STATEMENT OF BASIS

For the issuance of Draft Air Permit # 0287-AOP-R20 AFIN: 41-00002

1. PERMITTING AUTHORITY:

Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

2. APPLICANT:

Domtar A.W. LLC - Ashdown Mill
285 Highway 71 South
Ashdown, Arkansas 71822

3. PERMIT WRITER:

Christopher Riley

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Paper (except Newsprint) Mills
NAICS Code: 322121

5. ALL SUBMITTALS:

Date of Application	Type of Application (New, Renewal, Modification, Deminimis/Minor Mod, or Administrative Amendment)	Short Description of Any Changes That Would Be Considered New or Modified Emissions
6/27/2017	Modification	Converting Pulp Line 1A to be able to run both soft and hard wood. No changes in actual emissions
6/28/2017	Administrative Amendment	N/A

6. REVIEWER'S NOTES:

Domtar A.W. LLC. –Ashdown Mill (AFIN: 41-00002) operates a paper mill located at 285 Highway 71 South in Ashdown, Arkansas 71822. Domtar submitted a pair of applications, as an administrative amendment and a significant modification, to modify No. 1A Pulp Line to process softwood in addition to hardwood as well as add a material mixer to the Insignificant Activities list. The modification to No. 1A Pulp Line does trigger PSD review. There are no permitted emissions changes due to these applications.

Prevention of Significant Deterioration

This facility is considered an existing major source under 40 CFR §52.21, Prevention of Significant Deterioration (PSD) regulations because the facility is a Kraft Pulp Mill (one of the 28 listed industrial source categories) and has the potential to emit more than 100 tpy of a regulated New Source Review (NSR) pollutant. The following PSD analysis pertains to the modification of the 1A pulp line to softwood. The modification involves no changes to the method of operation for the 1A pulp line.

Modification PSD Applicability

The PSD applicability test for the project is presented below and is based on a test for actual to future actual emissions for existing equipment. For given pollutants the increase is zero because there is no increase due to change of material (softwood vs. hardwood having the same documented emission factor), application of projected actual emissions, application of "could have accommodated" emissions, or a combination of these. The net result is either some value less than or equal to zero.

Applicability Table Step 1

Pollutants	SER (tpy)	PEI	%SER	PSD triggered
VOC	40	1319.8	3300	Yes
TRS	10	0	0	No
CO	100	89	89%	No
PM	25	3.9	15	No
PM_{10}	15	2.6	17	No
$PM_{2.5}$	10	1.8	18	No
NO_X	40	0	0	No
SO_2	40	0	0	No
Lead	0.6	0	0	No
H_2SO_4	7	0	0	No
GHG	75000	0	0	No

No further consideration is given to total suspended particulate (PM), particulate matter less than 10 micron (PM_{10}), particulate matter less than 2.5 micron ($PM_{2.5}$), sulfur dioxide (SO_2), carbon monoxide (CO), total reduced sulfur (TRS), nitrogen oxides (NO_X), lead (Pb), or sulfuric acid mist (H_2SO_4) because the increase in the emission rates for those pollutants does not exceed their respective significant emission rates (SER). Although the proposed increase for the CO is less than the SER, a reasonable possibility exists under paragraph (r)(6) of 40 CFR §52.21 due to projected actual emissions with consideration of could have accommodated emissions summing to greater than 50 percent of the SER.

Greenhouse gases (GHG) were evaluated for PSD applicability. The sources that emit GHG and that are potentially affected by this project are the No. 2 recovery boiler (SN-06), the No. 3 recovery boiler (SN-14), and the precipitated calcium carbonate (PCC) plant. For the recovery boiler the permittee demonstrated that an increase did not occur for any of the pollutants listed in the preceding applicability tables. The boiler utilization did not increase with this project. Therefore, there is not an increase at those sources for greenhouse gases either. For the PCC plant emission calculations for CO_2, the only expected greenhouse gas to be emitted from that source, and assuming that all the calcium carbonate is converted, the potential CO_2e emissions would be 14,454 tpy. Therefore, the modification will not result in an increase greater than 75,000 tpy CO_2e and PSD review for GHG was not triggered.

Since the emission increase associated with the modification exceeds the SER for volatile organic compounds (VOC), the contemporaneous changes must be considered in determining whether or not PSD review is triggered. The contemporaneous period extends from January 1, 2013 to January 1, 2018. The permittee identified eight modifications including the current modification at hand during this period.

Modification	Emission Rate Change (tpy)
	VOC
Engines Addition	1.5
Engine Replacement	No Change
Emergency Engine Addition	0.1
Paper Additive Silos Addition	No Change
Paper Dye Operation Addition	12.8
Colling Towers Addition	No Change
A1 Machine Conversion	20.2
Fire Water Pump Engine Replacement	Decrease and Not Accounted
Second Fire Water Pump Engine Replacement	No Change
Bark Pile Addition	No Change
Title V Permit Renewal	Decrease and Not Accounted
Net Change	34.6

Applicability Table Step 2

Pollutants	SER (tpy)	PEI (tpy)	CCI (tpy)	CCD (tpy)	NEI (tpy)	PSD Review
VOC	40	1319.8	34.6	0	1354.4	Yes

The net emission increase exceeded the PSD SER for VOC. Therefore, PSD review was triggered for this pollutant.

BACT Analysis Summary

Any major source or major modification subject to PSD review must conduct an analysis to ensure the use of best available control technology (BACT). The requirements for conducting BACT can be found in the PSD regulations and applies to each pollutant that exceeds the SER. A BACT analysis is required for each new or existing emission unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of operation in the unit. For this modification VOC exceeds its respective SER. The emission units and pollutants that require BACT are listed below.

Emission Unit	Source Description	Pollutants Subject to BACT
Multiple units that exhaust into the NCG system and control emissions from that system	NCG System	VOC

The methodology used to determine BACT is the top-down method described in a 1987 memorandum from the EPA Assistant Administrator for Air and Radiation. Following the top-down method all available control technologies are ranked in descending order of control effectiveness. The most stringent control available for a similar or identical source or source category is identified, and a determination of feasibility is made. If the most stringent level of control is determined to be infeasible based on technical, economic, environmental, or energy related reasons, then the next most stringent option is evaluated. The process continues until the BACT level under consideration cannot be eliminated. If the emission unit and pollutant is subject to an applicable State Implementation Plan emission limitation, New Source Performance Standard (40 CFR Part 60) then BACT can be no less stringent than the emission standards specified by those applicable regulations. The *New Source Review Workshop Manual (Draft)* lists the five basic steps of conducting this analysis.

BACT Evaluation for the Non Condensable Gas (NCG) System

Step 1. Identify All Control Technologies. - The following technologies were considered for the NCG:

Pollutant	Control Technology
VOC	Thermal Destruction (Incineration) Carbon Adsorption Condensation Biofiltration

Step 2. Eliminate Technically Infeasible Control Technologies - The second step is to determine which control technologies are infeasible for technical reasons. Each control technologies for each pollutant is considered, those that are clearly technically infeasible are eliminated.

The technical feasibility of some of the VOC control options is questionable. Most notably is catalytic oxidation (a subset of thermal destruction/incineration). EPA reports have indicated limited use of this technology in pulping industry due to high sulfur content of pulp mill vent gases. The sulfur in the vent gases can blind or poison catalytic systems. Regardless, no control technology was eliminated because the top control option (thermal destruction/incineration) will be selected.

Step 3. Rank Remaining Control Technologies – The third step is to rank the remaining control technologies based on effectiveness.

Pollutant	Control Technology	Destruction Efficiency
VOC	Thermal Destruction (Incineration) Carbon Adsorption Condensation Biofiltration	Greater than 98% 95% to98% 90% to 95% 90%

Step 4. Top Down Evaluation of Control Options - The fourth step is to evaluate the remaining control technologies based on economic, energy, and environmental considerations.

The permittee selected the thermal destruction/incineration control option which results in the highest level of control. Therefore no evaluation based on economic, energy, and environmental consideration was necessary.

