Prevention of Significant Air Quality Deterioration Review

Preliminary Determination

January 2011

Facility Name: Langdale Forest Products Co.
City: Valdosta
County: Lowndes
AIRS Number: 04-13-185-00009
Application Number: 18039
Date Application Received: October 7, 2008

Review Conducted by:
State of Georgia - Department of Natural Resources
Environmental Protection Division - Air Protection Branch
Stationary Source Permitting Program

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SUMMARY

The Environmental Protection Division (EPD) has reviewed the application submitted by Langdale Forest Products Company for a permit to remove production limits for Drying Kilns Nos. 3 and 7. No other kilns at this facility are subject to production limits. These production limits were adopted to ensure that Landgale Forest Products did not trigger PSD review when Drying Kiln No. 7 was constructed. In order to consider removal of these production limits, the facility must be evaluated as if Drying Kiln No. 7 had not been constructed. Drying Kiln No. 7 is direct fired, so its construction will not result in increased utilization of the boiler. With the increased production from Drying Kiln No. 7, operation of the Planer Mill Group would be expected to increase, causing a corresponding increase in PM emissions. To avoid PSD review for PM2.5, the Division is raising the Drying Kiln No. 7 production limit from 40 million to 53.5 million board feet per year, and Langdale is taking a voluntary limit on production for the Planer Mill Group of 134.3 million board feet per year (the average annual production for the Planer Mill Group during the baseline period), which will result in no emission increase from the Planer Mill Group.

The proposed project will result in an increase in emissions from the facility. The source of these increases in emissions is Drying Kiln No. 7.

The modification of the Langdale Forest Products plant, due to this project, will result in an emissions increase in PM, PM_{10}, $PM_{2.5}$, NO_x, CO, VOC, and Greenhouse Gases (GHG). A Prevention of Significant Deterioration (PSD) analysis was performed for the facility for all pollutants to determine if any increase was above the "significance" level. Only the VOC emissions increase was above the PSD significant level threshold.

Langdale Forest Products is located in Lowndes County, which is classified as "attainment" or "unclassifiable" for SO_2, $PM_{2.5}$ and PM_{10}, NO_X, CO, and ozone (VOC).

The EPD review of the data submitted by Langdale Forest Products, related to the proposed modifications, indicates that the project will be in compliance with all applicable state and federal air quality regulations.

It is the preliminary determination of the EPD that the proposal provides for the application of Best Available Control Technology (BACT) for the control of VOC, as required by the federal PSD regulations in 40 CFR 52.21(j).

It has been determined through approved modeling techniques that the estimated emissions will not cause or contribute to a violation of any ambient air standard or allowable PSD increment in the area surrounding the facility or in any Class I areas located within 200 km of the facility. It has further been determined that the proposal will not cause impairment of visibility or detrimental effects on soils or vegetation. Any air quality impacts produced by project-related growth should be inconsequential.

This Preliminary Determination concludes that an Air Quality Permit should be issued to Langdale Forest Products for the removal of production limit for Drying Kiln No. 3 and raising the production limit for Drying Kiln No. 7. Various conditions have been incorporated into the current Title V operating permit to ensure and confirm compliance with all applicable air quality regulations. A copy of the draft permit amendment is included in Appendix A. This Preliminary Determination also acts as a narrative for the Title V Permit.

1.0 INTRODUCTION – FACILITY INFORMATION AND EMISSIONS DATA

On September 30, 2008, Langdale Forest Products Company (hereafter Langdale Forest Products or the facility) submitted an application for an air quality permit to remove the production limits for Drying Kilns Nos. 3 and 7. This application was amended by email on March 31, 2010 and by a letter dated July 12, 2010. The facility is located at 1202 Madison Highway in Valdosta, Lowndes County.

Drying Kiln No. 3 was constructed in 1976. The PSD regulations were promulgated after this date, therefore, Drying Kiln No. 3 was not subject to review or limits under the PSD regulations. When the PSD rules were promulgated the facility was a major source per PSD. On November 7, 2005, Permit Amendment No. 2421-185-0009-V-01-3 was issued to Langdale Forest Products, authorizing the construction of Drying Kiln No. 7. Prior to the installation of Drying Kiln No. 7, Langdale Forest Products was a major source under the PSD regulations, because the cumulative emissions of VOC from the existing equipment (Wood waste-fired boiler, Lumber Drying Kilns Nos. 1 through 3, and Pole Drying Kilns Nos. 4 through 6) exceeded 250 tons per year. To avoid review and permitting under the PSD regulations, the VOC emission increase from the facility had to be less than 40 tons per year. To restrict the VOC emission increase, a production limit was placed on existing Drying Kiln No. 3 and new Drying Kiln No. 7. These requirements were in Permit Amendment No. 2421-185-0009-V-01-3 and then included in the Title V renewal Permit No. 2421-185-0009-V-02-0 issued on April 11, 2006. Drying Kiln No. 7 was installed in 2007. However, because this permit amendment is for the removal of PSD avoidance limits, the facility is treated as if Drying Kiln No. 7 had not been constructed. Since Drying Kiln No. 7 is the only "new" emission unit, it is the only unit subject to PSD requirements.

Table 1-1: Title V Major Source Status

Pollutant	Is the Pollutant Emitted?	If emitted, what is the facility's Title V status for the Pollutant?		
		Major Source Status	Major Source Requesting SM Status	Non-Major Source Status
PM	x			x
PM_{10}	x			x
PM2.5	x			x
SO_2	x			x
VOC	x	x		
NO_x	x			x
CO	x	x		
TRS	N/A			
H_2S	N/A			
Individual HAP	x	x		
Total HAPs	x	x		

Table 1-2 below lists all current Title V permits, all amendments, 502(b)(10) changes, and off-permit changes, issued to the facility, based on a review of the "Permit" file(s) on the facility found in the Air Branch office.

