



PERMIT APPLICATION REVIEW SUMMARY

New Hampshire Department of Environmental Services
Air Resources Division
P.O. Box 95, 29 Hazen Drive
Concord, NH 03302-0095
Phone: 603-271-1370 Fax: 603-271-7053

Facility:	Gorham Paper & Tissue, LLC	Engineer:	Cathy Beahm			
Location:	72 Cascade Flats, Gorham, NH					
AFS #:	3300700001	Application #:	11-0150	Date:	12/13/11	Page 1 of 5

PROJECT DESCRIPTION

Gorham Paper & Tissue, LLC (GPT) is proposing to install a new 100-ton-per-day tissue machine at the Gorham facility, including a separate natural gas burner for the yankee dryer. The tissue will be manufactured using purchased virgin dried pulp. A tissue machine is similar to a conventional paper machine, with the exception of the dryer. The type of dryer used on the tissue machine is known as a yankee dryer. It includes a large steam dryer (i.e. the yankee drum) and a hood in which hot air impinges on the paper sheet. Thus drying is accomplished by conduction of heat through the yankee drum and by hot air convection. The hot air in the hood portion of the dryer will be heated by direct-fired natural gas burners. The yankee drum will be heated by steam provided by the existing steam plant.

In April, 2011, FP Acquisitions, LLC, the previous owners of the Gorham mill, applied for and received Temporary Permit, TP-0080 for the modification of the burners in two of the steam-generating boilers at the facility. Power Boilers #1 and #2 (PB1 and PB2) have been modified by GPT to combust natural gas from the Portland Natural Gas Transmission System (PNGTS) in addition to #6 fuel oil and on-specification used oil. TP-0080 also allows for the burning of treated¹ landfill gas (LFG) from Mt. Carberry Landfill in combination with natural gas in Power Boilers #1 and #2. The pipeline for the landfill gas is currently under construction and is expected to be completed in mid-2012.

Because the new tissue machine will utilize steam from the existing steam plant which includes Power Boilers #1 and #2, this application includes analysis associated with those devices as well. Therefore, this project is for the significant permit amendment to Temporary Permit, TP-0080.

CHANGES FROM PREVIOUS PERMIT

The following is a list of the major changes that are proposed in the amended Temporary Permit, TP-0080:

- Inclusion of the new tissue machine and tissue machine dryer as emission units in Table 1;
- Addition of the NO_x RACT requirements in Table 2, Item 7 and Table 5, Item 3 that GPT initiate and implement the study of RACT control options, apply for a NO_x RACT Order within 120 days of issuance of the Temporary Permit, pursuant to Env-A 1314.01 and comply with all of the terms and conditions of the final NO_x RACT order immediately upon the issuance of such order by the department, pursuant to Env-A 1316 for the new tissue machine dryer;
- Addition of new and revised recordkeeping and reporting requirements contained in Conditions VI (Table 4) and VII (Table 5) for the new tissue machine and tissue machine dryer;
- Addition of an operating limitation (Table 2, Item 10) which prohibits operation of the Temporary Package Boiler at the same time as the new tissue machine and tissue machine dryer until such time as updated air dispersion modeling is conducted which evaluates compliance with the National Ambient Air Quality Standards (NAAQS);
- Inclusion of the new tissue machine and tissue machine dryer into the existing annual emission caps (Table 2, Item 4) established under the initial permit review for TP-0080;
- Inclusion of carbon dioxide equivalents (CO_{2e}) limits in the annual emission limitations of Table 2, Item 4 and the recordkeeping requirement of Table 4, Item 6 due to the fact that this application was submitted after July 1, 2011;
- Inclusion of Env-A 2500, particulate matter and visible emission standards for the new tissue machine and dryer (Table 2, Items 11 and 12);

¹ The landfill gas from the Mt. Carberry Landfill will be treated by others via dewatering, compression and filtration prior to delivery to FP Acquisitions, LLC.

