



Air Quality Permitting Statement of Basis

August 7, 2006

Permit to Construct No. P-060020

Plum Creek Northwest Lumber, Inc., Meridian

Facility ID No. 001-00091

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FINAL

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Acronyms, Units, and Chemical Nomenclatures

AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
CO	carbon monoxide
DEQ	Department of Environmental Quality
dscf	dry standard cubic feet
EPA	U.S. Environmental Protection Agency
gr	grain (1 lb = 7,000 grains)
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
MACT	Maximum Achievable Control Technology
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
O ₃	ozone
PM	particulate matter
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	Synthetic Minor
SO ₂	sulfur dioxide
T/yr	tons per year
µg/m ³	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

Plum Creek Northwest Lumber, Inc., Meridian is a secondary re-manufacturing facility that produces wood products from lumber. Raw product (mill grade lumber) is obtained from offsite mills.

The cut plant receives raw product to be cut to desired lengths or ripped to specified widths. The material is then graded to customer requirements and ultimately shipped out as a finished product.

The edge glue operation receives grade cuts or lumber pieces that do not meet product specifications. The material received is ripped, chopped and sent to the gluer and/or finger jointer to be made into pre-finished strips. The strips are then sent to the molder to be edged and glued into panels. The raw panels are then ripped into finished sizes that are planed and sanded, and ultimately shipped out as finished product.

Both processes mentioned above produce wood waste in the form of sander dust, sawdust, chips, etc. The wood waste is stored in truck load-out storage bins where it is later transported off-site as product.

3. FACILITY / AREA CLASSIFICATION

Plum Creek Northwest Lumber, Inc. Meridian facility is not a major facility as defined by IDAPA 58.01.01.205; consequently, PSD permitting requirements do not apply. This facility is not a designated facility as defined by IDAPA 58.01.01.006.26. The primary Standard Industrial Classification for the facility is 2499, a wood products facility. The AIRS facility classification is "SM" because without control equipment, the potential to emit would at major source levels.

Plum Creek Northwest Lumber, Inc. is located in the City of Meridian, which is located in Ada County. Ada County is located in Air Quality Control Region 64 and UTM Zone 11. This area is designated as attainment or unclassifiable for all criteria air pollutants.

4. APPLICATION SCOPE

Plum Creek Northwest Lumber has submitted an application for the following changes to its Meridian facility:

- 1) Install a new 20,000 CFM cyclone as part of the edge glue operations equipment.
- 2) Remove hours of operation restriction of 20 hours per day.

4.1 Application Chronology

May 12, 2006	DEQ received application.
June 12, 2006	DEQ determined application complete.
June 20, 2006	Opportunity for public comment was published.
July 19, 2006	Opportunity for public comment period ended. No requests were received.
July 31, 2006	DEQ provided draft permit to Boise regional office for comments.

August 7, 2006 DEQ provided draft permit to facility for comments.
August 15, 2006 PTC processing fee was received from facility.

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

The following equipment has been reviewed as part of this PTC action:

- Cut Plant Cyclone #1 (SRC1)-existing
- Cut Plant Cyclone #2 (SRC2)-existing
- Edge Glue Baghouse (SRC3)-installed in 2002
- Edge Glue Cyclone #4 (SRC4)-new

5.2 Emissions Inventory

The primary pollutant of concern associated with this permit revision is PM₁₀. Total potential annual PM₁₀ emissions have increased by 29.49 T/yr from the existing permit. The PM₁₀ emissions estimates calculated by Trinity Consultants is provided in Table 5.1 below.

TABLE 5.1 EMISSION SUMMARY

Emissions Point	Hourly PM ₁₀ Emissions (lb/hr)	Annual PM ₁₀ Emissions (T/yr) ^a
Cut Plant Cyclone #1 (SRC1)	2.88	12.61
Cut Plant Cyclone #2 (SRC2)	2.88	12.61
Edge Glue Baghouse (SRC3)	1.38	6.06
Edge Glue Cyclone #4 – new (SRC4)	2.06	9.01

^aAssumes 8,760 hr/yr operations

Emissions were calculated by Trinity Consultants using emission factors from the existing permit, originally supplied by Plum Creek Northwest, Inc. for cyclones and the baghouse. The emission factors used are greater than the applicable emission factors listed in *Idaho DEQ Emission Factor Guide for Wood Industry*, 1/8/97, therefore, they are conservative.