Table 1-2: List of Current Permits, Amendments, and Off-Permit Changes

Permit Number and/or Off-Permit Change	Date of Issuance/ Effectiveness	Purpose of Issuance
2421-185-0009-V-02-0	April 11, 2006	First renewal Title V permit

Based on the proposed project description and data provided in the permit application, the estimated incremental increases of regulated pollutants from the facility are listed in Table 1-3 below:

Table 1-3: Emissions Increases from the Project

Pollutant	Potential Emissions Increase (tpy)	PSD Significant Emission Rate (tpy)	Subject to PSD Review
PM	9.9	25	No
PM_{10}	9.9	15	No
$PM_{2.5}$	9.9	10	No
VOC	123.1	40	**Yes**
NO_X	5.6	40	No
CO	23.8	100	No
SO_2	0.0	40	No
TRS	0.0	10	No
Pb	0.0	0.6	No
Fluorides	0.0	3	No
H_2S	0.0	10	No
SAM	0.0	7	No
GHG	53,326.2	75,000	No

The definition of baseline actual emissions is the average emission rate, in tons per year, at which the emission unit actually emitted the pollutant during any consecutive 24-month period selected by the facility within the 10-year period immediately proceeding the date a complete permit application was received by EPD. Note that the only emission unit whose baseline must be determined for this review is the Planer Mill Group, since this modification does not affect any other emission units onsite. The net increases were calculated by subtracting the past actual emissions (based upon the annual average emissions from January 2003 to December 2004) from the future projected actual emissions of Drying Kiln No. 7 and associated emission increases from non-modified equipment (i.e., the Planer Mill Group). Table 1-4 details a summary of these emission changes. The emissions calculations for Tables 1-3 and 1-4 can be found in detail in the facility's PSD application (see Section 3.0 of Application No. 18039 and revised by letter dated July 12, 2010). These calculations have been reviewed and approved by the Division.

Drying Kiln No. 7

Drying Kiln No. 7 is to be limited to a production rate of 53,500 thousand board feet per year (mbf/yr). There is not an AP-42 section for lumber drying kilns. The best available emission factors for lumber drying kilns were developed by the National Council for Air and Stream Improvement (NCASI). The NCASI emission factor for PM emissions from a direct-fired lumber kiln is 0.37 lb/mbf. As a conservative estimate, PM10 and PM2.5 are assumed to equal PM.

$$PM = \frac{53{,}500\ mbf\ /\ yr \times 0.37\ lb/mbf}{2000\ lb/ton} = 9.9\ tons/yr$$

The NCASI emission factor for NOx emissions from a direct-fired lumber kiln is 0.21 lb/mbf.

$$NOx = \frac{53{,}500\ mbf\ /\ yr \times 0.21\ lb/mbf}{2000\ lb/ton} = 5.6\ tons/yr$$

The NCASI emission factor for CO emissions from a direct-fired lumber kiln is 0.89 lb/mbf.

$$CO = \frac{53{,}500\ mbf\ /\ yr \times 0.89\ lb/mbf}{2000\ lb/ton} = 23.8\ tons/\ yr$$

The NCASI emission factor for VOC emissions from a direct-fired lumber kiln is 4.6 lb/mbf. This emission factor was derived from information published by NCASI in Technical Bulletin 845 – *A Comparative Study of VOC Emissions from Small-Scale and Full-Scale Lumber Kilns Drying Southern Pine*. NCASI published an emission factor of 3.8 lb as carbon/mbf, which was measured using Method 25A. The primary VOC compounds present in the exhaust from lumber kilns drying southern pine are terpenes (10 carbon molecule with a molecular weight of 136.2). Method 25A is also known to have little or no response to methanol and formaldehyde (both of which are VOCs). Methanol and formaldehyde were measured separately and reported by NCASI in Technical Bulletin 845 to be 0.16 lb/mbf for methanol and 0.103 lb/mbf for formaldehyde. To convert the published emission factor to an "as VOC" basis, it is multiplied by the ratio of the mass of VOC to the mass of carbon in the VOC (in this case 136.2/120.1 = 1.134) and adding the emission factors for methanol and formaldehyde. VOC emissions are therefore:

$$VOC = \frac{53{,}500\ mbf\ /\ yr \times 4.6\ lb/mbf}{2000\ lb/ton} = 123.1\ tons/\ yr$$

The lumber-kiln is fired by waste wood, which contains negligible sulfur. The SO2 emissions are assumed to be zero.

The Greenhouse Gas (GHG) emissions were calculated using the procedures published in 40 CFR 98 – *Mandatory Greenhouse Gas Reporting*, Subpart C – *General Stationary Fuel Combustion Sources*. Per Application 18039, the maximum hourly consumption of woodwaste is 7,500 lb and the maximum heat input is 30 MMBtu/hr. As a conservative estimate, woodwaste is assumed to be burned at its maximum rate for 8,760 hours per year. This assumption results in an annual consumption of wastewood of 32,850 tons per year. Per Table C-1 to 40 CFR 98 Subpart C, the default high heat value for "wood and wood residuals" is 15.38 MMBtu/ton, and the default CO_2 emission factor is 93.80 kg /MMBtu. Per Table C-2 to 40 CFR 98 Subpart C, the default emission factors for "biomass fuels – solid" are 3.2 x 10^{-2} kg/MMBtu for CH_4 and 4.2 x 10^{-3} kb/MMBtu for N_2O.

The emissions of CO2 are calculated using Equation C-1 and the emissions of CH4 and N2O are calculated using Equation C-8.

$$CO_2 = 32{,}850\ \frac{tons}{yr} \times 15.38\ \frac{MMBtu}{ton} \times 93.80\ \frac{kb}{MMBtu} \times 1.10231 \times 10^{-3}\ \frac{ton}{kg} = 52{,}239.4\ ton/\ yr$$

$$CH_4 = 32{,}850\ \frac{tons}{yr} \times 15.38\ \frac{MMBtu}{ton} \times 3.2 \times 10^{-2}\ \frac{kb}{MMBtu} \times 1.10231 \times 10^{-3}\ \frac{ton}{kg} = 17.8\ ton/\ yr$$

$$N_2O = 32{,}850\ \frac{tons}{yr} \times 15.38\ \frac{MMBtu}{ton} \times 4.2 \times 10^{-3}\ \frac{kb}{MMBtu} \times 1.10231 \times 10^{-3}\ \frac{ton}{kg} = 2.3\ ton/\ yr$$

The CO_2, CH_4, and N_2O emissions are converted to a CO_2 equivalent (CO_2e) basis by multiplying by the respective global warming potentials from 40 CFR 98 Subpart A, Table A-1. The global warming potential for CO_2 is 1, for CH_4 is 21, and for N_2O is 310. The total GHG emissions from Kiln No. 7 is, therefore:

$$GHG = 52{,}239.4 \times 1 + 17.8 \times 21 + 2.3 \times 310 = \ 53{,}326.2 \ ton / yr$$

Planer Mill Group

With an increase in production due to the addition of Drying Kiln No. 7, the Planer Mill Group would be expected to operate more. Langdale Forest Products, however, is primarily interested in operational flexibility that is not possible with production limits on the lumber drying kilns. Langdale has, therefore, elected to take a production limit on the Planer Mill Group equal to the average annual throughput during the baseline period (baseline: 2003-2004). Since the Planer Mill Group has not been modified and the annual throughput has not increased, there is no increase in emissions from the Planer Mill Group due to this project, and the emission increase for all pollutants is zero.