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- Modification of Condition VI., Table 4, Item 5 to clarify that an updated Env-A 1400 demonstration has been completed for the proposed operation of the Gorham paper mill including the new tissue machine, existing paper machines and combustion of landfill gas in Power Boilers #1 and #2 as of the submittal date of the application;
- Removal of Condition VII, Table 5, Item 2 from TO-0080 issued April 25, 2011, for the initial notification requirement since the facility has already satisfied this requirement by submitting the notification on September 16, 2011;
- Clarification of the permitted fuel types for Power Boilers #1 and #2 in Table 1 – Emission Unit Identification. The burners that were installed on these boilers are capable of burning natural gas or a blend of natural gas and landfill gas or #6 fuel oil or a combination of on-specification used oil and #6 fuel oil. They cannot burn oil and gas simultaneously as was originally requested in application #10-0130;
- Clarification of the NOx emission limit for Power Boilers #1 and #2 listed in Table 2, Item 6 based on the fuel type clarification noted above;
- Clarification of the frequency of NOx RACT testing for Power Boilers #1 and #2 (Table 3, Items 1 through 6) for the various combinations of permitted fuels;
- Revision of the conditions for 40 CFR Part 63 Subpart JJJJJ, *National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers* contained in Table 2, Items 8 and 9, Table 3, Items 8 and 9, Table 4, Items 7 and 8 and Table 5, Items 4 and 5 to make them more generic in nature so that if any proposed changes contained in the December 2, 2011 signed proposed rule become final, the permit references the sections of the Federal regulation and the permit will still be inclusive of the requirements and not require changes; and
- Clarification of the frequency of reporting the Biennial compliance report (Table 5, Item 5) only if the source actually experiences any deviations from the applicable requirements of 40 CFR 63, Subpart JJJJJ.

FACILITY DESCRIPTION

GPT is a paper mill that consists of all equipment and operations required to convert bleached market pulp, unbleached pulp and recycled fiber to paper products. This includes four existing fine-grade paper machines and one towel-grade paper machine, broke handling system, finishing area, wastewater treatment plant, and a steam plant that supplies process steam for the paper mill. The steam plant consists of Power Boilers #1, #2, #3, and #4, and a Temporary Package Boiler that is used during annual boiler maintenance outages at the Facility. GPT is also permitted to operate one emergency generator at the paper mill lift station. GPT is proposing to install a new tissue machine and associated tissue machine dryer in addition to the equipment currently located at the facility.

PROCESS/DEVICE DESCRIPTION

Table 2 –Emission Unit Identification

Emission Unit ID	Device Identification	Manufacturer Model Number Serial Number	Date Construction is Scheduled to Commence	Date Device is Scheduled to Start Up	Maximum Design Capacity and Fuel Type(s) ²
TM	Tissue Machine	Unknown at this time	December, 2011	04/01/12	100 tons of dried virgin pulp per day
TMD	Tissue Machine Dryer	Unknown at this time	December, 2011	04/01/12	20.5 MMBtu/hr while firing natural gas which is equivalent to 20,098 scf/hr

² The hourly fuel rate presented in Table 2 is set assuming a heating value of 1,020 Btu/scf for natural gas.

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POLLUTION CONTROL EQUIPMENT

The tissue machine dryer is proposed to be equipped with low NO_x burners. GPT is required to initiate and implement the study of RACT control options, apply for a NO_x RACT Order within 120 days of issuance of the Temporary Permit, pursuant to Env-A 1314.01 and comply with all of the terms and conditions of the final NO_x RACT order immediately upon the issuance of such order by the department, pursuant to Env-A 1316 for the new tissue machine dryer.

EMISSION CALCULATIONS

Attachment A shows the worst case short-term (lb/hr) and long-term (tpy) emission rates for criteria pollutants from the proposed new tissue machine, tissue machine dryer and Power Boilers #1 - #4. The basis of the emission rates are listed in the footnotes to Attachment A. GPT is requesting operation of the new tissue machine and dryer to remain under the existing facility-wide emission limits established in TP-0080.

Attachment B shows the estimated worst case short-term (lb/hr and lb/day) and long-term (lb/yr) emissions of Hazardous Air Pollutants (HAPs) and Regulated Toxic Air Pollutants (RTAPs) from the proposed new tissue machine, existing paper machines and combustion of landfill gas in Power Boilers #1 and #2. Emissions are calculated based on several factors.

For the proposed new tissue machine, the emissions are based on maximum annual usage rates of additives to the pulp for tissue production, MSDS for RTAP and HAP concentrations in those pulp additives and production capacity of the new tissue machine. For the existing paper machines, GPT submitted an Env-A 1400 analysis which calculated emissions using maximum annual and daily usage rates for pulp additives, the MSDS for RTAP and HAP concentration in those pulp additives and assumed solids and non-volatile liquids to not be emitted. In addition, the analysis stated that glyoxal is used as a cross linking agent and reacts with the starch that is applied to the paper. The manufacturer estimated emissions to be 0.01% of the total use. As a conservative estimate, 0.1% was used for the emission calculations. In Attachment B, NHDES chose to use the higher emission rates based on maximum daily usage of pulp additives to demonstrate that even at these levels, RTAP emissions comply with Env-A 1400 which results in no corresponding recordkeeping for compliance with a less conservative estimate based on annual usage rates. For the RTAP and HAP emissions from the burning of landfill gas from the Power Boilers #1 and #2, the emissions are calculated based on AP-42 concentration levels and site specific concentration levels in parts per million (ppm) as submitted in Application 10-0130 for the initial permitting of landfill gas combustion in these boilers in April, 2011. Emission factors reflect a boiler destruction efficiency of 98.6% for VOCs and reduced sulfur compounds. Boiler destruction efficiency was estimated based on USEPA AP-42, Chapter 2.4 (Draft), Table 2.4-3, October, 2008. Landfill gas flow is predicted to peak in 2051 at a flow rate of 2119 SCFM.

