaminants ("HACs") are regulated under to §5-261 of the Regulations. Pursuant to §5-261(1)(b)(ii) of the *Regulations*, all fuel burning equipment which combusts virgin liquid or gaseous fuel is exempt from this section. Therefore, Facility boilers are exempt from this regulation. The facility cooling towers use chemicals for water conditioning which contain HACs, however the quantities used will not exceed any action level. Based on information disclosed by the Applicant, there are no other sources of HACs at the Facility.

8. REASONABLY AVAILABLE CONTROL TECHNOLOGY

At this time, the Agency has not established a Reasonably Available Control Technology ("RACT") requirement applicable to this Facility. Therefore, the source is currently in compliance with this requirement. The Agency will notify the source if any applicable RACT requirement applies to this Facility in the future. If such RACT should apply to the source in the future, the Agency will ensure that the source complies with such requirement at that time.

AS

VERMONT AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Air Pollution Control Division

TECHNICAL ANALYSIS OF AN AIR CONTAMINANT SOURCE

#AOP-98-015a
DEC PIN# RU95-0193

August 25, 1999
(Revised: October 20, 1999)

Prepared By: John Perreault, P.E.

APPLICANTS:	OMYA, Inc./Vermont Marble Power Division of OMYA, Inc. 61 Main Street Proctor, Vermont 05765
SOURCE:	East Plant Verpol Plant Cogeneration Plant Florence Road, P.O. Box 10 Florence, Vermont 05744
RESPONSIBLE OFFICIAL:	Neal Jordan, OMYA, Inc.
CONTACT:	Neal Jordan OMYA, Inc. Manager of Environmental and Regulatory Affairs TEL: (802) 770-7261 FAX: (802) 459-3428
COUNTY:	Rutland
AREA DESIGNATION:	Attainment for PM_{10}, SO_2, NO_2, CO, & Pb; Unclassified for ozone
UTM COORDINATES:	$^{6}55^{960}$ m E, $^{48}41^{150}$ m N (Verpol Plant)

1.0 INTRODUCTION

On July 20, 1999, OMYA, Incorporated (hereinafter "OMYA, Inc." and also referred to herein as "Owner/Operator"), a subsidiary of Pluess-Staufer Industries, Inc., informed the Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division ("Agency"), of its intentions to construct several modifications to its' Verpol Plant located in Florence, Vermont. These modifications are summarized as follows:

(1) Construction of new steel product silos;
(2) The existing bulk bagging system will be replaced with new bulk baggers served by new bulk bagger product silos;
(3) A new pneumatic conveyor will be installed to supplement existing systems for delivering finished product from silos to the new bulk bagger silos;
(4) A new vacuum system will be installed for cleanup of spilled dry product;
(5) Existing fabric filters serving 50-lb bag packaging machines (known as "rotopackers") will be modified to vent to the ambient air;
(6) The burner for Spray Dryer #2 will be replaced with a larger burner to allow an increase in production through Spray Dryer #2;
(7) Continuation of the use of East Plant after normal startup of Flash Dryer #3 at the Verpol Plant;

Other noteworthy changes planned for the future, include: a conversion of existing Deagglomerators A and B to Surface Treaters A and C; a reduction in allowable sulfur dioxide ("SO_2") emission rates from the flash dryers at the East Plant, and the elimination of some existing equipment at the Verpol Plant.

1.1 Background

The East Plant and Verpol Plant are involved in the production of finely ground calcium carbonate materials. Various non-metallic mineral processing operations are employed in the production of the ground calcium carbonate materials. The processing of calcium carbonate materials at OMYA's facilities is classified as a source of air contaminants under §§5-401(5) and (12) of the *Regulations*. Additionally, located adjacent to the Verpol Plant is the Cogeneration Plant operated by Vermont Marble Power Division of OMYA, Inc. (formerly known as Vermont Marble Company). The Cogeneration Plant consists of two combustion turbines utilized for the generation of electrical power. Exhaust heat from the combustion turbines is used in the production of dried calcium carbonate materials at the Verpol Plant. The Cogeneration Plant is classified as a source of air contaminants under §5-401(3) of the *Regulations*.

The Cogeneration Plant, East Plant, and Verpol Plant are classified as one single stationary source of air contaminants within the definition of stationary source (see §5-101 of the *Regulations*), since the facilities are under common control and located on contiguous property (referred to herein collectively as "Facility"). This stationary source currently operates within the confines of an existing Air Pollution Control Permit to Construct and Operate #AOP-98-015 issued on November 16, 1998. Proposed modifications to any of the three facilities are subject to Agency review and approval pursuant to Subchapter V of the *Regulations*. The term modification is defined within

§5-101 of the *Regulations* as any physical change or change in the method of operation of the stationary source which would result in an actual emissions increase. Some of the projects described in item 1.0 above consist of physical changes or changes in the method of operation of the stationary source that have associated emissions increases and therefore meet the definition of modification. Consequently, those proposed projects are subject to Agency review and approval.

1.2 Project Description

OMYA proposes to:

(1) Construct new steel product silos;
(2) Replace the existing bulk bagging system with new bulk baggers served by new bulk bagger product silos;
(3) Install a new pneumatic conveyor to supplement existing systems for delivering finished product from storage silos to the new bulk bagger silos;
(4) Install a new vacuum system for cleanup of spilled dry product;
(5) Existing fabric filters serving 50-lb bag packaging machines (known as "rotopackers") will be modified to vent to the ambient air;
(6) Replace the existing Spray Dryer #2 burner with a new larger burner to increase production through Spray Dryer #2;
(7) Convert the existing Deagglomerators A and B to Surface Treaters A and C;
(8) Continue the use of the East Plant after normal startup of Flash Dryer #3 at the Verpol Plant; and
(9) Reduce the allowable SO_2 emission rates from the flash dryers at the East Plant.

1.3 Administrative Milestones

The administrative steps completed in the processing of the application are summarized below:

Table 1-1: Administrative Summary

Administrative Item	Result or Date
Date Application Received:	07/20/99
Date Application Fee Received and Amount:	07/20/99 $ 11,000.00
Date Administratively Complete:	07/22/99
Date & Location Receipt of Application Noticed:	07/24/99 *The Rutland Herald*
Date Technically Complete:	08/25/99
Date Draft Decision:	09/09/99 Approved
Date & Location Proposed Decision & Public Comment Period & Public Meeting Noticed:	09/11/99 *The Rutland Herald*
Date of Public Meeting:	10/07/99
Deadline for Public Comments:	10/20/99
Classification of Source Under §5-401	§5-401(3) - Electrical power generation facilities; §5-401(5) - Mineral product industries, including mining, quarrying and crushing operations; §5-401(6)(a) - Fossil fuel burning equipment with a rated heat input of 10 MMBTU/hr or greater; §5-401(12) - Operations involving the handling or transferring of sand or dust producing materials.
Classification of Operating Permit:	Title V Subject Source
New Source Review Classification:	Major Modification to an Existing Major Stationary Source
Facility SIC Code(s) and Description(s):	1422 (Crushed and Broken Limestone)

Future Allowable Air Contaminant Emissions (tons/year) *						
PM/PM_{10}	SO_2	NO_x	CO	NMHCs	Pb	Total HAPs
129	178	154	105	12	<0.1	<1**

Notes: * PM - total particulate matter, PM_{10} - particulate matter sized 10 microns or smaller, SO_2 - sulfur dioxide, NO_x - nitrogen oxides, CO - carbon monoxide, NMHCs - non-methane hydrocarbons, Pb - lead, HAPs - hazardous air pollutants.
** All individual HAP emissions < 0.1 tpy.

2.0 BASIS OF REVIEW

As was stated previously, OMYA, Inc. proposes to install and operate new equipment and modify existing equipment at its Facility located in Florence, Vermont. The Facility

is classified as an existing air contaminant source, and modification of the source is subject to Agency review and approval pursuant to Title 10 *Vermont Statutes Annotated* ("10 *V.S.A.*") §556 and Subchapter V of the *Regulations*. Additionally, considering its allowable emissions (See Table 4-1 below), the Facility is classified as a "Title V Subject Source" (see §5-1002 of the *Regulations*) and is subject to the operating permit requirements of 10 *V.S.A.* §556a and Subchapter X of the *Regulations*, as well as the federal operating permit regulations in Title 40 *Code of Federal Regulations* ("40 *CFR*") Part 70. OMYA, Inc. was granted an Air Pollution Control Permit to Operate ("Permit to Operate") in conjunction with a previous construction permit amendment for a third flash dryer (issued on November 16, 1998). Pursuant to 10 *V.S.A.* §556(e), the Agency proposes to combine its review for approval of the proposed projects with an operating permit modification.

3.0 FACILITY DESCRIPTION AND LOCATION

3.1 Description of Plant Layout and Surrounding Area

The Facility operated by OMYA, Inc. is located approximately 65 kilometers ("km") north of the Lye Brook Wilderness Area, 9.4 km southwest of Mount Nickwaket (the nearest designated Vermont sensitive area) and 170 km southwest of the Great Gulf and Dry River Wilderness areas.

The geographical area surrounding the Facility property is depicted in Figure 1 of Appendix B of this Technical Analysis.

3.2 Equipment and Stack Information

3.2.1 Description of Equipment

Tables 3-1, 3-2, and 3-3 below describe the specific air contaminant emission points at the Verpol Plant, East Plant, and the Cogeneration Plant, along with their existing or proposed air pollution control strategies.

3.2.2 Description of Compliance Monitoring Devices

No devices have been proposed to continuously monitor emissions produced from the source. Note, however, as part of its approval for the construction of three flash dryer systems at the Verpol Plant and the issuance of a Permit to Operate, the Agency required the installation and use of continuous measurement systems on the fabric filter exhausts serving the flash dryers and Surface Treater B. These measurement systems were designed to provide OMYA, Inc. with information concerning the degradation of particulate matter control in the collectors over time, and thus assist the operator in scheduling preventative maintenance repairs to the control system. Additionally, the combustion turbines present at the Cogeneration Plant are equipped with devices to monitor the water injection rates and fuel flow into the turbines in order to monitor the water to fuel ratio used as a means of reducing NO_x emissions.

Table 3-1: Emission Points and Control Strategies at the Verpol Plant

POTENTIAL SOURCE	AIR POLLUTION CONTROL STRATEGY OR DEVICE
Surface Treater A (formerly Deagglomerator A)	fabric filter; PM emissions $\leq$ 0.01 gr/dscf
Surface Treater C (formerly Deagglomerator B)	fabric filter; PM emissions $\leq$ 0.01 gr/dscf
Deagglomerator C	fabric filter; PM emissions $\leq$ 0.01 gr/dscf
Storage Silos and Associated Conveying Systems	fabric filter; PM emissions $\leq$ 0.01 gr/dscf
Surface Treater B	fabric filter; PM emissions $\leq$ 0.01 gr/dscf; broken bag detector
Spray Dryer #1	ESP; PM emissions $\leq$ 1.7 lbs/hr, 80% reduction in uncontrolled fuel burning SO_2 emissions due inherent scrubbing effect of drying process - SO_2 emissions $\leq$ 2.4 lbs/hr (full direct-fire mode) and $\leq$ 0.5 lbs/hr (cogen./limited supplemental direct-fire mode)
Spray Dryer #2	multiple cyclones in series with an ESP; PM emissions $\leq$ 2.3 lbs/hr,80% reduction in uncontrolled fuel burning SO_2 emissions due inherent scrubbing effect of drying process - SO_2 emissions $\leq$ 2.7 lbs/hr (full direct-fire mode) and $\leq$ 1.4 lbs/hr (cogen./limited supplemental direct-fire mode)
19.7 MMBTU/hr Boiler	low sulfur distillate oil fuel (0.3% S by wt.)
24 MMBTU/hr Boiler	low sulfur distillate oil fuel (0.3% S by wt.)
Flash Dryer #1 System	fabric filter; PM emissions $\leq$ 0.01 gr/dscf; 80% reduction in uncontrolled fuel burning SO_2 emissions due inherent scrubbing effect of drying process - SO_2 emissions $\leq$ 0.7 lbs/hr; broken bag detector
Flash Dryer #2 System	fabric filter; PM emissions $\leq$ 0.01 gr/dscf; 80% reduction in uncontrolled fuel burning SO_2 emissions due inherent scrubbing effect of drying process - SO_2 emissions $\leq$ 0.7 lbs/hr; broken bag detector
Flash Dryer #3 System	fabric filter; PM emissions $\leq$ 0.01 gr/dscf; 80% reduction in uncontrolled fuel burning SO_2 emissions due inherent scrubbing effect of drying nprocess - SO_2 emissions $\leq$ 0.7 lbs/hr; broken bag detector
FD #1, #2 and #3 Product Conveyors	Use existing fabric filter collectors located on product silos; PM emissions $\leq$ 0.01 gr/dscf
Proposed Finished Product Silos	*fabric filter; PM emissions $\leq$ 0.01 gr/dscf*
Proposed Bulk Bagger Stations/Bulk Bagger Product Silos	*fabric filter; PM emissions $\leq$ 0.01 gr/dscf*
Proposed New Product Transfer System	*fabric filter; PM emissions $\leq$ 0.01 gr/dscf*
Proposed House Vacuum System	*fabric filter; PM emissions $\leq$ 0.01 gr/dscf*
Rotopackers	*fabric filter; PM emissions $\leq$ 0.01 gr/dscf*

