TECHNICAL EVALUATION
&
PRELIMINARY DETERMINATION

APPLICANT

Gilman Building Products
581705 White Oak Road
Yulee, Florida 32097

Maxville Mill
Facility ID No. 0190005

PROJECT

Project No. 0190005-006-AC
Application for Air Construction Permit
Kiln No. 3

COUNTY

Clay, Florida

PERMITTING AUTHORITY

Florida Department of Environmental Protection
Waste and Air Resource Management Program
Northeast District Office
8800 Baymeadows Way West, Suite 100
Jacksonville, Florida 32256

December 23, 2014

1. GENERAL PROJECT INFORMATION

Air Pollution Regulations

Projects at stationary sources with the potential to emit air pollution are subject to the applicable environmental laws specified in Section 403 of the Florida Statutes (F.S.). The statutes authorize the Department of Environmental Protection (Department) to establish regulations regarding air quality as part of the Florida Administrative Code (F.A.C.), which includes the following applicable chapters: 62-4 (Permits); 62-204 (Air Pollution Control – General Provisions); 62-210 (Stationary Sources – General Requirements); 62-212 (Stationary Sources – Preconstruction Review); 62-213 (Operation Permits for Major Sources of Air Pollution); 62-296 (Stationary Sources - Emission Standards); and 62-297 (Stationary Sources – Emissions Monitoring). Specifically, air construction permits are required pursuant to Rules 62-4, 62-210 and 62-212, F.A.C.

In addition, the U. S. Environmental Protection Agency (EPA) establishes air quality regulations in Title 40 of the Code of Federal Regulations (CFR). Part 60 specifies New Source Performance Standards (NSPS) for numerous industrial categories. Part 61 specifies National Emission Standards for Hazardous Air Pollutants (NESHAP) based on specific pollutants. Part 63 specifies NESHAP based on the Maximum Achievable Control Technology (MACT) for numerous industrial categories. The Department adopts these federal regulations on a quarterly basis in Rule 62-204.800, F.A.C.

Glossary of Common Terms

Because of the technical nature of the project, the permit contains numerous acronyms and abbreviations, which are defined in Appendix A of this permit.

Facility Description and Location

Gilman Building Products is an existing Sawmill and Planing Mill, which is categorized under Standard Industrial Classification Code No. 2421. The facility is located in Clay County at US 301 and SR 218, South of Maxville, 6640 SR 218 E., Maxville, Clay County; UTM Coordinates: Zone 17, 400.9 km East and 3336.2 km North; and, Latitude: 30° 09’ 17” North and Longitude: 82° 01’ 44” West. This site is in an area that is in attainment (or designated as unclassifiable) for all air pollutants subject to state and federal Ambient Air Quality Standards (AAQS).

Facility Regulatory Categories

- The facility **is** a major source of hazardous air pollutants (HAP).
- The facility **has no** units subject to the acid rain provisions of the Clean Air Act.
- The facility **is** a Title V major source of air pollution in accordance with Chapter 213, F.A.C.
- The facility **is** a major stationary source in accordance with Rule 62-212.400, F.A.C. for the Prevention of Significant Deterioration (PSD) of Air Quality.

*After this permitting project, **this source will be considered** a major stationary source in accordance with Rule 62-212.400(PSD), F.A.C.*

Current VOC facility-wide emissions are 228 TPY + 171 TPY for this project = 399 Total VOC TPY. After this permitting project, this source will be considered a major stationary source in accordance with Rule 62-212.400(PSD), F.A.C.

This project will make the facility a major source of Individual hazardous air pollutants (HAP) for H095 Formaldehyde. Prior Total was 6.18 TPY + 4.6 TPY from the new Kiln No. 4 = 10.78 TPY Total.

This project will make the facility a major source of Individual hazardous air pollutants (HAP) for H115 Methanol. Prior Total was 9.6 TPY + 7.2 TPY from the new Kiln No. 4 = 16.8 TPY Total.

Total Facility-wide HAPS: 10.78 TPY + 16.8 TPY = 27.58 TPY Total HAPS.

Project Description

Air Construction Permit which authorizes the building of the No. 3 Direct-fired Lumber Drying Kiln (EU004). This project will add the following emissions unit.

