



DEPARTMENT ORDER

ND OTM LLC
Penobscot County
Old Town, Maine
A-180-77-15-A

Departmental
Findings of Fact and Order
New Source Review
NSR #15

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	ND OTM LLC
LICENSE TYPE	06-096 C.M.R. ch. 115, Minor Modification
NAICS CODES	322110 Wood Pulp Manufacturing
NATURE OF BUSINESS	Pulp Manufacturing
FACILITY LOCATION	24 Portland Street, Old Town, Maine

B. NSR License Description

ND OTM LLC (ND OTM, The Mill) has requested a New Source Review (NSR) license to install a Wet Lap System to operate in parallel with the existing Pulp Dryer, and to modify the operation of the digesters to produce pulp with a higher Kappa number.

C. Emission Equipment

The following new equipment is addressed in this NSR license:

Equipment	Unit Capacity
Medium Kappa Equipment*	--
Wet Lap System*	700 tons/day BDUBP**
Pulp Baling/Handling Equipment*	--

* These units are considered insignificant and are included only for completeness.

** short tons of bone dried unbleached pulp

The following existing equipment is affected, but not modified, by this project:

Fuel Burning Equipment

Equipment	Maximum Capacity	Fuel Type, % sulfur
#4 Recovery Boiler	2.57 MMlb/day black liquor solids, 375 MMBtu/hr	Black liquor solids, #6 fuel oil, distillate fuel

Process Equipment

Equipment	Unit Capacity	Pollution Control Equipment
Digester System	930 ADUBP* ton/day	LVHC System
Brownstock Washer	750 ADUBP ton/day pulp	HVLC System
Zaremba Multiple Effect Evaporator	Supporting pulp production for 2.57 MMlb/day black liquor solids	LVHC System
Unitech Multiple Effect Evaporator	Supporting pulp production for 2.57 MMlb/day black liquor solids	LVHC System
Smelt Dissolving Tank	Supporting pulp production for 2.57 MMlb/day black liquor solids	Scrubber
Lime Kiln	64 MMBtu/hr kiln burner	Scrubber
Pulp Dryer	425 ADUBP ton/day	None

*Air dried unbleached pulp

D. Project Description

ND OTM has proposed the installation of a Wet Lap System, intended to operate in parallel with the existing Pulp Dryer. Wet lap pulp is market grade pulp that has been dewatered via mechanical pressing to create mats of 75% moisture content. The proposed Wet Lap System consists of stock preparation via a machine chest tank on the stock approach, twin wire press for pulp dewatering, an extruder, and a baling line. The machine chest will heat the pulp stock from 120 °F to 160 °F using approximately 50,000 pounds of steam per hour. The higher temperature pulp de-waters more efficiently, and therefore heating is required to reach the targeted moisture level. The rest of the Wet Lap System equipment is electrically driven. Since the pulp is not fully dried, a portion of the volatile organic compounds (VOC) usually driven off in the drying process are retained in the pulp, resulting in VOC emissions from the Wet Lap System being lower than those from pulp

dryers. At the maximum potential throughput capacity of 700 tons/day of bone dry unbleached pulp (BDUBP), the proposed Wet Lap System will have the potential to emit 0.4 tons/year of VOC. The Wet Lap System potential to emit was calculated using emission testing results of similar units processing bleached pulp, and the ratio of VOC content in bleached and unbleached pulp found in NCASI Technical Bulletin 973, Tables 4.33 and 4.34. Since VOC emissions from the system will remain below 1 ton per year, the unit is considered insignificant pursuant to 06-096 C.M.R. ch. 115, Appendix B(B)(1)(a).

ND OTM has also proposed an increase in the Kappa number of pulp produced. The Kappa number is indicative of the content of lignin contained in finished pulp; therefore, a higher Kappa will yield more product from the wood chips used for pulp production since more wood mass is retained in the finished pulp.

