Statement of Basis

Permit to Construct No. P-2010.0016
Project No. 60529

Emerald Forest Products, Inc.

Emmett, Idaho

Facility ID No. 045-00006

Final

December 30, 2010

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Permit Writer

The purpose of this Statement of Basis is to satisfy the requirements of IDAPA 58.01.01.et seq, Rules for the Control of Air Pollution in Idaho, for issuing air permits.

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ACRONYMS, UNITS, AND CHEMICAL NOMENCLATURE

AAC	acceptable ambient concentration
AACC	acceptable ambient concentration for carcinogens
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
BACT	Best Available Control Technology
Btu	British thermal unit
CAA	Clean Air Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CEMS	Continuous Emissions Monitoring System
COM	Continuous Opacity Monitoring
DEQ	Department of Environmental Quality
EFP	Emerald Forest Products, Inc.
EPA	U.S. Environmental Protection Agency
ESP	Electrostatic Precipitator
EF	Emissions factor
gr/dscf	grain (1 lb = 7,000 grains) per dry standard cubic foot
HAPs	Hazardous Air Pollutants
HP	horse power
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
km	kilometer
lb/hr	pound per hour
MACT	Maximum Available Control Technology
MW	megawatt
MMBtu	Million British thermal units
MMBtu/hr	million British thermal units per hour
NAICS	North American Industry Classification System
NESHAP	Nation Emission Standards for Hazardous Air Pollutants
NAAQS	National Ambient Air Quality Standards
NSPS	New Source Performance Standards
O&M	Operations and Maintenance
NO_x	oxides of nitrogen
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
PTE	Potential to Emit
PTC	permit to construct
REI	Renewable Energy of Idaho
ROFA	Rotating Opposed Fired Air
Rules	*Rules for the Control of Air Pollution in Idaho*
SNCR	Selective Non-Catalytic Reduction
SO_2	sulfur dioxide
SIC	Standard Industrial Classification
SIP	State Implementation Plan
TAP	Toxic Air Pollutants
T/R	transformer/rectifier
T/yr	tons per year

VE	visible emissions
VOC	volatile organic compound
UTM	Universal Transverse Mercator
$\mu g/m^3$	micrograms per cubic meter

FACILITY INFORMATION

Description

The facility consists of one existing Zurn woodwaste-fired stoker boiler, one new Wellons woodwaste-fired boiler, one steam turbine generator, a cooling tower, two dry kilns, one emergency diesel-fired pump generator, a planer mill, and milling operations (debarker, sawmill, hog, woodwaste material handling, and screens). The woodwaste fuel which is fed to the boilers is generated from the associated sawmill and planer mill and also brought to the facility from other sources in the local area. A pipeline quality natural gas will only be used during startup of the stoker boilers. The Zurn boiler will be used to generate steam for the purpose of generating electricity, with nearly continuous operation. Additionally, part of the steam produced will be used to operate the milling operations. The Wellons boiler will be used to provide steam for indirect heating of the dry kilns. It is assumed that the boilers will operate approximately 24 hours per day.

The milling operations consist of a debarker, sawmill, hog, screens, and two dry kilns. The milling operations are assumed to be 16 hours per day, five days per week, and 52 weeks per year (4,160 hours per year). The planer mill is assumed to operate 10 hours per day. The debarker will remove bark from the logs. The bark will be used as a boilers fuel. Two saws will be used for cutting logs to the proper length for processing in the mill. The debarker will be in an enclosed structure. Debarked logs will be transported to the mill by way of a ground conveyor. The sawmill will be in an enclosed two level structure. Debarked and cut logs will be conveyed into the bottom level. The sawmill equipment will be located in the top level. Water will be sprayed onto the saws to control the emissions of the sawdust and to cool the saw blades. Any fines generated from the sawmill operation will be transported with the bark from the debarker by conveyor to the fuel house. The planer will be located in an enclosed structure. The dry planer shavings will be pneumatically conveyed to an enclosed shavings bin containing a cyclone and a baghouse system to control PM emissions. Dry wood shavings will be periodically unloaded by truck through a partially enclosed flap. The two wood shaving storage silos that were initially permitted will not be installed and, therefore, they are not included in this permit modification. Two dry kilns located on site will be indirectly heated by steam from the Wellons boiler.

Woodwaste from other sources in the local area will be delivered to the facility in trucks. Trucks will enter the property on the east side where they will be weighed by scales. Woodwaste from the trucks will be unloaded using a back on truck. The truck dump will raise the truck in the air until all woodwaste is unloaded. A water spray will be utilized to mist the woodwaste as it is unloaded. A two-sided wall (16-20 feet tall) will also provide containment in the truck dump conveyor. The sprayed material will initially enter a screening system. Woodwaste passing through the screens will be conveyed directly to fuel storage. The oversized woodwaste (larger than 5-inch pieces) will be sent to the stationary wood hog. The hog will be located next to the truck dump on the east end of the concrete pad. The hog will reduce the size of incoming woodwaste and return it to the screen. The fuel passing through the screen will be metered onto the enclosed 48-foot belt conveyor that runs the full length of the fuel site into the roofed fuel house or into the fuel pile. In the fuel house, the fuel will drop onto a cross belt and be metered into three separate bays for mixing by moisture content. After being mixed the fuel will be fed onto a conveyor with a drag chain system and metered into the boiler. The fuel house will be a 3-sided structure with a roof open on the east side. The storage area will have a 20-foot retaining wall on the south and east sides and there will be an apron to guide the pushed fuel into the fuel house.

Ash generated in the boilers will be conveyed to an enclosed bin. Ash will be transported off site to customers by way of truck. Trucks will be loaded with ash by parking under the bin. The ash truck loading will take place in an enclosed building and the truck trailers will be covered with a tarp before leaving the building.

Emissions at the facility occur from point sources such as the woodwaste boiler stacks dry kiln vents, cooling tower, planer mill, and fire pump generator. Fugitive emissions can occur from vehicles driving on paved and unpaved roads and from the debarker, sawmill, hog, and screens.

The particulate matter (PM) and PM_{10} emissions from the stoker boilers are controlled by an electrostatic precipitator (ESPs). The oxides of nitrogen and the carbon monoxide emissions from the Zurn boiler stack are controlled by selective non-catalytic reduction (SNCR) system and by the rotating opposed fired air (ROFA). The PM and PM_{10} emissions from the planer mill are controlled by a cyclone and a baghouse.

Permitting History

The following information was derived from a review of the permit files available to DEQ. Permit status is noted as active and in effect (A) or superseded (S).

• March 8, 2010	P-2010.0016, Administrative amendment to change the name of the facility from Renewable Energy of Idaho, Inc. to Emerald Forest Products, Inc. The mailing address and the responsible official were also updated (A, will be S as a result of this project).
• January 9, 2006	P-050019, Initial PTC issued to Renewable Energy of Idaho, Inc. Power generating facility from woodwaste-fired boiler and wood product and lumber facility

Application Scope

This PTC is for a minor modification at an existing minor facility.

The applicant has proposed to:

- Install and operate a woodwaste-fired boiler with a rated input capacity of 28.87 MMBtu/hr to generate steam for indirect heating of the two dry kilns existing at the facility.
- Limit the HAP emissions from the facility to less than major source thresholds to avoid Boiler MACT (40 CFR 63 Subpart DDDDD). The facility requested to reduce the lumber kilns production limit from the permitted amount of 36.8 million board feet per year (MMBF/yr) to 32 MMBF/yr. The facility also requested a self-imposed production limit of 32 MM BF/yr of lumber from the planer mill production. After the issuance of this permit the facility will be a synthetic minor for HAP emissions.
- Add a 1994 diesel-fired emergency generator fire pump with a rated capacity of 140 HP. The generator is subject to 40 CFR 63 Subpart ZZZZ.
- Removal from the existing permit the two wood shaving storage silos and a fugitive transfer point associated with the silos.
- This permit includes a wood shavings handling that will be periodically unloaded by truck through a partially enclosed flap. The wood shavings system is included in the fugitive section of the permit.
- This permit incorporates a separate section for the planer mill, which includes a cyclone and a baghouse to control particulate emissions.
- This permit incorporates a separate section to limit the HAP emissions to below major source thresholds for HAP.

Application Chronology

July 21, 2010	DEQ received an application and an application fee.
August 12-August 26, 2010	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action. No request for public comment was provided of the proposed action.

August 19, 2010	DEQ determined that the application was incomplete.
September 3, 2010	DEQ received a response for the 8/19/2010 incompleteness letter.
September 30, 2010	DEQ determined that the application was complete.
October 1, 2010	DEQ received supplemental information from the applicant. The applicant requested to drop the proposed construction of the 3rd kiln from operation and stay with the originally two permitted kilns.
September 28; October 5-October 21; and November 2, 2010	DEQ received supplemental information from the applicant.
November 15, 2010	DEQ made available the draft permit and statement of basis for peer and regional office review.
November 23, 2010	DEQ made available the draft permit and statement of basis for applicant review.
December 8, 2010	DEQ received an email from EFP stating that they have no comments on the draft permit or the statement of basis.
December 28, 2010	DEQ received the permit processing fee.

TECHNICAL ANALYSIS

Emissions Units and Control Devices

Table 1 EMISSIONS UNIT AND CONTROL DEVICE INFORMATION

ID No.	Source Description	Control Equipment Description	Emissions Point ID No. and Description
Zurn wood waste-fired stocker boiler	Zurn woodwaste-fired stocker boiler Manufacturer: Zurn Year manufactured: 1986 Type: Spreader stoker Rated heat input capacity: 280 MMBtu/hr Rated steam rate: 177,000 pounds per hour Maximum hourly woodwaste input rate: 17.75 tons Maximum annual wood-waste input rate: 155,490 tons Fuel value: 8,613 Btu per dry pound.	SNCR system: The SNCR system is a selective non-catalytic reduction which uses urea that can be mixed with dilution water to reduce and maintain emissions of oxides of nitrogen (NO_x) at the permitted levels. The urea and dilution water are mixed on a control rack, with individual flow control, and delivered through a lance into the boiler. Humidification water is delivered around the lance to help carry the urea further into the boiler The SNCR system in combination with ROFA (see below) offers a combination of time, temperature, and turbulent mixing to maximize NO_x and CO reduction. ROFA system The ROFA is a rotating opposed fire air which is used to reduce NO_x and CO emissions. The ROFA boxes are placed along the boiler walls to optimize combustion and to reduce the NO_x and CO emissions. The rotational air flow created by the ROFA system allows for combustion in the upper region of the boiler. This will increase the turbulent mixing and bulk rotation in the entire boiler. The ROFA system is tuned and optimized by using the NO_x and CO readings from the plant CEMS. The enhanced mixing provided by ROFA further increases the performance of the SNCR system. After tuning ROFA, the SNCR system is optimized using a temporary ammonia slip meter and the plant NO_x CEMS. The SNCR system is tuned to optimize NO_x reduction while minimizing ammonia slip. Once the system is optimized, SNCR control system automatically controls the unit to the optimized levels. Manufacturer: Mobotec USA Model No.: Not available	Exit height: 100 ft Exit diameter: 10 ft Exit flow rate: 119,892 acfm Exit temperature: 323°F

Wellons wood waste-fired stocker boiler	Wellons woodwaste-fired stocker boiler Manufacturer: Wellons Year manufactured: 1994 Serial No.: 9827-89-16 Type: Spreader stoker Rated heat input capacity: 28.87 MMBtu/hr Rated steam rate: 25,000 pounds per hour Maximum hourly woodwaste input rate: 1.68 tons Maximum annual woodwaste input rate: 14,673 tons Fuel value: 8,613 Btu per dry pound	Electrostatic precipitator (ESP) Manufacturer: Wellons Model No.: Wellons Type: Dry Number of T/R sets: two Particulate matter removal efficiency: 80%	Exit height: 53.0 ft Exit diameter: 3.0 ft Exit flow rate: 17,600 acfm Exit temperature: 350°F
Diesel-fired generator-emergency fire pump	Diesel-fired generator- emergency fire pump Manufacturer: John Deere Year manufactured: 1994 Rated capacity: 140 bhp (104 kW); Ignition type: compression Maximum fuel consumption: 7.79 gal/hr Maintenance and testing hours of operation: 100 hr/yr, per MACT Subpart ZZZZ	Emissions from the fire pump generator are uncontrolled	Exit height: 3.7 ft Exit diameter: 0.33 ft Exit velocity: 138.2 m/s Exit temperature: 855°F
Dry kilns (2)	Manufacturer: Wellons Two identical double-track kilns with computerize controls. Each kiln has 20 vents	PM and VOC emissions from the dry kilns are uncontrolled	Exit height: 29.0 ft Exit diameter: 2.0 ft Exit velocity: 0.001 m/s Exit temperature: 160°F
Planer mill, sawmill dust, and chip bins	Sawdust generated from the sawmill will be pneumatically conveyed to the sawdust bin. A chipper is fully enclosed within the sawmill. The woodwaste generated by the chipper is chain driven to the chip bin. The sawdust and wood chips are periodically unloaded via a truck through a partially enclosed flap.	PM_{10} emissions from the planer mill and the chip bins are controlled by a cyclone and a baghouse.	Exit height: 18.0 ft Exit diameter: 1.5 ft Exit velocity: 0.001 m/s Exit temperature: 77°F
Cooling tower (2-cell)	Non-contact cooling tower with a water flow of 16,800 gallons per minute.	Emissions from the cooling towers are uncontrolled.	Exit height: 18.0 ft Exit diameter: 1.5 ft Exit velocity: 0.001 m/s Exit temperature: 77°F
Fugitive dust sources	These include the debarker, sawmill, hog, screens, boiler fuel transfer points, woodwaste storage pile, trucks driving on paved and unpaved roads, woodwaste truck unloading, ash handling, etc.		

Emissions Inventories

The emission inventory was developed by the EFP's consultant (CH2M HILL) and reviewed by DEQ staff for the proposed Wellons woodwaste-fired boiler, the proposed diesel-fired generator fire pump, the existing Zurn woodwaste-fired boiler, and the existing two dry kilns. The existing dry kilns HAP and VOC emissions estimates were based on the emissions factors that were developed and published in the Journal of Forest Product Society, with the following title "Emissions of Hazardous Air Pollutant from Lumber Drying" by Dr. Mike Milota and Paul Mosher of Oregon State University in July/August 2008 (see Appendix A.) The existing dry kilns were originally permitted in January 9, 2006, at 36.8 million board feet per any consecutive 12-month period (MMBF/yr). However, EFP requested self-imposed limits of 32 MMBF/yr for the lumber drying kilns and planer production in order to stay below the major source of Hazardous Air Pollutants (HAPs) emissions thresholds of 25 T/yr to avoid Boiler MACT requirements. The total HAP emissions from the kilns are estimated at 2.1 T/yr. The HAP emissions from the Zurn and the Wellons woodwaste-fired boilers are estimated at 20.9 T/yr and 1.4 T/yr, respectively. The HAP emission rates from the boilers were estimated by using EPA AP-42, Fifth Edition, Volume 1, Chapter 1: External Combustion Sources, 1.6 Wood Residue Combustion in Boilers, Tables 1.6-3 and 1.6-4. The diesel fire pump generator emits HAP at 0.002 T/yr. HAP emission rates from the 140 HP emergency diesel-fired pump generator were estimated by using emissions factors from EPA AP-42, Section 3.3, Gasoline and Diesel Industrial Engines, Table 3.3-1. Thus, the estimated potential facility-wide HAP emissions are equal to (20.9 + 2.1 + 1.40 + 0.002 = 24.40 T/yr.)

The Wellons boiler emission rate estimates of PM, PM_{10}, CO, NO_x, SO_2, and VOC were based on emissions factors that were derived from source tests conduced in July 2004 on the boiler for these pollutants. During the DEQ and EFP pre-application meeting which was held on May 6, 2010, it was agreed that emissions factors (EF) and stack parameters from that source test results be used for the emissions estimates from the Wellons boiler for these pollutants. The source tests were performed on behalf of Longview Fibre Company in Washington state. The Wellons boiler was decommissioned by Longview Fibre Company in 2006 and purchased by EFP. According to EFP the boiler has not been modified since it was purchased by the company.

Emission rates of criteria air pollutants from the 140 HP emergency diesel-fired pump engine were estimated by using emissions factors from EPA AP-42, Section 3.3, Gasoline and Diesel Industrial Engines, Table 3.3-1.

For more information on HAP and criteria air emissions from the facility refer to Appendix A of this memo.

Pre-Project Controlled Emissions

The following table presents the pre-project potential to emit for all criteria pollutants for the emissions units being modified as submitted by the applicant and reviewed by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 2 PRE-PROJECT POTENTIAL CONTROLLED EMISSIONS ESTIMATES FOR CRITERIA POLLUTANTS

Emissions Unit	PM_{10}		SO_2		NO_X		CO		VOC		Lead	
	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr	T/yr
Point Sources												
Zurn woodwaste boiler	3.0	12.3	1.3	5.4	42.1	171.1	21.6	87.6	3.0	15.9	0.013	0.055
Dry kilns	1.67	3.5	0.00	0.00	0.00	0.00	0.00	0.00	8.54	17.8	0.00	0.00
Storage silos (planer shaving pneumatically to cyclones 1 & 2	0.88	1.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling tower	0.66	2.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pre-Project Totals	6.21	20.6	1.3	5.4	42.1	171.1	21.6	87.6	11.54	33.7	0.013	0.055

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Post Project Controlled Emissions

The following table presents the post project potential to emit for criteria pollutants from the emissions units being modified as submitted by the applicant and reviewed by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit.

Table 3 POST PROJECT POTENTIAL CONTROLLED EMISSIONS ESTIMATES FOR CRITERIA POLLUTANTS

Emissions Unit	PM_{10}		SO_2		NO_X		CO		VOC		Lead	
	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr	T/yr
Point Sources												
Zurn woodwaste boiler	3.0	12.3	1.3	5.4	42.1	171.1	21.6	87.6	3.0	15.9	0.013	0.055
Wellons woodwaste boiler (new source)	0.37	1.62	0.15	0.66	5.25	23.0	3.37	14.8	0.14	0.61	0.001	0.006
Dry kilns	0.20	0.14	0.00	0.00	0.00	0.00	0.00	0.00	21.3	15.5	0.00	0.00
Storage silos (planer shaving pneumatically to cyclones 1 & 2 (old source removed)[c]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cooling tower	0.66	2.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Planer mill shavings (new source)	0.25	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sawmill sawdust bin venting (new source)	1.43	1.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sawmill chip bin venting (new source)	2.00	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 HP fire pump generator (new source)	0.34	0.08	0.32	0.08	4.81	1.20	1.04	0.26	0.38	0.10	0.00	0.00
Post Project Totals	8.25	21.7	1.77	6.14	52.16	195.3	26.01	102.62	24.82	32.11	0.014	0.061

a) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
b) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.
c) Storage silo physically removed and reconfigured planer cyclone

Changes in Emissions

The change in the project emissions estimates is used to determine the processing fee per IDAPA 58.01.01.225. The following table presents the changes in controlled emissions estimates for criteria pollutants.

Table 4 CHANGES IN PROJECT POTENTIAL CONTROLLED EMISSIONS ESTIMATES FOR CRITERIA POLLUTANTS

	PM_{10}		SO_2		NO_X		CO		VOC		Lead	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Point Sources												
Pre-Project Potential to Emit	6.21	20.6	1.3	5.4	42.1	171.1	21.6	87.6	11.54	33.7	0.013	0.055
Post Project Potential to Emit	8.25		1.77	6.14	52.16		26.01	102.62	24.82	32.11	0.014	0.061
Changes in Potential to Emit	2.04	1.10	0.47	0.74	10.06	24.20	4.41	15.02	13.28	-1.59[a]	0.001	0.006

a) VOC emissions are reduced because the kilns production rate are reduced from originally permitted 36.8 MMBF/yr to 32 MMBF/yr.

Facility-Wide Criteria Air Pollutants Emissions from the Facility

The following table presents a summary of PTE for criteria air pollutants from all emissions units at the facility as submitted by the applicant and reviewed by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit. According to Appendix A the NO_x and CO emissions from the facility are greater than 100 T/yr. Therefore, the facility is classified as major facility, for the purposes of Tier I operating permit, as defined in IDAPA 58.01.01.008.10.

Table 5 SUMMARY OF FACILITY-WIDE FOR CRITERIA POLLUTANTS PTE

Emissions Unit	PM_{10}		SO_2		NO_X		CO		VOC		Lead	
	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr[a]	T/yr[b]	lb/hr	T/yr
Point Sources												
Zurn woodwaste boiler	3.0	12.3	1.3	5.4	42.1	171.1	21.6	87.6	3.0	15.9	0.013	0.055
Wellons woodwaste boiler (new source)	0.37	1.62	0.15	0.66	5.25	23.0	3.37	14.8	0.14	0.61	0.001	0.006
Dry kilns	0.20	0.14	0.00	0.00	0.00	0.00	0.00	0.00	21.3	15.5	0.00	0.00
Cooling tower	0.66	2.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Planer mill shavings (new source)	0.25	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sawmill sawdust bin venting (new source)	1.43	1.86	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sawmill chip bin venting (new source)	2.00	2.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150 HP fire pump generator (new source)	0.34	0.08	0.32	0.08	4.81	1.20	1.04	0.26	0.38	0.10	0.00	0.00
Facility-Wide Totals	8.25	21.7	1.77	6.14	52.16	195.3	26.01	102.66	24.82	32.11	0.014	0.061

d) Controlled average emission rate in pounds per hour is a daily average, based on the proposed daily operating schedule and daily limits.
e) Controlled average emission rate in tons per year is an annual average, based on the proposed annual operating schedule and annual limits.

