UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

MAR 1 8 2010

Mark Robinson
Plant Manager
Georgia-Pacific Wood Products LLC
Highway 13 North
Columbia, Mississippi 39429

Dear Mr. Robinson,

On December 1, 2009, the Mississippi Department of Environmental Quality (MDEQ) forwarded to the Environmental Protection Agency (EPA) your 502(b)(10) change request dated November 16, 2009. Please note that Mississippi regulations at APC-S-6 Section IV.F require that facilities provide EPA as well as MDEQ with written notification in advance of the proposed changes. In the future, you must provide EPA with a copy of any 502(b)(10) changes.

On December 2, 2009, EPA notified MDEQ via e-mail about concerns regarding Georgia Pacific's use of the "demand growth exclusion" in 40 CFR 52.21(b)(41)(ii)(*c*) and whether the "Vortex Burners" project qualified as a 502(b)(10) change. On December 14, 2009, representatives from Georgia Pacific met with EPA Region 4 to discuss the 502(b)(10) change request and provided additional information regarding the project.

After further review and consideration, and contingent on the information submitted being accurate and complete, EPA acknowledges that Georgia Pacific's use of the "demand growth exclusion" for calculating applicability of the Prevention of Significant Deterioration (PSD) permitting requirements is adequate and the project does qualify as a 502(b)(10) change. However, we have some points of clarification regarding statements made on the 502(b)(10) change request letter.

We acknowledge that Georgia Pacific may use the highest demonstrated average monthly operating level during the baseline period as an approximation of the level of operation that the units "could have accommodated" during the baseline period. However, EPA disagrees with the statement that Georgia Pacific "...does not accept this as the limit on excludable emissions during the baseline..." and the statement that the excludable amount under the "demand growth exclusion" is "...the highest amount that the unit could have legally and physically emitted during the baseline..." For PSD applicability purposes, the concept of emissions that "could have been accommodated" is relevant only in conjunction with the source's calculation of "projected actual emissions." That is, once the projected actual emissions from the source following the proposed project have been determined, the source may exclude from the projection "that portion of the unit's emissions following the project that an existing unit could have

accommodated" during the baseline period, and "that are also unrelated to the particular project." See 40 CFR 52.21(b)(41)(ii)(*c*). Accordingly, before any given emissions may be excluded under 40 CFR 52.21(b)(41)(ii)(*c*) on the basis that they result from future demand growth, those emissions must first be part of the projected actual emissions based on "all relevant information" [see e.g., 40 CFR 52.21(b)(41)(ii)(*a*)] used to make the emissions projection.

In summary, although we do not agree with some of the statements made by Georgia Pacific in the 502(b)(10) change request as explained above, based on the information submitted, we agree with Georgia Pacific's use of the "demand growth exclusion" for determining PSD applicability for the "Vortex Burners" project. Since the "Vortex Burners" project is not considered a Title I modification, and does not exceed emissions allowable under the permit, the change qualifies as a 502(b)(10) change. If you have any questions, you may contact Heather Abrams at (404) 562-9185 or Yolanda Adams at (404) 562-9214.

Sincerely,

Gregg M. Worley
Chief
Air Permits Section

Enclosures

1. Letter dated November 16, 2009
2. Example VOC Emissions for Kiln 2 and 3

cc: Mr. Scott Hodges – MDEQ
Ms. Maria Zufall – Georgia-Pacific

#1639

Georgia-Pacific Wood Products LLC
Highway 13 North
Columbia, Mississippi 39429
Telephone (601) 736-7181

November 16, 2009

Mr. Scott Hodges
Mississippi Department of Environmental Quality
Environmental Permits Division
P. O. Box 2261
Jackson, MS 39225

Re: Georgia-Pacific Wood Products LLC
Columbia, MS Sawmill
Facility No. 1740-00008

Dear Mr. Hodges:

Georgia-Pacific Wood Products LLC owns and operates the Columbia, Mississippi Chip-N-Saw (CNS). The Columbia CNS (Facility No. 1740-00008) operates under a Title V Major Source Operating Permit issued by the Mississippi Department of Environmental Quality (MDEQ). The Columbia CNS is submitting this letter to notify MDEQ of a 502(b)(10) change for a project to install a vortex chamber system on Kiln No. 2. The Columbia CNS anticipates making this change to Kiln No. 2 on or about December 15, 2009. A 502(b)(10) notification was submitted to MDEQ in November 2008 for the Kiln No. 3 vortex chamber, and that work was completed in March of 2009. Since the time of the November 2008 submittal, additional information has been developed regarding the Kiln No. 3 vortex chamber. This letter addresses the vortex chambers for both kilns.

