

## **Statement of Basis**

**Permit to Construct No. P-2009.0064  
Project ID 61224**

**Tamarack Mill, LLC dba Evergreen Forest and Tamarack Energy Partnership  
New Meadows, Idaho**

**Facility ID 003-00001**

**Final**

CZ

**December 13, 2013  
Carole Zundel  
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 concentrations
AACC	acceptable ambient concentrations for carcinogens
acfm	actual cubic feet per minute
CFR	Code of Federal Regulations
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	CO <sub>2</sub> equivalent emissions
DEQ	Department of Environmental Quality
EL	screening emission levels
EPA	U.S. Environmental Protection Agency
HAP	hazardous air pollutants
hp	horsepower
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pounds per hour
MACT	Maximum Achievable Control Technology
MMBtu/hr	million British thermal units per hour
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO <sub>2</sub>	nitrogen dioxide
NSPS	New Source Performance Standards
PM	particulate matter
PM <sub>2.5</sub>	particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers
PM <sub>10</sub>	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
<i>Rules</i>	<i>Rules for the Control of Air Pollution in Idaho</i>
SO <sub>2</sub>	sulfur dioxide
T/yr	tons per consecutive 12 calendar month period
TAP	toxic air pollutants
T-RACT	Toxic Air Pollutant Reasonably Available Control Technology
VOC	volatile organic compounds
µg/m <sup>3</sup>	micrograms per cubic meter

## **FACILITY INFORMATION**

### ***Description***

The facility includes a boiler, six lumber dry kilns, a log yard, a sawmill, a lumber yard, and wood by-product handling processes involved in managing sawdust, chips, and wood by-products to fuel the facility boiler or for sale. The processes take in raw logs, debark them, cut them into lumber, process the wood by-products generated (bark, green chips and shavings, and sawdust into salable products or boiler fuel, and burning that fuel in the boiler to generate steam that is used primarily for energy generation and secondarily for drying lumber in facility dry kilns. The facility's finished product is kiln dried lumber. That lumber is shipped offsite to be planed and packaged for market.

### ***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).

July 27, 2007	T2-050047, Initial Combination Permit. This Tier II operating permit and Permit to Construct was created to fulfill the requirement of the compliance section of the Tier I operating permit issued on February 6, 2003, Permit Status (S)
November 4, 2009	P-2009.0064, Addition of three Wellons lumber drying kilns, Permit status (S)
May 31, 2011	P-2009.0064, Permit revision to combine two PTC's, Permit status (A, but will become S upon issuance of this permit)

### ***Application Scope***

This PTC is for a modification at an existing Tier I facility. See the current Tier I permit statement of basis for the permitting history.

The applicant has proposed to add three kilns.

### ***Application Chronology***

June 14, 2013	DEQ received an application and an application fee.
June 26 – July 11, 2013	DEQ provided an opportunity to request a public comment period on the application and proposed permitting action.
June 26, 2013	DEQ approved pre-permit construction.
July 9, 2013	DEQ determined that the application was complete.
August 7, 2013	DEQ received supplemental information from the applicant.
August 14, 2013	DEQ received supplemental information from the applicant.
October 29, 2013	DEQ received supplemental information from the applicant.
November 19, 2013	DEQ made available the draft permit and statement of basis for peer and regional office review.
November 22, 2013	DEQ made available the draft permit and statement of basis for applicant review.
December 9, 2013	DEQ received the permit processing fee.

# TECHNICAL ANALYSIS

## Emissions Units and Control Equipment

Table 1 EMISSIONS UNIT AND CONTROL EQUIPMENT INFORMATION

Source ID No.	Sources	Control Equipment	Emission Point ID No.
Lumber Drying Kilns (No. 1, 2, 3, 4, 5, 6)	<u>Drying Kilns</u> Manufacturer.: Wellons Model: double-track Year Installed: 2009 (For kilns 1, 2, and 3) Total Max. Capacity: 76.0 million board feet per any consecutive 12-month period (76.0 MMBf/yr)	None	Kiln vents
Boiler	<u>Cogeneration Boiler</u> Manufacturer: Yanke Energy (Riley on nameplate SN-2772) Steam Rated capacity: 72,000 lbs Built: 1951 Remanufactured: 1983 Model: CG-1 Heat capacity: 102 MMBtu/hr Burner type: Stoker Stack diameter: 7.25 feet Stack height: 75 feet Exit temperature: 156°F Flow rate: 46,439 acfm Fuels: bark, sawdust, and chips	Multiclone Manufacturer: Joy Manufacturing Model: 9-inch Joy  Wet Scrubber Manufacturer: Yanke Energy Model: CG-1 W.S.	Multiclone and scrubber exhaust stacks
Bins	Sawdust and Chip Bins (ST 3 & 4)	None	Vents
Engine	150 HP Emergency Engine	None	Exhaust Stack

### Emissions Inventories

The annual throughput limit will not increase. Therefore, annual emissions will not increase. The short-term values will potentially increase, so that increase is evaluated in this analysis.

The additional information sent in an e-mail on August 7, 2013 indicated a maximum charge amount of 123,840 boardfeet per kiln. The verification analysis done for this permit assumed a maximum potential to emit of the maximum boardfeet, that all of each pollutant was emitted in the first day, and a 24-hour average was used to estimate the emissions. This is a conservative estimate of emissions.

### Potential to Emit

IDAPA 58.01.01 defines Potential to Emit as the maximum capacity of a facility or stationary source to emit an air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of the facility or source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is state or federally enforceable. Secondary emissions do not count in determining the potential to emit of a facility or stationary source.

### Change in Potential to Emit

The change in facility-wide potential to emit is used to determine if short-term regulatory standards are met. The following table presents the facility-wide change in the potential to emit for criteria pollutants.

Table 2 CHANGES IN POTENTIAL TO EMIT FOR REGULATED AIR POLLUTANTS

Source	PM <sub>10</sub> /PM <sub>2.5</sub>		VOC	
	lb/hr	T/yr	lb/hr	T/yr
Changes in Potential to Emit	0.18	0	45	0

### Non-Carcinogenic TAP Emissions

A summary of the estimated PTE for emissions increase of non-carcinogenic toxic air pollutants (TAP) is provided in the following table.

Table 3 PRE- AND POST PROJECT POTENTIAL TO EMIT FOR NON-CARCINOGENIC TOXIC AIR POLLUTANTS

Non-Carcinogenic Toxic Air Pollutants	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)
Methanol	2.3	17.3	N
Acrolein	0.07	0.017	Y
Propionaldehyde	0.05	0.029	Y

Some of the PTEs for non-carcinogenic TAP were exceeded as a result of this project. Therefore, modeling is required for Acrolein and Propionaldehyde because the 24-hour average non-carcinogenic screening ELs identified in IDAPA 58.01.01.586 were exceeded.

### Carcinogenic TAP Emissions

There is no change in annual throughput. Therefore, because the carcinogenic TAP emissions limits are based on annual average values, and there is no increase in annual emissions, no analysis is needed.

### Post Project HAP Emissions

HAP emissions are used to assess annual amounts. There is no change in annual emissions.

### ***Ambient Air Quality Impact Analyses***

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 ambient air quality standard. 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 TAP is provided in Appendix A.

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).

## **REGULATORY ANALYSIS**

### ***Attainment Designation (40 CFR 81.313)***

The facility is located in Adams County, which is designated as attainment or unclassifiable for PM<sub>2.5</sub>, PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO, and Ozone. Refer to 40 CFR 81.313 for additional information.