PM₁₀ emissions were calculated using the flow rates and emission factors supplied by the facility.

Note: Vehicle traffic and storage bins emissions were not included in the emissions inventory of the revised PTC because they are being considered as fugitive sources. Compliance with vehicle traffic and storage bins emissions will be addressed by following the permit requirements listed under Permit Condition 2.3 of the Facility-Wide Conditions.

5.3 Modeling

An ambient air quality analyses for the Plum Creek facility in Meridian, consisting of dispersion modeling and an evaluation of applicable background concentrations, was conducted by the applicant's consultant (Trinity) and submitted to DEQ. DEQ conducted a technical review of the submitted analyses. It was determined that the submitted ambient air quality analyses for Plum Creek

demonstrated to DEQ's satisfaction that emissions from the facility as represented from the information submitted, will not cause or significantly contribute to a violation of any air quality standard. Table 5.2 below shows the results of the full impact analyses. The complete ambient air quality analyses are included in Appendix B.

TABLE 5.2 FULL IMPACT ANALYSES FOR PM ₁₀							
Pollutant	Averaging Period	Maximum Modeled Concentration ^a (µg/m ³) ^b	Background Concentration (µg/m ³)	LP Impact ^c (µg/m ³)	Total Ambient Impact (µg/m ³)	NAAQS ^d (µg/m ³)	Percent of NAAQS
PM ₁₀ ^e	24-hour	(43.3) 45.3	90	0.6	(133.9) 135.9	150	91
	Annual	(16.0) 16.2	25.1	0.2	(41.3) 41.5	50	83

^aValues in parentheses are those from DEQ's verification analyses, where those values differ from those in the submitted analyses.

^bMicrograms per cubic meter.

^cImpact from neighboring Louisiana-Pacific mill.

^dNational ambient air quality standards

^eParticulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 Permit to Construct Required

The facility's proposed project does not meet the permit to construct exemption criteria contained in Sections 220 through 223 of the Rules. Therefore, a PTC is required.

IDAPA 58.01.01.203 Permit Requirements for New and Modified Stationary Sources

The applicant has shown to the satisfaction of DEQ that the facility will comply with all applicable emissions standards, ambient air quality standards, and toxic increments.

IDAPA 58.01.01.212.01 Obligation to Comply

Receipt of this revised PTC does not relieve Plum Creek Northwest Lumber, Inc. from the responsibility to comply with all applicable local, state, and federal statutes, rules and regulations.

IDAPA 58.01.01.224 Permit to Construct Application Fee

The applicant satisfied the PTC application fee requirement by submitting a fee of \$1,000.00 at the time the original application was submitted, May 12, 2006.

IDAPA 58.01.01.225 Permit to Construct Processing Fee

The project is subject to the processing fee provisions of IDAPA 58.01.01.225. Plum Creek Northwest Lumber, Inc. was assessed a processing fee of \$5,000.00, because the emissions increase is between 10 and 100 T/yr.

IDAPA 58.01.01.625 Visible Emissions

This regulation states that any point of emission shall not have a discharge of any air pollutant for a period aggregating more than three minutes in any 60-minute period of greater than 20% opacity.

The emissions points at this facility are subject to this regulation.

IDAPA 58.01.01.700-703 Process Weight Limitations

The facility is a source of particulate matter and is subject to this regulation.

5.5 Permit Conditions Review

This section describes permit conditions that have been revised and renumbered, modified or deleted as a result of this permit action. The new permit has been reformatted, includes new requirements and conditions specific to the processes at the facility. “Existing Permit Condition” refers to conditions in Permit No. 001-00091 issued July 12, 2002. “Revised Permit Condition” refers to conditions in this PTC No. P-060020. Revised permit condition numbers are different from existing permit condition numbers, but address the same or similar topic. “New Permit Condition” refers to new conditions in this PTC No. P-060020. “The revised PTC” refers to this permit, Permit No. P-060020.

Revised/Reformatted Permit Conditions

Existing Permit Condition 1.1 lists PM₁₀ emission limits for cyclones, storage bins and vehicle traffic. This condition was deleted because hours of operation limits have been removed as requested in the application. The request to remove hours of operation limits was granted because the applicant has shown that the facility will comply with all applicable emission standards and ambient air quality standards.

Process Weight emission limits for PM for each process (cut plant and edge glue operations) are now listed under revised Permit Conditions 3.4 and 4.4.