Facility ID No. 0190005

ID No.	Emission Unit Description
004	No. 3 Direct-fired Lumber Drying Kiln Manufacturer- Kiln Drying Systems & Components, Inc. Double Track unit.

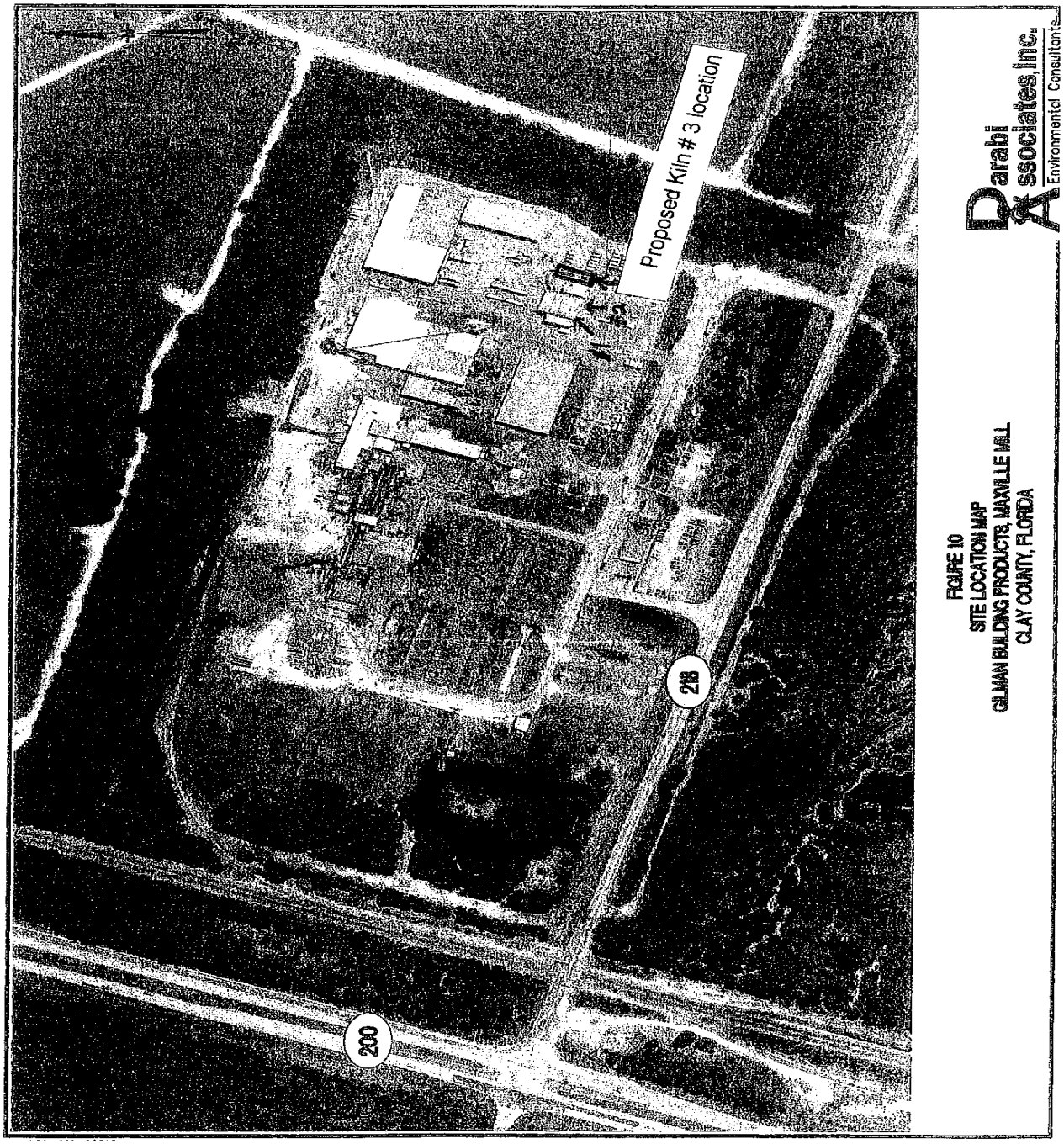
Processing Schedule

12/12/14 - Received the application for an air pollution construction permit.