### ***Facility Classification***

Because the emissions have not changed, the classification will not change from the previous permit, which is classified as "A"

**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 new emissions source. 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.

Because this is a Tier I source, IDAPA 58.01.01.209.05 is used. Because this permit does not violate any terms or conditions of the existing Tier I operating permit, 209.05.a is used to issue this permit.

**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.

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

IDAPA 58.01.01.301 .....Requirement to Obtain Tier I Operating Permit

This facility has been classified as a major facility in a previous analysis as defined in IDAPA 58.01.01.008.10. A Tier I renewal is currently in progress.

**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), nor is it 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. The facility is/is not a designated facility as defined in 40 CFR 52.21(b)(1)(i)(a), and does not have facility-wide emissions of any criteria pollutant that exceed 250 T/yr.

**NSPS Applicability (40 CFR 60)**

The facility is not subject to any NSPS requirements 40 CFR Part 60.

**NESHAP Applicability (40 CFR 61)**

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

**MACT Applicability (40 CFR 63)**

It should also be noted that the facility may be subject to the following subparts, but because the Tier I Operating Permit is currently in the process of being renewed, assessment of applicability in this PTC action was not done to avoid redundancy in the permits. The subparts are federally regulated and should be more appropriately added into the Tier I permit. These are 40 CFR 63 DDDD (National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products) for the kilns, Subpart DDDDD (NESHAPS: Industrial, Commercial, and Institutional Boilers and Process Heaters), JJJJJ (NESHAPS: Industrial, Commercial, and Institutional Boilers Area Sources) for the boiler, and ZZZZ (NESHAPS: Stationary Reciprocating Internal Combustion Engines) for the emergency engine. These regulations need be addressed in the upcoming Tier I application.

**Permit Conditions Review**

This section describes the permit conditions for this initial permit or only those permit conditions that have been added, revised, modified or deleted as a result of this permitting action.

All references to the kilns have been changed from three to six kilns.

Revised Permit Condition:

Permit Condition 2.11 for testing the boiler has been changed from requiring the date of the performance test from August 16, 2012, to June 18, 2018, because the most recent test has shown an emission rate that is less than 75% of both standards in the permit, so the next test is required to be done five years from the previous test which was conducted on June 20, 2013. The date was also specified in the third bullet item in the permit condition.

Removed Permit Condition:

This permit condition for the boiler was removed as requested in the permit application:

*CO Performance Test Request to remove this permit condition*

- *A CO performance test shall be conducted no later than August 16, 2012 and at least once every five years thereafter, the permittee shall conduct a performance test to measure CO emissions from the boiler stack. The test shall be conducted to demonstrate compliance with the emission rate limit specified by Emissions Limit permit condition. Each performance test conducted to demonstrate compliance shall be performed in accordance with IDAPA 58.01.01.157.*
- *All performance testing shall be conducted in accordance with the Performance Testing General Provision.*

An e-mail was sent from DEQ to Tamarack on August 10, 2012 regarding the CO testing. Excerpt as follows:

*“DEQ is sending Tamarack this e-mail to assist in clarifying the confusion regarding the carbon monoxide (CO) testing permit condition in the Tier I operating permit, T1-2007.0161, issued March 27, 2009 and the PTC, P-2009.0064, issued March 31, 2011.*

*As discussed before the intent was that Tamarack would source test the CO emissions to determine the emission rate in comparison to the requested CO limit in the Tier I operating permit. It was intended if the source test results for CO emissions rate were below 75% of the permitted limit for CO, Tamarack would not have to test CO again in regards to this permit condition. However when the Tier II/PTC permit issued July 27, 2007 and the PTC issued November 4, 2009 for the kilns were combined into the PTC issued March 31, 2012 the old permit condition for CO was included and the intent to eliminate the CO testing was not addressed.*

*The agreement established in the Tier I operating permit issued March 27, 2009 addressing the CO testing procedure will be honored regarding the elimination of CO testing if the source test of August 16, 2007 indicated the CO emission rate to be less than 75% of the permitted limit for CO. The August 16, 2007 source test for CO indicated the CO emission rate to be approximately 65% of the permitted limit for CO.*

*Thus DEQ will not be requiring Tamarack to perform a retest of CO at this time or any more source test for CO in regards to the permit condition of Tier I operating permit T1-2007.0161 issued on March 27, 2009 or the PTC P-2009.0064 issued on March 31, 2011.”*

Revised Permit Condition:

The hourly PM<sub>10</sub> limit for the kilns was increased from 0.44 to 0.62 to accommodate the three new kilns. The annual limit has not changed.

New Permit Condition:

*No Hemlock shall be dried in any of the kilns.*

From the OSU study, the emission factor for PM is 0.05 lb/mbf for hemlock. All other types of wood are 0.02 lb/mbf or less. When the kiln emissions are estimated at the worst case using 0.05 lb/mbf, modeling predicts that the PM<sub>2.5</sub> emissions exceed the NAAQS. When 0.02 lb/mbf is used, the modeling predicts that the PM<sub>2.5</sub> NAAQS limit is met no matter how the drying is done. Therefore, the method to show compliance with the short-term NAAQS level was agreed to be to not dry any hemlock.

No specific tracking requirements were written.

## **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 no request for a public comment period on DEQ's proposed action. Refer to the chronology for public comment opportunity dates.

## APPENDIX A – EMISSIONS INVENTORIES

Potential to Emit, Increase

123.8400 Max capacity of each  
kiln, mbf

Sources, Point	Six kilns, lb/hr (24-hour average) Six kilns	Increase, lb/hr (24-hour average) Three kilns	EL (lbhr)
Max per charge for each kiln = 123,840 bdf = 123.84 Mbdft			
PM, PM10, and PM2.5	0.6192	0.3096	
SO2	na	na	
NOx	na	na	
CO	na	na	
VOC (emission factor from December 2012 EPA Excel Worksheet)	89.79	44.89	
Methanol (585)		2.29	17.30
Acrolein (585)		0.07	0.02 Exceeds EL
Propionaldehyde (585)		0.05	0.03 Exceeds EL

585 TAP

Emission Factors, EPA  
Dec 2012, lb/Mbf

Methanol	0.1480
Acrolein	0.0045
Propionaldehyde	0.0032

## **APPENDIX B – AMBIENT AIR QUALITY IMPACT ANALYSES**

## **MEMORANDUM**

**DATE:** November 15, 2013

**TO:** Carole Zundel, Permit Writer, Air Program

**FROM:** Kevin Schilling, Stationary Source Modeling Coordinator, Air Program

**PROJECT:** P-2009.0064 PROJ61224 PTC Application for the Tamarack Mills, Permit to Construct for new Drying Kilns

**SUBJECT:** Demonstration of Compliance with IDAPA 58.01.01.203.02 (NAAQS) and 203.03 (TAPs)

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### **1.0 Summary**

Tamarack Mills, LLC dba Evergreen Forest and Tamarack Energy Partnership (Tamarack) submitted a Permit to Construct (PTC) application for three new lumber drying kilns located at Tamarack's sawmill in New Meadows, Idaho. Project-specific air quality impact analyses involving atmospheric dispersion modeling of estimated emissions associated with the proposed project were submitted to DEQ to demonstrate that the proposed plant would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02 and 203.03 [Idaho Air Rules Section 203.02 and 203.03]). Tamarack submitted the analyses and applicable information and data enabling DEQ to evaluate potential impacts to ambient air.