Existing Permit Condition 1.2 requires that opacity originating from cyclones, stacks, vents or other functionally equivalent opening comply with IDAPA 58.01.01.625.

Revised Permit Conditions 3.3 and 4.3 pertain to the cut plant and edge glue operation visible emissions and require the permittee to comply with Revised Permit Condition 2.2 as discussed below.

Existing Permit Condition 1.3 limits visible emissions from leaving the property to no more than three minutes in any 60 minute period. Existing Permit Condition 1.3 also requires visible emissions to be determined by performing a Method 22 (see/no see) evaluation.

Revised Permit Condition 2.2 is a facility-wide visible emission limitation requiring compliance with IDAPA 58.01.01.625. Revised Permit Conditions 3.3 and 4.3 pertain to the cut plant and edge glue operation and require permittee compliance with Revised Permit Condition 2.2.

Revised Permit Condition 2.8 is a facility-wide monthly inspection requirement to perform a see/no see evaluation. If emissions are visible, a Method 9 opacity test is required. Revised Permit Condition 2.8 also requires compliance with IDAPA 58.01.01.130-136.

Existing Permit Condition 2.1.1 requires cyclones and storage bins to operate according to their operations and maintenance manual and manufacturer specifications.

Revised Permit Conditions 3.5 and 4.6 require the cut plant and edge glue operation to develop and submit for DEQ review an operations and maintenance manual for the cyclones and baghouse and to operate according to the manual. The manual must be kept onsite and available for review.

Existing Permit Condition 2.1.2 restricts each cyclone to operate no more than 20 hours per any-24-hour period. This permit condition was deleted since hours of operation are not limited in the revised PTC.

Existing Permit Conditions 2.2 through 2.2.6 covers fugitive emissions. The conditions have been reformatted and renumbered as Permit Condition 2.3 in the revised PTC.

Existing Permit Condition 3.1 requires the permittee to monitor and record operational hours of each cyclone at the facility for each 24-hour period on a daily basis and to keep records onsite for five years. This condition was deleted because hours of operation are not limited in the revised PTC.

Existing Permit Condition 3.2 requires the permittee to develop an operations and maintenance manual for each cyclone and storage bin and to retain the manual onsite for review.

Revised Permit Conditions 3.5 and 4.6 require the cut plant and edge glue operation to develop and submit for DEQ review an operations and maintenance manual for the cyclones and baghouse, and to operate according to the manual. The manual must be kept onsite and available for review.

Existing Permit Condition 4.1 requires all documents submitted to DEQ to contain certification by a responsible official. This requirement is listed in the revised PTC under General Provision 8.

New Permit Conditions

New Permit Condition 2.4 requires the permittee to comply with the provisions of IDAPA 58.01.01.600-616 open burning rules.

New Permit Condition 2.5 requires the permittee to comply with the air pollution emergency rule in IDAPA 58.01.01.550-562.

New Permit Condition 2.6 requires the permittee to comply with the procedures and requirements of IDAPA 58.01.01.130-136.

New Permit Condition 2.7 is a facility-wide condition which requires visible emissions monitoring and recordkeeping.

New Permit Condition 2.8 is a facility-wide conditions that requires the permittee to conduct a monthly inspection for fugitive emissions, record results and retain records onsite for DEQ review.

New Permit Condition 2.9 requires the permittee to maintain records of all fugitive dust complaints and retain records onsite for DEQ review.

New Permit Condition 2.10 requires reporting excess emissions as required in IDAPA 58.01.01.130-136.

New Permit Condition 4.5 requires the permittee to install, calibrate, maintain and operate a pressure drop monitoring device for the baghouse and have the pressure drop range available for DEQ representatives upon request.

New Permit Condition 4.7 requires the permittee to monitor and record pressure drop across the baghouse once per week and have the information available for DEQ representatives upon request.

6. PERMIT FEES

Table 6.1 PTC PROCESSING FEE TABLE *

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0	0	0
SO ₂	0	0	0
CO	0	0	0
PM ₁₀ **	29.49	0	29.49
VOC	0	0	0
TAPS/HAPS	n/a	0	n/a
Total:	29.49	0	29.49
Fee Due	\$ 5,000.00		

*The processing fee was determined from annual emissions increase and reduction of PM₁₀ from cyclones and baghouse emissions. The storage bin and vehicle traffic emissions are considered fugitive emissions and were not included in the fee calculations in accordance with IDAPA 58.01.01.225.