12/16/14 Requested additional information.

12/17/14 Received additional information; application complete.

PLOT PLAN


Proposed Kiln # 3 location
218
200
FIGURE 10
SITE LOCATION MAP
GILMAN BUILDING PRODUCTS, MAXVILLE MILL
CLAY COUNTY, FLORIDA
Darabi Associates, Inc.
Environmental Consultants

2. PSD APPLICABILITY

General PSD Applicability

For areas currently in attainment with the state and federal AAQS or areas otherwise designated as unclassifiable, the Department regulates major stationary sources of air pollution in accordance with Florida's PSD preconstruction review program as defined in Rule 62-212.400, F.A.C. Under preconstruction review, the Department first must determine if a project is subject to the PSD requirements ("PSD applicability review") and, if so, must conduct a PSD preconstruction review. A PSD applicability review is required for projects at new and existing major stationary sources. In addition, proposed projects at existing minor sources are subject to a PSD applicability review to determine whether potential emissions *from the proposed project itself* will exceed the PSD major stationary source thresholds. A facility is considered a major stationary source with respect to PSD if it emits or has the potential to emit:

- 250 tons per year or more of any regulated air pollutant; or
- 100 tons per year or more of any regulated air pollutant and the facility belongs to one of the following 28 PSD-major facility categories: fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), Kraft pulp mills, portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants, primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants, fossil fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants and charcoal production plants.

Once it is determined that a project is subject to PSD preconstruction review, the project emissions are compared to the "significant emission rates" defined in Rule 62-210.200, F.A.C. for the following pollutants: carbon monoxide (CO); nitrogen oxides (NO_X); sulfur dioxide (SO_2); particulate matter (PM); particulate matter with a mean particle diameter of 10 microns or less (PM_{10}); volatile organic compounds (VOC); lead (Pb); fluorides (Fl); sulfuric acid mist (SAM); hydrogen sulfide (H_2S); total reduced sulfur (TRS), including H_2S; reduced sulfur compounds, including H_2S; municipal waste combustor organics measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans; municipal waste combustor metals measured as particulate matter; municipal waste combustor acid gases measured as SO_2 and hydrogen chloride (HCl); municipal solid waste landfills emissions measured as non-methane organic compounds (NMOC); and mercury (Hg). In addition, significant emissions rate also means any emissions rate or any net emissions increase associated with a major stationary source or major modification which would construct within 10 kilometers of a Class I area and have an impact on such area equal to or greater than 1 $\mu g/m^3$, 24-hour average.

If the potential emission exceeds the defined significant emissions rate of a PSD pollutant, the project is considered "significant" for the pollutant and the applicant must employ the Best Available Control Technology (BACT) to minimize the emissions and evaluate the air quality impacts. Although a facility or project may be *major* with respect to PSD for only one regulated pollutant, it may be required to install BACT controls for several "significant" regulated pollutants.

PSD Applicability:

The existing facility is not a PSD Major facility. Therefore, in order for this project to be subject to PSD review, the potential emissions from the project itself will have to exceed the PSD major stationary source thresholds. Present VOC facility-wide emissions are 228 TPY + 171 TPY from this project = 399 Total VOC TPY for the facility. After this permitting project, this source **will be** considered a major stationary source in accordance with Rule 62-212.400(PSD), F.A.C.

After this permitting project:

This project will make the facility a major source of Individual hazardous air pollutants (HAP) for H095 Formaldehyde. Prior Total was 6.18 TPY + 4.6 TPY from the new Kiln No. 4 = 10.78 TPY Total.

This project will make the facility a major source of Individual hazardous air pollutants (HAP) for H115 Methanol. Prior Total was 9.6 TPY + 7.2 TPY from the new Kiln No. 4 = 16.8 TPY Total.

Total Facility-wide HAPS: 10.78 TPY + 16.8 TPY = 27.58 TPY Total HAPS.

EU004 No. 3 Direct-fired Lumber Drying Kiln emissions for the project. As provided in the application, the following table summarizes Future PTE emissions and PSD applicability for the project.