Table 1-4: Net Change in Emissions Due to the Major PSD Modification

Pollutant	Increase from Drying Kiln No. 7		Associated Units Increase (tpy)	Total Increase (tpy)
	Past Actual	Future Potential		
PM/PM_{10}	0	9.9	0.0	9.9
$PM_{2.5}$	0	9.9	0.0	9.9
VOC	0	124.2	0.0	123.1
NO_X	0	5.7	0.0	5.6
CO	0	24.0	0.0	23.8
SO_2	0	0.0	0.0	0.0

Per the information presented in Tables 1-3 and 1-4 above, the Langdale Forest Products proposed modification, as specified per Georgia Air Quality Application No. 18039, is classified as a major modification under PSD only because of the potential VOC emissions increase.

Through its new source review procedure, EPD has evaluated the Langdale Forest Products proposal for compliance with State and Federal requirements. The findings of EPD have been assembled in this Preliminary Determination.

2.0 PROCESS DESCRIPTION

According to Application No. 18039, Langdale Forest Products has proposed to remove the production limits for Lumber Drying Kilns Nos. 3 and 7. These production limits had been adopted to ensure that Langdale Forest Products did not trigger PSD review when Drying Kiln No. 7 was constructed. With the removal of these production limits, the facility is being evaluated as if Drying Kiln No. 7 had not been constructed. Drying Kiln No. 7 is direct fired, so its construction did not result in increased utilization of the boiler. This modification is potentially major for PSD for VOC and PM2.5. It was found that the proposal could "net out" of PSD review for PM2.5 if the permit imposed a production limit on Drying Kiln No. 7 that is somewhat less than the reported capacity, and a limit on the production of the Planer Mill Group.

The Langdale Forest Products permit application and supporting documentation are included in Appendix A of this Preliminary Determination and can be found online at www.georgiaair.org/airpermit.

3.0 REVIEW OF APPLICABLE RULES AND REGULATIONS

State Rules

Georgia Rule for Air Quality Control (Georgia Rule) 391-3-1-.03(1), Construction Permit, requires that any person prior to beginning the construction or modification of any facility which may result in an increase in air pollution shall obtain a permit for the construction or modification of such facility from the Director upon a determination by the Director that the facility can reasonably be expected to comply with all the provisions of the Act and the rules and regulations promulgated thereunder. Georgia Rule 391-3-1-.03(8)(b) continues that no permit to construct a new stationary source or modify an existing stationary source shall be issued unless such proposed source meets all the requirements for review and for obtaining a permit prescribed in Title I, Part C of the Federal Act [i.e., Prevention of Significant Deterioration of Air Quality (PSD)], and Section 391-3-1-.02(7) of the Georgia Rules (i.e., PSD).

Georgia Rule 391-3-1-.02(2)(b), Visible Emissions, limits the opacity of visible emissions from any air contaminant source, which is subject to some other emission limitation under 391-3-1-.02(2). The opacity of visible emissions from regulated sources may not exceed 40 percent under this general visible emission standard. It is expected that the opacity of all emissions from the drying kilns and the planer mill group will be well below 40% at all times.

Georgia Rule 391-3-1-.02(2)(d), Fuel-burning Equipment, limits opacity and particulate matter (PM) from fuel-burning equipment. The boiler meets the definition of fuel burning equipment. The allowable particulate matter emission rate is based on the formula $E=0.5*(10/R)^{0.5}$ where E equals the allowable particulate emission rate in pounds per million Btu heat input and R equals the heat input in million Btu per hour. Secondly, this regulation limits visible emissions from each affected unit to no more than 20% opacity except for one 6-minute period in any hour of no more than 27% opacity. The only emission unit at Langdale Forest Products that meets the definition of "Fuel-burning Equipment" is the Wood waste-fire boiler. The operation of the boiler is not part of this PSD review and is not affected by this permit amendment.

Georgia Rule 391-3-1-.02(2)(e), Particulate Matter Emission from Manufacturing Processes, commonly known as the process weight rate rule, limits PM emissions from the kilns and other manufacturing processes. The Permittee may not discharge or cause the discharge into the atmosphere from each of the dry kilns, or any other process (e.g., planer mill group), any gases that contain particulate matter in excess of the rate derived from one of the following equations:

1) The allowable PM emissions rate for input rates up to and including 30 tons per hour (TPH) is expressed by the following equation:

   $E = 4.1P^{0.67}$, where E equals the allowable PM emission rate in pounds per hour (lb/hr) and P equals the process input weight in TPH.

2) The allowable PM emissions rate for input rates above 30 TPH is expressed by the following equation:

   $E = 55P^{0.11} - 40$, where E equals the allowable PM emission rate in lb/hr and P equals the process input weight in TPH.

The drying kilns are subject to the first equation (less than 30 tons per hour) and the planer mill group is subject to the second equation (greater than 30 tons per hour).

Georgia Rule 391-3-1-.02(2)(g), Sulfur Dioxide, applies to all "fuel burning" sources. The "fuel burning" sources are the boiler and Drying Kiln No. 7. Rule (g) limits the fuel burned in these sources to no more than 2.5 percent sulfur by weight. Because these sources are waste wood-fired, they are expected to easily comply with Rule (g).

Federal Rule - PSD

The regulations for PSD in 40 CFR 52.21 require that any new major source or modification of an existing major source be reviewed to determine the potential emissions of all pollutants subject to regulations under the Clean Air Act. The PSD review requirements apply to any new or modified source which belongs to one of 28 specific source categories having potential emissions of 100 tons per year or more of any regulated pollutant, or to all other sources having potential emissions of 250 tons per year or more of any regulated pollutant. They also apply to any modification of a major stationary source which results in a significant net emission increase of any regulated pollutant.