Step 5. Select BACT – The most effective control option not eliminated is BACT. Based on available information in the RACT/BACT/LAER Clearinghouse, publications from EPA's Clean Air, Technology Center, and BACT determinations for VOC from NCG systems, BACT limits were determined to be:

Source	Pollutant	BACT Determination		
		Control Technology	Emission Limitation or Alternative	Testing Frequency
NCG	VOC	Thermal Destruction via boiler or lime kiln	98 % or Greater	None

The permittee has asserted that MACT (40 CFR Part 63, Subpart S) is BACT and that the necessary control equipment is already employed. The control equipment is the NCG system and the No. 2 Power Boiler (SN-05) or the No. 2 Lime Kiln (SN-09). The NCG system will collect the low volume, high concentration (LVHC) gases from this project and route the gases for destruction in either SN-05 or SN-09. Subpart S provides an option for achieving 98% destruction by introducing LVHC gases along with the primary fuel or directly into the flame zone of a boiler or lime kiln. The background information document for Subpart S (*EPA-453/R92-050b*) on Pages 5-2 and 8-19 clearly indicate the use of either boiler or the lime kiln is sufficient to ensure 98% reduction and without the need for emission monitoring. A mass emission limitation or monitoring that portion of mass emissions from either of these devices is impractical since both the boiler and kiln generate VOC's from the combustion of the primary fuel. Thus it is concluded testing to demonstrate the destruction efficiency for BACT is impractical as well. It should be noted that BACT is already met with the existing equipment.

Air Quality Analysis

PSD regulations requires the applicant to conduct an air quality analysis for the modification in order to demonstrate that the emissions from the modification along with other applicable increases and decreases will not cause or contribute to the violation of any NAAQS or PSD increment. For this modification PSD review was only triggered for VOC. There is no NAAQS or PSD increment for VOC. However, VOC is a precursor for the formation of ozone. For ozone there is a NAAQS but currently no increment. Additionally there is no approved model for ozone for single source applications. Therefore, no air dispersion modeling can be conducted that will allow a direct estimate of offsite impacts due to this project. In lieu of conducting dispersion modeling, the permittee evaluated the VOC contributions of the facility and that of the surrounding areas. Based on this analysis, the project contributes to less than 1% of the total VOC emissions. The VOC contribution was then compared to the ozone concentration determined by the closest known monitors located in Harrison County, TX and Mena, AR. These monitors have 8-hour averages of 0.069 ppm and 0.067 ppm, respectively. Based on this comparison the permittee concluded that with a VOC contribution of less than 1% this modification would not cause or contribute to a NAAQS violation for ozone.

Class II Area Additional Impacts Analysis

An additional impact analysis is based existing air quality, the quantity of emissions, and the sensitivity of local soils, vegetation, and visibility in the project's area of impact. The additional

impact analysis consists of three parts: (1) growth, (2) soils and vegetation, and (3) visibility impairment.

Growth Analysis

The growth analysis includes a projection of the associated industrial, commercial, and residential source growth that result in the area due to the source and an estimate of the air emissions generated by the above associated industrial, commercial, and residential growth. The project is not expected to create any new fulltime positions. Residential growth is not expected to result from the project. In addition, the shipping of raw materials and products to and from the facility is not expected to significantly increase the level of rail or ground traffic in the area. Therefore, no appreciable increase in emissions is expected as a result of any industrial, commercial, or residential growth associated with the project.

Soils and Vegetation

The analysis of soil and vegetation air pollution impacts is based on an inventory of the soil and vegetation types found in the impact area. This inventory considers vegetation with commercial or recreational value. Since the air quality demonstration above indicated the project will not cause or contribute to a NAAQS violation it is concluded that there will be no appreciable impact on soils and vegetation.

Class II Area Visibility

Visibility in general is evaluated using a three tiered approach involving software called-VISCREEN. This software considers impacts from NO_2 and particulate matter. Neither pollutant is emitted above already permitted rates, and as such, no additional impact on visibility is expected from this project. VISCREEN does not consider impacts from ozone. Therefore, no VISCREEN analysis was performed because there are no applicable emission increase requiring this analysis.

Class I Area Impact Analysis

Class I areas are areas of special national or regional natural, scenic, recreational, or historic value for which the PSD regulations provide special protection. The nearest Class I areas are the Caney Creek Wilderness Area located in southwestern Arkansas and the Upper Buffalo Wilderness Area located in northwestern Arkansas. Caney Creek is approximately 81 km north of the facility, and Upper Buffalo is approximately 249 km north of the facility. The modification must demonstrate that neither a visibility impairment or a violation of a Class I increment will occur from this project. Currently, there is no Class I increment for VOC or ozone.

For the same reasons for the Class II Areas, a Class I area visibility analysis using VISCREEN was not performed. Additionally, the federal land managers' guidance FLAG allows screening to determine whether or not visibility analysis must be performed. FLAG requires this

assessment to consider both the mass emissions (Q) and a facility's proximity (d) to a Class I area. If the analysis results in Q/d value less than 10 then no further screening is necessary and it can be presumed that the project does not result in an appreciable impact on visibility in the Class I area. For this project, the increase, Q, is 2.6 tpy (all of which is PM_{10}). Thus Q/d is less than 0.1 and much less than 10 for the closer of the two Class I areas. Therefore, it is concluded additional visibility screening is not necessary for either Class I areas identified above.

7. COMPLIANCE STATUS:

The following summarizes the current compliance of the facility including active/pending enforcement actions and recent compliance activities and issues.
The facility was last inspected February 29-March 1, 2016. The inspection found no violations.

8. PSD APPLICABILITY:

a) Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? Y

b) Is the facility categorized as a major source for PSD? Y

- *Single pollutant ≥ 100 tpy and on the list of 28 or single pollutant ≥ 250 tpy and not on list*

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Facility	40 CFR Part 63, Subpart S	NESHAPS for Hazardous Air Pollutants from the Pulp and Paper Industry
Facility	40 CFR Part 60, Subpart A	General Provisions
Facility	40 CFR §52.21	Prevention of Significant Deterioration
Facility	40 CFR 52, Subpart E	Prevention of Significant Deterioration
01	40 CFR Part 60, Subpart Db	Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units
02	40 CFR Part 60, Subpart BB	Standards of performance for Kraft Pulp Mills
02	40 CFR Part 63, Subpart MM	NESHAPS for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite and Stand-Alone Semichemical Pulp Mills
05	40 CFR Part 60, Subpart BB	Standards of Performance for Kraft Pulp Mills
05	40 CFR Part 60, Subpart D	Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction Is Commenced after August 17, 1971
06	40 CFR Part 60, Subpart BB	Standards of Performance for Kraft Pulp Mills

06	40 CFR Part 63, Subpart MM	NESHAPS for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite and Stand-Alone Semichemical Pulp Mills
08	40 CFR Part 60, Subpart BB	Standards of Performance for Kraft Pulp Mills
08	40 CFR Part 63, Subpart MM	NESHAPS for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite and Stand-Alone Semichemical Pulp Mills
09	40 CFR Part 60, Subpart BB	Standards of Performance for Kraft Pulp Mills
09	40 CFR Part 63, Subpart MM	NESHAPS for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite and Stand-Alone Semichemical Pulp Mills
14	40 CFR Part 60, Subpart BB	Standards of Performance for Kraft Pulp Mills
14	40 CFR Part 63, Subpart MM	NESHAPS for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite and Stand-Alone Semichemical Pulp Mills
15	40 CFR Part 60, Subpart BB	Standards of Performance for Kraft Pulp Mills
15	40 CFR Part 63, Subpart MM	NESHAPS for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite and Stand-Alone Semichemical Pulp Mills
23	40 CFR Part 60, Subpart Kb	NSPS 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
16, 17, 18, 46	40 CFR 63, Subpart S	NESHAPS from the pulp and paper industry
01, 03, and 05	40 CFR 63, Subpart DDDDD	NESHAPS for major sources: Industrial, Commercial, and Institutional Boilers and Process Heaters
50, 53, 54a, 54b, 57, 58, 59	40 CFR Part 63, Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
58 and 59	40 CFR Part 60, Subpart IIII	Standards of Performance for stationary compression ignition internal combustion engines

10. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

11. AMBIENT AIR EVALUATIONS:

a) Reserved.

b) Non-Criteria Pollutants:

c) H_2S Modeling:

A.C.A. §8-3-103 requires hydrogen sulfide emissions to meet specific ambient standards. Many sources are exempt from this regulation, refer to the Arkansas Code for details.

Is the facility exempt from the H_2S Standards Y

The facility is subject to and complies with 40 CFR Part 60, Subpart BB and is exempt pursuant to A.C.A. § 8-3-103-(d)(2)(B)(ii).