Table 3-2: Emission Points and Control Strategies at the East Plant

POTENTIAL SOURCE	AIR POLLUTION CONTROL STRATEGY OR DEVICE
Raymond Mill	fabric filter; PM emissions $\leq$ 0.02 gr/dscf
Flash Dryer #1	fabric filter; PM emissions $\leq$ 0.02 gr/dscf; 80% reduction in uncontrolled fuel burning SO_2 emissions due inherent scrubbing effect of drying process - SO_2 emissions $\leq$ 1.0 lbs/hr
Flash Dryer #1 Recycle	fabric filter; PM emissions $\leq$ 0.02 gr/dscf
Flash Dryer #2	fabric filter; PM emissions $\leq$ 0.02 gr/dscf; 80% reduction in uncontrolled fuel burning SO_2 emissions due inherent scrubbing effect of drying process - SO_2 emissions $\leq$ 1.0 lbs/hr
Silos #1-#4	fabric filter (each silo); PM emissions $\leq$ 0.02 gr/dscf
Bins A and B	fabric filter (each bin vent); PM emissions $\leq$ 0.02 gr/dscf
Bins C and D	fabric filter (each bin vent); PM emissions $\leq$ 0.01 gr/dscf
Bin C & D Receiver	fabric filter; PM emissions $\leq$ 0.01 gr/dscf
Manual Packaging Dust Relief	fabric filter; PM emissions $\leq$ 0.02 gr/dscf
Automatic Packaging Dust Relief	fabric filter; PM emissions $\leq$ 0.02 gr/dscf
40 Mesh Unloading	fabric filter; PM emissions $\leq$ 0.02 gr/dscf
10.5 MMBTU/hr Boiler	low sulfur distillate oil fuel (0.5% S by wt.)

Table 3-3: Emission Points and Control Strategies at Vermont Marble Power Division

POTENTIAL SOURCE	AIR POLLUTION CONTROL STRATEGY OR DEVICE
56 MMBTU/hr Combustion Turbines #1 & #2	natural gas or distillate oil fuel (0.3% S); water injection
Combustion Turbines Starting Engines #1 & #2 (136 bHP each)	low sulfur diesel fuel (0.3% S by wt.); operation restricted to less than 100 hours per year each
Emergency Diesel-Fired Engine Generator (145 bHP)	low sulfur diesel fuel (0.3% S by wt.); operation restricted to less than 100 hours per year

4.0 QUANTIFICATION OF POLLUTANTS

Emissions must be calculated for the Facility in order to establish the regulatory review process necessary for the construction and operating permit portions of the application and to determine applicability with various air pollution control requirements. These

determinations are normally based upon allowable emissions. Allowable emission is defined as the emission rate calculated using the maximum rated capacity of the source and, if applicable, either: (a) the applicable emission standard contained in the *Regulations*, if any, or (b) the emission rate or design, operational or equipment standard specified in any order or agreement issued under the *Regulations* that is state and federally enforceable. In addition, §5-101 of the *Regulations* defines a "stationary source" as any structures, equipment, installations, or operations, 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 under common control. Based upon this definition, all of the equipment, operations, and structures at Facility are grouped together as one stationary air contaminant source.

Under the Agency's construction permit program (see Subchapter V of the *Regulations*), a source is classified as a major stationary source if allowable emissions of any air contaminant equal or exceed fifty (50) tons per year ("tpy"), except the air contaminant lead which is five (5) tpy. Additionally, any modification to an existing stationary source which results in an emissions increase equal to or greater than the "significant" levels identified in §5-101 of the *Regulations*, is classified as a major modification and subject to the same review requirements as a new major source.

Under the Agency's operating permit program, a source is classified as a "Title V Subject Source" and subject to federal review of the Permit to Operate if the Facility satisfies any one of the following criteria:

1. The source has allowable emissions of oxides of nitrogen ("NO_x"), sulfur dioxide ("SO_2"), carbon monoxide ("CO"), particulate matter ("PM/PM_{10}") or any other air contaminant, except volatile organic compounds ("VOCs"), of 100 tpy or greater;

2. The source has allowable emissions of VOCs of fifty (50) tpy or greater;

3. The source is subject to a federal emission standard pursuant to §111 of the *Clean Air Act* ("*CAA*") and promulgated in 40 *CFR* Part 60 (Standards of Performance for New Stationary Sources);

4. The source is subject to a federal emission standard pursuant to §112 of the *CAA* and promulgated in 40 *CFR* Part 61or 63 (National Emission Standards for Hazardous Air Pollutants); or

5. The source has allowable emissions of any one hazardous air pollutant ("HAP") regulated by the U.S. EPA of ten (10) tpy or greater, or allowable emissions of a combination of HAPs regulated by the U.S. EPA of twenty-five (25) tpy or greater. The HAPs regulated by the U.S. EPA are identified in §112 of the *CAA*.

Note: Non-major stationary sources subject to a requirement in §111 or §112 of the CAA are currently not subject to the Title V operating permit program, since the U.S. EPA has deferred the requirement for a Title V operating permit for non-major sources pursuant to 40 CFR Part 70 §70.3(b)(1) and the fact that the U.S. EPA has not completed rulemaking establishing how the program should be structured for non-major sources.

Based upon its allowable emissions (see Table 4-1 below), the Facility is currently classified as a "major stationary source" under the construction permit program, and a "Title V subject source" under the operating permit program requirements. Upon completion of the proposed modifications, the Facility will retain these classifications.

4.1 Designation of the Existing Stationary Source

§5-101 of the *Regulations* defines a major stationary source as a source with allowable emissions of any air contaminant equal to or greater than 50 tpy (except for lead, which is 5 tpy). Allowable emissions are determined using applicable emission standards in the *Regulations*, permit conditions, or published emission estimates. OMYA, Inc. is currently operating under the restrictions of Air Pollution Control Permit to Construct and Operate #AOP-98-015 issued on November 16, 1998. Existing allowable emissions have been determined using the emission limits stated in this Permit. In some cases for fuel burning equipment, the permit limit was expressed in terms of a fuel usage limit. This fuel usage limit was converted to an allowable emissions value through the application of emission factors published by the United States Environmental Protection Agency ("U.S. EPA") in *AP-42 Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources (5th Edition)*.

Table 4-1 below summarizes the existing allowable emissions for the East Plant, Verpol Plant, and the Cogeneration Plant. A breakdown of the estimated allowable emissions on an equipment specific basis is contained in Table 1: Existing Allowable Emission Estimates located in Appendix A of this Technical Analysis.

Table 4-1 Summary of Existing Allowable Emissions*

Facility	Air Contaminant Emissions, tons/year						
	PM/PM_{10}	SO_2	NO_x	CO	NMHCs	Pb	HAPs
East Plant	22	21	6	2	<1	<0.01	<1
Verpol Plant	61/60	28	39	10	<1	<0.01	<1
Cogeneration Plant	26	143	104	93	11	<0.01	<1
Total	109	192	149	104	13	<0.01	<1

* Based on allowable emissions contained in Air Pollution Control Permit #AOP-98-015a. Assumes the Cogeneration Plant is operating at Full Load and supplying heat for Spray Dryers #1 & #2 (limited supplemental firing of spray dryers).

As summarized in Table 4-1 above, total allowable emissions for the OMYA Plants (East and Verpol) and Cogeneration Plant result in the classification of this stationary source as major for particulate matter ("PM/PM_{10}"), sulfur dioxide ("SO_2"), oxides of nitrogen ("NO_x"), and carbon monoxide ("CO").

4.2 Designation of the Proposed Modification

The designation of an existing stationary source determines the appropriate levels for comparison when attempting to classify the size of the modification for new source review purposes. As an existing major source, any emissions increase resulting from

modifications must be compared to the *Significant Levels* described in §5-101 of the *Regulations* in order to determine whether or not the proposed modifications are subjected to the new source review requirements of §5-502 of the *Regulations* (Major Source and Major Modifications). If a proposed modification or aggregation of minor modifications at the source equal or exceed the "significant" levels, then the modification is classified as major and subject to the requirements of §5-502 of the *Regulations*.

Pursuant to §5-502(1), two forms of increases must be compared to the "significant" levels. First, the allowable emissions attributable to the proposed modification. Second, the emission increases attributable to the proposed modification in addition to the increase in emissions from prior minor modifications at the source since July 1, 1979. Prior modifications at the source which have been reviewed under §5-502 are not aggregated for the purposes of determining the applicability of major modification. This determination is performed on a pollutant-by-pollutant basis.

4.2.1 New Allowable Emissions

The allowable emissions increase associated with the proposed project is summarized in Table 4-2 below. The increase in emissions accounts for the following equipment additions or changes to existing equipment: (1) new bulk baggers served by new bulk bagger product silos; (2) a new pneumatic conveyor; (3) a new vacuum system for cleanup of spilled dry product; (4) ambient exhausting of the existing "rotopackers"; and (5) a increase in production through Spray Dryer #2. No emissions were associated with the new steel storage silos, since the silos will be served by existing conveying equipment, and emissions from this equipment have already been included. Table 2: New Allowable Emissions/Aggregated Emissions Increase, found in Appendix A of this Technical Analysis, gives a breakdown of the derivation of these emission estimates.

Table 4-2: New Allowable Emissions & Comparison to Significant Levels

	Air Contaminant Emissions, tons/year						
	PM/PM_{10}	SO_2	NO_x	CO	NMHCs	Pb	HAPs
Proposed Modification	27.5	6.1	14.3	3.6	0.2	<0.01	<1
Significant Levels	25/15	40	40	50	40	0.6	N/A

Based on the projected allowable emissions summarized in Table 4-2 above, the proposed modification is classified as a major modification and subject to the requirements in §5-502 of the *Regulations*.

4.2.2 Aggregated Emissions Increase - Addition of prior minor modifications with proposed modification.

Although the project has already been established to be subject to §5-502 of the *Regulations*, the aggregated emissions increase must still be performed in order to establish if any other pollutants will be significantly increased as a consequence of prior minor modifications. §5-502(1)(b) of the *Regulations* requires minor modifications be aggregated with prior minor modifications for the determining the applicability of major

modification review requirements. The purpose of this calculation is to prevent the circumvention of major modification review through the continued processing of minor modifications. A brief discussion of the permitting activity associated with the three facilities follows:

(1) OMYA was granted approval by the Agency to modify and operate the Verpol Plant on March 7, 1986. This Air Pollution Control Permit approved the installation and operation of Surface Treater B, an associated product storage silo and bagging equipment, and an increase in production through the existing spray dryer (Spray Dryer #1 - formerly known as Spray Dryer A).

(2) An amendment was issued on January 14, 1987, to restrict the production rates through four processes (i.e., Surface Treater B, Spray Dryer #1, Deagglomerator A, and the Product Bagging System) based upon the results of compliance emission testing.

(3) On March 8, 1988, OMYA's Air Pollution Control Permit was again amended to approve the modification of Ball Mill A, the addition of a new pneumatic product conveying system, and the reactivation of the existing Cone Crusher, Roller Mill Feed Silo, and Roller Mills A and B.