Tamarack submitted project-specific air quality impact analyses to demonstrate compliance of the proposed project with air quality standards. The DEQ review summarized by this memorandum addressed only the rules, policies, methods, and data pertaining to the pollutant dispersion modeling analyses used to demonstrate that the estimated emissions associated with operation of the proposed facility or modification will not cause or significantly contribute to a violation of any applicable air quality standard. This review did not evaluate compliance with other rules or analyses that do not pertain to the air impact analyses. This modeling review also did not evaluate the accuracy of emissions estimates. Evaluation of emissions estimates was the responsibility of the permit writer and is addressed in the Statement of Basis.

The submitted air quality impact analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data (review of emissions estimates was addressed by the DEQ permit writer); 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the project as modeled were below Significant Impact Levels (SILs) or other applicable regulatory thresholds; or b) that predicted pollutant concentrations from emissions associated with the project as modeled, when appropriately combined with co-contributing sources and background concentrations, were below applicable National Ambient Air Quality Standards (NAAQS) at ambient air locations where and when the project has a significant impact; 5) showed that Toxic Air Pollutant (TAP) emissions increases associated with the project do not result in increased ambient air impacts exceeding allowable TAP increments. Table 1 presents key assumptions and results to be considered in the development of the permit.

<b>Table 1. KEY CONDITIONS USED IN MODELING ANALYSES</b>	
<b>Criteria/Assumption/Result</b>	<b>Explanation/Consideration</b>
Daily allowable PM <sub>10</sub> and PM <sub>2.5</sub> emissions from the existing kilns will be reduced from 0.52 lb/hr to by 0.31 lb/hr. This is the daily emissions for all three existing kilns divided by 24 hr/day.	Modeled emissions from the existing kilns were reduced from what was modeled in the initial 2009 PTC.
Submitted modeling of formaldehyde and acetaldehyde (carcinogenic TAPs) were not reviewed by DEQ.	The DEQ permit writer determined that the new source or modification does not result in emissions that exceed the EL.
Emissions rates used in the modeling analyses, as listed in this memorandum, represent maximum potential emissions as given by design capacity or as limited by the issued permit for the specific pollutant and averaging period.	Compliance has not been demonstrated for emissions rates greater than those used in the modeling analyses.

The proposed project involves the following: 1) construction of three new Wellons lumber dry kilns

Air impact analyses are required by Idaho Air Rules to be conducted according to methods outlined in 40 CFR 51, Appendix W (Guideline on Air Quality Models). Appendix W requires that facilities be modeled using emissions and operations representative of design capacity or as limited by a federally enforceable permit condition. The submitted information and analyses demonstrated to the satisfaction of the Department that operation of the proposed facility or modification will not cause or significantly contribute to a violation of any ambient air quality standard, provided the key conditions in Table 1 are representative of facility design capacity or operations as limited by a federally enforceable permit condition.

## **2.0 Background Information**

### ***2.1 Applicable Air Quality Impact Limits and Modeling Requirements***

This section identifies applicable ambient air quality standards and analyses used to demonstrate compliance with air quality standards

#### ***2.1.1 Area Classification***

The proposed dry kiln project is a modification to the existing Tamarack stationary facility. The facility is located near New Meadows, Idaho, in Adams County. The area is designated as attainment or unclassifiable for all pollutants.

#### ***2.1.2 Modeling Applicability for Criteria Pollutants***

Idaho Air Rules Section 203.02 state that a PTC cannot be issued unless the application demonstrates to the satisfaction of DEQ that the new source or modification will not cause or significantly contribute to a NAAQS violation. Atmospheric dispersion modeling is used to evaluate the potential impact of a proposed project to ambient air and demonstrate NAAQS compliance. However, if the emissions associated with a project are very small, project-specific modeling analyses may not be necessary.

If the emissions increase associated with a project are below modeling applicability thresholds established in the *Idaho Air Quality Modeling Guideline* (State of Idaho Guideline for Performing Air

Quality Impact Analyses. Doc. ID AQ011 {rev. 2, July 2011}

<http://www.deq.idaho.gov/media/355037modeling-guideline.pdf>), then a project-specific analysis is not required. Modeling applicability emissions thresholds were developed by DEQ based on modeling of a hypothetical source designed to reasonably assure that impacts are below the applicable Significant Impact Level (SIL). DEQ has established two threshold levels: Level 1 thresholds are unconditional thresholds, requiring no approval for use by DEQ Level 2 thresholds are conditional upon DEQ approval, which depends on evaluation of the project and the site, including emissions quantities, stack parameters, number of sources emissions are distributed amongst, distance between the sources and the ambient air boundary, and the presence of sensitive receptors near the ambient air boundary.

Section 3.2.1 provides results of the modeling applicability analysis

### **2.1.3 Significant and Cumulative NAAQS Impact Analyses**

If modeled maximum pollutant impacts to ambient air from the emissions sources associated with new facility or the emissions increase associated with a modification exceed the significant impact levels (SILs) of Idaho Air Rules Section 006 (referred to as a significant contribution in Idaho Air Rules) or as incorporated by reference as per Idaho Air Rules Section 107.03, then a cumulative NAAQS impact analysis is necessary to demonstrate compliance with NAAQS and Idaho Air Rules Section 203.02. A cumulative NAAQS impact analysis may also be required for permit revisions driven by compliance/enforcement actions, any correction of emissions limits or other operational parameters that may affect pollutant impacts to ambient air, or other cases where DEQ believes NAAQS may be threatened by the emissions associated with the proposed project.

The SIL analyses for a facility modification involves modeling the increase in allowable or potential emissions that results from the proposed modification. Any decreases in emissions are modeled as negative values to account for the reduction in impacts to ambient air.

A cumulative NAAQS impact analysis for attainment area pollutants involves assessing ambient impacts (typically the design values consistent with the form of the standard) from facility-wide emissions, and emissions from any nearby co-contributing sources, and then adding a DEQ-approved background concentration value to the modeled result that is appropriate for the criteria pollutant/averaging time at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SILs and specifies the modeled design value that must be used for comparison to the NAAQS. NAAQS compliance is evaluated on a receptor-by-receptor basis.

If the cumulative NAAQS impact analysis indicates a violation of the standard, the permit may not be issued if the proposed project has a significant contribution (exceeding the SIL) to the modeled violation. This evaluation is made specific to both time and space. If the SIL analysis indicates the facility/modification has an impact exceeding the SIL, there might not be a significant contribution to a violation if impacts are below the SIL at the specific receptor showing the violation during the time periods when a modeled violation occurred.