As described in this letter, the project (vortex chambers for both Kiln 2 and 3) is exempt from construction permitting requirements because it is a *de minimis* NSR modification as defined by Mississippi's "Permit Regulation for the Construction and/or Operation of Air Emissions Equipment (APC-S-2)." The project qualifies as a 502(b)(10) change under the operational flexibility provisions of Mississippi's Title V regulation (APC-S-6) because the project does not constitute a Title I modification, does not exceed an allowable emission rate, and does not violate applicable requirements or contravene federally enforceable permit terms and conditions that are monitoring, recordkeeping, reporting, or compliance certification requirements.

The remainder of this letter provides a brief description of the project and applicability of permitting and regulatory requirements.

PROJECT DESCRIPTION AND EMISSIONS CHANGES

The Columbia CNS has three kilns that are heated by direct-fired dry shavings burners. The projects involve installing a secondary combustion "vortex" chamber on the burner for Kiln No. 2 and No. 3 to reduce energy costs and improve lumber quality. The additional combustion chamber also minimizes the risks of a kiln fire due to carryover. A 502(b)(10) letter for Kiln No. 3 was submitted to MDEQ in November 2008 and the vortex chamber was installed in March 2009. At the time of the November 2008 submittal, there was nothing in the project scope or engineering design to indicate that an increase in production could result from installation of the vortex chamber. Now that the plant has operated for a number of months with the vortex chamber on Kiln No. 3, it has been determined that the kiln cycle time can be reduced from an average of 19 hours to 17.5 hours by utilizing the retained heat in the vortex chamber if the lumber kiln is immediately re-loaded ("hot-charged"). Therefore, we have evaluated the emissions increase from reducing the cycle time for both Kiln Nos. 2 and 3.

For determining applicability of PSD permitting to the project, GP calculated emissions increases based on 40 CFR §52.21, which is incorporated by reference (with exceptions noted) in MDEQ regulation APC-S-5. Emissions increases (EI) for an existing unit are determined from:

EI = Projected Actual Emissions (PAE) – Baseline Actual Emissions (BAE)

The baseline actual emissions are based on emissions from 2004-2005, the highest two calendar years of production (and therefore emissions) in the past 10 years. Emissions are calculated using actual stack test data, NCASI, and EPA emission factors. Detailed calculations are included in the attachment to this letter.

For the modified units, Kiln Nos. 2 and 3, the projected actual emissions were estimated based on the highest monthly throughput (annualized) for the two kilns during the baseline period, 105,816 thousand board feet per year (Mbf/yr) plus the increased throughput due to decreased cycle time. The maximum monthly throughput (annualized) was used a basis for the projected maximum emissions because future production is expected to be no greater than the existing maximum other than the change due to the vortex project. The increase due to cycle time change was calculated as a percent increase based on 19 hours before installation of the vortex chamber and 17.5 hours with the vortex chamber. The projected actual production for Kiln Nos. 2 and 3 is calculated as 105,816 Mbf/yr * 19/17.5 = 114,886 Mbf/yr.

Per 40 CFR §52.21(b)(41)(ii)(c), the projected actual emissions:

> *Shall exclude, in calculating any increase in emissions that results from the particular project, that portion of the unit's emissions following the project that an existing unit could have accommodated during the consecutive 24-month period used to establish the baseline actual emissions under subparagraph (2)(aa) of this rule and that are not resulting from the particular project, including any increased utilization due to product demand growth;*

This provision is commonly called the "demand growth exclusion". The amount of excludable emissions is difficult to assess, and the rules contain no specific assessment guidance, but GP believes that the excludable amount essentially is the level of emissions that could be physically and legally accommodated by the unit during the baseline period, before (without) any increases caused by the physical or operational changes proposed in the project. The rules do not limit this excludable amount to the amount actually emitted (i.e., the highest demonstrated/documented level of emissions) during a given period within the baseline. Rather, it is the highest amount that the unit could have legally and physically emitted during the baseline, before the proposed project, if market demand had been sufficiently high to require that increased maximum level of production.

For convenience and simplicity only, GP used the highest demonstrated average monthly operating level[1] during the baseline period as an approximation of the level of operation that the Kiln Nos. 2 and 3 "could have accommodated" during the baseline period. Emissions that the unit could have accommodated during the baseline, including those caused by increased utilization stimulated by "demand growth", are subtracted from the calculated projected actual emissions.

As the kilns are typically the production bottleneck at the facility, emissions increases from affected sources were also calculated for all process emission units with the exception of Kiln No. 1. To determine the impact of the additional board production (9,070 Mbf/yr), the increase in Mbf was converted to increases in hours, log, and truck throughput based on ratio of Mbf to each production parameter during the baseline period.