(4) In November 1989, OMYA proposed the installation of a second spray dryer (Spray Dryer #2 - formerly known as Spray Dryer B), a deagglomerator (Deagglomerator C), and new pneumatic product conveying equipment. This proposed modification coincided with the proposal by Vermont Marble Power Division of OMYA, Inc. for the construction of a cogeneration project on OMYA's property in Florence. The addition of OMYA's new processing equipment and the cogeneration project were reviewed as a major modification for PM/PM_{10}, SO_2, NO_x, and CO. The Agency issued an Air Pollution Control Permit (#AP-89-049) on July 27, 1990, approving the projects. At the same time as the Agency was taking action on the major modification, the Agency combined the conditions for the East Plant, Verpol Plant, and Cogeneration Plant together under one stationary source air pollution control permit. OMYA, Inc. had purchased the adjacent White Pigment Plant and renamed the facility, East Plant, in 1988.

(5) An administrative amendment of Permit #AP-89-049 was issued on July 18, 1991 to incorporate minor revisions to the permit conditions.

(6) The Permit was again amended on July 12, 1993, to incorporate minor modifications at the East Plant and to performed administrative revisions of various conditions of the Permit. The minor modifications at the East Plant included: adding a dust collector onto Silo #1, extending the pneumatic conveying system feeding Silos #3 and #4 to also serve Silos #1 and #2; and provide the ability to convey product from the Roller Mill to either Bins A through D or the 40 Mesh Feed Silo. Previously, the Agency incorrectly calculated an emissions increase resulting from these minor modifications. However, the modifications involved only changes in the routing of the existing pneumatic conveyors. No new pneumatic conveying capacity was installed with these minor modifications. Therefore, emission rates from the East Plant did not increase as

a result of these minor modifications.

(7) On August 24, 1994 and February 23, 1996, the Agency received an application requesting an increase in the permitted level of distillate fuel oil usage at the East Plant. The fuel consumption limit was increased from 445,000 gallons annually to 600,000 gallons, and reviewed as a minor modification. A permit amendment was issued on March 29, 1996, approving the increase in the permitted fuel consumption limit.

(8) On September 13, 1996, the Agency approved, as a minor modification, the installation and operation of two flash dryers and associated product conveying equipment at the Verpol Plant.

(9) On December 2, 1997, the Agency approved, as a minor modification, the installation and operation of a replacement boiler at the Verpol Plant. The Agency's approval also allowed the transference of approved fuel use (480,000 gallons per year) from the flash dryers to the boilers at the Verpol Plant, and increased the permitted emission limit for Spray Dryer #1 from 1.32 pounds per hour ("lbs/hr") to 1.7 lbs/hr.

(10) The Agency granted approval for the installation of a third flash dryer and associated product conveying system at the Verpol Plant on November 16, 1998.

As stated in item (4) above, all modifications permitted prior to 1991 have been reviewed under §5-502 for PM/PM_{10}, SO_2, NO_x, and CO. Therefore, with the exception of volatile organic compounds ("VOCs") [classified as non-methane hydrocarbons ("NMHCs") for fuel burning equipment] and lead, only emission increases since 1991 must be aggregated with the proposed modification for determining the applicability of §5-502 of the *Regulations*. These modifications include:

(a) The minor modification of East Plant in 1996 to increase the permitted fuel consumption limitation;

(b) The minor modification of the Verpol Plant in 1996 to allow the installation and operation to two (2) flash dryers and associated product conveying systems;

(c) The minor modification of the Verpol Plant in 1997 to allow the installation and operation of a replacement boiler and transference of approved fuel use to the boilers, and increased PM/PM_{10} emission rate for Spray Dryer #1; and

(d) The minor modification of the Verpol Plant in 1998 to allow the installation and operation of a third flash dryer and associated product conveying system.

It should be noted that site-wide allowable emissions of lead and VOCs, including NMHC emissions from fuel burning equipment, are less than the "significant" levels for these pollutants. Additionally, HAPs do not have an applicable "significant" level. Consequently, it is unnecessary to document the aggregated emissions increase of lead, VOCs, and HAPs at the stationary source, since it is impossible for prior modifications to exceed the "significant" level for lead and VOCs at the Facility or it is irrelevant.

Table 4-3 below summarizes the aggregated emissions increase since 1991. Table 2: New Allowable Emissions/Aggregated Emissions Increase, found in Appendix A of this Technical Analysis, gives a breakdown of the derivation of these emission estimates.

Table 4-3: Aggregated Emissions Increase & Comparison to Significant Levels

	Air Contaminant Emissions, tons/year			
	PM/PM_{10}	SO_2	NO_x	CO
Proposed Modification	27.5	6.1	14.3	3.6
Prior Minor Modifications	16.6	18.7	25.0	6.3
Aggregated Modifications	44.1	24.8	39.3	9.9
Significant Levels	25/15	40	40	50

As summarized Table 4-3 above, the proposed modification, in combination with prior minor modifications, will generate an emissions increase above the "significant" level for PM and PM_{10}. Therefore, the proposed modification retains its classification as a major modification to a major stationary source for PM/PM_{10}, but does not involve a "significant" increase for any other air contaminant.

4.3 Designation of the Future Stationary Source

The designation of the stationary source in the future is determined by the allowable emissions that it will be limited to in the future. The future allowable emissions are quantified based on proposed equipment specifications, applicable emission standards in the *Regulations*, proposed operating conditions, or published emission estimates. Future allowable emissions include the emissions associated with the proposed modification. Table 4-4 below summarizes the future allowable emissions. Table 3: Future Allowable Emissions Estimates, found in Appendix A of this Technical Analysis, provides a breakdown of these emissions on an equipment specific basis.

Table 4-4: Summary of Future Allowable Emissions

Facility	Air Contaminant Emissions, tons/year						
	PM/PM_{10}	SO_2	NO_x	CO	NMHCs	Pb	HAPs
Verpol Plant	80	30	44	11	<1	<0.1	<1
East Plant	22	5	6	2	<1	<0.1	<1
Cogeneration Plant	26	143	104	93	11	<0.1	<1
Total	129	178	154	105	12	<0.1	<1

As summarized in Table 4-4 above, the Facility will retain its classification as a major

stationary source of PM/PM_{10}, SO_2, NO_x, and CO.

4.5 Enforceable Operating Restrictions

In addition to the control strategies identified in Tables 3-1 through 3-3 above, OMYA, Inc. and Vermont Marble Power Division of OMYA, Inc. have proposed operational restrictions for their facilities. These are summarized as follows:

(1) Whenever the combustion turbines are in use, distillate oil firing in Spray Dryers #1 and #2 will not exceed 62 and 169 gallons per hour, respectively;

(2) Annual distillate fuel oil usage at the Verpol Plant will not exceed 11,235,000 gallons (based upon worst case fuel use scenario) and in addition annual limitations for the combustion turbines, dryers, boilers, and diesel engines at 6,815,280; 5,500,000; 680,000; and 18,516 gallons, respectively;

(3) Sulfur content of distillate fuel oil used at Verpol Plant will not exceed 0.3 percent by weight ("% by wt.");

(4) Annual distillate fuel oil usage at the East Plant will not exceed 600,000 gallons; and

(5) Sulfur content of distillate fuel oil used at East Plant will not exceed 0.5 % by wt.

4.6 Identification of Insignificant and Exempt Activities

Activities which qualify as an "insignificant activity" pursuant to §5-1002(h) of the *Regulations* need not be considered when determining the applicability of Subchapter X of the *Regulations* and must only be listed as such within the operating permit application. Additionally, guidance provided by the U.S. EPA (entitled "White Paper for Streamlined Development of Part 70 Permit Applications") lists activities which are considered as "trivial" sources of air contaminants, and may be presumptively omitted from operating permit applications.

Although not required for determining applicability with Subchapter X, quantifiable emissions from "insignificant activities" must be included for the purposes of establishing whether or not a source is subject to other air pollution control requirements, including, but not limited to: reasonably available control technology, major source status, and Title V operating permit applicability.

OMYA, Inc. has identified the below listed equipment/activities as insignificant activities pursuant to §5-1002(h) of the *Regulations*:

(1) 0.35 MMBTU/hr distillate oil (formerly waste oil) out-building space heater at the Verpol Plant;
(2) Diesel-fired engine generator set which operates less than 100 hours per year at the Cogeneration Plant; and
(3) Two start-up diesel-fired engines which each operate less than 100 hours per

year at the Cogeneration Plant.

In addition to the above insignificant activities, emissions of VOCs are considered negligible from the storage and transfer of fuel oil into OMYA's two storage tanks (270,000 gallon tank and 500,000 gallon tank).

With the exception the diesel generator sets which have been previously quantified for the purposes of new source review, emissions have not been quantified from the above insignificant activities because they are considered negligible or not quantifiable. The exclusion of emissions produced by the insignificant and trivial activities does not alter the applicability status of the Facility under Subchapter X of the *Regulations*.

5.0 MOST STRINGENT EMISSION RATE

§5-502(3) of *Regulations* requires that applicable new major sources and major modifications achieve the Most Stringent Emission Rate ("MSER") with respect to those air contaminants for which it would have a "significant" increase in actual emissions. MSER must be achieved for each proposed physical or operational change which contributes to the increased emissions of the air contaminant. As calculated in item 4.2 above, OMYA, Inc. must achieve MSER for PM/PM_{10}.

MSER is defined as:

> *A rate of emissions which the Secretary, on a case-by-case basis, determines is achievable for a source based on the lowest emission rate achieved in practice by such category of source, unless the source demonstrates it cannot achieve such a rate due to economic impacts and costs. Costs of achievement of MSER will be accorded less weight for sources or modifications locating in non-attainment areas than for sources or modifications locating in attainment areas for the applicable air contaminant. In no event shall application of MSER result in emissions of any contaminants in excess of any federal emission standard or any emission standard contained in these regulations. If the Secretary determines that imposition of an emission standard is infeasible, a design, equipment, work practice or operational standard, or combination thereof, may be prescribed instead as constituting MSER.*

MSER is established following the procedures identified in the Agency's "Air Pollution Control Permitting Handbook," NESCAUM's "BACT Guideline," and the U.S. EPA's "New Source Review Workshop Manual." Essentially, the process of determining MSER begins by listing all available options for reducing emissions first and then ranking the alternatives in order of effectiveness from top to bottom (top being the most effective). MSER requires the application of the top option unless it can be demonstrated based upon costs (economic, energy, and environment) or technical constraints that such an option is not achievable for the proposed project. If the Agency concurs with the applicant that an option is not achievable, then the next most effective option is selected as MSER. Again, the same arguments may be presented. If found unacceptable, the next most stringent option is considered. Depending on the circumstances, this process may take several iterations before MSER is established.

As stated previously, MSER applies to each physical change or change in the method of operation of the source which caused or contributed to the significant increase. MSER will be applied to the following equipment at the Verpol Plant:

(1) Spray Dryer #2;
(2) Three flash dryers and associated product conveying systems;
(3) 24 MMBTU/hr Boiler;
(4) New steel storage silos;
(5) Bulk bagging stations/silos;
(6) House vacuum system;
(7) New product transfer conveyor; and
(8) Rotopackers.

Except for the spray dryers and boiler at the Verpol Plant, the Agency has previously established MSER as the application of a fabric filter achieving an emission concentration of 0.01 grains per dry standard cubic foot ("gr/dscf") of undiluted exhaust air from equipment processing dry calcium carbonate product. It is the Agency's opinion that such control equipment and emission concentration still achieves MSER for PM/PM_{10} from non-metallic mineral processing operations. The proposed Spray Dryer #2 emission limit is expressed in lbs/short ton of material processed and is equivalent to 0.01 gr/dscf, but will be achieve via the existing multiple cyclones in series with an electrostatic precipitator ("ESP"). MSER for the boiler is the use of a low sulfur distillate oil and proper operation and maintenance of the device. The application of additional PM/PM_{10} control on the boiler cannot be justified, and has not been required for distillate oil-fired boilers of this size.

MSER for mineral processing equipment: 0.01 gr/dscf of undiluted exhaust
MSER for boiler: 0.35 pounds per million British Thermal Units ("lbs/MMBTU") of heat input

6.0 APPLICABLE REQUIREMENTS

6.1 Citation and Description of all Applicable Requirements

§5-1006(e)(4) of the *Regulations* requires the Owner/Operator of a stationary air contaminant source to submit a complete application including, but not limited to a demonstration of compliance with all applicable air pollution control requirements. Additionally, pursuant to 10 V.S.A. §556 and Subchapter V of the *Regulations,* a source must demonstrate compliance with all applicable requirements prior to receiving approval for the construction or modification of a source. Applicable requirements include both state and federal regulations, and the conditions of any permit. Note that compliance relative to §5-261 and §5-1010 of the *Regulations* will be discussed separately under items 7.0 and 8.0 below.