12. CALCULATIONS:

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
Source SN-01 No. 3 Power Boiler (NCASI Factors include a 20% safety factor)					
PM/PM_{10}	NSPS and PSD	0.025 lb/MMBtu	ESP	98	Controlled Lb/hr based on 790 MMBtu/hr
SO_2	PSD BACT	0.1 lb/MMBtu (NSPS Limit)	N/A	-	PSD limit applied to unit with 620 MMBtu/hr of bark feed and 170 MMBtu/hr natural gas. (Permit 946-A)
VOC	PSD BACT	0.027 lb/MMBtu	N/A		PSD limit applied to unit with 790 MMBtu/hr of bark feed and natural gas
CO	PSD BACT	0.35 lb/MMBtu	N/A		PSD limit applied to unit with 790 MMBtu/hr of a combination of bark feed and natural gas
NO_X	PSD and NSPS Db	0.3 lb/MMBtu	N/A		PSD limit applied to unit with 790 MMBtu/hr of a combination of bark feed and natural gas
Lead	NCASI	5.20E-06 lb/MMBtu	ESP	N/A	790 MMBtu/hr Heat Input Design Capacity
Acetaldehyde	NCASI	2.80E-04 lb/MMBtu	N/A		
Acrolein	NCASI	2.60E-04 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity
Benzene	NCASI	3.30E-03 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
Formaldehyde	NCASI	1.30E-03 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity
Hydrogen Chloride	Boiler MACT	2.20E-02 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity
Hexane	NCASI	1.8 lb/MMscf	N/A		790 MMBtu/hr Heat Input Design Capacity
Naphthalene	NCASI	6.10E-04 lb/MMscf	N/A		
Phenol	NCASI	1.60E-04 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity
Toluene	NCASI	2.90E-05 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity, No SF
Antimony	NCASI	4.20E-07 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity
Arsenic	NCASI	1.90E-06 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity
Beryllium	NCASI	4.00E-07 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity
Cadmium	NCASI	1.10E-03 lb/MMscf	N/A		790 MMBtu/hr Heat Input Design Capacity
Chromium VI	NCASI	4.90E-07 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity
Chromium	NCASI	2.40E-06 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity
Cobalt	NCASI	2.40E-06 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity
Manganese	NCASI	9.10E-05 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity
Mercury	Boiler MACT	5.76E-6 lb/MMBtu	N/A		
Nickel	NCASI	3.50E-06 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity
Selenium	NCASI	3.30E-06 lb/MMBtu	N/A		790 MMBtu/hr Heat Input Design Capacity
SN-02 No. 3 Lime Kiln (NCASI Factors include a 20% safety factor)					
PM_{10}/PM	NSPS BB	0.066 gr/dscf	ESP	98	Stack Test 8.6 lb PM_{10}/hr

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
SO_2	PSD	0.727 lb/Ton CaO (13.3 lb/hr)			PSD limit applied to unit with 440 tons per day of lime (Permit 946-A) (0.727*440)/24= lb/hr tpy *8760
VOC	PSD	0.795 lb/ton of CaO			287-AR-7 cites AP-42, 4th Edition, current AP-42 does not have a factor. Calculation of lb/h and tpy same as SO2. The permit has as PSD limit but 946-A did not have in PSD. Picked up as a PSD cite in 287-AR-7.
CO	PSD	3.0 lb/ton CaO			PSD limit applied to unit with 440 tons per day of lime (Permit 946-A) (3.0*440)/24= lb/hr tpy *8760
NO_X	PSD	3.63 lb/ton CaO			PSD limit applied to unit with 440 tons per day of lime (Permit 946-A) (3.63*440)/24= lb/hr tpy *8760
TRS	NSPS BB	8 ppm			1.34 lb/hr CEMS
Lead	NCASI	2.10E-05 lb/ton			
Acetaldehyde	NCASI	9.70E-03 lb/ton			
Benzene	Stack Test	0.24 lb/hr			
Formaldehyde	NCASI	9.40E-03 lb/ton CaO			
Methanol	NCASI	9.30E-02 lbs/ton			
Toluene	NCASI	8.30E-03 lb/ton CaO			
Antimony	NCASI	2.60E-06 lb/tons			
Arsenic	NCASI	1.20E-06 lb/tons			

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
Beryllium	NCASI	3.30E-06 lb/tons			
Cadmium	NCASI	1.30E-05 lb/tons			
Chromium	NCASI	4.00E-05 lb/tons			
Cobalt	NCASI	1.10E-05 lb/tons			
Manganese	NCASI	1.10E-04 lb/tons			
Mercury	NCASI	5.40E-06 lb/tons			
Nickel	NCASI	8.30E-05 lb/tons			
Selenium	NCASI	1.80E-06 lbs/tons			
Source SN-03 No. 1 Power Boiler (Factors include a 20% safety factor)					
PM_{10}/PM	AP-42/NCASI	7.6 lb/MMscf	WESP	98%	Stack test 20% SF
SO_2	AP-42/NCASI	0.6 lb/MMscf			
VOC	AP-42/NCASI	5.5 lb/MMscf			
CO	AP-42/NCASI	84 lb/MMscf			Stack test 20% SF
NOx	AP-42/NCASI	280 lb/MMscf			
Lead	AP-42/NCASI	5.00E-04 lb/MMscf	WESP		
Acetaldehyde	NCASI Factor	0.84 lb/hr	N/A		
Acrolein	NCASI	9.36E-05 lb/MMBtu	N/A		580 MMBtu/hr Design Heat Input Capacity
Barium	AP-42/NCASI	4.40E-03 lb/MMscf			
Benzene	AP-42/NCASI	2.10E-03 lb/MMscf	N/A		580 MMBtu/hr Design Heat Input Capacity
Formaldehyde	AP-42/NCASI	7.5E-02 lb/MMscf	N/A		580 MMBtu/hr Design Heat Input Capacity

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
Hydrogen Chloride	Stack Test	52.2 lb/hr			
Hexane	AP-42/NCASI	1.8 lb/MMscf	N/A		580 MMBtu/hr Design Heat Input Capacity
Phenol	NCASI	1.4E-05 lb/MMBtu	N/A		580 MMBtu/hr Design Heat Input Capacity
Toluene	AP-42/NCASI	3.40E-03 lb/MMscf	N/A		580 MMBtu/hr Design Heat Input Capacity
Antimony	NCASI	5.04E-07 lb/MMBtu	N/A		580 MMBtu/hr Design Heat Input Capacity
Arsenic	AP-42/NCASI	2.00E-04 lb/MMscf	N/A		
Beryllium	AP-42/NCASI	1.20E-05 lb/MMscf	N/A		
Cadmium	AP-42/NCASI	1.10E-03 lb/MMscf	N/A		
Chromium VI	NCASI	5.88E-07 lb/MMBtu	N/A		580 MMBtu/hr Design Heat Input Capacity
Chromium	AP-42/NCASI	1.40E-03 lb/MMscf	N/A		580 MMBtu/hr Design Heat Input Capacity
Cobalt	AP-42/NCASI	8.40E-05 lb/MMscf	N/A		580 MMBtu/hr Design Heat Input Capacity
Manganese	AP-42/NCASI	3.80E-04 lb/MMscf	N/A		
Mercury	AP-42/NCASI	2.60E-04 lb/MMscf			580 MMBtu/hr Design Heat Input Capacity
Nickel	AP-42/NCASI	2.10E-03 lb/MMscf			
Selenium	AP-42/NCASI	2.40E-05 lb/MMscf			580 MMBtu/hr Design Heat Input Capacity
Source SN-05 No. 2 Power Boiler (NCASI factors include a 20% safety factor)					
PM_{10}	NSPS D	0.1 lb/MMBtu	Venturi Scrubber	98	820 MMBtu/hr Design Heat Input Capacity
SO_2	NSPS D	1.2 lb/MMBtu	Venturi Scrubber	98	820 MMBtu/hr Design Heat Input Capacity
VOC	Stack Test	92 lb/hr			
CO	MACT	900 ppmvd			820 MMBtu/hr Design Heat Input Capacity
NO_X	NSPS	0.7 lb/MMBtu			820 MMBtu/hr Design Heat Input Capacity