Based on the methodology described above, the following emission increases are calculated for the vortex chamber projects, demonstrating that neither PSD nor state permitting is required for any pollutant.

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[1] The 30-day period as a demonstration of "could have accommodated" emissions has been presented by EPA Region 4 as an acceptable approximation (Southern Section AWMA Presentation by Jim Little, August 22, 2006). GP does not accept this as the limit on excludable emissions during the baseline as there are no such limits in the rule, but uses it here for convenience because it seems to be an accepted, demonstrated approach.

Table 1. Emissions Increase due to Vortex Burners

	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NO_X (tpy)	CO (tpy)	VOC (tpy)	SO_2 (tpy)
Kiln 2 and 3							
A. Baseline	34.0	34.0	34.0	19.9	83.6	211.6	3.0
B. Capable of Accommodating	41.3	41.3	41.3	24.2	101.6	257.1	3.6
C. Projected Actual	44.8	44.8	44.8	26.3	110.3	279.2	3.9
D. Demand Growth (D = B - A)	7.3	7.3	7.3	4.3	18.0	45.5	0.6
E. Emission Increase (E = C - A - D)	3.5	3.5	3.5	2.1	8.7	22.0	0.3
Affected Sources - Incremental Increase	8.3	3.2	1.6				
Project Increase	11.8	6.8	5.1	2.1	8.7	22.0	0.3
PSD SER	**25**	**15**	**10**	**40**	**100**	**40**	**40**
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**	**No**
MDEQ De Minimis	**18.8**	**11.3**	**7.5**	**30.0**	**75.0**	**30.0**	**30.0**
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

REGULATORY APPLICABILITY ANALYSIS

There are no New Source Performance Standards (NSPS) that specifically apply to sawmills. In addition, no emission units proposed for modification are defined as affected facilities under any NSPS. Therefore, no NSPS apply to this project.

A National Emissions Standard for Hazardous Air Pollutants (NESHAP) for the plywood and composite wood products (PCWP) source category, commonly known as the PCWP MACT, was initially finalized by U.S. EPA on July 30, 2004 and was reissued and amended after reconsideration on February 16, 2006. The rule was partially vacated and remanded by the D.C. Circuit Court of Appeals in June 2007. Lumber kilns are process units within the "affected source" under the PCWP MACT. However, there are no applicable control requirements or work practice standards. Therefore, GP was only required to submit an initial notification as required under NESHAP Subpart A (40 CFR §63.9). No other emission units proposed for modification are process units within the affected source under the PCWP MACT.

The equipment at the Columbia CNS will continue to be operated in compliance with applicable requirements of Mississippi's "Air Emission Regulations for the Prevention, Abatement, and Control of Air Contaminants (APC-S-1)." There is no change to the applicability or requirements of these regulations as a result of the vortex chamber projects.

PERMITTING APPLICABILITY ANALYSIS

The Columbia CNS's current Title V Operating Permit limits the kilns to 160,000 Mbf/yr (combined), 2.4 lbs of sulfur dioxide (SO_2) per MMBtu and firing of woodwaste only. The CNS will continue to meet these requirements after the proposed project. Therefore,

the installation of the vortex chamber will not result in an exceedance of an allowable emission rate, violate applicable requirements, or contravene federally enforceable permit terms and conditions that are monitoring, recordkeeping, reporting, or compliance certification requirements.

Regulation APC-S-2 describes requirements for construction permits. The emissions increases from the proposed project are shown in Table .. The increases were compared to both the Prevention of Significant Deterioration (PSD) significant emission rates (SER) and MDEQ's *de minimis* modification threshold (equal to 75% of the PSD SER). The project emission increases are below both the major modification thresholds and the *de minimis* thresholds. Therefore, the project is not a major modification, does not require an emissions netting analysis, and is not a moderate (i.e., synthetic minor) modification. Section XIII(F) provides that "a *de minimis* NSR modification is excluded from the requirements for a permit to construct. This does not eliminate any requirement for modification of Title V permits or permits to operate for *de minimis* modifications."

The Columbia CNS permit has an existing requirement to (Condition 5.B.1) to record the lumber throughput on a daily and rolling 365-day basis and is required to report annual facility-wide emissions per Condition 1.7. As such the Columbia CNS requests that the existing monitoring requirements be accepted as meeting the recordkeeping requirements of 52.21(r)(6).