The compliance analyses and determinations in this technical analysis rely on data and representations provided by the Owner/Operator. Any statements and conclusions regarding the compliance status contained herein are not binding against the state of Vermont in any future legal or administrative proceedings.

Vermont Air Pollution Control Regulations

§5-211(1) - Prohibition of Visible Air Contaminants - Installations constructed subsequent to April 30, 1970. This standard applies to any equipment installed subsequent to April 30, 1970, and specifies that visible emissions may not exceed twenty (20) percent ("%") opacity for a period or periods aggregating to six (6) minutes or more in any hour, and at no time may they exceed sixty (60) % opacity. Compliance with this standard is based upon the procedures contained in proposed Reference Method F-1 (51 *Federal Register*, page 31076, August 29, 1986).

OMYA, Inc. has stated that it complies with this standard.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

§5-221(1)(a) - Prohibition of Potentially Polluting Materials in Fuel. This section prohibits the use of any fuel, in fuel burning equipment, with a sulfur content more than 2.0% by weight. This prohibition applies to all fuel burning equipment at the Facility. Compliance with this standard is based on fuel analyses following the procedures prescribed by the American Society for Testing and Materials ("ASTM").

OMYA, Inc. has stated that it complies with this standard based upon their use of distillate oil having a maximum sulfur content of 0.3 % by wt. at the Verpol Plant and 0.5 % by wt. at the East Plant, and their contract(s) with fuel suppliers.

The continued use of these methods are sufficient to ensure compliance with this limitation in the future.

§5-231(1) - Prohibition of PM; Industrial Process Emissions. This section limits the discharge of PM from industrial processes. An emission limit is derived based upon the limitations established in Table 1 of the *Regulations*, or depending upon the circumstances, a concentration limit of 0.06 grains per dry standard cubic foot ("gr/dscf") of undiluted exhaust gas. Table 1 of the *Regulations* specifies a maximum PM discharge rate based upon the maximum processing rate in units of pounds per hour ("lbs/hr") for any given piece of process equipment. Where the processing rate is not considered an appropriate measure of pollution potential, such as wood processing equipment, Table 1 is substituted by the concentration standard. Compliance with this standard is based upon the use of Reference Method 5 (40 *CFR* Part 60, Appendix A).

OMYA, Inc. has stated that it complies with this standard.

The Agency will assess compliance with this section in the future as follows: (1) OMYA, Inc. will be required to properly operate and maintain its dust collection systems including fabric filter collectors and electrostatic precipitators ("ESP"); (2) visual observations of each exhaust will be conducted during Agency inspections of the Facility; and, (3) if visible emissions are determined to be in excess of the limits specified in §5-211 of the *Regulations* or the conditions of OMYA's permit, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standard or that other corrective measures be taken. Additionally, the Agency has required the use of continuous measurement systems on the flash dryer

systems and Surface Treater B to assist OMYA's operators in monitoring the dust emitted from these systems.

§5-231(3)(a)(i) - Prohibition of PM; Combustion Contaminants. This standard applies to each fuel burning device with a heat input rating of 10 MMBTU/hr or less, and specifies that PM emissions may not exceed 0.5 lbs/hr/MMBTU of heat input. The emission standard in this regulation applies to installations in which fuel is burned for the primary purpose of producing steam, hot water, hot air or other liquids, gases, or solids, and in the course of doing so, the products of combustion do not come into direct contact with the process material. Therefore, the above standard does not apply to dryers. Compliance with this standard is based upon the procedures contained in Reference Method 5 (40 *CFR* Part 60, Appendix A).

OMYA, Inc. has stated that it complies with this requirement.

The Agency will assess compliance with this standard in the future as follows: (1) OMYA, Inc. will be required to properly operate and maintain all fuel burning equipment used on-site; (2) visual observations of the exhausts will be conducted during any Agency inspection of the Facility; and, (3) if visible emissions are determined to be in excess of the limits specified in §5-211 of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standard or that other corrective measures be taken.

§5-231(3)(a)(ii) - Prohibition of PM; Combustion Contaminants. This standard applies to each fuel burning device with a rated heat input greater than 10 MMBTU/hr but equal to or less than 250 MMBTU/hr. The actual value of the standard is based upon the heat input of the unit and calculated using a formula. The emission standard in this regulation applies to installations in which fuel is burned for the primary purpose of producing steam, hot water, hot air or other liquids, gases, or solids, and in the course of doing so, the products of combustion do not come into direct contact with the process material. Therefore, the above standard does not apply to dryers. Compliance with the standards identified above is determined using the procedures contained in Reference Method 5 (40 *CFR* Part 60, App. A).

OMYA, Inc. has stated that it complies with this requirement.

The Agency will assess compliance with this standard in the future as follows: (1) OMYA, Inc. will be required to properly operate and maintain its fuel burning equipment; (2) visual observations of each exhaust will be conducted during any Agency inspections of the Facility; and, (3) if visible emissions are determined to be in excess of the limits specified in §5-211 of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standard or that other corrective measures be taken.

§5-231(4) - Prohibition of PM; Fugitive PM. This section specifies that each process operation must be equipped with a fugitive PM control system. Additionally, this section requires the use of reasonable precautions to prevent the discharge of fugitive PM from any handling, storage, or transportation of materials, or the construction of buildings, or use of roads. This section applies to the Facility, including: the handling, processing,

storage, disposal and transportation of marble ore and material collected by the fabric filter collectors and ESPs.

OMYA, Inc. has stated that it complies with this requirement.

The Agency will assess compliance with this standard in the future as follows: (1) OMYA, Inc. will be required to properly operate and maintain its dust collection systems including fabric filter collectors and ESPs; (2) OMYA, Inc. will be required to comply with the fugitive PM control measures specified within its permit; (3) visual observations of each exhaust will be conducted during Agency inspections of the Facility, and if visible emissions are determined to be in excess of the limits specified in §5-211 of the *Regulations* or the conditions of OMYA's permit, the Agency may require the performance of a stack test to verify compliance with the applicable PM/PM_{10} standard or that other corrective measures be taken; and, (4) require the implementation of additional reasonable precautions based upon the results of an Agency inspection. Additionally, the Agency has required the use of continuous measurement systems on the flash dryer systems and Surface Treater B to assist OMYA's operators in monitoring the dust emitted from these systems.

§5-241(1) & (2) - Prohibition of Nuisance and Odor. This requirement applies to the entire Facility and prohibits the discharge of air contaminants that would be a nuisance to the public or be source of objectionable odors beyond the property-line.

OMYA, Inc. has stated that it complies with this requirement.

The Agency will verify compliance with this requirement in the future during any inspections of the Facility. Additionally, the Agency investigates all complaints that it receives in order to determine whether or not there is a violation of this requirement.

§5-502(3) - Most Stringent Emission Rate. As part of obtaining approval for the installation of Spray Dryer #2, Deagglomerator C with pneumatic conveying, and the Cogeneration Plant, the Agency required OMYA, Inc. to achieve the MSER pursuant to §5-502(3) of the *Regulations*. See item 5.0 above for more information regarding the applicability of MSER for the proposed project.

OMYA, Inc. has stated that it complies with this requirement.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

Subchapter VIII - Registration of Air Contaminant Source. This Subchapter requires the registration of a stationary source, with the Agency, if it produces five (5) tons per year or greater of actual emissions during the preceding calendar year. The Owner or Operator of a source is required to submit information regarding their operations and pay a fee based on the quantity of emissions they produce and the fuels that they use.

Based upon its past actual emissions, OMYA, Inc. is subject to the registration requirements of Subchapter VIII of the *Regulations*. OMYA, Inc. currently registers it's Facility, and proposes to continue to comply with this requirement in the future.

The Agency will ensure compliance with this requirement in the future during any inspections of the Facility.

Air Pollution Control Permit #AP-98-015 (Issued November 16, 1998)

OMYA, Inc. currently operates within the confines of an Air Pollution Control Permit to Construct and Operate issued on November 16, 1999. Although the conditions of this permit are currently applicable requirements, the Agency is reviewing each condition to determine whether or not it will be incorporated into any future permit for this Facility as part of its approval for the proposed modifications.

Federal Air Pollution Control Regulations

***Clean Air Act*, Title I - Air Pollution Prevention and Control, Part A - Air Quality and Emission Limitations, §111 - Standards of Performance for New Stationary Sources.** OMYA, Inc. is subject to three applicable federal new source performance standards established under §111 of the federal *Clean Air Act* and promulgated within Title 40 *Code of Federal Regulations* ("*CFR*") Part 60.

40 *CFR* Part 60 Subpart Dc - The replacement boiler (24 MMBTU/hr boiler at Verpol Plant) approved by the Agency in 1997 is considered an affected facility subject to 40 *CFR* Part 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. Subpart Dc specifies emission limitations for PM/PM_{10}, SO_2, and opacity, as well as monitoring, record keeping, notification and reporting requirements. Applicability to Subpart Dc also subjects OMYA, Inc. to the general notification, record keeping, and other requirements of 40 *CFR* Part 60 Subpart A.

OMYA, Inc. has stated that it complies with these requirements.

The Agency will incorporate the applicable requirements of 40 *CFR* Part 60 Subpart A and Dc within any permit issued to OMYA, Inc. approving the proposed modifications.

40 *CFR* Part 60 Subpart GG - The design rated heat input of each combustion turbine at the Cogeneration Plant exceeds 10.7 gigajoules per hour. Each turbine is actually rated at 54 gigajoules per hour. Therefore, the combustion turbines are subject to the federal regulations contained in 40 *CFR* Part 60 Subpart GG - Standards of Performance for Stationary Gas Turbines. This new source performance standard sets limits for emissions of NO_x and SO_2, specifies maximum sulfur contents of fuels, requires continuous monitoring of fuel consumption and ratio of water to fuel injected into the turbine (if NO_x emission are controlled using water injection), monitoring of sulfur and nitrogen contents in the fuel, and reporting requirements. Emissions of NO_x and SO_2 may not exceed 176 and 150 parts per million on a volume and dry basis ("ppmvd") corrected to 15 % oxygen ("O_2") at ISO standard conditions, respectively. The maximum sulfur content in fuel cannot exceed 0.8% by weight.

OMYA, Inc. has stated that it complies with these requirements.

The Agency will incorporate the applicable requirements of 40 *CFR* Part 60 Subpart GG which have not been superceded by more stringent state requirements or which have not already been completed (i.e., initial performance testing). See item 6.2 for more information.

40 *CFR* Part 60 Subpart OOO - On August 1, 1985, a federal new source performance standard was promulgated which applied to non-metallic mineral processing operations such as those operated by OMYA, Inc. at its Verpol and East Plants. This federal standard is contained in 40 CFR Part 60 Subpart OOO and is entitled Standards of Performance for Non-metallic Mineral Processing Plants. This new source performance standard applies to new or modified affected facilities commencing construction or modification after August 31, 1983. The federal standard sets limits on emissions of PM and visible air contaminants from non-metallic processing plants and requires compliance testing. Affected equipment at the OMYA facilities include the following:

East Plant: Product Bin C, Product Bin D, and
Bin C & D Receiver;

Verpol Plant: Surface Treater B, with product conveying;
Deagglomerator C, with product conveying;
Finished Product Silos 9 through 16; and
Deagglomerator mills associated with Flash Dryers #1, 2, and #3.

Additionally, the following new equipment at the Verpol Plant will be subject to the requirements in 40 *CFR* Part 60 Subpart OOO:

New finished product silos;
Bulk Bagger Silos; and
Rotopackers.

OMYA, Inc. has stated that it complies with these requirements for its affected equipment.

The Agency will incorporate the applicable requirements of 40 *CFR* Part 60 Subpart OOO which have not been superceded by a more stringent state requirements or which have not already been completed (i.e., initial performance testing). See item 6.2 for more information.

Section 112 of the Clean Air Act - National Emission Standards for Hazardous Air Pollutants (NESHAPs)

No promulgated NESHAPs in 40 *CFR* Part 61 currently are applicable to the Facility.

There are currently no promulgated NESHAPs in 40 *CFR* Part 63 that apply to the Facility. The NESHAPs in 40 *CFR* Part 63 identify the "maximum achievable control technology" ("MACT") standards for major sources of hazardous air pollutants ("HAPs"). Although there is currently no MACT standard that applies to OMYA, Inc., the U.S. EPA has identified the following source categories at the Facility as potentially regulated by MACT standard to be promulgated on or before November 15, 2000:

- Industrial Boilers,
- Institutional/Commercial Boilers,
- Process Heaters,
- Stationary Internal Combustion Engines, and
- Stationary Turbines.