**10.8 T/yr of PM₁₀ is the total permitted amount from permit No. 001-00091 issued July 12, 2002, which limited hours of operation and annual T/yr of PM₁₀ emissions based on the facility's operating schedule. 40.29 T/yr of PM₁₀ are the potential PM₁₀ emissions from the removal of hourly restrictions and operating schedule limitations as requested in the application dated May 12, 2006.

A PTC processing fee of \$5000.00 is due, because the PM₁₀ emissions (not including fugitive emissions) increase was greater than 10 T/yr, but less than 100 T/yr.

Note: The PTC processing fee was received on August 15, 2006.

7. PERMIT REVIEW

7.1 Regional Review of Draft Permit

A draft copy of the permit was provided to DEQ's Boise Regional Office on July 31, 2006. No comments were received.

7.2 Facility Review of Draft Permit

A draft copy of the permit was provided to the facility on August 7, 2006. No comments were submitted.

7.3 Public Comment

An opportunity for public comment period on the PTC application was provided from June 20, 2006, to July 19, 2006. No entity requested a comment period.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommends that Plum Creek Northwest Lumber, Inc. of Meridian, Idaho be issued a draft PTC No. P-060020. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

Appendix A

AIRS Information

P-060020

AIRS/AFS^a FACILITY-WIDE CLASSIFICATION^b DATA ENTRY FORM

Facility Name: Plum Creek Northwest Lumber
Facility Location: Meridian
AIRS Number: 001-00091

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION
								A-Attainment U-Unclassified N- Nonattainment
SO ₂	B							U
NO _x	B							U
CO	B							A
PM ₁₀	SM						SM	A
PT (Particulate)	SM						SM	U
VOC	B							U
THAP (Total HAPs)	B							U
			APPLICABLE SUBPART					

^a Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

^b AIRS/AFS Classification Codes:

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

Appendix B

Modeling Memorandum

P-060020

MEMORANDUM

DATE: August 17, 2006
TO: Tracy Druin, Permit Writer, Air Program
FROM: Kevin Schilling, Modeling Coordinator – Stationary Sources, Air Program *KS*
PROJECT NUMBER: P- 060020
SUBJECT: Modeling Review for the Plum Creek Northwest Lumber, Inc. Permit to Construct Application for their facility in Meridian, Idaho.

1.0 Summary

Plum Creek Northwest Lumber, Inc. (Plum Creek) submitted a Permit to Construct (PTC) application to modify their wood products facility located in Meridian, Idaho. The PTC application will also modify the facility-wide Tier II Operating Permit. Air quality analyses involving atmospheric dispersion modeling of emissions associated with the facility were submitted in support of a permit application to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02). Trinity Consultants (Trinity), Plum Creek's consultant, conducted the ambient air quality analyses.

A technical review of the submitted air quality analyses was conducted by DEQ. The submitted modeling analyses in combination with DEQ's staff analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed that predicted pollutant concentrations from emissions associated with the facility, when appropriately combined with background concentrations, were below applicable air quality standards at all receptor locations. Table 1 presents key assumptions and results that should be considered in the development of the permit.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
Modeled design concentrations, when combined with a reasonably conservative background concentration and accounting for impacts from a neighboring facility, are well below the PM ₁₀ NAAQS.	Unique permit limits or provisions are not necessary to assure compliance with applicable air quality standards.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance.

2.1.1 Area Classification

The Plum Creek facility is located in Ada County, designated as an attainment or unclassifiable area for sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), lead (Pb), and ozone (O₃), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀). The area operates under limited maintenance plans for PM₁₀ and CO. There are no Class I areas within 10 kilometers of the facility.

2.1.2 Significant and Full Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources at the facility exceed the significant contribution levels (SCLs) of IDAPA 58.01.01.006.90, then a full impact analysis is necessary to demonstrate compliance with IDAPA 58.01.01.203.02. A full impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting maximum pollutant concentrations in ambient air are then compared to the National Ambient Air Quality Standards (NAAQS) listed in Table 2. Table 2 also lists SCLs and specifies the modeled value that must be used for comparison to the NAAQS.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	Averaging Period	Significant Contribution Levels ^a ($\mu\text{g}/\text{m}^3$) ^b	Regulatory Limit ^c ($\mu\text{g}/\text{m}^3$)	Modeled Value Used ^d
PM ₁₀ ^e	Annual	1.0	50 ^f	Maximum 1 st highest ^g
	24-hour	5.0	150 ^h	Maximum 6 th highest ⁱ
Carbon monoxide (CO)	8-hour	500	10,000 ^j	Maximum 2 nd highest ^g
	1-hour	2,000	40,000 ^j	Maximum 2 nd highest ^g
Sulfur Dioxide (SO ₂)	Annual	1.0	80 ^f	Maximum 1 st highest ^g
	24-hour	5	365 ^j	Maximum 2 nd highest ^g
	3-hour	25	1,300 ^j	Maximum 2 nd highest ^g
Nitrogen Dioxide (NO ₂)	Annual	1.0	100 ^f	Maximum 1 st highest ^g
Lead (Pb)	Quarterly	NA	1.5 ^h	Maximum 1 st highest ^g

