



DEPARTMENT ORDER

**Twin Rivers Paper Company LLC
Aroostook County
Madawaska, Maine
A-263-77-2-A**

**Departmental
Findings of Fact and Order
New Source Review
NSR #2**

FINDINGS OF FACT

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

I. REGISTRATION

A. Introduction

FACILITY	Twin Rivers Paper Company LLC (Twin Rivers)
LICENSE TYPE	06-096 C.M.R. ch. 115, Minor Modification
NAICS CODES	322121 (Paper (except Newsprint) Mills)
NATURE OF BUSINESS	Paper Mill
FACILITY LOCATION	82 Bridge Avenue, Madawaska, Maine 04756

B. NSR License Description

Twin Rivers Paper Company LLC (Twin Rivers) has requested a New Source Review (NSR) license to install a film metering size press on Paper Machine (PM) #8. This will result in the other three paper machines at the facility, PMs #4, #5, and #7, becoming affected equipment due to Twin Rivers' plans to change the assortment of products made on each machine as a result of the size press installation on PM #8. Therefore, this project will consist of both the size press addition to PM #8 and the operational changes being made to PMs #4, #5, and #7 as a result of the size press installation on PM #8.

C. Emission Equipment

The following equipment is addressed in this NSR license:

Process Equipment

<u>Equipment</u>	<u>Raw Material Process Rate*</u>	<u>Paper Production Rate*</u>	<u>Pollution Control Equipment</u>	<u>Date of Install.</u>
Paper Machine #8 PM #8 Size Press**	41 gal/min (starch)	388 ton/day (141,620 tons/year)	None	October 2019 (projected)

*Raw material process rate and production rate information are listed only for informational purposes; they are not intended as license restrictions.

**New in this license.

The following equipment is affected by this NSR license:

Process Equipment

<u>Equipment</u>	<u>Max. Production Rate*</u>	<u>Install Date</u>
Paper Machine #4 PM #4 Size Press	50,000 tons/year	1927
Paper Machine #5	76,000 tons/year	1928
Paper Machine #7 PM #7 Online Coater	70,000 tons/year	1960

*Listed for informational purposes only; not intended as a license restriction.

D. Application Classification

All rules, regulations, or statutes referenced in this air emission license refer to the amended version in effect as of the issued date of this license.

The modification of a major source is considered a major or minor modification based on whether or not expected emissions increases exceed the "Significant Emission Increase" levels as given in *Definitions Regulation*, 06-096 Code of Maine Rules (C.M.R.) ch. 100. For a major stationary source, the expected emissions increase from each modified or affected unit may be calculated as equal to the difference between the post-modification projected actual emissions and the baseline actual emissions for each NSR regulated pollutant.

The primary NSR regulated pollutant from the units being modified and affected by the project is volatile organic compounds (VOC). Units being modified and affected by this project include PM #8, which is being modified by the installation of a size press, and the following units affected by this project: PM #4 (including the size press), PM #5, and PM #7 (including the online coater). From this point forward, the units modified and affected by the project will be known as the Paper Machine Source Group.

PMs #4, #5, and #7 are considered affected units because the range of products produced on each machine will change as a result of the PM #8 size press installation, which will in turn affect the VOC emissions generated by each unit; therefore, they must be included in calculating the baseline actual and projected actual emissions for the project in order to accurately determine whether or not the modification is a major or minor modification.

There will be no increase in usage of Boiler #6 due to this project. Any additional steam required as part of this project will be provided by the company's pulp mill in Edmundston, New Brunswick, and Boiler #6 will continue to act as a backup to this equipment.

The emission increases are determined by subtracting the baseline actual emissions of the 24 months preceding the modification (or representative 24 months) from the proposed actual emissions. The results of this comparison are as follows:

Pollutant	Baseline Actual Emissions 01/10 – 12/11 (ton/year)	Projected Actual Emissions (ton/year)	Net Emissions Increase (ton/year)	Significant Emissions Increase Levels (ton/year)
VOC	38.1	78.0	39.9	40

Note: The above values are for Paper Machine Source Group only. None of the other equipment at the facility is affected by this NSR license.

Therefore, this NSR license is determined to be a minor modification under *Minor and Major Source Air Emission License Regulations*, 06-096 C.M.R. ch. 115 since the changes being made are not addressed or prohibited in the Part 70 air emission license. An application to incorporate the requirements of this NSR license into the Part 70 air emission license has been submitted to the Department.

II. BEST PRACTICAL TREATMENT (BPT)

A. Introduction

In order to receive a license, the applicant must control emissions from each unit to a level considered by the Department to represent Best Practical Treatment (BPT), as defined in 06-096 C.M.R. ch. 100. Separate control requirement categories exist for new and existing equipment as well as for those sources located in designated non-attainment areas.

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

B. PM #8 Modification

1. Project Description

Twin Rivers proposes to install a film metering size press on PM #8 in October 2019. The size press will be used to apply a starch-based preparation to paper made on PM #8 and will expand the paper machine's capabilities to enable the production of packaging and light weight opaque publishing products. This will provide the facility with production flexibility by enabling PM #8 to produce additional products beyond what the unit can currently produce and by allowing products currently made on PM #8 to be produced on PMs #4, #5 and/or #7. After installation of the size press, PM #8 is expected to have a maximum starch usage of 41 gal/min and an approximate maximum paper production rate of 388 tons/day. From this point forward, the name PM #8 shall refer to PM #8 as a whole, including the proposed size press.

2. Regulatory Requirements

a. State Regulations

Twin Rivers is not subject to *Control of Volatile Organic Compounds from Paper, Film, and Foil Coating Operations*, 06-096 C.M.R. ch. 123. Size presses, such as the one proposed for PM #8, are exempt from this regulation. [06-096 C.M.R. ch. 123, § 1.C.(1)]

b. Federal Regulations

(1) New Source Performance Standards (NSPS)

There are no NSPS requirements applicable to PM #8.

(2) National Emission Standards for Hazardous Air Pollutants (NESHAP)

PM #8 is not subject to *NESHAP: Paper and Other Web Coating*, 40 C.F.R. Part 63, Subpart JJJJ. This regulation is only applicable to major sources of HAP. As established in Air Emission License A-263-70-E-R/A (August 27, 2018), Twin Rivers is an area source of HAP and is therefore not subject to this regulation.

3. BACT Findings

The primary regulated pollutant from PM #8 is VOC; therefore, the following BACT analysis will only address control of VOC from PM #8.

a. Volatile Organic Compounds (VOC)

VOCs are hydrocarbons which participate in atmospheric photochemical reactions and which may act as precursors to ground level ozone (O₃). VOC emissions from PM #8 are attributable to several different sources. These include small amounts of VOC present in the water carrying the pulp to the paper machine that may volatilize as the paper sheet is dried, as well as VOC present in papermaking additives and coatings that may volatilize during the papermaking process. Potential control techniques for control of VOC emissions from PM #8 includes add-on controls such as carbon adsorption, biofiltration, and thermal oxidation, and pollution prevention measures such as VOC limits on raw materials and good operating practices, which include the use of low-VOC or non-VOC containing materials and additives and operating the unit per manufacturer's recommendations.

In carbon adsorption, effluent gas passes through a filter media filled with activated carbon. As the gas passes through the media, VOCs are adsorbed by the activated carbon, and clean effluent gas is vented to the atmosphere. Carbon adsorption systems are commonly set up in parallel such that while one adsorber is online processing and removing VOC, the other is offline so it can be regenerated. Carbon adsorption has generally not been used to control VOC emissions from paper machines. Use of such a system would be problematic due to the PM present in the effluent gas, which would impede the adsorption of VOC by the activated carbon bed. In order to use carbon adsorption to control VOC from PM #8, PM controls would need to be installed on PM #8. PM #8 currently has no PM controls and is not required to have any for compliance purposes. Installation of PM controls would be technically challenging given the number of exhaust points and the high volumetric gas flow rates associated with PM #8. Additionally, a review of similar projects from the RACT-BACT-LAER Clearinghouse (RBLC) did not indicate any paper machines using carbon absorption for control of VOC. Given the technical challenges described above and the high costs associated with installing both PM controls and a carbon adsorption system, the use of a carbon adsorption system for control of VOC emissions from PM #8 is considered technically and economically infeasible.

In biofiltration, a filter media filled with living material such as bacteria or microbes is used to biologically degrade VOC and other pollutants. Biofiltration is typically used for odor control and has not been known to have been used for control of VOC emissions from paper machines. Biofiltration requires an excessively large footprint and thus would be too large to install in the area of PM #8. Additionally,

the presence of PM in the PM #8 exhaust could have negative impacts on the biofilter media. A review of similar projects in the RBLC did not indicate any paper machines using biofiltration for control of VOC. Given these facts, biofiltration is considered technically infeasible for control of VOC emissions from PM #8.

Thermal oxidizers work by destroying VOC at high temperature via thermal combustion, which results in the chemical oxidation of VOC to form carbon dioxide and water. Thermal oxidizers generally incorporate an external fuel source designed to burn at a high enough temperature to ignite the effluent gas and fully oxidize any VOC present in the gas. Potential thermal oxidation technologies include direct-fired thermal oxidizers and regenerative thermal oxidizers.

Direct-fired thermal oxidizers are the simplest form of thermal oxidizer. In a direct-fired thermal oxidizer, gases are introduced to a firing box near the burner, which is designed to provide enough residence time to achieve the required destruction efficiency. In a regenerative thermal oxidizer (RTO), gases are initially heated using a ceramic bed that has been heated during a previous oxidation cycle. After being preheated, the gases enter an externally heated combustion chamber that further heat up the gases to complete the destruction of VOCs present in the gases.

Thermal oxidizers can achieve a destruction efficiency of 95% or greater and are best applied where there is a high concentration of VOCs in the gases. A review of similar projects in the RBLC did not identify any paper machines using thermal oxidizers for control of VOC. Given the high volumetric flow rate of the exhaust gas and the low VOC concentrations in the exhaust from PM #8, use of a thermal oxidizer for control of VOC from PM #8 is considered technically infeasible.

Pollution prevention measures for control of VOC from PM #8 include options such as VOC limits on raw materials and the use of good operating practices. A review of similar projects in the RBLC identified pollution prevention measures as the dominant method of VOC control for paper machines. The materials and additives used on PM #8 are carefully selected and optimized for the products Twin Rivers plans to produce on PM #8 after installation of the size press; therefore, use of VOC limits on raw materials is considered technically infeasible for control of VOC emissions from PM #8 due to the potential for negative impacts on the quality of Twin Rivers' final product.

The remaining option for control of VOC from PM #8 is the use of good operating practices, which includes the use of low-VOC and non-VOC containing materials and additives and operating the unit per the manufacturer's recommendations. Twin Rivers currently uses low-VOC or non-VOC containing materials and additives on PM #8 and intends to continue doing so after installation of the size press on PM #8. No adverse economic, environmental, and energy impacts are anticipated with use of this control technique.

The Department finds the use of good operating practices, which includes the use of low-VOC or non-VOC materials and additives, and operating the unit per the manufacturer's recommendations, to constitute BACT for VOC emissions from PM #8.

b. Visible Emissions

Per *Visible Emissions Regulation*, 06-096 C.M.R. ch. 101, § 2.B.3.d., visible emissions from PM #8 shall not exceed 20% opacity on a six-minute block average basis. Compliance with this limit shall be demonstrated by conducting EPA Method 9 visible emissions tests on an as-requested basis.

4. Project VOC Limit and Periodic Monitoring

In order to ensure this project remains a minor modification, VOC emissions from the Paper Machine Source Group shall be limited to 78.0 tons per year on a 12-month rolling total basis. To demonstrate compliance with this limit, Twin Rivers shall maintain and make available upon request a record of all VOC-containing coatings and additives used on this equipment. These records shall be maintained on a monthly and 12-month rolling total basis and shall provide all necessary data to determine compliance, including the following:

- a. Amount of VOC containing chemicals (in lb VOC/gallon, less water) in applied coatings and additives;
- b. Volume (in gallons) of all coatings and additives applied each month; and
- c. Total VOC emitted from coatings and additives on a monthly and 12-month rolling total basis.

C. Incorporation Into the Part 70 Air Emission License

The requirements in this 06-096 C.M.R. ch. 115 NSR license shall apply to the facility upon issuance. Per *Part 70 Air Emission License Regulations*, 06-096 C.M.R. ch. 140, § 1.C.(8), for a modification at the facility that has undergone NSR requirements or been processed through 06-096 C.M.R. ch. 115, the source must apply for an amendment to their Part 70 license within one year of commencing the proposed operations, as provided in 40 C.F.R. Part 70.5. Twin Rivers applied for an amendment to incorporate the requirements of this NSR license into their Part 70 license on August 24, 2018.

