Air Quality Permit

Issued To: Plum Creek Manufacturing, L.P.
P.O. Box 28
Fortine, MT 59903

Permit #1343-02
Modification Request Received: 11/09/99
Department Decision on Modification: 12/08/99
Permit Final: 12/24/99
AFS Number: 053-0002

An air quality permit, with conditions, is granted to Plum Creek Manufacturing, L.P. (Plum Creek), pursuant to Sections 75-2-204 and 211, Montana Code Annotated (MCA), as amended, and Administrative Rules of Montana (ARM) 17.8.701, *et seq*., as amended, for the following:

Section I: Permitted Facilities

A. Plant Location

The Plum Creek – Ksanka mill is located in the SE¼ SE¼ of Section 25, NE¼ NE¼ of Section 36, SW¼ SW¼ Section 30, NW¼ NW¼ of Section 31, Township 35 North, Range 25 and 26 West, Lincoln County, in Fortine, Montana.

B. Current Permit Action

Plum Creek submitted a permit modification request on November 9, 1999 to the Department of Environmental Quality (department) for several changes at the Plum Creek – Ksanka facility. Because the potential emissions from the new equipment (blower and cyclone) will be less than 15 tons per year, Plum Creek will be adding the equipment to the facility under the de minimis rule (ARM 17.8.705(1)(r)).

Section II: Limitations and Conditions

A. Emission Control Requirements

1. Plum Creek shall not cause or authorize the production, handling, transportation, or storage of any material unless reasonable precautions to control emissions of particulate matter are taken. Such emissions of airborne particulate matter from any stationary source shall not exhibit an opacity of 20% or greater averaged over six (6) consecutive minutes (ARM 17.8.308 [1]).

2. Plum Creek shall not cause or authorize the use of any street, road or parking lot without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308 [2]).

3. Plum Creek shall treat all unpaved portions of the haul roads, access roads, and the general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precaution limitations in Section II.A.1 and 2 (ARM 17.8.710).

B. Emission Limitations

1. Plum Creek shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over six (6) consecutive

minutes (ARM 17.8.304[2]).

2. Plum Creek shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed on or before November 23, 1968, that exhibit an opacity of 40% or greater averaged over six (6) consecutive minutes (ARM 17.8.304[1]).

3. Plum Creek shall not cause or authorize particulate matter from the hog fuel boiler to be discharged from the stack into the outdoor atmosphere in excess of 0.462 lbs/MMBtu or 13.9 lbs/hr (ARM 17.8.710).

C. Testing

1. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

2. The department may require further testing (ARM 17.8.105).

D. Operational Reporting Requirements

1. Plum Creek shall supply the department with annual production information for all emission points, as required by the department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the most recent emission inventory report and sources identified in this permit.

   Production information shall be gathered on a calendar-year basis and submitted to the department by the date required in the emission inventory request. Information shall be in the units as required by the department. This information is required for the annual emission inventory and to verify compliance with permit limitations; the information may be submitted with the emission inventory (ARM 17.8.505).

2. Plum Creek shall notify the department of any construction or improvement project conducted pursuant to ARM 17.8.705(1)(r) that would include a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emissions unit.
   The notice must be submitted to the department, in writing, 10 days prior to start up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.705(1)(r)(iv) (ARM 17.8.705).

3. All records compiled in accordance with this permit must be maintained by Plum Creek as a permanent business record for at least five (5) years following the date of the measurement, must be available at the plant site for inspection by the department, and must be submitted to the department upon request (ARM 17.8.710).

Section III: General Conditions

A. Inspection - The recipient shall allow the department's representatives access to the source at all reasonable times for the purpose of making inspections, surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver - The permit and all the terms, conditions, and matters stated herein shall be deemed accepted if the recipient fails to appeal as indicated below.

C. Compliance with Statutes and Regulations -Nothing in this permit shall be construed as relieving the permittee of the responsibility for complying with any applicable federal or Montana statute, rule or standard, except as specifically provided in ARM 17.8.701, *et seq*. (ARM 17.8.717).

D. Enforcement - Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement as specified in Section 75-2-401 *et seq*., MCA.

E. Appeals - Any person or persons who are jointly or severally adversely affected by the department's decision may request, within fifteen (15) days after the department renders its decision, upon affidavit setting forth the grounds therefor, a hearing before the Board of Environmental Review. A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The department's decision on the application is not final unless fifteen (15) days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the department's decision until the conclusion of the hearing and issuance of a final decision by the Board of Environmental Review.

F. Permit Inspection - As required by ARM 17.8.716, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by department personnel at the location of the permitted source.

G. Construction Commencement - Construction must begin within three years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked.

H. Permit Fees - Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, the continuing validity of this permit is conditional upon the payment by the permittee of an annual operation fee, as required by that Section and rules adopted thereunder by the Board of Environmental Review.

Permit Analysis
Plum Creek Manufacturing, L.P.
Permit #1343-02

I. Introduction/Process Description

A. Permitted Equipment and Facilities

The Plum Creek – Ksanka facility is located in the SE3 SE3 of Section 25, NE3 NE3 of Section 36, SW3 SW3 Section 30, NW3 NW3 of Section 31, Township 35 North, Range 25 and 26 West, Lincoln County, in Fortine, Montana. The facility consists of the following equipment.

1. Hogged Fuel Boiler

The Dutch oven hogged fuel boiler with multiclone emission controls was installed in 1979. Bark from the log-debarking process is the main fuel for the boiler. Steam generated in the boiler is presently used in the kilns to dry lumber. The boiler produces a maximum of 20,000 pounds of steam per hour at 250 psi. It consists of a Wellons fuel cell with a Nebraska Type A boiler package. A multiclone installed downstream from the boiler controls the particulate emissions.

2. Cyclones and Target Boxes

Cyclones are used as a pollution control device when transferring chips, shavings, and hogfuel to the truck bins or boiler. A target box is used when pneumatically transferring sawdust to the sawdust truck bin. The following cyclones are located at the facility:

Planer Shavings Bin Cyclone	- 37256 scf/min;
Chipper Cyclone	- 2794 scf/min;
Planer Chipper Cyclone	- 1630 scf/min;
Edger Chip Cyclone	- 1500 scf/min;
Hog Fuel Cyclone	- 5000 scf/min; and
Sawdust Target Box	- 1863 scf/min.

3. Lumber Drying Kilns

The sawed lumber is placed in one of two kilns and is dried before being planed. The kilns are made by Wellons and were installed in 1979. Both kilns have 108-foot double tracks.

4. Fugitive Emissions: Raw Materials Handling

These fugitive emissions include activities such as shavings handling, sawdust handling, chips handling, boiler hog fuel handling, and the hog fuel pile.

5. Fugitive Emissions: Vehicle Traffic

These fugitive emissions result from driving vehicles on both paved and unpaved roads/areas.

B. Source Description

The primary operation at the facility is the production of stud grade lumber from raw logs. The

Ksanka mill site sawmill has kilns for drying lumber, a planer and a hog fuel-fired boiler to supply steam to the kilns. Logs are received and stored in the log yard. The process of cutting the logs into lumber includes debarking, sawing, chipping, kiln drying, planing, and packaging for shipping. The byproducts of lumber manufacturing are sawdust, wood chips, planer shavings, and hog fuel. These byproducts may be burned in the hog fuel boiler or stored in bins until the material is sold and transferred off site. The hog fuel boiler is used for providing steam for the drying of rough green lumber in the drying kilns. Bark from the log-debarking process is the main fuel for the boiler.

C. Permit History

A preconstruction air quality permit #63-100169 was issued for a modified teepee burner on July 14, 1969; the teepee burner was removed from the site ten years prior to revoking the permit on August 10, 1996. Permit **#1343-00** was issued for the hog fuel boiler on September 5, 1979. During the review of operating permit OP-1343-00, it was discovered that Plum Creek should have altered their permit as the result of constructing/altering several sources during the 1980s. A letter was sent to Plum Creek on August 5, 1996 requiring Plum Creek to submit a permit application for all sources constructed and altered after 1968.

During this time, the Department of Environmental Quality's (department's) rules were being renumbered and the new preconstruction permitting requirements went into effect on August 22, 1996. These permitting requirements no longer required Plum Creek to obtain a permit for every altered source, but only those sources that were not in existence prior to 1968 and emitted more than 15 tons per year of a pollutant (i.e., drying kilns).

On November 6, 1996, the department received an application from Plum Creek requesting a preconstruction permit for the Ksanka lumber mill drying kilns. Plum Creek was required to obtain a preconstruction permit because the kilns have emissions in excess of 15 tons per year of a pollutant. The application was assigned permit **#1343-01** and was deemed complete on November 21, 1996.

Permit #1343-01 identified all existing sources at the facility, including, but not limited to, the boiler, drying kilns, cyclones on pneumatic transfer systems, wood-waste material loadout points and bins, and fugitive emissions from the mill operations.

D. Current Permit Action

Plum Creek submitted a permit modification request on November 9, 1999 to the department for several changes at the Plum Creek – Ksanka facility. Because the potential emissions from the new equipment (blower and cyclone) will be less than 15 tons per year, Plum Creek will be adding the equipment to the facility under the de minimis rule (ARM 17.8.705(r)). Permit **#1343-02** will replace permit #1343-01.

E. Additional Information

Additional information, such as applicable rules and regulations, BACT determinations, air quality impacts, and environmental assessments, are included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial quotations of some applicable rules and regulations which apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available upon request from the department. Upon request, the department will provide references for location of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 - General Provisions, including, but not limited to:

1. ARM 17.8.105, Testing Requirements. Any person or persons responsible for the emissions of any air contaminant into the outdoor atmosphere shall, upon written request of the department, provide the facilities and necessary equipment, including instruments and sensing devices, and shall conduct tests, emission or ambient, for such periods of time as may be necessary, using methods approved by the department.

2. ARM 17.8.106, Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the department, any source, or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq*., MCA.

   Plum Creek shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to using the proper test methods and supplying the required reports. A copy of the Montana Source Testing Protocol and Procedures Manual is available from the department upon request.

3. ARM 17.8.110, Malfunctions. The department must be notified promptly by phone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than four hours.

4. ARM 17.8.111, Circumvention. (1) No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant which would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner that a public nuisance is created.

B. ARM 17.8, Subchapter 2 - Ambient Air Quality, including, but not limited to:

1. ARM 17.8.210, Ambient Air Quality Standards for Sulfur Dioxide;
2. ARM 17.8.211, Ambient Air Quality Standards for Nitrogen Dioxide;
3. ARM 17.8.212, Ambient Air Quality Standards for Carbon Monoxide;
4. ARM 17.8.213, Ambient Air Quality Standard for Ozone;
5. ARM 17.8.214, Ambient Air Quality Standard for Hydrogen Sulfide;
6. ARM 17.8.220, Ambient Air Quality Standard for Settled Particulate Matter;
7. ARM 17.8.221, Ambient Air Quality Standard for Visibility;
8. ARM 17.8.222, Ambient Air Quality Standard for Lead;
9. ARM 17.8.223, Ambient Air Quality Standard for PM_{10}; and
10. ARM 17.8.230, Fluoride in Forage.

Plum Creek must comply with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 - Emission Standards, including, but not limited to:

1. ARM 17.8.304, Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged to an outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308, Particulate Matter, Airborne. Under this section, Plum Creek shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309, Particulate Matter, Fuel Burning Equipment. This section requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this section.

4. ARM 17.8.310, Particulate Matter, Industrial Process. This section requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this section.

5. ARM 17.8.322, Sulfur Oxide Emissions - Sulfur In Fuel. This section requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this section.

6. ARM 17.8.324(3), Hydrocarbon Emissions--Petroleum Products. No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such a tank is equipped with a vapor loss control device as described in (1) of this rule, or is a pressure tank as described in (1) of this rule.

7. ARM 17.8.340, Standard of Performance for New Stationary Sources. This section incorporates by reference 40 CFR Part 60, Standards of Performance for New Stationary Sources (NSPS). The boiler is not an NSPS affected source under 40 CFR Part 60 Subpart Dc because it was manufactured and installed prior to by June 9, 1989. There are no NSPS standards for sawmills.

D. ARM 17.8. Subchapter 5 - Air Quality Permit Application, Operation and Open Burning Fees, Including, but not limited to:

1. ARM 17.8.504, Air Quality Permit Application Fees. This section requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the department. A permit application fee was not required for the current permit action.

2. ARM 17.8.505, Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the department; and the air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, as described above, shall take place on a calendar-year basis. The department may insert into any final permit issued after the effective date of these rules such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions which pro-rate the required fee amount.

E. ARM 17.8, Subchapter 7 - Permit, Construction and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.701, Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.704, General Procedures for Air Quality Preconstruction Permitting. This air quality preconstruction permit contains requirements and conditions applicable to both construction and subsequent use of the permitted equipment.

3. ARM 17.8.705, When Permit Required, Exclusions. This rule requires a facility to obtain an air quality permit or permit alteration if they construct, alter, or use any air contaminant sources which have the potential to emit more than 25 tons per year of any pollutant.

4. ARM 17.8.706, New or Altered Sources and Stacks - Permit Application Requirements. This section requires that a permit application be submitted prior to installation, alteration or use of a source. A permit application was not required for the current permit action.

5. ARM 17.8.707, Waivers. ARM 17.8.706 requires the permit application be submitted 180 days before construction begins. This section allows the department to waive this time limit. The department hereby waives this limit.

6. ARM 17.8.710, Conditions for Issuance of Permit. This section requires that Plum Creek demonstrate compliance with applicable rules and standards before a permit can be issued. Also, a permit may be issued with such conditions as necessary to assure compliance with all applicable rules &standards. Plum Creek demonstrated compliance with applicable rules and standards as required for permit issuance.

7. ARM 17.8.716, Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the department at the location of the source.

8. ARM 17.8.717, Compliance with Other Statutes and Rules. This rule states that nothing in the permit shall be construed as relieving Plum Creek of the responsibility for complying with any applicable federal and Montana statutes, rules and standards, except as specifically provided in ARM 17.8.101, *et seq*.

9. ARM 17.8.720, Public Review of Permit Applications. This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. An affidavit of publication of public notice was not required for the current permit action.

10. ARM 17.8.731, Duration of Permit. An air quality permit shall be valid until revoked or modified as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which

in no event may be less than one year after the permit is issued.

11. ARM 17.8.733, Modification of Permit. An air quality permit may be modified for changes in any applicable rules and standards adopted by the board or changed conditions of operation at a source or stack which do not result in an increase in emissions because of those changed conditions. A source may not increase its emissions beyond those found in its permit unless the source applies for and receives another permit.

12. ARM 17.8.734, Transfer of Permit This section states that an air quality permit may be transferred from one person to another if written notice of intent to transfer, including the names of the transferor and the transferee, is sent to the department.

F. ARM 17.8, Subchapter 8 - Prevention of Significant Deterioration of Air Quality (PSD), including, but not limited to:

ARM 17.8.801, Definitions. This rule is a list of applicable definitions used in this subchapter.

This facility is not a PSD source since this facility is not a listed source and the site's potential to emit is below 250 tons per year of any pollutant. This modification will not cause a net emissions increase greater than significant levels and, therefore, does not require PSD review. Plum Creek's proposed action is not considered a "major modification" since there will not be an emissions increase associated with this permit.

G. ARM 17.8, Subchapter 12 - Operating Permit Program Applicability, including, but not limited to:

ARM 17.8.1201, Definitions. (23) Major Source under Section 7412 of the Federal Clean Air Act (FCAA) is defined as any stationary source having:

1. a. Potential To Emit (PTE) > 10 tons/year of any one hazardous air pollutant (HAP), or
   b. PTE > 25 tons/year of a combination of all HAPs, or
   c. lesser quantity as the department may establish by rule.

2. PTE > 100 tons/year of any pollutant.

3. Sources with the PTE > 70 tons/year of PM-10 in a serious PM-10 nonattainment area.

Plum Creek was issued a Title V operating permit on August 14, 1997.

III. Emission Inventory - Criteria Pollutants (tons/year)

Source		tons/year TSP	PM-10	NOx	VOC	CO	SOX
Hog Fuel Boiler	60.9	60.9	27.4	3.3	248.2	3.7	
Sawdust Target Box		2.1	0.8				
Planer Shavings Bin Cyclone	42.0	16.8					
Chipper Cyclone		3.1	1.3				
Planer Chipper Cyclone	1.8	0.7					
Edger Chip Cyclone		3.4	1.7				
Hog Fuel Cyclone		5.6	2.3				
Sawmill & Planer Processes-Debarking		4.4	2.4				
Sawmill & Planer Processes-Sawing		15.4	8.8				
Sawmill & Planer Processes-Chipping		1.1	0.6				
Raw Materials Handling-Shavings	14.0	8.4					

Raw Materials Handling-Sawdust	4.0	1.4				
Raw Materials Handling-Chips		1.2	0.4			
Raw Materials Handling-Boiler Hog Fuel		12.1	4.4			
Raw Materials Handling-Hog Fuel Pile		19.0	6.9			
Lumber Drying Kilns					94.6	
Vehicle - Fugitives (unpaved)		62.1	22.4			
Vehicle - Fugitives (paved)		10.1	2.0			
Total Emissions	262.3	142.2	27.4	97.9	248.2	3.7

Hog Fuel Boiler

Hog Fuel Consumed: 36500 tons/yr
Hours operated: 8760 hrs/yr

TSP Emissions:
Emission Factor: 13.90 lbs/hr Permit Condition
Calculations: 13.9 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =60.88 tons/yr

PM-10 Emissions:
Emission Factor: 13.90 lbs/hr Permit Condition
Calculations: 13.9 lbs/hr * 8760 hrs/yr * 0.0005 tons/lb =60.88 tons/yr

NOx Emissions:
Emission Factor: 1.50 lbs/ton {AP-42, 1.6-2, Volume I Fifth Edition }
Fuel Consumption: 36500 ton/yr
Calculations: 1.5 lbs/ton * 36500 ton/yr * 0.0005 tons/lb = 27.38 tons/yr

VOC Emissions:
Emission Factor: 0.18 lbs/ton {AP-42, 1.6-3, Volume I Fifth Edition }
Fuel Consumption: 36500.00 tons/yr
Calculations: 0.2 lbs/ton * 36500.00 tons/yr * 0.0005 tons/lb =3.29 tons/yr

CO Emissions:
Emission Factor: 13.60 lbs/ton {AP-42, 1.6-2, Volume I Fifth Edition }
Fuel Consumption: 36500.00 tons/yr
Calculations: 13.6 lbs/ton * 36500.00 tons/yr * 0.0005 tons/lb = 248.20 tons/yr

SOx Emissions:
Emission Factor: 0.20 lbs/ton {AP-42, 1.6-2, Volume I Fifth Edition }
Fuel Consumption: 36500.00 tons/yr
Calculations: 0.2 lbs/ton * 36500.00 tons/yr * 0.0005 tons/lb = 3.65 tons/yr

Sawdust Target Box

Hours of Operation: 8,760 hrs/yr
Flow Rate: 1863 scf/min

TSP Emissions:
Emission Factor: 0.03 gr/scf {AP- 42 Table 10.4.1 Rev 2/80}
Calculations: 0.03 gr/scf * 1863 scf/min * 8760 hrs/yr * 60 min/hr * 1 lb/7000 gr * 0.0005 tons/lb = 2.10 tons/yr

PM-10 Emissions:
Emission Factor: 0.012 gr/scf {AP- 42 Table 10.4.1 Rev 2/80}
Calculations: 0.012 gr/scf * 1863 scf/min * 8760 hrs/yr * 60 min/hr * 1 lb/7000 gr * 0.0005 tons/lb = 0.84 tons/yr

Planer Shavings Bin Cyclone

Hours of Operation: 8,760 hrs/yr
Flow Rate: 37256 scf/min

TSP Emissions:
Emission Factor: 0.03 gr/scf {AP- 42 Table 10.4.1 Rev 2/80}
Calculations: 0.03 gr/scf * 37256 scf/min * 8760 hrs/yr * 60 min/hr * 1 lb/7000 gr * 0.0005 tons/lb = 41.96 tons/yr

PM-10 Emissions:
Emission Factor: 0.012 gr/scf {AP- 42 Table 10.4.1 Rev 2/80}
Calculations: 0.012 gr/scf * 37256 scf/min * 8760 hrs/yr * 60 min/hr * 1 lb/7000 gr * 0.0005 tons/lb =16.78 tons/yr

Chipper Cyclone

Hours of Operation: 8,760 hrs/yr
Flow Rate: 2794 scf/min

TSP Emissions:
Emission Factor: 0.03 gr/scf {AP- 42 Table 10.4.1 Rev 2/80}
Calculations: 0.03 gr/scf * 2794 scf/min * 8760 hrs/yr * 60 min/hr * 1 lb/7000 gr * 0.0005 tons/lb = 3.15 tons/yr

PM-10 Emissions:
Emission Factor: 0.012 gr/scf {AP- 42 Table 10.4.1 Rev 2/80}
Calculations: 0.012 gr/scf * 2794 scf/min * 8760 hrs/yr * 60 min/hr * 1 lb/7000 gr * 0.0005 tons/lb = 1.26 tons/yr

Planer Chipper Cyclone

Hours of Operation: 8,760 hrs/yr
Flow Rate: 1630 scf/min

TSP Emissions:
Emission Factor: 0.03 gr/scf {AP- 42 Table 10.4.1 Rev 2/80}
Calculations: 0.03 gr/scf * 1630 scf/min * 8760 hrs/yr * 60 min/hr * 1 lb/7000 gr * 0.0005 tons/lb = 1.84 tons/yr

PM-10 Emissions:
Emission Factor: 0.012 gr/scf {AP- 42 Table 10.4.1 Rev 2/80}
Calculations: 0.012 gr/scf * 1630 scf/min * 8760 hrs/yr * 60 min/hr * 1 lb/7000 gr * 0.0005 tons/lb = 0.73 tons/yr

Edger Chip Cyclone

Hours of Operation: 8760 hrs/yr
Flow Rate: 1500 cfm

TSP Emissions:
Emission Factor: 0.06 gr/cf {department normally estimates PM-10 to be 50% of TSP}
Calculations: 0.06 gr/scf * 1500 cf/min * 8760 hrs/yr * 60 min/hr * 1 lb/7000 gr * 0.0005 tons/lb 3.4 tons/yr

PM-10 Emissions:
Emission Factor: 0.03 gr/cf {Source Information}
Calculations: 0.03 gr/cf * 1500 cf/min * 8760 hrs/yr * 60 min/hr * 1 lb/7000 gr * 0.0005 tons/lb. 1.7 tons/yr

Hog Fuel Cyclone

Hours of Operation: 8,760 hrs/yr
Flow Rate: 5000 scf/min

TSP Emissions:
Emission Factor: 0.03 gr/scf {AP- 42 Table 10.4.1 Rev 2/80}
Calculations: 0.03 gr/scf * 5000 scf/min * 8760 hrs/yr * 60 min/hr * 1 lb/7000 gr * 0.0005 tons/lb = 5.63 tons/yr

PM-10 Emissions:
Emission Factor: 0.012 gr/scf {AP- 42 Table 10.4.1 Rev 2/80}
Calculations: 0.012 gr/scf * 5000 scf/min * 8760 hrs/yr * 60 min/hr * 1 lb/7000 gr * 0.0005 tons/lb = 2.25 tons/yr

Sawmill & Planer Processes - Debarking
Logs Processed: 440000 tons/yr
Hours of Operation: 8,760 hrs/yr

TSP Emissions:
Emission Factor: 0.02 lbs/ton {AFSSCC 30700801}
Calculations: 440000 tons/yr * 0.02 lbs/ton * 0.0005 tons/lb = 4.40 tons/yr

PM-10 Emissions:
Emission Factor: 0.01 lbs/ton {AFSSCC 30700801}
Calculations: 440000 tons/yr * 0.01 lbs/ton * 0.0005 tons/lb = 2.42 tons/yr

Sawmill & Planer Processes - Sawing
Control Efficiency 80 % -- 5 Saws , 1 outdoors & 4 indoors

TSP Emissions:
Emission Factor: 0.35 lbs/ton {AFSSCC 30700802}
Controlled Factor: 0.07 lbs/ton
Calculations: 440000 tons/yr * 0.07 lbs/ton * 0.0005 tons/lb = 15.40 tons/yr

PM-10 Emissions:
Emission Factor: 0.20 lbs/hr {AFSSCC 30700802}
Controlled Factor: 0.04 lbs/ton
Calculations: 440000 tons/yr * 0.04 lbs/ton * 0.0005 tons/lb = 8.80 tons/yr

Sawmill & Planer Process – Chipping

Chips Processed 110000 tons/yr

TSP Emissions:
Emission Factor: 0.02 lbs/ton {AFSSCC 30700801}
Calculations: 110000 tons/yr * 0.02 lbs/ton * 0.0005 tons/lb = 1.10 tons/yr

PM-10 Emissions:
Emission Factor: 0.01 lbs/ton {AFSSCC 30700801}
Calculations: 110000 tons/yr * 0.01 lbs/ton * 0.0005 tons/lb = 0.61 tons/yr

Raw Materials Handling – Shavings Handling

Tons Handled: 35,000 tons/yr

Handling Components Methods Control %

Loading Pile	Pneumatic	90	
Storage	Bin		90
Unloading Pile	Truck Dump	0	
Overall Control Efficiency =			0.6

TSP Emissions

Emission Factor: 2.00 lbs/ton AP-42 Table 10.4-2 & AFSSCC 30703002
Controlled Factor: 0.80 lbs/ton
Calculations: 35000 tons/yr * 0.80 lbs/ton * 0.0005 tons/lb = 14.00 tons/yr

PM-10 Emissions:

Emission Factor: 1.200 lbs/ton AP-42 Table 10.4-2 & AFSSCC 30703002
Controlled Factor: 0.48 lbs/ton
Calculations: 35000 tons/yr * 0.48 lbs/ton * 0.0005 tons/lb = 8.40 tons/yr

Raw Materials Handling – Sawdust Handling

Tons Handled: 20,000 tons/yr

Handling Components	Methods	Control %
Loading Pile	Pneumatic	90
Storage	Bin	90
Unloading Pile	Truck Dump	0
Overall Control Efficiency =		0.6

TSP Emissions:

Emission Factor: 1.00 lbs/ton AP-42 Table 10.3-1 & AFSSCC 30700803
Controlled Factor: 0.40 lbs/ton
Calculations: 20000 tons/yr * 0.40 lbs/ton * 0.0005 tons/lb = 4.00 tons/yr

PM-10 Emissions:

Emission Factor: 0.360 lbs/ton AP-42 Table 10.3-1 & AFSSCC 30700803
Controlled Factor: 0.14 lbs/ton
Calculations: 20000 tons/yr * 0.14 lbs/ton * 0.0005 tons/lb = 1.44 tons/yr

Raw Materials Handling – Chips Handling

Tons Handled: 60,000 tons/yr

Handling Components	Methods	Control %
Loading Pile	Pneumatic	90
Storage	Bin	90
Unloading Pile	Truck Dump	0
Overall Control Efficiency =		0.6

TSP Emissions:

Emission Factor: 0.10 lbs/ton AP-42 Table 10.3-1 & AFSSCC 30700803
Controlled Factor: 0.04 lbs/ton Assuming 10% of factor with Controls
Calculations: 60000 tons/yr * 0.04 lbs/ton * 0.0005 tons/lb = 1.20 tons/yr

PM-10 Emissions:

Emission Factor: 0.036 lbs/ton AP-42 Table 10.3-1 & AFSSCC 30700803
Controlled Factor: 0.01 lbs/ton Assuming 10% of factor with Controls
Calculations: 60000 tons/yr * 0.01 lbs/ton * 0.0005 tons/lb =0.43 tons/yr

Raw Materials Handling - Boiler Hog Fuel Handling

Tons Handled: 42,750 tons/yr

Handling Components	Methods	Control %
Loading Pile	Open Convey	0
Storage	Bin	90
Unloading Pile	Screw Convey	40
Overall Control Efficiency =		0.43

TSP Emissions:
Emission Factor: 1.00 lbs/ton AP-42 Table 10.3-1 & AFSSCC 30700803
Controlled Factor: 0.57 lbs/ton
Calculations: 42750 tons/yr * 0.57 lbs/ton * 0.0005 tons/lb =12.11 tons/yr
PM-10 Emissions:
Emission Factor: 0.36 lbs/ton AP-42 Table 10.3-1 & AFSSCC 30700803
Controlled Factor: 0.20 lbs/ton
Calculations: 42750 tons/yr * 0.20 lbs/ton * 0.0005 tons/lb =4.36 tons/yr

Raw Materials Handling - Hog Fuel Pile
Tons Handled: 42,750 tons/yr

Handling Components	Methods	Control %
Loading Pile	Open Convey	0
Storage	Pile (precip)	33
Unloading Pile	Loader	0
Overall Control Efficiency =		0.11

TSP Emissions:
Emission Factor: 1.00 lbs/ton AP-42 Table 10.3-1 & AFSSCC 30700803
Controlled Factor: 0.89 lbs/ton
Calculations: 42750 tons/yr * 0.89 lbs/ton * 0.0005 tons/lb = 19.02 tons/yr

PM-10 Emissions:
Emission Factor: 0.36 lbs/ton AP-42 Table 10.3-1 & AFSSCC 30700803
Controlled Factor: 0.32 lbs/ton
Calculations: 42750 tons/yr * 0.32 lbs/ton * 0.0005 tons/lb = 6.85 tons/yr

Lumber Drying Kilns

Lumber Produced: 110000 mbf (Based on Maximum Production Rate)

VOC Emissions:
Emission Factor: Range 0.12 - 0.18 lb c/mbf non-pine & 1.86 - 3.32 lb C/mbf pine
Emission Factor: 1.72 lbs/mbf (Based on NCASI Kiln Study TB No. 718, 7/96)
Calculations: 110000 mbf * 1.72 lbs/mbf * 0.0005 tons/lb = 94.60 tons/yr

Vehicle – Fugitives (Unpaved Roads)

E=K * 5.9 * (s/12)*(S/30)*(W/3)^0.7*(W/4)^0.5*(365-P)/365 Unpaved Roads (AP-42,Sec 13.2.2, 1/95)

Where:		Constants	
E= emission factor in lbs/vehicle mile traveled,	(lb/vmt)		
K= particle size multiplier (dimensionless TSP=	1.00, PM-10 =0.36	1.00	0.36
s= silt content of road surface material, %	10.0 %		
S= mean vehicle speed, (mph)	See Below mph		
W= mean vehicle weight of vehicles, (tons)	See Below Tons		
w= mean number of wheels on vehicles	See Below wheels		
P= Precipitation Ratio based on the following:	120 Days with more than .01" of Precipitation		
PR= (365 days - 120 days)/365 =	0.6712		

Source		TSP (vmt)	TSP Emission Factor (lb/vmt)	PM-10 Uncontrol Emiss (tpy)	PM-10 Emission Factor (lb/vmt)	S Uncontrol Emiss	W Vehicle (tpy)	w Vehicle Speed (mph)	Number of Weight (ton)	Wheels
FE Loader - Log Yard	Unpaved Loaded	741	2.49	0.9	0.90	0.33		5	26	4
	Unpaved Empty	741	2.43	0.90	0.87	0.32		5	25	4

LogTrucks	Unpaved Loaded	3520	14.30	25.18	5.15	9.06		10	40	18		
	Unpaved Empty	3520	7.20	12.67	2.59	4.56		10	15	18		
Wagners	Unpaved Loaded	8800	5.86	25.78	2.11	9.28		8	45	4		
	Unpaved Empty	8800	3.32	14.61	1.20	5.26		8	20	4		
Wood-waste Shipment	Unpaved Loaded	1199	14.55	8.73	5.24	3.14		10	41	18		
	Unpaved Empty	1199	7.53	4.52	2.71	1.63		10	16	18		
Sawmill Shipments	Unpaved Loaded		500	14.30	3.58	5.15	1.29		10			
40	18											
	Unpaved Empty		500	7.53	1.88	2.71	0.68		10			
16	18											
Water Truck	Unpaved Loaded		5000	7.46	18.64	2.68	6.71		10			
24	10											
	Unpaved Empty	1000	4.32	2.16	1.55	0.78		10	11	10		
Employee	Unpaved		11400	0.83	4.72	0.30	1.70		10		2	
4												
Total Emission from UNPAVED Roads (tons/year)				124.28		44.74						
Assume 50 % control for watering (tons/year)=				62.14		22.37						

Vehicle – Fugitives (Paved Roads)

E= K (sL/2)*0.65(W/3)^1.5

Where:

	Constants	
E= emission factor in lbs/vehicle mile traveled, (lb/vmt)		
k= particle size multiplier (dimensionless)	0.082	0.016
s= silt content of road surface material, %	10.0 %	
W= mean vehicle weight of vehicles, (tons)	See BelowTons	

Source		(vmt)	TSP Emission Factor (lb/vmt)	PM-10 Emission Factor (lb/vmt)	TSP Uncontroll Emiss (tpy)	PM-10 Uncontrol Emiss (tpy)	W Vehicle Weight (Tons)	Silt Loading g/m^2 sL
Saw Kiln - Hyster	Paved Loaded	7200	3.02	0.59	10.87	2.12	10	31.9
	Paved Empty	7200	2.58	0.50	9.28	1.81	9	31.9
Total Emissions from PAVED Roads (tons/year)=					20.15	3.93		
Assume 50 % control for sweeping (tons/year) =					10.08	1.97		

IV. Existing Air Quality

The area surrounding the Plum Creek – Ksanka facility is listed as attainment/unclassified for the National Ambient Air Quality Standards (NAAQS). Because the current permitting action will result in very small increases in the facility's potential emissions, the department does not believe there will be any adverse impacts to the ambient air quality of the area.

V. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the department has conducted a private property taking and damaging assessment and has determined there are no taking or damaging implications.

VI. Environmental Assessment

An environmental assessment is not required for the current permitting action because the increase in potential emissions will be below the de minimis levels and it is considered an administrative action.

Permit Analysis Prepared By: Dan Walsh
Date: December 7, 1999