^aIDAPA 58.01.01.006.90
^bMicrograms per cubic meter
^cIDAPA 58.01.01.577 for criteria pollutants
^dThe maximum 1st highest modeled value is always used for significant impact analysis
^eParticulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers
^fNever expected to be exceeded in any calendar year
^gConcentration at any modeled receptor
^hNever expected to be exceeded more than once in any calendar year
ⁱConcentration at any modeled receptor when using five years of meteorological data
^jNot to be exceeded more than once per year

2.2 Background Concentrations

Background concentrations were revised for all areas of Idaho by DEQ in March 2003¹. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources. Background concentrations used in these analyses are listed in Table 3. Recently monitored concentrations of PM₁₀ from Meridian were used as background concentrations. No emissions of other pollutants were identified in the application.

Table 3. BACKGROUND CONCENTRATIONS		
Pollutant	Averaging Period	Background Concentration ($\mu\text{g}/\text{m}^3$) ^a
PM ₁₀ ^b	24-hour	90
	annual	25.1

^aMicrograms per cubic meter

^bParticulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

The Plum Creek facility is located near the Louisiana-Pacific mill. The PM₁₀ contribution from this neighboring facility was considered in the analyses using generic procedures described in DEQ background concentration memo.¹ This method involves using DEQ-generated impact factors of 0.036

1 Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, March 14, 2003.

$\mu\text{g}/\text{m}^3$ per ton of PM_{10} emissions for 24-hour impacts and $0.011 \mu\text{g}/\text{m}^3$ per ton of PM_{10} emissions for annual impacts. The permit allowable emissions from the Louisiana-Pacific mill resulted in incremental impacts of $0.6 \mu\text{g}/\text{m}^3$ for the 24-hour averaging period and $0.2 \mu\text{g}/\text{m}^3$ for the annual averaging period.

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

Table 4 provides a summary of the modeling parameters used by Trinity in the submitted analyses.

Parameter	Description/Values	Documentation/Additional Description
Model	AERMOD	AERMOD version 04300
Meteorological data	Boise surface data Boise upper air data	1987 - 1991
Terrain	Considered	Elevation data from digital elevation model (DEM) files
Building downwash	PRIME algorithm	Building dimensions obtained from modeling files submitted
Receptor grid	Grid 1	25-meter spacing along boundary
	Grid 2	50-meter spacing out to 100 m
	Grid 3	100-meter spacing out to 1,500 m
Facility location (UTM)^a	Easting	549 kilometers
	Northing	4,828 kilometers

^aUniversal Transverse Mercator

3.1.1 Modeling protocol

A dispersion modeling protocol was submitted to DEQ prior to submitting the application. DEQ approved the protocol and modeling analyses were conducted in accordance with procedures established in the protocol.

3.1.2 Model Selection

AERMOD was used by Trinity to conduct the ambient air analyses. AERMOD is the EPA-directed replacement model for ISCST3 (AERMOD must be used for all air quality analyses, where ISCST3 would otherwise be appropriate, received by DEQ after December 9, 2006). AERMOD uses the PRIME downwash algorithm, which is superior to the existing downwash algorithms within ISCST3 and is capable of estimating concentrations within building recirculation cavities.

3.1.3 Meteorological Data

Surface meteorological data collected at the Boise airport, combined with upper air data from Boise, were used with the meteorological data preprocessor AERMET. DEQ determined these data were the most representative meteorological data available for the Plum Creek site. Output files from AERMET were used as input to AERMOD.

3.1.4 Land-Use Analysis

A land-use analysis for the area surrounding the application site and the meteorological station is needed to determine appropriate values for seasonal albedo, daytime Bowen ratio, and surface roughness. Different values can be used for up to 12 sectors extending out three kilometers from the site or meteorological station. These variables are used in AERMET to construct the final meteorological data files for AERMOD input.

Two land-use sectors were identified by Trinity for the area surrounding the Plum Creek site, generally defined along the division between developed and undeveloped lands. Trinity evaluated albedo, Bowen ratio, and surface roughness for each sector surrounding the Plum Creek site by first dividing the land-use in each sector according to the following land-use categories: 1) urban; 2) grassland; 3) deciduous forest; 4) coniferous forest; 5) desert shrubland; 6) water; 7) swamp; 8) cultivated land. Specific values for each land use type were then determined from look up tables available in the AERMET User's Guide.² The value used for the entire sector was calculated by using a weighted average of surface characteristics by surface area within the sector. Table 5 shows weighted average surface characteristics used in the submitted analyses. Trinity did not provide a detailed description or justification for parameter values selected; however, DEQ review of the values used indicates the values are within reasonable expectations for both the area surrounding the meteorological station and the Plum Creek site.

DEQ conducted verification analyses using surface characteristics associated with the meteorological station site rather than the facility site. This is consistent with recent guidance provided in the AERMOD Implementation Guide.³ Table 6 shows surface characteristics used in DEQ's verification analyses. DEQ divided the area surrounding the meteorological station into four sectors. Land-use within the sectors included varying proportions of urban, grassland, and desert shrubland. DEQ used average moisture conditions for selecting values for the Bowen ratio associated with specific land-use types.

Table 5. SURFACE CHARACTERISTICS USED IN THE SUBMITTED ANALYSES

Season	Sector	Albedo ^a	Daytime Bowen Ratio ^b	Surface Roughness ^c
Winter	Sector 1	0.52	1.95	0.27
Spring		0.16	0.76	0.30
Summer		0.20	1.26	0.40
Autumn		0.19	1.59	0.31
Winter	Sector 2	0.51	1.73	0.29
Spring		0.15	0.60	0.33
Summer		0.19	0.95	0.44
Autumn		0.18	1.22	0.34

^a Fraction of total incident solar radiation reflected by the surface back to space without absorption

^b Ratio of the sensible heat flux to the latent heat flux

^c In principle, the height at which the mean horizontal wind speed is zero (meters)

2 U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. User's Guide for the AERMOD Meteorological Preprocessor (AERMET). EPA-454/B-03-002. November 2004.

3 U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. AERMOD Implementation Guide. http://www.epa.gov/scram001/7thconf/aermod/AERMOD_Implementation_Guide_final_09_27_05.pdf. September 2005.

Season	Sector	Albedo ^a	Daytime Bowen Ratio ^b	Surface Roughness ^c
Winter	Sector 1, 300° – 105° 75% urban, 25% desert shrubland	0.28	2.63	0.80
Spring		0.18	1.50	0.83
Summer		0.19	2.50	0.83
Autumn		0.21	3.00	0.83
Winter	Sector 2, 105° – 205° 25% urban, 50% grassland, 25% desert shrubland	0.35	2.63	0.30
Spring		0.20	1.20	0.35
Summer		0.20	1.90	0.38
Autumn		0.22	2.50	0.33
Winter	Sector 3, 205° – 260° 40% urban, 10% grassland, 50% desert shrubland	0.32	3.75	0.50
Spring		0.22	1.94	0.56
Summer		0.22	2.88	0.56
Autumn		0.23	3.90	0.55
Winter	Sector 4, 260° – 300° 0% urban, 20% grassland, 80% desert shrubland	0.36	4.83	0.16
Spring		0.28	2.48	0.25
Summer		0.26	3.36	0.26
Autumn		0.26	5.00	0.24

^a Fraction of total incident solar radiation reflected by the surface back to space without absorption

^b Ratio of the sensible heat flux to the latent heat flux

^c In principle, the height at which the mean horizontal wind speed is zero (meters)

3.1.5 Terrain Effects

The modeling analyses submitted by Trinity considered elevated terrain. Elevations of receptors, buildings, and emissions sources were calculated from United States Geological Survey (USGS) 7.5 minute Digital Elevation Model (DEM) files using the AERMOD terrain preprocessor AERMAP. DEQ verification analyses were conducted using the receptors generated in the submitted analyses. AERMAP was not run by DEQ to regenerate the receptor grid.

3.1.6 Facility Layout

DEQ verified proper identification of the facility boundary and buildings on the site by comparing the modeling input to a facility plot plan submitted with the application and aerial photographs of the area.