Although the above source categories exist at the Facility, it is not anticipated that the MACT standards will apply to OMYA, Inc. due to the fact that total emissions of HAPs have been estimated to be less than 1 tpy from the Facility (including operational restrictions). See item 7.3 for more information.

40 *CFR* Part 64 - Compliance Assurance Monitoring. Pursuant to requirements concerning enhanced monitoring and compliance certification under the *Clean Air Act* ("*CAA*"), EPA promulgated new regulations and revised regulations on October 22, 1997. These new requirements implemented compliance assurance monitoring ("CAM") for major stationary sources of air pollution that are required to obtain operating permits under Title V of the *CAA*. Subject to certain exemptions, the new regulations require owners or operators of such sources to conduct monitoring that satisfies particular criteria established in the rule to provide a reasonable assurance of compliance with applicable requirements under the *CAA*. Monitoring is proposed focus on emissions units that rely on pollution control device equipment to achieve compliance with applicable standards. The regulations also provide procedures for coordinating these new requirements with the operating permits program regulations.

As a result of comments received during the rule making process and the lengthy delay in the adoption of the CAM rule, U.S. EPA provided an extended implementation schedule for this rule. Facilities which had submitted a complete operating permit application prior to April 20, 1998, were not required to address CAM as part of their initial operating permit application unless they proposed to make significant changes to the facility subsequent to this date. OMYA, Inc. was previously not required to address CAM because it had submitted an administratively complete operating permit application prior to April 20, 1998. However, with the proposal of further modifications to the facility and the reopening of the operating permit, OMYA, Inc. must address the applicability of these requirements for the pollutant-specific emissions units affected by the permit reopening.

§64.2 in 40 *CFR* Part 64 specifies that each pollutant specific emission unit at a facility the meets a three-part test is subject to the requirements for CAM. An emission unit must:

(A) be subject to an emission limitation or standard,
(B) use a control device to achieve compliance, and
(C) have **pre-control** emissions that exceed or are equivalent to the major source threshold in 40 *CFR* Part 70 (i.e., 10 tpy individual HAP, 25 tpy total HAPs, 50 tpy VOCs, or 100 tpy for any other air contaminant).

Note that the term "control device" means equipment, other than inherent process equipment, that is used to destroy or remove air pollutant(s) prior to discharge to the

atmosphere. The term "control device" does not include passive methods such as lids or seals or inherent process equipment provided for safety or material recovery. Additionally, the CAM rule provides some exemptions, such as an exemption for any affected facility subject to an NSPS or NESHAP promulgated after November 15, 1990.

Equipment affected by the proposed project and possibly subject to CAM now rather than at renewal of the operating permit include: Spray Dryer #2, bulk bagging stations/silos, rotopackers, new product conveying system, new finished product silos, and the new vacuum cleaning system. Spray Dryer #2 is equipped with multiple cyclones in series with an ESP, while the remaining equipment is serviced by fabric filter collectors. The cyclones and ESP serving Spray Dryer #2 are generally considered control devices, but due to the design of the process, the noted devices are primarily designed for dry product recovery, and therefore do not meet the definition of "control device" as stated in the CAM regulations. The remaining process equipment each have pre-control potential emissions less than 100 tpy. Therefore, OMYA, Inc. has been determined to not be subject to CAM for the affected equipment noted above at this time.

***Clean Air Act*, Title VI - Stratospheric Ozone Protection.** The requirements of Title VI of the Clean Air Act are implemented through regulations and standards within 40 *CFR* Part 82 Subparts A through F. Of these regulations, OMYA, Inc. is subject to Subpart F - Recycling and Emissions Reduction. This requirement is applicable to any facility that owns, services, maintains, repairs, and disposes of appliances containing ozone depleting substances. OMYA, Inc. utilizes a refrigeration unit which employs R-22 (an HCFC) and regulated ozone depleting chemical. The Agency will incorporate the applicable requirements of 40 *CFR* Part 82 Subpart F into any permit issued to OMYA.

6.2 Equivalency and Streamlining

Particulate Matter Emission Standards

The federal standard for non-metallic mineral processing plants specifies a limit of 0.05 grams per dry standard cubic meter [equivalent to 0.022 grains per dry standard cubic foot ("gr/dscf")] for affected facilities equipped with fabric filter collectors. Due to major modification applicability in 1990, as well as for the proposed modifications, the Agency has specified an emission limit of 0.01 gr/dscf for the affected facilities noted previously (See item 6.1 above) as part of achieving the Most Stringent Emission Rate ("MSER"). The emission concentrations specified by MSER are more stringent and therefore overrule the federal emission standards in 40 *CFR* Part 60 Subpart OOO for the affected facilities noted in item 6.1 above. Additionally, the same equipment is subject to a PM/PM_{10} emission limit in §5-231(1)(a) and Table 1 of the *Regulations*. The requirements of §5-231(1)(a) and Table 1 of the *Regulations* are also less stringent than MSER and are also overruled by the MSER concentration of 0.01 gr/dscf.

Sulfur Dioxide Emission Standards

The federal standard for SO_2 specified in 40 *CFR* Part 60 Subpart GG is overruled by the sulfur in fuel restrictions specified for the Cogeneration Plant as part of achieving MSER. The combustion turbines may not burn distillate oil with a sulfur content greater than 0.3 % by weight (corresponds to an emission concentration of 58 ppm), which is more stringent than the federal limit of 0.8 % by wt. and 150 ppmvd corrected to 15% O_2

at ISO conditions. Additionally, the MSER sulfur in fuel restriction is also more stringent and therefore overrules the sulfur in fuel restriction in §5-221(1)(a) of the *Regulations* (2.0% by wt. or less).

Nitrogen Oxides Emission Standards
The federal standard for NO_x specified in 40 *CFR* Part 60 Subpart GG is overruled by the NO_x limit specified for the Cogeneration Plant as part of achieving MSER. The combustion turbines may not emit NO_x in excess of 60 ppmvd corrected to 15% O_2 and ISO conditions, which is more stringent than the federal limit of 176 ppmvd corrected to 15% O_2 and ISO conditions.

6.3 Citation and Identification of Requirements For Which a Permit Shield Provision Has Been Requested

Pursuant to §5-1015(a)(11) of the *Regulations*, OMYA, Inc. has requested to be shielded from several potentially applicable requirements. The Agency's determinations are based upon the information submitted by the Owner/Operator in its application. The resulting permit shield shall be binding only with respect to activities disclosed in the Owner/Operator's application.
OMYA, Inc. has requested a permit shield from the requirements of 40 *CFR* Part 60 Subpart OOO [Standards of Performance for Non-metallic Mineral Processing Plants] for various pieces of process equipment installed prior to August 31, 1983 (except where noted), and located at the East and Verpol Plants, including:

East Plant
(1) 40 Mesh Silo,
(2) Raymond Mill w/ product conveying,
(3) Flash Dryer #1 w/ product conveying,
(4) Flash Dryer #1 recycle collector,
(5) Flash Dryer #2 w/ product conveying,
(6) Product Silos 1-4,
(7) Product Bins A and B,
(8) Manual and Automatic Packaging,

Verpol Plant
(1) Spray Dryer #1,
(2) Spray Dryer #2 (constructed in 1990/91, but not an "affected facility" per U.S. EPA definition),
(3) Surface Treaters A and C (formerly Deagglomerators A and B) with product conveying,
(4) Finished Product Silos 1 through 8, and
(5) Bulk truck/railcar loadout.

OMYA, Inc. has also requested a permit shield for the Cogeneration Plant from the regulations promulgated under Title IV of the *1990 Clean Air Act Amendments* pertaining to acid rain. The U.S. EPA identified the Cogeneration Plant as a potential source to be regulated by the requirements of Title IV. However, based upon information supplied by the Vermont Marble Power Division of OMYA, Inc., the U.S. EPA sent a letter (Letter from Brian J. McLean, Director, Acid Rain Division, U.S. EPA to William Gleason of

Vermont Marble Power Division of OMYA, Inc. dated September 18, 1996) to OMYA, Inc. notifying them that the requirements of Title IV do not apply to the Cogeneration Plant. However, pursuant to §5-1015(a)(11)(vii) of the Regulations, the Agency may not grant a permit shield from the requirements of Title IV of the *CAA*.

The Agency will grant a permit shield from 40 *CFR* Part 60 Subpart OOO for above noted equipment.

6.4 Description of Alternative Operating Scenarios and Related Applicable Requirements Not Previously Identified

OMYA, Inc. has not identified any alternative operating scenarios within its application.

7.0 HAZARDOUS AIR CONTAMINANTS

§5-261 of the *Regulations* addresses the release of hazardous air contaminants ("HACs") into the ambient air. Unless exempted from §5-261, the owner/operator of a source must quantify its emissions of HACs regulated by this rule. Any source whose emission rate of a HAC exceeds its respective Action Level ("AL") is subject to the rule for that HAC, and the owner/operator must then demonstrate that the emissions of the HAC are minimized to the greatest extent practicable and achieve the Hazardous Most Stringent Emission Rate ("HMSER"). An air quality impact evaluation may be required to further assess the ambient impacts that may be attributable to the source. The evaluation of the air quality impacts is performed using the Hazardous Ambient Air Standards ("HAAS") or Stationary Source Hazardous Air Impact Standard ("SSHAIS") contained in the *Regulations*.

7.1 Applicability of §5-261

Pursuant to §5-261(1)(b) of the *Regulations*, all fuel burning equipment burning virgin fossil fuel is exempted from review pursuant to this section. However, OMYA, Inc. was required to assess it compliance with §5-261 for its non-metallic mineral processing operations. Based upon information supplied in the application, OMYA, Inc. has determined that its emissions of crystalline silica exceed the AL of 0.010 pounds per eight hours ("lbs/8-hrs"). Laboratory analysis performed by OMYA, Inc. has indicated the silica content of its products is typically 0.16%. Assuming the silica content of its PM emissions are the same percentage as the product reporting to the air pollution control equipment, OMYA, Inc. has estimated its actual emissions of crystalline silica are 0.07 lbs/8-hrs. Consequently, it was determined that OMYA, Inc. is subject to §5-261 of the *Regulations* for emissions of crystalline silica.

7.2 Hazardous Most Stringent Emission Rate

OMYA, Inc. has proposed that HMSER for crystalline silica is the use Electrostatic Precipitators on the spray dryers and fabric filter control on the remaining non-metallic mineral processing equipment. The Agency concurs with OMYA's determination of HMSER for crystalline silica. No further review of emissions of crystalline silica will be required by the Agency.

7.3 Federal Hazardous Air Pollutants

Although not subject to §5-261 of the *Regulations*, the federal EPA has listed fossil fuel burning equipment as a potentially regulated source category for emissions of hazardous air pollutants ("HAPs") listed in Section 112(b) of the federal *Clean Air Act*. Non-metallic mineral processing plants have not been identified as a source category that will be regulated by the U.S. EPA for emissions of HAPs.

A major HAP source is defined pursuant to the federal thresholds of 10 tpy (individual HAP) and 25 tpy (total HAPs). Major sources of HAPs are regulated within 40 *CFR* Parts 61 and 63. Although, OMYA, Inc. has the potential to emit some of the HAPs listed in Section 112(b) from its fuel burning equipment, estimates of the HAP emissions assuming the proposed fuel limits result in less than 1 tpy of total HAP emissions (See emission factors published by U.S. EPA in AP-42 Section 1.3), and therefore, OMYA, Inc. is not classified as a major source of HAPs.

8.0 REASONABLY AVAILABLE CONTROL TECHNOLOGY

At this time, the Agency has not established a Reasonably Available Control Technology ("RACT") requirement applicable to this Facility. Therefore, the source is currently in compliance with this requirement. The Agency will notify OMYA, Inc. if any applicable RACT requirement applies to this Facility in the future. If such RACT should apply to the source in the future, the Agency will ensure that OMYA, Inc. complies with such requirement at that time.

9.0 COMPLIANCE PLAN

9.1 Description of the Compliance Status for Each Applicable Requirement

See Part 6.1 above.

9.2 Compliance Schedule For Each Applicable Requirement for Which the Source is Not in Compliance

Not applicable to the East, Verpol and Cogeneration Plants.