Pollutant	Emissions	Future Potential To Emit	Net - Projected Potential Emissions	Excludable for Demand Growth[4]	Future Potential To Emit	Major Source and Title V PSD Emissions Rate	Subject to PSD?
PM Kilns	(90,000*0.375)/2000 = 16.9	(90,000*0.375)/2000 = 16.9	16.9	N/A	17	250	N
PM_{10}	(90,000*0.375)/2000= 16.9	(90,000*0.375)/2000= 16.9	16.9	N/A	17	250	N
$PM_{2.5}$	N/A					250	N
SO_2	N/A					250	N
NO_x	(90,000*0.102)/2000 =4.59	(90,000*0.102)/2000 =4.59	4.59	N/A	4.6	250	N
CO	(90,000*0.491)/2000 =22.095	(90,000*0.491)/2000 =22.095	22.1	N/A	22.1	250	N
VOC	(90,000*3.8)/2000 =171	(90,000*3.8)/2000 = 171	171	N/A	171	250	N
H095	(90,000*0.103)/2000 = 4.6	(90,000*0.103)/2000 =4.6	4.6	N/A		N/A	
H115	(90,000*0.16)/2000 =7.2	(90,000*0.16)/2000 =7.2	7.24	N/A		N/A	

It is noted that on June 23, 2014, the Supreme Court issued a decision addressing the application of stationary source permitting requirements to greenhouse gases in *Utility Air Regulatory Group (UARG) v. Environmental Protection Agency (EPA)*, No. 12-1146. The Supreme Court said that EPA may not treat greenhouse gases as an air pollutant for purposes of determining whether a source is a major source required to obtain a PSD or Title V Permit.

Based on the projections, supporting information provided by the applicant, conclusions presented by the applicant, and the emissions summary presented in above table, the Department agrees that the project does not trigger PSD preconstruction review.

3. APPLICATION REVIEW

Discussion of Emissions

Permit application:

Maximum Process or Throughput Rate: 90,000 MBF/yr. Maximum Heat Input Rate: 40 MM Btu/hr.

No. 3 Direct-fired Lumber Drying Kiln Manufacturer- Kiln Drying Systems & Components, Inc. Double Track unit.

Revised, references
Southern Yellow Pine Emission Factors
MBF is 1000 board feet

	emission factor, pounds per MBF		
	Steam heated	Suspension burner	Gasifier
PM	0.022 (1)	0.40 (2)	0.14 (3)
PM_{10}	~	~	~
VOC			
as carbon	3.61 (4)	3.83 (5)	3.83 (5)
as VOC (pinene)	4.09	4.34	4.34
Methanol	0.199 (6)	0.161 (7)	0.161 (7)
Phenol	0.01(8)	0.01 (8)	0.01 (8)
Formaldehyde	0.0183 (9)	0.103 (10)	0.103 (10)
Acetaldehyde (11)	0.052	0.052	0.052
Acrolein (12)	0.0075	0.0075	0.0075

	emission factor, pounds per MBF-hour		
	Steam heated	Suspension burner	Gasifier
Acetaldehyde	0.00377 (13)	0.00377	0.00377
Acrolein	0.00051 (14)	0.00051	0.00051
formaldehyde	0.0014 (15)	0.01185 (16)	0.01185 (16)

For TAPs, the emissions on an hourly basis are given by (Charge in 1000 board feet)* (emission factor) Example:
140,000 BF kiln charge = (140)*(0.00140) =
0.196 lb formaldehyde per hour

Note: for hourly emissions of phenol, use emission factor in lb/MBF.

Note: The full scale direct fired kiln has a blend box that mixes hot air from the sawdust combustion with cooler recycled air from the kiln. Although the small scale kilns reported data under "direct fire" this only means that the temperature profiles of the kilns matched that of a full scale kiln. There was no intermingling of hot combustion gases with cooler recycle air from the small kilns since these kilns are electricaly heated.