Georgia has adopted a regulatory program for PSD permits, which the United States Environmental Protection Agency (EPA) has approved as part of Georgia's State Implementation Plan (SIP). This regulatory program is located in the Georgia Rules at 391-3-1-.02(7). This means that Georgia EPD issues PSD permits for new major sources pursuant to the requirements of Georgia's regulations. It also means that Georgia EPD considers, but is not legally bound to accept, EPA comments or guidance. A commonly used source of EPA guidance on PSD permitting is EPA's Draft October 1990 New Source Review Workshop Manual for Prevention of Significant Deterioration and Nonattainment Area Permitting (NSR Workshop Manual). The NSR Workshop Manual is a comprehensive guidance document on the entire PSD permitting process.

The PSD regulations require that any major stationary source or major modification subject to the regulations meet the following requirements:

- Application of BACT for each regulated pollutant that would be emitted in significant amounts;
- Analysis of the ambient air impact;
- Analysis of the impact on soils, vegetation, and visibility;
- Analysis of the impact on Class I areas; and
- Public notification of the proposed plant in a newspaper of general circulation

Definition of BACT

The PSD regulation requires that BACT be applied to all regulated air pollutants emitted in significant amounts. Section 169 of the Clean Air Act defines BACT as an emission limitation reflecting the maximum degree of reduction that the permitting authority (in this case, EPD), on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such a facility through application of production processes and available methods, systems, and techniques. In all cases BACT must establish emission limitations or specific design characteristics at least as stringent as applicable New Source Performance Standards (NSPS). In addition, if EPD determines that there is no economically reasonable or technologically feasible way to measure the emissions, and hence to impose and enforceable emissions standard, it may require the source to use a design, equipment, work practice or operations standard or combination thereof, to reduce emissions of the pollutant to the maximum extent practicable.

EPA's NSR Workshop Manual includes guidance on the 5-step top-down process for determining BACT. In general, Georgia EPD requires PSD permit applicants to use the top-down process in the BACT analysis, which EPA reviews. The five steps of a top-down BACT review procedure identified by EPA per BACT guidelines are listed below:

Step 1: Identification of all control technologies;
Step 2: Elimination of technically infeasible options;
Step 3: Ranking of remaining control technologies by control effectiveness;
Step 4: Evaluation of the most effective controls and documentation of results; and
Step 5: Selection of BACT.

The following is a discussion of the applicable federal rules and regulations pertaining to the equipment that is the subject of this preliminary determination, which is then followed by the top-down BACT analysis.

New Source Performance Standards

No New Source Performance Standards are applicable to any of the equipment at this facility.

National Emissions Standards For Hazardous Air Pollutants

Subpart A (General Provisions) imposes generally applicable requirements for initial notifications, initial compliance testing, monitoring, and record keeping requirements.

Subpart DDDD (National Emission Standard for Hazardous Air Pollutants for Plywood and Composite Wood Products) regulates HAP emissions from Plywood and Composite Wood Products (PCWP) facilities that are major sources of HAPs. The PCWP MACT indicates that the MACT is applicable to sawmills with lumber kilns, which are major for HAPs. At this facility, the potential formaldehyde and methanol emissions are each over 10 tons per year, and potential total HAPs are more than 25 tons per year. The facility is, therefore, major for HAPs and the MACT is applicable. However, the provisions of 40 CFR 63, Subpart DDDD include no control requirements for lumber kilns.

Subpart DDDDD (Industrial, Commercial, and Institutional Boilers and Process Heaters) was vacated on June 8, 2007, by the U.S. Court of Appeals for the D.C. Circuit in Natural Res. Def. Council v. EPA, No. 04-1385, 2007 U.S. App. LEXIS 13388. EPA is required to propose a revised subpart in 2009 and to finalize the subpart in 2010. The subpart has not yet been finalized.

State and Federal – Startup and Shutdown and Excess Emissions

Excess emission provisions for startup, shutdown, and malfunction are provided in Georgia Rule 391-3-1-.02(2)(a)7. Excess emissions from the Drying Kiln No. 7 associated with the proposed project would most likely result from a malfunction. The facility cannot anticipate or predict malfunctions. However, the facility is required to minimize emissions during periods of startup, shutdown, and malfunction.

Federal Rule – 40 CFR 64 – Compliance Assurance Monitoring

Under 40 CFR 64, the *Compliance Assurance Monitoring* Regulations (CAM), facilities are required to prepare and submit monitoring plans, for certain emission units, with the Title V application. The CAM Plans provide an on-going and reasonable assurance of compliance with emission limits. Under the general applicability criteria, this regulation applies to units that use a control device to achieve compliance with an emission limit and whose pre-controlled emissions levels exceed the major source thresholds under the Title V permitting program. Although other units may potentially be subject to CAM upon renewal of the Title V operating permit, such units are not being modified under the proposed project and so need not be considered for CAM applicability at this time. Therefore, this applicability evaluation only addresses the Drying Kiln No. 7, which does not employ any air pollution control devices; therefore, the CAM requirements are not triggered by the proposed modification.

4.0 CONTROL TECHNOLOGY REVIEW

The proposed project will result in emission increases that are significant for VOC and, therefore, trigger PSD review.

Drying Kiln No. 7 - Background

Drying Kiln No. 7 (Source Code DK07) is a direct-fired lumber drying kiln. The drying kiln is used to dry dimensional lumber produced by the facility's sawmill. The dimensional lumber is loaded onto a railcar and rolled into the lumber kiln, where it takes 19 to 24 hours to dry. The moisture in the wood is reduced from approximately 50 percent to 19 percent.

Drying Kiln No. 7 – VOC Emissions

Applicant's Proposal

Langdale Forest Products identified five potential VOC control methods, (1) absorption (including packed columns and wet scrubbers), (2) adsorption (including activated carbon and biofilters), (3) condensation, (4) oxidation (including thermal and catalytic oxidizers), and (5) process optimization.

In addition to addressing each potential VOC control method, Section 5.2.2.1 of the amended application identifies three major problems that affect all of the potential add-on control technologies. First, both the air intake and kiln exhaust operate through the same set of openings along the roof of the kiln. Two sets of openings alternate between performing the air intake and the kiln exhaust function. To route emissions to any external pollution control device would involve a complex ductwork system. Second, several thousand pounds of water are evaporated and exhausted from the lumber kiln each hour, resulting in a nearly saturated air stream. To prevent condensation in the ductwork it would need to be well insulated and heat traced. Third, the kiln condensate is tacky and viscous due to the resinous compounds in the kiln exhaust. This kiln condensate would cause significant blockage and plugging in ductwork and in any control device.