Non-Carcinogenic TAP Emissions

A summary of the estimated PTE non-carcinogenic emissions increase of toxic air pollutants (TAP) is provided in the following table. The estimated uncontrolled emissions increases of TAP were below applicable emissions screening levels (EL) except for acrolein and propionaldehyde.

It should be noted that the impact of naphthalene emissions was reported in the PTC application as exceeding the screening level. This was an error and modeling was not required for this pollutant.

Pre- and post project, as well as the change in, non-carcinogenic TAP emissions are presented in the following table:

Table 6 PRE- AND POST PROJECT NON-CARCINOGENIC TAP EMISSIONS SUMMARY
POTENTIAL TO EMIT

Non-Carcinogenic Toxic Air Pollutants (sum of all emissions)	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Acrolein	1.12E+00	1.17E+00	4.86E-02	1.70E-02	Yes
Ammonia	4.12E+00	4.12E+00	0.00E+00	1.20E+00	No
Antimony	4.27E-05	4.71E-05	4.41E-06	3.30E-02	No
Barium	9.20E-04	1.01E-03	9.48E-05	3.30E-02	No
2-Butanone (MEK)	1.51E-03	1.67E-03	1.56E-04	3.93E+01	No
Chlorine	7.84E-03	8.65E-03	8.08E-04	2.00E-01	No
Chlorobenzene	2.21E-01	2.44E-01	2.28E-02	2.33E+01	No
Chromium, Total	1.16E-04	1.28E-04	1.17E-05	3.30E-02	No
Cobalt	3.53E-05	3.89E-05	3.63E-06	3.30E-03	No
Copper	2.65E-04	2.92E-04	2.73E-05	6.70E-02	No
Crotonaldehyde	2.77E-03	3.06E-03	2.86E-04	3.80E-01	No
Dichlorobenzene	2.36E-06	2.36E-06	0.00E+00	2.00E+01	No
1,2-Dichloropropane	9.24E-03	1.01E-02	8.37E-04	2.31E+01	No
Ethyl benzene	8.68E-03	9.57E-03	8.95E-04	2.90E+01	No
n-Hexane	3.52E-03	3.52E-03	0.00E+00	1.20E+01	No

Hydrogen Chloride	1.88E-01	2.07E-01	1.93E-02	5.00E-02	No
Iron	5.35E-03	5.90E-03	5.52E-04	3.33E-01	No
Manganese	8.65E-03	9.54E-03	8.92E-04	3.33E-01	No
Mercury	9.80E-04	1.08E-03	1.01E-04	7.00E-03	No
Methanol	5.10E-01	1.28E+00	7.66E-01	1.73E+01	No
Molybdenum	1.14E-05	1.26E-05	1.17E-06	3.33E-01	No
Naphthalene	2.72E-02	3.01E-02	2.89E-03	3.33E+00	No
Pentachlorophenol	1.43E-05	1.58E-05	1.47E-06	3.30E-02	No
Phenol	1.43E-02	1.58E-02	1.47E-03	1.27E+00	No
Phosphorus	1.46E-04	1.61E-04	1.51E-05	7.00E-03	No
Propionaldehyde	1.71E-02	6.29E-02	4.58E-02	2.87E-02	Yes
Selenium	7.84E-04	8.65E-04	8.08E-05	1.30E-02	No
Silver	9.20E-03	1.01E-02	9.48E-04	7.00E-03	No
Styrene	5.32E-01	5.87E-01	5.49E-02	6.67E+00	No
Toluene	2.58E-01	2.85E-01	2.70E-02	2.50E+01	No
Tin	1.24E-04	1.37E-04	1.28E-05	7.00E-03	No
Vanadium	5.30E-06	5.85E-06	5.47E-07	3.00E-03	No
o-Xylene	7.00E-03	8.03E-03	1.03E-03	2.90E+01	No
Yttrium	1.62E-06	1.79E-06	1.67E-07	6.70E-02	No
Zinc	2.72E-03	2.95E-03	2.34E-04	6.67E-01	No

Therefore, modeling is required for acrolein and propionaldehyde, and because the 24-hour average non-carcinogenic screening EL identified in IDAPA 58.01.01.585 were exceeded.

Carcinogenic TAP Emissions

A summary of the estimated PTE carcinogenic emissions increase of TAP is provided in the following table. The estimated uncontrolled emissions increases of TAP were below the applicable EL except for acetaldehyde, arsenic, benzene, benzo(a)pyrene, 1,3-butadiene, cadmium, carbon tetrachloride, chloroform, 1,2-dichloroethane, dichloromethane, formaldehyde, and POM.

Pre- and post project, as well as the change in, carcinogenic TAP emissions are presented in the following table:

Table 7 PRE- AND POST PROJECT CARCINOGENIC TAP EMISSIONS SUMMARY POTENTIAL TO EMIT

Carcinogenic Toxic Air Pollutants (sum of all emissions)	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Acetaldehyde	2.32E-01	1.82E+00	1.59E+00	3.00E-03	Yes
Arsenic	1.19E-04	1.31E-04	1.23E-05	1.50E-06	Yes
Benzene	1.18E+00	1.30E+00	1.22E-01	8.00E-04	Yes
Benzo(a)pyrene	7.28E-04	8.03E-04	7.53E-05	2.00E-06	Yes
Beryllium	5.97E-06	6.59E-06	6.13E-07	2.80E-05	No
bis(2-Ethylhexyl)phthalate	1.32E-05	1.46E-05	1.36E-06	2.80E-02	No
1,3-Butadiene	0.00E+00	4.26E-05	4.26E-05	2.40E-05	Yes
Cadmium	1.15E-03	1.27E-03	1.18E-04	3.70E-06	Yes
Carbon Tetrachloride	1.26E-02	1.39E-02	1.30E-03	4.40E-04	Yes
Chloroform	9.24E-03	1.02E-02	9.53E-04	2.80E-04	Yes
Chromium, hexavalent	1.89E-05	2.09E-05	1.95E-06	3.30E-02	No
1,2-Dichloroethane	8.12E-03	8.96E-03	8.37E-04	2.50E-04	Yes

Dichloromethane	8.12E-02	8.96E-02	8.37E-03	1.60E-03	Yes
Formaldehyde	1.25E+00	1.32E+00	7.06E-02	5.10E-04	Yes
Nickel	1.83E-04	2.01E-04	1.84E-05	2.70E-05	No
Tetrachloroethylene	1.06E-02	1.17E-02	1.10E-03	1.30E-02	No
Trichloroethylene	8.40E-03	9.27E-03	8.66E-04	1.79E+01	No
2,4,6-Trichlorophenol	6.16E-06	6.80E-06	6.35E-07	1.20E-03	No
Vinyl Chloride	5.04E-03	5.56E-03	5.20E-04	9.40E-04	No
PAH	0.00E+00	9.05E-05	9.05E-05	9.10E-05	No
POM[a]	8.45E-04	9.33E-04	8.85E-05	2.00E-06	Yes

a) Polycyclic Organic Matter (POM) is considered as one TAP comprised of: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, chrysene, indeno(1,2,3-cd)pyrene, benzo(a)pyrene. The total is compared to benzo(a)pyrene.

Therefore, modeling is required for acetaldehyde, arsenic, benzene, benzo(a)pyrene, 1,3-butadiene, cadmium, carbon tetrachloride, chloroform, 1,2-dichloroethane, dichloromethane, formaldehyde, and POM because the annual average carcinogenic screening EL identified in IDAPA 58.01.01.586 were exceeded.

Facility-Wide HAPS Emissions from the Facility

The following table presents a summary of PTE for HAPs from all emissions units at the facility as submitted by the applicant and reviewed by DEQ staff. See Appendix A for a detailed presentation of the calculations of these emissions for each emissions unit. According to Appendix A, the HAP emissions from the facility are below major source thresholds of 10 T/yr of any single HAP and below 25 T/yr for any combination of HAPs.

Table 8 SUMMARY OF FACILITY-WIDE HAPS PTE

Emissions units	PTE (T/yr)
Zurn woodwaste-fired boiler	20.90
Wellons woodwaste-fired boiler	1.41
Lumber drying kilns	2.1
150 HP diesel-fired emergency fire pump	0.002
Total HAPs	**24.41**

Ambient Air Quality Impact Analyses

The permittee supplied the National Ambient Air Quality Standards (NAAQS) for the criteria air pollutants. The VOC emissions from the facility were not modeled because there is no ambient air quality standard exists for VOC emissions. The applicant has demonstrated pre-construction compliance to DEQ's satisfaction that emissions from this facility will not cause or significantly contribute to a violation of any NAAQS. The applicant has also demonstrated pre-construction compliance to DEQ's satisfaction that the emissions increase due to this permitting action will not exceed any acceptable ambient concentration (AAC) or acceptable ambient concentration for carcinogens (AACC) for toxic air pollutants (TAP). A summary of the Ambient Air Impact Analysis for TAPs is provided in Appendix B.

An ambient air quality impact analyses document has been crafted by DEQ based on a review of the modeling analysis submitted in the application. That document is part of the final permit package for this permitting action (see Appendix B).

T-RACT Analysis

The permittee submitted a Air Toxics Reasonably Control Technology (T-RACT) analysis in accordance with IDAPA 58.01.01.210.12, for carcinogenic pollutants under IDAPA 58.01.01.586, which exceeded the acceptable ambient concentration for carcinogens (AACC). The permittee conducted a T-RACT analysis for the following pollutants: acetaldehyde, benzo(a)pyrene, benzene, cadmium, formaldehyde, and polycyclic organic matter (POM) emitted from the Wellons boiler and the emergency fire pump. The T-RACT will not apply to the dry kilns emissions because the kilns emissions resulted in a net pollutant emissions decrease due to the request from the permittee to lower the permitted allowable production rate of lumber from 36.8 MM BF/yr to 32 MM BF/yr.

DEQ reviewed the submitted information for the proposed T-RACT analysis, in accordance with IDAPA 58.01.01.214.b. After reviewing the submitted material, DEQ concluded that the ambient impacts for acetaldehyde, benzo(a)pyrene, benzene, cadmium, formaldehyde, and POM, that were submitted by the permittee are considered as the approved T-RACT ambient concentrations.

For more information on T-RACT, the reader is referred to the permittee's submittal on October 5, 2010, and to the modeling memorandum in Appendix B.

REGULATORY ANALYSIS

Attainment Designation (40 CFR 81.313)

The facility is located at 500 West Main, Emmett, Idaho. Emmett is located in Gem County and is within Air Quality Control Region (AQCR) 63 and Universal Transverse Mercater (UTM) Zone 11. Gem County is designated as attainment or unclassifiable for $PM_{2.5}$, PM_{10}, SO_2, NO_2, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

Permit to Construct (IDAPA 58.01.01.201)

IDAPA 58.01.01.201 Permit to Construct Required

The permittee has requested that a PTC be issued to the facility for the proposed Wellons woodwaste-fired boiler, 140 HP emergency diesel-fired generator, and a reduction in lumber kilns production limit. Therefore, a permit to construct is required to be issued in accordance with IDAPA 58.01.01.220. This permitting action was processed in accordance with the procedures of IDAPA 58.01.01.200-228.

Tier II Operating Permit (IDAPA 58.01.01.401)

IDAPA 58.01.01.401 Tier II Operating Permit

The application was submitted for a permit to construct (refer to the Permit to Construct section), and an optional Tier II operating permit has not been requested. Therefore, the procedures of IDAPA 58.01.01.400–410 were not applicable to this permitting action.

Visible Emissions (IDAPA 58.01.01.625)

IDAPA 58.01.01.625 Visible Emissions

The sources of PM and PM_{10} emissions at this facility are subject to the State of Idaho visible emissions standard of 20% opacity. This requirement is assured in several permit conditions throughout the permit.

Standards for New Sources (IDAPA 58.01.01.676)

IDAPA 58.01.01.676 Standards for New Sources

The fuel burning equipment located at this facility, with a maximum rated input of ten (10) million BTU per hour or more, are subject to a particulate matter limitation of 0.08 gr/dscf of effluent gas corrected to 8% oxygen by volume when combusting wood products fuel. Fuel-Burning Equipment is defined as any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer. This requirement is assured by Permit Condition 37 for the proposed Wellons boiler.

Particulate Matter – New Equipment Process Weight Limitations (IDAPA 58.01.01.701)

IDAPA 58.01.01.701 Particulate Matter – New Equipment Process Weight Limitations

IDAPA 58.01.01.700 through 703 set PM emission limits for process equipment based on when the piece of equipment commenced operation and the piece of equipment's process weight (PW) in pounds per hour (lb/hr). IDAPA 58.01.01.701 and IDAPA 58.01.01.702 establish PM emission limits for equipment that commenced operation on or after October 1, 1979 and for equipment operating prior to October 1, 1979, respectively.

The process weight rule applies to the two kilns because these kilns emit particulates and commenced operation on or after October 1, 1979. The emissions are limited according to the equation in the rule.

The proposed kiln PTE is based on lumber production limit of 32 MM BF/yr. The PM emission estimate is 0.14 T/yr – refer to PTC application.

The following calculations establish the lumber drying kilns process weight and the corresponding PM emissions limitation.

(32 lb/cf[1]) x (0.054 cf/bf[2]) x (32 million BF/yr) / (8,760) hours kiln operations/year) = 6312 lb/hr, average process weight for one hour.

[1] AP-42, Appendix B, density of Douglas fir (representative density for all lumber species).
[2] Conversion from 1 BF, based on 2-by-4s, to 1 CF.

The PM process weight limitation for sources constructed on or after October 1, 1979, and having a process weight less than 9,250 lb/hr, is determined using the following equation (IDAPA 58.01.01.701):

$E = 0.045 (PW)^{0.60}$

$E = 0.045 (6,312)^{0.60} = 8.58$ lb/hr allowable PM emissions

Actual estimated hourly PM emissions:

32,000 m BF/yr x 0.01 lb PM/m BF* lumber / 8760 hr/yr = 0.04 lb/hr average hourly PM emission rate.

* PM Emission Factor from NCASI (from PTC application); m here is equal 1,000.

The estimated hourly PM emissions are much less than the calculated allowable PM emission limit. Therefore, compliance with this requirement has been demonstrated.

The process weight rule also applies to the new proposed planer mill because the planer mill emits particulates and will commence operation on or after October 1, 1979. The emissions are limited according to the equation in the rule.

The proposed planer mill PTE is based on lumber production limit of 22,000 BF/hr. The PM emission estimate is 0.25 lb/hr – refer to PTC application.

The following calculations establish the lumber planer mill process weight and the corresponding PM emissions limitation.

The PM process weight limitation for sources constructed on or after October 1, 1979, and having a process weight greater than 9,250 lb/hr, is determined using the following equation (IDAPA 58.01.01.701):

$$E = 1.10\ (PW)^{0.25}$$

$$E = 1.10\ (22{,}000)^{0.25} = 13.40 \text{ lb/hr allowable PM emissions}$$

The estimated hourly PM emissions are much less than the calculated allowable PM emission limit. Therefore, compliance with this requirement has been demonstrated.

Title V Classification (IDAPA 58.01.01.300, 40 CFR Part 70)

IDAPA 58.01.01.301 Requirement to Obtain Tier I Operating Permit

Post project facility-wide emissions from this facility have a potential to emit greater than 100 tons per year for NO_X and CO, as demonstrated previously in the Emissions Inventories Section of this analysis. Therefore, this facility is classified as a major facility, as defined in IDAPA 58.01.01.008.10. Thus, in accordance with IDAPA 58.01.01.313.01.b, the permittee must submit a complete application to DEQ for an initial Tier I operating permit within 12 months of becoming a Tier I source or commencing operation. This requirement is assured by Permit Condition 18.

PSD Classification (40 CFR 52.21)

40 CFR 52.21 Prevention of Significant Deterioration of Air Quality

The facility is not a major stationary source as defined in 40 CFR 52.21(b)(1). This section defines a Major stationary source as:

Any of the following stationary sources of air pollutants which emits, or has the potential to emit, 100 tons per year or more of any regulated NSR pollutant: Fossil fuel-fired steam electric plants of more than 250 million British thermal units per hour heat input, coal cleaning plants (with thermal dryers), kraft pulp mills, portland cement plants, primary zinc smelters, iron and steel mill plants, primary aluminum ore reduction plants (with thermal dryers), primary copper smelters, municipal incinerators capable of charging more than 250 tons of refuse per day, hydrofluoric, sulfuric, and nitric acid plants, petroleum refineries, lime plants, phosphate rock processing plants, coke oven batteries, sulfur recovery plants, carbon black plants (furnace process), primary lead smelters, fuel conversion plants, sintering plants, secondary metal production plants, chemical process plants (which does not include ethanol production facilities that produce ethanol by natural fermentation included in NAICS codes 325193 or 312140), fossil-fuel boilers (or combinations thereof) totaling more than 250 million British thermal units per hour heat input, petroleum storage and transfer units with a total storage capacity exceeding 300,000 barrels, taconite ore processing plants, glass fiber processing plants, and charcoal production plants, or

Notwithstanding the stationary source size specified in paragraph (b)(1)(i) of this section, any stationary source which emits, or has the potential to emit, 250 tons per year or more of a regulated NSR pollutant; or

Any physical change that would occur at a stationary source not otherwise qualifying under paragraph (b)(1) of this section, as a major stationary source, if the changes would constitute a major stationary source by itself.

This facility is not one of the facilities designated and does not have facility-wide emissions for any criteria pollutant that exceed 250 T/yr. In addition, the facility is not undergoing any physical change at a stationary source not otherwise qualifying under paragraph 40 CFR 52.21(b)(1) as a major stationary source, that would constitute a major stationary source by itself as defined in 40 CFR 52. Therefore in accordance with 40 CFR 52.21(a)(2), PSD requirements are not applicable to this permitting action.

NSPS Applicability (40 CFR 60)

40 CFR 60, Subpart Db	Standards of Performance for Industrial-Commercial–Institutional Steam Generating Units

The EFP's existing Zurn woodwaste-fired stoker boiler is rated at 280 MMBtu/hr and it is subject to the requirements of 40 CFR 60 Subpart Db. Requirements under subpart Db were addressed in the existing permit that was issued to the facility on March 8, 2010. No changes are requested from the permittee with regard to the Zurn woodwaste boiler and, therefore, no new permitting requirements are added to the Zurn boiler section of this permit. However, a summary table of Subpart A, which has a general provision to 40 CFR 60 Subpart Db was included for the boiler section of the permit because it was omitted in the previous permit(s).

40 CFR 60, Subpart Dc	Standards of Performance for Small Industrial–Commercial–Institutional Steam Generating Units

The EFP's new Wellons woodwaste-fired stoker boiler is rated at 28.87 MMBtu/hr and is subject to the requirements of 40 CFR 60 Subpart Dc. The Wellons boiler at the facility only combusts woodwaste as fuel required by Permit Condition 38. However, Section § CFR 60.40c(a) (Applicability and Delegation of Authority) of Subpart Dc applies to the boiler. The permittee submitted to DEQ the FRA form in the application materials – refer to permit application for the Form FRA. Because the boiler's capacity is less than 30 MMBtu/hr, there are no any other NSPS requirements for the boiler except for the notification (in accordance with 40 CFR 60.48c(a)(1)) and reporting requirements in accordance with 40 CFR 60.7(b), (c), (d) and (f). The general provisions to 40 CFR 60 Subpart Dc is included in Permit Condition 48, which includes the notifications and recordkeeping and reporting requirements.

NESHAP Applicability (40 CFR 61)

The facility is not subject to any NESHAP requirements in 40 CFR 61.

MACT Applicability (40 CFR 63)

The facility has proposed to operate an emergency diesel-fire pump generator with a maximum rated capacity of 140 HP. The facility is an area source of HAP emissions (see Table 7, summary of facility-wide HAPs PTE); therefore, the diesel-fired generator is subject to 40 CFR 63 Subpart ZZZZ. EFP submitted to DEQ the Form FRA in the application and addressed the requirements of Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

40 CFR 63, Subpart ZZZZ	National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines
§ 63.6580	What is the purpose of subpart zzzz?

In accordance with §63.6580, subpart ZZZZ establishes national emission limitations and operating limitations for HAPs emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

§ 63.6585	Am I subject to this subpart?

In accordance with §63.6585, the EFP is subject to this subpart because the facility will be operated as an area source of HAP emissions. The facility is a source of HAP that is not a major source of HAP and is not part of a major source of HAP emissions.

40 CFR 63, Subpart DDDDD	National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters

§ 63.7480 What is the purpose of subpart DDDDD?

In accordance with §63.7480, subpart DDDDD establishes national emission limits and work practice standards for HAP emissions from industrial, commercial, and institutional boilers and process heaters. Subpart DDDDD also establishes requirements to demonstrate initial and continuous compliance with the emission limits and work practice standards.

§ 63.7485 Am I subject to this subpart?