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
Lead	NCASI	3.60E-05 lb/MMBtu			
Acetaldehyde	NCASI	2.80E-04 lb/MMBtu	N/A		
Acrolein	NCASI	2.60E-04 lb/MMBtu	N/A		820 MMBtu/hr Design Heat Input Capacity
Benzene	NCASI	3.3E-03 lb/MMBtu	N/A		820 MMBtu/hr Design Heat Input Capacity
HCl	Stack Test	5.75 lb/hr	N/A		
Hexane	NCASI	1.8 lb/MMscf	N/A		820 MMBtu/hr Design Heat Input Capacity
Naphthalene	Stack Test	0.50 lb/hr	N/A		
Phenol	NCASI	1.60E-04 lb/MMBtu	N/A		
Toluene	NCASI	2.9E-05 lb/MMBtu	N/A		
Antimony	NCASI	2.00E-06 lb/MMBtu	Venturi Scrubber	98	800 tons coal/day
Arsenic	NCASI	4.1E-04 lb/ton coal	Venturi Scrubber	98	800 tons coal/day
Beryllium	NCASI	2.1E-05 lb/ton coal	Venturi Scrubber	98	800 tons coal/day
Cadmium	NCASI	3.20E-06 lb/MMBtu	Venturi Scrubber	98	800 tons coal/day
Chromium VI	NCASI	6.1E-6 lb/MMBtu	Venturi Scrubber	98	820 MMBtu/hr Design Heat Input Capacity
Chromium	NCASI	2.6E-04 lb/ton coal	Venturi Scrubber	98	800 tons coal/day
Cobalt	NCASI	1.0E-04 lb/ton coal	Venturi Scrubber	98	800 tons coal/day
Manganese	NCASI	2.50E-04 lb/MMBtu	Venturi Scrubber	98	820 MMBtu/hr Design Heat Input Capacity
Mercury	MACT	5.76E-06 lb/MMBtu	Venturi Scrubber	98	800 tons coal/day
Nickel	NCASI	2.8E-04 lb/ton coal	Venturi Scrubber	98	800 tons coal/day
Selenium	NCASI	1.3E-03 lb/ton coal	Venturi Scrubber	98	800 tons coal/day
Source SN-06 No. 2 Recovery Boiler (NCASI factors include a 20% safety factor)					

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
PM_{10}	NSPS BB	0.044 gr/dscf	ESP	98	
SO_2	PSD	286 lb/hr			PSD limit from 287-AR-3
VOC	Stack Test	46.7 lb/hr			
CO	PSD	980 lb/hr 16.8 lb/ADTP			
NO_X	PSD	309.2 lb/hr 5.3 lb/ADTP			
Lead	NCASI	2.30E-05 lb/ton BLS			
Sulfuric Acid	NCASI	3.22 lb/hr			
Acetaldehyde	NCASI	6.1E-03 lb/ton BLS			2160 tons BLS/day 788,400 tons BLS/yr
Benzene	NCASI	5.0E-03 lb/ton BLS			2160 tons BLS/day 788,400 tons BLS/yr
Formaldehyde	NCASI	1.5E-02 lb/ton BLS			
Styrene	NCASI	8.80E-04 lb/ton BLS			
Antimony	NCASI	1.00E-06 lb/ton BLS			
Arsenic	NCASI	1.47E-06 lb/ton BLS			
Beryllium	NCASI	9.68E-07 lb/ton BLS			
Cadmium	NCASI	1.20E-05 lb/ton BLS			
Chromium	NCASI	4.49E-05 lb/ton BLS			
Chromium VI	NCASI	1.60E-05 lb/ton BLS			
Cobalt	NCASI	3.20E-06 lb/ton BLS			
Manganese	NCASI	9.98E-05 lb/ton BLS			

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
Mercury	NCASI	5.46E-06 lb/ton BLS			
Nickel	NCASI	7.92E-05 lb/ton BLS			
Selenium	NCASI	5.35E-06 lb/ton BLS			
Hydrogen Chloride	Stack Test	51.20 lb/hr			
Methanol	NCASI	0.045 lb/ton BLS			2160 tons BLS/day 788,400 tons BLS/yr
TRS	NSPS BB	5 ppm			NSPS BB 5PPMV
Source SN-08 - No. 2 Smelt Dissolving Tank (NCASI factors have a 20% safety factor)					
PM_{10}/ PM	NSPS BB	0.2 lb/ton BLS	Scrubber	80	PM is a PSD limit from 287-AR-3 2160 tons BLS/day 788,400 tons BLS/yr
SO_2	PSD	10.6 lb/hr	Scrubber	80	SO_2 is a PSD limit from 287-AR-3
VOC	NCASI	0.066 lb/ton BLS			2160 tons BLS/day 788,400 tons BLS/yr
Acetaldehyde	NCASI	1.6E-03 lb/ton BLS			2160 tons BLS/day 788,400 tons BLS/yr
Ammonia	NCASI	0.41E-03 lb/ton BLS			2160 tons BLS/day 788,400 tons BLS/yr
Formaldehyde	NCASI	3.5E-03 lb/ton BLS			2160 tons BLS/day 788,400 tons BLS/yr
Methanol	NCASI	0.087 lb/ton BLS			2160 tons BLS/day 788,400 tons BLS/yr
Beryllium	NCASI	2.50E-07 lb/ton BLS			
TRS	NSPS BB	0.033 lb/ton BLS	Scrubber	60	2160 tons BLS/day 788,400 tons BLS/yr
Source SN-09 No. 2 Lime Kiln (NCASI factors have a 20% safety factor)					
PM/PM_{10}	Stack Test NSPS MM	51.0 lb/hr 0.064 gr/dscf	Scrubber	85	PM is a PSD limit
SO_2	Permit 946A	0.727 lb/ton CaO			Based on BACT for Lime Kiln No. 3 18.33 tons CaO/hr 160571 tons CaO/yr

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
VOC	AP-42 , 4th edition, 1985	17.1 lb/hr			18.33 tons CaO/hr 160571 tons CaO/yr
CO	BACT	3.0 lb/ton CaO			Based on BACT for Lime Kiln No. 3
NO_X	AP-42 , 4th edition, 1985	3.7411 lb/ton CaO			18.33 tons CaO/hr 160571 tons CaO/yr
Lead	NCASI	6.20E-03 lb/ton BLS			
Acetaldehyde	NCASI	9.70E-03 lb/ton CaO			18.33 tons CaO/hr 160571 tons CaO/yr
Benzene	Stack Test	0.23			
Methanol	NCASI	9.30E-02 lb/ton BLS			
Formaldehyde	NCASI	9.40E-03 lb/ton CaO			
Toluene	NCASI	8.3E-03 lb/ton CaO			
Antimony	NCASI	3.70E-06 lb/tons BLS			
Arsenic	NCASI	1.30E-05 lb/tons BLS			
Beryllium	NCASI	1.19E-06 lb/tons BLS			
Cadmium	NCASI	2.60E-05 lb/tons BLS			
Chromium	NCASI	2.70E-04 lb/tons BLS			
Cobalt	NCASI	1.00E-05 lb.tons BLS			
Manganese	NCASI	1.70E-03 lb.tons BLS			
Mercury	NCASI	4.00E-06 lb.tons BLS			
Nickel	NCASI	3.10E-04 lb/tons BLS			
Selenium	NCASI	1.40E-05 lb.tons BLS			

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
TRS	NSPS BB	8.00 ppmvd @10% O_2	Scrubber	25	CEMS
Source SN-14 No. 3 Recovery Boiler (NCASI factors have a 20% safety factor)					
PM_{10}/PM	PSD NSPS	93.5 lb/hr 0.044 gr/dscf	ESP	98	controlled
SO_2	PSD	425.0 lb/hr 250 PPM			287-AR had a PSD avoidance limit of the firing rate of BLS. CEMS can show compliance now. 1861.5 tpy
VOC	AP-42 , 4th edition, 1985	0.8 lb/ADTP			INCOMPLETE Calculations
CO	CEMS	856 lb/hr			
NOx	CEMS	270 lb/hr			PSD Limit
Acetaldehyde	NCASI	4.2E-04 lb/ton BLS			2,800 tons/day 1,022,000 tons/yr
Benzene	NCASI	6.4E-04 lb/ton BLS			2,800 tons/day 1,022,000 tons/yr
Formaldehyde	NCASI	6.6E-03 lb/ton BLS			2,800 tons/day 1,022,000 tons/yr
Hydrogen Chloride	Stack Test	54.50 lb/hr			
Methanol	NCASI	0.045 lb/ton BLS			2,800 tons/day 1,022,000 tons/yr
Styrene	NCASI	8.8E-04 lb/ton BLS			2,800 tons/day 1,022,000 tons/yr
Sulfuric Acid	Stack Test	4.20 lb/hr			
TRS	CEMS	6.6 lb/hr			PSD Limit
Source SN-15 - No. 3 Smelt Dissolving Tank (NCASI factors have a 20% safety factor)					
PM_{10}/PM	PSD NSPS BB	18.7 lb/hr 0.1 g/kg BLS	Scrubber	90	
SO_2	PSD	5.1 lb/hr	Scrubber	10	
VOC	NCASI[7]	0.066 lb/ton BLS			2800 tons/day 1,022,000 tons/year
TRS	PSD NSPS BB	1.6 lb/hr 0.0168 g/kg BLS	Scrubber	25	