Each potential control method is addressed as follows:

Absorption (including Packed Columns and Wet Scrubbers)

"Absorption control technologies involve the physical transfer of VOC molecules in the air stream into a liquid or solid and distribution throughout the body of that liquid or solid." (Section 5.2.1.1 of the revised application) Packed towers or spray chambers are commonly used for this physical transfer using water, a caustic solution, or other liquid as a scrubbing fluid. Per Section 5.2.2.2.1 of the revised application, "Absorption is a viable technology for compounds with high water solubilities and low Henry's Law constants." The VOC emissions from lumber kilns consists almost entirely of terpenes, which have relatively high Henry's Law constants and low water solubilities. Additionally, due to the viscous nature of lumber kiln condensate, a packed tower or spray chamber used as a control device would foul easily necessitating frequent maintenance. Absorption is, therefore, not a technically feasible technology for controlling VOC emissions from lumber drying kilns.

Adsorption (including Activated Carbon and Biofilters)

"Adsorption control technologies involve the chemical adhesion of VOC molecules from the exhaust gas stream onto the surface of a solid substrate. Activated carbon and biofilters are commonly used." (Section 5.2.1.2 of the revised application) Section 5.2.2.2.2 of the revised application identifies several factors that make adsorption infeasible for lumber drying kilns. First, in high relative humidity exhaust streams (above about fifty percent), water vapor will preferentially condense on the adsorbent. Lumber kilns inherently have high humidity in their exhaust streams. Second, adsorption is highly dependent on residence time. Batch lumber kilns have highly variable exhaust flow rates. The adsorption chamber would need to be significantly oversized to account for the peak flow rate.

Third, adsorption (or a biofilter) is not recommended at temperatures above 150 °F. Lumber kilns operate in a temperature range normally used to desorb VOC from activated carbon. A quench system would be necessary to reduce temperatures, which would increase humidity and cause condensation of the lumber kiln condensate. As stated above in the absorption section, the lumber kiln condensate is highly viscous and would foul the adsorption chamber (or biofilter). Lastly, adsorption media must be periodically regenerated. For terpenes, the predominant VOC from lumber kilns, the regeneration can only be performed thermally. The temperatures necessary for terpene desorption will damage commercially available adsorption media. Adsorption is, therefore, not a technically feasible technology for controlling VOC emissions from lumber drying kilns.

Condensation

"Condensation control technologies involve chilling the exhaust gases below the vaporization point for the target compounds. VOCs in the exhaust gas stream are condensed and removed as liquid. The condensed liquid can be treated and disposed through a wastewater treatment system or may be distilled for beneficial reuse." (Section 5.2.1.3 of the revised application) Section 5.2.2.2.4 of the revised application notes, "EPA has found that refrigerated condensers are feasible where VOC concentrations are high, usually greater than 5,000 parts per million." Lumber kiln exhaust concentrations are highly variable, but generally fall well below 1,000 parts per million. Section 5.2.2.2.4 also states that a temperature below 32 °F would be necessary to achieve condensation of terpenes from lumber kilns. Temperatures this low in an exhaust stream with significant quantities of water vapor would lead to significant quantities of ice plugging the condenser. Condensation is, therefore, not a technically feasible technology for controlling VOC emissions from lumber drying kilns.

Oxidation (including Thermal and Catalytic Oxidizers)

"Oxidation control technologies involve the chemical oxidation of VOCs to carbon dioxide (CO_2) and water vapor (H_2O)." (Section 5.2.1.4 of the revised application) The oxidation unit can either be a thermally oxidizer (e.g., conventional thermal oxidizer, recuperative thermal oxidizer, or regenerative thermal oxidizer) or a catalytic oxidizer (e.g., regenerative catalytic oxidizer). Section 5.2.2.2.3 identifies several factors that make oxidation difficult. First, oxidizers are highly dependent on residence time and lumber kilns, as noted for adsorption, have highly variable exhaust flow rates. Second, the exhaust steam temperature is significantly less than the normal operating temperatures of oxidizers (approximately 1600 °F). Third, the variable nature of lumber kilns allows heat loss during inactivity periods. This heat loss reduces the ability of regenerative, recuperative and catalytic oxidizers to exchange heat and, therefore, leads to higher fuel usage than normal on these units. Oxidation is, therefore, not a technically feasible technology for controlling VOC emissions from lumber drying kilns.

Process Optimization

"Process optimization requires the installation of process monitoring and control equipment, routine inspection and equipment maintenance in accordance with manufacturers' recommendation." (Section 5.2.1.5 of the revised application) Proper operating of the lumber kiln parameters (e.g., temperature or humidity) can minimize the VOCs in the exhaust streams from the lumber kiln. Section 5.2.2.2.5 of the revised application identifies the variable nature of lumber and the effects of climatic conditions as problems in implementing process optimization. But, this section concludes, "general process optimization through temperature and flow controls is feasible for these kilns and could reduce VOC concentrations from what could be expected for a poorly controlled process."

Absorption, adsorption, condensation, and oxidation were all eliminated because these technologies are not technically feasible for controlling VOC emission from lumber kilns and have not been demonstrated for use in controlling a lumber drying kiln. Process optimization was identified as the only technically feasible control technology.

Langdale Forest Products selected process optimization as BACT for Lumber Drying Kiln No. 7, which will include "inspection and maintenance of process monitoring and control equipment and training of kiln operators." (Section 5.2.4.1 of revised Permit Application dated March 31, 2010).

EPD Review – VOC Control

The Division reviewed all of the RBLC entries for VOC from lumber drying kilns since 2000 (see Table 4-1). This review showed that none of the entries require an add-on control device for VOC and that an emission limit of 4.6 lb VOC/1,000 board feet lumber (mbf) dried is BACT for a direct-fired lumber drying kiln, based on process optimization. Note that the emission limit of 4.6 lb/mbf, as VOC, is equivalent to an emission limit of 3.8 lb/mbf, as carbon measured using Method 25A. For a more detailed explanation of this equivalence, see Section 3.2 of the Application No. 18039.