REFERENCES

(1)

PRODUCT	FIRING TYPE	MILLS/ UNITS/ RUNS	RATIO OF NON-DETECTS	RANGE			MEDIAN	MEAN	UNITS
Southern Pine Lumber	Steam Heated	3/3/16	0/16 nd	#####	to	1.7E-01	9.3E-03	2.2E-02	lb/MBF
Southern Pine Lumber	Direct Fired	6/7/24	0/24 nd	#####	to	1.3E+00	3.2E-01	3.7E-01	lb/MBF

(2) personal Communication, D Word, NCASI, May 31, 2005

Kiln 1K181 Suspension Burner	Run	M 5 lb/MBF	Production	Cycle time, hrs
1K181	1	0.4170	133	20.3
1K181	2	0.3480	133	20.3
1K181	1	0.4800	131	20
1K181	2	0.4100	131	20
1K181	3	0.3600	131	20
		0.40	131.80	20.12

(3) personal Communication, D Word, NCASI, May 31, 2005

Kiln 098 DF Gasifier	Run	M 5 lb/MBF	Production	Cycle time, hrs
1K098	1	0.2670	130	26.45
1K098	2	0.2010	130	26.45
1K098	3	0.2260	130	26.45
2K098	1	0.1520	128	17.52
2K098	2	0.1810	128	17.52
2K098	3	0.0980	128	17.52
2K098	1	0.0640	104.5	17.25
2K098	2	0.0548	104.5	17.25
2K098	3	0.0466	104.5	17.25
		0.143	120.83	20.41

(4) NCASI Technical Bulletin 845 Table 8.2 Steam heated average of all kilns
(5) NCASI Technical Bulletin 845 Table 8.1 Direct fired (gasifier) full scale kiln only
(6) NCASI Technical Bulletin 845 Table 9.6 Steam heated all kilns
(7) NCASI Technical Bulletin 845 Table 9.4 Direct fired (gasifier) full scale kiln
(8) Table 2A to Appendix B Emission factors for Plywood and Composite Wood Product MACT (Subpart DDDD)
(9) NCASI Technical Bulletin 845 Table 9.5 steam heated full scale kiln and OSU small scale runs. MSU not used. See spreadsheet tab for statistical test
(10) NCASI Technical Bulletin 845 Table 9.3 Direct fired full scale kiln only
(11) NCASI Technical Bulletin 845 Appendix BB6 FSK INDF3 and BB7 OSU INDF3
(12) NCASI Technical Bulletin 845 Appendix BB6 FSK INDF3 and BB7 OSU INDF3
(13) NCASI Technical Bulletin 845 Appendix BB6 FSK INDF3 run # 10 and BB7 OSU INDF3 Run # 2
(14) NCASI Technical Bulletin 845 Appendix BB6 FSK INDF3 run # 10 and BB7 OSU INDF3 Run # 2
(15) NCASI Technical Bulletin 845 Appendix Y7 FSK INDF1 run # 9, BB6 FSK INDF3 run # 10, App Y9 OSU INDF1 run # 4, BB7 OSU INDF3 run # 5
(16) NCASI Technical Bulletin 845 Appendix Y1 FSK DF2 run # 6, Y2 FSK DF5 run # 6

NCASI Technical Bulletin No.845 references

VOC:

Maximum Hourly Rate = 10.27 Mbf/hr
Maximum Annual Rate = 90,000 Mbf/yr
Maximum lbs/hr = (3.8 lb/Mbf) * (10.27 Mbf/hr) = 39 lbs/hr
Maximum lbs/yr = (3.8 lb/Mbf) * (90,000 Mbf/yr) * (1/2000 tons/lb) = 171 tons/yr.

CO:

Maximum Hourly Rate = 10.27 Mbf/hr
Maximum Annual Rate = 90,000 Mbf/yr
Maximum lbs/hr = (0.491 lb/Mbf) * (10.27 Mbf/hr) = 5.04 lbs/hr
Maximum lbs/yr = (0.491 lb/Mbf) * (90,000 Mbf/yr) * (1/2000 tons/lb) = 22.1 tons/yr.

PM/PM10:

Maximum Hourly Rate = 10.27 Mbf/hr
Maximum Annual Rate = 90,000 Mbf/yr
Maximum lbs/hr = (0.375 lb/Mbf) * (10.27 Mbf/hr) = 3.85 lbs/hr
Maximum lbs/yr = (0.375 lb/Mbf) * (90,000 Mbf/yr) * (1/2000 tons/lb) = 16.9 tons/yr.