ND OTM has proposed a 20 to 30-point Kappa number increase, with a future expected Kappa number of 58, which is equivalent to a 4-6% increase in overall chip yield. This will be achieved by a reduction in the overall temperature of the digesters, resulting in a decreased steam demand of approximately 3,000-5,000 pounds per hour. The resulting black liquor from the digesters will contain an estimated 10-14% decrease in solids. Therefore, the black liquor combusted in the Recovery Boiler will be slightly more dilute resulting in a lower heat content and lower steam production. ND OTM estimates that the decrease in steam production will be more than offset by the reduced steam demand of the Wet Lap System. Therefore, no additional steam demand is expected to result from this project.

Due to the higher lignin content to attain the Kappa value increase, the pulp fibers are inherently stiffer and more viscous. As a result, additional fibrillation is necessary. Fibrillation refers to the separation of the linkage between cellulosic fibrils by delamination of the wood cell wall, thereby producing the desired cellulose flexibility and pulp properties. To achieve this, ND OTM is proposing to install one new electrically driven refiner. The refiners use mechanical compressive and shear forces and are contained within an existing building, with no resulting emissions of regulated air pollutants. Additional bulk pulp handling and process equipment includes the installation of the refiners, a rock and metal trap, new or repurposed pumps, repurposed tanks, and repurposed pressure screens. The new refiners and pulp handling equipment are categorically exempt insignificant activities pursuant to 06-096 C.M.R. ch. 115, Appendix B(A)(84).

The #4 Recovery Boiler, Smelt Dissolving Tank, and Lime Kiln will not be physically modified by this project, nor will the project have an effect on the operating methodology. These units will see increased utilization as a result of the overall increased mill pulp production and are therefore affected units. The potential pulp production capacity at the mill is 339,450 ADUBP ton/year as dictated by the digesters, but through this licensing action the facility is taking an enforceable limit of 220,825 ADUBP tons/year on a calendar year basis.

The high-volume, low-concentration (HVLC) non-condensable gas (NCG) collection system will be modified to include pick-up points from the new process equipment, including the #2 Consistency Chest, Secondary Dilution Chest, MicraScreens, and Tertiary Chest. The HVLC collection point from the Secondary Knotters will be removed.

E. 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 application for the installation of a Wet Lap process and an increase in the pulp Kappa number does not violate any applicable federal or state requirements and does not reduce monitoring, reporting, testing, or recordkeeping requirements.

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 new, 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.

1. Baseline Actual Emissions

Baseline actual emissions (BAE) are equal to the average annual emissions from any consecutive 24-month period within the ten years prior to submittal of a complete license application. ND OTM has proposed using 7/2011 – 6/2013 as the 24-month baseline period from which to determine baseline actual emissions for all pollutants for emission units affected as part of this project.

BAE for existing modified and affected equipment are based on actual annual emissions reported to the Department through *Emissions Statements*, 06-096 C.M.R. ch. 137 with the following exceptions:

- a. Emissions of PM are not collected in the annual emissions report. PM emissions from all equipment were determined in a similar matter as the filterable portions of the PM₁₀ emissions.
- b. Emissions of PM₁₀ and PM_{2.5} in the annual emissions report are for the filterable portion only. Emissions of PM₁₀ and PM_{2.5} were adjusted to include emissions of condensable particulate matter (CPM).

The results of this baseline analysis are presented in the table below.

Baseline Actual Emissions (7/2011 – 6/2013 Average)

Equipment	PM (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	SO₂ (tpy)	TRS (tpy)	NO_x (tpy)	CO (tpy)	VOC (tpy)
NCG Combustion	--	--	--	15.34	--	--	--	--
Digester	--	--	--	--	1.68	--	--	1.64
Brownstock Washer	--	--	--	--	0.13	--	--	0.19
Evaporators	--	--	--	--	1.74	--	--	0.03
Pulp Dryer	--	--	--	--	--	--	--	6.28
Recovery Boiler	139.20	109.56	79.91	28.45	16.38	281.14	55.52	129.90
Smelt Dissolving Tank	10.48	9.55	8.28	0.13	0.99	0.26	0.26	0.26
Lime Kiln	38.59	37.82	37.05	28.76	22.33	14.93	8.73	23.97
Total	188.27	156.93	125.24	72.68	43.25	296.33	64.51	162.27

2. Projected Actual Emissions

Projected actual emissions (PAE) are the maximum actual annual emissions anticipated to occur in any one of the five years (12-month periods) following the date existing units resume regular operation after the project or any one 12-month period in the ten years following if the project involves increasing the unit’s design capacity or its potential to emit of a regulated pollutant.