Table 4-1: Summary of BACT Determinations for VOC from Lumber Drying Kilns (2000-2010)

Facility Name	RBLC ID	Facility State	Permit Issuance Date	Limits	Control	Notes
Chesterfield Lumber Company	SC-0050	SC	4/10/2000	353.5 lb/day 64.51 tons/yr	None Specified	1 Indirect-Fired Kiln
Weyerhaeuser Company	MS-0054	MS	12/28/2000	4.2 lb/mbf 467.5 tons/yr	No Add On Controls Feasible	5 Direct-Fired Kilns
Weyerhaeuser Company	MS-0054	MS	12/28/2000	4.2 lb/mbf 73.5 tons/yr	No Add On Controls Feasible	1 Direct-Fired Kiln
Weyerhaeuser Company	MS-0054	MS	12/28/2000	11.46 lb/hr 47.5 tons/yr	No Controls Required	4 Kilns
Potlatch – Ozan Unit	AR-0046	AR	3/8/2001	3.5 lb/mbf	None Specified	1 Indirect-Fired Kiln
Charles Ingram Lumber Company	SC-0070	SC	8/15/2001	192.5 tons/yr	Work Practices	1 Direct-Fired Kiln
International Paper Company Morton Lumber Mill	MS-0048	MS	9/5/2001	5.2 lb/mbf 137 tons/yr	None Specified	3 Direct-Fired Kilns
International Paper Company Morton Lumber Mill	MS-0048	MS	9/5/2001	5.2 lb/mbf 78 tons/yr	None Specified	1 Direct-Fired Kiln
Collum's Lumber Mill	SC-0059	SC	4/8/2002	195 tons/yr	None Specified	2 Indirect-Fired Kilns
T.R. Miller Mill	AL-0225	AL	5/16/2002	6.78 lb/mbf	Good Engineering Practices	1 Kiln
Leola Lumber Mill	AR-0064	AR	11/1/2002	423 lb/charge 88.2 tons/yr	None Specified	1 Indirect-Fired Kiln
Georgia-Pacific Corp. – El Dorado Sawmill	AR-0062	AR	11/7/2002	5572 lb/charge 304 tons/yr	Proper Maintenance and Operation	7 Indirect-Fired Kilns
West Fraser (South), Inc. – Huttig Mill	AR-0065	AR	11/7/2002	3.5 lb/mbf 91.9 lb/hr	None Specified	1 Indirect-Fired Kiln
New South Lumber Company, Inc.- Camden Plant	SC-0082	SC	3/7/2003	4.2 lb/mbf	Work Practices	5 Indirect-Fired Kilns
Albertville Sawmill	AL-0195	AL	6/4/2003	7 lb/mbf	Good Engineering Practices	2 Indirect-Fired Kilns
Holden Wood Products Mill	LA-0187	LA	6/18/2003	89.15 lb/hr 89.8 tons/yr	None Specified	2 Direct-Fired Kilns
Holden Wood Products Mill	LA-0187	LA	6/18/2003	66 lb/hr 59.69 tons/yr	None Specified	3 Direct-Fired Kilns
New South Lumber Company, Inc.-Conway Plant	SC-0090	SC	9/5/2003	4.2 lb/mbf 363.7 tons/yr	Work Practices	5 Kilns

Facility Name	RBLC ID	Facility State	Permit Issuance Date	Limits	Control	Notes
Elliot Sawmilling Company	SC-0085	SC	5/23/2004	4.5 lb/mbf	Work Practices	1 Direct-Fired Kiln
Joyce Mill	LA-0180	LA	7/19/2004	367.77 lb/hr 750 tons/yr	Proper Kiln Design and Operation	4 Indirect-Fired Kilns
Temple-Inland Diboll Operations	TX-0483	TX	11/1/2004	30.6 lb/hr 85.35 tons/yr	None Specified	4 Kilns
Waldo	AR-0080	AR	1/12/2005	3.5 lb/mbf	None Specified	5 Indirect-Fired Kilns
Coushatta Sawmill	LA-0181	LA	7/13/2005	28 lb/hr 122.6 tons/yr	None Specified	1 Indirect-Fired Kiln
Potlatch Corporation – Ozan Unit	AR-0083	AR	7/26/2005	3.5 lb/mbf 119 lb/hr	Proper Operation	4 Indirect-Fired Kilns
Skagit County Lumber Mill	WA-0327	WA	1/25/2006	54 T/YR	Computerized Steam Management System	7 Kilns
Wright City Complex	OK-0113	OK	7/21/2006	4.8 lb/mbf	None Specified	1 Kiln
Albertville Sawmill	AL-0235	AL	4/9/2008	7 lb/mbf	Daily and Monthly Kiln I/M Procedures	2 Indirect-Fired Kilns
Bibler Brothers Lumber Company	AR-0101	AR	8/25/2008	3.8 lb/mbf 46.5 lb/hr/kiln	None Specified	2 Continuous Direct-Fired Kilns
North Florida Lumber/Bristol Sawmill	FL-0315	FL	08/04/2009	116.93 tons/yr	Best operating practices	1 Indirect-Fired Kiln

Conclusion – VOC Control

A VOC emission limit of 4.6 lb/1,000 board feet lumber dried, based on process optimization, is BACT for Lumber Drying Kiln No. 7. The BACT selection for the Lumber Drying Kiln No. 7 is summarized below in Table 4-2:

Table 4-2: BACT Summary for the Lumber Drying Kiln No. 7

Pollutant	Control Technology	Proposed BACT Limit	Averaging Time	Compliance Determination Method
VOC	Process optimization	4.6 lb VOC/1,000 board feet lumber dried	Daily	Inspection program

5.0 TESTING AND MONITORING REQUIREMENTS

Testing Requirements:

There are no applicable testing requirements being imposed due to the extreme difficulty in testing lumber drying kilns. Lumber drying kilns have many exhaust points to the atmosphere, and the exhaust flow is intermittent and at low velocity. Any attempt to test a lumber drying kiln would be cost prohibitive and would change the operating characteristics of the kiln. Furthermore, the emission limit is based on the best available emission factor for direct-fired lumber kilns, and the Division is confident that the kiln will be in compliance with the limit.

Monitoring Requirements:

Because testing is impractical, the Permittee is required to implement a Work Practice and Preventative Maintenance Program for Drying Kiln No. 7. This program will provide a means of ensuring that the kiln operates in a consistent fashion and will allow Langdale to quickly discover any adverse conditions that may adversely impact the VOC emissions from the kiln.

CAM Applicability:

Because Drying Kiln No. 7 does not have a control device, CAM is not applicable and is not being triggered by the proposed modification. Therefore, no CAM provisions are being incorporated into the facility's permit.