Compliance with Idaho Air Rules Section 203.02 is demonstrated if: a) all modeled impacts of the SIL analysis are below the applicable SIL or other level determined to be inconsequential to NAAQS compliance; or b) modeled design values of the cumulative NAAQS impact analysis (modeling all emissions from the facility and co-contributing sources, and adding a background concentration) are less than applicable NAAQS at receptors where impacts from the proposed facility/modification

exceeded the SIL or other identified level of consequence; or c) if the cumulative NAAQS analysis showed NAAQS violations, the impact of proposed facility/modification to any modeled violation was inconsequential (typically assumed to be less than the established SIL) for that specific receptor and for the specific modeled time when the violation occurred

**Table 2. APPLICABLE REGULATORY LIMITS**

Pollutant	Averaging Period	Significant Impact Levels <sup>a</sup> ( $\mu\text{g}/\text{m}^3$ ) <sup>b</sup>	Regulatory Limit <sup>c</sup> ( $\mu\text{g}/\text{m}^3$ )	Modeled Design Value Used <sup>d</sup>
PM <sub>10</sub> <sup>e</sup>	24-hour	5.0	150 <sup>f</sup>	Maximum 6 <sup>th</sup> highest <sup>g</sup>
PM <sub>2.5</sub> <sup>h</sup>	24-hour	1.2	35 <sup>i</sup>	Mean of maximum 1 <sup>st</sup> highest <sup>j</sup>
	Annual	0.3	15 <sup>k</sup>	Mean of maximum 1 <sup>st</sup> highest <sup>j</sup>
Carbon monoxide (CO)	1-hour	2,000	40,000 <sup>l</sup>	Maximum 2 <sup>nd</sup> highest <sup>m</sup>
	8-hour	500	10,000 <sup>l</sup>	Maximum 2 <sup>nd</sup> highest <sup>m</sup>
Sulfur Dioxide (SO <sub>2</sub> )	1-hour	3 ppb <sup>n</sup> (7.8 $\mu\text{g}/\text{m}^3$ )	75 ppb <sup>o</sup> (196 $\mu\text{g}/\text{m}^3$ )	Mean of maximum 4 <sup>th</sup> highest <sup>p</sup>
	3-hour	25	1,300 <sup>l</sup>	Maximum 2 <sup>nd</sup> highest <sup>m</sup>
	24-hour	5	365 <sup>l</sup>	Maximum 2 <sup>nd</sup> highest <sup>m</sup>
	Annual	1.0	80 <sup>q</sup>	Maximum 1 <sup>st</sup> highest <sup>m</sup>
Nitrogen Dioxide (NO <sub>2</sub> )	1-hour	4 ppb <sup>r</sup> (7.5 $\mu\text{g}/\text{m}^3$ )	100 ppb <sup>s</sup> (188 $\mu\text{g}/\text{m}^3$ )	Mean of maximum 8 <sup>th</sup> highest <sup>t</sup>
	Annual	1.0	100 <sup>q</sup>	Maximum 1 <sup>st</sup> highest <sup>m</sup>
Lead (Pb)	3-month <sup>u</sup>	NA	0.15 <sup>q</sup>	Maximum 1 <sup>st</sup> highest <sup>m</sup>
	Quarterly	NA	1.5 <sup>q</sup>	Maximum 1 <sup>st</sup> highest <sup>m</sup>

- <sup>a</sup> Idaho Air Rules Section 006 (definition for significant contribution) or as incorporated by reference as per Idaho Air Rules Section 107.03.b.
- <sup>b</sup> Micrograms per cubic meter.
- <sup>c</sup> Incorporated into Idaho Air Rules by reference, as per Idaho Air Rules Section 107.
- <sup>d</sup> The maximum 1<sup>st</sup> highest modeled value is always used for the significant impact analysis unless indicated otherwise. Modeled design values are calculated for each ambient air receptor.
- <sup>e</sup> Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
- <sup>f</sup> Not to be exceeded more than once per year on average over 3 years.
- <sup>g</sup> Concentration at any modeled receptor when using five years of meteorological data.
- <sup>h</sup> Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
- <sup>i</sup> 3-year average of the upper 98<sup>th</sup> percentile of the annual distribution of 24-hour concentrations.
- <sup>j</sup> 5-year mean of the 1<sup>st</sup> highest modeled 24-hour concentrations at the modeled receptor for each year of meteorological data modeled. The monitoring design value is used for background concentrations for PM<sub>2.5</sub> analyses. This approach is also used for the significant impact analysis.
- <sup>k</sup> 3-year average of annual concentration. The NAAQS was revised to 12  $\mu\text{g}/\text{m}^3$  on December 14, 2012. However, this standard will not be applicable for permitting purposes in Idaho until it is incorporated by reference *sine die* into Idaho Air Rules (Spring 2014).
- <sup>l</sup> Not to be exceeded more than once per year.
- <sup>m</sup> Concentration at any modeled receptor.
- <sup>n</sup> Interim SIL established by EPA policy memorandum.
- <sup>o</sup> 3-year average of the upper 99<sup>th</sup> percentile of the annual distribution of maximum daily 1-hour concentrations.
- <sup>p</sup> 5-year mean of the 4<sup>th</sup> highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year average of maximum modeled 1-hour impacts for each year is used.
- <sup>q</sup> Not to be exceeded in any calendar year.
- <sup>r</sup> 3-year average of the upper 98<sup>th</sup> percentile of the annual distribution of maximum daily 1-hour concentrations.
- <sup>s</sup> 5-year mean of the 8<sup>th</sup> highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year average of maximum modeled 1-hour impacts for each year is used.
- <sup>t</sup> 5-year mean of the 4<sup>th</sup> highest daily 1-hour maximum modeled concentrations for each year of meteorological data modeled. For the significant impact analysis, the 5-year average of maximum modeled 1-hour impacts for each year is used.
- <sup>u</sup> 3-month rolling average.

NO<sub>2</sub> and SO<sub>2</sub> short-term standards have recently been promulgated by EPA. The standards became applicable for permitting purposes in Idaho when they were incorporated by reference *sine die* into Idaho Air Rules (Spring 2011).

The PM<sub>2.5</sub> annual standard was changed from 15 µg/m<sup>3</sup> to 12 µg/m<sup>3</sup> on December 14, 2012. The revised standard will not become applicable for permitting purposes until it is incorporated *sine die* into Idaho Air Rules (Spring 2014).

#### **2.1.4 Toxic Air Pollutant Analyses**

Emissions of toxic substances are generally addressed by Idaho Air Rules Section 161:

*Any contaminant which is by its nature toxic to human or animal life or vegetation shall not be emitted in such quantities or concentrations as to alone, or in combination with other contaminants, injure or unreasonably affect human or animal life or vegetation.*

Permitting requirements for toxic air pollutants (TAPs) from new or modified sources are specifically addressed by Idaho Air Rules Section 203.03 and require the applicant to demonstrate to the satisfaction of DEQ the following:

*Using the methods provided in Section 210, the emissions of toxic air pollutants from the stationary source or modification would not injure or unreasonably affect human or animal life or vegetation as required by Section 161. Compliance with all applicable toxic air pollutant carcinogenic increments and toxic air pollutant non-carcinogenic increments will also demonstrate preconstruction compliance with Section 161 with regards to the pollutants listed in Sections 585 and 586.*

Per Section 210, if the total projectwide emissions increase of any TAP associated with a new source or modification exceeds screening emission levels (ELs) of Idaho Air Rules Section 585 or 586, then the ambient impact of the emissions increase must be estimated. If ambient impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of Idaho Air Rules Section 585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of Idaho Air Rules Section 586, then compliance with TAP requirements has been demonstrated.

Idaho Air Rules Section 210.20 states that if TAP emissions from a specific source are regulated by the Department or EPA under 40 CFR 60, 61, or 63, then a TAP impact analysis under Section 210 is not required for that TAP.

## **2.2 Background Concentrations**

Background concentrations are used in the cumulative NAAQS impact analyses to account for impacts from sources not explicitly modeled. Cumulative NAAQS analyses were only needed for PM<sub>2.5</sub> and PM<sub>10</sub>. There were no other criteria pollutant emissions increases estimated for the proposed modification.