New emission units must use potential to emit emissions for projected actual emissions.

This project includes the installation of new a new Wet Lap System. At the maximum potential throughput capacity of 700 tons/day BDUBP, the Wet Lap System has a potential to emit 0.4 tons/year of VOC. Because emissions from the system are less than 1 ton/yr, the Wet Lap System is considered insignificant pursuant to 06-096 C.M.R. ch. 115, Appendix B(B)(1)(a), and will not be included in these calculations.

The appurtenant equipment associated with the medium Kappa pulp production and pulp baling/handling equipment associated with the Wet Lap System are considered insignificant units pursuant to 06-096 C.M.R. ch. 115, Appendix B(A)(84) which specifically exempts “Broke beaters, repulpers, pulp and repulping tanks, stock chests and bulk pulp handling, process water and white water storage tanks not associated with requirements in 40 C.F.R. Part 63”, and therefore will not be included in these calculations.

Affected equipment includes any new or physically modified equipment as well as upstream or downstream activities, such as the increased use of the Digesters, Brownstock Washers, Evaporators, Recovery Boiler, Smelt Dissolving Tank, Pulp Dryer, and Lime Kiln.

Projected emissions were determined by scaling up pulp production, Lime Kiln natural gas usage, and equipment operating hours proportionally with the anticipated production increase over the baseline period. The black liquor solids (BLS) production and firing rate was determined using a mass balance approach based on digester design, wood species, medium Kappa number cooking procedures, percent solids in fired liquor, and chemical usage. The BLS rate was then also proportionally increased based on pulp production increase.

Projected actual emissions from the affected equipment are shown below.

Projected Actual Emissions

Equipment	PM (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	SO₂ (tpy)	TRS (tpy)	NO_x (tpy)	CO (tpy)	VOC (tpy)
NCG Combustion	--	--	--	17.67	--	--	--	--
Digester	--	--	--	--	1.93	--	--	1.89
Brownstock Washer	--	--	--	--	0.14	--	--	0.22
Evaporators	--	--	--	--	2.00	--	--	0.03
Pulp Dryer	--	--	--	--	--	--	--	41.88
Recovery Boiler	138.05	108.65	79.25	28.22	16.24	278.81	55.06	128.83
Smelt Dissolving Tank	10.40	9.48	8.21	0.13	0.98	0.26	0.26	0.26
Lime Kiln	44.44	43.56	42.67	33.12	23.21	17.20	10.06	27.60
Total	192.89	161.69	130.13	79.14	44.50	296.27	65.38	200.71

3. Emission Adjustments

In determining projected actual emissions, ND OTM excluded increases in emissions that the existing equipment could have accommodated during the baseline period and are unrelated to the current project. This is known as the Demand Growth Exclusion.

To determine how much of the emissions increases are attributable to the project versus market demand, ND OTM looked at what emissions would have been produced if additional orders for unbleached product had been received.

In the baseline period, ND OTM produced bleached kraft pulp exclusively, due to market demands. At any point, the mill could have produced unbleached product if the

market had been favorable to do so. The change in product from bleached to unbleached pulp is not precluded by ND OTM’s air emission license and could have occurred at any point during the baseline period. The additional VOC emissions that would have occurred if the facility had produced unbleached pulp can be excluded, since they are unrelated to the Wet Lap System and medium Kappa projects and could have been accommodated during the baseline period, pursuant to 40 C.F.R. § 52.21(b)(41).

Based on the analysis outlined above, the following emissions are excludable under the Demand Growth Exclusion:

Demand Growth Exclusion Emissions Adjustments

Equipment	VOC (tpy)
Pulp Dryer	35.60
Total	35.60

4. Emissions Increases

Emissions increases are calculated by subtracting BAE and excludable emissions from the PAE. The emissions increases are then compared to the significant emissions increase levels.