In accordance with §63.7485, you are subject to this subpart if you own or operate an industrial, commercial, or institutional boiler or process heater as defined in §63.7575 that is located at, or is part of, a major source of HAP as defined in §63.2 or §63.761 (40 CFR part 63, subpart HH, National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities), except as specified in §63.7491.

According to the submitted HAP emission estimates, the HAP emissions from the facility are below major source thresholds of 10 T/yr of any single HAP and below 25 T/yr for any combination of HAPs. Therefore, EFP is not subject to MACT Subpart DDDDD.

40 CFR 63, Subpart DDDD	National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products

§ 63.2230 What is the purpose of subpart DDDD?

In accordance with §63.2230, subpart DDDD establishes national compliance options, operating requirements, and work practice requirements for HAP emissions from plywood and composite wood products (PCWP) manufacturing facilities. This subpart also establishes requirements to demonstrate initial and continuous compliance with the compliance options, operating requirements, and work practice requirements.

§ 63.2231 Does this subpart apply to me?

In accordance with §63.2231(a) and (b), if you own or operate a PCWP manufacturing facility. A PCWP manufacturing facility is a facility that manufactures plywood and/or composite wood products by bonding wood material (fibers, particles, strands, veneers, etc.) or agricultural fiber, generally with resin under heat and pressure, to form a structural panel or engineered wood product. Plywood and composite wood products manufacturing facilities also include facilities that manufacture dry veneer and lumber kilns located at any facility. Plywood and composite wood products include, but are not limited to, plywood, veneer, particleboard, oriented strandboard, hardboard, fiberboard, medium density fiberboard, laminated strand lumber, laminated veneer lumber, wood I-joists, kiln-dried lumber, and glue-laminated beams; and you are located at a major source of HAP emissions, your facility will be subject to this subpart.

The facility has two permitted existing dry lumber kilns. According to the submitted HAP emission estimates, the HAP emissions from the facility are below major source thresholds of 10 T/yr of any single HAP and below 25 T/yr for any combination of HAPs. Therefore, EFP is not subject to MACT Subpart DDDD.

CAM Applicability (40 CFR 64)

Because the facility is classified as a major facility, as defined in IDAPA 58.01.01.008.10, and in accordance with IDAPA 58.01.01.313.01.b, EFP will submit a complete application to DEQ for an initial Tier I operating permit within 12 months of becoming a Tier I source or commencing operation, and CAM will be addressed at that time.

Permit Conditions Review

This section of the statement of basis describes only the permit conditions that have been added, revised, modified or deleted as a result of this permitting action. This permitting action is for a PTC for adding to the existing permit a new woodwaste boiler, planer mill and woodwaste handling system, emergency diesel generator, and a request to limit HAP emissions from the entire facility to below major source thresholds.

Wellons Woodwaste-Fired Stoker Boiler

Permit Condition 35 is to limit the PM_{10} emissions to 0.37 lb/hr and 1.62 T/yr. Also, Permit Condition 37 is to limit the PM limit of 0.08 gr/dscf of effluent gas corrected to 8% oxygen, in accordance with IDAPA 58.01.01.676. Compliance with these permit conditions will be determined by conducting PM and PM_{10} performance tests on the boiler stack, as described in Permit Condition 47. During the time period when performance tests are not conducted, the permittee can determine compliance with the PM and PM_{10} emissions limits from the boiler stack by operating the ESP in accordance with the manufacturer specifications, as specified in Permit Condition 42. The permittee will also prepare a summary sheet of the manufacturer operating parameters specifications of the ESP, which include continuously measuring the following: secondary voltage, secondary amperage, and the spark rate.

Further testing will be performed in according to the schedule set in Table 7 in the permit.

It should be noted that the boiler was previously source tested for PM, NO_x, VOC, and SO_2 on July 21, 2004 by the Longview Fibre Company in Washington and the boiler is being purchased by the EFP. The results of the pollutant source tests were submitted in the permit application. The PM and PM_{10} source test requirements in this permit will establish parameters for the ESP that will be useful for monitoring and operating requirements during periods when performance testing are not conducted.

Permit Condition 38 sets requirements for visible emissions of 20% from the boiler stack as required in IDAPA 58.01.01.625. Compliance with this permit condition is determined by Permit Condition 43. Monthly inspections of visible emissions of see/no see evaluation will be conducted to determine if any visible emissions (VE) are present. If any VE is present, the permittee will take a correction action as quickly as possible or will perform Method 9 opacity observation and record the results of the VE as described in Permit Condition 43.

Permit Condition 40 limits the steam production from the boiler to 24,900 lbs of steam per hour averaged over any consecutive 24-hr period. This permit condition was included in the permit based on the source test in which the boiler was tested for to measure the PM emissions in 2004, as stated above. According to the 2004 PM source test results (see original PTC application), the boiler was operating at steam rates of 27,000, 25,600, 23,750, and 23,400 lb steam/hr during the four hour source test period. This resulted in an average steam rate of 24,937 lbs/hr. The permittee used the results of the PM tests for the emissions estimates for PM_{10} (it is assumed PM = PM_{10}), which is used for the modeling analysis. Therefore, this steam limit is included as a permit condition for the protection of NAAQS. Compliance with this permit condition is determined by Permit Conditions 41 and 46, which require the permittee to install, calibrate, and maintain a monitor to continuously measure the steam production rate of the boiler.

Permit Condition 45 sets requirements for the permittee to inspect annually for any physical degradation of the ESP. This includes the discharge electrode, collection electrodes, electrode alignment, rapper mechanism for electrodes, and transformer-rectifier sets. The permittee must keep records of inspection and repairs made to the ESP or any corrective action taken.

Permit Condition 46 sets the NSPS requirements for the boiler in accordance with 40 CFR 60.7, 40 CFR 60.48c, and 40 CFR 60 Subpart A. A summary of applicable requirements of NSPS Part 60 Subpart A is included in Table 8 of the permit.

Drying Kilns

The permittee requested a self-imposed limit in lumber production to stay below the major source threshold for HAP emissions. The following are the permit conditions that were included in the permit for the drying kilns:

Old Permit Condition 35 from PTC No. P-2010.0016, issued on March 8, 2010 – "Throughput Limits: The throughput of lumber for the drying kilns shall not exceed 36.8 million board feet during any consecutive 12-month period."

New Permit Condition 52 is revised to include the throughput of lumber for the drying kilns shall not exceed 32 million board feet during any consecutive 12-month period. Compliance with this permit condition can be determined by Permit Condition 54 by monitoring and recording the throughput of lumber on monthly and annual (12-month period) basis.

New Permit Condition 52 has been added to the permit to require that the maximum kiln temperature for each kiln not to exceed 200°F. By limiting the kiln temperature to 200°F or less that will keep the emissions of methanol, formaldehyde propionaldehyde, and acrolein, which are HAP pollutants, from some wood species not to exceed the estimated HAP emissions from the drying kilns and would not trigger the HAP major source threshold for the facility. Emissions estimates of these pollutants, as submitted by the applicant, are included in Appendix A of this statement of basis. The emission estimates for these pollutants are based on emissions factors from a study by Oregon State University, which was published in Journal of Forest Products Society and written by Dr. Mike Milota and Paul Mosher, in July/August 2008. Compliance with this permit condition is determined by Permit Conditions 53 and 55.

It should be noted that the drying kilns contribution from the total HAP emissions from the facility is 2.1 T/yr. The boilers contribution of HAP emissions is 22.31 T/yr – see Table 7 in this memo.

Planer Mill

The permittee requested a self-imposed limit in lumber processed at the planer mill to 220,000 BF/day and 32 million BF/yr. Particulates emissions from the planer mill are controlled by a cyclone and a baghouse. The following are the permit conditions that were included in the permit for the drying kilns:

New Permit Condition 57 has been added to require operating limits on throughput of lumber on daily and annual basis to limit emissions of PM_{10} from the planer mill. Compliance with the throughput limits can be determined by Permit Condition 59.

New Permit Condition 58 has been added to require the permittee to install a cyclone and a baghouse to control the PM and PM_{10} emissions from the planer stack.

This permit condition requires the permittee to develop a baghouse procedures document for the inspection and operation of the baghouse. The document must be a permittee developed document independent of the manufacturer supplied operating manual but may include summaries of procedures included in the manufacturer supplied operating manual.

Baghouses are expected to be highly effective in controlling particulates from this process, provided they are operated and maintained according to manufacturer specifications and periodically inspected. If any visible emissions were present from the baghouse stack, the permittee must realize that a corrective action must be taken to fix the baghouse and a description of the correction action must be taken. At a minimum the baghouse procedures document must include procedures to determine if bags are ruptured and procedures to determine if bags are not appropriately secured in place. The permittee is required to maintain records of the results of each baghouse inspection in accordance with Monitoring and Recordkeeping requirements in the General Provisions of this permit.

Emergency Diesel-fire Pump Generator

Permit Condition 61 regulates the visible emissions from the generator stack to 20% opacity in accordance with IDAPA 58.01.01.625. Compliance with this permit condition can be determined as specified Permit Condition 67 (Visible Emissions Monitoring).

Permit Condition 62 regulates the operation hours for the generator to four hours per day for testing and maintenance purposes. The operation hours will not apply during emergency situations. This requirement is included in the permit based upon the permittee request and based on modeling analysis for NAAQS purposes. Compliance with this permit condition is determined through Permit Condition 65.

Permit Condition 63 regulates the fuel sulfur content in accordance with IDAPA 58.01.01.728. Compliance with this permit condition is determined by Permit Condition 66 (Sulfur Content Monitoring.)

Permit Condition 67 requires the permittee to comply with the requirements of 40 CFR 63 Subpart ZZZZ.

The facility has proposed to operate as an area source of HAP emissions, and is subject to the requirements of 40 CFR 63, Subpart ZZZZ–National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

§ 63.6580 What is the purpose of subpart ZZZZ?

"Subpart ZZZZ establishes national emission limitations and operating limitations for HAP emitted from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations."

§ 63.6585 Am I subject to this subpart?

"You are subject to this subpart if you own or operate a stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand."

The facility has one RICE at an area source of HAP emissions. Therefore, the engine is subject to this subpart.

§ 63.6590(a)(1)(iii) For stationary RICE located at an area source of HAP emissions, a stationary RICE is existing if you commenced construction or reconstruction of the stationary RICE before June 12, 2006.

The 140 HP diesel generator was constructed in 1994. Thus, the generator is existing.

§ 63.6595 (a) Affected sources.

"(1) If you have an existing stationary RICE, excluding existing non-emergency CI stationary RICE, with a site rating of more than 500 brake HP located at a major source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than June 15, 2007. If you have an existing non-emergency CI stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions, an existing stationary CI RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, **or an existing stationary CI RICE located at an area source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than May 3, 2013.** If you have an existing stationary SI RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, or an existing stationary SI RICE located at an area source of HAP emissions, you must comply with the applicable emission limitations and operating limitations no later than October 19, 2013."

The generator is a CI engine, so the permittee must comply with the applicable operating limitations for this subpart no later than May 3, 2013. The requirements of this subpart that apply to this emergency diesel-fired generator are included in this permit to be a proactive and to make the permittee aware of the requirements of this subpart. However, the permittee has no obligations to comply with this subpart until May 3, 2013.

The requirements of Subpart ZZZZ and the general provisions to the MACT 40 CFR 63 Subpart A are included in Permit Condition 67.

Facility-wide Hazardous Air Pollutant Emissions

This section of the permit establishes a synthetic minor status of HAP emissions from the facility. The facility requested to limit the HAP emissions to below major source thresholds to avoid the Boiler MACT requirements.

Permit Condition 77 limits the emissions of any single HAP to less than 10 per any consecutive 12-month period (T/yr) from the facility. It also limits the emissions of any combination of HAPs to less than 25 T/yr from the entire facility.

Compliance with the Facility-wide HAP emissions can be determined by operating the HAP emissions units (i.e., woodwaste boilers, dry kilns, and emergency generators) in the permit in accordance with the respective operating requirements for those emissions units in the permit as stated in Permit Condition 78. The permittee is also required to calculate on monthly and annually (every consecutive 12-month period) basis, the HAP emissions rates from all the sources of HAP emissions at the facility as specified in Permit Condition 79. All HAP emissions estimates (monthly and annually) will be kept at the site and will be provided to DEQ representatives upon request. This information will be compiled in accordance with Monitoring and Recordkeeping Requirements of the General Provisions of the permit.

PUBLIC REVIEW

Public Comment Opportunity

An opportunity for public comment period on the application was provided in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and there was not a request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

Public Comment Period

Because there was not a request for a public comment or a public hearing during the opportunity for public comment, DEQ did make this project available to public comment.

APPENDIX A – EMISSIONS INVENTORIES

Emerald Forest Products - Emmett

Table 1 - Existing Baseline

Baseline Potential Controlled Emissions (Point Source Inventory)

Emissions Unit	Location	Stack ID	PM		PM_{10}		SO_2		NOx		CO		VOC		Lead		HAPs		
			lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	
Point Sources Included in Modeling																			
Wood-Waste Zurn Stoker Boiler	Power Plant	ZURN BOILER	3.0	12.3	3.0	12.3	1.3	5.4	42.1	171.1	21.6	87.6	3.0	15.9	0.013	0.055	5.1	20.9	
Dry Kilns	Sawmill	KILNS	2.9	6.1	1.67	3.5							8.54	17.8			0.53	1.11	
Storage Silos (planer shavings pneumatically to cyclones 1 & 2)	Power Plant	CYCLONES (1&2)	0.98	2.1	0.88	1.84													Storage Silos Physically removed reconfigured planer cyclone
Cooling Tower	Power Plant	COOLING TOWER (CELL1 & CELL 2)	2.21	9.7	0.66	2.9													
Stationary Baseline Project Totals			**9.1**	**30.2**	**6.2**	**20.5**	**1.3**	**5.4**	**42.1**	**171.1**	**21.6**	**87.6**	**11.54**	**33.7**	**0.013**	**0.055**	**5.6**	**22.0**	

Baseline Potential Controlled Emissions (Fugitive Source Inventory)

Emissions Unit	Location	Stack ID	PM		PM_{10}		SO_2		NOx		CO		VOC		Lead		HAPs		
			lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	
Fugitive Sources Included in Modeling																			
Debarker	Sawmill	DEB	0.47	0.29	0.21	0.13													
Sawmill	Sawmill	SAW	0.68	1.43	0.39	0.82													
Hog	Power Plant	HOG	0.13	0.03	0.06	0.01													
Screen	Power Plant	SCREEN	0.12	0.19	0.06	0.09													
Truck Unloading	Power Plant	TRUCK DUMP	1.87	8.19	0.93	4.09													
Transfer point (Hog to Fuel Conveyor)	Power Plant	TP1	0.06	0.24	0.03	0.12													
Transfer point (Main Conveyor to Belt Tripper)	Power Plant	TP2	0.31	1.37	0.16	0.68													
Transfer point (Belt Tripper to Fuel House)	Power Plant	TP3	0.22	0.97	0.11	0.49													
Transfer point (Bucking Saws to Debarker)	Sawmill	TP4	0.24	1.07	0.12	0.53													
Transfer point (Two Shaving Silos)	Power Plant	TP5	0.01	0.05	0.006	0.03													Physically removed
Fugitive Baseline Project Totals			**4.1**	**13.8**	**2.1**	**7.0**													
Additional Fugitive Sources Not Included in Modeling																			
Wood Storage Pile	Power Plant	PILE	0.97	4.25	0.49	2.12													
Haul Roads	Sawmill & Power Plant	ROADS	8.72	13.82	1.70	2.70													
Fugitive Baseline Project Totals Not Included in Modeling			**13.8**	**31.9**	**4.3**	**11.8**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**			**0.0**	**0.0**	

Total Baseline Potential Controlled Emissions (Stationary and Fugitive Source Inventory)

Emissions Unit	PM		PM_{10}		SO_2		NOx		CO		VOC		Lead		HAPs	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Stationary Baseline Project Totals	9.1	30.2	6.2	20.5	1.3	5.4	42.1	171.1	21.6	87.6	11.5	33.7	0.013	0.055	5.6	22.0
Fugitive Baseline Project Totals	13.8	31.9	4.3	11.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Baseline Potential Emissions	**22.9**	**62.1**	**10.5**	**32.4**	**1.3**	**5.4**	**42.1**	**171.1**	**21.6**	**87.6**	**11.54**	**33.7**	**0.013**	**0.055**	**5.6**	**22.0**

Notes:

Baseline Potential Controlled Emissions developed from original PTC issued January 9, 2006.

Emerald Forest Products - Emmett

Table 2 - Proposed Increase Criteria Pollutants

Proposed Increase Controlled Emissions (Stationary and Fugitive Source Inventory)

Point Sources	Stack ID	PM lb/hr	PM T/yr	PM_{10} lb/hr	PM_{10} T/yr	SO_2 lb/hr	SO_2 T/yr	NOx lb/hr	NOx T/yr	CO lb/hr	CO T/yr	VOC lb/hr	VOC T/yr	Lead lb/hr	Lead T/yr	HAPs lb/hr	HAPs T/yr	
Wood-Waste Zurn Stoker Boiler	ZURN BOILER	0	0	0	0	0	0	0	0	0	0	0	0			0	0	
Wood-Waste Wellons Boiler	BOILER	0.37	1.62	0.37	1.62	0.15	0.66	5.25	23.0	3.37	14.76	0.14	0.61	0.001	0.006	0	1.42	New Source
Dry Kilns	KILNS	-2.70	-5.96	-1.47	-3.36							12.80	-2.28			0	1.06	Use lower NCASI emission rate for PM
Planer Shavings	PLANER CYCLONE/BAG	-0.73	-1.92	-0.63	-1.66													Source reconfigured
Sawmill Sawdust Bin Venting	SAW BIN VENT	2.47	3.21	1.43	1.86													New Source
Sawmill Chip Bin Venting	CHIP BIN VENT	3.45	4.49	2.00	2.60													New Source
Cooling Tower	COOLING TOWER (CELL1 & CELL 2)	0.00	0.00	0.00	0.00													
104 kW Fire Pump Generator	GEN	0.34	0.085	0.34	0.085	0.32	0.08	4.81	1.20	1.04	0.26	0.38	0.10				0.002	New Source

Fugitive Sources	Stack ID	PM lb/hr	PM T/yr	PM_{10} lb/hr	PM_{10} T/yr	SO_2 lb/hr	SO_2 T/yr	NOx lb/hr	NOx T/yr	CO lb/hr	CO T/yr	VOC lb/hr	VOC T/yr	Lead lb/hr	Lead T/yr	HAPs lb/hr	HAPs T/yr	
Debarker	DEB	0.00	0.00	0.00	0.00													
Sawmill	SAW	0.00	0.00	0.00	0.00													
Load Out Sawmill Sawdust Bin	SAWDUST BIN	0.007	0.009	0.003	0.004													
Load Out Sawmill Chip Bin	CHIP BIN	0.009	0.012	0.004	0.006													
Load Out Planer Shavings Bin	SHAVINGS BIN	0.005	0.006	0.002	0.003													
Transfer point (storage pile to Boiler fuel box)	FUEL BOXES (2)	0.078	0.244	0.037	0.116													
Hog	HOG	0.00	0.00	0.00	0.00													
Screen	SCREEN	0.00	0.00	0.00	0.00													
Truck Unloading at Power Plant	TRUCK DUMP	0.00	0.00	0.00	0.00													
Transfer point (Hog to Fuel Conveyor)	TP1	0.00	0.00	0.00	0.00													
Transfer point (Main Conveyor to Belt Tripper)	TP2	0.00	0.00	0.00	0.00													
Transfer point (Belt Tripper to Fuel House)	TP3	0.00	0.00	0.00	0.00													
Transfer point (Bucking Saws to Debarker)	TP4	0.00	0.00	0.00	0.00													
Transfer point (Two Shaving Silos)	TP5	-0.01	-0.05	-0.01	-0.03													Removed

Additional Sources (not included in modeling)	Stack ID	PM lb/hr	PM T/yr	PM_{10} lb/hr	PM_{10} T/yr	SO_2 lb/hr	SO_2 T/yr	NOx lb/hr	NOx T/yr	CO lb/hr	CO T/yr	VOC lb/hr	VOC T/yr	Lead lb/hr	Lead T/yr	HAPs lb/hr	HAPs T/yr
Wood Storage Pile	PILE	0.00	0.00	0.00	0.00												
Haul Roads	ROADS	0.00	0.00	0.00	0.00												
	Net Summary	**3.28**	**1.75**	**2.08**	**1.25**	**0.47**	**0.74**	**10.06**	**24.20**	**4.41**	**15.02**	**13.32**	**-1.57**	**0.001**	**0.006**	**0.00**	**2.49**

Emerald Forest Products - Emmett

Table 3 - New Baseline

Baseline Potential Controlled Emissions (Point Source Inventory)