6.0 AMBIENT AIR QUALITY REVIEW

An air quality analysis is required to determine the ambient impacts associated with the construction and operation of the proposed modifications. The main purpose of the air quality analysis is to demonstrate that emissions due to the proposed modifications, in conjunction with other applicable emissions from existing sources (including secondary emissions from growth associated with the new project), will not cause or contribute to a violation of any applicable National Ambient Air Quality Standard (NAAQS) or PSD increment in a Class I or Class II area. NAAQS exist for NO_2, CO, $PM_{2.5}$, PM_{10}, SO_2, Ozone (O_3), and lead. PSD increments exist for SO_2, NO_2, and PM_{10}.

The proposed project at Langdale Forest Products triggers PSD review for VOC. An additional analysis was conducted to demonstrate compliance with the Georgia air toxics program. This section of the application discusses the air quality analysis requirements, methodologies, and results.

Because the actual and potential emissions increase of VOC will exceed 100 tons per year, the applicant was required to submit an ozone impact analysis. The photochemistry underlying the generation of ground-level ozone is very complex and not well understood. As such, no air quality dispersion model has yet been developed which is capable of accurately predicting ambient ozone concentrations resulting from the precursor emissions of a single facility. Consequently, the analysis of the potential impacts of VOC on ground level ozone generation must be conducted by other means.

The analysis submitted by the applicant consisted of an evaluation of existing ambient monitoring data for the area, as well as a qualitative evaluation of the increase in the ozone precursor pollutants of VOC and NOx that will be emitted, relative to background concentrations of these pollutants in the area. The applicant concluded that the additional VOC and NOx emissions from Langdale Forest Products will have a negligible effect on ambient ozone concentrations in the area. The Division has evaluated the analysis submitted by the applicant and agrees with its conclusions.

Class I Area Analysis

Federal Class I areas are regions of special national or regional value from a natural, scenic, recreational, or historic perspective. Class I areas are afforded the highest degree of protection among the types of areas classified under the PSD regulations. U.S. EPA has established policies and procedures that generally restrict consideration of impacts of a PSD source on Class I Increments to facilities that are located near a federal Class I area. Historically, a distance of 100 km has been used to define “near”, but more recently, a distance of 200 kilometers has been used for all facilities that do not combust coal.

The three Class I areas within approximately 200 kilometers of Langdale Forest Products are the Okefenokee Wilderness Area, located approximately 70 kilometers east of the facility; the St. Marks Wilderness Area, located approximately 101 kilometers southwest of the facility; and the Wolf Island Wilderness Area, located approximately 198 kilometers northeast of the facility. The U.S. Fish and Wildlife Service (FWS) is the designated Federal Land Manager (FLM) responsible for oversight of all three of these Class I areas.

The applicant provided the FLM the project’s maximum expected annual emissions and the distances to each Class I area. Subsequently, the FLM advised the applicant that a Class I area analysis would not be required for the Okefenokee Wilderness Area (the closest Class I area) and, therefore, any of the other areas. This decision was based on the relatively low level of emissions that were perceived to potentially impact the Class I areas, especially compared to the long distance to each Class I area. Thus, the applicant was not required to conduct analyses of Class I Air Quality Related Values (AQRVs). EPD agrees with the conclusions of the FLM and will not require modeling to demonstrate compliance with the Class I air quality standards in the three previously mentioned Class I areas.

7.0 ADDITIONAL IMPACT ANALYSES

PSD requires an analysis of impairment to visibility, soils, and vegetation that will occur as a result of a modification to the facility and an analysis of the air quality impact projected for the area as a result of the general commercial, residential, and other growth associated with the proposed project.

Soils and Vegetation

The applicant submitted an analysis of the potential adverse impacts of increased VOC emissions on soils (see Section 7.5 of Application No. 18039) and vegetation (see Section 7.6 of Application No. 18039) in the areas surrounding the facility. This analysis included potential factors such as changes in soil pH and increased ozone concentrations. The analysis concluded that any adverse impacts are expected to be insignificant.

Growth

The purpose of a growth analysis is to predict how much new growth is likely to occur as a result of the project and the resulting air quality impacts from this growth. No adverse impacts on growth are anticipated from the project since any workforce growth and associated residential and commercial growth that would be associated with the proposed project (expected to be minimal) would not cause a quantifiable impact on the air quality of the area surrounding the facility.

Visibility

Visibility impairment is any perceptible change in visibility (visual range, contrast, atmospheric color, etc.) from that which would have existed under natural conditions. Poor visibility is caused when fine, solid, or liquid particles – usually in the form of organic aerosols, nitrogen oxides, or sulfur dioxides – absorb or scatter light. The absorption of light reduces the amount of light received from viewed objects and the scattering of light scatters ambient light into the line of sight, appearing as haze.

VOC emissions do not impact visibility. Therefore, the project will not impact Class I and Class II visibility for purposes of PSD review of the project.

Georgia Toxic Air Pollutant Modeling Analysis

Georgia EPD regulates the emissions of toxic air pollutant (TAP) emissions through a program covered by the provisions of *Georgia Rules for Air Quality Control*, 391-3-1-.02(2)(a)3.(ii). A TAP is defined as any substance that may have an adverse effect on public health, excluding any specific substance that is covered by a State or Federal ambient air quality standard. Procedures governing the Georgia EPD's review of TAP emissions as part of air permit reviews are contained in the agency's "*Guideline for Ambient Impact Assessment of Toxic Air Pollutant Emissions (Revised)*."

Selection of Toxic Air Pollutants for Modeling

For projects with quantifiable increases in TAP emissions, an air dispersion modeling analysis is generally performed to demonstrate that off-property impacts are less than the established Acceptable Ambient Concentration (AAC) values. The TAPs evaluated are restricted to those that may increase due to the proposed project. Thus, the TAP analysis would generally be an assessment of off-property impacts due to facility-wide emissions of any TAP emitted by a facility. To conduct a facility-wide TAP impact evaluation for every pollutant that could conceivably be emitted by the facility is impractical. A literature review would suggest that at least one molecule of hundreds of organic and inorganic chemical compounds could be emitted from the various combustion units. This is understandable given the nature of the waste wood fed to the combustion sources, and the fact that there are complex chemical reactions occurring in that combustion. The vast majority of compounds potentially emitted by wood combustion, however, are emitted in only trace amounts that are not reasonably quantifiable.