There are no particulate monitors in the area that could be considered as reasonably representative of the Tamarack site. A beta version of a background concentration tool was developed by the Northwest International Air Quality Environmental Science and Technology Consortium (NW AIRQUEST) and

provided through Washington State University (located at <http://lar.wsu.edu/nw-airquest/lookup.htm>). The tool uses regional scale modeling of pollutants in Washington, Oregon, and Idaho, with modeling results adjusted according to available monitoring data. Using the background concentration tool, DEQ suggested the following background concentrations as shown in Table 3. These values compare fairly well to monitored values from other fairly remote locations.

<b>Pollutant</b>	<b>Averaging Period</b>	<b>Background Concentration (<math>\mu\text{g}/\text{m}^3</math>)<sup>a</sup></b>
PM <sub>2.5</sub> <sup>b</sup>	24-hour	16 <sup>c</sup>
	Annual	6 <sup>d</sup>
PM <sub>10</sub> <sup>e</sup>	24-hour	38 <sup>f</sup>

<sup>a.</sup> Micrograms per cubic meter.

<sup>b.</sup> Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

<sup>c.</sup> 98<sup>th</sup> percentile of annual distributions of 24-hour concentrations.

<sup>d.</sup> Annual average concentrations.

<sup>e.</sup> Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.

### **3.0 Modeling Impact Assessment**

#### **3.1 Modeling Methodology**

This section describes the modeling methods used by the applicant to demonstrate preconstruction compliance with applicable air quality standards.

##### **3.1.1 Overview of Analyses**

Tamarack submitted project-specific air impact analyses that were determined by DEQ to be reasonably representative of the proposed kiln project. Results of the submitted analyses demonstrate compliance with applicable air quality standards to DEQ's satisfaction, provided the facility is operated as described in the submitted application and in this memorandum.

Table 4 provides a brief description of parameters used in the modeling analyses.

<b>Parameter</b>	<b>Description/Values</b>	<b>Documentation/Additional Description</b>
General Facility Location	New Meadows	The area is an attainment or unclassified area for all criteria pollutants.
Model	AERMOD	AERMOD with the PRIME downwash algorithm, version 12345.
Meteorological Data	Boise	2005-2009 with wind direction rotated. See Section 3.1.6 of this memorandum.
Terrain	Considered	Receptor, building, and emissions source elevations were determined using Digital Elevation Model (DEM) files.
Building Downwash	Considered	Plume downwash was considered for the structures associated with the facility.
Receptor Grid	Grid 1	25-meter spacing along the roadway bisecting the facility
	Grid 2	50-meter spacing out to at least 100 meters.
	Grid 3	100-meter spacing out to 350 meters.
	Grid 4	300-meter spacing out to 850 meters

### **3.1.2 Modeling protocol and Methodology**

A modeling protocol was submitted to DEQ prior to the application. The protocol was submitted by Chris Johnson on behalf of Tamarack. DEQ provided an electronic protocol approval letter. Project-specific modeling was generally conducted using data and methods described in the protocol and in the *Idaho Air Quality Modeling Guideline*.

### **3.1.3 Model Selection**

Idaho Air Rules Section 202.02 requires that estimates of ambient concentrations be based on air quality models specified in 40 CFR 51, Appendix W (Guideline on Air Quality Models). The refined, steady state, multiple source, Gaussian dispersion model AERMOD was promulgated as the replacement model for ISCST3 in December 2005. AERMOD retains the single straight line trajectory of ISCST3, but includes more advanced algorithms to assess turbulent mixing processes in the planetary boundary layer for both convective and stable stratified layers.

AERMOD was used for the modeling analyses to evaluate impacts of the facility.

### **3.1.4 Meteorological Data**

There are no meteorological stations near the facility that gather adequate data for dispersion modeling purposes. DEQ provided Chris Johnson (Tamarack's consultant) with model-ready meteorological files for Boise and McCall, initially suggesting that modeling should be performed for both sets of data. DEQ suggested rotating the wind direction fields in the Boise data such that the primary wind directions are orientated with the direction of the valley.

After reviewing the meteorological data assessment presented in the protocol, DEQ agreed that the McCall meteorological data are less likely to be representative of the wind fields at the site than rotated Boise data. Also, because maximum impacts are likely to be located very close to the facility and largely driven by downwash, parameters such as wind direction and speed will be much more important than other meteorological parameters (temperature, cloud cover, surface characteristics, etc) that would be better represented by McCall data. DEQ did not require modeling to be performed using both Boise and McCall data because of the following: 1) the magnitude of emissions increase associated with the project is relatively small, as the facility's consultant insists there will be no actual increase in emissions associated with the project; 2) the receptors likely to be impacted to the greatest degree are those along the road bisecting the facility, and there is a very limited opportunity for public exposure at such ambient air locations.

### **3.1.5 Terrain Effects**

Terrain data were extracted from 7.5-minute USGS DEM files in the NAD27 datum. Although National Elevation Dataset (NED) files have largely replaced the use of DEM files, using DEM files for this project was appropriate because buildings, ambient air boundaries, and emissions source locations used in the previous analyses were in the NAD27 datum.

The terrain preprocessor AERMAP was used to extract the elevations from the DEM files and assign them to receptors in the modeling domain in a format usable by AERMOD. AERMAP also determined the hill-height scale for each receptor. The hill-height scale is an elevation value based on the surrounding terrain which has the greatest effect on that individual receptor. The model AERMOD

uses those heights to evaluate whether the emissions plume has sufficient energy to travel up and over the terrain or if the plume will travel around the terrain.

### **3.1.6 Building Downwash**

Potential downwash effects on the emissions plume were accounted for in the model by using building parameters (locations of building corners, base elevation, and building heights) The building parameters for existing buildings were taken directly from previous dispersion modeling analyses and were not reverified in this project's application. The Building Profile Input Program for the PRIME downwash algorithm (BPIP-PRIME) was used to calculate direction-specific dimensions and Good Engineering Practice (GEP) stack height information from building dimensions/configurations and release parameters for input to AERMOD.

### **3.1.7 Ambient Air Boundary**

The application states that the ambient air boundary used for the project is well inside of the property boundary for the site. Although the site is not fenced, public access is precluded by: 1) limited physical access to the area; 2) employees that are trained to discourage uninvited access; 3) the remoteness of the area, with limited public interest in accessing the area.

Highway US95 bisects the facility, including groups of emissions sources. Modeling receptors were placed along the highway since it is an area of public access. For TAPs modeling, receptors along public roadways that transect a facility can be excluded from ambient air as per Idaho Air Rules Section 220.03.b.

### **3.1.8 Receptor Network**

Table 4 describes the receptor network used in the submitted modeling analyses. DEQ contends that the receptor network was adequate to reasonably assure compliance with applicable air quality standards at all ambient air locations.

## **3.2 Emission Rates**

Emissions rates of criteria pollutants and TAPs for the proposed project were provided by the applicant for various applicable averaging periods. DEQ modeling review, described in this memorandum, did not include review of emissions rates for accuracy. Review and approval of estimated emissions was the responsibility of the DEQ permit writer. DEQ modeling review included verification that the application's potential emissions rates were properly used in the model.

### **3.2.1 Criteria Pollutant Emissions Rate**

Table 5 lists criteria pollutant emissions rates used in the project-specific modeling analyses for all applicable averaging periods. The rates listed represent the maximum allowable rate as averaged over the specified period.