10.0 AMBIENT AIR QUALITY IMPACT EVALUATION (Criteria Pollutants)

For modifications, §5-502(4)(a) of the *Regulations* and Agency procedures require an evaluation of impacts on air quality for each air contaminant that is predicted to increase by 10 tpy or greater (exception: no evaluation required for VOCs). An air quality impact evaluation is performed to demonstrate whether or not a proposed project will cause or contribute to violations of the ambient air quality standards ("AAQS") and/or significantly deteriorate existing air quality. In 1990, as part of its application for Cogeneration Plant, OMYA, Inc. demonstrated compliance with the AAQS and PSD increments. Comparison of the proposed future allowable emissions and the allowable emissions modeled in 1990 indicate emissions of PM_{10} and NO_x (as nitrogen dioxide) are proposed to increase by greater than 10 tpy. Consequently, OMYA, Inc. was required to perform an air quality impact evaluation for these two air contaminants.

Air quality impact evaluations rely on the use of mathematical dispersion models to simulate the operation of the source and assess the affects of meteorology, distance, topography, and time on pollutant dispersion. Output generated by the models is used to determine resultant air quality pollutant concentrations in the vicinity of the source. Important factors influencing pollutant concentrations include: source operation, meteorological conditions, distance to point of impact (commonly referred to as "receptors"), and nearby terrain and buildings.

10.1 General Information

The basic component of an air quality impact evaluation is the dispersion model. Acceptable dispersion models for use in regulatory application are identified by the U.S. EPA in *Guideline on Air Quality Models* found in Appendix W to 40 *CFR* Part 51. The dispersion model simulates the operation of the emission source(s) and takes into account the affects of meteorology, distance, nearby buildings and terrain, and time on pollutant dispersion. Results of the dispersion modeling estimate the source impact as ambient concentrations at given locations and periods of time in the vicinity of the source. The estimated impacts are combined with existing pollutant concentrations and/or concentrations produced by other nearby sources to determine the potential air quality impact once a project is built. Of particular importance to the air quality impact evaluation is the dispersion model selected and the assumptions utilized to simulate the operation of the source and meteorology.

Dispersion models vary in complexity and required input. Typically, applicants will make their first attempt to document compliance with air quality standards by using the most simple techniques, referred to as screening models. These models require a minimum of data input and provide the applicant will a conservative assessment of their potential impact. Conservative default meteorological conditions are used as input in the screening models in order to ensure a worst case analysis. Screening models are often used to define the impact area of a source. The impact area is used to select other nearby sources of the same pollutants that should be implicitly included in the air quality analysis. If an applicant cannot rely on a screening analysis to demonstrate compliance with air quality standards, then they may progress to a more refined dispersion model. Refined dispersion models require a greater level of data input and usually present a more realistic assessment of potential impacts.

10.2 Data Inputs

Attached Figure 1 in Appendix B depicts the geographical area in the vicinity of the Verpol Plant. Figure 2 depicts the location of OMYA's emission points and the building layouts of the East Plant, Verpol Plant, and Cogeneration Plant. Appendix F of the application includes several tables which summarize the various dispersion model inputs for each emission point at the Facility.

As part of its evaluation, OMYA, Inc. was required to determined the "good engineering practice" ("GEP") stack height for each emission point. The GEP analysis relied on plant

layout and elevation drawings to establish GEP for each emission point. Where a stack height is less than GEP, OMYA was required to consider the influence of any nearby buildings or terrain on pollutant dispersion. Summarized in Table F-1 and F-2 of the application are the results of the stack height analysis.

Meteorological data input into the refined dispersion model was obtained from the National Weather Service. Surface data was taken for Burlington, VT, while upper air data was for Albany, NY. The meteorological data covered the period 1987 to 1991.

10.3 Site Description and Receptor Locations

The East Plant, Verpol Plant, and Cogeneration Plant are located on one contiguous parcel of property in the town of Pittsford, Vermont. The Facility is located approximately 65 kilometers ("km") north of the Lye Brook Wilderness Area, 9.4 km southwest of Mount Nickwaket (the nearest designated Vermont sensitive area) and 170 km southwest of the Great Gulf and Dry River Wilderness areas.

Terrain located to West and Southwest is predominately above stack top. The closest complex terrain is approximately 1200 feet in the southwest direction from the Verpol Plant (series low rolling hills). Terrain to the East gradually drops below the Facility elevation for approximately 2 kilometers (just before the village of Pittsford). From thereon the terrain rises significantly above stack top. Terrain to the North mainly consists of rolling hills with some points being consider complex terrain. The nearest location above stack top in the northern direction is approximately 1.5 kilometers from the Verpol Plant. As was stated previously, Figure 1 in Appendix B depicts the geographical terrain in the vicinity of the Facility, including terrain elevations.

For its screening analysis, OMYA, Inc. utilized a Cartesian grid system based upon the Universal Transverse Mercator ("UTM") coordinate system. Receptors were placed at ground level at a 50 meter spacing between receptors up to a distance of 1,000 meters from the Facility property boundary. Spacing between receptors was increased to 100 meters to a distance of 2,000 meters from the property boundary, and 250 meters between receptors to a distance of 5 kilometers from the property boundary. Receptors were placed 50 meters apart along the property boundary. No receptors were modeled inside the property boundary, since the area is not generally accessible by the public.

For its refined analysis, OMYA, Inc. modified the grid system to increase the number of receptors in the immediate area of anticipated highest concentrations (southeast of the property boundary). Additionally, receptor spacing in other directions was set at 100 meters between receptors to a distance of 2 kilometers from the property boundary, and 500 meters to a distance of 8 kilometers from the property boundary. A discrete receptor was also placed at the closest point in the Lye Brook Wilderness Area (closest Class I area to the Facility).

Elevations for the receptors were imported from the United States Geological Survey's Digitized Elevation Model ("DEM")

10.4 Ambient Background Concentrations

The town of Pittsford and surrounding areas are considered attainment for the air

contaminants, PM_{10} and nitrogen dioxide ("NO_2"). Consequently, OMYA, Inc. must demonstrate the proposed modification will not cause a violation of the AAQS for these contaminants. Compliance with the AAQS is based upon a comparison of the total estimated concentration to the AAQS for a particular pollutant and averaging period. The AAQS are contained in Subchapter III of the *Regulations*, and the PM_{10} and NO_2 AAQS are summarized in Table 10-1 below. The total estimated concentration is the sum of existing air quality concentrations and the estimated impact created by the Facility. Existing air quality concentrations consist of representative monitored concentrations (commonly referred to as "background") and the predicted impact concentrations from nearby sources. Impact concentrations from nearby sources are obtained through dispersion modeling of their emissions.

Table 10-1: AAQS for PM_{10} and NO_2

Pollutant	Averaging Period	Primary Standard	Secondary Standard
PM_{10}	Annual[a]	50 ug/m^3	50 ug/m^3
	24-hour[b]	150 ug/m^3	150 ug/m^3
NO_2	Annual[c]	100 ug/m^3	100 ug/m^3

Notes:
a - Standard is attained when the expected annual arithmetic mean is less than or equal to 50 ug/m^3.
b - Standard is attained when the expected number of exceedance is less than or equal to 1.
c - Never to be exceeded.

Representative monitored data is defined as the typical concentration expected at the point of predicted maximum impact from the source. Possible origins of monitoring data are the Agency's air monitoring network, the network of another agency or private concern, or a source specific network. In circumstances where non-source specific monitoring data will be used to determine existing concentrations, the latest three (3) years of data must be employed for determining the highest annual ambient concentrations for PM_{10} and NO_2, and the highest four highest 24-hour ambient concentrations.

The Agency currently operates and maintains an ambient monitoring site in downtown Rutland, Vermont. This site is approximately 15 kilometers from the Facility. The Agency has allowed the use of this monitoring data in establishing background concentrations for OMYA's application. Given the area in the vicinity of the Facility is rural, and the degree of human activity near the monitoring site, its proximity to the Facility, the Agency believes the use of this monitoring site data conservatively satisfies the criteria noted in the preceding paragraph. Summarized in Table 10-2 are the ambient concentrations of PM_{10} and NO_2 which are considered background for the AAQS evaluation.

Table 10-2: Representative Ambient Monitored Concentrations

Pollutant	Averaging Period	Background Values
PM_{10}	Annual	24 ug/m^3

	24-hour	55 ug/m^3
NO_2	Annual	24 ug/m^3

As was stated previously, existing concentrations must include the impact of nearby source(s), and thus may necessitate the evaluation of other sources using dispersion modeling. A nearby source must be included in the air quality impact evaluation if it produces a significant concentration gradient in the Facility's significant impact area. Due to the number of emission points present at the source, OMYA, Inc. utilized the U.S. EPA dispersion model, ISCST3, to assess its significant impact area. Based upon this dispersion model, OMYA, Inc. predicted a significant impact area ("SIA") out to 3 kilometers from the Facility. A review of the Agency's database indicates no facilities located within 3 kilometers of the Facility with the potential to generate a significant concentration gradient. Therefore, no additional nearby stationary sources were directly included in the impact evaluation.

10.5 Modeling Approach

OMYA, Inc. performed its air quality impact evaluation in two steps: first, a screening level analysis; and second, a refined analysis to complete the compliance demonstration. The screening analysis utilized the U.S. EPA model, ISCST3, with a standard set of meteorological conditions. The resultant concentrations were then adjusted to various averaging periods using adjustment factors. Based upon this technique, OMYA, Inc. was unable to document compliance with the AAQS and PSD increments. Consequently, OMYA, Inc. conducted a refined impact evaluation.

The refined impact analysis also relied on the use of the U.S. EPA model, ISCST3, but included the input of five (5) years of meteorological data for Burlington, Vermont and Albany, NY.

10.6 Results of Air Quality Impact Evaluation

10.6.1 Ambient Air Quality Standards

The AAQS are summarized in Table 10-1 above. The results of refined air quality impact evaluation demonstrating compliance with the AAQS are summarized in Table 10-3 below.

Table 10-3: Results of the AAQS Demonstration

Pollutant	Averaging Period	Total Estimated Air Quality Concentration	AAQS
PM_{10}	Annual	31 ug/m^3	50 ug/m^3
	24-hour	104 ug/m^3	150 ug/m^3
NO_2	Annual	31 ug/m^3	100 ug/m^3

10.6.2 Prevention of Significant Deterioration Increments

The prevention of significant deterioration ("PSD") increments are contained in Table 2 of the *Regulations*. Additionally, §5-502(5) of the *Regulations* specifies an increment allocation system for major sources and major modifications. New major sources and major modifications may not consume more than 25% of the annual and 75% of the short-term PSD increment values. The results of refined air quality impact evaluation demonstrating compliance with the PSD increments are summarized in Table 10-4 below.

Table 10-4: Results of the PSD Demonstration

Pollutant	Averaging Period	Max. Increment Consumption Per Table 2	Remaining Increment	Remaining Available PSD Increment (1)	Increment Consumption
Class I Area					
PM_{10}	Annual	4 ug/m^3	4 ug/m^3	1.0 ug/m^3	<0.1 ug/m^3
	24-hour	8 ug/m^3	8 ug/m^3	6.0 ug/m^3	<0.1 ug/m^3
NO_2	Annual	2.5 ug/m^3	2.5 ug/m^3	2.5 ug/m^3	<0.1 ug/m^3
Class II Areas					
PM_{10}	Annual	17 ug/m^3	13.6 ug/m^3	3.4 ug/m^3	2.7 ug/m^3
	24-hour (worst case)	30 ug/m^3	20 - 24.9 ug/m^3 (21 ug/m^3)	15.0 - 18.7 ug/m^3 (15.8 ug/m^3)	11.5 - 15.7 ug/m^3 (15.5 ug/m^3)
NO_2	Annual	25 ug/m^3	25 ug/m^3	25 ug/m^3	7 ug/m^3

Notes: (1) Total PSD increment values are stated in Table 2 of the *Regulations*. Pursuant to §5-502(5) of the Regulations, a new major source or major modification may not consume more than 25% and 75% of the remaining annual and 24-hour PSD increment values, respectively, for each significantly increasing air contaminant.

10.7 Special Modeling Considerations

§5-502(4)(d) of the *Regulations* specifies that the increase in allowable emissions caused by a new major source or major modification may not cause an adverse impact on visibility in any sensitive area or in any Class I Federal area and will not interfere with reasonably progress toward remedying of existing man-made visibility impairment in a sensitive area. OMYA presented in its application an analysis following the procedures in the U.S. EPA's "Workbook for Plume Visual Impact Screening and Analysis," that no such adverse impact would occur as a consequence of their proposed modifications.