Emissions Unit	Location	Stack ID	PM		PM_{10}		SO_2		NOx		CO		VOC		Lead		HAPs	
			lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Point Sources Included in Modeling																		
Wood-Waste Zurn Stoker Boiler	Power Plant	ZURN BOILER	3.00	12.3	3.0	12.3	1.3	5.4	42.1	171.1	21.6	87.6	3.0	15.9	0.013	0.055	5.1	20.9
Wood-Waste Wellons Boiler	Sawmill	WELLONS BOILER	0.37	1.62	0.37	1.62	0.15	0.66	5.25	23.0	3.37	14.8	0.14	0.61	0.001	0.006		1.42
Dry Kilns	Sawmill	KILNS	0.20	0.14	0.20	0.14							21.3	15.5				2.17
Planer Shavings	Sawmill	PLANER CYCLONE/BAG	0.25	0.18	0.25	0.18												
Sawmill Sawdust Bin Venting	Sawmill	SAW BIN VENT	2.47	3.21	1.43	1.86												
Sawmill Chip Bin Venting	Sawmill	CHIP BIN VENT	3.45	4.49	2.00	2.60												
Cooling Tower	Power Plant	COOLING TOWER (CELL1 & CELL 2)	2.21	9.70	0.66	2.90												
104 kW Fire Pump Generator	Sawmill	GEN	0.34	0.08	0.34	0.08	0.32	0.08	4.81	1.20	1.04	0.26	0.38	0.10				0.002
Stationary Baseline Project Totals			**12.3**	**31.7**	**8.2**	**21.7**	**1.8**	**6.1**	**52.2**	**195.3**	**26.0**	**102.6**	**24.9**	**32.1**	**0.015**	**0.061**	**5.1**	**24.49**

Baseline Potential Controlled Emissions (Fugitive Source Inventory)

Emissions Unit	Location	Stack ID	PM		PM_{10}		SO_2		NOx		CO		VOC		Lead		HAPs	
			lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Fugitive Sources Included in Modeling																		
Debarker	Sawmill	DEB	0.47	0.29	0.21	0.13												
Sawmill	Sawmill	SAW	0.68	1.43	0.39	0.82												
Load Out Sawmill Sawdust Bin	Sawmill	SAWDUST BIN	0.007	0.009	0.003	0.004												
Load Out Sawmill Chip Bin	Sawmill	CHIP BIN	0.009	0.012	0.004	0.006												
Load Out Planer Shavings Bin	Sawmill	SHAVINGS BIN	0.005	0.006	0.002	0.003												
Transfer point (storage pile to Boiler fuel box)	Sawmill	FUEL BOXES (2)	0.078	0.244	0.037	0.116												
Hog	Power Plant	HOG	0.13	0.03	0.06	0.01												
Screen	Power Plant	SCREEN	0.12	0.19	0.06	0.09												
Truck Unloading at Power Plant	Power Plant	TRUCK DUMP	1.87	8.19	0.93	4.09												
Transfer point (Hog to Fuel Conveyor)	Power Plant	TP1	0.06	0.24	0.03	0.12												
Transfer point (Main Conveyor to Belt Tripper)	Power Plant	TP2	0.31	1.37	0.16	0.68												
Transfer point (Belt Tripper to Fuel House)	Power Plant	TP3	0.22	0.97	0.11	0.49												
Transfer point (Bucking Saws to Debarker)	Sawmill	TP4	0.24	1.07	0.12	0.53												
Fugitive Baseline Project Totals			**4.2**	**14.1**	**2.1**	**7.1**												
Additional Fugitive Sources Not Included in Modeling																		
Wood Storage Pile	Power Plant	PILE	0.97	4.25	0.49	2.12												
Haul Roads	Sawmill & Power Plant	ROADS	8.72	13.82	1.70	2.70												
Fugitive Baseline Project Totals Not Included in Modeling			**9.7**	**18.1**	**2.2**	**4.8**												

Total Baseline Potential Controlled Emissions (Stationary and Fugitive Source Inventory)

Emissions Unit	PM		PM_{10}		SO_2		NOx		CO		VOC		Lead		HAPs	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Stationary Baseline Project Totals	12.3	31.7	8.2	21.7	1.8	6.1	52.2	195.3	26.0	102.6	24.9	32.1	0.015	0.061	5.1	24.49
Fugitive Baseline Project Totals	13.9	32.1	4.3	11.9												
Total Baseline Potential Emissions	**26.2**	**63.8**	**12.6**	**33.6**	**1.766**	**6.1361**	**52.16**	**195.297**	**26.006**	**102.62**	**24.86**	**32.13**	**0.015**	**0.061**	**5.1**	**24.49**

Notes:

Baseline Potential Controlled Emissions developed from original PTC issued January 9, 2006.

Emerald Forest Products - Emmett
Table 4 Proposed Increase - TAPs

TAP	Wellons Boiler (new)		Dry Kiln (change)		Fire Pump (new)		Net		IDAPA 58.01.01.58 5/586 - EL	Comparison
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	
Acetaldehyde[1]	2.40E-02	1.05E-01	1.56E+00	1.14E+00	8.36E-04	2.09E-04	1.59E+00	1.24E+00	3.00E-03	EXCEEDS
Acrolein[1]	2.25E-03	9.86E-03	4.62E-02	3.36E-02	1.01E-04	2.52E-05	4.86E-02	4.35E-02	1.70E-02	EXCEEDS
Benzene	1.21E-01	5.31E-01			1.02E-03	2.54E-04	1.22E-01	5.31E-01	8.00E-04	EXCEEDS
Benzo(a)anthracene*	1.88E-06	8.22E-06			1.83E-06	4.58E-07	3.71E-06	8.68E-06		
Benzo(b)fluoranthene*	2.89E-06	1.26E-05			1.08E-07	2.70E-08	3.00E-06	1.27E-05		
Benzo(k)Fluoranthene*	1.04E-06	4.55E-06			1.69E-07	4.23E-08	1.21E-06	4.59E-06		
Benzo(a)pyrene *	7.51E-05	3.29E-04			2.05E-07	5.13E-08	7.53E-05	3.29E-04	2.00E-06	EXCEEDS
bis(2-Ethylhexyl)phthalate	1.36E-06	5.94E-06					1.36E-06	5.94E-06	2.80E-02	Below
1,3-Butadiene					4.26E-05	1.07E-05	4.26E-05	1.07E-05	2.40E-05	EXCEEDS
2-Butanone (MEK)	1.56E-04	6.83E-04					1.56E-04	6.83E-04	3.93E+01	Below
Carbon Tetrachloride	1.30E-03	5.69E-03					1.30E-03	5.69E-03	4.40E-04	EXCEEDS
Chlorobenzene	2.28E-02	9.99E-02					2.28E-02	9.99E-02	2.33E+01	Below
Chloroform	9.53E-04	4.17E-03					9.53E-04	4.17E-03	2.80E-04	EXCEEDS
Chlorine	8.08E-04	3.54E-03					8.08E-04	3.54E-03	2.00E-01	Below
Chrysene *	1.10E-06	4.81E-06			3.85E-07	9.62E-08	1.48E-06	4.90E-06		
Crotonaldehyde	2.86E-04	0.00E+00					2.86E-04	0.00E+00	3.80E-01	Below
Dibenzo(a,h)anthracene *	2.63E-07	1.15E-06			6.36E-07	1.59E-07	8.99E-07	1.31E-06		
1,2-Dichloroethane (ethylene dichloride)	8.37E-04	3.67E-03					8.37E-04	3.67E-03	2.50E-04	EXCEEDS
Dichloromethane	8.37E-03	0.00E+00					8.37E-03	0.00E+00	1.60E-03	EXCEEDS
1,2-Dichloropropane	9.53E-04	0.00E+00					9.53E-04	0.00E+00	2.31E+01	Below
Ethylbenzene	8.95E-04	3.92E-03					8.95E-04	3.92E-03	2.90E+01	Below
Formaldehyde[2]	3.75E-02	1.64E-01	3.18E-02	-1.60E-03	1.29E-03	3.22E-04	7.06E-02	1.63E-01	5.10E-04	EXCEEDS
Hydrogen chloride	1.93E-02	8.47E-02					1.93E-02	8.47E-02	5.00E-02	Below
Indeno(1,2,3,c,d)pyrene *	2.51E-06	1.10E-05			4.09E-07	1.02E-07	2.92E-06	1.11E-05		
Methanol[2]			7.66E-01	-1.42E-01			7.66E-01	-1.42E-01	1.73E+01	Below
Naphthalene	2.80E-03	1.23E-02			9.25E-05	2.31E-05	2.89E-03	1.23E-02	9.10E-05	EXCEEDS
Pentachlorophenol	1.47E-06	6.45E-06					1.47E-06	6.45E-06	3.30E-02	Below
Phenol	1.47E-03	6.45E-03					1.47E-03	6.45E-03	1.27E+00	Below
Propionaldehyde[1]	1.76E-03	7.71E-03	4.40E-02	3.20E-02			4.58E-02	3.97E-02	2.87E-02	EXCEEDS
Styrene	5.49E-02	2.40E-01					5.49E-02	2.40E-01	6.67E+00	Below
Tetrachloroethene	1.10E-03	4.81E-03					1.10E-03	4.81E-03	1.30E-02	Below
Trichloroethene	8.66E-04	0.00E+00					8.66E-04	0.00E+00	1.79E+01	Below
Toluene	2.66E-02	1.16E-01			4.46E-04	1.12E-04	2.70E-02	1.16E-01	2.50E+01	Below
2,4,6-Trichlorophenol	6.35E-07	2.78E-06					6.35E-07	2.78E-06	1.20E-03	Below
Vinyl Chloride	5.20E-04	2.28E-03					5.20E-04	2.28E-03	9.40E-04	Below
o-Xylene	7.22E-04	3.16E-03			3.11E-04	7.77E-05	1.03E-03	3.24E-03	2.90E+01	Below
PAH					9.05E-05	9.36E-07	9.05E-05	9.36E-07	9.10E-05	Below
*IDAPA POM (7-PAH)	8.47E-05	3.71E-04			3.74E-06	9.36E-07	8.85E-05	3.72E-04	2.00E-06	EXCEEDS

[1] Acetaldehyde, acrolein, and propionaldehye emissions from the lumber dry kilns were not included in the 2005 PTC.

[2] The original 2005 PTC included an hourly production rated of 281,600 BF over 32 hour shift and a maximum annual production rate of 36,800,000 board feet per year. The same emission factors that were used to calculate formaldehyde and methanol emissions in the original 2005 PTC for the dry kilns remain unchanged for this 2010 PTC Mod. This permit will include a maximum production limit of 32,000,000 board feet per year. The reduction in production rate resulted in a net decrease in formaldehyde and methanol emissions. Example calc. for formaldehyde hourly emissions (2005): 281,600 BF/32 hr * 0.0024 lb/1000 BF = 0.021 lb/hr. Example calc. for formaldehyde annual emissions (2005): 36,800,000 BF/yr * 0.0024 lb/1000 BF = 88.32 lb/yr = 0.04 ton/yr. Example calc. for methanol hourly emissions (2005): 281,600/32 hr * 0.058 lb/1000 BF = 0.51 lb/hr. Example calc. for methanol annual emissions (2005): 36,800,000 BF/yr * 0.058 lb/1000 BF = 2,134 lb/yr = 1.07 ton/yr.

Trace Element TAP	Wellons Boiler (new)		Dry Kiln (change)		Fire Pump (new)		Net		IDAPA 58.01.01.58 5/586 - EL	Comparison
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	
Antimony	4.41E-06	1.93E-05					4.41E-06	1.93E-05	3.30E-02	Below
Arsenic	1.23E-05	5.37E-05					1.23E-05	5.37E-05	1.50E-06	EXCEEDS
Barium	9.48E-05	0.00E+00					9.48E-05	0.00E+00	3.30E-02	Below
Beryllium	6.13E-07	2.69E-06					6.13E-07	2.69E-06	2.80E-05	Below
Cadmium (volatile metal)	1.18E-04	5.18E-04					1.18E-04	5.18E-04	3.70E-06	EXCEEDS
Chromium, total	1.17E-05	5.13E-05					1.17E-05	5.13E-05	3.30E-02	Below
Chromium, hexavalent	1.95E-06	0.00E+00					1.95E-06	0.00E+00	3.30E-02	Below
Cobalt	3.63E-06	1.59E-05					3.63E-06	1.59E-05	3.30E-03	Below
Copper	2.73E-05	0.00E+00					2.73E-05	0.00E+00	6.70E-02	Below
Iron	5.52E-04	0.00E+00					5.52E-04	0.00E+00	3.33E-01	Below
Lead (volatile metal)	1.39E-03	6.07E-03					1.39E-03	6.07E-03		
Manganese	8.92E-04	3.91E-03					8.92E-04	3.91E-03	3.33E-01	Below
Mercury (volatile metal)	1.01E-04	4.43E-04					1.01E-04	4.43E-04	7.00E-03	Below
Molybdenum	1.17E-06	0.00E+00					1.17E-06	0.00E+00	3.33E-01	Below
Nickel	1.84E-05	8.06E-05					1.84E-05	8.06E-05	2.70E-05	Below
Phosphorus	1.51E-05	6.60E-05					1.51E-05	6.60E-05	7.00E-03	Below
Potassium	2.18E-02	0.00E+00					2.18E-02	0.00E+00		
Selenium (volatile metal)	8.08E-05	3.54E-04					8.08E-05	3.54E-04	1.30E-02	Below
Silver	9.48E-04	0.00E+00					9.48E-04	0.00E+00	7.00E-03	Below
Sodium	2.01E-04	0.00E+00					2.01E-04	0.00E+00		
Tin	1.28E-05	0.00E+00					1.28E-05	0.00E+00	7.00E-03	Below
Vanadium	5.47E-07	0.00E+00					5.47E-07	0.00E+00	3.00E-03	Below
Yttrium	1.67E-07	0.00E+00					1.67E-07	0.00E+00	6.70E-02	Below
Zinc	2.34E-04	0.00E+00					2.34E-04	0.00E+00	6.67E-01	Below
Total Organic HAP								2.47E+00		
Total Trace Element HAP								1.16E-02		
Total HAPs								2.48E+00		

STATE OF IDAHO
DEPARTMENT OF ENVIRONMENTAL QUALITY
Toxic Air Pollutant Emissions Inventory

TABLE 1. PRE- AND POST PROJECT NON-CARCINOGENIC TAP EMISSIONS SUMMARY POTENTIAL TO EMIT

Non-Carcinogenic Toxic Air Pollutants (sum of all emissions)	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Non-Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Acrolein	1.12E+00	1.17E+00	4.86E-02	1.70E-02	Yes
Amonia	4.12E+00	4.12E+00	0.00E+00	1.20E+00	No
Antimony	4.27E-05	4.71E-05	4.41E-06	3.30E-02	No
Barium	9.20E-04	1.01E-03	9.48E-05	3.30E-02	No
2-Butanone (MEK)	1.51E-03	1.67E-03	1.56E-04	3.93E+01	No
Chlorine	7.84E-03	8.65E-03	8.08E-04	2.00E-01	No
Chlorobenzene	2.21E-01	2.44E-01	2.28E-02	2.33E+01	No
Chromium, Total	1.16E-04	1.28E-04	1.17E-05	3.30E-02	No
Cobalt	3.53E-05	3.89E-05	3.63E-06	3.30E-03	No
Copper	2.65E-04	2.92E-04	2.73E-05	6.70E-02	No
Crotonaldehyde	2.77E-03	3.06E-03	2.86E-04	3.80E-01	No
Dichlorobenzene	2.36E-06	2.36E-06	0.00E+00	2.00E+01	No
1,2-Dichloropropane	9.24E-03	1.01E-02	8.37E-04	2.31E+01	No
Ethylbenzene	8.68E-03	9.57E-03	8.95E-04	2.90E+01	No
n-Hexane	3.52E-03	3.52E-03	0.00E+00	1.20E+01	No
Hydrogen Chloride	1.88E-01	2.07E-01	1.93E-02	5.00E-02	No
Iron	5.35E-03	5.90E-03	5.52E-04	3.33E-01	No
Manganese	8.65E-03	9.54E-03	8.92E-04	3.33E-01	No
Mercury	9.80E-04	1.08E-03	1.01E-04	7.00E-03	No
Methanol	5.10E-01	1.28E+00	7.66E-01	1.73E+01	No
Molybdenum	1.14E-05	1.26E-05	1.17E-06	3.33E-01	No
Naphthalene	2.72E-02	3.01E-02	2.89E-03	9.10E-05	Yes
Pentachlorophenol	1.43E-05	1.58E-05	1.47E-06	3.30E-02	No
Phenol	1.43E-02	1.58E-02	1.47E-03	1.27E+00	No
Phosphorus	1.46E-04	1.61E-04	1.51E-05	7.00E-03	No
Propionaldehyde	1.71E-02	6.29E-02	4.58E-02	2.87E-02	Yes
Selenium	7.84E-04	8.65E-04	8.08E-05	1.30E-02	No
Silver	9.20E-03	1.01E-02	9.48E-04	7.00E-03	No
Styrene	5.32E-01	5.87E-01	5.49E-02	6.67E+00	No
Toluene	2.58E-01	2.85E-01	2.70E-02	2.50E+01	No
Tin	1.24E-04	1.37E-04	1.28E-05	7.00E-03	No
Vandium	5.30E-06	5.85E-06	5.47E-07	3.00E-03	No
o-Xylene	7.00E-03	8.03E-03	1.03E-03	2.90E+01	No
Yttrium	1.62E-06	1.79E-06	1.67E-07	6.70E-02	No
Zinc	2.72E-03	2.95E-03	2.34E-04	6.67E-01	No

STATE OF IDAHO
DEPARTMENT OF ENVIRONMENTAL QUALITY
Toxic Air Pollutant Emissions Inventory

TABLE 2. PRE- AND POST PROJECT CARCINOGENIC TAP EMISSIONS SUMMARY POTENTIAL TO EMIT

Carcinogenic Toxic Air Pollutants (sum of all emissions)	Pre-Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Post Project 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Change in 24-hour Average Emissions Rates for Units at the Facility (lb/hr)	Carcinogenic Screening Emission Level (lb/hr)	Exceeds Screening Level? (Y/N)
Acetaldehyde	2.32E-01	1.82E+00	1.59E+00	3.00E-03	Yes
Arsenic	1.19E-04	1.31E-04	1.23E-05	1.50E-06	Yes
Benzene	1.18E+00	1.30E+00	1.22E-01	8.00E-04	Yes
Benzo(a)pyrene	7.28E-04	8.03E-04	7.53E-05	2.00E-06	Yes
Beryllium	5.97E-06	6.59E-06	6.13E-07	2.80E-05	No
bis(2-Ethylhexyl)phthalate	1.32E-05	1.46E-05	1.36E-06	2.80E-02	No
1,3-Butadiene	0.00E+00	4.26E-05	4.26E-05	2.40E-05	Yes
Cadmium	1.15E-03	1.27E-03	1.18E-04	3.70E-06	Yes
Carbon Tetrachloride	1.26E-02	1.39E-02	1.30E-03	4.40E-04	Yes
Chloroform	9.24E-03	1.02E-02	9.53E-04	2.80E-04	Yes
Chromium, Hexavalent	1.89E-05	2.09E-05	1.95E-06	3.30E-02	No
1,2-Dichloroethane	8.12E-03	8.96E-03	8.37E-04	2.50E-04	Yes
Dichloromethane	8.12E-02	8.96E-02	8.37E-03	1.60E-03	Yes
Formaldehyde	1.25E+00	1.32E+00	7.06E-02	5.10E-04	Yes
Nickel	1.83E-04	2.01E-04	1.84E-05	2.70E-05	No
Tetrachloroethylene	1.06E-02	1.17E-02	1.10E-03	1.30E-02	No
Trichloroethylene	8.40E-03	9.27E-03	8.66E-04	1.79E+01	No
2,4,6-Trichlorophenol	6.16E-06	6.80E-06	6.35E-07	1.20E-03	No
Vinyl Chloride	5.04E-03	5.56E-03	5.20E-04	9.40E-04	No
PAH	0.00E+00	9.05E-05	9.05E-05	9.10E-05	No

STATE OF IDAHO
DEPARTMENT OF ENVIRONMENTAL QUALITY
HAP Emissions Inventory

TABLE 3. HAP POTENTIAL TO EMIT EMISSIONS SUMMARY

HAP Pollutants	PTE (T/yr)
Acetaldehyde	1.24E+00
Acrolein	4.35E-02
Benzene	5.31E-01
Benzo(a)anthracene*	8.68E-06
Benzo(b)fluoranthene*	1.27E-05
Benzo(k)Fluoranthene*	4.59E-06
Benzo(a)pyrene *	3.29E-04
bis(2-Ethylhexyl)phthalate	5.94E-06
1,3-Butadiene	1.07E-05
2-Butanone (MEK)	6.83E-04
Carbon Tetrachloride	5.69E-03
Chlorobenzene	9.99E-02
Chloroform	4.17E-03
Chlorine	3.54E-03
Chrysene *	4.90E-06
Crotonaldehyde	0.00E+00
Dibenzo(a,h)anthracene *	1.31E-06
1,2-Dichloroethane (ethylene dichloride)	3.67E-03
Dichloromethane	0.00E+00
1,2-Dichloropropane	0.00E+00
Ethylbenzene	3.92E-03
Formaldehyde	1.63E-01
Hydrogen chloride	8.47E-02
Indeno(1,2,3,c,d)pyrene *	1.11E-05
Methanol	-1.42E-01
Naphthalene	1.23E-02
Pentachlorophenol	6.45E-06
Phenol	6.45E-03
Propionaldehyde	3.97E-02
Styrene	2.40E-01
Tetrachloroethene	4.81E-03
Trichloroethene	0.00E+00
Toluene	1.16E-01
2,4,6-Trichlorophenol	2.78E-06
Vinyl Chloride	2.28E-03
o-Xylene	3.24E-03
PAH	9.36E-07
*IDAPA POM (7-PAH)	3.72E-04