The only criteria pollutants emitted as a result of the new kiln project will be PM<sub>2.5</sub>, PM<sub>10</sub>, and VOCs (regulate VOCs as a control of ozone). Modeling analyses of PM<sub>5</sub> and PM<sub>10</sub> were required because emissions from the project exceeded modeling thresholds listed in the *Idaho Air Quality Modeling*

*Guideline.* Ozone modeling was not required because VOC emissions are well below a 100 ton/year emissions threshold used as a screening analysis trigger for ozone impacts.

<b>Table 5. TAMARACK MILL CRITERIA POLLUTANT EMISSIONS USED IN ANALYSES</b>			
<b>Emissions Point in Model</b>	<b>PM<sub>2.5</sub><sup>a</sup> 24-Hour</b>	<b>PM<sub>2.5</sub> Annual</b>	<b>PM<sub>10</sub><sup>b</sup> 24-Hour</b>
KILN4A, KILN4B, KILN4C, KILN5A, KILN5B, KILN5C, KILN6A, KILN6B, KILN6C – new kilns	0.04612 <sup>c</sup> (0.04612) <sup>c,d</sup>	0.04612 <sup>c</sup> (0.04612) <sup>c,d</sup>	0.04612 <sup>c</sup> (0.04612) <sup>c,d</sup>
KILN1A, KILN1B, KILN1C, KILN2A, KILN2B, KILN2C, KILN3A, KILN3B, KILN3C – existing kilns	0.04612 <sup>c</sup> (-0.04612) <sup>c,d</sup>	0.04612 <sup>c</sup> (-0.04612) <sup>c,d</sup>	0.04612 <sup>c</sup> (-0.04612) <sup>c,d</sup>
DEQ verification analyses: new kilns	0.0344 <sup>c</sup> (0.0344) <sup>c,d</sup>	0.0344 <sup>c</sup> (0.0344) <sup>c,d</sup>	0.0344 <sup>c</sup> (0.0344) <sup>c,d</sup>
DEQ verification analyses: existing kilns	0.0344 <sup>c</sup> (-.0239) <sup>c,d</sup>	0.0344 <sup>c</sup> (-.0239) <sup>c,d</sup>	0.0344 <sup>c</sup> (-.0239) <sup>c,d</sup>
BOILER <sup>e</sup>	17.72	17.72	18.00
CLTWR <sup>e</sup>	0.290	0.290	0.290
BLOWPPIL <sup>e</sup>	0.141	0.141	0.703
TR3 <sup>e</sup>	1.56E-6	1.56E-6	4.68E-6
TR4 <sup>e</sup>	9.00E-6	9.00E-6	9.00E-5
TR5 <sup>e</sup>	0.00277	0.00277	0.0277
ST2 <sup>e</sup>	1.00E-5	1.00E-5	5.00E-5 <sup>e</sup>
P4 <sup>e</sup>	0.0300	0.0300	0.150
TR6 <sup>e</sup>	0.0680	0.0680	0.408
ST3AND4 <sup>e</sup>	0.0190	0.0190	0.109
TR1 <sup>e</sup>	4.00E-5	4.00E-5	4.00E-5
DEBARK <sup>e</sup>	0.025	0.025	0.120
HOG <sup>e</sup>	0.0110	0.0110	0.0510

- a. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
- b. Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
- c. Values listed are for each emissions point in the model (3 vents per kiln).
- d. Values in parentheses are those used in the SIL analysis.
- e. Modeled as a co-contributing source.

Emissions from the kilns are the only sources affected by the proposed modification. Other facility wide emissions are listed in Table 5 because cumulative NAAQS analyses were needed for both PM<sub>10</sub> and PM<sub>2.5</sub>. The submitted application did not provide any discussion or justification for the emissions estimates used for emissions sources other than the kilns. Listed PM<sub>10</sub> emissions are fairly consistent with what was modeled in previous analyses submitted in support of the 2009 PTC. Modeling performed in 2009 did not include PM<sub>2.5</sub> analyses. DEQ evaluated the importance of accurately assessing PM<sub>2.5</sub> emissions, as a fraction of given PM<sub>10</sub> emissions, through verification modeling. Section 3.6 describes the DEQ sensitivity analyses.

The initial application calculated PM<sub>2.5</sub> and PM<sub>10</sub> 24-hour emissions from the three new kilns at 0.273 pounds/hour (0.0303 pounds/hour·vent X 9 vents). The three existing kilns were modeled in the SIL analysis at 0.0303 pounds/hour·vent, accounting for reduced allowable/potential emissions because of a change in the kiln drying cycle time. DEQ discussed estimated emissions rates from the kilns with the applicant's consultant, and revised modeling was submitted on August 16, 2013, using an updated value of 0.415 pounds/hour (0.0461 pounds/hour·vent X 9 vents) for the new kilns and 0.0461 pounds/hour·vent for the existing kilns.

The revised emissions rates were still based on emissions per lumber charge evenly distributed over two days, and DEQ felt adequate evidence was not submitted to support this assumption. DEQ performed sensitivity analyses using a value of 0.774 pounds/hour (0.0860 pound/hour·vent X 9 vents) and PM<sub>2.5</sub> NAAQS compliance could not be demonstrated. Rather than accept a throughput restriction for the kilns, the applicant agreed to a treespecies limit since high-emitting tree species would not be processed at the facility. The final agreed upon kiln 24-hour averaged PM<sub>2.5</sub> and PM<sub>10</sub> emissions rates were 0.619 pounds/hour for all six kilns. The single kiln vent emissions rate was then calculated at (0.619 pounds/hour) / (18 vents) = 0.03439 pounds/hour·vent. The emissions from the existing kilns were based on the difference between the current allowable rate and the future allowable rate. Since the permit did not specifically list an emissions rate limit, the applicable existing allowable rate is the value modeled for the previously issued permit, or 0.05825 pounds/hour·vent. The modeled change was then calculated at (0.03439 pounds/hour·vent) - (0.05825 pounds/hour·vent) = -0.02386 pounds/hour·vent.

The submitted SIL analyses modeled the existing kilns at 0.0415 pounds/hour·vent. DEQ performed verification modeling analyses using the corrected emissions rates.

### 3.2.2 TAP Emissions Rates

Tamarack modeled those TAPs where the increase in TAP emissions associated with the proposed project exceeded the emissions screening levels (ELs) of Idaho Air Rules Section 585 and 586.

Table 6 provides modeled emissions rates for TAPs. Emissions of other TAPs were below applicable ELs. The applicant submitted modeling results for formaldehyde and acetaldehyde. The modeling was not reviewed by DEQ because the DEQ permit writer determined that the new source or modification did not result in an annual-averaged increase in emissions of formaldehyde or acetaldehyde.

DEQ calculated emissions estimates of acrolein and propionaldehyde that differed from those submitted by the applicant. Also, DEQ did not agree with the applicant's assertion that there would be a decrease in these TAPs from the existing kilns, so the DEQ verification analyses assumed no change in emissions from the existing kilns.

Emissions Point in Model	Pollutant	Averaging Period	Emissions Rate (lb/hr) <sup>a</sup>
KILN4A, KILN4B, KILN4C, KILN5A, KILN5B, KILN5C, KILN6A, KILN6B, KILN6C – new kilns	Acrolein	24-hour	0.00461 (0.007744)
	Propionaldehyde	24-hour	0.00406 (0.005556)
KILN1A, KILN1B, KILN1C, KILN2A, KILN2B, KILN2C, KILN3A, KILN3B, KILN3C – existing kilns	Acrolein	24-hour	-0.00461 (0.0)
	Propionaldehyde	24-hour	-0.00406 (0.0)

<sup>a</sup> Pounds per hour emissions rate used in modeling analyses for specified averaging periods. Values in parentheses are those used in DEQ verification analyses.