- The 0.375 lbs/Mbf includes the 0.2 lbs/million Btu heat input* of the Kiln burner.
- The facility will conduct VE test of the burner stack to substitute for the PM stack testing, for compliance assurance.

*Rule 62-296.410(3)(b), F.A.C.

NOx:

Maximum Hourly Rate = 10.27 Mbf/hr
Maximum Annual Rate = 90,000 Mbf/yr
Maximum lbs/hr = (0.102 lb/Mbf) * (10.27 Mbf/hr) = 1.05 lbs/hr
Maximum lbs/yr = (0.102 lb/Mbf) * (90,000 Mbf/yr) * (1/2000 tons/lb) = 4.6 tons/yr.

H095:

Maximum Hourly Rate = 10.27 Mbf/hr
Maximum Annual Rate = 90,000 Mbf/yr
Maximum lbs/hr = (0.103 lb/Mbf) * (10.27 Mbf/hr) = 1.06 lbs/hr
Maximum lbs/yr = (0.103 lb/Mbf) * (90,000 Mbf/yr) * (1/2000 tons/lb) = 4.6 tons/yr.

H115:

Maximum Hourly Rate = 10.27 Mbf/hr
Maximum Annual Rate = 90,000 Mbf/yr
Maximum lbs/hr = (0.16 lb/Mbf) * (10.27 Mbf/hr) = 1.6 lbs/hr
Maximum lbs/yr = (0.16 lb/Mbf) * (90,000 Mbf/yr) * (1/2000 tons/lb) = 7.2 tons/yr.

Emission Factors (EF) are based on NCASI Technical Bulletin No. 845.

Federal Requirements

Rule 62-204.800(11), F.A.C., 40 CFR 63, NESHAP.

The following provisions incorporated into Rule 62-204.800(11), F.A.C. adopted from 40 CFR 63 and incorporated into this rule apply to this project:

- 40 CFR 63, Subpart A – General Provisions (Link to Subpart A); and
- 40 CFR 63, Subpart DDDD – National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products (Link to Subpart DDDD). For the new kilns, Subpart DDDD states (bold highlight added):

  §63.2252 What are the requirements for process units that have no control or work practice requirements?

  For process units not subject to the compliance options or work practice requirements specified in §63.2240 (including, but not limited to, ***lumber kilns****), you are not required to comply with the compliance options, work practice requirements, performance testing, monitoring, SSM plans, and recordkeeping or reporting requirements of this subpart, or any other requirements in subpart A of this part, except for the initial notification requirements in §63.9(b).*

Consequently, the new direct-fired lumber kiln at the Maxville Plant is not required to comply with the compliance options, work practice requirements, performance testing, monitoring, startup, shutdown, and malfunction (SSM) plans, and recordkeeping or reporting requirements of Subpart DDDD.

State Requirements

Visible Emissions. Visible Emissions shall not exceed 30 percent opacity except that visible emissions not exceeding 33 percent opacity shall be allowed for one six-minute period in any one-hour period.

[Rule 62-296.410(2)(b)1., F.A.C., and Application No. 0190005-006-AC]

Particulate Matter. Particulate Matter – shall not exceed 0.2 pounds per million Btu of heat input of carbonaceous fuel plus 0.1 pounds per million Btu heat input of fossil fuel.

[Rule 62-296.410(2)(b)2., F.A.C., and Application No. 0190005-006-AC]

PM Compliance Tests. Compliance with the PM limit shall be demonstrated by meeting the visible emissions (VE) limit specified.

[Rule 62-296.410(3)(b), F.A.C, – Carbonaceous Fuel Burning Equipment]

Other Draft Permit Requirements

Maximum Heat Input Rate: 40 MM Btu/hr.

4. PRELIMINARY DETERMINATION

The Department makes a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations as conditioned by the draft permit. This determination is based on a technical review of the complete application, reasonable assurances provided by the applicant, and the conditions specified in the draft permit. Leslie Maybin is the project engineer responsible for reviewing the application and drafting the permit. Additional details of this analysis may be obtained by contacting the project engineer at the Florida Department of Environmental Protection (Department), Northeast District Office, Waste and Air Resource Management Program 8800 Baymeadows Way West, Suite 100, Jacksonville, Florida 32256.