Regulation APC-S-6 describes requirements for Title V operating permits. Section IV.F of this regulation addresses changes that may be made without requiring a permit revision. These changes are commonly referred to as "operational flexibility" or 502(b)(10) changes that "are not modifications under any provision of Title I of the Act and the changes do not exceed the emissions allowable under the permit." This project meets these criteria as described in this letter because the project is not a major modification with respect to PSD and does not trigger applicable requirements as a modification under NSPS or NESHAP.

SUMMARY

The modification described in this letter does not constitute a Title I modification and does not exceed a permitted, allowable emission rate. This modification does not violate applicable requirements or contravene federally enforceable permit terms and conditions that are monitoring, recordkeeping, reporting, or compliance certification requirements. Further, GP understands that a permit shield will not be extended to this modification.

GP appreciates your prompt review of the proposed 502(b)(10) change described in this letter and respectfully requests your written concurrence with the permitting conclusions

discussed herein. Please do not hesitate to contact Maria Zufall at 404.652.7256 or Forrest Denney at 404.652.4831 to discuss any questions and comments or if any additional information is required.

CERTIFICATION

The undersigned certifies under the penalty of law, that all information and statements provided in this request, based on information and belief formed after reasonable inquiry, are true, accurate, and complete.

Sincerely,

Mark Robinson

Mark Robinson
Plant Manager

cc: Mr. Forrest Denney

Attachment

ATTACHMENT

Emission Calculations

Emissions Summary

	PM (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)	NO_x (tpy)	CO (tpy)	VOC (tpy)	SO_2 (tpy)
Kiln 2 and 3							
A. Baseline	34.0	34.0	34.0	19.9	83.6	211.6	3.0
B. Capable of Accommodating	41.3	41.3	41.3	24.2	101.6	257.1	3.6
C. Projected Actual	44.8	44.8	44.8	26.3	110.3	279.2	3.9
D. Demand Growth (D = B - A)	7.3	7.3	7.3	4.3	18.0	45.5	0.6
E. Emission Increase (E = C - A - D)	3.5	3.5	3.5	2.1	8.7	22.0	0.3
Affected Sources - Incremental Increase							
Planer Mill Cyclone	0.8	0.8	0.8				
Shavings Truck Bin Cyclone	7.5E-03	7.5E-03	7.5E-03				
Fuel Bin Cyclone	0.2	0.2	0.2				
Deck Saw	4.3E-02	1.5E-02	1.5E-02				
Debarkers	0.5	0.2	0.2				
Bark Hog	5.1E-02	2.3E-02	2.3E-02				
Lillypad Chipper	4.9E-03	2.3E-03	2.3E-03				
Green Chipper	3.4E-02	1.5E-02	1.5E-02				
Shaker Screen	0.2	0.1	0.1				
Drop Points	2.4E-02	1.1E-02	1.7E-03				
Roads	6.5	1.8	0.2				
Project Increase	11.8	6.8	5.1	2.1	8.7	22.0	0.3
PSD SER	**25**	**15**	**10**	**40**	**100**	**40**	**40**
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**	**No**
MDEQ De Minimis	**18.8**	**11.3**	**7.5**	**30.0**	**75.0**	**30.0**	**30.0**
Exceeds?	**No**	**No**	**No**	**No**	**No**	**No**	**No**

1 For sources without $PM_{2.5}$ data, it is assumed equal to PM_{10}. For sources without PM_{10} data, assumed equal to PM.

Project Details

Production ratio due to project	1.09	
Kiln 2 and 3 Capable of Accommodating	105,816	Mbf/yr
Kiln 2 and 3 Future Actual	114,886	Mbf/yr
Increased Production	9,070	Mbf/yr

1 Production ratio calculated based on decrease in cycle time for the kilns. Equal to current average cycle time of 19 hours divided by future average cycle time of 17.5 hours.
2 Kiln 2 and 3 capable of accommodating calculated from highest production month during baseline period (March 2004).
3 Kiln future actual based on highest production month during baseline period and percent increase due to reduction in kiln cycle time. Value is consistent with a the combined kiln permit limit 160,000 Mbf/yr limit and with 70% of capacity for Kilns 2 and 3.