Formaldehyde and methanol have been identified as the primary TAPs emitted from lumber kilns, mainly from the drying of wood. Other TAPs that may be present are emitted in insignificant quantities. The emission rates were determined using emission factors developed by the National Council for Air and Stream Improvement (NCASI). The Langdale Forest Products analysis of toxic emissions can be found in Section 9.0 of Application No. 18039. Note that there are no emission factors for wood drying kilns in AP-42.

For each TAP identified for further analysis, both the short-term and long-term AACs were calculated following the procedures provided in Georgia EPD's *Guideline*. Figure 8-3 of Georgia EPD's *Guideline* contains a flow chart of the process for determining long-term and short-term ambient thresholds. Langdale Forest Products referenced the resources previously detailed to determine the long-term (i.e., annual average) and short-term AAC (i.e., 24-hour or 15-minute average). The AACs were verified by the EPD.

Determination of Toxic Air Pollutant Impact

The Georgia EPD *Guideline* recommends a tiered approach to model TAP impacts, beginning with screening analyses using SCREEN3, followed by refined modeling, if necessary, with ISCST3 or ISCLT3. For the refined modeling completed, the infrastructure setup for the SIA analyses was relied upon with appropriate sources added for the TAP modeling. Note that, per the Georgia EPD *Guideline*, downwash was not considered in the TAP assessment.

Initial Screening Analysis Technique

Generally, an initial screening analysis is performed in which the total TAP emission rate is modeled from the stack with the lowest effective release height to obtain the maximum ground level concentration (MGLC). Note the MGLC could occur within the facility boundary for this evaluation method. The individual MGLC is obtained and compared to the smallest AAC. Due to the likelihood that a screening for this proposal would result in the need for further analysis for most TAPs, the analyses were initiated with the secondary screening technique.

Langdale Forest Products used the ISCST3 dispersion model to evaluate the impacts of methanol and formaldehyde (see Section 9.0 of Application No. 18039). Receptors were placed along the facility property line at 25 meter intervals, on a grid at 25 meter intervals to a distance of 200 meters from the property line, and on a grid at 100 meters interval to a distance of 2,000 meters from the property line. In Langdale Forest Products' model, the MGLC occurred at the property line and were all below both the long-term and short-term AACs

The Division used the ISCST3 dispersion model to evaluate the modeling submitted by Langdale Forest Products. Details of the modeling can be found in EPD'S Air Toxics Assessment Review in Appendix C of this Preliminary Determination and in Section 9.0 of the permit application. Modeling was conducted for methanol and formaldehyde, which as indicated above are known to be the two primary air toxics from lumber drying kilns.

As noted in Appendix C of this Preliminary Determination, the Division made two corrections to the modeling submitted by Langdale Forest Products that affected the results. First, the exit velocity of the exhaust gases from the kilns was reduced because the kiln stacks have lids, which restrict the gas flow from the kilns even when the lids are open. Second, receptors were added for a public road that runs through the plant property.

The modeled 15-minute and annual methanol concentrations and the modeled 15-minute formaldehyde concentration were found to be less than the established Acceptable Ambient Concentration (AAC) values at all receptors. The modeled annual formaldehyde concentration, however, was greater than the AAC. The maximum ground level concentration (MGLC) was 1.011 $\mu g/m^3$, which is 131 percent of the

0.77 μg/m^3 AAC. As noted in Appendix C, "all the exceeding values occur only at receptors located along the segment of road that runs through the property." Since the exceeded AAC is annual and it is reasonable to believe that no person would remain continuously on this segment of road, it is extremely unlikely that chronic exposure to concentrations over 0.77 μg/m^3, by non-plant personnel, will take place. Therefore, the model is viewed as passing the *Guideline*.

8.0 EXPLANATION OF DRAFT PERMIT CONDITIONS

The permit requirements for this proposed permit modification to this facility are included in draft Permit Amendment No. 2421-185-0009-V-02-1.

Section 1.0: Facility Description

The facility description is amended to indicate the removal of the PSD avoidance production limit on Kiln No. 3 and to raise the production limit on Kiln No. 7. To avoid PSD review for PM2.5, a limit on the hours of operation is included for the planer mill.

Section 2.0: Requirements Pertaining to the Entire Facility

No conditions in Section 2.0 are being added, deleted or modified as part of this permit action.

Section 3.0: Requirements for Emission Units

Condition 3.2.1, which limited the production for Drying Kilns Nos. 3 and 7 as PSD avoidance, is modified to remove the production limit on Drying Kiln No. 3 and raise the production limit on Drying Kiln No. 7 to 53.5 million board feet per year.

Condition 3.2.2 is added to limit the throughput for the planer mill group as PSD avoidance for PM2.5.

Condition 3.3.4 is added to limit the VOC emissions from Drying Kiln No. 7, on a lb VOC per board foot basis, per PSD requirements.

Section 4.0: Requirements for Testing

No conditions in Section 4.0 are being added, deleted or modified as part of this permit action.

Section 5.0: Requirements for Monitoring

Conditions 5.2.10 and 5.2.11 are added to require the development of a Work Practice and Preventive Maintenance Program for Drying Kiln No. 7 and to establish the normal temperature operating range for the kiln.

Section 6.0: Other Recordkeeping and Reporting Requirements

Conditions 6.2.3 and 6.2.4, which required tracking the production from Drying Kilns Nos. 3 and 7, and Condition 6.1.7b.i., which required an exceedances report when production exceeded permit limits, are modified by removing Drying Kiln No. 3 from these requirements.

Conditions 6.2.5 and 6.2.6 are added requiring the tracking and reporting of the throughput of the planer mill group.

Condition 6.1.7 is modified by adding paragraph b.ii., which requires reporting if the throughput limit on the planer mill group is exceeded, and paragraphs c. iv. through vi., which require reporting of adverse conditions found while carrying out the Work Practice and Preventive Maintenance Program on Drying Kiln No. 7

Section 7.0: Other Specific Requirements

No conditions in Section 7.0 are being added, deleted or modified as part of this permit action

APPENDIX A

Draft Title V Operating Permit Amendment
Langdale Forest Products Company
Valdosta (Lowndes County County), Georgia

APPENDIX B

Langdale Forest Products Company PSD Permit
Application and Supporting Data

Contents Include:

1. PSD Permit Application No. 18039, dated September 30, 2008
2. Additional Information Package Dated July 31, 2010

APPENDIX C

EPD'S PSD Dispersion Modeling and Air Toxics Assessment Review