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
Acetaldehyde	NCASI	1.6E-04 lb/ton BLS			
Ammonia	NCASI	0.41 lb/ton BLS			
Formaldehyde	Stack Test	0.58 lb/hr			
Methanol	NCASI	0.087 lb/ton BLS			
Beryllium	NCASI	2.5E-07 lb/ton BLS			
Sources SN-16 – No. 1A Bleachplant Vents, SN-17 - No. 1B Bleachplant Vents and SN-18 - No. 2 Bleachplant Vents (NCASI factors have a 20% safety factor)					
VOC	Stack Test	32.0 lb/hr			Bubbled Sources
CO	Stack Test	240.4 lb/hr			
Acetaldehyde	NCASI	0.0037 lb/ADTUBP			3,407 ADTUBP/day 1,234,555 ADTUBP/yr
Chlorine	Stack Test	6.00 lb/hr	Scrubber	99	
Chlorine Dioxide	Stack Test	4.00 lb/hr	Scrubber	99	
Chloroform	Stack Test	16.50 lb/hr			
Formaldehyde	NCASI	4.2E-4 lb/ADTUBP			3,407 ADTUBP/day 1,234,555 ADTUBP/yr
HCl	NCASI	0.022 lb/ADTUBP			3,407 ADTUBP/day 1,234,555 ADTUBP/yr
Methanol	NCASI	0.16 lb/ADTUBP			3,407 ADTUBP/day 1,234,555 ADTUBP/yr
TRS	NCASI	0.016 lb/ADTUBP			3,407 ADTUBP/day 1,234,555 ADTUBP/yr
Source SN-20 - ERCO ClO2 Generator					
Chlorine	Stack Test	0.30 lb/hr			
Chlorine Dioxide	Stack Test	3.00 lb/hr			
Source SN-21 - Effluent Treatment Lagoons (NCASI factors have a 20% safety factor)					
VOC	NCASI	248.9 lb/hr			Sum of methanol, formaldehyde, and chloroform estimates 75 Mgal/day effluent
Chloroform	NCASI	5E-03 lb/ADTUBP			3,770 ADTUBP/day 1,376,050 ADTUBP/yr
Formaldehyde	NCASI	0.76 ppmw			3,770 ADTUBP/day 1,376,050 ADTUBP/yr

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
Methanol	NCASI	4.9 [A] 21.4 [B] 0.25 [C] 0.25 [D]			3,770 ADTUBP/day 1,376,050 ADTUBP/yr Contributions from sources: A: Bleach Plant [lb/ADTUBP] B: Condensates [lb/ADTUBP] C: Clarifier Effluent [ppmw] D: Clarifier Fugitive [ppmw]
Source SN-22 - No. 1A and 1B Brownstock Washers (NCASI factors have a 20% safety factor)					
VOC	stack test	1A 0.57 lb/ton pulp and No. 1B .06173 lb/ton pulp			59.2 lb/hr 259.3 tpy
Acetone	stack test	8.80 lb/hr			
Formaldehyde	stack test	0.2 lb/hr			
Methanol	stack test	59 lb/hr			
TRS	NCASI	0.23 lb/ADTUBP			1,152 ADTUBP/day 420,480 ADTUBP/yr
Source SN-23 - Storage Tank - Methanol Tank					
VOC	AP-42 Sec. 7.1.3.1	39.81 lb/hr			
Methanol	AP-42 Sec. 7.1.3.1	39.81 lb/hr			
SN-28 - Storage Tank					
VOC	AP-42 Sec. 7.1.3.1	6.62 lb/hr			
Formic Acid	AP-42 Sec. 7.1.3.1	6.62 lb/hr			
Source SN-29 - Recausticizer Vents (NCASI factors have a 20% safety factor)					
PM/PM_{10}	NCASI	0.031 lb/ton CaO			1,152 tons CaO/day 420,500 tons CaO/yr
VOC	NCASI	3.62 lb/hr			Sum of acetaldehyde and methanol

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
Acetaldehyde	NCASI	2.1E-2 lb/ton CaO			Emission factor is from the previous permit. Permittee requested to keep existing emission limit of 0.51 lb/hr.
Ammonia	NCASI	0.46 lb/ton CaO			1,152 tons CaO/day 420,500 tons CaO/yr
Methanol	NCASI	0.054 lb/ton CaO			1,152 tons CaO/day 420,500 tons CaO/yr
Sources SN-30A, SN-30B, SN-30C, SN-30D, SN-30E and SN-30E – PCC Carbonators Lime Silos					
PM_{10}	Stack test	4.8 lb/hr			
SO_2	Stack test	2.4 lb/hr			
VOC	Stack test	12.6 lb/hr			
CO	Stack test	54.6 lb/hr			
NO_X	Stack test	65.4 lb/hr			
TRS	Stack test	0.36 lb/hr			
Source SN-36 - Weak Black Liquor Tanks (Tanks #1 through #10)					
VOC	NCASI	0.713 lb/hr/tank			
Acetone	NCASI	0.016 lb/hr/tank			
Acetaldehyde	NCASI	0.0032 lb/hr/tank			
Methanol	NCASI	0.71 lb/hr/tank			
TRS (#1-#9)	Stack test	0.1 lb/hr			PSD limit
TRS (#10)	Stack test	0.0531			PSD limit
Source SN-37 - Pulp Dryer Hood and Vacuum Exhausts					
VOC	Stack test	4.7 lb/hr			R0 Application: production rate 37.5 tph finished pulp @7% moisture which is 34.875 tph bone dry pulp 900 air dried tons per day finished product Permitted 8,760 hours (328,500 ADTFP/yr)

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
Acetaldehyde	NCASI	0.033 lb/ADTFP			See comment for VOC. Permit limit includes 20% safety factor
Methanol	NCASI	0.071 lb/ADTFP			See comment for VOC. Permit limit includes 20% safety factor
Source SN-38 - No. 2 and No. 3 Wood Yards					
PM	AP-42 Section 13.2.4	5.6 lb/hr			Bark, Chips, Wind Erosion, and Jet Screen
PM_{10}	AP-42 Section 13.2.4	4.14 lb/hr			Bark, Chips, Wind Erosion, and Jet Screen
VOC	NCASI	2.16 lb/hr			Assumes 50% moisture, 100% softwood PSD Limit
Source SN-39 – High Density Storage Tanks					
VOC	NCASI	0.151 lb/hr/tank			11 tanks Sum of acetaldehyde, chloroform, and methanol 20% SF
Acetaldehyde	NCASI	0.02 lb/hr/tank			11 tanks 20% SF
Chloroform	NCASI	0.011 lb/hr/tank			11 tanks 20% SF
Methanol	NCASI	0.12 lb/hr/tank			11 tanks 20% SF
TRS	NCASI	0.349 lb/hr/tank			11 tanks 20% SF
Acetone	NCASI	0.027 lb/hr/tank			11 tanks 20% SF
Source SN-40 - No. 1A and No. 1B Digester Chip Fill Exhausts					