Antimony	1.93E-05
Arsenic	5.37E-05
Barium	0.00E+00
Beryllium	2.69E-06
Cadmium (volatile metal)	5.18E-04
Chromium, total	5.13E-05
Chromium, hexavalent	0.00E+00
Cobalt	1.59E-05
Copper	0.00E+00
Iron	0.00E+00
Lead (volatile metal)	6.07E-03
Manganese	3.91E-03
Mercury (volatile metal)	4.43E-04
Molybdenum	0.00E+00
Nickel	8.06E-05
Phosphorus	6.60E-05
Potassium	0.00E+00
Selenium (volatile metal)	3.54E-04
Silver	0.00E+00
Sodium	0.00E+00
Tin	0.00E+00
Vanadium	0.00E+00
Yttrium	0.00E+00
Zinc	0.00E+00

Emerald Forest Products, Inc.
104 kW Emergency Fire Pump Generator

Generator Name	**104**
Model No.	**JU4H**
Brake Horsepower Rating (hp)	140
Fuel Type	Distillate #2
- maximum sulfur content	0.0015%
Maximum Firing Rate (gals/hr)	7.8
Maximum Heat Input Rating (Btu/hr)	1,090,600
Maximum Hours of Operation	500
Maximum Firing Rate (gals/yr)	3,895
Annual Operation Limit (hrs/yr)	500
Annual Firing Rate (gals/yr)	3,895
Heat Value of Fuel (Btu/gal)	140,000

John Deere Engine

Uncontrolled Potential to Emit				
Criteria Pollutant	**Emission Factor[1] (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**
Total Particulate Matter (PM_{10})[2]	0.31	0.34	169	0.08
Nitrogen Oxides (NOx)	4.41	4.81	2,405	1.20
Sulfur Oxides	0.29	0.32	158	0.08
Carbon Monoxide (CO)	0.95	1.04	518	0.26
TOC[3]	0.350	0.38	191	0.10

		Uncontrolled Potential to Emit				
Compound	**Emission Factor[4] (lb/MMBtu)**	**Emission Rate (lb/hr)**	**Emission Rate (lb/yr)**	**Emission Rate (ton/yr)**	**IDAPA 58.01.01.585/ 586 - EL (lb/hr)**	**PTE Emission Rate vs. EL**
1,3-Butadiene	3.91E-05	4.26E-05	2.13E-02	1.07E-05	2.40E-05	**Exceeds**
Acetaldehyde	7.67E-04	8.36E-04	4.18E-01	2.09E-04	3.00E-03	Below
Acrolein	9.25E-05	1.01E-04	5.04E-02	2.52E-05	1.70E-02	Below
Benzene	9.33E-04	1.02E-03	5.09E-01	2.54E-04	8.00E-04	**Exceeds**
Benzo(a)pyrene	1.88E-07	2.05E-07	1.03E-04	5.13E-08	2.00E+06	Below
Formaldehyde	1.18E-03	1.29E-03	6.43E-01	3.22E-04	5.10E-04	**Exceeds**
Naphthalene	8.48E-05	9.25E-05	4.62E-02	2.31E-05	3.33E+00	Below
Propylene	2.58E-03	2.81E-03	1.41E+00	7.03E-04		
Toluene	4.09E-04	4.46E-04	2.23E-01	1.12E-04	2.50E+01	Below
Xylenes	2.85E-04	3.11E-04	1.55E-01	7.77E-05	2.90E+01	Below
Benzo(a)anthracene	1.68E-06	1.83E-06	9.16E-04	4.58E-07		
Chrysene	3.53E-07	3.85E-07	1.92E-04	9.62E-08		
Benzo(b)fluoranthene	9.91E-08	1.08E-07	5.40E-05	2.70E-08		
Benzo(k)fluoranthene	1.55E-07	1.69E-07	8.45E-05	4.23E-08		
Indeno(1,2,3-cd)pyrene	3.75E-07	4.09E-07	2.04E-04	1.02E-07		
Dibenz(a,h)anthracene	5.83E-07	6.36E-07	3.18E-04	1.59E-07		
IDAPA POM (7-PAH)[5]		3.74E-06	1.87E-03	9.36E-07	2.00E+06	Below
Total PAH[6]	8.30E-05	9.05E-05	4.53E-02	2.26E-05	9.10E-05	Below
HAPs				**0.002**		

Notes:

[1] Criteria emission factors ffrom EPA AP-42, Section 3.3 Gasoline and Diesel Industrial Engines,Table 3.3-1.

[2] PM emission factor is assumed to equal PM_{10}.

[3] TOC is assumed to be equal to VOC, Emission factor for TOC for exhaust only.

[4] Toxic emission factors were utilized from EPA AP-42, Section 3.3 Gasoline and Diesel Industrial Engines,Table 3.3-2.

[5] Polycyclic Organic Matter (POM) is the sum of benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and benzo(a)pyrene.

[6] Based on removing benzo(a)pyrene and naphthalene from Total PAH, EPA AP-42, Section 3.3 Gasoline and Diesel Industrial Engines,Table 3.3-2.

Emerald Forest Products - Emmett

Wood Boiler Hazardous Air Pollutants (HAP) Potential to Emit Calculations

Hours of Operation	8760	hr/yr
Heat Input =	28.87	MMBtu/hr

Organic Compound HAP	AP42 Emission Factor[1] lb/MMBTU	NCASI Emission Factor[2] lb/MMBTU	CAA 112(b) HAP?	Emissions lb/hr	Emissions t/yr	IDAPA 58.01.01.585/ 586 - EL lb/hr	Comparison
Acenaphthene	9.10E-07		N	2.63E-05			
Acenaphthylene	5.00E-06		N	1.44E-04			
Acetaldehyde	8.30E-04		Y	2.40E-02	1.05E-01	3.00E-03	**Exceeds**
Acetophenone	3.20E-09		Y	9.24E-08	4.05E-07		
Acrolein		7.80E-05	Y	2.25E-03	9.86E-03	0.017	Below
Anthracene	3.00E-06		N	8.66E-05			
Benzene	4.20E-03		Y	1.21E-01	5.31E-01	8.00E-04	**Exceeds**
Benzo(a)anthracene *	6.50E-08		Y	1.88E-06	8.22E-06		
Benzo(a)pyrene *	2.60E-06		Y	7.51E-05	3.29E-04	2.00E-06	**Exceeds**
Benzo(b)fluoranthene *	1.00E-07		Y	2.89E-06	1.26E-05		
Benzo(e)pyrene	2.60E-09		Y	7.51E-08	3.29E-07		
Benzo(g,h,i)perylene	9.30E-08		Y	2.68E-06	1.18E-05		
Benzo(j,k)fluoranthene	1.60E-07		Y	4.62E-06	2.02E-05		
Benzo(k)fluoranthene *	3.60E-08		Y	1.04E-06	4.55E-06		
bis(2-Ethylhexyl)phthalate	4.70E-08		Y	1.36E-06	5.94E-06	2.80E-02	Below
Bromomethane (methylene bromide)	1.50E-05		Y	4.33E-04	1.90E-03		
2-Butanone (MEK)	5.40E-06		Y	1.56E-04	6.83E-04	39.3	Below
Carbazole	1.80E-06		N	5.20E-05			
Carbon Tetrachloride	4.50E-05		Y	1.30E-03	5.69E-03	4.40E-04	**Exceeds**
Chlorobenzene	7.90E-04		Y	2.28E-02	9.99E-02	23.3	Below
Chloroform	3.30E-05		Y	9.53E-04	4.17E-03	2.80E-04	**Exceeds**
Chlorine	2.80E-05		Y	8.08E-04	3.54E-03	0.2	Below
Chloromethane	2.30E-05		N	6.64E-04			
2-Chloronaphthalene	2.40E-09		N	6.93E-08			
Chrysene *	3.80E-08		Y	1.10E-06	4.81E-06		
Crotonaldehyde	9.9E-06		N	2.86E-04		0.38	Below
Decachlorobiphenyl	2.70E-10		N	7.79E-09			
Dibenzo(a,h)anthracene *	9.10E-09		Y	2.63E-07	1.15E-06		
Dichlorobiphenyl	7.40E-10		N	2.14E-08			
1,2-Dichloroethane (ethylene dichlorid	2.90E-05		Y	8.37E-04	3.67E-03	2.50E-04	**Exceeds**
Dichloromethane	2.90E-04		N	8.37E-03		1.60E-03	**Exceeds**
1,2-Dichloropropane	3.30E-05		N	9.53E-04		23.133	Below
2,4-Dinitrophenol	1.80E-07		Y	5.20E-06	2.28E-05		
Ethylbenzene	3.10E-05		Y	8.95E-04	3.92E-03	29	Below
Fluoranthene	1.60E-06		N	4.62E-05			
Fluorene	3.40E-06		N	9.82E-05			
Formaldehyde		1.30E-03	Y	3.75E-02	1.64E-01	5.10E-04	**Exceeds**
Heptachlorobiphenyl	6.60E-11		N	1.91E-09			
Hexachlorobiphenyl	5.50E-10		N	1.59E-08			
Heptachlorodibenzo-p-dioxins	2.00E-09		Y	5.77E-08	2.53E-07		
Heptachlorodibenzo-p-furans	2.40E-10		Y	6.93E-09	3.03E-08		
Hexachlorodibenzo-p-dioxins	1.60E-06		Y	4.62E-05	2.02E-04		
Hexachlorodibenzo-p-furans	2.80E-10		Y	8.08E-09	3.54E-08		
Hydrogen chloride		6.70E-04	Y	0.02	8.47E-02	0.05	Below
Indeno(1,2,3,c,d)pyrene *	8.70E-08		Y	2.51E-06	1.10E-05		
2-Methylnaphthalene	1.60E-07		N	4.62E-06			
Monochlorobiphenyl	2.20E-10		N	6.35E-09			
Naphthalene	9.70E-05		Y	2.80E-03	1.23E-02	9.10E-05	**Exceeds**
4-Nitrophenol	1.10E-07		Y	3.18E-06	1.39E-05		
Octachlorodibenzo-p-dioxins	6.60E-08		Y	1.91E-06	8.35E-06		
Octachlorodibenzo-p-furans	8.80E-11		Y	2.54E-09	1.11E-08		
Pentachlorodibenzo-p-dioxins	1.50E-09		Y	4.33E-08	1.90E-07		
Pentachlorodibenzo-p-furans	4.20E-10		Y	1.21E-08	5.31E-08		
Pentachlorobiphenyl	1.20E-09		N	3.46E-08			
Pentachlorophenol	5.10E-08		Y	1.47E-06	6.45E-06	0.033	Below
Perylene	5.20E-10		N	1.50E-08			
Phenanthrene	7.00E-06		N	2.02E-04			
Phenol	5.10E-05		Y	1.47E-03	6.45E-03	1.27	Below
Propionaldehyde	6.10E-05		Y	1.76E-03	7.71E-03	0.0287	Below
Pyrene	3.70E-06		N	1.07E-04			
Styrene	1.90E-03		Y	5.49E-02	2.40E-01	6.67	Below
2,3,7,8-Tetrachlorodibenzo-p-dioxins	8.60E-12		Y	2.48E-10	1.09E-09		
Tetrachlorodibenzo-p-dioxins	4.70E-10		Y	1.36E-08	5.94E-08		
2,3,7,8-Tetrachlorodibenzo-p-furans	9.00E-11		Y	2.60E-09	1.14E-08		
Tetrachlorodibenzo-p-furans	7.50E-10		Y	2.17E-08	9.48E-08		
Tetrachlorobiphenyl	2.50E-09		N	7.22E-08			
Tetrachloroethene	3.80E-05		Y	1.10E-03	4.81E-03	1.30E-02	Below
Trichlorobiphenyl	2.60E-09		N	7.51E-08			
1,1,1-Trichloroethane	3.10E-05		N	8.95E-04			
Trichloroethylene	3.00E-05		N	8.66E-04		17.93	Below
Toluene	9.20E-04		Y	2.66E-02	1.16E-01	25	Below
2,4,6-Trichlorophenol	2.20E-08		Y	6.35E-07	2.78E-06	1.20E-03	Below
Vinyl Chloride	1.80E-05		Y	5.20E-04	2.28E-03	9.40E-04	Below
o-Xylene	2.50E-05		Y	7.22E-04	3.16E-03	29	Below
*IDAPA POM (7-PAH)			Y	8.47E-05	3.71E-04	2.00E-06	**Exceeds**

Emerald Forest Products - Emmett

Wood Boiler Hazardous Air Pollutants (HAP) Potential to Emit Calculations

Hours of Operation 8760 hr/yr
Heat Input = 28.87 MMBtu/hr

Trace Element HAP	AP-42 Emission Factor lb/MMBTU	Assumed no ESP Control**	CAA 112(b) HAP?	HAP Emissions lb/hr	HAP Emissions t/yr	IDAPA 58.01.01.585/ 586 - EL lb/hr	PTE Emission Rate vs. EL
Antimony	7.90E-06		Y	4.41E-06	1.93E-05	0.033	Below
Arsenic	2.20E-05		Y	1.23E-05	5.37E-05	1.50E-06	**Exceeds**
Barium	1.7E-04		N	9.48E-05		0.033	Below
Beryllium	1.10E-06		Y	6.13E-07	2.69E-06	2.80E-05	Below
Cadmium (volatile metal)	4.10E-06	X	Y	1.18E-04	5.18E-04	3.70E-06	**Exceeds**
Chromium, total	2.10E-05		Y	1.17E-05	5.13E-05	0.033	Below
Chromium, hexavalent	3.50E-06		N	1.95E-06		0.033	Below
Cobalt	6.50E-06		Y	3.63E-06	1.59E-05	0.0033	Below
Copper	4.9E-05		N	2.73E-05		0.067	Below
Iron	9.9E-04		N	5.52E-04		0.333	Below
Lead (volatile metal)	4.80E-05	X	Y	1.39E-03	6.07E-03		
Manganese	1.60E-03		Y	8.92E-04	3.91E-03	0.333	Below
Mercury (volatile metal)	3.50E-06	X	Y	1.01E-04	4.43E-04	0.007	Below
Molybdenum	2.1E-06		N	1.17E-06		0.333	Below
Nickel	3.30E-05		Y	1.84E-05	8.06E-05	2.70E-05	Below
Phosphorus	2.70E-05		Y	1.51E-05	6.60E-05	0.007	Below
Potassium	3.9E-02		N	2.18E-02			
Selenium (volatile metal)	2.80E-06	X	Y	8.08E-05	3.54E-04	0.013	Below
Silver	1.7E-03		N	9.48E-04		0.007	Below
Sodium	3.6E-04		N	2.01E-04			
Tin	2.3E-05		N	1.28E-05		0.007	Below
Vanadium	9.8E-07		N	5.47E-07		0.003	Below
Yttrium	3.0E-07		N	1.67E-07		0.067	Below
Zinc	4.2E-04		N	2.34E-04		0.667	Below

Total Organic HAP **1.41 t/yr**
Total Trace Element HAP **0.012 t/yr**
Total HAPs **1.42 t/yr**

Notes:

[1] *AP-42, Fifth Edition, Volume I, Chapter 1: External Combustion Sources, 1.6 Wood Residue Combustion In Boilers, Table 1.6-3 and Table 1.6-4*

[2] *NCASI, Compilation of 'Air Toxic' and Total Hydrocarbon Emissions Data for Sources at Kraft, Sulfite and Non-Chemical Pulp Mills-An Update, Technical Bulletin No. 858, February 2003.*

* Polycyclic Organic Matter (POM) is the sum of benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, and benzo(a)pyrene.

**Assumed ESP Particulate Control - Based on IDEQ PM factors of 8.8 lb/hr (uncontrolled), 0.17 lb/hr (controlled) 98%

Emerald Forest Products - Emmett

Wellons Boiler Data Sheet

Hours of Operation 8760 hours/year

	Wellons Stoker (controlled)	
Fuel Input (HHV) (MMBtu/hr)	28.87	
Fuel Analysis (Biomass Hog Fuel)		
HHV dry (Btu/lb)	8934	
HHV wet (Btu/lb)		
Steam Input Rating 25,000 (lb/hr)	25000	Maximum Steam Rating
Moisture (%)	39.8	Hazen Research 2004
Initial deformation temp for ash (F)		
Carbon (wt-% dry basis)	56.2	
Hydrogen (wt-% dry basis)	5.0	
Oxygen (wt-% dry basis)	36.3	
Nitrogen (wt-% dry basis)	0.4	
Sulphur (wt-% dry basis)	0.020	
Ash (wt-% dry basis)	2.1	
Chlorine (wt-% dry basis)	0.0	
Stack Parameters		
O_2 (%)	10.67	
CO_2 (%)	9.90	
Stack Gas Moisture (%)	13	
Stack Temperature (F)	322	
Stack Gas Velocity (ft/min)	2395.0	
Actual Gas Flow (ft^3/min)	16459.0	
Dry Std. Gas Flow (ft^3/min)	9123	
Emission Rates		
CO (lb/hr)	3.37	Source Test Longview Fibre, 7/21/04
CO (tpy)	14.8	
SO2 (lb/hr)	0.15	Source Test Longview Fibre, 7/21/04
SO2 (tpy)	0.66	
NOx (lb/hr)	5.25	Source Test Longview Fibre, 7/21/04
NOx (tpy)	23.0	
Total PM (lb/hr)	0.37	Source Test Longview Fibre, 7/21/04
Total PM (tpy)	1.62	
VOC (lb/hr)	0.14	Source Test Longview Fibre, 7/21/04
VOC (tpy)	0.61	

Emerald Forest Products - Emmett

Sawmill Sawdust Bin Venting - Point Source

Each unit is 200 cubic feet. Capacity of bin is 40 units or 8000 cubic feet

Wood is 35% moisture

Each bin will be filled every 40 hours of operation (not continuosly).

Bulk density of wood is equal to the density of dry wood (2.056 lb/bd-ft) divided by the moisture content of the wood.

Bulk density:	38	lb/cf
Annual hours of operation (10 hr/day, 5 day/wk)	2600	hour/year

Maximum hourly production rate: $\frac{99 \text{ ton bone-dry wood}}{40 \text{ hr}}$

Maximum annual production rate: 6,415 $\frac{\text{ton bone-dry wood}}{\text{yr}}$

Idaho DEQ Emission Factor Guide for Wood Industry (1/1997), Waste Wood, Bin Venting

PM =	1	lb/tons handled
PM10 =	0.58	lb/tons handled

Potential Emissions

Sawmill Sawdust Bin Venting - Point Source	lb/hr	tpy
PM	2.47	3.21
PM10	1.43	1.86

Potential Emissions Calculations:

Maximum Hourly PM emissions:

$$\frac{99 \text{ ton bone-dry wood}}{40 \text{ hr}} \times \frac{1.00 \text{ lb PM}}{\text{tons handled}} = 2.467 \text{ lb/hr PM}$$

Maximum Annual PM emissions:

$$6{,}415 \frac{\text{ton bone-dry wood}}{\text{yr}} \times \frac{1.00 \text{ lb PM}}{\text{tons handled}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 3.207 \text{ tpy PM}$$

Maximum Hourly PM10 emissions:

$$\frac{99 \text{ ton bone-dry wood}}{40 \text{ hr}} \times \frac{0.58 \text{ lb PM10}}{\text{tons handled}} = 1.431 \text{ lb/hr PM10}$$

Maximum Annual PM10 emissions:

$$6{,}415 \frac{\text{ton bone-dry wood}}{\text{yr}} \times \frac{0.58 \text{ lb PM10}}{\text{tons handled}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 1.860 \text{ tpy PM10}$$

Emerald Forest Products - Emmett

Sawmill Sawdust Bin - Fugitive Source

Each unit is 200 cubic feet. Capacity of bin is 40 units or 8000 cubic feet
Wood is 35% moisture
Each bin will be filled every 40 hours of operation (not continuosly).
Bulk density of wood is equal to the density of dry wood (2.056 lb/bd-ft) divided by the moisture content of the wood.