Production Data

Parameter	Units	2004	2005	2004-2005 Average	Parameter per Mbf	Increase Due to Project	Potential	Reference
Logs	tpy	576,387	534,045	555,216	4.48	40,634	1,735,487	1, 2
Bark generated	tpy	58,864	54,540	56,702	0.46	4,150	173,549	1, 3
Lillypads	tpy	5,835	5,406	5,621	4.54E-02	411	17,355	1, 4
Sawdust generated	tpy	1,225	1,135	1,180	0.01	86	112,128	1, 2
Chips generated	tpy	197,986	186,779	192,343	1.55	14,077	627,216	1, 2
Kiln Production - All	Mbf/year	135,159	112,701	123,930	1.00	9,070	160,000	1, 5
Kiln Production - 2&3 Only	Mbf/year	90,431	83,740	87,086	0.70	6,373		1
Dry Shavings Generated	tpy	5,852	4,402	5,127	0.04	375	36,704	1, 2
Fuel Silo Throughput	tpy	17,078	18,298	17,688	0.14	1,295		1
Planer Hours	hours	5,219	5,197	5,208	0.04	381	8,760	1
Truck Bin Hours	hours	1,923	1,008	1,466	0.01	107	8,760	1
Fuel Storage Hours	hours	3,296	4,189	3,743	0.03	274	8,760	1
Finished Lumber Trucks	No./year	3,490	4,521	4,006	0.03	293		1
1" Rough Green Lumber Trucks	No./year	366	404	385	3.11E-03	28		1
Rock Trucks	No. year	145	125	135	1.09E-03	10		1

1. Actual throughput data per annual emission inventories and monthly kiln data.
Increase due to project calculated based on past actual ratio of each parameter to Mbf and increase in Mbf due to project.
2. Potential throughput per 2008 Title V application. Calculated from ratio of maximum to actual board processing and actual process throughput for 2007.
3. Potential estimated as 10% of log throughput.
4. Potential estimated as 1% of log throughput.
5. Potential throughput per Title V permit limit, Condition 3.B.3

Production Data

Parameter	Past Actual	Increase in hours due to project
Planer Hours	5,208	381
Truck Bin Hours	1,466	107
Fuel Storage Hours	3,743	274

Planer Mill Cyclone Test Data

Test Date	PM Test Value (lb/hr)
October 2, 2003	3.14
January 30, 2006	3.68
October 11, 2007	2.65
Average + 2 Std. Deviations	4.19

Cyclone Emissions

Unit	ID	Past Actual PM Emission Factor (lb/hr)	Future PM Emission Factor (lb/hr)	Past Actual Emissions (tpy)	Emission Increase (tpy)
Planer Mill Cyclone	AA-001	3.14	4.19	8.2	0.8
Shavings Truck Bin Cyclone	AA-002	0.14	0.14	0.1	0.01
Fuel Bin Cyclone	AA-003	1.62	1.62	3.0	0.2

1. Emission factors are based on test data. PM is assumed equal to PM_{10} and $PM_{2.5}$.
   Past actual planer mill cyclone test data based test data for 2003, as this value would be used for 2004-05 emissions.
   Increase emissin factor based on average plus 2 standard deviations of test data.
   Shavings truck bin cyclone test data from September 30, 2003.
   Fuel bin cyclone test data from September 30, 2003.
2. Emissions calculated from lb/hr and hours per year.

Production Data (Kiln 2 and 3 only)

Parameter	Past Actual	Future Actual	Capable of Accommodating
Kiln Throughput (Mbf/yr)	87,086	114,886	105,816
Heat Input (MMBtu/yr)	239,486	315,937	290,994

1. Heat input estimated from 2.75 MMBtu/Mbf
2. Capable of accommodating equal to maximum month (March 2004) annualized to one year.

Criteria Pollutant Emission Calculations

Pollutant	Emission Factors (lb/MMBtu)	Emission Factors (lb/mbf)	Past Actual Emission Rates[1] (tpy)	Future Actual Emission Rates[1] (tpy)	Capable of Accommodating (tpy)
PM(f+C)[2]	-	0.78	34.0	44.8	41.3
NO_X[3]		0.458	19.9	26.3	24.2
SO_2[4]	0.025	-	3.0	3.9	3.6
CO[5]	-	1.92	83.6	110.3	101.6
VOC[6]	-	4.86	211.6	279.2	257.1

1. For SO_2: Emission Rates (lb/hr) = Emission Factor (lb/MMBtu) * Fuel Usage (ton/yr) * Fuel Heat Content (Btu/lb) / Hours of Operation (hr/yr) * (2,000 lb/ton) * (MMBtu/10^6 Btu)

   Emission Rates (tpy) = Emission Factor (lb/MMBtu) * Fuel Usage (ton/yr) * Fuel Heat Content (Btu/lb) * (MMBtu/10^6 Btu)

   For all other pollutants: Emission Rates (lb/hr) = Emission Factor (lb/mbf) * Production Rate (mbf/yr) / Hours of Operation (hr/yr)

   Emission Rates (tpy) = Emission Factor (lb/mbf) * Production Rate (mbf/yr) * (ton/2,000 lb)

2. Georgia Pacific Title V Factors, average plus 2 standard deviations. Includes filterable and condensable.
3. Stack test data for similar facility (Idabel, 1996) plus 20% safety factor.
4. Emission factors from AP-42 Section 1.6 Wood Residue Combustion in Boilers (9/2003).
5. Georgia Pacific Title V Factors, average plus 2 standard deviations.
6. Calculated from the wood products protocol method plus a 20% safety factor.