D. Annual Emissions

Twin Rivers shall be restricted to the following annual emissions, based on a 12-month rolling total. The tons per year limits were calculated based on a fuel limit of 2,800,000 gallons of #6 fuel oil per year for Boiler #6, a fuel limit of 3,000,000 gallons of propane per year for Propane-fired Dryers #1-6 and #11-13 (combined), 100 hours/year of operation each for Diesel Fire Pumps #1 and #2 and the Diesel Generator, and a conservative estimate of 130.0 tons/year of VOC from all paper coatings and additives used at the facility (this includes the 78.0 tons/year limit for VOC emissions from the Paper Machine Source Group):

Total Licensed Annual Emissions for the Facility

Tons/year

(used to calculate the annual license fee)

	PM	PM₁₀	SO₂	NO_x	CO	VOC
Boiler #6	42.0	42.0	154.5	84.0	7.0	1.1
Propane-fired Dryers #1-6 and #11-13 (combined)	6.8	6.8	0.1	19.5	11.3	1.5
Diesel Fire Pump #1	0.1	0.1	0.1	0.5	0.1	0.1
Diesel Fire Pump #2	0.1	0.1	0.1	0.4	0.1	0.1
Diesel Generator	0.1	0.1	0.1	0.1	0.1	0.1
Paper Making	---	---	---	---	---	130.0
Total TPY	49.1	49.1	154.9	104.5	18.6	132.9

III. AMBIENT AIR QUALITY ANALYSIS

Twin Rivers previously submitted an ambient air quality analysis demonstrating that emissions from the facility, in conjunction with all other sources, do not violate ambient air quality standards. An additional ambient air quality analysis is not required for this NSR license.

ORDER

Based on the above Findings and subject to the conditions listed below, the Department concludes that the emissions from this source:

- will receive Best Practical Treatment,
- will not violate applicable emission standards,
- will not violate applicable ambient air quality standards in conjunction with emissions from other sources.

The Department hereby grants NSR License A-263-77-2-A pursuant to the preconstruction licensing requirements of 06-096 C.M.R. ch. 115 and subject to the specific conditions below.

Severability. The invalidity or unenforceability of any provision of this License or part thereof shall not affect the remainder of the provision or any other provisions. This License shall be construed and enforced in all respects as if such invalid or unenforceable provision or part thereof had been omitted.

SPECIFIC CONDITIONS

- (1) Twin Rivers is licensed to install and operate a size press on PM #8. [06-096 C.M.R. ch. 115, BACT]
- (2) **Project VOC Emissions Cap and Periodic Monitoring**

VOC emissions from the Paper Machine Source Group shall not exceed a combined total of 78.0 tons per year of VOC on a 12-month rolling total basis. To demonstrate compliance with this limit, Twin Rivers shall maintain and make available upon request a record of all VOC-containing coatings and additives used on this equipment. These records shall be maintained on a monthly and 12-month rolling total basis and shall provide all necessary data to determine compliance, including the following:

- A. Amount of VOC containing chemicals (in lb VOC/gallon, less water) in applied coatings and additives;
- B. Volume (in gallons) of all coatings and additives applied each month; and
- C. Total VOC emitted from coatings and additives on a monthly and 12-month rolling total basis.

[06-096 C.M.R. ch. 115, BACT]

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(3) **PM #8 Visible Emissions**

Visible emissions from PM #8 shall not exceed 20% opacity on a six-minute block average basis. Compliance with this limit shall be demonstrated by conducting EPA Method 9 visible emissions tests on an as-requested basis. [06-096 C.M.R. ch. 101, § 2.B.3.d.]

DONE AND DATED IN AUGUSTA, MAINE THIS 23 DAY OF January, 2019.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: Marc Allen Robert Carr for
MELANIE LOYZIM, ACTING COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: August 24, 2018
Date of application acceptance: September 4, 2018

Date filed with the Board of Environmental Protection:

This Order prepared by Jonathan E. Rice, Bureau of Air Quality.