3.1.7 Building Downwash

Plume downwash effects caused by structures proposed for the facility were accounted for in the modeling analyses. The Building Profile Input Program for PRIME (BPIP-PRIME) was used to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emissions release parameters for AERMOD.

3.1.8 Ambient Air Boundary

The property boundary was used as the ambient air boundary for the modeling analyses submitted by Trinity. DEQ assumed reasonable measures would be taken to ensure the general public are excluded from access to the property.

3.1.9 Receptor Network

The receptor grids used by Trinity met the minimum recommendations specified in the *State of Idaho Air Quality Modeling Guideline*. DEQ determined the receptor grid was adequate to reasonably resolve maximum modeled concentrations.

3.2 Emission Rates

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application, the engineering technical memorandum, and the proposed permit. The following approach was used for DEQ verification modeling:

- All modeled emissions rates were equal to or greater than the facility's emissions calculated in the PTC application or the permitted allowable rate.
- More extensive review of modeling parameters selected was conducted when model results for specific sources approached applicable thresholds.

Table 7 lists PM₁₀ emissions rates for sources included in the short-term and long-term dispersion modeling analyses. Trinity included fugitive PM₁₀ emissions from material handling operations (Edge Glue Truck Bin).

Unit Id	Model Id	Description	Emission Rates (lb/hr) ^b
001	SRC1	Cyclone #1	2.88
002	SRC2	Cyclone #2	2.88
004	SRC3	Baghouse	1.38
005	SRC4	Cyclone #4	2.06
Fugitive Emissions Sources			
Not specified	EGTRUCK	Edge Glue Truck Bin	0.0025

^aParticulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers

^bPounds per hour emissions rates

3.3 Emission Release Parameters

Table 8 provides emissions release parameters, including stack location, stack height, stack diameter, exhaust temperature, and exhaust velocity. The truck bin source was modeled as a volume source. The initial plume dimension was governed by the dimensions of nearby buildings. DEQ did not verify the calculation of initial dispersion coefficients.

Release Point / Location	Source Type	Stack Height (m) ^a	Modeled Diameter (m)	Stack Gas Temp. (K) ^b	Stack Gas Flow Velocity (m/sec) ^c
SRC1	Point	26.2	1.0	294	0.001 ^d
SRC2	Point	26.2	1.0	294	0.001 ^d
SRC3	Point	16.2	4.8	294	0.86
SRC4	Point	7.6	3.4	294	1.1
Volume Sources					
Release Point / Location	Source Type	Release Height (m)	Initial Horizontal Dispersion Coefficient σ_{y0} (m)	Initial Vertical Dispersion Coefficient σ_{z0} (m)	
EGTRUCK	Volume	3.5	1.4	6.3	

^aMeters

^bKelvin

^cMeters per second

^dSet to account for a horizontal release, as specified by the Idaho Air Quality Modeling Guideline

3.4 Results for Full Impact Analyses

The applicant demonstrated compliance using full impact analyses, since impacts of all criteria pollutants were well above significant contribution levels. Table 9 summarizes the results of the full impact analyses. Results from DEQ verification analyses are listed in parentheses. Results from DEQ's verification analyses, using an independent land-use assessment to establish surface characteristics for input to AERMET, were essentially identical to those obtained by the analyses conducted by Trinity.

Pollutant	Averaging Period	Maximum Modeled Concentration ^a (µg/m ³) ^b	Background Concentration (µg/m ³)	LP Impact ^c (µg/m ³)	Total Ambient Impact (µg/m ³)	NAAQS ^d (µg/m ³)	Percent of NAAQS
PM ₁₀ ^e	24-hour	45.3 (43.3)	90	0.6	135.9 (133.9)	150	91
	Annual	16.2 (16.0)	25.1	0.2	41.5 (41.3)	50	83

^aValues in parentheses are those from DEQ's verification analyses, where those values differ from what was used in the submitted analyses

^bMicrograms per cubic meter

^cImpact from neighboring Louisiana-Pacific mill

^dNational ambient air quality standards

^eParticulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

4.0 Conclusions

The ambient air impact analysis submitted, consisting of dispersion modeling and an evaluation of applicable background concentrations, demonstrated to DEQ's satisfaction that emissions from the facility, as represented by the applicant in the permit application and DEQ analyses, will not cause or significantly contribute to a violation of any air quality standard.