



STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION

JOHN ELIAS BALDACCI
GOVERNOR

BETH NAGUSKY
ACTING COMMISSIONER

Woodland Pulp, LLC
Washington County
Baileyville, Maine
A-215-77-2-M

Departmental
Findings of Fact and Order
Regional Haze
Best Available Retrofit Technology
Determination

After staff investigation reports and other documents in the applicant's file in the Bureau of Air Quality, pursuant to 38 M.R.S.A, § 344, § 582, § 590 and § 603, the Department finds the following facts:

I. REGISTRATION

A. Introduction

FACILITY	Woodland Pulp LLC (WPLLC)
INITIAL LICENSE NUMBER	A-215-70-A-I
LICENSE TYPE	BART Determination
NAICS CODES	32211
NATURE OF BUSINESS	Pulp Production
FACILITY LOCATION	Baileyville, Maine
DETERMINATION ISSUANCE DATE	November 2, 2010

Best Available Retrofit Technology (BART) is defined in 38 MRSA §582, sub-§5-C as an emission limitation based on the degree of reduction achievable through the application of the best system of continuous emission reduction for each visibility-impairing air pollutant that is emitted by an existing stationary facility. The emission limitation must be established, on a case-by-case basis, taking into consideration the technology available, the costs of compliance, the energy and non-air quality environmental impacts of compliance, any pollution control equipment in use or in existence at the source, the remaining useful life of the source, and the degree of improvement in visibility that may reasonably be anticipated to result from the use of such technology.

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A facility is determined to have BART eligible emission units if the following criteria outlined in the Regional Haze Rule found in 40 CFR, Part 51 are met:

1. The facility falls into one of the 26 source specific categories identified in the Clean Air Act (CAA) of 1977,
2. The facility has emission units that entered operation in the 15 years prior to the adoption of the CAA, and
3. The facility has the potential to emit more than 250 tons/year of a single visibility impairing pollutant from units that fall under criteria #2.

Per 38 MRSA §603-A, sub-§8; for those BART eligible units determined by the Department to require additional sulfur air pollution controls to improve visibility, the controls must be installed and operational no later than January 1, 2013.

B. Emission Equipment

The following emission units are determined to be BART eligible under 40 CFR, Section 51:

CAA Source Specific Category	Emission Unit	Unit Capacity	Date of Start-up
#3, Kraft Pulp Mill	Power Boiler #9	625 MMBtu/hr	1971
	Lime Kiln	75 MMBtu/hr	1966

II. EMISSION UNITS AND CONTROL EQUIPMENT DESCRIPTION

Determining the appropriate control options for BART eligible units requires an analysis of the following factors:

- a. Identification of available retrofit control technologies for each pollutant.
- b. Elimination of technically infeasible options.
- c. Rank feasible options in order of effectiveness.
- d. Evaluation of impacts for feasible options.

A. #9 Power Boiler

#9 Power Boiler is rated at 625 MMBtu/hr and was placed into operation in 1971. #9 Power Boiler is fueled primarily by biomass but is also licensed to burn #6 fuel oil, sludge, TDF, specification waste oil, HVLC, LVHC, mill yard waste, oily rags, stripper off-gas, and propane. Emissions are controlled using a variable-throat wet venturi scrubber that was installed in 1979.

BART Analysis

1. PM
 - a. Fabric Filters, Wet Electrostatic Precipitator (WESP), Dry Electrostatic Precipitator (DESP), and Wet Scrubbers.
 - b. Fabric filters are not technically feasible due to fire risk from combustible fly-ash. WESP is not technically feasible due to operational difficulties with multi-fuel boilers. DESP could not be installed post-scrubber due to excess moisture levels, but could be installed upstream. Only DESP shall be considered from this point on.
 - c. DESP - 98-99% control efficiency for biomass; 90% efficiency for Oil. Wet Scrubber – 85-98% control efficiency.
 - d. Estimated cost for DESP installation is \$4,640 per ton of PM removed. Therefore, a DESP is not a cost-effective option.
2. SO₂
 - a. Wet Scrubber and low sulfur fuel.
 - b. Both technologies are feasible.
 - c. Wet Scrubber – 90-95% control efficiency. Low sulfur fuel – dependant on fuel sulfur content.
 - d. WPLLC is currently employing both technologies (Biomass is considered a low sulfur fuel). No further analysis is necessary.

3. NO_x
 - a. NO_x tempering, Flue Gas Recirculation (FGR), Selective Non-Catalytic Reduction (SNCR), Selective Catalytic Reduction (SCR), Low NO_x Burners and good combustion practices.
 - b. NO_x Tempering is not technically feasible due to reduced thermal efficiency and increased fuel usage. SCR is not technically feasible due to the increased frequency of catalyst fouling from multi-fuel boilers. FGR is not technically feasible based on previous failed FGR trials conducted on #9 Power Boiler.
 - c. SNCR - 30-40% control efficiency. Low NO_x Burners – 10% control efficiency.
 - d. Estimated cost for SNCR installation is \$7,360 per ton of NO_x removed, and SNCR has a reduced effectiveness on boilers with significant load swings. Therefore SNCR is not a cost-effective option. WPLLC is currently using Low NO_x Burners.