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
VOC	Stack Test	2.09 lb/fill			Compliance demonstrated by limiting time between blows Sum of Methanol and Ethanol Max 4.8 fills/hr 2,304 ADTP/day 840,960 ADTP/yr
Methanol	Stack Test	5.75 lbs/hr			Compliance demonstrated by limiting time between blows Max 4.8 fills/hr
TRS	NCASI	2.02 lb/hr			Compliance demonstrated by limiting time between blows Max 4.8 fills/hr 2,304 ADTP/day 840,960 ADTP/yr
Source SN-41 - Sludge Landfill					
PM	AP-42 Section 13.2.4	1.36E-3 lb/ton Sludge			344,000 yd^3/yr 170 yd^3/hr 947.7 lb/yd^3
PM_{10}	AP-42 Section 13.2.4	6.5E-4 lb/ton Sludge			344,000 yd^3/yr 170 yd^3/hr 947.7 lb/yd^3
VOC (as NMOC)	LandGEM	63.15 lb/hr			
CO	LandGEM	4.8 lb/hr 1.8 tpy			
HAPS	LandGEM				See Permit For Emission Rates
Source SN-42 - No. 2 Decker					
VOC	Stack Test	5.6 lb/hr			Sum of acetaldehyde, formaldehyde, methanol, and terpenes (0.48 lb terpenes/ADTUBP)
Acetaldehyde	NCASI	5.9E-03 lb/ADTUBP			1,100 ADTUBP/day 401,500 ADTUBP/yr 20% SF
Acetone	Stack Test	7.52 lb/hr			

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
Formaldehyde	NCASI	3.3E-03 lb/ADTUBP			1,100 ADTUBP/day 401,500 ADTUBP/yr 20% SF
Methanol	Stack Test	3.3 lb/hr			
TRS	NCASI	0.044 lb/ADTUBP			1,100 ADTUBP/day 401,500 ADTUBP/yr 20% SF
Source SN-43 - Tub Grinder					
PM_{10}/PM	AP-42 Table 3.3-1	0.31 lb/MMBtu			4 MMBtu/hr 258,000 gallon/yr 0.13 MMBtu/gal
SO_2	AP-42 Table 3.3-1	0.29 lb/MMBtu			4 MMBtu/hr 258,000 gallon/yr 0.13 MMBtu/gal
VOC	AP-42 Table 3.3-1	0.36 lb/MMBtu			4 MMBtu/hr 258,000 gallon/yr 0.13 MMBtu/gal
CO	AP-42 Table 3.3-1	0.95 lb/MMBtu			4 MMBtu/hr 258,000 gallon/yr 0.13 MMBtu/gal
NO_X	AP-42 Table 3.3-1	4.41 lb/MMBtu			4 MMBtu/hr 258,000 gallon/yr 0.13 MMBtu/gal
HAPs	AP-42 Table 3.3-2				4 MMBtu/hr 258,000 gallon/yr 0.13 MMBtu/gal
Sources SN-44a, SN-44b, SN-44c and SN-44d - Paper Machines					
VOC	Testing	44A: 2.0 44B: 4.7 44C: 5.6 44D: 10.3			Emission factors are in 1b/hr by machine.

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
Acetaldehyde	NCASI	0.033 lb/ADTFP			SN-44A 19.1 ADTFP/hr 167,316 ADTFP/yr SN-44B &C 30.77 ADTFP/hr 269,553 ADTFP/yr SN-44D 79.92 ADTFP/hr 700,070 ADTFP/yr ADTFP – air dried tons of finished product 20% SF
Acrolein	NCASI	1.6E-3 lb/ADTFP			See Comments for Acetaldehyde 20% SF
Formaldehyde	NCASI	6.4E-3 lb/ADTFP			See Comments for Acetaldehyde 20% SF
Methanol	Testing	44A: 2.00 44B: 4.70 44C: 5.60 44D: 6.80			Limited by VOC and Methanol in shower water Emission factors are in lb/hr by machine.
Source SN-45 - Oxygen Delignification System (NCASI factors have a 20% safety factor)					
VOC	Stack Test	9.1 lb/hr			1,100 ADTUBP/day
CO	Stack Test	16.5 lb/hr			1,100 ADTUBP/day
Acetaldehyde	NCASI	0.034 lb/ADTP			1,100 ADTUBP/day
Formaldehyde	NCASI	0.0017 lb/ADTP			1,100 ADTUBP/day
Methanol	Stack Test	9.11 lb/hr			1,100 ADTUBP/day
TRS	Stack Test	2 lb/hr			1,144 ADTUBP/day
SN-46 – Haul roads					

Constituent	Emission Factor Source (AP-42, Testing, etc.)	Emission Factor and units (lb/ton, lb/hr, etc.)	Control Equipment Type (if any)	Control Equipment Efficiency	Comments (Emission factor controlled/uncontrolled, etc.)
PM/PM_{10}	Estimate	0.16 lb/VMT		Subject to road maintenance plan	Overall lb/VMT for both paved/undpaved with controls included
SN-50, SN-53, SN-54a, SN-54b, SN-57, SN-58, and SN-59 – Stationary RICE					
PM/PM_{10}	AP-42 Table 3.3-1				
SO_2	AP-42 Table 3.3-1				
VOC	AP-42 Table 3.3-1				
CO	AP-42 Table 3.3-1				
NO_X	AP-42 Table 3.3-1				
HAP	AP-42 Table 3.3-2				
SN-55 – Paper Additive Silos					
PM/PM_{10}	Mass Balance	0.03 gr/dscf	Fabric filter		
SN-56 – Dye Operation					
VOC	Mass Balance				Emission factor varies by MSDS for each product used.

13. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
01	PM	5	Every 5 years	§19.702
01	PM_{10}	201A or 5 and 202	Every 5 years	§19.702
01	VOC	Method 25A	Every 5 years	§19.702
01	Filterable PM	Multiple refer to Subpart DDDDD, Table 5	Annually	Boiler MACT
01	HCl	Multiple refer to Subpart DDDDD, Table 5	Annually	Boiler MACT

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
01	Mercury	Multiple refer to Subpart DDDDD, Table 5	Annually	Boiler MACT
02	PM/PM_{10}	5 or 29	Initial test	§63.865
02	O_2	3, 3A or 3B	Initial test	§63.865
02	PM	5	Every five years	§18.1002
02	PM_{10}	201A or 5 and 202	Every five years	§19.702
02	VOC	25A	Every five years	§19.702
03	VOC	25A	Every five years	§19.705
03	PM	5 and 202	Every five years	§18.1002
03	PM_{10}	201A or 5 and 202	Every five years	§19.705
03	CO	10B	Every five years	§19.705
03	NO_X	7E	Every five years	§19.705
05	PM	5	Every five years	§18.1002
05	PM_{10}	201A or 5 and 202	Every five years	§19.705
05	VOC	25A	Every five years	§19.705
05	HCl	26A	Every five years	§18.1002
05	Filterable PM	Multiple refer to Subpart DDDDD, Table 5	Annually	Boiler MACT
058	HCl	Multiple refer to Subpart DDDDD, Table 5	Annually	Boiler MACT
05	Mercury	Multiple refer to Subpart DDDDD, Table 5	Annually	Boiler MACT
06	VOC	25A	Every five years	§19.705
06	PM	5 and 202	Every five years	§19.705
06	PM_{10}	201A or 5 and 202	Every five years	§19.705
08	TRS	16	Every five years	§18.1002
08	VOC	25A	Every five years	§19.705
08	O_2	3A or 3B	Once	§63.865
08	PM	5	Every five years	§19.705
08	PM_{10}	201A or 5 and 202	Every five years	§19.705
08	Ammonia	Method 206	Every five years	§18.1002
09	PM	5 or 29	Once	§63.865
09	O_2	3A or 3B	Once	§63.865
09	NO_X	7E	Every five years	§19.705
14	PM_{10}	201A or 5 and 202	Every five years	§19.702
14	VOC	25A	Every five years	§19.702
15	TRS	16	Annual	§19.804
15	Ammonia	206	Every five years	§19.703
15	PM	5 or 29	Initial	63.865
15	O_2	3 or 3A	Initial	63.865
15	VOC	Method 25A	Every five years	§19.702

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
16, 17,18	Pressure differential	Pressure transmitter	Yearly	63.453(a)(1)
16, 17,18	Cl_2, ClO_2	NCASI Special Report Number 91-07	Every five years	18.1002
16,17 ,18	CO	10B	Every five years	§19.703
16,17 ,18	VOC	25A	Every five years	§19.703
20	Cl_2, ClO_2	NCASI Special Report Number 91-07	Every five years	18.1002
21	COD	Water Test	Daily	63.453(j)
21	Horsepower of Aerator units	Observation	Daily	63.453(j)
21	Inlet liquid flow	Flow Meter	Daily	63.453(j)
21	Liquid Temperature	Thermocouple	Daily	63.453(j)
21	BOD_5 percent reduction	BOD_5	Quarterly	63.453(j)
22	Methanol	25D	Yearly	§18.1003
22	Acetone	25D	Yearly	§18.1003
30	PM	5	Every five years	§19.702
30	PM/PM_{10}	201A or 5 and 202	Every five years	§19.702
30	SO_2	6C	Every five years	§19.702
30	VOC	25A	Every five years	§19.702
30	NO_X	7E	Every five years	§19.702
30	CO	Method 10B	Every five years	§19.702
37	VOC	25D	Yearly	§19.702
42	Methanol	NCASI Method DI/MEOH-94-02, Methanol in Process liquids by GC/FID, August 1998, Methods Manual, NCASI, Research Triangle Park, NC	Yearly	§18.1002
42	Acetone		Yearly	§18.1002
44a	VOC	25D on shower water	Yearly	§19.703

SN(s)	Pollutant	Test Method	Test Interval	Justification For Test Requirement
44b, 44c, 44d	Methanol	NCASI Method DI/MEOH-94-02, Methanol in Process liquids by GC/FID, August 1998, Methods Manual, NCASI, Research Triangle Park, NC	Yearly	§18.1002
45	VOC	25A	Every 5 years	§19.705
45	CO	10	Every 5 years	§19.705
54a	Formaldehyde	Method 320 or 323 of 40 CFR Part 63, App A	Initial	§63.6620 One test per engine
54b	Formaldehyde	Method 320 or 323 of 40 CFR Part 63, App A	Initial	§63.6620 One test per engine

14. MONITORING OR CEMS:

The permittee must monitor the following parameters with CEMS or other monitoring equipment (temperature, pressure differential, etc.)

SN(s)	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency*	Report (Y/N)**
01	CO, NO_X	CEM	Every 15 minutes; Average once/ hour	N
01	Opacity	COM	Six-minute average	N
02	TRS	CEM	12-hour Average	N
02	CO, O_2	CEM	Every 15 minutes; Average once/ hour	N
02	Opacity	COM	Six-minute average	N
05	SO_2, CO, NO_X, O_2	CEM	Every 15 minutes; Average once/ hour	N

SN(s)	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency*	Report (Y/N)**
05	Temperature Scrubbing Liquid Flow rate Pressure Drop of Gas Stream	CPMS	Continuous	N
06	SO_2, CO, NO_X TRS, O_2	CEM	Every 15 minutes; Average once/ hour	N
06	Opacity	COM	Six-minute average	N
06	Floor Tube Temperature	CPMS	Continuous	N
08	Pressure Drop of gas stream Pressure of liquid supply Scrubbing liquor flow rate	CPMS	Continuous	Y
09	CO, TRS, O_2	CEM	Every 15 minutes; Average once/ hour	N
09	Scrubbing liquid flow rate Air pressure drop across scrubber Temperature of lime kiln	CPMS	Continuous	N
14	Opacity	COM	Six-minute average	N
14	CO, NO_X, TRS, O_2	CEM	Every 15 minutes; Average once/ hour	N
14	SO_2	CEM	Every 15 minutes; Average once/ hour	Y
14	Temperature	CPMS	Continuous	N
15	Scrubber gas pressure drop Scrubber Liquid Pressure	CPMS	Continuous	Y
15	Scrubbing liquid flow rate	CPMS	Every 8 hours – average the three daily readings	N

SN(s)	Parameter or Pollutant to be Monitored	Method of Monitoring (CEM, Pressure Gauge, etc)	Frequency*	Report (Y/N)**
16	Inlet air flow rate Scrubbing liquid flow rate Inlet pH of Scrubber Liquid	CPMS	Continuous	N
17	Inlet air flow rate Scrubbing liquid flow rate Inlet pH of Scrubber Liquid	CPMS	Continuous	N
18	Inlet air flow rate Scrubbing liquid flow rate Inlet pH of Scrubber Liquid	CPMS	Continuous	N
20	Absorption Water Temperature	Thermocouple	Once per shift	N
36	Temperature	CPMS	Continuous	N

15. RECORDKEEPING REQUIREMENTS:

The following are items (such as throughput, fuel usage, VOC content, etc.) that must be tracked and recorded.

SN	Recorded Item	Limit	Frequency	Report (Y/N)
01	Fuel Usage	Recording of pounds of fuel used	Daily	N
01	Fuel Usage	Recording of pounds of fuel used	Monthly Average	Y
01	Fuel Usage	Recording of pounds of fuel used	12-month Rolling Average	Y
01	Hourly NO_X Emission Rate	237 lb/hr	Hourly	Y
01	30-day average NO_X emission rates	0.3 lb/MMBtu	30-day rolling average	Y
01	30-day average CO emission rates	0.35 lb/MMBtu	30-day rolling average	Y
01	Moisture Content of Biomass Fuel	Must exceed 40% by weigh on an as fired annual heat input basis	Monthly	Y
01	HCl and Mercury content per fuel analysis	No standard – Boiler MACT	Concurrently with performance testing, annually	Y
01	Type of fuel and amount during Startup/Shutdown	No standard – Boiler MACT	Per Event	Y

SN	Recorded Item	Limit	Frequency	Report (Y/N)
01	BTU Loading	790 MMBTU/hr	Daily	Y
02	TRS Concentration		Twelve-hour Average	Y
02	O_2		Twelve-hour Average	N
02	Period pre-coat filter isolated	75% feed capacity for kiln		N
02	CO and NO_X	240.9 tpy CO 291.3 tpy NO_X	30-day rolling averages	N
02	%Solids of lime mud feed	65% 30-day rolling average	Daily	N
02	CaO Production	Ton/d	daily	Y
05	Fuel Usage	tpd	daily	Y
05	Fuel Usage	tpd	Month	Y
05	Moisture Content of Biomass Fuel	Must exceed 40% by weight on an as fired annual heat input basis	Monthly	Y
05	HCl and Mercury content per fuel analysis	No standard – Boiler MACT	Concurrently with performance testing, annually	Y
05	Type of fuel and amount during Startup/Shutdown	No standard – Boiler MACT	Per Event	Y
05	Biomass heat input	Must be 10% or greater on an annual heat input basis	Monthly	Y
06	TRS emission	12-hour average	Daily	N
06	O_2 Concentration	12-hour average	Daily	N
06	Hourly HCl Emissions	One-hour average	Hourly	N
06	Floor Tube Temperature	3-hour average	Hourly	Y
06	Floor Tube Temperature	monthly average	monthly	Y
06	Black Liquor Solids Rate	Daily feed	Daily	N
08	Pressure Drop of gas stream	Instantaneous	Once per shift	N
08	Pressure of liquid supply	Instantaneous	Once per shift	N
08	Scrubbing Liquor flow Rate	Flow Meter	Hourly	Y
08	Pressure Drop of gas stream	Pressure Drop	Once Every 15-minutes	Y
08	Scrubbing Liquor flow Rate	Flow Meter	Once Every 15-minutes	Y
09	TRS Concentration	CEMS	12-hour average	N
09	O_2 Concentration	CEMS	12-hour average	N

SN	Recorded Item	Limit	Frequency	Report (Y/N)
09	Pressure Drop of gas stream	Instantaneous	Once per shift	N
09	Pressure of liquid supply	Instantaneous	Once per shift	N
09	Temperature	1-hour Rolling average	hourly	N
09	%Solids of lime mud feed	65% 30-day rolling average	Daily	N
09	CaO Production Rate	daily	daily	
09	Liquid Flow rate	Daily		N
09	Gas pressure drop	CEMs	Daily	N
12	Fuel Usage		Daily	Y
12	Fuel Usage		Monthly	Y
12	Hours of Operation		Hour	Y
12	Steam Loading		Hourly	N
14	TRS concentration		12-hour average	N
14	Black Liquor Firing Rate		Time below 1.5 MMlbs/day	N
14	HCl emissions	54.5 lb/hr and 238.71 tpy	Hourly	Y
14	BLS firing rate		Daily	Y
15	Scrubber Gas Pressure drop		Once per shift/ once every 15 minutes	Y
15	Scrubber Liquid Supply Pressure		Once per shift	Y
15	Scrubber Liquid flow Rate	175 gpm	Once per shift/ once every 15 minutes	Y
16	Fan Amperage	65 -105 amperes	Once per shift	Y
16	Scrubber Liquid flow Rate	300 gallons/minute	Once per shift	
17	Scrubber Liquid flow Rate	300 gallons/minute	Once per shift	
17	Fan Amperage	50 -105 amperes	Once per shift	Y
18	Scrubber Liquid flow Rate	350 gallons/minute	Once per shift	
18	350 gallons/minute	30 -80 amperes	Once per shift	Y
20	Scrubber Water Temperature		Once per shift	N
23	Tank Dimensions			N
23	Methanol Throughput	18,850,000 lbs/12 months	Monthly	Y
28	Formic Acid throughput	5,336,000 lbs/12 months	Monthly	Y
29	Lime processed	420,500 tons/12 months	Monthly	Y
36 Tank #10	Weak Black Liquor Throughput	2,018,304,000 gallon/12 months	Monthly	Y
37	Finished Product (Pulp)	328,500 tons of air dried pulp	Monthly	Y
38	Woodchips processed	4,320,000 tons/12 months	Monthly	Y