Bulk density:	38	lb/cf
Annual hours of operation (10 hr/day, 5 day/wk)	2600	hour/year

Maximum hourly production rate: $\frac{99}{40}$ $\frac{\text{ton bone-dry wood}}{\text{hr}}$

Maximum annual production rate: 6,415 $\frac{\text{ton bone-dry wood}}{\text{yr}}$

AP-42 Section 13.2.4 (Aggregate Handling and Storage Piles)

Wind Speed	10.0	mph
Material moisture conter	35.0	%
PM Particle size multipli	0.74	
PM =	0.004	lb/ton bone-dry wood
PM10 Particle size multi	0.35	
PM10 =	0.002	lb/ton bone-dry wood

Division of Environmental Protection, Office of Air Quality for West Virginia, Reference Document for General Permit Number G10-B, for the construction, modification, relocation, operation, and prevention and control of air pollution from the operation of coal preparation plants and coal handling operations

Control Factor = 70% Based on full enclosure from truck

Potential Emissions

Sawmill Sawdust Bin - Fugitive Source	lb/hr	tpy
PM	0.007	0.009
PM10	0.003	0.004

Potential Emissions Calculations:

Maximum Hourly PM emissions:

$$\frac{99}{40}\ \frac{\text{ton bone-dry wood}}{\text{hr}} \times \frac{0.004\ \text{lb PM}}{\text{ton bone-dry wood}} \times 70\% = 0.007\ \text{lb/hr PM}$$

Maximum Annual PM emissions:

$$6{,}415\ \frac{\text{ton bone-dry wood}}{\text{yr}} \times \frac{0.004\ \text{lb PM}}{\text{ton bone-dry wood}} \times \frac{1\ \text{ton}}{2000\ \text{lb}} \times 70\% = 0.009\ \text{tpy PM}$$

Maximum Hourly PM10 emissions:

$$\frac{99}{40}\ \frac{\text{ton bone-dry wood}}{\text{hr}} \times \frac{0.002\ \text{lb PM10}}{\text{ton bone-dry wood}} \times 70\% = 0.003\ \text{lb/hr PM10}$$

Maximum Annual PM10 emissions:

$$6{,}415\ \frac{\text{ton bone-dry wood}}{\text{yr}} \times \frac{0.002\ \text{lb PM10}}{\text{ton bone-dry wood}} \times \frac{1\ \text{ton}}{2000\ \text{lb}} \times 70\% = 0.004\ \text{tpy PM10}$$

Emerald Forest Products - Emmett

Sawmill Chip Bin - Point Source

Each unit is 200 cubic feet. Capacity of bin is 56 units or 11,200 cubic feet

Wood is 35% moisture

Each bin will be filled every 40 hours of operation (not continuosly).

Bulk density of wood is equal to the density of dry wood (2.056 lb/bd-ft) divided by the moisture content of the wood.

Bulk density:	38	lb/cf
Annual hours of operation (10 hr/day, 5 day/wk)	2600	hour/year

Maximum hourly production rate: $\frac{138 \text{ ton bone-dry wood}}{40 \text{ hr}}$

Maximum annual production rate: 8,981 $\frac{\text{ton bone-dry wood}}{\text{yr}}$

Idaho DEQ Emission Factor Guide for Wood Industry (1/1997), Waste Wood, Bin Venting

PM =	1	lb/tons handled
PM10 =	0.58	lb/tons handled

Potential Emissions

Sawmill Chip Bin - Point Source	lb/hr	tpy
PM	3.45	4.49
PM10	2.00	2.60

Potential Emissions Calculations:

Maximum Hourly PM emissions:

$$\frac{138 \text{ ton bone-dry wood}}{40 \text{ hr}} \times \frac{1.00 \text{ lb PM}}{\text{tons handled}} = 3.454 \text{ lb/hr PM}$$

Maximum Annual PM emissions:

$$8{,}981 \frac{\text{ton bone-dry wood}}{\text{yr}} \times \frac{1.00 \text{ lb PM}}{\text{tons handled}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 4.490 \text{ tpy PM}$$

Maximum Hourly PM10 emissions:

$$\frac{138 \text{ ton bone-dry wood}}{40 \text{ hr}} \times \frac{0.58 \text{ lb PM10}}{\text{tons handled}} = 2.003 \text{ lb/hr PM10}$$

Maximum Annual PM10 emissions:

$$8{,}981 \frac{\text{ton bone-dry wood}}{\text{yr}} \times \frac{0.58 \text{ lb PM10}}{\text{tons handled}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 2.604 \text{ tpy PM10}$$

Emerald Forest Products - Emmett

Sawmill Chip Bin - Fugitive Source

Each unit is 200 cubic feet. Capacity of bin is 56 units or 11,200 cubic feet
Wood is 35% moisture
Each bin will be filled every 40 hours of operation (not continuosly).
Bulk density of wood is equal to the density of dry wood (2.056 lb/bd-ft) divided by the moisture content of the wood.

Bulk density:	38	lb/cf
Annual hours of operation (10 hr/day, 5 day/wk)	2600	hour/year

Maximum hourly production rate: $\frac{138 \text{ ton bone-dry wood}}{40 \text{ hr}}$

Maximum annual production rate: 8,981 $\frac{\text{ton bone-dry wood}}{\text{yr}}$

AP-42 Section 13.2.4 (Aggregate Handling and Storage Piles)

Wind Speed	10.0	mph
Material moisture conte	35.0	%
PM Particle size multip	0.74	
PM =	0.004	lb/ton bone-dry wood
PM10 Particle size mul	0.35	
PM10 =	0.002	lb/ton bone-dry wood

Division of Environmental Protection, Office of Air Quality for West Virginia, Reference Document for General Permit Number G10-B, for the construction, modification, relocation, operation, and prevention and control of air pollution from the operation of coal preparation plants and coal handling operations
Control Factor = 70% Based on partial enclosure from truck

Potential Emissions

Sawmill Chip Bin - Fugitive Source	lb/hr	tpy
PM	0.009	0.012
PM10	0.004	0.006

Potential Emissions Calculations:

Maximum Hourly PM emissions:

$$\frac{138}{40}\ \frac{\text{ton bone-dry wood}}{\text{hr}} \times \frac{0.00\ \text{lb PM}}{\text{ton bone-dry wood}} \times 70\% = 0.009\ \text{lb/hr PM}$$

Maximum Annual PM emissions:

$$8{,}981\ \frac{\text{ton bone-dry wood}}{\text{yr}} \times \frac{0.00\ \text{lb PM}}{\text{ton bone-dry wood}} \times 70\% \times \frac{1\ \text{ton}}{2000\ \text{lb}} = 0.012\ \text{tpy PM}$$

Maximum Hourly PM10 emissions:

$$\frac{138}{40}\ \frac{\text{ton bone-dry wood}}{\text{hr}} \times \frac{0.00\ \text{lb PM10}}{\text{ton bone-dry wood}} \times 70\% = 0.004\ \text{lb/hr PM10}$$

Maximum Annual PM10 emissions:

$$8{,}981\ \frac{\text{ton bone-dry wood}}{\text{yr}} \times \frac{0.00\ \text{lb PM10}}{\text{ton bone-dry wood}} \times 70\% \times \frac{1\ \text{ton}}{2000\ \text{lb}} = 0.006\ \text{tpy PM10}$$

Emerald Forest Products - Emmett

Load Out Planer Shavings Bin

Each unit is 200 cubic feet. Capacity of bin is 24 units or 4,800 cubic feet
Wood is approximately 15% moisture
Each bin will be filled every 40 hours of operation (not continuosly).
Bulk density of wood is equal to the density of dry wood (2.056 lb/bd-ft) divided by the moisture content of the wood.

Bulk density:	29	lb/cf
Annual hours of operation (10 hr/day, 5 day/wk)	2600	hour/year

Maximum hourly production rate: $\frac{59}{40}$ $\frac{\text{ton bone-dry wood}}{\text{hr}}$

Maximum annual production rate: 3,849 $\frac{\text{ton bone-dry wood}}{\text{yr}}$

AP-42 Section 13.2.4 (Aggregate Handling and Storage Piles)

Wind Speed	10.0	mph
Material moisture con	15.0	%
PM Particle size mult	0.74	
PM =	0.004	lb/ton bone-dry wood
PM10 Particle size m	0.35	
PM10 =	0.002	lb/ton bone-dry wood

Division of Environmental Protection, Office of Air Quality for West Virginia, Reference Document for General Permit Number G10-B, for the construction, modification, relocation, operation, and prevention and control of air pollution from the operation of coal preparation plants and coal handling operations
Control Factor = 70% Based on full enclosure from truck

Potential Emissions

Load Out Planer Shavings Bin	lb/hr	tpy
PM	0.005	0.006
PM10	0.002	0.003

Potential Emissions Calculations:

Maximum Hourly PM emissions:

$$\frac{59}{40}\ \frac{\text{ton bone-dry wood}}{\text{hr}} \times \frac{0.004\ \text{lb PM}}{\text{ton bone-dry wood}} \times 70\% = 0.005\ \text{lb/hr PM}$$

Maximum Annual PM emissions:

$$3{,}849\ \frac{\text{ton bone-dry wood}}{\text{yr}} \times \frac{0.004\ \text{lb PM}}{\text{ton bone-dry wood}} \times \frac{1\ \text{ton}}{2000\ \text{lb}} \times 70\% = 0.006\ \text{tpy PM}$$

Maximum Hourly PM10 emissions:

$$\frac{59}{40}\ \frac{\text{ton bone-dry wood}}{\text{hr}} \times \frac{0.002\ \text{lb PM10}}{\text{ton bone-dry wood}} \times 70\% = 0.002\ \text{lb/hr PM10}$$

Maximum Annual PM10 emissions:

$$3{,}849\ \frac{\text{ton bone-dry wood}}{\text{yr}} \times \frac{0.002\ \text{lb PM10}}{\text{ton bone-dry wood}} \times \frac{1\ \text{ton}}{2000\ \text{lb}} \times 70\% = 0.003\ \text{tpy PM10}$$

Emerald Forest Products - Emmett

Wellons Fuel Boxes

Unloading residual wood products into 2 fuel boxes based on EFP maximum production rate of 13,000 cubic feet per hour
Wood is 35% moisture
Fuel boxes filled a maximum of 3 times per day
Bulk density of wood is equal to the density of dry wood (2.056 lb/bd-ft) divided by the moisture content of the wood.

Bulk density:	38	lb/cf
Operating days per year (5 days/wk, 52 wk/year)	260	day/year

Maximum daily production rate: $\frac{481 \text{ ton bone-dry wood}}{1 \text{ day}}$

Maximum annual production rate: 125,087 $\frac{\text{ton bone-dry wood}}{\text{yr}}$

AP-42 Section 13.2.4 (Aggregate Handling and Storage Piles)

Wind Speed	10.0	mph
Material moisture content	35.0	%
PM Particle size multiplier	0.74	
PM =	0.0039	lb/ton bone-dry wood
PM10 Particle size multiplier	0.35	
PM10 =	0.002	lb/ton bone-dry wood

Potential Emissions

Wellons Fuel Boxes	lb/hr	tpy
PM	0.078	0.244
PM10	0.037	0.116

Potential Emissions Calculations:

Maximum Hourly PM emissions:

$$\frac{481 \text{ ton bone-dry wood}}{1 \text{ day}} \times \frac{0.004 \text{ lb PM}}{\text{ton bone-dry wood}} = 1.879 \text{ lb/day} = 0.0783 \text{ lb/hr PM}$$

Maximum Annual PM emissions:

$$125{,}087 \text{ ton bone-dry wood} \times \frac{0.004 \text{ lb PM}}{\text{ton bone-dry wood}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 0.244 \text{ tpy PM}$$

Maximum Hourly PM10 emissions:

$$\frac{481 \text{ ton bone-dry wood}}{1 \text{ day}} \times \frac{0.002 \text{ lb PM10}}{\text{ton bone-dry wood}} = 0.889 \text{ lb/day} = 0.037 \text{ lb/hr PM10}$$

Maximum Annual PM10 emissions:

$$125{,}087 \text{ ton bone-dry wood} \times \frac{0.002 \text{ lb PM10}}{\text{ton bone-dry wood}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 0.116 \text{ tpy PM10}$$

Emerald Forest Products - Emmett

Total of 2 identical units

Kilns will be Everton-Moore with computerized controls. Manufacturer flowrate will be 400 acfm heated steam from kilns in the lumber drying cycle.

The kiln drying temperature cycle reaches approximately 200 degrees Fahrenheit. The exit temperature drops approximately 20 degrees resulting in an exit temperature of 180 degrees Fahrenheit or 355 degree Kelvin.

Maximum hourly production rate:	22,000	BF/hr total for 2 kilns	Self-imposed limit
Maximum annual production rate:	32,000,000	BF/yr total for 2 kilns	Self-imposed limit

Emission factors provided in Intermountain Forest Association report "Small-scale Kiln Study Utilizing Ponderosa Pine, Lodgepole Pine, White Fir, and Douglas Fir" 9/29/2000.

	VOC (lb/MBF)	Methanol (lb/MBF)	Formaldehyde (lb/MBF)
Ponderosa Pine	1.38	0.065	0.0029
White Fir	0.26	0.122	0.0028
Lodgepole Pine	1.08	0.060	0.0040
Douglas Fir	0.49	0.023	0.0010

Other applicable air toxic emisson factors from lumber drying provided in study by Mike Milota and Paul Mosher entitled "Emissions of hazardous air pollutants from lumber drying", July/August 2008.

	Acetaldehyde (lb/MBF)	Propionaldehyde (lb/MBF)	Acrolein (lb/MBF)
Ponderosa Pine (170 F)	0.042	0.0019	0.0017
White Wood (190 F)	0.144	0.0044	0.005
Douglas Fir (200 F)*	0.071	0.0006	0.0009

*

Note: White Wood is a mix of western pines, fir and spruce.
The emission factor for White Wood was used to support White Fir and Lodgepole Pine.

Planned wood mix sent to dry kilns is 50% Ponderosa Pine, 10 % White Fir, 10% Lodgepole Pine, 30% Douglas Fir
Emission Factors Converted to Planned Wood Mix

VOC =	0.97	lb/MBF		
Methanol =	0.058	lb/MBF		
Formaldehyde =	0.0024	lb/MBF		
Acetaldehyde =	0.071	lb/MBF	0.065	lb/MBF
Propionaldehyde =	0.002	lb/MBF	0.002	lb/MBF
Acrolein =	0.002	lb/MBF	0.002	lb/MBF

"NCASI Environmental Resource Handbook for Wood Products Plants", October 31, 2004, Chapter 3: Wood Drying, Table 3.3.1.2-1
Kiln- Steam Heated Unfilterable PM = 0.009 lb/MBF

Calculations:

Pollutant	lb/hr	tpy
VOC	21.34	15.52
PM	0.20	0.14
PM10	0.20	0.14
Methanol	1.28	0.93
Formaldehyde	0.053	0.038
Acetaldehyde	1.564	1.138

Emerald Forest Products - Emmett

All shavings will be blown inside a pipe to a cyclone/baghouse.

Maximum hourly production rate: 22,000 BF/hr Self-imposed limit

Maximum annual production rate: 32,000,000 BF/yr Self-imposed limit

Idaho DEQ Emission Factor Guide for Wood Industry (1/1997), Cyclone/Baghouse Exhaust, Sanderdust

PM = 0.04 lb/ton dry wood
PM10 = 0.04 lb/ton dry wood

Emission Calculations:

Assume the typical product planed on planer is 8 ft x 3.5 in x 1.5 in (3.5 board feet)

Volume per board 3.5 BF

Surface area of each planed side

Top	96 in x 3.5 in	336 in^2
Bottom	96 in x 3.5 in	336 in^2
Right	96 in x 1.5 in	144 in^2
Left	96 in x 1.5 in	144 in^2
Total		960 in^2 per board

Total 274.3 in^2 per board foot

Approximately 1/8 inch is planed off of four sides. The total volume of shavings generated per BF is:
Typically 1/32 inch is planed off however to be more conservative, 1/8 inch was used.

Vol per board = 120 in^3/board

Vol per BF = 34.29 in^3/BF = 0.0198 ft^3/BF

Assume the density of the lumber shavings is 28.1 lb/ft^3. The mass of the shavings per board foot is:

0.02 ft3/BF(28.1 lb/ft^3) 0.56 lb shaving/BF

Mass of shavings routed to the baghouse:

$$0.56 \frac{lb}{BF} \times 22{,}000 \frac{BF}{hr} \times = 12{,}265.9 \frac{lb}{hr}$$

$$0.56 \frac{lb}{BF} \times 32{,}000{,}000 \frac{BF}{yr} \times \frac{1\ ton}{2000\ lb} = 8{,}920.6 \frac{ton}{yr}$$

Emissions

	lb/hr	tpy
PM	0.25	0.18
PM10	0.25	0.18

Process Weight Calculations - Based on the amount of boards going into the planer:

Assume the typical product planed on planer is 8 ft x 3.5 in x 1.5 in (3.5 board feet). The volume of a product can be found by multiplying the length by the cross sectional area. Therefore, the volume of the boards being

96 inches x 3.5 inches x 1.5 x [1ft^3/1728 $inches^3$] = 0.29 $\frac{ft^3}{board}$ 0.083 $\frac{ft^3}{BF}$

Dry weight for doug fir should be 2 #s per bf

0.083 ft3/BF(27 lb/ft^3) 2.00 lb/BF

Mass of wood entering the planar:

$$2.00 \frac{lb}{BF} \times 22{,}000 \frac{BF}{hr} \times = 44{,}000 \frac{lb}{hr}$$

Emerald Forest Products - Emmett

PM Standard Calculations

Table H.1

Compliance with IDAPA Rule 676 PM Standard for Fuel Burning Equipment

Unit	Wood Boiler
Fuel	Wood Waste
Rated Heat Input (MM Btu/hr)	28.87
PM Emission Rate (lb/hr)	0.37
Exit/Flue Gas Flowrate Calculation	
F_d (Table 19-2, EPA Method 19) (dscf/MM Btu) [1,2]	9,600
Exit flowrate @ 0% O_2: (dscfm)	4,619
Exit flowrate @ 8% O_2 for Wood Waste and 3% for Natural Gas: (dscfm) [3]	7,484
Calculated Grain Loading (gr/dscf @ 8 / 3% O_2) [4]	0.006
PM Loading Standard (IDAPA 58.01.01.676) (gr/dscf @ 8 / 3% 02)	0.08
Compliance w/ PM Loading Standard	**Yes**

[1] Appendix A-7 to 40 CFR part 60, Method 19—Determination of sulfur dioxide removal efficiency and particulate, sulfur dioxide and nitrogen oxides emission rates, Table 19-2 (F Factors for Various Fuels)

[2] Fd, Volumes of combustion components per unit of heat content (scf/million Btu). Fd for wood bark is 9,600 scf/ million Btu.

[3] $(Flow_{8\%}) = (Flow_{0\%}) \times (20.9/(20.9 - 8))$, where 20.9 = Oxygen concentration in ambient air

[4] (Flow (dscfm) x (7,000 gr/lb) x (PM lb/hr) x (60 min/ hr) = gr/dscf

Emerald Forest Products - Emmett

Process Weight Calculations

Table H.2

Compliance with IDAPA Rule 701 PM Standard for Process Weight

Unit	Planer
Process Weight (lb/hr)	22,000
PM Emission Rate (lb/hr)	0.25
Compliance with Allowable Emission Calculation	
Calculated Allowable Emissions (E) (lb/hr) [1]	13.40
Compliance w/ PM Loading Standard	**Yes**

[1] **General Restrictions - New Equipment:**
If PW is less than 9,250 pounds per hour
$E = 0.045(PW)^{0.06}$
If PW is greater than 9,250 pounds per hour
$E = 1.10(PW)^{0.25}$

APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES

MEMORANDUM

DATE: November 18, 2010

TO: Harbi Elshafei, Air Quality Engineer, Air Program

FROM: Darrin Mehr, Air Quality Analyst, Air Program

PROJECT NUMBER: P-2010.0016 Project 60529

SUBJECT: Modeling Demonstration for a PTC Application for the Proposed Installation of a Woodwaste-fired Boiler, Fire Water Pump Generator at the Emerald Forest Products Facility in Emmett, Idaho

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1.0 Summary

Emerald Forest Products (EFP) submitted an application for a Permit to Construct (PTC) modification to the facility located in Emmett. The facility was issued its initial PTC in 2005. The modification includes the installation of a woodwaste boiler with the rated heat input capacity of 28.87 million British Thermal Units per hour (MMBtu/hr) and a fire water pump generator engine rated at 140 horsepower.

Several process design changes were included in this permit modification application. Lumber drying kiln throughput will be reduced from 38.6 million board feet per year (MMbd ft/yr) to 32 MMbd ft/yr.

A planer shavings bin equipped with a cyclone and baghouse combination will be installed in place of two shaving silos each equipped with a cyclone. The planer shavings bin will have a point source for the baghouse vent and a fugitive volume source for dry shaving loadout from the bin to transport trucks. At the sawmill a green chip bin and a sawdust bin will be installed. Each of these bins has a point source for the vent and one volume source representing the fugitive emissions resulting from the material transfer from the bin to transport trucks.

This modeling analysis was based on the permit application and modeling files received on:

- July 21, 2010, original PTC modification application and modeling submittal
- September 3, 2010, incompleteness determination response and revised modeling for new TAPs
- September 23, 2010, noncarcinogenic TAPs revised modeling
- October 5, 2010, acetaldehyde, acrolein, propionaldehyde modeling
- October 7, 2010, revised modeling for 24-hr avg propionaldehyde and acrolein.

Please refer to the permit statement of basis to review a complete history for this project.

The facility is not a *designated facility*, as defined in IDAPA 58.01.01.006, Rules for the Control of Air Pollution in Idaho (Rules). The facility's potential to emit (PTE) of particulate matter with an aerodynamic diameter of ten microns or less (PM_{10}), sulfur dioxide (SO_2), carbon monoxide (CO), and nitrogen oxides (NO_x) each is less than 100 tons per year (T/yr). The facility is not a major facility under the New Source Review (NSR) PSD program.

The proposed project is subject to review under Section 200 of the Rules. Section 203.02 of the Rules requires the facility to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS). Section 210 of the Rules requires the facility to demonstrate compliance with the toxic air pollutants (TAPs) increments, which are listed in Sections 585 and 586 of the Rules.

The modeling analyses: 1) utilized appropriate methods and models; 2) were 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 were below national ambient air quality standards and other applicable toxic air pollutant increments or approved T-RACT increments at all ambient air locations.

This modeling analysis was conducted by CH2M HILL, on behalf of EFP. Key assumptions and results that should be considered in the development of the permit are shown in Table 1.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES	
Criteria/Assumption/Result	**Explanation/Consideration**
PM_{10} NAAQS Compliance Significant changes to the project have occurred since the initial permit application was submitted, which affect the level of requested emissions and the modeling demonstration to support the facility's modification request. The initial July 21, 2010 facility-wide PM_{10} modeling demonstration was based on a facility-wide sawmill and drying kiln throughput of 44 million board feet per year (MMbd ft/yr). The current permit-allowable throughput is 36.8 MMbd ft/yr and the final requested throughput for this project is 32 MMbd ft/yr. Maximum daily sawmill / planer throughput remained unchanged at 220,000 bd ft/day. PM_{10} significant contribution level (SCL) and National Ambient Air Quality Standards (NAAQS) compliance demonstrations were that were submitted with the initial July 21, 2010 submittal were accepted as submitted without the requirement to remodel to reflect the reduced annual kiln throughput and an altered emissions profile for the two existing kilns due to dropping the proposed third kiln from the project. No other NAAQS pollutants were affected. PM_{10} ambient impacts presented in the original modeling demonstration are conservative considering the project's requested allowable throughput was reduced to a level below the existing permit-allowable throughput. The original PM_{10} modeling demonstration reflects requested daily operations for the facility and adequately reflects requested annual operations at the facility.	The July 21, 2010 submittal's full impact analysis adequately demonstrated compliance with the PM_{10} NAAQS for this project for the following reasons: • Requested allowable lumber drying kiln and sawmill throughput will decrease by 12 MMbd ft/yr from the level represented in the modeling demonstration, so annual ambient impacts may be lower than presented. • The proposed third lumber drying kiln has been removed from the project. The third kiln is located adjacent to the two existing kilns and the ambient impacts attributed to the drying kiln process should occur in the same vicinity. • PM_{10} emission factors for lumber drying have been reduced based on new information and drying kiln PM_{10} emissions will decrease from the existing permitted PM_{10} emission rates. • The facility's proposed operations were accurately or conservatively represented in the modeling. • Facility-wide ambient PM_{10} impacts were predicted to be 72% of the 24-hr avg NAAQS and 73% of the annual NAAQS.
The initial facility-wide 2005 PTC did not address emissions of certain HAPs/TAPs emitted by the lumber drying kilns. A revised TAPs analysis was submitted to DEQ to address this issue.	Acetaldehyde (carcinogen), acrolein (non-carcinogen), and proprionaldehyde (non-carcinogen) were included in this project. Compliance was demonstrated for the non-carcinogenic TAPs and T-RACT was applied to the carcinogenic acetaldehyde emissions.
Lumber throughput at the planer / planer baghouse was modeled at 220,000 board feet per day (bf/day) and an emission rate of 0.104 lb/hr of PM_{10} and 2.5 lb/day of PM_{10}.	The sawmill and planer were assumed to operate at 220,000 board feet per day, or 10 hours in any day at the maximum requested throughput of 22,000 board feet per hour. PM_{10} emissions were averaged over 24 hours per day and modeled without any other limitations for every 24 hour period. The lumber drying kilns were assumed to operate at 24 hours per day at the requested 22,000 bf / hour.
The firewater pump generator engine was modeled at 4 hours per day and 500 hours per year.	

Formaldehyde emissions from the drying kilns will decrease based on reduced annual drying kiln throughput. T-RACT for formaldehyde is applicable to the Wellons boiler and the firewater pump generator engine.	

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 EFP facility is located in Gem County, which is designated as an attainment or unclassifiable area for sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), lead (Pb), ozone (O_3), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM_{10}).

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 associated with the project exceed the significant contribution levels (SCLs) of Section 006 of IDAPA 58.01.01, Rules for the Control of Air Pollution in Idaho (Idaho Air Rules), then a cumulative—or full— impact analysis is needed to demonstrate compliance with National Ambient Air Quality Standards (NAAQS) and Idaho Air Rules Section 203.02 for Permits to Construct and Section 403.02 for Tier II Operating Permits. A cumulative NAAQS impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions, and emissions from any nearby co-contributing sources, 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 cumulative pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. The SCLs and the modeled value that must be used for comparison to the NAAQS are also listed in Table 2.

Table 2. APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels[c] ($\mu g/m^3$)[d]	Regulatory Limit[e] ($\mu g/m^3$)	Modeled Value Used[h, i]
PM_{10}[a]	Annual	1.0[j]	50[f, j]	Maximum 1st highest
	24-hour	5.0	150[g]	Maximum 6th highest[k]
$PM_{2.5}$[b]	Annual	Proposed: 0.3, 0.8, 1.0[c]	15[f]	Use PM_{10} as a surrogate $PM_{2.5}$ –Maximum 1st high[l]
	24-hour	Proposed: 1.2, 4.0, 5.0[c]	35	Use PM_{10} as a surrogate $PM_{2.5}$ –Maximum 1st high[l]
Carbon monoxide (CO)	8-hour	500	10,000[g]	Maximum 2nd highest
	1-hour	2,000	40,000[g]	Maximum 2nd highest
Sulfur Dioxide (SO_2) *SO_2 is the indicator species for Sox*	Annual	1.0	80[f]	Maximum 1st highest
	24-hour	5	365[g]	Maximum 2nd highest
	3-hour	25	1,300[g]	Maximum 2nd highest
	1-hour[o]	Not established	196[o]	Maximum 6th highest[o]
Nitrogen Dioxide (NO_2) *NO_2 is the indicator species for NOx*	Annual	1.0	100[f]	Maximum 1st highest
	1-hour[n]	EPA Interim: 4 ppb[n] (7 $\mu g/m^3$)	188[n]	Maximum 8th highest[n]
Lead (Pb)	Quarterly	NA	1.5[f]	Maximum 1st highest
	Rolling 3-month average	NA	0.15[f, m]	Maximum 1st highest

[a] Particulate matter with an aerodynamic diameter less than or equal to a nominal ten (10) micrometers.

[b] Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

[c] SCLs are defined in Idaho Air Rules Section 006. Proposed Class II $PM_{2.5}$ SCLs (72 FR 54111, September 21, 2007). Idaho has not set state-determined interim $PM_{2.5}$ SCLs.

[d] Micrograms per cubic meter.

[e] Federal NAAQS (see 40 CFR 50) in effect as of July 1 of each year are incorporated by reference during the legislative session the following spring. See Idaho Air Rules Section 107.

[f] Never expected to be exceeded in any calendar year.

[g] Never expected to be exceeded more than once in any calendar year. The 3-hr and 24-hr standards were revoked (see 75 FR 35520, June 22, 2010) but will be in effect in Idaho until the legislature adjourns *sine die* in Spring 2011.

[h] Concentration at any modeled receptor.

[i] The maximum 1st highest modeled value is always used for significant impact analyses.

[j] The annual PM_{10} standard was revoked in 2006. The standard is still listed because compliance with the annual $PM_{2.5}$ standard is demonstrated by a PM_{10} analysis that demonstrates compliance with the revoked PM_{10} standard.

[k] PM_{10} concentration at any modeled receptor when using five years of meteorological data. Use the maximum 2nd highest value for analyses with less than five years of meteorological data or one year of site-specific met data.

[l] $PM_{2.5}$ concentration at any modeled receptor when using a single year of site-specific meteorological data or a concatenated file with five years of meteorological data. EPA recommends using the high 8th high 3-year average monitored value for background, and using the highest 24-hr average and highest annual averages across five years of met data for the modeled result (Steven Page memo, Modeling Procedures for Demonstrating Compliance with $PM_{2.5}$ NAAQS, March 23, 2010).

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	**Averaging Period**	**Significant Contribution Levels[c] ($\mu g/m^3$)[d]**	**Regulatory Limit[e] ($\mu g/m^3$)**	**Modeled Value Used[h, i]**
[m] Pb: The EPA's October 15, 2008 standard became effective in Idaho's NSR program when it was incorporated by reference into the Idaho Air Rules, i.e., when the Idaho Legislature adjourned *sine die* on March 29, 2010.				
[n] NO_2 concentration at any modeled receptor when using complete year(s) of site-specific met data or five consecutive years of meteorological data. Compliance is based on the 3-year average of the 98th percentile of the annual distribution of 1-hour average daily maximum concentrations. The EPA's February 10, 2010 standard will not be effective in Idaho's NSR program until the Idaho Legislature adjourns *sine die* in Spring 2011. EPA Interim SIL. Page memo, dated June 29, 2010.				
[o] SO_2 concentration at any modeled receptor when using five consecutive years of meteorological data. Compliance is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. EPA's 1-hour standard (75 FR 35520, June 22, 2010) of 0.075 ppm (196 $\mu g/m^3$) will not be effective in Idaho's NSR program until the Idaho Legislature adjourns *sine die* in Spring 2011.				

Idaho operates the NSR program in accordance with an EPA-approved state implementation plan (SIP). EPA has asserted through a 1997 policy (Seitz) memorandum that compliance with $PM_{2.5}$ standards will be assured through air quality analyses for the corresponding PM_{10} standard. Although the PM_{10} annual standard was revoked in 2006, compliance with the revoked PM_{10} annual standard must be demonstrated as a surrogate to the annual $PM_{2.5}$ standard. DEQ NSR program management has determined that the additional recommendations described in a March 23, 2010 EPA memorandum (Page) regarding $PM_{2.5}$ implementation do not apply to Idaho's SIP-approved NSR program. $PM_{2.5}$ standards will not be effective in Idaho until Idaho's $PM_{2.5}$ NSR SIP is approved by the EPA.

2.1.3 TAPs Analyses

The increase in emissions from the proposed project are required to demonstrate compliance with the toxic air pollutant (TAP) increments, with an ambient impact dispersion analysis required for any TAP having a requested potential emission rate that exceeds the screening emission rate limit (EL) specified by Idaho Air Rules (Rules) Section 585 or 586.

This project involves the proposed installation of a Wellons 28.87 MMBtu/hr woodwaste-fired boiler and an internal combustion engine for a firewater pump generator at a facility that was issued a PTC in 2005. The final requested facility-wide lumber throughput will be reduced from the current allowable throughput of 36.8 MMbd ft/yr to 32 MMbd ft/yr. TAPs emission increases will only occur for the boiler and the internal combustion engine.

The original 2005 permitting analysis for this facility did not address acetaldehyde, a carcinogenic TAP, or acrolein and propionaldehyde emissions, which are non-carcinogenic TAPs. Emission factors have been developed that apply for these pollutants and the emissions of these TAPs were addressed in this permit application.

The analyses submitted in the application included a TAPs compliance demonstration per the requirements of Section 210 of the Rules. A compliance demonstration was included for emission increases requested with this permitting action. Non-carcinogenic TAPs regulated by Section 585 of the Rules and carcinogenic TAPs regulated by Section 586 of the Rules were expected to increase.

2.2 Background Concentrations

Background concentrations were revised for all areas of Idaho by DEQ in March 2003[1]. 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 concentration values provided by DEQ for this project were based on default small town/suburban background values.

PM_{10}, 24-hour average and annual average; SO_2, annual average; and NO_2, annual average, impacts exceeded the significant contribution levels, and the following background concentrations were provided by DEQ for this project:

- PM_{10}, 24-hour average: 81 $\mu g/m^3$,
  PM_{10}, annual average: 27 $\mu g/m^3$,
- NO_2, annual average: 32 $\mu g/m^3$, and
- SO_2, annual average: 8 $\mu g/m^3$.

3.0 Modeling Impact Assessment

3.1 Modeling Methodology

Table 3 provides a summary of the modeling parameters used in the submitted modeling analyses.

Table 3. MODELING PARAMETERS

Parameter	*Description/ Values*	*Documentation/Additional Description*
Model	AERMOD	AERMOD, Version 09292
Meteorological data	2001-2005 individual year and concatenated data files	DEQ provided a pre-processed data set of concatenated and individual year files derived from Boise airport surface and upper air data covering the years 2001-2005.
Land Use (urban or rural)	Rural	Urban heat rise coefficients were not used. DEQ agrees with the applicant's assessment that a rural land use designation is appropriate.
Terrain	Considered	3-dimensional receptor coordinates were obtained from Digital Elevation Model (DEM) files for the surrounding area.
Building downwash	Downwash algorithm	AERMOD, Version 09292 uses BPIP-Prime and the PRIME algorithms to evaluate structure-induced downwash effects.
Receptor grid	Grid 1	25-meter spacing along the ambient air boundary

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

	Grid 2	100-meter spacing in a 2,600-meter (X) by 2,500-meter (Y) grid centered on the facility
	Grid 3	500-meter spacing in an 11,000-meter (X) by 10,500 meter (Y) grid centered on the facility and Grid 2

3.1.1 Modeling protocol

A modeling protocol was submitted to DEQ by CH2M HILL, on behalf of EFP, on May 25, 2010. The modeling protocol was approved, with comments, by DEQ, on May 28, 2010.

Modeling was generally conducted using methods documented in the modeling protocol and the *State of Idaho Air Quality Modeling Guideline.*

3.1.2 Model Selection

AERMOD, Version 09292, was used by CH2M HILL, on behalf of EFP, to conduct the ambient air analyses for NAAQS and TAPs compliance demonstrations.

3.1.3 Meteorological Data

DEQ supplied a dataset that was processed using AERMET and 2001 through 2005 Boise airport surface and upper air data files. This is the most recent consecutive 5 year data set that DEQ has for this area. The facility is located approximately 26 miles northwest of the Boise airport.

3.1.4 Terrain Effects

The modeling analyses considered elevated terrain. The elevation of each receptor was obtained from United States Geological Survey (USGS) national elevation data (NED) files for the area surrounding the facility. Geographic coordinates were based in the North American Datum of 1983 (NAD83) system. Elevations were established using the North American Vertical Datum of 1988 (NAVD 88). The modeling demonstration included the NED "tif" files used for the modeling demonstration. Elevations for the emission sources and buildings were accepted as submitted.

3.1.5 Facility Layout

DEQ checked the site plan submitted with the permit application to verify the facility's proposed layout. The site plan was created independently of the modeling demonstration's input files and generally matched the modeling file input. The facility layout and location of emission sources were accepted as submitted. Construction of all of this facility's permitted emissions units has not been completed at this time.

3.1.6 Building Downwash

Plume downwash effects caused by structures at the facility were accounted for in the modeling analyses. The Building Profile Input Program-Plume Rise and Building Downwash Model (BPIP-PRIME) was used by the applicant to calculate direction-specific building dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and emissions release parameters. The output from BPIP-PRIME was used as input to AERMOD, Version 09292, to account for building-induced downwash effects.

3.1.7 Ambient Air Boundary

Ambient air was determined to exist for all areas immediately exterior to the facility's property boundary. A fence was listed as the method to control public access to the area being claimed as exempt from ambient air. This

approach follows the methods of determining the ambient air boundary as specified in the *State of Idaho Air Quality Modeling Guideline.*

3.1.8 Receptor Network

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

3.2 Emission Rates

3.2.1 Modeled Emission Rates

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application. The following approach was used for EFP's modeling demonstration:

- All modeled criteria air pollutant emissions rates used in the full impact analysis for comparison against the NAAQS were equal to or greater than the requested permit allowable emissions calculated in the PTC application and the allowable emission rates listed in the air quality permit.
- The criteria air pollutant emission rates modeled in the preliminary analysis for comparison of impacts to the significant contribution levels (SCLs) were equal to or greater than the difference between current permitted allowable emission rates and the future requested emission rates.
- Modeled TAPs emission rates were equal to the emission rates attributed to the PTC modification's increase in emissions listed in the application submittals.

3.2.1.1 Modeled Preliminary Analysis Emission Rates

Table 4 lists the hourly emission rates that were modeled to demonstrate compliance with the significant contribution levels (SCLs), and, where applicable, to demonstrate compliance with NAAQS, for pollutants with short-term averaging periods of 24 hours or less. The emission rates listed in Table 4 were modeled continuously for 24 hours per day. Limitations on operation were accounted for using reduced emission rates that reflect requested emissions within each averaging period (3-hour, 8-hour, and 24-hour). The modeling demonstration is intended to reflect a single working shift per day according to documentation in the application.

Table 4. MODELED SHORT-TERM AVERAGE EMISSIONS RATES FOR PRELIMINARY ANALYSIS

Source ID	Description	PM_{10}[b], 24-hour avg (lb/hr)[a]
WELLBOIL	Wood waste Wellons boiler	0.37
SAWBIN	Sawdust bin vent	0.596
CHIPBIN	Chip bin vent	0.833
FIREGEN	104 kW firepump generator	0.057
KILN01 – KILN30	Dry kiln vent #1 through dry kiln vent 30 (represents 2 existing kilns and the one proposed kiln)	-0.049 (each vent)[c] -1.47 (all 30 vents)[c]
PLANBH	Planer Baghouse	-0.263[c]
SAWLOAD	Sawdust bin loadout (bin to truck)	0.0013
CHIPLOAD	Chip bin loadout (bin to truck)	0.0014

Table 4. MODELED SHORT-TERM AVERAGE EMISSIONS RATES FOR PRELIMINARY ANALYSIS		
Source ID	**Description**	**PM_{10}[b], 24-hour avg (lb/hr)[a]**
SHAVLOAD	Shavings bin loadout (bin to truck)	0.0007
TP5	REMOVED – Two shavings silos	-0.0025[c]
TP6	Wellons boiler fuel boxes	0.0265

[a] Pounds per hour

[b] Particulate matter with a mean aerodynamic diameter of ten microns or less

[c] Negative emission rate reflecting lower emission factors or a change in process design

Table 5 lists the hourly emission rates that were modeled to demonstrate compliance with the significant contribution levels (SCLs) to determine if a full impact analysis was required for criteria pollutants with an annual averaging period. The emission rates listed in Table 5 were modeled continuously, without any additional restrictions, for 8,760 hours per year.

Table 5. MODELED ANNUAL AVERAGE EMISSIONS RATES FOR PRELIMINARY ANALYSIS				
Source ID	**Description**	**Emission Rates (lb/hr)[a]**		
		PM_{10}[b]	**NO_x[c]**	**SO_2[d]**
WELLBOIL	Wood waste-fired Wellons boiler	0.370	5.25	0.15
SAWBIN	Sawdust bin vent	0.425	--	--
CHIPBIN	Chip bin vent	0.594	--	--
FIREGEN	104 kW firepump generator	0.019	0.274	0.018
KILN01 – KILN30	Dry kiln vent #1 through dry kiln vent 30 (represents 2 existing kilns and the one proposed kiln)	-0.025 (each)[e] -0.75 (all 30 vents)[e]	--	--
PLANBH	Planer baghouse	-0.363[e]	--	--
SAWLOAD	Sawdust bin loadout (bin to truck)	0.0009	--	--
CHIPLOAD	Chip bin loadout (bin to truck)	0.0014	--	--
SHAVLOAD	Shavings bin loadout (bin to truck)	0.0007	--	--
TP5	REMOVED – Two shavings silos	-0.0069[e]	--	--
TP6	Wellons boiler fuel boxes	0.0265	--	--

[a] Pounds per hour

[b] Particulate matter with a mean aerodynamic diameter of ten microns or less

[c] Nitrogen oxides

[d] Sulfur dioxide

[e] Negative emission rate reflecting lower emission factors or a change in process design

3.2.1.2 Modeled Full Impact Analysis Emission Rates

The data in Table 6 and Table 7 represents the full impact (or facility-wide) ambient impact demonstration's emission rates.

The full ambient impact analysis for PM_{10} is based on the original July 21, 2010 modeling demonstration that modeled drying kiln emissions from 30 individual vents at a throughput of 44 MMbd ft/yr using updated PM_{10} emission factors to estimate emissions. DEQ did not require an updated PM_{10} modeling demonstration on the basis that there will be reduced PM_{10} emissions from the drying kilns due to a reduction in the throughput of lumber and that the difference between modeling the emissions from three immediately adjacent kilns with 30 vents versus two immediately adjacent kilns with a total of 20 vents should not be great enough to cause ambient design impacts, with background concentrations added, that would approach the NAAQS. Also, the initial July 21, 2010 facility-wide modeling demonstration captures the new emissions units and all other process changes that represent the future-requested operations requested for this project and the facility.