### 3.3 Emission Release Parameters and Plant Criteria

Table 7 lists emissions release parameters for sources modeled. Parameters appeared to be within normally expected ranges for the kilns modeled.

**Table 7. EMISSIONS RELEASE PARAMETERS**

Point Sources					
Release Point /Location	Source Type	Stack Height (m) <sup>a</sup>	Modeled Diameter (m)	Stack Gas Temp. (K) <sup>b</sup>	Stack Gas Flow Velocity (m/sec) <sup>c</sup>
KILN4A, KILN4B, KILN4C, KILN5A, KILN5B, KILN5C, KILN6A, KILN6B, KILN6C	Point	6.58	1.54	355	0.98
KILN1A, KILN1B, KILN1C, KILN2A, KILN2B, KILN2C, KILN3A, KILN3B, KILN3C	Point	6.58	1.54	355	0.98
BOILER	Point	22.86	2.03 <sup>d</sup>	333	7.17 <sup>d</sup>
CLTWR	Point	9.14	4.88	303	4.55
Area Sources					
Release Point /Location	Source Type	Release Height (m)	Easterly Length (m)	Northerly Length (m)	Initial Vertical Dispersion Coefficient $\sigma_{z0}$ (m)
BLOWPPIL	Area	7.01	4.57	4.57	6.10 <sup>e</sup> (1.52) <sup>c</sup>
TR3	Area	2.74	2.74	6.1	3.35
TR4	Area	2.74	2.74	7.62	3.35
TR5	Area	1.52	2.44	1.83	2.44
ST2	Area	4.57	137	137	7.32
P4	Area	1.83	2.44	2.44	2.44 <sup>e</sup> (1.52) <sup>c</sup>
Volume Sources					
Release Point /Location	Source Type	Release Height (m)	Initial Horizontal Dispersion Coefficient $\sigma_{y0}$	Initial Vertical Dispersion Coefficient $\sigma_{z0}$	
TR6	Volume	4.27	1.77	5.1	
ST3AND4	Volume	10.67	1.77	5.1	
TR1	Volume	3.05	1.42	0.71	
DEBARK	Volume	1.83	1.42	0.71	
HOG	Volume	1.52	1.42	0.71	

<sup>a</sup> Meters.

<sup>b</sup> Kelvin.

<sup>c</sup> Meters/second.

<sup>d</sup> Revised from previous 2009 analyses. Previous diameter was 2.21 m and velocity was 5.72 m/sec. The application stated values were consistent with 12 source tests.

<sup>e</sup> The 6.10 m value for BLOWPPIL and 2.44 m value for P4 was used in the previous modeling, but the modeling report indicated the value should be 1.52 m for both sources. DEQ verification modeling was performed using the 1.52 value.

### 3.4 Results for Significant Impact Level and Cumulative NAAQS Analyses

Tamarack performed Significant Impact Level (SIL) analyses for 24-hour PM<sub>2.5</sub>, annual PM<sub>2.5</sub>, and 24-hour PM<sub>10</sub> to evaluate whether the proposed modification of the Tamarack facility would significantly contribute to concentrations of criteria pollutants in ambient air. Table 8 summarizes results for the SIL analyses. Project-specific impacts only exceeded SILs at receptors along the highway bisecting the facility.

Cumulative impact analyses were performed for those pollutants where results of the SIL analyses indicated impacts could exceed the SIL or where DEQ determined the proposed project could have consequential impacts to a modeled NAAQS violation. Cumulative impact analyses involved modeling the entire Tamarack facility, then adding a background concentration value to the result.

Pollutant	Averaging Period	Max Modeled Concentration ( $\mu\text{g}/\text{m}^3$ ) <sup>a</sup>	SIL <sup>b</sup> ( $\mu\text{g}/\text{m}^3$ )	Cumulative NAAQS Required
PM <sub>2.5</sub> <sup>c</sup>	24-hour	10.69 <sup>e</sup> (8.06) <sup>g</sup>	1.2	Yes
	annual	1.69 <sup>f</sup> (1.56) <sup>g</sup>	0.3	Yes
PM <sub>10</sub> <sup>d</sup>	24-hour	12.82 (9.63) <sup>g</sup>	5	Yes

- <sup>a</sup> Micrograms per cubic meter.
- <sup>b</sup> Significant Impact Level.
- <sup>c</sup> Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
- <sup>d</sup> Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
- <sup>e</sup> The submitted analysis used the maximum value for all five years modeled, although modeling guidance allows the use of the 5-year average of the maximum 24-hour concentrations for each year.
- <sup>f</sup> The submitted analysis used the maximum annual average of the five years modeled, although modeling guidance allows the use of the 5-year average of annual values.
- <sup>g</sup> Values in parentheses are results from DEQ's verification analyses.

Table 9 provides results for the submitted cumulative NAAQS impact analyses.

Pollutant	Averaging Period	Max Modeled Design Value Concentration <sup>a</sup> ( $\mu\text{g}/\text{m}^3$ ) <sup>b</sup>	Background Concentration ( $\mu\text{g}/\text{m}^3$ )	Total Ambient Impact ( $\mu\text{g}/\text{m}^3$ )	NAAQS <sup>c</sup> ( $\mu\text{g}/\text{m}^3$ )	Percent of NAAQS
PM <sub>2.5</sub> <sup>d</sup>	24-hour	18.4 <sup>f</sup> (13.52)	16	34.4 (29.5)	35	98 (84)
	annual	7.51 <sup>g</sup> (5.65)	6	13.5 (11.7)	15	90 (33)
PM <sub>10</sub> <sup>e</sup>	24-hour	34.1 (31.2)	38	72.1 (69.2)	150	48 (46)

- <sup>a</sup> Design values are the modeled values to compare to the applicable NAAQS after adding an appropriate background value. For 24-hour PM<sub>2.5</sub>, the design value is the 5-year average of the maximum 24-hour average concentration for each year modeled. For annual PM<sub>2.5</sub>, the design value is the 5-year average of annual values for each year modeled. For 24-hour PM<sub>10</sub>, the design value is the 6<sup>th</sup> highest modeled value from the 5-year period. Values in parentheses are from DEQ verification analyses.
- <sup>b</sup> Micrograms per cubic meter.
- <sup>c</sup> National ambient air quality standards.
- <sup>d</sup> Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.
- <sup>e</sup> Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers.
- <sup>f</sup> This value is the maximum of 8<sup>th</sup> highest values from five years modeled individually, which is a conservative estimate of the design value.
- <sup>g</sup> This value is the maximum of annual values from five years modeled individually, which is a conservative estimate of the design value.
- <sup>h</sup> This value is the maximum of 2<sup>nd</sup> highest values from five years modeled individually, which is a conservative estimate of the design value.

### 3.5 Results for Toxic Air Pollutant Analyses

Table 10 presents results for TAP modeling. All impacts were below the applicable AACCs.

Pollutant	Averaging Period	Maximum Modeled Concentration ( $\mu\text{g}/\text{m}^3$ ) <sup>a</sup>	AACC TAP Increment <sup>b</sup> ( $\mu\text{g}/\text{m}^3$ )	Percent of Increment
Acrolein	24-hour	1.28 (2.21)	12.5	10 (18)
Propionaldehyde	24-hour	1.13 (1.58)	21.5	5 (7)

- <sup>a</sup> Micrograms per cubic meter. Values in parentheses are results from DEQ verification analyses.
- <sup>b</sup> Toxic Air Pollutant allowable increment impact listed in Idaho Air Rules Section 586.