Pollutant	Baseline Actual Emissions 7/11 – 6/13 (ton/year)	Projected Actual Emissions (ton/year)	Excludable Emissions (ton/year)	Emissions Increase (ton/year)	Significant Emissions Increase Levels (ton/year)
PM	188.27	192.89	0.00	4.62	25
PM ₁₀	156.93	161.69	0.00	4.76	15
PM _{2.5}	125.24	130.13	0.00	4.89	10
SO ₂	72.68	79.14	0.00	6.46	40
TRS	43.25	44.50	0.00	1.25	10
NO _x	296.33	296.27	0.00	-0.06	40
CO	64.51	65.38	0.00	0.87	100
VOC	162.27	200.71	35.60	2.84	40

5. Classification

Since emissions increases do not exceed significant emissions increase levels, 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. An application to incorporate the requirements of this NSR license into the Part 70 air emission license shall be

submitted no later than 12 months from commencement of operations associated with the Wet Lap System and medium Kappa pulp production.

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 *Definitions Regulation*, 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. Kappa Number Increase

Units modified as part of the medium Kappa pulp production project include only the HVLC source group. The HVLC source group includes the Brownstock Washers and will include vent points from the medium Kappa processing equipment. The HVLC source group has the potential to emit TRS and VOC. Pixelle has submitted a BACT analysis addressing these pollutants.

The non-condensable gas (NCG) stream is collected and incinerated in the Lime Kiln and will continue to be collected and controlled in a similar manner after the proposed project.

In addition, ND OTM collects and treats the pulping process condensates that are generated by the digester systems, evaporator systems, and the HVLC collection systems. This is an enclosed system operated with sealed tanks designed to prevent VOC and HAP emissions. The condensates are collected in a central tank which is hard piped to the mill wastewater treatment plant aeration basin. The mill wastewater treatment plant employs biological treatment on the collected condensates. Microorganisms in the aeration basin use the VOC/HAP, which is primarily methanol, as a source of food. The treatment system includes a spill pond, two primary clarifiers, an 11-acre aeration basin with 1,250 horsepower of floating aerators, two secondary clarifiers, a belt press and screw press for sludge dewatering, various pumps, and instrumentation.

ND OTM has identified this as the most stringent level of control technically feasible for the VOC and TRS present in the system vent gases and condensates.

The Department finds that BACT for TRS and VOC emissions from the HVLC source group shall be collection and incineration of the NCG stream in the Lime Kiln, the collection and treatment of pulp process condensates in the wastewater treatment plant. ND OTM shall continue to comply with existing license conditions pertaining to the HVLC system.

C. Facility-Wide Pulp Production

Although the installation of the Wet Lap System and medium Kappa pulp production could allow for increased pulp production up to a potential 339,450 tons/year ADUBP as limited by the capacity of the two Digesters, ND OTM has requested a licensed limit of 220,825 ton/yr ADUBP (equivalent to 605 ton/day ADUBP). ND OTM shall maintain records documenting facility-wide pulp production on a daily and calendar year total basis.

D. Future Project Emissions Reporting

Following completion of the projects described in this NSR license, actual emissions of certain regulated NSR pollutants from emissions units that are modified or affected by the projects are required to be tracked on an annual basis, per 40 C.F.R. § 52.21(r)(6). This requirement pertains to any regulated NSR pollutant that could increase as a result of the project and that is emitted by emissions units affected by the project. Specifically, these obligations pertain to any regulated NSR pollutant emitted from existing emissions units at the mill modified or affected by the project for which there is a reasonable possibility that this project may result in a significant increase of such pollutant. *Reasonable Possibility* is defined as a projected actual emissions increase that, added to the amount of emissions excluded under 40 C.F.R. § 52.21(b)(41)(ii)(c), sums to at least 50% of the amount that is a “significant emissions increase,” as defined in 40 C.F.R. § 52.21(b)(40) for the regulated NSR pollutant.

For the projects described in the NSR, VOC has a calculated future actual emission increase that is at least 50% of the significant emissions increase level, excluding demand growth adjustments.

ND OTM shall monitor, calculate, and maintain a record of the annual VOC emissions, in tons per year on a calendar year basis, for all affected emission units. If the annual emissions, in tons per year, from the projects exceed the baseline actual emissions, excluding any emissions increase unrelated to the project to due to demand growth, for VOC by an amount equal to or greater than the significant emissions increase level for that pollutant, ND OTM shall submit a report to the Department and EPA within 60 days after the end of the calendar year which contains the following:

1. The facility name, address, and phone number;
2. The annual emissions for the project; and

3. Any other information that the facility wishes to include in the report (e.g., an explanation as to why the emissions differ from the preconstruction projection).