11.0 PUBLIC PARTICIPATION

The proposed project is classified as a major modification with emissions increase of all air contaminants in excess of ten (10) tpy, and consequently, the application is subject to the public participation requirements of 10 *V.S.A.* §556. Additionally, based upon its allowable emissions, any operating permit for this Facility is subject to the public participation requirements of §5-1007 of the *Regulations*. Therefore, the Agency

published noticed on July 29, 1999 in the *Rutland Herald* that it had received an administratively complete application from OMYA, Inc. for the proposed projects and operating permit modification. Additionally, the affected states were also notified of the receipt of the administratively complete operating permit application on August 25, 1999. On August 25, 1999, the Agency determined the application satisfied the requirements for technical completeness.

Public notice was published in the *Rutland Herald* on September 11, 1999, of the Agency's plans to issue a draft decision approving the issuance of an amended Air Pollution Control Permit. This notification solicited comments on the application, the Agency's review, and draft decision for a minimum of thirty (30) days. The notice also notified the public of an informational meeting scheduled on Thursday, October 7, 1999. The affected states of New York, Massachusetts, and New Hampshire, the Federal Land Manager, and U.S. EPA were notified of the Agency's draft decision on September 9, 1999. The comment period closed on October 20, 1999, with the Agency receiving comments from OMYA, Inc. and the U.S. EPA.

12.0 CONCLUSIONS

Based on the foregoing technical analysis of the proposed modification, the following conclusions are made:

A. The proposed modification, subject to the recommended permit conditions, will meet the applicable emission standards contained in state and federal regulations. Furthermore, it is expected that emissions from the proposed modification will not significantly deteriorate air quality, nor will they cause or contribute to a violation of an ambient air quality standard.

B. Pursuant to regulatory definition, the proposed project is designated as a major modification to an existing major stationary source.

C. Recommended Permit Conditions - See draft permit.

Consistent with 10 V.S.A. §556(e) and for the purposes of reducing the administrative burden of enforcing two separate permits, the Agency proposes to issue the Air Pollution Control Permit to Construct (approving the proposed projects) in conjunction with the Air Pollution Control Permit to Operate (OMYA's facilities). The result will be a combined Air Pollution Control Permit to Construct and Operate ("Combined Permit").

APPENDIX A

Table 1 - Existing Allowable Emission Estimates

EAST PLANT - Process equipment controlled using fabric filters; Maximum PM concentration limited to 0.02 grains/dry standard cubic foot of undiluted exhaust ("gr/dscf"), unless otherwise noted; Unrestricted hours of operation; Only three of eight silos/bins discharge at any one time, since only three pneumatic conveying systems feeding the bins/silos (Use highest emission rates and air flow rates for three bins/silos to determine allowable emissions). Combustion emissions based on AP-42 emission factors for distillate oil firing: SO_2 - 142(S)lbs/1000 gals, S = % sulfur in fuel by wt., limited to 0.5% or less; NO_x - 20 lbs/1000 gals; CO - 5 lbs/1000 gals; NMHCs - 0.34 lbs/1000 gals. Combustion emissions from Raymond Mill, Flash Dryer #1, Flash Dryer #2, and Boiler based on existing permitted fuel consumption limit of 600,000 gpy, and following approximate breakdown of usage: Raymond Mill (1% of total limit); Flash Dryer #1 (47.5%); Flash Dryer #2 (47.5%); and Boiler (4%).

Equipment	Control Equipment	Max. Exhaust Flow Rate, dscfm	PM lbs/hr	PM tpy	SO_2 tpy	NO_x tpy	CO tpy	NMHCs tpy	Pb tpy	HAPs tpy
Raymond Mill	FF	2000	0.34	1.50	0.21	0.06	0.02	<0.01	<0.01	<0.01
Flash Dryer #11	FF	7530	1.29	5.65	10.12	2.85	0.71	0.05	<0.01	0.01
Flash Dryer #1 (Recycle)	FF	1560	0.27	1.17						
Flash Dryer #2 (w/ HE)	FF	8310	1.42	6.24	10.12	2.85	0.71	0.05	<0.01	0.01
Silo #1	FF	1700	0.29	1.28						
Silo #2	FF	1700	0.29	1.28						
Silo #3	FF	1700	0.29	1.28						
Silo #4	FF	1700	---	---						
Bin A	FF	1700	---	---						
Bin B	FF	1700	---	---						
Bin C	FF (0.01 gr/dscf)	1700	---	---						
Bin D	FF (0.01 gr/dscf)	1700	---	---						
Bin C & D Receiver	FF (0.01 gr/dscf)	800	0.07	0.30						
Man. Packaging Dust Relief	FF	1400	0.24	1.05						
Auto. Packaging Dust Relief	FF	2700	0.46	2.03						
40 Mesh Unloading	FF	900	0.15	0.68						
Boiler #1(10.5 MMBTU/hr)	Uncontrolled		0.15	0.02	0.85	0.24	0.06	<0.01	<0.01	<0.01
		TOTAL EAST		22.47	21.30	6.00	1.50	0.10	<0.01	0.02

VERPOL PLANT - Process equipment controlled using fabric filters, unless otherwise noted; Maximum PM concentration limited to 0.01 gr/dscf, unless otherwise noted; Unrestricted hours of operation; Combustion emissions based on AP-42 emission factors for distillate oil firing: SO_2 - 142(S)lbs/1000 gals, S = % sulfur in fuel by wt., limited to 0.3% or less; NO_x - 20 lbs/1000 gals; CO - 5 lbs/1000 gals; NMHCs - 0.34 lbs/1000 gals. Spray Dryer #1 limited to 0.07 lbs/short ton of total solids entering the spray dryer on an hourly basis and Spray Dryer #2 limited to 0.060 lbs/short ton. SO_2 emissions from flash dryer systems assume 80% reduction in SO_2 emissions due to calcium carbonate powder. Spray dryer combustion emissions assume the use of exhaust heat from the turbines and limited supplemental firing in the spray dryers to 62 gph or less each. Combustion emissions from the boilers is based upon fuel consumption limit of 680,000 gpy and the burning of this fuel within the largest boiler.

Equipment	Control Equipment	Max. Exhaust Flow Rate, dscfm	PM/PM_{10} lbs/hr		PM/PM_{10} tpy	SO_2 tpy	NO_x tpy	CO tpy	NMHCs tpy	Pb tpy	HAPs tpy
Flash Dryer #3	FF	10,000	0.86/0.77		3.8/3.4	2.98	7.0	1.75	0.12	<0.01	0.02
FD#3 Prod. Conveying	FF	2,700	0.23/0.21		1.0/0.91						
Flash Dryer #1	FF	10,000	0.86/0.77		3.8/3.4	2.98	7.0	1.75	0.12	<0.01	0.02
Flash Dryer #2	FF	10,000	0.86/0.77		3.8/3.4	2.98	7.0	1.75	0.12	<0.01	0.02
FD#1 & FD#2	FF	2,700	0.23	1.0							
Product Conveying	FF	2,700	0.23	1.0							
Raw Product Silos (2)	FF	1200 per silo	0.10		0.90						
Deagglomerator A Feed Silo	FF	1200	0.10		0.45						
Deagglomerator B Feed Silo	FF	1200	0.10		0.45						
Deagglomerator A	FF	16,700	1.43		6.27						
Deagglomerator B	FF	16,600	1.42		6.23						
Deagglomerator C	FF	16,200	1.39		6.08						
Prod. Conveying	FF	1200	0.10	0.45							
Prod. Conveying	FF	1200	0.10	0.45							
Prod. Conveying	FF	1200	0.10	0.45							
Surface Treater B	FF	24,400	2.09		9.16						
Finished Product Conveying	FF	2650	0.23		0.99						
Bulk Bagging Station	FF	3300	0.28		1.24						
Spray Dryer #1	ESP		1.70		7.45	2.31	5.43	1.36	0.09	<0.01	0.01
Spray Dryer #2	cyclone/ESP		1.32		5.78	2.31	5.43	1.36	0.09	<0.01	0.01
Boiler #2 (24 MMBTU/hr)	Uncontrolled		0.34		0.68	14.48	6.8	1.70	0.12	<0.01	0.02
Boiler #1(19.7 MMBTU/hr)	Uncontrolled		0.28		0	0	0	0	0	0	0
		TOTAL VERPOL		61.34/60.12		28.06	38.66	9.67	0.66	<0.01	0.10

COGENERATION PLANT - Emissions based on continuous operation at maximum capacity and emission data provided by the equipment manufacturer. NO_x from turbines controlled using water injection; diesel engines uncontrolled. Diesel-fired equipment hours of operation limited to 100 hours per year or less each and sulfur in fuel limit of 0.3% by weight.

Equipment		PM/PM_{10} tpy	SO_2 tpy	NO_x tpy	CO tpy	NMHC tpy	Pb tpy	HAPs tpy
Turbine #1		13.1	71.4	51.7	46.0	5.7	<0.01	<0.01
Turbine #2		13.1	71.4	51.7	46.0	5.7	<0.01	<0.01
Diesel Engine #1 (136 BHP)		0.01	0.02	0.18	0.07	0.01	<0.01	<0.01
Diesel Engine #2 (136 BHP)		0.01	0.02	0.18	0.07	0.01	<0.01	<0.01
Diesel-Fired Emergency Generator Set (145 BHP)	0.01	0.02	0.22	0.42	0.01	<0.01	<0.01	
	TOTAL COGENERATION PLANT	26.3	142.8	104.0	92.5	11.4	<0.01	<0.01
	TOTAL FOR SOURCE	110.1/108.9	192.2	148.6	103.7	12.8	<0.01	0.1

Table 2 - New Allowable Emissions/Aggregated Emissions Increase

NEW ALLOWABLE EMISSIONS

Allowable Emissions Assumptions:

- Bulk bagger stations/silos, new product transfer conveyor, house vacuum system, and rotopackers each limited to PM/PM_{10} emission concentration of 0.010 gr/dscf of undiluted exhaust, respectively. Emissions calculated based on emission concentration and maximum rated exhaust air flow rate for fabric filter serving each process.
- Increase in emissions from Spray Dryer #2 associated with production increase, except PM/PM_{10}, based upon AP-42 emission factors for distillate oil-fired boiler. SO_2 emission rate also assumes 80% reduction from uncontrolled emission rate due to inherent scrubbing of SO_2 which occurs within the spray dryer by the calcium carbonate powder. PM/PM_{10} emissions based upon limit of 0.07 lbs/short ton of product introduced into the dryer and increase in production rate. Increase in production is the difference between current actual emissions (CY '98) and future potential emissions assuming no heat is being supplied by the cogeneration plant and 90% availability of the spray dryer.

SPRAY DRYER #2								Total	Indiv.
		PM/PM_{10}	**SO_2**	**NO_x**	**CO**	**NMHCs**	**Pb**	**HAPs**	**HAPs**
Emission Limit:		0.07	142(S)=142(0.3)=42.6	20	5	0.34			
Emission Limit Units:		lbs/short ton	lbs/1000 gals.						
Factor assuming 80% control efficiency: 8.5 lbs/1000 gals.									
INCREASE IN EMISSIONS FROM SPRAY DRYER #2									
Emission Rate	(lbs/hr):	0.99	0.91	2.14	0.54	0.04	<0.01	0.01	<0.01
	(tpy):	5.4	6.08	14.28	3.57	0.24	<0.01	0.04	0.02
BULK BAGGING STATION/SILOS									
Emission Rate	(lbs/hr):	0.96 (total)							
	(tpy):	4.2 (total)							
NEW PRODUCT CONVEYING SYSTEM									
Emission Rate	(lbs/hr):	0.23							
	(tpy):	1.0							
HOUSE VACUUM SYSTEM									
Emission Rate	(lbs/hr):	0.21							
	(tpy):	0.9							
ROTOPACKERS									
Emission Rate	(lbs/hr):	3.65 (total)							
	(tpy):	16.0 (total)							
TOTAL									
Emission Rate	(lbs/hr):	6.04	0.91	2.14	0.54	0.04	<0.01	0.01	<0.01
	(tpy):	27.5	6.08	14.28	3.57	0.24	<0.01	0.04	<0.01

AGGREGATED EMISSIONS INCREASE: Since future allowable emissions of Pb & VOCs (including NMHCs from fuel burning) are less than significant levels not necessary to consider these emissions. Additionally, no significant level of HAPs, and therefore not relevant to aggregated emissions calculation process.