Log and Saw Parameters

Log Length	40	ft/log
Log Diameter	0.92	ft
Density	58	lb ft^{-1}
Saw Kerf Width	0.504	inches
No. Cuts per log	2	cuts/log

Deck Saw Emissions (F-001)

	Log Throughput (tpy)	Log Length[1] (feet/yr)	No. Logs[2]	Sawdust[3] (tpy)	Emission Factor (lb/ton)[4] PM	Emission Factor (lb/ton)[4] PM_{10}	PM Emissions[5] (tpy)	PM_{10} Emissions[5] (tpy)
Past Actual	555,216	29,010,233	725,256	1,166	1.0	0.36	0.58	0.21
Increase	40,634	2,123,146	53,079	85	1.0	0.36	0.04	0.02

1. Log length calculated from log throughput (tpy) / density (lb/ft^3) / area (ft^2) * 2000 lb/ton.
2. Number of logs calculated from total log length (ft/yr) / individual log length (ft)
3. Sawdust calculated from No. logs per year * No. cuts (cuts/log) * log area (ft^2) * kerf width (ft) * density (lb/ft^3)/2000.
4. Emission factor based on the FIRE database for SCC 3-07-008-03 for sawdust storage pile handling.
   Emissions assumed similar since sawing is creating sawdust.
5. Annual emissions calculated from emission factor (lb/ton) * sawdust (tpy) / 2000 (lb/ton).

Debarker, Hog, and Chipper Emission Calculations (FS-002, FS-003, FS-004, FS-005)

Unit	Throughput Past Actual (tpy)	Throughput Increase (tpy)	PM Emissions Past Actual (tpy)	PM Emissions Increase (tpy)	PM_{10} Emissions Past Actual (tpy)	PM_{10} Emissions Increase (tpy)
F-002 Debarkers	555,216	40,634	6.66	0.5	3.05	0.22
F-003 Bark Hog	57,882	4,236	0.69	0.05	0.32	0.02
F-004 Lillypad Chipper	5,621	411	6.74E-02	4.94E-03	3.09E-02	2.26E-03
F-005 Green Chipper	38,469	2,815	0.46	0.03	0.21	0.02
IS - Shaker Screen	193,523	14,163	2.32	0.17	1.06	0.08

1. Debarker throughput based on total logs. Bark Hog throughput based and bark plus sawdust.
   Lillypad Chipper throughput based on lillypad throughput (0.1% of logs). Green chipper throughput based on 20% of chip production
   Shaker screen throughput equal to chips plus sawdust.
2. Emission factor per FIRE database. SCC Code 3-07-008-01, Log Debarking.

PM	0.024	lb/ton of logs processed
PM_{10}	0.011	lb/ton of logs processed

Emission Factor Calculation

Material	Moisture Content[1]	Emission Factor (lb/ton)[2,3] PM	PM_{10}	$PM_{2.5}$
All	4.8	1.19E-03	5.63E-04	8.52E-05

1. Moisture content (M) for f set equal to the maximum value for which the equation is appropriate. Actual moisture content is higher.

2. Emission factor calculated from $$E\ (lb/ton) = k \times 0.0032 \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$
where:

k: Particle size multiplier
0.74 PM
0.35 PM_{10}
0.053 $PM_{2.5}$

U: Mean wind speed 7.558 mph

3. Emission factor per AP-42, Section 13.2.4, *Aggregate Handling and Storage Piles*, drop equation. Mean wind speed for Baton Rouge, LA per EPA TANKS meteorological database.

Emissions Calculation

Material	No. Drop Points	Throughput (tpy) Past Actual	Increase	PM Emissions (tpy) Past Actual	Increase	PM_{10} Emissions (tpy) Past Actual	Increase	$PM_{2.5}$ Emissions (tpy) Past Actual	Increase
Sawdust/Bark Bin	2	57,882	4,236	6.88E-02	5.04E-03	3.26E-02	2.38E-03	4.93E-03	3.61E-04
Green Chip Loading	2	192,343	14,077	2.29E-01	1.67E-02	1.08E-01	7.92E-03	1.64E-02	1.20E-03
Dry Shavings Loading	2	5,127	375	6.10E-03	4.46E-04	2.88E-03	2.11E-04	4.37E-04	3.20E-05
Fuel Silo Loading	2	17,688	1,295	2.10E-02	1.54E-03	9.95E-03	7.28E-04	1.51E-03	1.10E-04
Total				0.32	0.02	0.15	0.01	0.02	1.70E-03

Road Emissions (F-006)

Average Through Traffic:	Past Actual	Increase	Units
Shavings Trucks (Unpaved Road)			
# roundtrips per truck:	1	1	trips/truck
# miles per roundtrip:	0.8	0.8	miles/trip
Unloaded vehicle weight:	13.3	14.5	tons/truck
Loaded vehicle weight, (approx.):	41.5	41.5	tons/truck
Material Throughput	5,127	375	tons/yr
Total number of trucks:	182	14	trucks/yr
Vehicle miles traveled (VMT):	145	11	miles/yr
Chip Trucks (Unpaved Road)			
# roundtrips per truck:	1	1	trips/truck
# miles per roundtrip:	0.8	0.8	miles/trip
Unloaded vehicle weight:	13.3	14.5	tons/truck
Loaded vehicle weight, (approx.):	41.5	41.5	tons/truck
Material Throughput	192,343	14,077	tons/yr
Total number of trucks:	6,821	521	trucks/yr
Vehicle miles traveled (VMT):	5,457	417	miles/yr
Log Trucks (Unpaved Road)			
# roundtrips per truck:	1	1	trips/truck
# miles per roundtrip:	0.7	0.7	miles/trip
Unloaded vehicle weight:	13.6	13.6	tons/truck
Loaded vehicle weight, (approx.):	42	42	tons/truck
Material Throughput	555,216	40,634	tons/yr
Total number of trucks:	19,550	1,431	trucks/yr
Vehicle miles traveled (VMT):	13,685	1,002	miles/yr
Bark /Sawdust Fuel Trucks (Unpaved Road)			
# roundtrips per truck:	1	1	trips/truck
# miles per roundtrip:	1.0	1.0	miles/trip
Unloaded vehicle weight:	13.3	14.5	tons/truck
Loaded vehicle weight, (approx.):	41.5	41.5	tons/truck
Material Throughput	57,882	4,236	tons/yr
Total number of trucks:	2,053	157	trucks/yr
Vehicle miles traveled (VMT):	2,053	157	miles/yr
Finished Lumber Trucks (Unpaved Road)			
# roundtrips per truck:	1	1	trips/truck
# miles per roundtrip:	0.6	0.6	miles/trip
Unloaded vehicle weight:	15	15	tons/truck
Loaded vehicle weight, (approx.):	35	35	tons/truck
Total number of trucks:	4,006	293	trucks/yr
Vehicle miles traveled (VMT):	2,403	176	miles/yr
1" Rough Green Lumber (Unpaved Road)			
# roundtrips per truck:	1	1	trips/truck
# miles per roundtrip:	0.6	0.6	miles/trip
Unloaded vehicle weight:	13.3	14.5	tons/truck
Loaded vehicle weight, (approx.):	40	40	tons/truck
Total number of trucks:	385	28	trucks/yr
Vehicle miles traveled (VMT):	231	17	miles/yr
Block Trucks (Unpaved Road)			
# roundtrips per truck:	1	1	trips/truck
# miles per roundtrip:	0.6	0.6	miles/trip
Unloaded vehicle weight:	13.3	14.5	tons/truck
Loaded vehicle weight, (approx.):	40	40	tons/truck
Total number of trucks:	135	10	trucks/yr
Vehicle miles traveled (VMT):	81	6	miles/yr

1. Total number of trucks calculated from material throughput divided by difference between unloaded and loaded weight. For finished lumber, rough green lumber and block trucks, total trucks were based on 2004/2005 data and future increase.
2. Vehicle miles traveled (VMT) = Total # of trucks * # miles per roundtrip

Average Fleet Weight	**27.38**	**27.58**

Emission Calculations

Pollutant	Emission Factor (lb/VMT) Past Actual	Increase	VMT Past Actual	Increase	Emissions (tpy) Past Actual	Increase
TSP	7.21	7.24	24,055	1,785	86.76	6.46
PM_{10}	2.06	2.06	24,055	1,785	24.73	1.84
$PM_{2.5}$	0.21	0.21	24,055	1,785	2.47	0.18

Calculated from:

lb PM = $k*(silt\%/12)^{a}*(Wt/3)^{0.45}*(365\text{-rain days})/365$

lb $PM_{10}/PM_{2.5}$ = $k*(silt\%/12)^{a}*(Wt/3)^{0.45}*(365\text{-rain days})/365$

(Emission factors are based on the average of the loaded and unloaded lb/VMT factors)

where: $k_{for\ TSP}$ = 4.9 (See AP-42, Table 13.2.2-2)

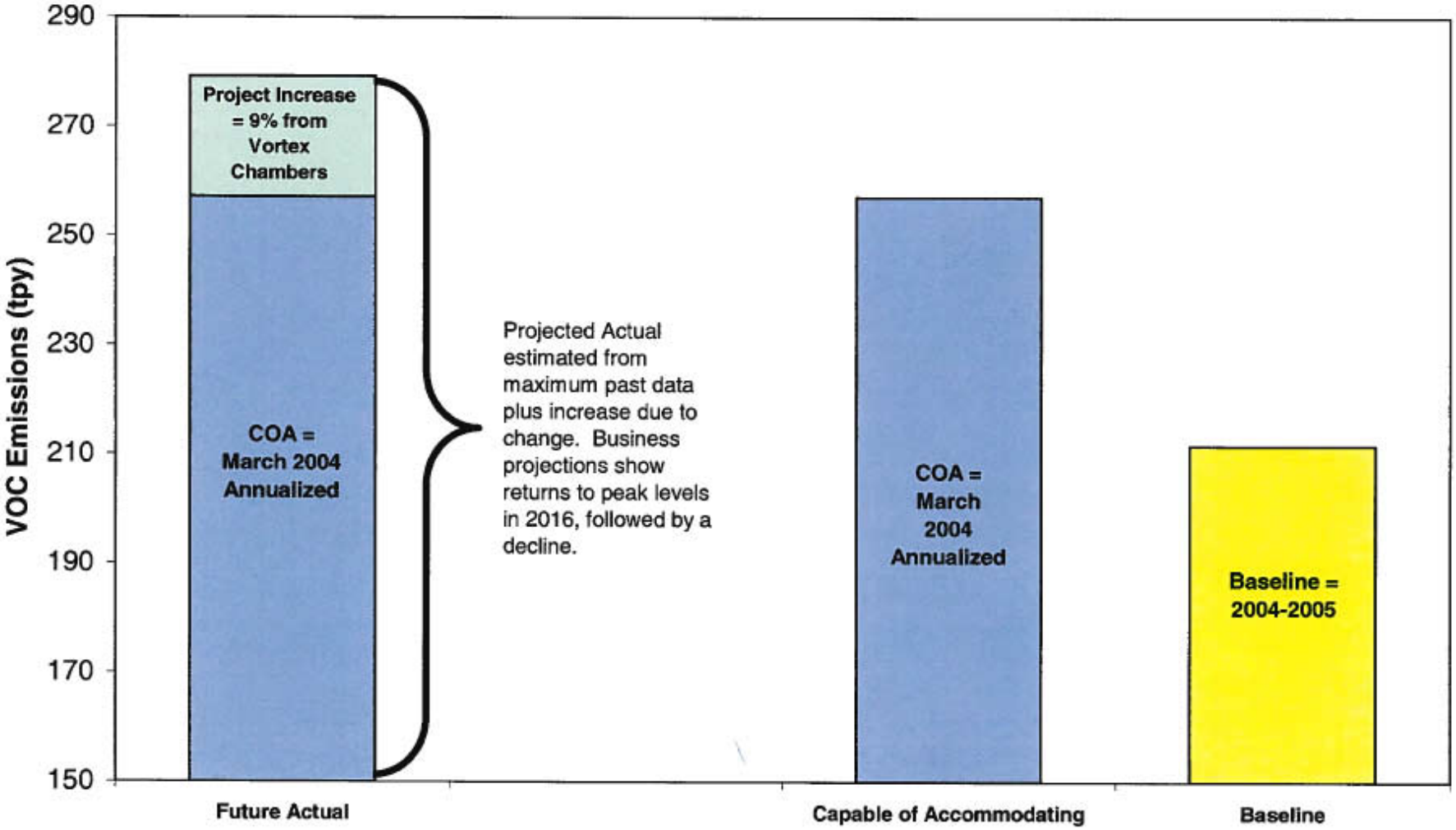
$k_{for\ PM10}$ = 1.5 (See AP-42, Table 13.2.2-2)

$k_{for\ PM2.5}$ = 0.15 (See AP-42, Table 13.2.2-2)

% Silt:	8.4	(See AP-42, Table 13.2.2-1)
Operating Days	365	
Average # Rainy Days:	110	(See AP-42, Figure 13.2.2-1)

Wt is the average fleet weight

Example VOC Emissions for Kiln 2 and 3



*9% increase based on Kiln 3 modification (March 2009) which showed a potential for kiln batch times to decrease from 19 to 17.5 hours