BART for #9 Power Boiler shall therefore consist of the following:

1. PM – operation of a wet scrubber and compliance with an emission limit of 0.22 lb/MMBtu. WPLLC will also meet a more restrictive lbs/hour limit of 84.4 lbs/hour. The previous particulate limit was 93.8 lbs/hour.
2. SO₂ – operation of a wet scrubber to achieve a compliance limit of 0.30 lb/MMBtu, based on a 24 hour average.
3. NO_x – use of Low NO_x Burners, good combustion practices, and compliance with an emission limit of 0.4 lb/MMBtu based on a 24 hour average. WPLLC is already required to meet this limit per their Part 70 Air Emission License. No further action is required.

B. Lime Kiln

The Lime Kiln is rated at 75 MMBtu/hr and was placed into operation in 1966. Emissions are controlled using a fixed-throat wet venturi scrubber and a Ceilcote cross-flow scrubber. The Lime Kiln is fueled by #6 fuel oil.

BART Analysis

1. PM

The Lime Kiln is subject to the MACT standard for PM found in 40 CFR, Part 63, Subpart MM. According to 40 CFR, Part 51, Appendix Y, a MACT requirement satisfies the purposes of BART. No further analysis is necessary.

2. SO₂

- a. Wet Scrubber and In-process capture.
- b. Both technologies are feasible and are already employed on the Lime Kiln by WPLLC (including two wet scrubbers).
- c. Industry data is unclear which technology provides better control.
- d. As WPLLC currently employs both technologies, no further analysis is necessary.

3. NO_x

- a. SNCR, SCR, Non-Selective Catalytic Reduction (NSCR), FGR, Low NO_x Burners and good combustion practices.
- b. The impracticality of installing chemical injection nozzles inside a rotating Kiln drum makes SNCR technically infeasible. SCR and NSCR are not feasible due to the known presence of catalyst fouling substances in the Lime Kiln. FGR is not feasible as it reduces the temperature in the flame zone, thus hindering the chemical reaction taking place in the Lime Kiln. Low NO_x Burners are a non-demonstrated technology and are not listed in the EPA BACT/RACT/LAER Clearinghouse for Lime Kiln emissions control. Therefore, Low NO_x Burners are not a feasible technology.
- c. Good combustion practices are the only feasible option.
- d. WPLLC already employs good combustion practices in the Lime Kiln. No further analysis is necessary.

BART for the Lime Kiln shall therefore consist of the following:

1. PM – As part of its Part 70 Air Emission License, WPLLC is required to meet the PM standard found in 40 CFR, Part 63, Subpart MM. No further action is required.
2. SO₂ – operation of two wet scrubbers and In-process control to comply with emission limit of 8.3 lb/hr. WPLLC is already required to meet this limit per their Part 70 Air Emission License. No further action is required.

3. NO_x – good combustion practices and compliance with emission limit of 120 ppmvd corrected to 10% O₂. WPLLC is already required to meet this limit per their Part 70 Air Emission License. No further action is required.

ORDER

The Department hereby grants Air Emission License A-215-77-2-M subject to the following conditions.

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

Air emission license A-215-77-1-A (issued February 15, 2008) is no longer applicable and shall be replaced with the BART requirements in this air emission license.

New Conditions:

1. Best Available Retrofit Technology (BART) [40 CFR Part 51, BART]

By January 1, 2013; WPLLC shall:

A. For the #9 Power Boiler

1. Operate the wet scrubber to meet a compliance limit of 0.30 lb SO₂/MMBtu based on a 24 hour average, as demonstrated by a continuous emission monitoring system.
2. Operate the wet scrubber to meet compliance limits of 0.22 lb PM/MMBtu and 84.4 lbs PM/hr.
3. Use Low NO_x Burners, good combustion practices, and meet a compliance limit of 0.4 lb NO_x/MMBtu.

B. For the Lime Kiln

1. Limit PM emissions to 0.064 gr/dscf corrected to 10% O₂, as found in 40 CFR Part 63, Subpart MM.
2. Operate the two wet scrubbers and in-process control to achieve 90% control efficiency, and meet a compliance limit of 8.3 lb SO₂/hr.

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- C. Per 40 CFR Part 51 §51.308(e)(1)(v), WPLLC shall maintain the control equipment required by BART and establish procedures to ensure such equipment is properly operated and maintained. This condition shall go into effect 5 years from the date of EPA's approval of Maine's Regional Haze SIP submittal. [40 CFR Part 51 §51.308(e)(1)(v)]

DONE AND DATED IN AUGUSTA, MAINE THIS *2nd* DAY OF *November* 2010,

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY: *James P. Brooks*
BETH NAGUSKY, ACTING COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date filed with the Board of Environmental Protection: _____

This Order prepared by Jonathan Voisine, Bureau of Air Quality.