Step a) Calculate allowable emissions for new equipment

Air Contaminant Emissions, tpy			
PM/PM_{10}	SO_2	NO_x	CO
27.5	6.08	14.28	3.57

Step b) Calculate allowable emissions for all existing processes that are affected by the modification. - Included in Step a) for Spray Dryer #2.

Step c) Calculate actual emissions for existing equipment that are affected by the modification but which were installed prior to 7/1/79 or have been previously reviewed under § 5-502. - Included in Step a) for Spray Dryer #2.

Step d) Calculate allowable emissions from all other equipment at the site added since 7/1/79 which have not been reviewed under § 5-502.

Modifications prior to 1991 reviewed as major modification for PM/PM_{10}, SO_2, NO_x, and CO. Therefore, no longer necessary to consider minor modifications prior to 1991 for the previously identified air contaminants for major source applicability.

* In 1996 - Modifications to East Plant to increase the permitted fuel consumption limit from 445,000 gpy to 600,000 gpy. Calculations provided in Technical Analysis dated March 29, 1996, with one change (must consider 80% SO_2 removal due to inherent scrubbing of SO_2 in drying process by calcium carbonate) and summarized as follows:

	Air Contaminant Emissions, tpy			
Modification	PM/PM_{10}	SO_2	NO_x	CO
Increase in Fuel Consumption Limit	<0.1	1.1	1.6	0.4

(Continued)

* In 1996 - Addition of new flash dryer systems and associated product conveying equipment at Verpol Plant. The emission increase for this modification has been changed to reflect a reduction in the permitted fuel consumption limit for the Flash Dryers #1 and #2 from 1,880,000 gpy to 1,400,000 gpy as requested by OMYA, Inc. in 1997, and again proposed to be reduced from 2,100,000 to 1,900,000 gpy for all three dryers (Flash Dryer #1, Flash Dryer #2, and Flash Dryer #3 - 633,333 gpy each). Calculations as provided in Technical Analysis dated September 13, 1996, with two other changes [(1) assume 80% reduction in SO_2 emissions rather than original estimate of 50% based upon emission testing; (2) flash dryer and conveyor PM_{10} emissions based on % of product handled being < 10 um in size (FD#1 for Omyacarb 5 at 70% and FD#2 for Omyacarb 3 at 90%] and summarized as follows:

Modification	Air Contaminant Emissions, tpy PM/PM_{10}	SO_2	NO_x	CO
FD#1, FD#2, & prod. conveying	9.6	5.4	12.7	3.2

* Addition of replacement boiler at Verpol Plant approved in 1997. Emissions equivalent to the new allowable emissions identified in Technical Analysis dated December 2, 1997, minus actual emissions associated with operation of boilers which pre-exist 1991.

Modification	Air Contaminant Emissions, tpy PM/PM_{10}	SO_2	NO_x	CO
New 24 MMBTU/hr Boiler	0.5	9.5	4.4	1.1

* Increase in emissions associated with increasing the allowable PM/PM_{10} emission rate for Spray Dryer #1 at Verpol Plant from 1.32 lbs/hr to 1.7 lbs/hr in 1997.

Modification	Air Contaminant Emissions, tpy PM/PM_{10}	SO_2	NO_x	CO
Increase in PM/PM10 emission limit for Spray Dryer #1	1.7	—	—	—

* Addition of Flash Dryer #3 system and Flash Dryer #3 product conveying system in 1998. Emissions equivalent to the new allowable emissions identified in Technical Analysis revised November 6, 1998. The emission increase for this modification has been changed to reflect a reduction in the permitted fuel consumption limit for the Flash Dryer #3 from 700,000 gpy to 633,333 gpy as requested by OMYA, Inc. as part of this modification. Three flash dryers limited to 1,900,000 gpy (Flash Dryer #1, Flash Dryer #2, and Flash Dryer #3 - 633,333 gpy each).

Modification	Air Contaminant Emissions, tpy PM/PM_{10}	SO_2	NO_x	CO
Flash Dryer #3	3.8	2.7	6.3	1.6
Flash Dryer #3 Product Conveying System	1.0	—	—	—
Total for Modification	4.8	2.7	6.3	1.6
TOTAL PRIOR MINOR MODIFICATIONS:	16.6	18.7	25.0	6.3

Step e) Calculate size of modification - Step a) + Step b) - Step c) + Step d)

Aggregated PM/PM_{10} Emissions Increase, tpy = 27.5 tpy + 0 tpy - 0 tpy + 16.6 tpy = 44.1 tpy
Aggregated SO_2 Emissions Increase, tpy = 6.1 tpy + 0 tpy - 0 tpy + 18.7 tpy = 24.8 tpy
Aggregated NO_x Emissions Increase, tpy = 14.3 tpy + 0 tpy - 0 tpy + 25.0 tpy = 39.3 tpy
Aggregated CO Emissions Increase, tpy = 3.6 tpy + 0 tpy - 0 tpy + 6.3 tpy = 9.9 tpy

Table 3 - Future Allowable Emission Estimates

EAST PLANT - Process equipment controlled using fabric filters; Maximum PM concentration limited to 0.02 grains/dry standard cubic foot of undiluted exhaust ("gr/dscf"), unless otherwise noted; Unrestricted hours of operation; Only three of eight silos/bins discharge at any one time, since only three pneumatic conveying systems feeding the bins/silos (Use highest emission rates and air flow rates for three bins/silos to determine allowable emissions). Combustion emissions based on AP-42 emission factors for distillate oil firing: SO_2 - 142(S)lbs/1000 gals, S = % sulfur in fuel by wt., limited to 0.5% or less; NO_x - 20 lbs/1000 gals; CO - 5 lbs/1000 gals; NMHCs - 0.34 lbs/1000 gals. Combustion emissions from Raymond Mill, Flash Dryer #1, Flash Dryer #2, and Boiler based on existing permitted fuel consumption limit of 600,000 gpy, and following approximate breakdown of usage: Raymond Mill (1% of total limit); Flash Dryer #1 (47.5%); Flash Dryer #2 (47.5%); and Boiler (4%). SO_2 emissions from dryer systems assume 80% reduction in SO_2 emissions due to calcium carbonate powder.

Process	Control Equipment	Max. Exhaust Flow Rate, dscfm	PM lbs/hr	PM tpy	SO_2 tpy	NO_x tpy	CO tpy	NMHCs tpy	Pb tpy	HAPs tpy
Raymond Mill	FF	2000	0.34	1.49	0.04	0.06	0.02	<0.01	<0.01	<0.01
Flash Dryer #11	FF	7530	1.29	5.65	2.02	2.85	0.71	0.05	<0.01	0.01
Flash Dryer #1 (Recycle)	FF	1560	0.27	1.18						
Flash Dryer #2 (w/ HE)	FF	8310	1.42	6.22	2.02	2.85	0.71	0.05	<0.01	0.01
Silo #1	FF	1700	0.29	1.27						
Silo #2	FF	1700	0.29	1.27						
Silo #3	FF	1700	0.29	1.27						
Silo #4	FF	1700	---	---						
Bin A	FF	1700	---	---						
Bin B	FF	1700	---	---						
Bin C	FF (0.01 gr/dscf)	1700	---	---						
Bin D	FF (0.01 gr/dscf)	1700	---	---						
Bin C & D Receiver	FF (0.01 gr/dscf)	800	0.07	0.31						
Man. Packaging Dust Relief	FF	1400	0.24	1.05						
Auto. Packaging Dust Relief	FF	2700	0.46	2.01						
40 Mesh Unloading	FF	900	0.15	0.66						
Boiler #1(10.5 MMBTU/hr)	Uncontrolled		0.15	0.02	0.85	0.24	0.06	<0.01	<0.01	<0.01
		TOTAL EAST	22.4	4.94	6.00	1.50	0.10	<0.01	0.02	

VERPOL PLANT - Process equipment controlled using fabric filters, unless otherwise noted; Maximum PM concentration limited to 0.01 gr/dscf, unless otherwise noted; Unrestricted hours of operation; Combustion emissions based on AP-42 emission factors for distillate oil firing: SO_2 - 142(S)lbs/1000 gals, S = % sulfur in fuel by wt., limited to 0.3% or less; NO_x - 20 lbs/1000 gals; CO - 5 lbs/1000 gals; NMHCs - 0.34 lbs/1000 gals. Spray Dryer #1 limited to 0.07 lbs/short ton of total solids entering the spray dryer on an hourly basis and Spray Dryer #2 limited to 0.060 lbs/short ton. SO_2 emissions from all dryer systems assume 80% reduction in SO_2 emissions due to calcium carbonate powder. Spray dryer combustion emissions assume the use of exhaust heat from the turbines and limited supplemental firing in the spray dryers (i.e., SD #1 - 62 gph and SD #2 - 169 gph). Combustion emissions from the boilers are based upon fuel consumption limit of 680,000 gpy and the burning of this fuel within the largest boiler.

Process	Control Equipment	Max. Exhaust Flow Rate, dscfm	PM/PM_{10} lbs/hr	PM/PM_{10} tpy	SO_2 tpy	NO_x tpy	CO tpy	NMHCs tpy	Pb tpy	HAPs tpy
Bulk Bagger Stations/Silos	FF	800 each	0.07 ea.	4.2 total						
Product Transfer Conveyor	FF	2,700	0.23	1.0						
House Vacuum System	FF	2,450	0.21	0.9						
Rotopackers	FF	14,200 each	1.22 ea.	16.0 total						
Flash Dryer #1	FF	10,000	0.86	3.8	2.7	6.3	1.6	0.11	<0.01	0.02
Flash Dryer #2	FF	10,000	0.86	3.8	2.7	6.3	1.6	0.11	<0.01	0.02
Flash Dryer #3	FF	10,000	0.86	3.8	2.7	6.3	1.6	0.11	<0.01	0.02
FD#1 & FD#2	FF	2,700	0.23	1.0						
Product Conveying	FF	2,700	0.23	1.0						
FD#3 Prod. Conveying	FF	2,700	0.23	1.0						
Surface Treater A	FF	10,000	0.86	3.8						
Surface Treater C	FF	10,000	0.86	3.8						
Deagglomerator C	FF	16,200	1.39	6.09						
Prod. Conveying	FF	1200	0.10	0.44						
Prod. Conveying	FF	1200	0.10	0.44						
Prod. Conveying	FF	1200	0.10	0.44						
Surface Treater B	FF	24,400	2.09	9.15						
Finished Product Conveying	FF	2650	0.23	1.01						
Bulk Bag. Transfer Hopper	FF	1200	0.10	0.45						
Spray Dryer #1	ESP		1.70	7.45	2.1	4.9	1.2	0.08	<0.01	0.01
Spray Dryer #2	cyclone/ESP		2.31	10.1	5.7	13.3	3.3	0.23	<0.01	0.01
Boiler #2 (24 MMBTU/hr)	Uncontrolled		0.35	0.7	14.5	6.8	1.7	0.12	<0.01	0.02
Boiler #1(19.7 MMBTU/hr)	Uncontrolled		0.28	0	0	0	0	0	0	0
		TOTAL VERPOL	80.2	30.4	44.0	11.0	0.75	<0.01	0.10	

(Continued)

COGENERATION PLANT - Emissions based on continuous operation at maximum capacity and emission data provided by the equipment manufacturer. NO_x from turbines controlled using water injection; diesel engines uncontrolled. Diesel-fired equipment hours of operation limited to 100 hours per year or less each and sulfur in fuel limit of 0.3% by weight.

	PM tpy	SO_2 tpy	NO_x tpy	CO tpy	NMHC tpy	Pb tpy	HAPs tpy
Turbine #1	13.1	71.4	51.7	46.0	5.7	<0.01	<0.01
Turbine #2	13.1	71.4	51.7	46.0	5.7	<0.01	<0.01
Diesel Engine #1 (136 BHP)	0.01	0.02	0.18	0.12	0.01	<0.01	<0.01
Diesel Engine #2 (136 BHP)	0.01	0.02	0.18	0.12	0.01	<0.01	<0.01
Diesel-Fired Emergency Generator Set (145 BHP)	0.01	0.02	0.20	0.40	0.01	<0.01	<0.01
TOTAL COGENERATION PLANT	26.2	142.8	104.0	92.6	11.4	<0.01	<0.01
TOTAL FOR SOURCE	129	178	154	105	12.3	<0.01	0.1