The total maximum predicted hazardous air pollutant (HAP) emissions from the new tissue machine, existing paper machines, and combustion of landfill gas are 4.5 TPY and the maximum individual HAP emissions were predicted to be 4.1 TPY of hydrogen chloride. The facility has a permit limit of 10 TPY for each single HAP and 25 TPY for all HAPs combined from the facility which will remain in the amended permit and keeps the facility an area source for HAP emissions relative to any NESHAP requirements.

MODELING

GZA GeoEnvironmental, Inc., on behalf of GPT, performed an updated air dispersion modeling for the proposed new tissue machine and tissue machine dryer in combination with the worst case emissions from the heating plant on either natural gas or #6 fuel oil. DES reviewed the modeling and the memorandum from Lisa Landry to Cathy Beahm on November 10, 2011 stated that all of the maximum predicted impacts associated with the proposed new tissue machine and dryer are below the applicable NAAQS. In addition, GZA submitted an Env-A 1400 compliance demonstration for RTAP emissions from the new tissue machine as part of this application, for RTAP emissions from the existing paper machines in a letter dated September 15, 2011 and for RTAP emissions from the combustion of landfill gas in Application #10-0130 in April, 2011. NHDES combined the analysis into Appendix B and compared the information to the 24-hr and annual de minimis levels and ambient air limits from the most recent Env-A 1400 list. The analysis demonstrates that the facility is in compliance with Env-A 1400 for the equipment analyzed based on the emission information provided in these documents as of the date of this permit application review.

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EMISSION TESTING

No stack testing of the paper machine and paper machine dryer will be required at this time. However, this requirement will be reviewed and addressed during the revised NOx RACT Order process pursuant to Env-A 1316 which will be conducted prior to start-up of the new tissue machine and dryer.

COMPLIANCE STATUS

Emission Testing

This is a new device with no history of prior stack testing.

Inspections

An on-site full compliance evaluation was conducted on July 21, 2009. The only issue identified as a result of the inspection was that the Facility needed to complete the update of its air toxics compliance determination with regard to Env-A 1400. The Facility submitted an Air Toxics Compliance Demonstration dated June 3, 2010. DES reviewed and approved the report on June 15, 2010. In addition, the air toxics compliance determination has been updated as a result of this application (See Modeling.)

Reports and Fees

All reports are up to date. Fraser submitted their annual emission report and fees through December 15, 2010. Gorham Paper & Tissue, LLC submitted a report and fee for the remainder (12/16/10 – 12/31/10) of the year.

REVIEW OF REGULATIONS

Env-A 600 – Permitting

- 606.02 – Applicable – The facility is requesting to add new devices which will result in an increase of criteria pollutants from the burning of natural gas and the emission of new regulated toxic air pollutants, therefore an air dispersion modeling analysis is required.
- 607.01(a) – Applicable – The new tissue machine dryer has a design rating greater than 10 MMBtu/hr while burning natural gas.
- 607.01(n) – Applicable – As part of the April, 2011 review of the potential emissions from the modification of PB1 and PB2, it was determined that the Facility needed facility-wide emission caps. The new tissue machine and dryer will be included in the existing facility-wide emission caps.
- 607.01(q) – Not Applicable
- 607.01(s) – Not Applicable
- 607.01(t) – Not Applicable
- 607.01(v) – Not Applicable – See a previous section of the permit application review summary entitled “Modeling” for a description of the Env-A 1400 review.
- 607.01(w) – Not Applicable
- 607.01(x) – Applicable – The devices are subject to NOx RACT, Env-A 1314 *Miscellaneous Stationary Sources*.

Env-A 1300 – Prevention, Abatement and Control of Stationary Source Air Pollution

- 1314 *Miscellaneous Stationary Sources* – The NOx RACT Order ARD-97-003 will need to be modified as a result of the installation of the new tissue machine dryer. This will be completed prior to start-up of the device.