SN	Recorded Item	Limit	Frequency	Report (Y/N)
40	Time sample port is opened	Only when retrieving sample	Daily	N
40	Spacing of digester blows	Minimum of 25 minutes	Daily	N
41	Sludge put in landfill	163,000 tons/12 months	Monthly	Y
42	Unbleached Pulp	427,123 tons of air dried unbleached pulp	Monthly	Y
43	Fuel Consumption	258,000 gallons/12 months	Monthly	Y
44A	Finished Product	167,316 tons air dried paper/12 months	Monthly	Y
44B	Finished Product	269,553 tons air dried paper/12 months	Monthly	Y
44C	Finished Product	269,553 tons air dried paper/12 months	Monthly	Y
44D	Finished Product	700,070 tons air dried product/12 months	Monthly	Y
01,03,05	Tire derived fuel	220 tons/24-hours	Daily	Y
ALL	Units Operating at less than 25% capacity		Yearly	Y
RICE	Hours of Operation	500 hrs / 12 months	Per event	Y
56	Dye Usage	12.8 tons/12 months	Monthly	Y

16. OPACITY:

SN	Opacity %	Justification	Compliance Mechanism
01	20	Boiler fired with many different fuels	COMS - submittals in accordance with CEM standards
01	10	Boiler MACT	COMS operated according to Boiler MACT
02	20	This is a lime kiln. Particulate emissions are present which are not entirely caused by fuel combustion.	COMS - submittals in accordance with CEM standards
03	5	Fires only natural gas.	Fires only natural gas
05	20	This is a boiler which is fired with many different types of fuel.	Scrubber parameters - no submittal of records required.
06	20	Recovery boiler. The highest allowable under the NSPS is 35%. The boiler is limited to 20% because of Department regulations.	COMS - submittals in accordance with COM standards
08	20	Smelt tank with 18 lb/hr of particulate matter emissions.	Scrubber parameters - Submittal of records as required by 63 Subpart MM
09	20	This is a lime kiln which has	Scrubber parameters - Submittal of records as

SN	Opacity %	Justification	Compliance Mechanism
		particulate matter emissions from fuel combustion as well as from proper operation of the kiln.	required by 63 Subpart MM
14	20	Recovery boiler. The highest allowable under the NSPS is 35%. The boiler is limited to 20% because of Department regulations.	COMS - submittals in accordance with CEM standards
15	20	Smelt tank with PM emissions of 18.7 lb/hr.	Scrubber parameters - Submittal of records as required by 63 Subpart MM
43	5	Tub grinder fired with diesel fuel.	Weekly observations - no submittal of records required
RICE	20 – Diesel 5 - Propane	Regulation 19.501	Daily for events lasting more than 24 hours

17. DELETED CONDITIONS:

Former SC	Justification for removal
N/A	

18. GROUP A INSIGNIFICANT ACTIVITIES:

Source Name	Group A Category	Emissions (tpy)						
		PM/PM_{10}	SO_2	VOC	CO	NO_x	HAPs	
							Single	Total
Material Mixer	A1	0.302	0.007	0.929	4.571	2.729	0.027	0.027
250 gal lubricating/hydraulic oil tanks (5,000 gal site wide)	A2			5E-05				
Used Oil Storage Tank (10,000 gal)	A3			8E-05				
Woodyard Diesel Tank (9,425 gal)	A3			0.014				
Woodyard Hydraulic Oil Tank (9,425 gal)	A3			9E-05				
Medium Diesel Tanks (<10,000 gal site wide)	A3			0.014				
Small Diesel Tanks (<1,000 gal each)	A3			0.01				
Paper Machine	A3			0.01				

Source Name	Group A Category	Emissions (tpy)						
		PM/PM_{10}	SO_2	VOC	CO	NO_x	HAPs	
							Single	Total
Portable Tote Bins								
Caustic Storage Tanks	A4							
Laboratory Hoods	A5			0.21				0.21
Mill Services (storeroom) gasoline tank (130,000 gal)	A13			1.65				
Brock Services Gasoline Tank (552 gal)	A13			0.27				
Coal Pile	A13	0.03						
Turpentine Storage Tank (18,612 gal)	A13			0.546				
Cooling Tower [a] #1	A13	0.05						
Cooling Tower [a] #2	A13	0.02						
Cooling Tower [a] #3	A13	0.03						
Cooling Tower [a] #4	A13	0.05						
Cooling Tower [a] #5	A13	0.11						
Cooling Tower [a] #6	A13	0.04						
Cooling Tower [a] #7	A13	0.005						
Cooling Tower [a] #8	A13	0.060						
Cooling Tower [a] #9	A13	0.008						
Cooling Tower [a] #10	A13	0.053						
Cooling Tower [a] #11	A13	0.025						
Cooling Tower [a] #12	A13	0.454						
Cooling Tower [a] #13	A13	0.329						
Cooling Tower [a] #14	A13	0.350						
Cooling Tower [a] #15	A13	0.387						
Converting Area	A13			0.26				0.26

[a] #1 #3 EVAP, #2 Water Plant North Tower, #3 Water Plant South Tower, #4 R-8 Tower ERCO, #5 SVP Tower, #6 No. 62 Tower, #7 BAC 3642 Tower 61 PM Converting, #8 61 PM Ground, #9 63 PM, #10 Pulp Mill MCC, #11 Admin, #12 No. 4 Turbine Generator Tower, #13 No. 64 Tower, #14 Vacuum Pump Tower, and #15 ECF Conversion Tower

19. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

List all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
0287-AOP-R19

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Facility Name: Domtar (Ashdown)
Permit Number: 287-AOP-R20
AFIN:41-00002

$/ton factor	23.93	Annual Chargeable Emissions (tpy)	16011.46
Permit Type	Modification	Permit Fee $	1000

Minor Modification Fee $	500
Minimum Modification Fee $	1000
Renewal with Minor Modification $	500
Check if Facility Holds an Active Minor Source or Minor Source General Permit	☐
If Hold Active Permit, Amt of Last Annual Air Permit Invoice $	0
Total Permit Fee Chargeable Emissions (tpy)	0
Initial Title V Permit Fee Chargeable Emissions (tpy)	

HAPs not included in VOC or PM: *Chlorine, Hydrazine, HCl, HF, Methyl Chloroform, Methylene Chloride, Phosphine, Tetrachloroethylene, Titanium Tetrachloride*

Air Contaminants: *All air contaminants are chargeable unless they are included in other totals (e.g., H2SO4 in condensible PM, H2S in TRS, etc.)*

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
PM		2456.9	2456.9	0	0	2456.9
PM_{10}		1885.4	1885.4	0		
$PM_{2.5}$		0	0	0		
SO_2		7889.7	7889.7	0	0	4000
VOC		5682	5682	0	0	4000
CO		12299.8	12299.8	0		
NO_X		7610	7610	0	0	4000
Lead	☐	0.83	0.83	0		

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
1,1,1- Trichloroethane	☑	0.03	0.03	0	0	0.03
Acetone	☑	73.2	73.2	0	0	73.2
Ammonia	☑	493.24	493.24	0	0	493.24
Chlorine	☑	27.59	27.59	0	0	27.59
Chlorine Dioxide	☑	30.66	30.66	0	0	30.66
Dichloromethane	☑	0.56	0.56	0	0	0.56
H2S	☑	0.55	0.55	0	0	0.55
HCl	☑	634.55	634.55	0	0	634.55
Perchloroethylene	☑	0.28	0.28	0	0	0.28
Sulfuric Acid	☑	32.5	32.5	0	0	32.5
TRS	☑	261.4	261.4	0	0	261.4