Table 6. MODELED SHORT-TERM AVERAGE EMISSIONS RATES FOR FULL IMPACT ANALYSIS

Source ID	Description	PM_{10}[b], 24-hour avg (lb/hr)[a]
ZURNBOIL	Wood waste zurn stoker boiler	3.0
WELLBOIL	Wood waste wellons boiler	0.37
SAWBIN	Sawdust bin vent	0.596
CHIPBIN	Chip bin vent	0.833
COOLTWR1	Cooling tower 1	0.33
COOLTWR2	Cooling tower 2	0.33
FIREGEN	104 kW firepump generator	0.057
KILN01 – KILN30	Dry kiln vent #1 through dry kiln vent 30 (represents 2 existing kilns and the one proposed kiln)	0.0066 (each vent) 0.198 (all 30 vents)
PLANBH	Planer Baghouse	0.104
DEB	Debarker	0.088
HOG	Hog	0.02
SCREEN	Screen	0.025
TRUCKDMP	Truck unloading at Power Plant	0.9338
SAWLOAD	Sawdust bin loadout (bin to truck)	0.0013
CHIPLOAD	Chip bin loadout (bin to truck)	0.0017
SHAVLOAD	Shavings bin loadout (bin to truck)	0.0008
TP1	Hog unit to fuel conveyor	0.0125
TP2	Main conveyor to belt tripper	0.0667
TP3	Belt tripper to fuel house	0.0458
TP4	Bucking saw to debarker	0.0500
TP6	Wellons boiler fuel boxes	0.0154
SAW1	Sawmill building exhaust 1	0.0813
SAW2	Sawmill building exhaust 2	0.0813

[a] Pounds per hour

[b] Particulate matter with a mean aerodynamic diameter of ten microns or less

[c] Carbon monoxide

[d] Sulfur dioxide

Table 7 lists the hourly emission rates that were modeled to demonstrate compliance with the NAAQS for the full impact analysis, for pollutants with annual averaging periods. These emissions were modeled continuously for 8,760 hours per year.

Table 7 MODELED ANNUAL AVERAGE EMISSIONS RATES FOR FULL IMPACT ANALYSIS				
Source ID	**Description**	**Emission Rates (lb/hr)[a]**		
		PM_{10}[b]	**NO_x[c]**	**SO_2[d]**
ZURNBOIL	Wood waste Zurn stoker boiler	2.8082	39.06	1.23
WELLBOIL	Wood waste Wellons boiler	0.3699	5.25	0.15
SAWBIN	Sawdust bin vent	0.4247		
CHIPBIN	Chip bin vent	0.5936		
COOLTWR1	Cooling tower 1	0.3311		
COOLTWR2	Cooling tower 2	0.3311		
FIREGEN	104 kW firepump generator engine	0.0194	0.274	0.018
KILN01 – KILN30	Dry kiln vent #1 through dry kiln vent #30 (represents 2 existing kilns and the one proposed kiln)	0.0015 (each) 0.045 (all 30 vents)		
PLANBH	Planer Baghouse	0.0571		
DEB	Debarker	0.0297		
HOG	Hog	0.0023		
SCREEN	Screen	0.0205		
TRUCKDMP	Truck unloading at Power Plant	0.9338		
SAWLOAD	Sawdust bin loadout (bin to truck)	0.0009		
CHIPLOAD	Chip bin loadout (bin to truck)	0.0014		
SHAVLOAD	Shavings bin loadout (bin to truck)	0.0007		
TP1	Hog unit to fuel conveyor	0.0274		
TP2	Main conveyor to belt tripper	0.1553		
TP3	Belt tripper to fuel house	0.1119		
TP4	Bucking saw to debarker	0.1210		
TP6	Wellons boiler fuel boxes	0.0265		
SAW1	Sawmill building exhaust 1	0.0936		
SAW2	Sawmill building exhaust 2	0.0936		

[a] Pounds per hour

[b] Particulate matter with a mean aerodynamic diameter of ten microns or less

[c] Nitrogen oxides

[d] Sulfur dioxide

The carcinogenic toxic air pollutant (TAP) annual average emission rates listed below in Table 8 were modeled to demonstrate compliance with the applicable acceptable ambient concentration (AACC) increments. Non-carcinogenic TAP 24-hour average emission rates listed below in Table 6 were modeled to demonstrate compliance with the acceptable ambient concentration for non-carcinogens (AAC). The emission rates were modeled continuously for 8,760 hours per year without any additional restrictions on the emission rates or hours of operation. Multiply the carcinogenic TAP hourly emission rates listed in Table 6 by 8,760 hours per year to

obtain the annual emissions represented in the modeling demonstration, and multiply the non-carcinogenic TAP emission rate by 24 hours per day to obtain the daily amount of emissions represented in the modeling.

This project will not result in any formaldehyde emissions increase for the lumber drying kilns. The October 22, 2010 submittal requested dropping the proposed 3rd drying kiln and reduced allowable throughput by 4.8 MMbd ft/year from the current permitted throughput. Formaldehyde emissions from the drying kilns are not subject to TAPs modeling.

Naphthalene emissions did not exceed the screening emission rate limit (EL) of 3.33 lb/hr, and modeling was not required.

Emissions of all other TAPs were estimated to be below ELs listed in Sections 585 and 586 of the Rules, and air impact analyses were not required.

Table 8. MODELED TOXIC AIR POLLUTANT EMISSIONS RATES

TAP	Chemical Abstract Service #	Wellons Boiler (lb/hr)	Fire Water Pump Generator (lb/hr)[a]	Lumber Drying Kiln Individual Vent (lb/hr)	Lumber Drying Kiln All Vents Combined (lb/hr)
Non-carcinogenic TAPs					
Acrolein	107-02-8	2.25E-03	1.68E-05	2.30E-03	4.60E-02 (20 vents)
Propionaldehyde	123-38-6	1.76E-03	--	2.20E-03	4.40E-02 (20 vents)
Carcinogenic TAPs					
Acetaldehyde	75-07-0	2.40E-02	4.77E-05	0.013	0.26 (20 vents)
Arsenic	7440-38-2	1.23E-05	--	--	--
Benzene	71-43-2	1.21E-01	5.80E-05	--	--
Benzo (a) pyrene	50-32-8	7.51E-05	1.17E-08	--	--
1,3-Butadiene	106-99-0	--	2.44E-06	--	--
Cadmium	7440-43-9	1.18E-04	--	--	--
Carbon tetratchloride	56-23-5	1.30E-03	--	--	--
Chloroform	67-66-3	9.52E-04	--	--	--
1,2-Dichloroethane	107-06-2	8.38E-04	--	--	--
Dichloromethane	75-09-2	8.38E-03	--	--	--
Formaldehyde	50-00-0	3.74E-02	7.35E-05	9.75E-05[c]	0.029[c] (30 vents)
Polycyclic Organic Matter[b]		8.47E-05	2.14E-07	--	--

[a] Pounds per hour

[b] For POM, polyaromatic hydrocarbon mixtures are regulated as a single TAP which is regulated by the benzo(a)pyrene TAP screening emission rate limit and allowable increment.

[c] This project's final requested throughput was below the existing permit allowable throughput. There is no increase in formaldehyde from the kilns for this project. However, formaldehyde was not remodeled for just the Wellons boiler and the firewater pump generator engine, and the results are considered to be conservative predicted ambient impacts.

3. 3 *Emission Release Parameters*

3.3.1 Point Sources

Table 9 provides emissions release parameters, including stack height, stack diameter, exhaust temperature, and exhaust velocity for point sources.

The exhaust flow rate was determined using a performance test conducted on this boiler in 2004. All other exhaust parameters were accepted as representative of the parameters to be built for the proposed boiler. Zurn boiler exhaust parameters used for the 2005 initial Yellowstone Power, Inc facility-wide PTC modeling demonstration were accepted as submitted for this project. Supporting calculations were submitted via an August 8, 2010 email, to support and explain the exhaust parameters for the proposed firewater pump generator engine and the two cooling towers initially permitted in 2005.

Drying kiln exhaust parameters included an exit velocity assumption of 0.001 meters per second as requested by DEQ in the modeling protocol approval. Exit temperature and diameter were determined by CH2M HILL/EFP. The application describes each kiln vent as being a 2 feet by 2 feet square. The equivalent diameter for these dimensions is 2.26 feet (or 0.69 meters). This small difference will result in a negligible effect on the momentum buoyancy of the plume due to the conservatively assumed 0.001 meter per second exit velocity for the kiln vents. The final requested design is for two kilns with ten exhaust vents for each kiln for a total of twenty vents. These kilns were permitted in the facility's initial 2005 PTC.

The point sources representing the vents for the proposed green chip bin (CHIPBIN), sawmill green sawdust bin (SAWBIN), and the planer baghouse (PLANBH) have a horizontal release orientation, and an exit velocity of 0.001 meters per second was assumed for each source. Additional substantiation was not deemed necessary, and release height, diameter, and temperature values were accepted as submitted. Values used in the analyses appeared reasonable and were adequately documented.

Table 9. POINT SOURCE STACK PARAMETERS

Release Point	Description	Stack Height (m)[a]	Stack Gas Flow Temperature (K)[b]	Stack Gas Flow Velocity (m/sec)[c]	Stack Diameter (m)
WELLBOIL	Wellons Woodwaste-Fired Boiler	16.16	434.3	11.94	0.91
ZURNBOIL	Zurn Woodwaste-Fired Boiler (previously permitted source)	30.48	435.0	7.74	3.05
FIREGEN	104 kW Fire Water Pump Generator Engine	3.66	730.2	138.22	0.10
KILN01 through KILN20	20 Individual Kiln Exhaust Vents (existing Kiln 1 and Kiln 2)	8.84	344.0	0.001	0.61

Table 9. POINT SOURCE STACK PARAMETERS					
Release Point	Description	Stack Height (m)[a]	Stack Gas Flow Temperature (K)[b]	Stack Gas Flow Velocity (m/sec)[c]	Stack Diameter (m)
KILN21 through KILN30	10 Individual Kiln Exhaust Vents (Kiln 3--proposed in original application and deleted in subsequent submittals)	8.84	344.0	0.001	0.61
PLANBH	Sawmill Planer Baghouse Vent	5.49	298.15	0.001	0.46
SAWBIN	Sawmill Green Sawdust Shavings Bin Vent	14.63	298.15	0.001	0.46
CHIPBIN	Sawmill Green Chip Bin Vent	15.24	298.15	0.001	0.46
COOLTWR1	Cooling Tower 1	9.75	293.0	66.39	3.66
COOLTWR2	Cooling Tower 2	9.75	293.0	66.39	3.66

[a] Meters

[b] Kelvin

[c] Meters per second

3.3.3 Volume Sources

Volume source exhaust parameters are listed below in Table 10, and were accepted as submitted in the application without additional substantiation of assumptions and calculations. The majority of the volume source modeling parameters were used in the facility's original 2005 PTC modeling demonstration.

Table 10. VOLUME SOURCE RELEASE PARAMETERS				
Release Point	Description	Release Height (m) [a]	Initial Horizontal Dispersion Coefficient σ_{y0} (m)	Initial Vertical Dispersion Coefficient σ_{z0} (m)
DEB	Debarker	7.32	3.4	3.4
HOG	Hog	4.7	0.32	2.27
SCREEN	Screen	2.44	1.23	1.13
TRUCKDMP	Truck unloading at Power Plant	10.67	1.23	4.96
SAWLOAD	Sawdust bin loadout (bin to truck)	4.27	0.71	1.97
CHIPLOAD	Chip bin loadout (bin to truck)	4.27	0.71	1.97
SHAVLOAD	Shavings bin loadout (bin to truck)	4.27	0.71	1.97
TP1	Hog unit to fuel conveyor	3.05	0.28	1.42
TP2	Main conveyor to belt tripper	3.05	0.28	1.42
TP3	Belt tripper to fuel house	3.05	0.28	1.42
TP4	Bucking saw to debarker	3.05	0.28	1.42
TP5	REMOVED-Two shavings silos	3.05	0.28	1.42
TP6	Wellons boiler fuel boxes	4.57	2.27	2.13
SAW1	Sawmill building exhaust 1	9.91	0.21	4.61
SAW2	Sawmill building exhaust 2	9.91	0.21	4.61

[a] Meters

3.4 Results for Ambient Impact Analyses

3.4.1 Preliminary Impact Analyses

A preliminary impact analysis to determine if impacts exceed the significant contribution levels was performed for this project. Emissions of PM_{10}, SO_2, CO, and NO_x were modeled. The emissions units and changes accounted for in the preliminary impact analysis included the following: a proposed Wellons boiler, a firewater pump generator engine, the addition of a third lumber drying kiln, a 7.2 MMbd ft/yr production increase, the addition of two material storage bins with vents and fugitive material transfer emissions, and the addition of a planer cyclone with a baghouse. The significant impact analysis also included the removal of two sawmill material storage silos and reduced PM_{10} lumber drying kiln emission rates based on new emission factors. This analysis was included in the July 21, 2010 submittal and was not altered to reflect the final requested 4.8 MMbd ft/yr throughput reduction from the current permitted annual throughput for the drying kilns.

The emissions for this project were modeled and the impacts were compared to the significant contribution concentrations listed in Section 006.105 of the Idaho Air Rules. Maximum ambient impacts are required to be used to compare against the SCLs per Section 4.1.1 of the *State of Idaho Air Quality Modeling Guideline*. The results are listed in Table 11. Lead emissions were expected to be below modeling thresholds and were not modeled.

Modeled impacts were above the SCLs for PM_{10} 24-hour and annual averaging periods, SO_2, annual averaging period, and NO_2, annual averaging period. All NO_x was assumed to be emitted as NO_2. A full impact analysis was performed for these pollutants and averaging periods.

Table 11. RESULTS OF SIGNIFICANT IMPACT ANALYSES

Pollutant	Averaging Period	Maximum Modeled Concentration[a] ($\mu g/m^3$)[b]	Significant Contribution Level ($\mu g/m^3$)	Facility-Wide Modeling Required	Percentage of Significant Contribution Level
PM_{10}[c]	24-hour	22.45 (27.27)	5.0	Yes	449% (545%)
	Annual	5.23	1.0	Yes	523%
SO_2[d]	Annual	1.02	1.0	Yes	102%
	24-hour	3.05 (3.32)	5.0	No	61% (66%)
	3-hour	15.09 (16.15)	25.0	No	60% (65%)
NO_2[e]	Annual	35.66	1.0	Yes	3566%
CO[f]	1-hour	112.08 (112.97)	2,000.0	No	6% (6%)
	8-hour	77.75 (84.2)	500.0	No	16% (17%)

[a] Significant contribution evaluations use the maximum impact attributed to the proposed project's emissions increases. Values in parentheses are the maximum impact values obtained from the modeling output files.

[b] Micrograms per cubic meter

[c] Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

[d] Sulfur dioxide

[e] Nitrogen dioxide

[f] Carbon monoxide

3.4.2 Full Impact Analyses

A full impact analysis was performed by EFP for this project by adding the ambient impacts attributed to the proposed and existing emissions sources to the ambient background concentrations provided by DEQ for SO_2, NO_2, and PM_{10}. All NO_x impacts were assumed to be NO_2. PM_{10} ambient impacts are conservative considering impacts were evaluated at a facility throughput of 44 MMbd ft/yr instead of the final requested permit allowable throughput of 32 MMbd ft/yr. The highlights of this issue are listed above in Table 1.

The results of the full impact analysis are listed in Table 12. Facility-wide predicted ambient impacts, with background concentrations added, were well below each NAAQS.

Table 12. RESULTS OF FULL IMPACT ANALYSES						
Pollutant	**Averaging Period**	**Modeled Design Concentration ($\mu g/m^3$)[a]**	**Background Concentration ($\mu g/m^3$)**	**Total Ambient Impact ($\mu g/m^3$)**	**NAAQS[b] ($\mu g/m^3$)**	**Percent of NAAQS**
PM_{10}[c]	24-hour	26.69	81	107.69	150	72%
	Annual	9.72	27	36.72	50	73%
NO_2[d]	Annual	35.72	32	67.72	100	68%
SO_2[e]	Annual	1.03	8	9.03	80	11%

[a] Micrograms per cubic meter

[b] National ambient air quality standards

[c] Particulate matter with a mean aerodynamic diameter of ten microns or less

[d] Nitrogen dioxide

[e] Sulfur dioxide

3.4.3 Toxic Air Pollutant Impact Analyses

Dispersion modeling for TAPs was required to demonstrate compliance with TAP increments specified by Idaho Air Rules Sections 585 and 586. This project's caused emission increases that exceeded the screening emission rate limits. The requested emission increases were modeled to demonstrate compliance with the allowable TAP increments. The results of the TAPs analyses are listed in Table 13. The predicted ambient TAPs impacts were below allowable increments. Acrolein, propionaldehyde, and acetaldehyde emissions were modeled using the two existing kilns with a total of 20 vents.

Table 13. RESULTS OF TAPs ANALYSES				
Toxic Air Pollutant	**CAS No.[a]**	**Maximum Modeled Concentration ($\mu g/m^3$)[b]**	**AAC/AACC[c] ($\mu g/m^3$)**	**Percent of AAC/AACC**
Non-Carcinogenic TAPs				
Acrolein	107-02-8	2.16	12.5	17%
Propionaldehyde	123-38-6	2.06	21.5	10%
Carcinogenic TAPs				
Acetaldehyde	75-07-0	2.33	4.5E-01	518%
Arsenic	7440-38-2	8.00E-05	2.3E-04	35%
Benzene	71-43-2	8.23E-01	1.2E-01	685%
Benzo(a)pyrene	50-32-8	5.10E-04	3.0E-04	170%
1,3-Butadiene	106-99-0	1.00E-05	3.6E-03	0.3%
Cadmium	7440-43-9	8.00E-04	5.6E-04	143%
Carbon tetratchloride	56-23-5	8.82E-03	6.7E-02	13%
Chloroform	67-66-3	6.46E-03	4.3E-02	15%
1,2-Dichloroethane	107-06-2	5.69E-03	3.8E-02	15%
Dichloromethane	75-09-2	5.69E-02	2.4E-01	24%

Formaldehyde	50-00-0	2.55E-01[e]	7.7E-02	331%[e]
Polycyclic Organic Matter (POM)		5.70E-04	3.0E-04[d]	190%

[a] Chemical Abstract Service Number

[b] Micrograms per cubic meter

[h] Acceptable ambient concentration for non-carcinogens (Section 585)/acceptable ambient concentration for carcinogens (Section 586)

[d] Mixtures of polyaromatic hydrocarbons (PAHs) consisting of the combination of 7 listed PAHs are considered a single TAP and are limited by the benzo(a)pyrene AACC.

[e] Conservative impact value because a 7.2 MMbd ft/yr increase in lumber drying kiln throughput is accounted for in this ambient impact.

Several carcinogenic TAPs exceeded the allowable increment for this project. A Toxics – Reasonably Available Control Technology (T-RACT) analysis per Section 210.12 of the Idaho Air Rules was submitted for acetaldehyde, benzene, benzo(a)pyrene, cadmium, formaldehyde, and polycyclic organic matter. The ambient impacts listed in Table 14 are considered as the approved T-RACT ambient concentrations referred to in IDAPA 58.01.01.210.12.b and 210.12.c. The risk allowed for the carcinogenic increments is 1 in 1,000,000. The allowable risk for an approved T-RACT impact is 1 in 100,000. The acceptable ambient concentrations for carcinogens listed in Table 13 above were multipled by a factor of 10 to establish the allowable T-RACT increments in Table 14 below.

Table 14. RESULTS OF TAPs ANALYSES USING T-RACT[a] INCREMENT

Toxic Air Pollutant	CAS No.[b]	Maximum Modeled Concentration ($\mu g/m^3$)[c]	T-RACT AACC[d] ($\mu g/m^3$)	Percent of T-RACT AACC
Acetaldehyde	75-07-0	2.33	4.5	51.8%
Benzene	71-43-2	8.23E-01	1.2	68.5%
Benzo(a)pyrene	50-32-8	5.10E-04	3.0E-03	17.0%
Cadmium	7440-43-9	8.00E-04	5.6E-03	14.3%
Formaldehyde	50-00-0	2.55E-01[f]	7.7E-01	33.1%[f]
Polycyclic Organic Matter (POM)		5.70E-04	3.0E-03[e]	19.0%

[a] Toxics—Reasonably Available Control Technology

[b] Chemical Abstract Service Number

[c] Micrograms per cubic meter

[d] Acceptable ambient concentration for carcinogens (Section 586)

[e] Mixtures of polyaromatic hydrocarbons (PAHs) consisting of the combination of 7 listed PAHs are considered a single TAP and are limited by the benzo(a)pyrene AACC.

[f] Conservative impact because a 7.2 MMbd ft/yr increase in lumber drying kiln throughput is accounted for in this ambient impact.

4.0 Conclusions

The ambient air impact analysis submitted demonstrated to DEQ's satisfaction that emissions from the facility, as represented by the applicant in the permit application, will not cause or significantly contribute to a violation of any air quality standard.

APPENDIX C – PROCESSING FEE

PTC Fee Calculation

Instructions:
Fill in the following information and answer the following questions with a Y or N. Enter the emissions increases and decreases for each pollutant in the table.

Company:	**Emerald Forest Products, Inc.**
Address:	**115 Broad Street, PO Box 1539**
City:	**Thompson Falls**
State:	**MT**
Zip Code:	**59873**
Facility Contact:	**Richard Vinson**
Title:	**President**
AIRS No.:	**045-00006**

N Does this facility qualify for a general permit (i.e. concrete batch plant, hot-mix asphalt plant)? Y/N

Y Did this permit require engineering analysis? Y/N

N Is this a PSD permit Y/N (IDAPA 58.01.01.205.04)

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO_X	24.2	0	24.2
SO_2	0.7	0	0.7
CO	15.0	0	15.0
PM10	1.1	0	1.1
VOC	-1.6	0	-1.6*
TAPS/HAPS	0.0	0	0.0
Total:	39.5	0	**39.5**
Fee Due	**$ 5,000.00**		

Comments: * The previously permitted lumber production rate from the kilns is reduced for this permitting action. Thus, VOC emissions are reduced too.