Env-A 1400 – Regulated Toxic Air Pollutants – Applicable but no permit limitations were necessary to show compliance as of the date of this review.

Env-A 1600 – Fuel Specifications

- 1603.02 – Applicable – Natural gas is subject to Env-A 1600.
- 1605.01 – Applicable – Natural gas shall contain no more than 15 grains of sulfur per 100 cubic feet of gas at standard temperature and pressure. (Note that Env-A 402.03 (5 grains sulfur per 100 cubic feet of natural gas) is in the Title V Permit TV-OP-048 and the current EPA approved SIP and is federally enforceable. DES revised the sulfur limit in natural gas to 15 grains per 100 cubic feet on May 29, 1997 in the renumbered rule, Env-A 1605.01. However, this rule has not been SIP approved by EPA yet.)

Env-A 2500 – Pulp and Paper Industry: Particulate Matter and Visible Emission Standards – Applicable

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Federal Regulations

- 40 CFR Part 63 Subpart JJJJJ, *National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers* – Applicable – The boilers are considered an existing source under this regulation because the construction of the boilers occurred prior to June 4, 2010 and the modifications to the burners do not trigger the reconstruction level for 40 CFR 63. The biennial tune-up and one time energy assessment requirements of 40 CFR 63, Subpart JJJJJ were added to the Temporary Permit when it was initially issued in April, 2011. On December 2, 2011, USEPA signed proposed changes to 40 CFR 63, Subpart JJJJJ. Since this proposal is not a final document, changes were made to the permit to reference the rule as opposed to listing specific requirements so that when the regulation is finalized, the permit will still reflect the requirements of the rule.

FACILITY-WIDE EMISSION CAPS

Permit TP-0080 was issued April 25, 2011 for the installation of new burners on Power Boilers #1 and #2, which allow for the burning of natural gas or a combination of natural gas and landfill gas as well as maintaining the ability to burn #6 fuel oil and on-specification used oil. This application (#11-0150) is for the installation of a new tissue machine and a tissue machine dryer. Since steam from Power Boilers #1 - #4 will be used on the new tissue machine, it was decided that the two projects would be evaluated together to determine applicability of the Non-Attainment New Source Review (NSR) and Prevention of Significant Deterioration (PSD) programs. Since TP-0080 established a facility-wide emission cap for SO₂, NO_x, PM, CO and VOC to keep the burner conversion project below significance levels for NSR and PSD, the facility proposed incorporating the new tissue machine and tissue machine emissions under the same facility-wide cap. A portion of the description for the basis of the facility-wide emission caps established in TP-0080 (Table 2, Item 4), which is contained in the permit application review summary for application # 10-0130 stated:

The Administrative Order by Consent No. 08-039 ARD (AOC) issued to Fraser N.H., LLC on August 21, 2008 was issued to facilitate the commencement of construction of a wood fueled biomass boiler. The wood fueled biomass boiler was never constructed and the application for the boiler was withdrawn on January 31, 2011. The AOC required, among other things, an emission cap for SO₂, NO_x TSP, CO and VOC from Power Boilers #1 - #4 and the Temporary Package Boiler. DES has reestablished the emission caps for Power Boilers #1 - #4 and the Temporary Package Boiler based on 2004-2005 baseline emissions plus the significance level (de minimis) for PSD and NSR as follows:

Table 5 – Maximum Annual Emission Limits in Tons per Consecutive 12-Month Period					
	Sulfur Dioxide (SO ₂)	Nitrogen Oxide (NO _x)	Total Suspended Particulate Matter (PM) ³	Carbon Monoxide (CO)	Volatile Organic Compounds (VOC)
Baseline Emissions from Power Boilers #1, #2, #3, #4 and Temporary Package Boiler	1077.4	341.7	133.8	3.1	0.0
Significance Level (de minimis)	39.9	39.9	24.9	99.9	39.9
Maximum Annual Emission Cap	1117.3	381.6	158.7	103.0	39.9

These emission caps were included in the temporary permit TP-0080 issued on April 25, 2011. The emissions from the new tissue machine and tissue machine dryer are now included in this facility-wide cap under the amended TP-0080. Finally, an emission cap for greenhouse gases (GHGs) is included in the amended TP-0080 to limit the potential increase in GHG emissions from the prior boiler modifications and the installation of the new tissue machine and dryer to less than 75,000 CO₂e, the PSD major modification threshold for GHGs.

³ Particulate matter includes filterable plus condensibles.