[40 C.F.R. § 52.21(r)(6)(v)]

E. Incorporation Into the Part 70 Air Emission License

Pursuant to *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.

F. Annual Emissions

This license will not change the facility's estimated maximum annual emissions, used for the purposes of calculating the facility's annual air license fee.

III. AMBIENT AIR QUALITY ANALYSIS

ND OTM previously submitted an ambient air quality impact analysis outlined in air emission license A-180-77-4-A (dated October 12, 2012) demonstrating that emissions from the facility, in conjunction with all other sources, do not violate ambient air quality standards (AAQS). An additional ambient air quality impact analysis is not required for this NSR license.

ORDER

Based on the above Findings and subject to 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 New Source Review License A-180-77-15-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) ND OTM is authorized to install and operate a Wet Lap System, and to modify operations as required to produce pulp with a higher Kappa number as discussed in the application.

(2) **Facility-Wide Pulp Production**

A. ND OTM shall limit total pulp production to 220,825 ADUBP tons/year on a calendar year basis.

B. ND OTM shall maintain records documenting facility-wide pulp production on a daily and calendar year total basis.

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

(3) ND OTM shall collect emissions from vent points on the medium Kappa processing equipment as part of the HVLC system for incineration in the Lime Kiln. Collection points shall include the #2 Consistency Chest, Secondary Dilution Chest, MicraScreens, and Tertiary Chest. The HVLC system shall continue to meet all applicable requirements of 06-096 C.M.R. ch. 124 and 140, and 40 C.F.R. Part 63, Subpart S, as contained in the facility's existing Air Emission License and amendments. [06-096 C.M.R. ch. 115, BACT]

(4) **Future Project Emissions Reporting**

A. ND OTM shall monitor, calculate, and maintain a record of the annual emissions, in tons per year on a calendar year basis, of VOC for all emission units that are part of the Medium Kappa and Wet Lap System projects (modified or affected). This includes the #4 Recovery Boiler, Digester System, Brownstock Washer, Zaremba Multiple Effect Evaporator, Unitech Multiple Effect Evaporator, Smelt Dissolving Tank, Lime Kiln, and Pulp Dryer. ND OTM must monitor, calculate, and maintain a record of the annual emissions for a period of 5 years following the resumption of regular operations after the change. [40 C.F.R. § 52.21(r)(6)]

B. If the annual emissions, in tons per year, from the project exceed the baseline actual emissions, excluding any emission increase unrelated to the project and due to demand growth, for any of these pollutants by an amount equal to or greater than the significant emissions increase level for that pollutant, ND OTM shall submit a report to the Department and EPA within 60 days after the end of the calendar year which contains the following:

1. The facility name, address, and phone number;
2. The annual emissions for the project; and
3. Any other information that the facility wishes to include in the report (e.g., an explanation as to why the emissions differ from the preconstruction projection.)

[40 C.F.R. § 52.21(r)(6)(v)]

**ND OTM LLC
Penobscot County
Old Town, Maine
A-180-77-15-A**

**Departmental
Findings of Fact and Order
New Source Review
NSR #15**

- (5) ND OTM shall submit an application to incorporate this NSR license into the facility's Part 70 air emission license no later than 12 months from commencement of the requested operation. [06-096 C.M.R. ch. 140 § 1(C)(8)]

DONE AND DATED IN AUGUSTA, MAINE THIS 21st DAY OF MARCH, 2022.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY:  for
MELANIE LOYZIM, COMMISSIONER

PLEASE NOTE ATTACHED SHEET FOR GUIDANCE ON APPEAL PROCEDURES

Date of initial receipt of application: June 25, 2021

Date of application acceptance: June 28, 2021

Date filed with the Board of Environmental Protection:

This Order prepared by Benjamin Goundie, Bureau of Air Quality.

FILED
MAR 21, 2022
State of Maine
Board of Environmental Protection