### 3.6 DEQ Sensitivity Analyses

DEQ verification analyses were performed to evaluate the importance of estimated PM<sub>2.5</sub> fractions of PM<sub>10</sub> emissions used in the cumulative impact analyses. This was accomplished by conservatively assuming 100 percent of PM<sub>10</sub> emissions are PM<sub>2.5</sub>.

Table 11 summarizes DEQ's sensitivity analyses.

Pollutant	Averaging Period	Maximum Project Impact (µg/m <sup>3</sup> ) <sup>a</sup>	Max Modeled Design Value Concentration <sup>b</sup> (µg/m <sup>3</sup> )	Background Concentration (µg/m <sup>3</sup> )	Total Ambient Impact (µg/m <sup>3</sup> )	NAAQS <sup>c</sup> (µg/m <sup>3</sup> )	Percent of NAAQS
PM <sub>2.5</sub> <sup>d</sup>	24-hour	8.06	52.6 <sup>e</sup>	16	68.6	35	196%
	annual	1.36	15.4 <sup>e</sup>	6	21.4	15	143%

<sup>a</sup>. Micrograms per cubic meter.

<sup>b</sup>. Design values are the modeled values to compare to the applicable NAAQS after adding an appropriate background value. For 24-hour PM<sub>2.5</sub>, the design value is the 5-year average of the maximum of 8<sup>th</sup> highest 24-hour average concentration for each year modeled. For annual PM<sub>2.5</sub>, the design value is the 5-year average of annual values for each year modeled.

<sup>c</sup>. National ambient air quality standards.

<sup>d</sup>. Particulate matter with an aerodynamic diameter less than or equal to a nominal 2.5 micrometers.

<sup>e</sup>. Only modeled for receptors where the project had an impact exceeding the SIL.

Proposed project impacts exceeding the 1.2 µg/m<sup>3</sup> 24-hour and 0.3 µg/m<sup>3</sup> annual PM<sub>2.5</sub> SIL were predicted only at receptors on the road bisecting the facility. DEQ then performed a cumulative PM<sub>2.5</sub> impact analysis for those receptors, assuming PM<sub>2.5</sub> emissions from existing sources at the facility are equal to PM<sub>10</sub> emissions. This conservative assumption was made because of the lack of documentation in the application for PM<sub>2.5</sub> emissions from existing emissions sources at the facility. This is likely to be very conservative for emissions sources related to sawdust handling, since PM<sub>2.5</sub> is typically only a small fraction of the total PM<sub>10</sub> emissions.

PM<sub>2.5</sub> 24-hour and annual impacts exceeded the NAAQS at receptor locations along the highway north of the new kilns. A maximum 24-hour impact of 68.6 µg/m<sup>3</sup> PM<sub>2.5</sub> was predicted and a maximum annual impact of 21.4 µg/m<sup>3</sup> was predicted, both in excess of the NAAQS.

Modeled exceedances of the 24-hour and annual PM<sub>2.5</sub> NAAQS were reviewed in more detail to evaluate whether the proposed project had a significant contribution to a violation. A significant impact to an exceedance is considered to occur when the project's impacts exceed the SIL at the specific receptor where a NAAQS violation occurs and during the modeled averaging period when the NAAQS violation occurs. A cumulative NAAQS analysis was refined to include only those receptors where the SIL analysis showed impacts exceeding the SIL.

The AERMOD function MAXDCONT was then used to evaluate the contribution of the project to all modeled 24-hour PM<sub>2.5</sub> NAAQS violations. Modeled violations of NAAQS were predicted down through the 115<sup>th</sup> highest impact levels. However, the kiln project's contribution to these modeled violations, at the specific time and location of the modeled violation, were all less than the 1.2 µg/m<sup>3</sup> SIL. Therefore, the project does not cause or contribute to the 24-hour PM<sub>2.5</sub> NAAQS violation.

#### **4.0 Conclusions**

The ambient air impact analyses demonstrated to DEQ's satisfaction that emissions from the proposed Tamarack kiln project will not cause or significantly contribute to a violation of any ambient air quality standard.

The modeling review performed by DEQ assures NAAQS and TAP compliance on a project specific basis, as required by Idaho Air Rules Section 203.02 and 203.03. It does not assure compliance with NAAQS on a facility-wide basis. Although there were modeled NAAQS violations associated with DEQ's sensitivity analyses, the proposed project did not cause or significantly contribute to such violations. Also, DEQ cannot conclude whether such violations would occur if facilitywide emissions estimates and/or modeling methods were further refined. Such an analysis was outside of the scope of this permitting action.

## APPENDIX C – FACILITY DRAFT COMMENTS

**The following comments were received from the facility on December 3, 2013:**

**Facility Comment:**

Section 2.11 of the draft PTC discusses source test dates. Two source tests have been performed since the 2012 date listed in the draft permit. The most recent, performed on June 19 and 20, 2013 and subsequently reviewed by IDEQ, showed results consistently less than 75% of all applicable particulate emission standards. Therefore, the source test by date in this permit should be June 19, 2018.

**DEQ Response:**

The permit condition references "from issuance date of this permit." That wording can be changed to "June 19, 2013" considering the results of the June 20, 2013 test. The retest date was also changed in the first paragraph of the permit condition for clarity.

**Facility Comment:**

The General Provisions Section of the permit, after Section 5 Lumber Dry Kilns, should be numbered Section 6, not Section 3.

**DEQ Response:**

This has been corrected.

**Facility Comment:**

The facility had an existing PTC 2009.0064 for our first three lumber dry kilns. The provisions of another Tier II permit were rolled into PTC 2009.0064 in 2011. That existing PTC 2009.0064 remains current. This draft permit seems to be in addition to the existing PTC 2009.0064, not to replace it. Is it appropriate for this PTC for three more lumber dry kilns to have the same permit number?

**DEQ Response:**

The permit issued on May 31, 2011, P-2009.0064, is being revised to add the three new kilns. No other changes are being made. This new permit will incorporate and replace the existing permit when the new permit is issued. The new permit will supercede the 2011 permit.

**Facility Comment:**

The Statement of Basis, in Table 1, gives kiln stack parameters from the pseudo stacks IDEQ recommended for modeling the lumber dry kilns. Actual emission releases are through a series of 28" x 28" roof vents atop each kiln. Through each vent, fans with 1054 acfm capacity can blow air in or out. That actual data seems more appropriate in that table, not the modeling pseudo stack data.

**DEQ Response:**

Stack parameters have been deleted from this memo.

**APPENDIX D – 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:** Tamarack Mill, LLC dba Evergreen Forest and Tamarack Energy Partnership  
**Address:** Six miles SW of New Meadows on US 95  
**City:** New Meadows  
**State:** ID  
**Zip Code:** 83654  
**Facility Contact:** Mark Krogh  
**Title:** Plant Superintendent  
**AIRS No.:** 003-00001

- 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)

<b>Emissions Inventory</b>			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO <sub>x</sub>	0.0	0	0.0
SO <sub>2</sub>	0.0	0	0.0
CO	0.0	0	0.0
PM10	0.0	0	0.0
VOC	0.0	0	0.0
TAPS/HAPS	0.0	0	0.0
<b>Total:</b>	<b>0.0</b>	<b>0</b>	<b>0.0</b>
<b>Fee Due</b>	<b>\$ 1,000.00</b>		

Comments:

