Response to Public Comments on
Draft Prevention of Significant Deterioration Permit
and
Draft Tribal Minor
New Source Review Permit

PotlatchDeltic Construction of Lumber Dry Kiln LK-6; Permits R10PSD00100 and R10TNSR01800

June 21, 2019

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I. Introduction – Summary of the Public Participation Process

On September 6, 2018, the U.S. Environmental Protection Agency (EPA), Region 10 (Region 10) provided public notice of, and requested public comment on, Region 10's proposed action relating to a combined Clean Air Act (CAA) Prevention of Significant Deterioration (PSD) and minor New Source Review (NSR) permit application (application) for a modification to the PotlatchDeltic Land and Lumber, LLC (PotlatchDeltic or Permittee) facility in St. Maries, Idaho (facility, St. Maries Complex or SMC). The SMC consists of a sawmill, lumber dry kiln, planer mill, plywood mill and steam generating plant. Potlatch also owns and operates a Lumber Drying Division approximately one and one-half miles away, at which a portion of the green lumber manufactured by SMC is kiln dried and then returned to SMC's planer mill for further processing.

PotlatchDeltic is proposing to expand the SMC's capacity to produce dried lumber by constructing a new kiln to dry Grand Fir, White Fir and Western Hemlock lumber (project). Region 10 proposed to issue PSD and minor NSR permits that would grant approval, in accordance with the PSD and minor NSR regulations governing EPA-issued PSD and minor NSR permits in Indian Country (40 CFR 52.21 and 40 CFR part 49, subpart C[1], respectively) to PotlatchDeltic for the project. The permits would authorize the Permittee to construct and operate the new lumber dry kiln and associated existing sawmill, planer mill, and steam generating plant equipment in accordance with the terms and conditions of the permits.

Region 10 announced its proposed permit decisions and the public comment period, which included an opportunity for public hearing,[2] through public notices published on the Region 10's website on September 6, 2018. Region 10 also distributed the public notices to the necessary parties via mail in accordance with 40 CFR parts 49 and 124, thus satisfying minor NSR and PSD permit issuance requirements, respectively.

All data submitted by the Permittee as part of the application through the date of the notice of public comment was made available for public review as part of the administrative record for the draft PSD and minor NSR permits. This administrative record, including the draft PSD and draft minor NSR permits, documentation of Region 10's analysis (a draft PSD Fact Sheet as provided in 40 CFR 124.8 and a draft minor NSR Permit Analysis as provided in 40 CFR 49.157(a)(3)), the application, and other supporting information was made available through the Region 10 website.

The draft PSD and minor NSR permits for the project and the Region 10's draft PSD Fact Sheet and draft minor NSR Permit Analysis for the draft permits were also available for public review at the following locations:

- St. Maries Public Library, 822 College Avenue, St. Maries, Idaho; and
- EPA Region 10 Public Library, 1200 Sixth Avenue, Seattle, Washington.

[1] The provisions for issuing minor NSR permits in Indian Country are referred to here as the "Tribal Minor NSR regulations."
[2] The public hearing was later cancelled due to a lack of public interest.

As noted above, as part of the public participation process, Region 10 provided notice of a public hearing to receive written and oral comments pursuant to 40 CFR 49.157(c) and 124.12, which hearing was scheduled to take place on October 11, 2018, at the Federal Building in St. Maries, Idaho. Region 10 cancelled the public hearing on October 10, 2018 after receiving no requests for a public hearing by the October 9, 2018 deadline set in the September 6, 2018 notice. Region 10 provided public notice of the cancellation via the website noted above beginning October 10, 2018.

II. Responses to Public Comments

The purpose of this document is to respond to significant issues raised in the public comments received during the public comment period and to explain what changes have been made in the final PSD permit and the final minor NSR permit for the project as compared with the draft permits. All timely comments were fully considered, regardless of the method used to submit them.

This section summarizes all significant public comments received by Region 10 on our proposed permit decisions for the project and provides our responses to the comments, including an explanation of what changes have been made, if any, in the final permits as a result of those comments. Similar comments have been grouped together by topic into one comment summary and addressed by a single response. For ease of reading and brevity, we have generally removed citations and references to attachments from our comment excerpts and summaries, but those citations can be found in the original comments. The full text of all public comments and other documents relevant to our final permit decisions for the project are available by clicking on either the PSD or minor NSR permit links at https://www.epa.gov/publicnotices/notices-search/location/Idaho.

A. General Support for the Project or General Concern about Permits

Comment A.1: One commenter states that, that due to the extent of departure from the permittee's anticipated level of agency permit review and the extent of disagreement over the feasibility of implementing the proposed permits, the construction timeline was postponed by the permittee, which delay results in economic impacts to the company and to the local community.

Response: Region 10 used its best efforts to issue the permits promptly. In several instances, delays were attributable to the Permittee not providing all information needed to process the application, including those instances when additional information was necessary to support the Permittee's requests for changes to draft permit conditions.

Region 10 received the initial application on November 16, 2017. Region 10 notified PotlatchDeltic on December 15, 2017 that its application was incomplete. On February 2, 2018, PotlatchDeltic submitted the first supplement to its application. As Region 10 began drafting the permits in approximately February/March 2018, it identified additional information needed to process the permit application and requested additional information from the Permittee on several occasions between March and August 2018. The public comment period on the draft

permits began on September 6, 2018, 16 days after PotlatchDeltic submitted a supplement to its application, and ended on October 11, 2018. On October 8, 2018, PotlatchDeltic submitted comments on the draft permits. PotlatchDeltic continued to supplement its application after the close of the public comment period. Final application materials (updated modeling files) were received May 14, 2019. See pages 3 and 4 of the final PSD Fact Sheet and minor NSR Permit Analysis for a chronology of the application updates.

Comment A.2: Several commenters state generally that some of the permit conditions are not technically justified, are unachievable as proposed, are not necessary to carry out the purposes of the CAA, and are more stringent than permits issued to other similar facilities. One of these commenters states generally that the permits are unacceptable as drafted.

Response: Region 10 has made changes in response to comments and has responded to the specific comments made by the commenters below. Region 10 believes the final permits are consistent with the requirements of the CAA and technically justified, as described in more detail below and in the support documents for the permits.

Comment A.3: One commenter expresses full support for the Permittee's project. The commenter states that the Permittee is a very environmentally responsible company, is very active in the community, and employs approximately 400 people in a town with a population of 2,500 people. The commenter requests that the appropriate permits for the project be approved.

Response: Region 10 appreciates the commenters support for the project and is issuing the permits.

B. PSD and Minor NSR Permits - BACT and Control Technology Review for Proposed Kiln

Comment B.1: Several commenters disagree with numerous statements and proposed conclusions in the draft Region 10 BACT Analysis Review, Attachment C to the draft PSD Fact Sheet (hereafter referred to as the "draft BACT Review") for LK-6, as well as with the summary of the draft BACT Review in the draft Fact Sheet with respect to the availability and technical feasibility of the control options considered by Region 10. None of the commenters disagree with the final proposed conclusion of the draft BACT Review, and two of the commenters expressly supported Region 10's proposed BACT determination (Option 9): high temperature drying with no additional controls, as proposed by the Permittee.

The commenters state generally that the draft permit documents contain numerous incorrect, unverified, misleading, or unsupported assumptions about the availability and technical feasibility of add-on controls for kiln volatile organic compound (VOC) emissions or are not a proper exercise of EPA's BACT review under CAA Sections 165(a)(1) and 169(3) and should be corrected in the final document. The areas of disagreement with the statements and proposed conclusions in Region 10's draft BACT Review and draft Fact Sheet fall into five general categories. First, commenters state that any control options that were based on limiting the maximum kiln temperatures, with or without the installation of additional kiln capacity to recoup lost production associated with lower drying temperatures, constitute "redefining the source."

Similarly, the commenters state that Region 10's consideration of a continuous dry kiln in lieu of the batch dry kiln (proposed by the Permittee as the process equipment for the project) also constitutes "redefining the source." The commenters assert that the various control options considered by Region 10 do not reflect control technologies for the proposed project but instead represent a different project altogether, and thus are inconsistent with EPA guidance and judicial precedent on "redefining the source." The commenters point to judicial decisions, including a decision of the U.S. Court of Appeals for the Ninth Circuit, which upheld EPA's determination that consideration of solar or increased use of natural gas would disrupt the plant's purpose of burning biomass waste and would thus "redefine the source," citing to *Helping Hand Tools v. EPA*, 836 F.3d 999, 1005 (2016), *modified* 848 F.3d 1185.

Second, the commenters disagree with Region 10's proposed determination that the collection of dry kiln emissions under low temperature conditions with or without the routing of emissions to a Regenerative Thermal Oxidizer (RTO) to reduce VOC emissions are available and technically feasible control options. The commenters point to several factors in asserting that Options 1, 2, 3, 4, and 6 are not available and/or not technically feasible. Commenters assert that there are currently no kiln manufacturers that produce balanced-air kilns, and that only one other facility has a batch dry kiln that has been designed to have a balanced-air system, but only under very low temperature drying conditions. One commenter also asserts that such low temperature drying is not suitable for drying structural lumber, the product the Permittee produces.

With respect to thermal destruction of lumber kiln VOC emissions with an RTO, the commenters state that there are currently no known installations of RTOs on batch dry kilns nor vendors that will guarantee a level of emission reduction. The commenters assert that the use of RTOs as proposed by Region 10 has thus not been demonstrated in practice and would be a research project. The commenters also state that a review of EPA's RACT-BACT-LAER Clearinghouse shows that thermal destruction of VOC emissions with an RTO has not been required at any other batch dry kiln that has undergone CAA permitting.

The commenters also assert that installation of an RTO on a batch dry kiln is not a feasible technology transfer from other processes that commonly use RTOs to reduce VOC emissions (such as veneer dryers) because there are significant differences between the exhaust gas stream of a batch dry kiln and these other sources that commonly employ RTOs. In this regard, the commenters state that VOC emissions from drying lumber are known to vary substantially over the course of one kiln drying cycle, in terms of moisture, temperature, VOC content, and particulate matter content. The commenters also contend that Region 10 did not sufficiently address expected problems that would result from the collection of the exhaust stream and the use of RTOs on the durability of the proposed system, such as the viscosity and flammability of condensation from lumber kiln exhaust gases and the frequent startup and shutdown cycles. The commenters also took issue with Region 10's statements regarding the effect of kiln temperature on VOC emissions and the impacts of bypassing the RTO when the exhaust flow from the kiln vents is high and when there is no flow. One commenter also contends that Region 10 gave inadequate consideration to the technical feasibility of disposing of liquid condensates that would be generated in collecting and transporting kiln exhaust gases.

Third, one commenter takes issue with Region 10's consideration of a continuous dry kiln rather than a batch dry kiln as the process equipment for the project on technical feasibility grounds. The commenter asserts that because it is impossible to accurately measure the VOC content of gases entering the large openings at both ends of a continuous dry kiln, it is impossible also to know what portion of VOC emissions are collected by a hood, and the fact that some continuous dry kilns have hoods over the doors at each end is not enough to conclude that collection and thermal destruction of VOC emissions from continuous dry kilns is an available and feasible technology.

Fourth, commenters take issue with some underlying assumptions underlying Region 10's BACT analysis. For example, a commenter asserts that Region 10 essentially assumes that operating a batch dry kiln at lower temperature will result in lower uncontrolled VOC emissions compared to operating it at any higher temperature, without giving adequate recognition of other relevant factors, such as drying time and moisture content. One commenter addresses EPA's statements with respect to biofilters, which ultimately Region 10 concluded was not technically feasible as an add-on control option for dry kilns (Option 10). The commenter states that Region 10's statement in discussing biofilters that "the gas temperature issue could be addressed by installing sufficient length of ducting to allow the gas stream to cool to meet the temperature requirements of a biofilter" was unsubstantiated.

Finally, several commenters express concern that the BACT review, which they believe has numerous incorrect statements and assumptions regarding the availability and technical feasibility of control options for this particular project, would set a precedent for other similar projects. Commenters state that it is common for permitting authorities to assert that PSD permits for projects in similar source categories follow the same approach EPA took in some previous PSD permit, unless the permittee can prove that approach is inapplicable. The commenters state it is thus essential that Region 10 correct what they believe to be the deficiencies in the draft PSD permit and analysis with respect to the VOC BACT analysis for LK-6, both for the benefit of the Permittee and to avoid creating what the commenters view as a flawed precedent.

Response: Region 10's proposed determination regarding an RTO as a potential control technology stated that RTOs were technically feasible only in conjunction with low temperature drying. Draft BACT Review, p. 10. Region 10 also specifically stated that it was not taking a position on whether low temperature drying, either alone or in conjunction with recouping lost capacity through installation of additional kiln capacity, is "redefining the source" and therefore could be excluded from the list of "available" control technologies under Step 1 of the BACT analysis. See Draft BACT Review, p. 14; see also *In re Arizona Public Service Co.*, 17 E.A.D. 324, 335-37 (EAB 2016) (explaining "redefining the source" legal principles). In addition, Region 10 proposed that, aside from the Permittee's proposed option (Option 9), none of the options identified as potentially available and technically feasible (Options 1-8) would be cost effective for this source, including the use of a continuous dry kiln. Although a BACT analysis generally proceeds from Step 1 to Step 5 in a step-wise fashion, nothing precludes a permitting authority from limiting investigation of certain potentially available control options where it is clear such options would be later eliminated as not cost effective. Region 10 therefore proposed

BACT for LK-6 that reflects the Permittee's proposed mode of operation with no additional controls (Option 9). Draft Fact Sheet, pg. 9; Draft BACT Review, pp. 9, n. 16; 17-20.

None of the commenters disagree with Region 10's proposed determination of BACT for LK-6 that Region 10 is now finalizing: high temperature drying with no additional controls, as proposed by the permittee. The technical and legal arguments made in the comments relating to the proposed availability (including "redefining the source") or technical feasibility of Options 1 through 8 or any of the other options Region 10 proposed to reject as not cost effective thus do not affect the final terms and conditions of the PSD permit. Because EPA's final PSD permit decision does not require a final determination on whether any options other than Option 9 redefine the source, are otherwise unavailable, or are technically infeasible, the commenters' disagreements with Region 10's proposal do not need to be resolved, and Region 10 is therefore not making a final decision on these issues. The discussion of the various control options considered will remain in the BACT Analysis for informational purposes, but the final Fact Sheet and BACT Review will expressly contain a caveat. The documents will expressly state that, in light of comments received during the public comment period on the availability and technical feasibility of Options 1-8 and 10-12, and because Region 10 has concluded that none of these options are economically feasible, Region 10 is not making a final determination on whether Options 1-8 and 10-12 would redefine the source, are otherwise unavailable, or are technically infeasible for this project. The information Region 10 considered in the draft BACT Analysis will therefore be available for other agencies to consider, but these agencies will have clear notice that Region 10 has not made a final decision on these issues.

Comment B.2: One commenter states that BACT is a unique, case-specific analysis and determination, that is tailor-made for each pollutant emitting facility, citing to *In re Deseret Power Electric Cooperative*, PSD Appeal No. 07-03,14 E.A.D. 212, 221(2008). The commenter states that the final Fact Sheet and BACT Review should note that whatever the Permittee agrees to as BACT for the project is a product of the particular facts and circumstances of this Permittee and this application.

Response: Region 10 agrees with the commenter that BACT is a case-by-case analysis and determination and depends to an extent on the specifics of the facility undergoing review. The final Fact Sheet has been revised to make this clear. The final BACT Review is being updated only to make clear, as discussed in response to Comment B.1 above, that Region 10 is not making a final determination of whether Options 1-8 and 10-12 would redefine the source, are otherwise unavailable, or are technically infeasible for this project.

Comment B.3: One commenter states that the CAA "does not create an obligation for the permit issuer to 'conduct an independent analysis of available alternatives,'" citing to *In re. Deseret Power Electric Cooperative*, PSD Appeal No. 07-03,14 E.A.D. 212 (2008). The commenter asserts that Region 10 staff for the project had come up with numerous alternatives for the proposed project, and that the supplemental research and analysis conducted by Region 10 shows an unusual willingness of Region 10 staff to substitute views of Region 10 for the industry-specific environmental expertise of the permittee and consultant. The commenter concludes that, as a result, the draft BACT Review misses or misunderstands key aspects of

analyzing available control technology for lumber kilns and was based on assumptions, not demonstrated facts.

Response: The EAB has stated that permit issuers generally have broad discretion in conducting BACT determinations. *In re Arizona Public Services Company*, PSD Appeal No. 16-01,17 E.A.D. 323, 336 (2016). Region 10's consideration of control options not considered by the Permittee in this case is not inconsistent with its discretion as the permit issuing authority.

With respect to the statement that the BACT review misses or misunderstands key aspects of analyzing available control technology for lumber kilns and was based on assumptions, see response to Comment B.1 above.

Comment B.4: Several commenters contend that Region 10's consideration of costs and economic impacts of several of the control options was inadequate. Commenters state that Region 10 gave inadequate consideration to the cost of disposing of liquid condensates that would be generated in collecting and transporting kiln exhaust gases and the cost of the capture system. Several commenters also assert that Region 10 did not sufficiently analyze the environmental costs of burning propane to fire the RTO or of using two kilns, instead of a single kiln.

Response: Because Region 10 rejected all control options other than Option 9 based on cost effectiveness, it is not necessary for Region 10 to consider additional costs, whether monetary or environmental, that might also have led Region 10 to reject such options as BACT.

Comment B.5: One commenter noted that the draft Fact Sheet stated that BACT is no control based on the amount of VOC emissions from the project and that BACT is an emission limit. The commenter then requested that Region 10 clarify in the Fact Sheet that BACT for LK-6 is a 50 tons per year (tpy) VOC limit, achieved by following proper operation and maintenance practices recommended by the manufacturer of the new batch dry kiln.

Response: Region 10 disagrees that draft Condition 3.1 in the draft PSD permit (Condition 3.2 of the final PSD permit), which imposes a restriction on annual VOC emissions from LK-6 of 50 tpy, is an emission limit that represents BACT for LK-6. A rolling 12-month limit on VOC emissions would not be appropriate as a BACT limit because it would not ensure the minimization of emissions on a continuous basis. Instead, it could allow emissions to be higher than could be achieved with BACT-level controls at times over the 12-month period, as long as emissions were lower (for example, by shutting down LK-6) at other times over the 12-month period.[3] Please see response to Comment C.3 for a discussion of the requirements included in the final PSD permit to represent BACT.

[3] Region 10 also notes that the Permittee did not, in its application, provide any information regarding operation and maintenance (procedures recommended by the manufacturer of LK-6 or any operation and maintenance procedures it uses to minimize emissions from its existing Kiln 5. The Permittee has since provided such information. Please see response to Comment C.3 for a discussion of the work practice requirements Region 10 has determined represent BACT for LK-6.

Both the draft Fact Sheet and draft BACT Review discuss that the Permittee revised its permit application during the permitting process to reflect that VOC emissions from the proposed project were not expected to exceed 50 tpy based on the mix of wood species expected to be dried in LK-6. The Permittee therefore requested that 50 tpy of VOC be used to define baseline emissions for evaluating the cost effectiveness of the various control options considered in the BACT analysis and agreed to accept a permit condition to ensure this estimate of the upper bound of VOC emissions expected from the project would not be exceeded. See Draft New Source Review Workshop Manual, October 1990, pp. B-37-41.

In several places in the draft Fact Sheet and numerous places in the draft BACT Review, Region 10 described this permit condition as a 50 tpy limit on potential to emit (PTE) or a voluntary limit on PTE. This characterization is incomplete. Instead, the 50 tpy estimate of VOC emissions from the project reflects a realistic scenario of the upper boundary of uncontrolled VOC emissions from LK-6 based on the mix of wood species expected to be dried in the kiln and at the temperatures at which the Permittee proposes to dry lumber. As EPA has previously stated, estimating a realistic upper-bound case scenario for purposes of the cost effectiveness analysis does not mean that it must be assumed that the source operates in an absolute worst-case manner all the time. Draft New Source Review Workshop Manual, October 1990, pg. B-37. Instead, the estimate of baseline emissions for purposes of determining the cost effectiveness of control options may appropriately consider the manner in which the source is expected to operate. Id., pg. B-38. If the assumptions about the manner in which the source expects to operate have a deciding role in the BACT determination, EPA has advised that the permitting authority should include enforceable conditions in the permit to assure that the upper bound assumptions are not exceeded. Id., p. B-38. That is what Region 10 has done here by imposing in draft Condition 3.1 (final PSD permit Condition 3.2) a requirement that VOC emissions from LK-6 not exceed 50 tpy. Rather than assuming for purposes of determining baseline emissions for the BACT cost effectiveness analysis based on the permittee drying the highest VOC emitting species at all times at the highest temperatures, the 50 tpy estimate reflects the actual mix of species intended to be dried in the kiln at the anticipated proportions and at the temperatures proposed by the permittee. See Id. B-38-39.

Comment B.6: One commenter disagrees with Region 10's statement in the minor NSR draft Permit Analysis that an RTO is technically feasible but not cost effective. In support of this comment, the commenter refers generally to its comments on this issue on the draft PSD permit, which are summarized in Comment B.1 above.

Response: The commenter did not provide any specific comments on Region 10's minor NSR control technology review other than referring generally to comments summarized in Comment B.1 above. As discussed in response to Comment B.1 above, none of the commenters disagree with Region 10's ultimate proposed determination on Region 10's case-by-case control technology review for LK-6. And because Region 10 ultimately concluded that additional controls are not economically feasible, Region 10 is not making a final decision on whether any of the other control options considered, including an RTO, are available or technically feasible. For additional discussion of this issue, please see response to Comment B.1.

In addition, for the same reasons discussed in response to Comment C.3 with respect to VOC, on further consideration, Region 10 has determined it is appropriate to establish work practice requirements to represent Region 10's determination in the control technology review, rather than a numeric emission limit. The work practices required for PM2.5 in the final minor NSR permit to minimize condensable particulate matter (CPM) emissions are the same as required in the final PSD permit for VOC. This is because the conditions under which semi-volatile compounds (that collectively makeup CPM) are emitted are the same conditions contributing to VOC emissions (e.g. high kiln temperatures and over-drying lumber).

C. PSD Permit - VOC Emission Factors and Emission Limits for Proposed Kiln

Comment C.1: Several commenters disagree with the VOC emission factors Region 10 used to estimate emissions from LK-6 and contend that Region 10 should have used the VOC emission factors it posted on Region 10's website in December 2012 (December 2012 VOC emission factors) and that the Permittee had used in its PSD permit application. The commenters assert that Region 10 did not adequately explain the basis for the VOC emission factors it used in the draft PSD permit, nor demonstrate their validity. The commenters also state that neither the emission factors nor the process used to derive them has been adequately subject to industry, peer, or public review except as part of the public comment process on this draft PSD permit, with one commenter suggesting it was unclear if Region 10 was requesting comment on the emission factors as part of this permitting process. One commenter acknowledges deficiencies in the data set for the December 2012 VOC emission factors but asserts that such deficiencies should not be rectified unilaterally by Region 10 in this site-specific permit action.

Response: For reasons unrelated to this comment and explained in response to Comment C.3, none of the emission limits/factors in Condition 3.3 of the draft PSD permit are carried over to the final PSD permit.[4] The final PSD permit does not include numeric VOC emission limits on the proposed kiln other than the 50 tpy annual limit. Conditions 3.2.2 and 3.2.3 in the final PSD permit are new and specify equations the Permittee is required to use to calculate a batch's VOC emission factor (lb/mbf) for comparison to the 50 tpy annual limit. The derivation of each equation (one for Grand Fir/White Fir and the other for Western Hemlock)[5] is presented in Appendix E of the final Fact Sheet. Use of each equation (as prescribed by the final permit) generates a species-specific emission factor (lb/mbf) based upon the maximum 60-minute dry-bulb air temperature in the kiln during the lumber drying process. Note that Appendix E's equation for Western Hemlock (Condition 3.2.3 of the final PSD Permit) changed slightly from the draft permit because Region 10 discovered a technical error in the Microsoft Excel spreadsheet used to derive the equation after proposing the draft PSD permit for public comment.

[4] It is not correct, as one commenter implies, that none of the numeric BACT emission limits in the draft permit were based on the December 2012 VOC emission factors. As explained in the draft Fact Sheet, some of the numeric limits were based on the December 2012 VOC emissions factors and others were based on updates to those emission factors due to test data that was not available in December 2012 and were derived as shown in Appendix E of the draft (and final) Fact Sheet.

[5] The Permittee refined the scope of its project to dry only Grand Fir, White Fir, and Western Hemlock after the close of the public comment period.

In any event, Region 10 disagrees that it did not adequately explain or provide an adequate opportunity for review of the methodology and calculations in Appendix E of the draft (and final) PSD Fact Sheet for deriving the VOC emission factors that formed the basis for and that were used to propose numeric VOC emission limits representing BACT for LK-6 in the draft PSD permit. As is expected of all permitting authorities, Region 10 uses the best emissions data available and appropriate at the time of permit issuance to evaluate and process an application. In 2007, Region 10 began developing and sharing species-specific emission factors (hazardous air pollutants (HAP) only and at two temperatures, either ≤200°F or >200°F) for lumber drying in support of synthetic minor permits requested by sources in Indian Country. In December 2012, Region 10 updated the existing HAP emission factors and generated new species-specific VOC emission factors (either ≤200°F or >200°F) based upon EPA's *Interim VOC Measurement Protocol for the Wood Products Industry – July 2007* (otherwise known as Other Test Method 26, or OTM-26) in support of permitting activity in Indian Country. Region 10 posted the December 2012 VOC emission factors on its website.

In support of the BACT analysis for this project, Region 10 calculated VOC emission factors for certain wood species over a range of maximum drying temperatures (not just ≤200°F or >200°F), based largely upon underlying emissions data appearing in the December 2012 work. For those species with a sufficient number of test results (Douglas Fir, Ponderosa Pine, Western Hemlock and White Fir[6]), Region 10 calculated emission factors throughout the range of maximum drying temperatures. These newly calculated values provided the basis for an analysis of whether reducing maximum drying temperature (e.g., for Ponderosa Pine lumber, from 235°F to 200°F or 235°F to 170°F) would be economically and technologically feasible and constitute BACT for LK-6. For Douglas Fir and Ponderosa Pine, the emission factors presented in Appendix E of the draft PSD permit took into consideration testing that had been conducted after Region 10 posted the December 2012 VOC emission factors on its website.[7]

As in December 2012, Region 10 used the OTM-26 methodology to quantify VOC emissions from individual test runs. As explained in the draft Fact Sheet, what differed in 2018 was that the emission factors underlying the draft PSD permit were derived by averaging individual test results in the dataset. In contrast, the December 2012 VOC emission factors were derived by using the dataset's worst-case (highest) test result or by calculating a 90th percentile value. Region 10 explained in the draft Fact Sheet how the emission factors relied on in the draft PSD permit were developed. The proposed BACT emission limits in the draft PSD permit for Douglas Fir, Ponderosa Pine, Western Hemlock, and White Fir reflected the newly calculated emission factor nearest the maximum drying temperature of 245°F entering the load (the temperature at which the Permittee proposes to dry).

In providing 35 days for public comment on the draft PSD permit, Region 10 provided an opportunity for public comment on the underlying calculations for the VOC emission factors included in Appendix E of the draft Fact Sheet, the summary of the small-scale kiln test results (also included in Appendix E of the draft Fact Sheet) used to derive those emission factors, the

[6] White Fir in this context refers to a group of species also referred to as "true firs," including Grand Fir.
[7] Page 17 of the Fact Sheet to the draft permit erroneously indicated that the new Western Hemlock and White Fir emissions factors took into consideration new testing conducted after completion of the December 2012 document. That was not the case. No new testing had been conducted.

test reports (available from Southwest Clean Air Agency website) that had not been previously considered in developing the December 2012 VOC emission factors, and the proposed numeric VOC BACT limits for LK-6. This information was available electronically via the internet during the public comment period on the draft PSD permit. Indeed, during the public comment period, the Permittee, other wood products companies, and industry trade organizations submitted comments on the proposed VOC emission factors in Appendix E of the draft Fact Sheet and their use to develop emission limits representing BACT in this PSD permit action. Region 10 therefore disagrees that it did not adequately explain or provide an adequate opportunity for review of these issues.

As discussed above, however, the final PSD permit does not include numeric VOC emission limits on the proposed kiln other than the 50 tpy annual limit, and the final PSD permit uses equations rather than the VOC emission factors in the draft PSD permit for comparison to the 50 tpy annual limit.

Comment C.2: One commenter contends that Region 10's proposed VOC emission factors reflect conclusions regarding drying at certain temperatures and impacts on emissions (e.g., drying white fir at 225 F emits less VOC emissions than drying white fir at 190 F.) that represent a theory that may or may not be supported by science nor widely accepted in the industry.

Response: Region 10 acknowledges that factors other than maximum drying temperature influence emissions. Region 10 continues to believe, however, as demonstrated by the overwhelming majority of data in Appendix E to the final Fact Sheet, that higher drying temperatures generate more VOC emissions. The best-fit linear equations in Appendix E (modeling VOC emissions as a function of maximum drying temperature) illustrate that point. Region 10 acknowledges that if certain parts of the dataset are looked at in isolation (as the commenter points out by referring to a specific test result), the data would appear to support a theory that emissions decrease with increasing maximum drying temperature. The data set as a whole, however, does not support that theory, nor do the permitting practices of other Pacific Northwest permitting authorities, as evidenced by permits limiting maximum drying temperature to minimize emissions.

In part to address the commenter's concern, rather than specifying a single emission factor value applicable to all batches of a particular species irrespective of maximum drying temperatures (as we did in the draft PSD permit), the final PSD permit in Conditions 3.2.2 and 3.2.3 requires use of the best-fit linear equations to estimate emissions for Grand Fir/White Fir and Western Hemlock. These equations take into consideration all test results in the dataset, thus ensuring isolated test results do not unduly skew resultant emission estimates.

Comment C.3: Several commenters take issue with Region 10's use of the emission factors for the purpose proposed in the draft PSD permit, namely, demonstrating compliance with an emission limitation based on detailed calculations applying various emission factors, contending that the emission factors Region 10 proposes to use are not sufficiently robust to form the basis for in-or-out compliance determinations. These commenters request that Condition 3.3 of the draft PSD permit be revised to indicate that the pounds of VOC per thousand board feet (lb/mbf) values in Table 3-1 are emission factors used to determine compliance with the VOC emission

limit in Condition 3.1 of the permit, rather than enforceable emission limits themselves. The commenters provide several reasons in support of this position. First, a commenter asserts that there are no applicable regulations that would be the basis for limiting the VOC emissions on a board-foot basis. Second, a commenter contends that, absent a reliable monitoring/surrogate parameter for VOC emissions, there is no reliable method to verify in real time, on a charge-by-charge basis, that VOC emissions have not exceeded the emission limits in Table 3-1. Third, a commenter contends that, although measuring emissions from laboratory or pilot-scale kilns is a necessary and appropriate way of getting an approximation of kiln emissions (because, the commenter states, it is not feasible to measure VOC emissions from operating lumber kilns), small-scale testing only provides general indications of VOC emissions from drying different wood species at various temperatures and should not be used to establish enforceable, precise emission rates, as Region 10 did in the draft PSD permit. This commenter asserts that relying on small-scale testing to establish enforceable emission limits is also inappropriate because the emission factors relied on by Region 10 are based on only a few test runs. The commenter agrees that the data presented are useful in understanding some of the factors affecting lumber kiln VOC emissions, but states the data should not be considered a measure of actual operating kiln emissions. One commenter proposes as an alternate approach verifying compliance with Condition 3.1 of the draft PSD permit (now Condition 3.2 of the final PSD permit) based on the performance test and adherence to other permit conditions like exit temperature.

Response: After considering the comments, Region 10 has determined it is appropriate to set work practice standards rather than numeric emission limits for VOC emissions from LK-6 to reflect BACT for VOC. As discussed in the documents supporting the draft PSD permit, Region 10 proposed that BACT for VOC is the Permittee's proposed mode of operation using good operation and maintenance practices with no additional controls. In this case, consistent with 40 CFR 52.21(b)(12), Region 10 is setting work practice standards instead of numeric emission limits.[8] The final PSD permit therefore imposes the following work practice requirements in Conditions 3.3 to 3.6 of the final PSD permit to ensure that LK-6 is operated in a manner to minimize VOC emissions at all times: maximum kiln temperature limit, final moisture content limit, obligation to operate a computerized kiln management system, and obligation to operate the kiln in accordance with an operation and maintenance manual that assures good air pollution control practices.

Comment C.4: One commenter requests that Region 10 revise the Fact Sheet to eliminate any inference that the facility will exceed the VOC emission limit for LK-6 in Condition 3.1 of the draft PSD permit. The commenter specifically requests that certain language in the Fact Sheet discussing VOC emissions from LK-6 and showing past VOC emissions from Kiln 5 be deleted. The commenter states that the Permittee proposed the limit and will operate within the limit.

Response: As discussed above in response to Comment C.1, since issuance of the draft PSD Permit, the Permittee has revised the scope of the project and is limiting the species dried in LK-6 to Grand Fir, White Fir, and Western Hemlock. The expected margin of compliance with the

[8] It is important to note that, in this case, the same level of environmental protection (associated with implementation of the selected control device and/or technique as BACT) can be achieved by requiring compliance with either a numerical emission limit or a work practice requirement.

50 tpy limit on VOCs is therefore greater than at the time the draft PSD permit was issued, when the Permittee was proposing to also dry higher VOC emitting species. Accordingly, this discussion in the final Fact Sheet has been revised and the language of concern in the comment has been deleted.[9]

Comment C.5: Condition 3.1 of the draft PSD permit states: "……. VOC emissions shall mean emissions as determined using EPA's Interim VOC Measurement Protocol for the Wood Products Industry – July 2007, otherwise known as Other Test Method 26, or OTM-26, and includes quantification of the individual contributions of methanol, formaldehyde, acetaldehyde, propionaldehyde, acrolein, phenol, acetic acid and ethanol." Several commenters disagree with Region 10's proposed definition of VOCs and contend that the use of OTM-26 for determining compliance with the VOC limit for LK-6 in Condition 3.1 is a major modification to this interim VOC mass calculation protocol or otherwise inappropriate. The commenters contend that OTM-26 is a procedure for adding HAP emissions to VOC emissions and defining the combined amount as VOC, and that OTM-26 double counts emissions because HAP emissions that are VOC are appropriately measured by EPA Reference Method 25A. The commenters further assert that OTM-26 specifies that formaldehyde and methanol are required to be included in the evaluation of only those sources listed in Appendix 1 of OTM-26, and that this list does not include lumber kilns. The commenters also state that, for sources not on the list, VOC mass is determined from the Reference Method 25A result on a propane mass basis, that quantification of formaldehyde and methanol is not required, and that the only other compounds specified by OTM-26 for adjustment of the Reference Method 25Avalue are exempt VOCs and non-VOCs. The commenters are concerned that, through this permit, Region 10 is redefining VOC emissions for the wood products industry using the draft OTM-26 guidance without going through public rulemaking and state that the EPA Air Emissions Center (EMC) notes that the "OTM" category includes test methods that have not yet been subject to the Federal rulemaking process. The commenters express concern about the precedent that will be set if this permit uses a draft guidance to create emission limits and requires the Permittee to use an "Other Test Method" for compliance demonstration.

Response: As an initial matter, because the final PSD permit no longer requires source testing for VOC, both the test method specified in the permit and the method for determining VOC emissions based on the test results is relevant only if testing is required under other CAA authorities, such as Section 114 of the CAA.

With respect to the substance of the comments, published reference test methods are necessarily based on data and other information available at the time of publication. In promulgating a source-specific limit, such as a limit in a PSD permit, the permitting authority has the discretion to determine the most appropriate method for measuring emissions based on the permittee's operations and the available data at the time of permit issuance. Here, Region 10's Director of

[9] Region 10 disagrees that the draft Fact Sheet speculated that the Permittee would not be able to comply with the VOC limit on LK-6 or that it was inappropriate for Region 10 to present the Permittee's reported VOC emissions from Kiln 5 over the past several years to inform the testing/monitoring decision for LK-6. The Permittee itself stated in its initial application that the two kilns would be operated similarly. Of course, that has changed now that LK-6 will be limited to drying lower emitting species than Kiln 5.

the Air and Radiation Division has been delegated the authority to implement the PSD program in Indian Country in Region 10 and has the discretion to determine how best to measure compliance with emission limits in PSD permits issued by Region 10. The test method and emissions calculation method proposed in the draft PSD permit were available for public comment, and Region 10 has considered those comments in making a final decision on this issue.

OTM-26 is a protocol for estimating VOC emissions from certain designated emission units in the wood products industry. According to the protocol, Reference Method 25A is first used to measure total hydrocarbons as carbon, and methanol and formaldehye are then measured to determine their individual contributions. To ensure no double counting, the contribution of methanol and formaldehye (as carbon) is deducted from the Reference Method 25A measurement. Also deducted from the Reference Method 25A measurement is the contribution of what OTM-26 refers to as "non-VOCs" (if measured individually).[10] What is left of the Reference Method 25A measurement is then multiplied by a factor of 1.2238 to scale the measurement from an "as carbon" to an "as propane" reference. Finally, the VOC "as propane," methanol, and formaldehyde contributions are summed to generate a single "WPP1 VOC" emission rate. "WPP1 VOCs" (or "Wood Products Protocol 1 VOCs") refers to VOCs as determined through application of the methodology in OTM-26. Determining VOC emissions using OTM-26 is relatively inexpensive given that it requires only limited source testing and bypasses measuring numerous individual VOC compounds.

With respect to the contention that OTM-26 is applicable only to those sources listed in Appendix 1 of OTM-26 and that this list does not include lumber kilns, Region 10 acknowledges that Appendix 1 does not identify lumber dry kilns as a category of emission units for which the methodology was developed. As discussed above, however, nothing prevents a permitting authority from requiring the use of a methodology for measuring emissions from an emission unit or process not specifically identified in the method or background documents for the method *where those pollutants are being emitted and subject to the emission limit in question*, as is the case here, and the method is otherwise appropriate. Aside from the claim that the methodology double counts emissions—which we explain above is not the case—the commenters have not provided any information to show that OTM-26 in not appropriate for estimating emissions from lumber kilns.

Similarly, nothing prevents a permitting authority from requiring that constituents beyond those included in a reference method or procedure be included in determining emissions from a specific source where those constituents are included in the definition of the pollutant at issue, here, VOC as defined in 40 CFR 51.100. Region 10 acknowledges that, in proposing the draft PSD permit, the Region did not sufficiently differentiate the VOC accounting required of the Permittee in the draft PSD permit from the VOC accounting specified in OTM-26. Whereas Region 10 is requiring the Permittee to determine the individual VOC contributions of methanol,

[10] As used here, a "non-VOC" refers to a compound of carbon that is not specifically listed or is excluded in the definition of VOC in 40 CFR 51.100(s), specifically 51.100(s)(1).

formaldehyde, acetaldehyde, propionaldehyde, acrolein, phenol (the six PCWP HAP's) [11], acetic acid, and ethanol, OTM-26 does not require quantification of individual VOC contributions beyond methanol and formaldehyde. Again, the commenters have not provided any information to show that acetaldehyde, propionaldehyde, acrolein, phenol, acetic acid, and ethanol are not constituents of the pollutant VOC, as defined in 40 CFR 51.100, even if they are not required to be considered in determining VOC emissions using OTM-26. Region 10 is clarifying in the final PSD permit and Fact Sheet that the 50 tpy limit applies to VOCs quantified through application of the WPP1 protocol specified in OTM-26 taking into consideration Reference Method 25A and the individual contributions of not just methanol and formaldehyde, but also acetaldehyde, propionaldehyde, acrolein, phenol, acetic acid and ethanol.

Region 10 has determined it is appropriate to expand the methodology behind OTM-26 WPP1 to require the inclusion of these eight VOC constituents that are included in the definition of VOC in 40 CFR 51.100 because their contribution is not insignificant to overall VOC lumber drying emissions as evidenced by the information presented in Appendix E. Based upon emissions data for drying White Fir at 240°F, methanol accounts for 39 percent of VOC while acetaldehyde accounts for 5 percent. Considering only the results of Reference Method 25A (as carbon) would only account for 56 percent of VOC from a lumber kiln. Based upon emissions data for drying Western Hemlock at 235°F, methanol accounts for 12 percent of VOC while acetaldehyde accounts for 23 percent. Considering only the results of Reference Method 25A (as carbon) would only account for 48 percent of VOC.

The contribution of ethanol and acetic acid has been quantified through sampling and analysis for Douglas Fir and Ponderosa Pine. For Douglas Fir, ethanol's contribution over three tests was measured to be 0, 1.4 and 5.4 percent of VOC, and acetic acid's contribution over the same three tests was measured to be 37, 20 and 13 percent of VOC. For Ponderosa Pine, ethanol's contribution over one test was measured to be 32 percent of VOC, and acetic acid's contribution over the same test was measured to be 6.4 percent. This actual emissions data supports Region 10's decision to include the quantification of the individual contributions of methanol, formaldehyde, acetaldehyde, propionaldehyde, acrolein, phenol, acetic acid, and ethanol through OTM-26 when defining VOC in the context of the 50 tpy annual limit that applies to LK-6 in the event source testing is required.

Comment C.5: One commenter states that VOC emissions factor development testing was done over a period of two decades to establish dry kiln VOC emission factors to represent normal (non-upset) operating conditions and that HAP testing, particularly methanol testing, was done under extreme test conditions to demonstrate the effects of over-drying lumber. The commenter contends that the VOC emission factor for white fir is especially skewed by OTM-26 because of the high methanol measured during a high-temperature HAP experiment.

Response: Appendix E reflects the testing the commenter refers to as having been conducted over two decades, including the testing the commenter characterizes as being performed under

[11]EPA identified these six pollutants as the main pollutants from the Plywood and Composite Wood Products sector in EPA's National Emission Standards for Hazardous Air Pollutants (NESHAP) for major sources (also referred to the Maximum Available Control Technology or MACT standards) for Plywood and Composite Wood Products Manufacture (referred to as the PCWP MACT). See 40 C.F.R. Part 63, Subpart DDDD.

"extreme test conditions to demonstrate the effects of over-drying lumber." Results of the referenced testing were published in the March 2003 edition of the *Forest Products Journal*. According to the article entitled, "HAP and VOC Emissions from White Fir Lumber Dried at High and Conventional Temperatures," the resultant test-derived HAP emission factors reflect drying lumber down to 15% moisture (dry basis) and at a maximum entry-load temperature of 240°F. The Permittee is proposing to dry its lumber down to 13% moisture (dry basis) and at a maximum exit-load temperature of 245°F. Under OTM-26, methanol's individual contribution to VOC is quantified in the same way as the contribution of any other individual VOC constituent. Region 10 generated a best-fit linear relationship between maximum drying temperature and VOC emissions considering multiple tests conducted at different maximum drying temperatures (but with all samples dried to 15% moisture). The commenter has not provided any information or analysis to indicate that the emissions data on which the emission factor equation in Condition 3.2.2 is based is invalid or unrepresentative.

D. PSD Permit - VOC Testing of Lumber Drying Emissions from Small-Scale Kiln

Comment D.1: Several commenters disagree with Condition 4.1 of the draft PSD permit, which requires the Permittee to conduct small-scale kiln testing on the wood species proposed to be dried in LK-6 to verify the emissions factors used by Region 10 to establish the VOC BACT limits in Condition 3.3 and to determine compliance with the annual limit on VOC emissions in Condition 3.1. One commenter requests that Condition 4.5 of the draft PSD permit be revised to make it clear that only equipment located at the SMC is required to be tested, which would preclude small-scale testing requirements. The commenters raise several concerns with the VOC testing requirements in the draft PSD permit. First, commenters assert that there are currently no small-scale kilns available for source testing purposes and that the agency referenced by Region 10 as another air permitting authority that has required similar testing (Southwest Clean Air Agency or SWCAA) is currently approving waivers from small-scale kiln testing requirements due to a lack of readily available and/or reasonably affordable kiln testing options. Commenters also contend it is unreasonable to require the Permittee to pay to make a small-scale kiln at another facility operational for source testing, as the commenters assert Region 10 suggested as a viable option. Second, commenters contend that, to the extent small-scale testing facilities are available, the cost of small-scale kiln testing for a single mill is unreasonable. Third, commenters assert that, because kiln operating conditions vary throughout the year, affected by seasonal weather conditions and lumber moisture content, it is not possible for testing to be "representative of normal operations," as Region 10 has proposed to require, or to produce more accurate, "species-specific emission factors" as Region 10 assumes. In a similar vein, one commenter states that small-scale kiln drying schedules are typically different from those of full-scale kilns and that measuring dry-bulb temperature of inlet air in a small-scale kiln may not be akin to that in a full-scale kiln, given differences in factors such as types of heat sources and temperature control equipment, travel distances across the load or charge, charge size/configuration, impacts from ambient seasonal inlet air temperatures, and how inlet temperature impacts outlet air temperature.

Fourth, one commenter states that it is unclear that a small-scale kiln is capable of replicating the Permittee's unique, proprietary drying program, in which there are multiple incremental temperature increases and a final temperature set-point that is greater than typical drying

programs that have been conducted in past small-scale kiln testing. Fifth, one commenter contends that the small-scale testing requirement essentially requires the Permittee to conduct further research into potential wood-drying emissions after the permit has been issued. This commenter asserts that neither CAA Section 114 nor the CAA PSD provisions provide EPA the authority to require that a PSD permittee perform laboratory research studies as opposed to testing the facility's emissions or measuring its ambient impacts. Sixth, one commenter contends that it is infeasible to conduct emissions tests on a small-scale kiln that meets the requirements of 40 CFR 60.8(e) and Reference Method 1 (40 CFR Part 60 Appendix A). Seventh, one commenter states that the testing described in Conditions 3.1 and 4.1 of the draft PSD permit would only be emission factor verification testing, not compliance testing and that VOC emissions from dry kilns have already been studied extensively by OSU, the University of Idaho, and others for many years. The commenter contends that the testing required by the draft PSD permit would only repeat testing done in the past and that, if the test outcomes were different, it would just be normal differences in testing results or, when averaged with past testing, would shift the average results only slightly. Eighth, one commenter raises issues with the protection of confidential business information, asserting that requiring small-scale kiln testing would require the Permittee to disclose the details of its confidential drying program and would eliminate any competitive advantage the Permittee has achieved as a result of developing its unique drying program. Finally, in lieu of the small-scale kiln testing, one commenter requests that compliance with VOC emission limits be determined using the December 2012 VOC emission factors multiplied by the volume of lumber dried in LK-6 and that any other compliance demonstration exceeds the requirements of other similar operators, imposes an unprecedented burden on a single mill to locate and equip a laboratory, and creates significant competitive disadvantage for the Permittee.

Response: As discussed above in response to Comment C.3, Region 10 has determined that it is appropriate to set work practice standards rather than numeric emission limits to implement the VOC BACT determination in the final PSD permit. In addition, as discussed in the final Fact Sheet, on November 13, 2018, the Permittee advised Region 10 that it had refined the scope of the project and would be drying only Grand Fir, White Fir, and Western Hemlock lumber in LK-6. This restriction on wood species reduces expected VOC emissions from the project because these species of wood are generally lower emitting species than Ponderosa Pine and Douglas Fir. As discussed in the draft Fact Sheet, the draft PSD permit limited VOC emissions from LK-6 to 50 tpy to reflect the Permittee's upper bound estimate of VOC emissions expected from the project considering the species of wood the Permittee intended to dry. Because of the narrower margin of compliance expected at the time and because the Permittee proposed a maximum drying temperature higher than the temperature at which past testing had been conducted, the draft PSD permit proposed to require small-scale VOC testing to determine species-specific emission factors specific to the Permittee's proposed drying schedule and to use the results of the testing to calculate monthly emissions to demonstrate compliance with the 50 tpy VOC limit.

With the restriction on wood species and given the physical capacity of the proposed kiln, anticipated emissions are expected to be a maximum of 39 tpy, resulting in a much larger margin of compliance for the 50 tpy limit than anticipated when the draft PSD Permit was proposed. With the species restriction, Region 10 does not anticipate actual emissions to sufficiently approach the 50 tpy limit so as to require small-scale VOC testing to affirm the emission factor

values and assure compliance with the 50 tpy VOC limit. Condition 4.1 of the draft PSD permit is therefore not included in the final PSD permit.

See the explanation of Condition 3.2 in Section 7 of the final Fact Sheet for further discussion of this issue.

Comment D2: One commenter asserts that Condition 4.5.3 of the draft PSD permit, which states that only regular operating staff can adjust the processes or emission control devices during or within two hours prior to the start of a source test, is unclear because it does not specify whether "regular operating staff" refers to Permittee staff or small-scale kiln staff.

Response: As discussed in response to Comment D.1, the final PSD permit does not require small-scale VOC testing. Condition 4.5 of the draft PSD permit, including Condition 4.5.3, is therefore not included in the final PSD permit.

Comment C.5: One commenter contends that the limit in Condition 3.1 of the draft PSD permit is a rather arbitrary 50 tpy VOC emission cap for LK-6, noting that it is not needed to assure attainment of the National Ambient Air Quality Standards (NAAQS) or necessary to comply with any applicable emission standard. The commenter contends that it is particularly inappropriate for a PSD permit to require "a post-permitting research project of uncertain feasibility, value, and cost" (by which the commenter is apparently referring to the source testing requirement in Condition 4.1) "for the purported purpose of better assuring that the new kiln will be below this arbitrary 50 tpy cutoff."

Response: The restriction on VOC emissions in Condition 3.1 is not "arbitrary," as the commenter contends. Instead, it makes enforceable the Permittee's 50 tpy estimate of the upper bound VOC emissions from LK-6 based on its capacity, mix of wood species expected to be dried in the kiln and at the temperatures and for the duration at which the Permittee proposes to dry a batch of lumber. The Permittee requested the 50 tpy limit before the Permittee requested (after the close of the public comment period) a restriction on the wood species the proposed kiln can dry. As discussed above in response to Comment D.1, with the new restriction on wood species, Region 10 does not anticipate actual emissions will exceed the 50 tpy limit. The limit is established, consistent with EPA guidance, to represent maximum expected emissions for purposes of the BACT analysis. With respect to the commenter's concerns about the feasibility, cost, and value of the source testing required by Condition 4.1 of the draft PSD permit, please see response to Comment D.1 above. Region 10 is no longer requiring the Permittee to conduct small-scale kiln testing for VOCs in the final PSD permit.

E. PSD Permit - Proposed Kiln Monitoring, Recordkeeping, and Reporting

Comment E.1: Several commenters assert that the proposed limit on the temperature of the air entering LK-6 in Condition 3.2 is redundant with and less applicable than Condition 3.4, which limits the temperature of the air exiting LK-6 to 245°F. The commenters state that most operators use exit air temperature as an indicator of kiln performance, regardless of whether they measure inlet air temperature. The commenters contend that the inlet temperature is only marginally higher than the exit temperature in a double track kiln and does not necessarily

indicate higher VOC and HAP emissions, as Region 10 has assumed. One commenter asserts that dry kilns are controlled based on the "set point" for the average dry bulb temperature of heated air exiting each lumber charge and there is no reason for Condition 4.2.9 to require monitoring of wet bulb temperature or entering air. The commenter recommends that Condition 4.2.9. be reworded as follows: "For each cross-sectional area of the kiln, the kiln control set point shall be used to establish the maximum allowed dry bulb temperature of the heated air as it exits the charge of lumber."

The commenters conclude that requiring monitoring of both the inlet and the outlet temperature provides no environmental or compliance benefit and, together with other proposed monitoring requirements in the draft PSD permit, imposes an unreasonable burden on the mill that other operators in the industry do not experience.

Response: The draft PSD Permit proposed limits on the dry bulb temperature of heated air entering and exiting each load of lumber for LK-6. See Conditions 3.2 (entering) and 3.4 (exiting) of the draft PSD permit. The limit on the dry bulb temperature of heated air entering each load was to be determined based on the small-scale kiln testing for VOC. Because small-scale kiln testing for VOC is no longer required as explained in response to Comment D.1, the inlet air temperature limit (Condition 3.2 of the draft PSD permit) is not included in the final PSD permit.

Region 10 disagrees with commenter's contention that it is unnecessary to monitor the dry bulb temperature of the heated air entering the load of lumber. The final PSD permit retains the requirement to monitor the temperature entering and exiting each load. Monitoring of exit air temperature is necessary to assure compliance with the 245°F BACT limit in Condition 3.3. Monitoring inlet air temperature is necessary to calculate the kiln's emissions. See Conditions 3.2.2 and 3.2.3 of the final PSD permit for the required calculations. During the OSU small-scale kiln testing (the results of which comprise the bulk of the emission factor database presented in Appendix E to the PSD Fact Sheet), the temperature of the heated air entering the load of lumber was recorded, not the temperature of the air exiting the load. A mathematical relationship has been documented between the maximum temperature of the air entering the load and VOC emissions. No relationship has been established between the maximum temperature of the air exiting the load and VOC emissions. Region 10 therefore continues to believe it is important for the Permittee to monitor the temperature of heated air entering the load.

It is important to note that the equipment used to measure the temperature of the air entering the load is the same equipment used to measure the temperature of the air exiting the load. This is because the direction of air flow through the load changes periodically by 180° with scheduled "fan reversals." During these synchronized periodic events over the course of a drying cycle, the rotational direction of all fan blades is reversed. A thermocouple or resistance temperature detector measuring inlet air temperature before the fan reversal will be measuring outlet air temperature after the fan reversal. Because measuring inlet air temperature can be achieved by using equipment already required to measure outlet air temperature (to assure compliance with the 245°F limit), Region 10 anticipates the Permittee will incur little additional cost to conduct inlet air monitoring.

Region 10 also disagrees that it is appropriate to monitor the temperature "set point" rather than the actual temperature of air exiting the load. According to the application, the computerized kiln management system controlling LK-6 will be programmed to prevent the temperature of the air exiting the load from exceeding 245°F. Programming the computerized kiln management system to a "set point" of 245°F is somewhat analogous to setting a kitchen oven's thermostat to 325°F. The "set point" is a temperature that is to be achieved and maintained through heating, but also a value that is not to be exceeded. Both the computerized kiln management system and the kitchen oven's thermostat rely upon the accuracy of temperature sensors (in the kiln and in the oven) to determine whether more or less heating is necessary. If the temperature sensors are not accurate and underreport (to the kiln management system and kitchen oven thermostat) the actual temperature in the kiln or kitchen oven, the actual temperature will be greater than the "set point" temperature. If the computerized kiln management system malfunctions or its commands are overridden through manual intervention, the actual temperature in the kiln can also exceed the "set point" temperature. For the reasons noted above, recording each batch's "set point" temperature is not adequate to assure that the actual 1-hour average temperature of air exiting each load is equal to or less than 245°F. The commenter does not offer a compelling argument to change the proposed (Condition 4.2.9) and final (Condition 4.1.4) exit load dry bulb temperature monitoring requirement, which Region 10 has determined is necessary to assure compliance with the BACT work practice requirement in Condition 3.3.

Upon further consideration of the comments regarding wet-bulb temperature monitoring, Region 10 has removed the requirement that the Permittee measure wet-bulb temperature in the kiln.[12] This provision was included in the draft PSD permit to help ensure that the small-scale kiln testing required in the draft PSD permit would be representative of LK-6's operations. This information is not necessary now that small-scale testing for VOC is not required in the final PSD permit.

Comment E.2: Several commenters state that Region 10's draft PSD permit requires significant operational monitoring that is redundant, without regulatory basis, not relevant to production, and not directly linked to the primary intent of the permit, which some commenters assert is to limit VOC emissions from LK-6 to 50 tpy. The commenters contend that the proposed requirements increase the quantity of data to be monitored, tracked, recorded, and reported when compared to the requirements placed on other wood product facilities, and thus subjects the Permittee to burdensome and excessive additional capital and operational costs that the competition does not incur. The commenters cite as examples that the draft PSD permit requires monitoring air temperature entering the kiln; wood product dimensions; venting duration (daily and per charge); hourly moisture content of lumber; enter and exit temperatures (wet and dry bulb) for each cross-sectional area of kiln; and time elapsed between heating the kiln and opening the first roof vent. The commenters also contend that some of the information required to be collected, such as lumber mbf/charge, would be confidential business information, the disclosure of which would jeopardize the company's market position. One commenter states that Condition 4.2.8 in the draft PSD permit, which requires the continuous measurement of lumber

[12] We note, however, that monitoring wet bulb temperature exiting the load is part of the computerized kiln management system required by final Condition 3.3 to control the entire drying process. Wet bulb temperature monitoring (for air exiting the load) is also required to be addressed in the operation and maintenance manual required by final Condition 3.6.

moisture, recorded hourly and at the beginning/end of the charge, is overburdensome and infeasible and that there are no known measurement devices that can accurately measure the initial and kiln dry moisture content of each board in a charge and then average those board level data into a charge average. Another commenter requests that kiln monitoring requirements be limited to exhaust air temperature and the volume of wood species dried, which the commenter contends is consistent with its competitors' requirements. Commenters also request that Condition 4.2.6 be simplified to require that only hours of operation be tracked, and that the requirement to track venting time in Condition 4.2.10 be removed. Finally, one commenter asserts that it is not feasible to monitor directly VOC emissions from lumber kilns because of the difficulties of capturing those emissions and the highly variable nature of the gas streams. The commenter states that Region 10 recognizes this, and thus requires the Permittee to monitor emissions of LK-6 indirectly, by applying emission factors to information about the amount of lumber dried and the temperature at which the kiln is operated. The commenter states that, while this is an appropriate approach, it is inappropriate to require a high level of detail for the factors necessary to apply the emission factors, given the lack of precision of the emission factors themselves. The commenter concludes that the monitoring conditions of a PSD permit should be limited to information reasonably necessary to comply with emission limitations (which in turn are necessary to assure application of BACT and avoiding unacceptable ambient impacts) and that the monitoring or data gathering provisions of the draft PSD permit appear to go beyond that.

Response: Upon consideration of the comments received, Region 10 has made a number of revisions to the LK-6 monitoring requirements in draft PSD permit Condition 4.2. The final monitoring requirements are included in Condition 4.1 of the final PSD permit, and a summary of the changes and the rationale for them is detailed below:

- Draft Condition 4.2.1 (identity of species) is included in the final PSD permit as Condition 4.1.1. The final permit continues to require that each species of wood in a batch be identified because Condition 3.1 prohibits the Permittee from drying any species other than Grand Fir, White Fir, and Western Hemlock. Also, each batch's emissions are calculated based upon species-specific emission factors. The final PSD permit lists one emission factor for batches consisting of Grand Fir and/or White Fir, and another emission factor for batches consisting of Western Hemlock. Because the final PSD permit requires that the higher of the two emission factors (the factor for Grand Fir/White Fir) be used to calculate emissions for batches consisting of Grand Fir/White Fir and Western Hemlock lumber, it is unnecessary to identify the approximate proportion of each species in the batch. Therefore, that monitoring aspect of the draft requirement is not included in the final PSD permit.
- Draft Condition 4.2.2 (lumber dimensions) is not included in the final PSD permit. This provision was included in the draft PSD permit to help ensure that the small-scale kiln testing required in the draft PSD permit would be representative of the facility's operations. This information is not necessary now that small-scale testing for VOC is not required in the final PSD permit.
- Draft Condition 4.2.3 (volume of lumber per batch) is included in the final PSD permit as Condition 4.1.2. Measuring and recording the volume of lumber in each batch is necessary to determine the batch's emissions. Emissions are required to be summed

annually to determine compliance with the 50 tpy limit in Condition 3.2.

- Draft Conditions 4.2.4 (venting duration per day), 4.2.5 (venting duration per batch), 4.2.6 (equivalent volume of lumber dried per day) and 4.2.7 (equivalent volume of lumber dried per month) are not included in the final PSD permit. These provisions are no longer needed because the 50 tpy VOC limit is an annual rather than a 12-month rolling limit in the final PSD permit to better align the 50 tpy limit with its underlying purpose of informing the BACT analysis. In addition, the restriction on species now included in Condition 3.1 of the final PSD permit provides a wider margin of compliance than at the time the draft PSD permit was proposed. With the reduction to the compliance demonstration frequency and diminished likelihood of noncompliance with the 50 tpy limit, requiring the Permittee to determine daily or even monthly emissions is no longer necessary.
- Draft PSD permit Condition 4.2.8 (moisture content of lumber) is included in the final PSD permit as Condition 4.1.5. One commenter interpreted proposed PSD permit Condition 4.2.8 as requiring permittee to measure the moisture content of each board in a batch. This was not the intended effect of this provision, and final Condition 4.1.5 clarifies that only a sample of a batch's lumber must be continuously monitored for moisture content. The applicant has confirmed that the kiln computer management system can accomplish what is required in the final permit.
- As discussed above in response to Comment E.1, the dry bulb portion of draft PSD permit Condition 4.2.9 is included in the final PSD permit as Conditions 4.1.3 and 4.1.4 and the wet bulb monitoring requirement is no longer included.
- Draft PSD permit Condition 4.2.10 (time elapsed between first applying heated air to load and roof vent opening) is not included in the final PSD permit. This provision was included in the draft PSD permit to help ensure that the small-scale kiln testing required in the draft PSD permit would be representative of the facility's operations. This information is not necessary now that small-scale testing for VOC is not required in the final PSD permit.

With respect to comments that some of the information required to be monitored may be confidential business information, 40 CFR Part 2 has provisions for claiming information required to be submitted to EPA as confidential. Region 10 notes, however, that under 40 CFR 2.301, "emissions data," is not entitled to confidential treatment. "Emissions data" includes, among other things, any information to determine the identity, amount, frequency, or other characteristic (to the extent related to air quality) of the emissions, which, under an applicable standard or limitation, the source was authorized to emit (including, to the extent necessary for such purposes, a description of the manner or rate of operation of the source). The information Region 10 is requiring to be monitored is needed to calculate emissions to show compliance with the 50 tpy limit on VOC (on which the BACT analysis is premised) and to confirm compliance with BACT work practice requirements.

F. Minor NSR Permit - PM2.5 Attainment Concerns

Comment F.1: One commenter asserts that Region 10 overstates the risk of a non-attainment designation in the air shed and the impact of PM2.5 emissions from the SMC on ambient air quality to impose excessive emissions limits and tracking requirements in the draft minor NSR

permit. The commenter states that Idaho State agency assessments attribute adverse air impacts in the area to exceptional events, not localized stationary source emissions.

Response: Based on available information, Region 10 agrees with the commenter that smoke from wildland fires adversely impacts air quality in the vicinity of the SMC, particularly in late summer. The Idaho Department of Environmental Quality (IDEQ) has flagged PM2.5 levels at the IDEQ St. Maries PM2.5 monitor on 36 days during August and September of 2015-2017, as data affected by wildland fire exceptional events. The data exclusion was appropriately documented and justified by IDEQ in accordance with 40 CFR Part 51, Appendix W guidelines. Consistent with Section 8.3.2 of Appendix W, PM2.5 data on the days flagged by IDEQ as affected by wildland fire exceptional events have been removed from the 2015-2017 dataset used in the air quality impact analysis (AQIA) for this project, after further technical evaluation and confirmation by Region 10. The PM2.5 background design values used in the PM2.5 AQIA in support of the draft minor NSR permit were calculated using the abbreviated dataset with these events removed.

As discussed in the draft Permit Analysis for the draft minor NSR permit (Section 3.2), PM2.5 levels at the IDEQ St. Maries PM2.5 monitor were 91% of the 24-hour NAAQS and 76% of the annual PM2.5 NAAQS during 2015-2017 when days flagged by IDEQ as affected by wildland fire exceptional events are excluded. It is important to emphasize that this is *prior* to consideration of the PM2.5 air quality impacts from the project. Without removal of PM2.5 data on days IDEQ flagged as affected by wildland fire exceptional events, air quality at the IDEQ St. Maires monitor from 2015-2017 was 112% of the PM2.5 NAAQS (in other words, in excess of the NAAQS) and 89% percent of the annual PM2.5 NAAQS.

It is therefore clear from the monitoring data that periods of poor air quality in the vicinity of the SMC are also prevalent when there is no impact from wildland fires. High PM2.5 levels are most common in the winter and spring during periods of cold stagnant air. During these periods, emissions from residential wood smoke, mobile sources, and stationary sources (including the existing SMC), contribute to adverse air quality in the St. Maries area.

Existing information demonstrates that existing emissions from the SMC contribute significantly to the background PM2.5 concentration at the PM2.5 monitor in the St. Maries area. Section 3.1.2 of the PM2.5 Air Quality Impact Analysis Memo summarizes the results of supplemental modeling conducted to estimate the contribution of actual PM2.5 emissions from the *existing* emission units that comprise the project (that is, the existing emission units at the SMC that are predicted to have increased emissions as a result of the project). The modeling results demonstrate that actual PM2.5 emissions from the *existing* emission units that comprise the project alone result in significant PM2.5 concentrations at the monitor location. The maximum 24-hour PM2.5 concentration at the monitor was found to be 4.1 $\mu g/m^3$, more than three times EPA's Significant Impact Level (SIL) of 1.2 $\mu g/m^3$ for PM2.5. It is important to emphasize that this estimated impact does not include the impact of emissions from emission units at the SMC that are not expected to increase as a result of the project, the impact of emissions from the new emission unit, LK-6, or the expected increase in emissions from existing

emission units associated with the project.[13] The commenter has provided no information to show that current PM2.5 emissions from the SMC do not, or that expected PM2.5 emissions from the project will not, contribute to PM2.5 levels close to the PM2.5 24-hour NAAQS during times when impacts from wildland fires are not a concern.

Region 10 notes that the city of St. Maries is also located adjacent to the Pinehurst PM2.5 non-attainment area (refer to http://www.deq.idaho.gov/media/60180337/nonattainment-map.pdf) and is affected by similar emissions and meteorological conditions that contribute to poor air quality in the region at certain times of the year.

When expected PM2.5 emissions from the project are modeled, the resulting concentrations are 99.4% of the 24-hour PM2.5 NAAQS and 98.2% of the annual PM2.5 NAAQS. At this level of impact, and given that allowable PM2.5 emissions from the project are in excess of the PM2.5 levels used in the modeling, it is important to include in the minor NSR permit annual and 24-hour limits on PM2.5 emissions from the project. Without such limits, Region 10 cannot determine that the project will not cause or contribute to a violation of the PM2.5 NAAQS, a condition to issuance of the minor NSR permit. See 40 CFR 49.151(e)(5); 49.154(d)(3). See also response to Comment G.2.

Comment F.2: One commenter states that Region 10's summary of the attainment status of the area in Section 3.2 of the draft minor NSR Permit Analysis is inconsistent with IDEQ's monitoring data review, and 2015-2017 data impacted by exceptional events. The commenter states that the SMC is already shipping green lumber off-site for drying, and the purpose of this project is to dry that lumber at the SMC, and not to operate the SMC at maximum emissions for 8,760 hours per year.

Response: With respect to the statement that Region 10's evaluation of air quality in St. Maires is inconsistent with IDEQ's monitoring data review and concerns regarding exceptional events, please see the response to Comment F.1 above.

With respect to the comment that the purpose of the project is to dry at the SMC green lumber that has historically been shipped offsite for drying and not to operate the SMC's sawmill and planer mill at maximum capacity, the commenter appears to suggest that overall emissions in the area will not increase because green lumber from the SMC that was previously shipped offsite for drying at the Permittee's LDD or at the Stimson Lumber Company's St. Maries mill will now be dried at the SMC. However, construction of LK-6 will allow the Permittee to dry at the SMC more green lumber than is currently shipped off-site to Stimson Lumber. In its application materials, the Permittee has proposed to increase the annual hours of operation and operate the SMC's sawmill and planer mill more days of the week for part of the year. Region 10 understands that the Permittee has not proposed to operate the SMC at maximum emissions for 8,760 hours per year, but the application materials submitted by the Permittee are clear that expected emissions from the SMC will increase as a result of the project and will not be offset by

[13] Note that the conclusion that existing SMC emissions contribute significantly to background concentrations at the monitor is key to supporting the weight-of-evidence approach used in the cumulative modeling evaluation. If this was not the case, a cumulative modeling analysis based on the assumption that current facility emission impacts are adequately represented in the background design concentration could not have been performed.

legally enforceable reductions at the LDD. As discussed in response to Comment F.1 above, the air quality analysis shows that modeled emissions from the increases expected from the project together with background emissions will be at 99.4% and 98.2%, respectively, of the 24-hour and annual PM2.5 NAAQS. Given this expected level of emissions when project emissions are considered and because the Permittee has modeled emissions at above current levels, but below the maximum PTE of the SMC, emissions limitations on PM2.5 emissions from the Project to reflect the level of emissions modeled by the Permittee in the AQIA are needed to ensure emissions from the project do not cause or contribute to a violation of the PM2.5 NAAQS.[14] See 40 CFR 49.151(e)(5); 49.154(d)(3).

G. Minor NSR Permit – Emission Factors and Emission Limits

Comment G.1: One commenter requests that Region 10 replace the 0.021 lb/mbf numeric BACT emission limit in Condition 3.1 of the draft minor NSR permit with a 0.92 tpy limit. The commenter also requests that Region 10 revise the PM, PM10, PM2.5 emission factor for LK-6 used to demonstrate compliance with that emission limit from 0.021 lb/mbf lumber to 0.020 lb/mbf lumber based on the test data used for the emission calculations.

Response: After considering this comment and similar ones related to Region 10's proposed implementation of BACT for VOC for LK-6 in Comment C.3, Region 10 has determined it is appropriate to set work practice standards rather than a numeric emission limit to implement the PM10/PM2.5 case-by-case control technology review for LK-6. As discussed in the documents supporting the draft minor NSR permit, Region 10 proposed the numeric control technology review emission limits for PM10/PM2.5 based on the Permittee's proposed mode of operation using good operation and maintenance practices with no additional controls. Region 10 is therefore setting work practice standards instead of numeric emission limit. See 40 CFR 49.154(c); see also response to Comment C.3

In establishing the PM10/PM2.5 control technology review work practice standards, Region 10 notes that CPM and VOC are emitted as a result of the same or similar processes; the VOC BACT work practice requirements will therefore be similarly effective in minimizing the unnecessary generation of CPM emissions. The final minor NSR permit therefore imposes the following work practice requirements in Conditions 3.2 to 3.5 of the final minor NSR permit to ensure that LK-6 is operated in a manner to minimize PM10/PM2.5 emissions at all times: maximum kiln temperature limit, minimum final moisture content limit, obligation to operate a computerized kiln management system, and obligation to operate the kiln in accordance with an operation and maintenance manual that assures good air pollution control practices.

As with the BACT determination discussed in response to Comment C.3, it is important to note that in this case, the same level of environmental protection (associated with implementation of the selected control device and/or technique in the case-by-case control technology review) can be achieved by requiring compliance with either a numerical emission limit or a work practice

[14] For existing emission units subject to "lb/day" and "tpy" emission limits in the minor NSR permit, the Permittee calculated the units' modeled emissions increase assuming allowable emissions were less than what the units would otherwise be allowed to emit given existing regulation.

requirement in this particular case. Different considerations would apply where an emission limit is imposed to protect the NAAQS.

See response to Comment G.2 with respect to the request for the annual 0.92 tpy limit and to use 0.020 lb/mbf emission factor in calculating daily and annual emissions.

Comment G.2: One commenter states that imposing daily and annual emissions limits for particulate matter, as is done in Conditions 3.2 and 3.3 of the draft minor NSR permit, is excessive and without regulatory basis. The commenter requests deletion of these limits in light of what the commenter characterizes as the insignificant daily and low annual emissions from the specific units, a very conservative PM2.5 modeling analysis (assuming daily sawmill operations that are physically impossible) that indicated compliance with the NAAQS, and the State of Idaho's observations that stationary sources are not the primary contributor to adverse air quality impacts in the airshed. In the alternative, the commenter makes the following requests.

The limits in Table 3-1 be updated as follows:

1) Kiln 6 (LK-6) emission factor be revised from 0.21 lb/mbf to 0.020 lb/mbf lumber
2) Baghouse 4 (PCWR-PM-PTB) be revised from 7.57 lb/day to 7.90 lb/day
3) Baghouse 5 (PCWR-PM-PSB) be revised from 7.57 lb/day to 7.90 lb/day
4) Baghouse 11 (PCWR-SM-SDB) be revised from 13.4 lb/day to 14.0 lb/day
5) Cyclone 2 (PCWR-SM-CH) be revised from 25.1 lb/day to 26.2 lb/day

The limits in Table 3-2 be updated as follows:

6) Kiln 6 (LK-6) emission factor be revised from 0.21 lb/mbf to 0.020 lb/mbf lumber
7) LK-6 be revised from 0.70 tpy to 0.92 tpy based on maximum kiln throughput with 50 tpy VOC limit
8) Riley Boiler (PB-2) be revised from 4.51 tpy to 4.64 tpy
9) Baghouse 4 (PCWR-PM-PTB) be revised from 1.38 tpy to 1.44 tpy
10) Baghouse 5 (PCWR-PM-PSB) be revised from 1.38 tpy to 1.44 tpy
11) Baghouse 11 (PCWR-SM-SDB) be revised from 2.44 tpy to 2.55 tpy
12) Cyclone 2 (PCWR-SM-CH) be revised from 4.59 tpy to 4.79 tpy
13) Sawmill Traffic (PT) be revised from 4.18 tpy to 2.95 tpy, and revise 0.0194 lb/mbf lumber to 0.0137 lb/mbf.

The commenter states that these requested changes are based on the PM2.5 emissions evaluated in the Permittee's August 2018 AQIA. The commenter also requests that Region 10 clarify that the Plant Traffic emission limits are specific to only sawmill operations.

Response: Under the Tribal Minor NSR regulations, if an AQIA analysis required by 40 CFR 49.154(d)(1) reveals that the construction or modification of the source would cause or contribute to a NAAQS or PSD increment violation, the permitting authority must require the source to reduce or mitigate such impacts before issuing a permit. See 40 CFR 49.154(d)(3). As discussed in Section 3.2 of the draft Permit Analysis, Section 5 of the final Permit Analysis, and in response to Comments F.1 and F.2, the AQIA shows that modeled emissions from the

increases expected from the project together with background emissions will be at 99.4% and 98.2%, respectively, of the 24-hour and annual $PM_{2.5}$ NAAQS. See also Appendix C to final minor NSR Permit Analysis. In addition, although the Permittee's AQIA may have been conservative in some respects, the Permittee modeled emissions above its current levels, and below the maximum PTE of the SMC. The Permittee may have had the option of modeling with less conservative assumptions, which may have allowed the Permittee to model at its maximum PTE. Having not done so, however, and given modeling results very close to the NAAQS, 40 CFR 49.151(e)(5) and 49.154(d)(3) provide Region 10 authority to impose PM2.5 emission limits that reflect the level of emissions used by the Permittee in the modeling in order to protect the 24-hour and annual PM2.5 NAAQS. Therefore, the minor NSR permit continues to include daily and annual limits on PM2.5.

With respect to the comment on the emission factor for determining compliance with the daily and annual PM2.5 emission limits for LK-6 (items 1 and 6 above), in light of the limited test data regarding PM10/PM2.5 emissions resulting from lumber drying (see response to Comment H.1), the final minor NSR permit includes an emission factor of 0.0510 lb/mbf for calculating LK-6 PM2.5 emissions that is based on the emission rate modeled by the Permittee.

With respect to the comments requesting revisions to the daily and annual emission limits (items 2-5 and 7-13 above), the Permittee submitted a revised AQIA in May 2019 that assumed more realistic PM2.5 concentrations (0.0032 rather than 0.0064 lb/dscf) and 24 (rather than 23) hours per day of operation for the emissions increases of all emission units pneumatically conveying wood residue (PCWR). For the revised annual NAAQS demonstration, the AQIA assumed that PCWR and PT emission units operated only 7,488 hours per year. For PB-2, the revised AQIA assumed a more realistic PM2.5 emission rate (0.00722 rather than 0.0105 lb/mlb steam) to calculate its emissions increase. PB-2's 3.10 ton/yr annual limit reflects the 24-hour NAAQS-based daily limit multiplied by 365 days/yr. The emission limits reflect the emission rates that were modeled in May 2019. See Appendix D to the minor NSR Permit Analysis for calculation of the revised emission limits that are different from the EPA-proposed September 2018 limits and different from those requested by the Permittee in October 2018 in the context of this comment.

Finally, Region 10 confirms that the PT (Plant Traffic) daily emission limit applies to only those emissions related to lumber manufacturing operations. The description for emission unit PT in Table 1-1 of the final minor NSR permit now makes this clear.

Comment G.3: One commenter states that Region 10 has included in Condition 3.8 of the draft minor NSR permit three additional requirements that are not in the referenced regulation, 40 CFR 49.126(d)(2). The commenter requests that Region 10 remove Condition 3.8.11, which requires the watering of logs immediately prior to debarking. The commenter states that, although the Permittee waters the log decks during certain parts of the year, watering logs during the winter is not possible due to freezing temperatures. The commenter states that the Permittee's watering procedures are already described in the Permittee's fugitive dust control plan, which the commenter states is already referenced by Region 10 in draft Condition 3.8.

Response: Draft Conditions 3.8.9 through 3.8.11 proposed the following requirements as reasonable precautions to control fugitive dust (in addition to others):

3.8.9 Limiting unnecessary travel of vehicles on unpaved areas;
3.8.10 Limiting the speed of vehicles traveling on unpaved areas to 15 miles per hour by appropriate signage; and
3.8.11 Watering logs immediately prior to debarking as necessary during arid and windy conditions.

Region 10 acknowledges that these elements are not included in the list of required precautions to control fugitive dust under 40 CFR 49.126(d)(2) or, in some cases, in the Permittee's current Fugitive Dust Plan required by 40 CFR 49.126(e)(iii). The list of precautions identified in 40 CFR 49.126(d)(2), however, is not exclusive, and nothing precludes Region 10 from including in a minor NSR permit additional reasonable measures to control fugitive dust where, as here, there is reason to be concerned that the proposed new source or modification may cause or contribute to a PM2.5 NAAQS violation if not appropriately restricted given the existing ambient air quality in the area. The requirement to limit unnecessary travel of vehicles on unpaved areas reflects the requirement in Section 2.2 of the Permittee's Fugitive Dust Plan to "limit vehicle traffic on unpaved roadways." The requirement to limit the speed of vehicles traveling on unpaved areas to 15 miles per hour by appropriate signage reflects the assumption the Permittee used to estimate PM2.5 emissions generated by traffic on unpaved areas as part of its AQIA to demonstrate that the project will not cause or contribute to a NAAQS violation (the analysis assumes a 57% control efficiency associated with reducing vehicles speed to no more than 15 miles per hour on unpaved areas). The requirement to water logs immediately prior to debarking is based on Section 2.8 of the Permittee's Fugitive Dust Plan, which encourages the watering of logs during arid and windy conditions prior to debarking. Region 10 is therefore retaining these provisions in the final minor NSR permit (final permit Conditions 3.13.9 through 3.13.11) but, in response to the comment, is not requiring watering when the ambient temperature is 32°F or less.

Comment G.4: Several commenters take issue with the 5% opacity limit proposed for LK-6 in Condition 3.5 of the draft minor NSR permit, asserting that a 5% limit has not been proven to be achievable using the current technology. The commenters state that there is no technical basis for Region 10's statement in the draft Permit Analysis that no visible emissions is an indicator of proper kiln operation. The commenters also contend that they are not aware of any rulemakings to establish a new source performance standard for new kiln technology and that the appropriate process for setting a lower opacity limit for new kilns would be through a rulemaking, not a source-specific permit. The commenters assert that, without a technical determination that new kilns can achieve consistent performance at lower opacity levels, a more stringent technology standard is unsupported. The commenters identify examples of opacity limits in other permits for kilns in Idaho that are at 20% and request a comparable opacity limit of 20% for LK-6. Commenters also express concern that Reference Method 9 is not compatible with an opacity limit less than 10% because opacity is measured in 5% increments, and trained Reference Method 9 observers are certified to produce opacity reading results with an average error not to exceed 7.5% opacity. One commenter also notes that Reference Method 9 is not on the list of required EPA Reference Methods in the appendix of the minor NSR permit

Response: In response to the comment, Region 10 has revised the opacity limit for LK-6 from 5% to 20%, consistent with the FARR visible emissions limit in 40 CFR 49.124(d). Region 10 has concluded that there is insufficient information on the threshold level of visible emissions that either (a) reflects implementation of minor NSR case-by-case control technology requirements, or (b) assures compliance with the daily and annual limits protective of the PM2.5 NAAQS to technically justify a more stringent limit. Condition 3.10 of the final minor NSR permit includes the 20% opacity limit. This limit, which applies to all emission units that are a part of this project, serves as a control technology review requirement of LK-6 and also is imposed to mitigate PM2.5 impacts because PM2.5 levels in the area are near the level of the PM2.5 NAAQS.

Reference Method 9 is an appropriate method for determining compliance with a 20% opacity limit, as evidenced by numerous EPA and state and local opacity standards. Region 10 has added Reference Method 9 to the list of methods in the appendix to the final minor NSR permit.

H. Minor NSR Permit - PM2.5 Testing of Various Emission Generating Activities

Comment H.1: Several commenters disagree with Region 10's draft permit condition requiring testing for PM2.5 at a small-scale kiln as impractical, inappropriate, and unachievable. In addition to the reasons discussed in the summary of Comment D.1 above, commenters contend that small-scale kilns are typically not equipped with stacks to conduct compliance-grade emissions testing and that, even if the requisite ports needed to conduct Reference Method 5 and Reference Method 202 testing were to be installed, the port locations would not meet Method 1 requirements and velocities/flows could not be measured in accordance with the requirements of Reference Method 2. The commenters assert that any associated stack and port fabrication effort may not be technically feasible on a small-scale kiln. The commenters state that, not only are there no small-scale kilns available to conduct testing within 180 days, but most of the small-scale kilns that historically have been available for research-level VOC emission tests were not configured to meet the conditions of this draft minor NSR permit because kiln exhaust flow and pollutant concentration measurements are not collected. Instead, the commenters contend, small-scale kilns rely on mass flow controllers for measuring inlet kiln air flow and in-kiln pollutant measured concentrations. The commenters request that Region 10 remove the requirement to conduct small-scale kiln testing for reasons discussed above. One commenter proposes instead that compliance with PM2.5 emission limits for LK-6 be determined using existing emission factors and the volume of lumber dried in the new kiln.

Response: Upon further consideration, the final minor NSR permit does not require the Permittee to conduct testing to measure PM, PM10 and PM2.5 emissions resulting from lumber drying for each species of wood processed, as was proposed in Condition 4.1 of the draft minor NSR permit. This decision is based on a number of factors.

First, although Region 10 disagrees that testing for PM10/PM2.5 in a bench-scale or small-scale kiln is not technically feasible,[15] Region 10 acknowledges that testing in a bench-scale (e.g., a 4'x4'x4' 125 board foot kiln) or small-scale (e.g., 2,000 board foot) kiln has technical challenges that are not present with the testing of many other emission sources. The commenters are correct that the bench-scale kiln testing to measure VOC emissions that has been conducted was not performed in a manner that satisfies EPA Reference Methods 1 and 2 testing requirements. Region 10 also agrees that the PM2.5 testing that has been performed in small-scale kilns had deficiencies that call into question the accuracies of the results.[16] However, Region 10 is aware of one small-scale kiln that is currently available and believes that a stack most likely can be configured to allow for testing that satisfies the requirements of EPA Reference Methods 1 and 2.[17] Based on discussions with small-scale kiln operators, Region 10 also understands that the kiln management system used by small-scale kiln operators are capable of replicating the type of drying schedule described by the Permittee in its comments here.[18] Region 10 acknowledges, however, that there appears to be only one small-scale kiln currently in operation for commercial purposes, and that there are technical challenges with bench-scale and small-scale kiln testing.[19]

Second, the Permittee's revised May 2019 NAAQS modeling analysis overestimates the project's impacts on ambient air quality. This is primarily because wood residue recovery baghouses and cyclones were modeled assuming 24 hours per day of operation. The Permittee has informed Region 10 that maintenance and repair needs prevent operation of these units for

[15] We also disagree that small-scale kiln testing is cost prohibitive. The estimated cost of renting a kiln and performing two sequential 36-hour runs is approximately $100,000. This amount is not unreasonable, especially where a facility is located in an area with NAAQS compliance concerns.

[16] With respect to the testing conducted by Horizon Engineering at Oregon State University (OSU) (referenced in the application), Region 10 has concerns about the accuracy of the test results because the testing was performed using a flow monitoring device that was not calibrated for the conditions under which sampling was performed. It is uncertain whether the lack of adequate calibration biased the results high or low. With respect to the testing conducted by ETI at Chemco (referenced in the application), Region 10 has concerns about the accuracy of the test results because the hot and wet kiln exhaust was routed through what effectively served as a giant condenser prior to sampling and analysis (a surrounding wood-framed enclosure covered with polyethylene plastic sheeting), such that at least some of the aerosols that would otherwise have been measured downstream as CPM in the EPA Reference Method 202 sampling train were instead cooling and condensing out of the kiln exhaust stream along with the liquid vapor. With the potential loss of CPM to the giant condenser, the test results would likely be biased low. In addition, similar to the testing at OSU, the Chemco testing was performed using a flow monitoring device that was not calibrated for the conditions under which sampling was performed. In addition, the Chemco and the OSU kiln tests were conducted while drying lumber at a maximum temperature of 65°F less than the maximum temperature at which the Permittee intends to dry lumber. This would have biased emissions low for both tests as CPM emissions will increase with drying temperature.

[17] The Permittee disagrees that this particular small-scale kiln can be used to generate representative emissions because it is not equipped with a fan to periodically circulate air in the opposite direction through the package of boards that constitute the load of lumber. Because the Permittee did not further engage Region 10 to explain its thinking on this matter, Region 10 remains of the view that this small-scale kiln can be operated in a manner to represent full-scale operation.

[18] With respect to the Permittee's concern about sharing its confidential drying schedule with the small-scale kiln operator to satisfy the requirement to conduct small-scale testing, the Permittee presumably has the option of entering into a non-disclosure agreement to address that concern.

[19] We also note that NCASI Technical Bulletin No. 845, "A Comparative Study of VOC Emissions from Small-Scale and Full-Scale Lumber Kilns Drying Southern Pine" documents a good correlation between emissions measured from batch-scale and full-scale kilns drying lumber from the same pool.

more than 21 hours per day and has provided summaries of operational records supporting this assertion.

Finally, and of most significance, the revised May 2019 PM2.5 modeling analysis modeled PM2.5 emissions from boilers and baghouses rather than PM emissions as was done in the initial modeling. The lower emission rates (PM2.5 as opposed to PM) used in the revised modeling analysis for the boilers and baghouses are imposed as emission limits in the final minor NSR permit. This in turn allowed the use of a higher emission factor in the modeling for PM2.5 emissions from LK-6. The revised modeling uses a steam-heated lumber kiln PM2.5 emission factor of 0.051 lb/mbf rather than 0.021 lb/mbf as in the Permittee's initial application. In fact, additional analysis by the Permittee showed that an emission factor of up to 0.055 lb/mbf for LK-6 could have been used in the modeling and still demonstrate compliance with the 24-hour and annual PM2.5 NAAQS. The 0.051 lb/mbf PM2.5 emission factor used to estimate emissions from LK-6 in the revised modeling analysis is the highest value Region 10 is aware of having been used to estimate emissions generated by drying Pacific Northwest softwood lumber.[20] Most NSR and Title V permit applicants appear to use the PM2.5 emission factors for lumber drying presented in Oregon DEQ's guidance document AQ-EF02 entitled, "Emission Factors for Wood Products." Although the document does not specify an emission factor for White Fir, it does specify an emission factor of 0.05 lb/mbf for drying Western Hemlock. The Permittee's PM2.5 NAAQS demonstration is therefore based on an emission factor that is slightly higher than the emission factor relied on by other permit authorities in the Pacific Northwest.

In light of the complexity of the testing and the revised modeling analysis, the final permit does not include a requirement that the Permittee test and verify that its emissions are not greater than the 0.051 lb/mbf rate used in the revised modeling analysis. Instead, the final minor NSR permit requires the Permittee to demonstrate compliance with the lb/day limit on a daily basis by managing the amount of lumber that is dried per day assuming the 0.051 lb/mbf emission factor is representative of PM2.5 emissions from LK-6. If information later becomes available indicating that either the 0.051 lb/mbf emission factor in the permit is not representative of PM2.5 emissions from LK-6 or that daily or annual emissions from LK-6 may be greater than the emission limits in the final minor NSR permit, Region 10 has authority to require the Permittee to conduct testing (small or full-scale) through Clean Air Act Section 114 authority, reopening of this minor NSR permit (see 40 CFR 49.19(e)), or in the Title V operating permit (see 40 CFR 71.6(a)(3)(i)(B) and 71.6(c)(1)). In this regard, Region 10 notes that there is a

[20] Since the draft permit was proposed, Region 10 has learned of PM2.5 testing conducted at a full-scale kiln in Pineland, Texas by the National Council for Air and Stream Improvement (NCASI) as a "research project," measuring emissions from one-half of the vents on the full-scale kiln. The resulting emissions factor is 0.0606 lb/mbf PM2.5. Although Region 10 has some concerns with the testing method, Region 10 believes the results are representative with a margin of error of plus or minus 50 to 100% of the reported value for Southern pine, the wood-species tested. Region 10 considered the extent to which the Southern Pine 0.0606 lb/mbf PM2.5 emission factor is representative of the Permittee's Grand Fir, White Fir or Western Hemlock emissions. Southern Pine softwoods are part of a group of higher-VOC-emitting resinous pine species, whereas the lumber the Permittee proposes to dry are part of a group of lower-VOC-emitting non-resonated species. Without more information regarding the relative amounts of PM2.5 emitted by different species of lumber or the relative PM2.5-to-VOC ratios of different species of lumber, Region 10 does not believe there is a basis for applying the Southern Pine emission factor to Pacific Northwest lumber species.

PM2.5 monitor located approximately one mile from the SMC that has been in operation many years and is expected to continue in operation after LK-6 becomes operational.

Comment H.2: With respect to Condition 4.1, which requires that the Permittee measure PM, PM10 and PM2.5 emissions from LK-6 for each lumber species dried, one commenter takes issue with the requirement that the Permittee measure total PM using Reference Method 5 and assume that the PM10 and PM2.5 fractions are equal to the total PM emissions. The commenter contends that the Permittee has the right to choose this assumption at its own risk, and that the regulatory agency cannot require this assumption. The commenter states that the applicable test method for PM10 and PM2.5 is Reference Method 201A, as listed in the appendix to the draft minor NSR permit. The commenter also states that, even if a small-scale kiln were available for deriving estimates of PM2.5 emissions from LK-6, the small-scale kiln could not be tested using Reference Method 201A because of the potential for high moisture content in the kiln exhaust. According the Reference Method 201A guidance on the EPA Air Emission Measurement Center website, the commenter asserts, Reference Method 201A cannot be used to measure emissions where water droplets may be present because stacks with entrained moisture droplets may have water droplets larger than the cut sizes for the Reference Method 201A cyclones. The commenter contends that PM from lumber drying includes filterable particulate and hydrocarbons which are captured as condensable particulate in the source testing process, and that the dry kiln PM source tests the commenter has reviewed have shown that the PM emissions are roughly 70% condensable hydrocarbons and only 30% filterable dust. The commenter asserts that the filterable particulate matter is assumed to be sawdust left on the boards from the sawmill, which cannot be reduced by kiln operation and that the condensable hydrocarbons include VOCs that are released from the wood during drying, which can be minimized through optimized kiln operations.

Response: For the reasons discussed in our response to Comment H.1, the final minor NSR permit does not require testing to measure lumber drying emissions generated by a small-scale kiln (in lieu of testing LK-6 itself).

In response to the comment, the final permit provides that if source testing is required, the Permittee has the option of using either Reference Method 201A or Reference Method 5 to measure PM10/PM2.5 filterable emissions generated by the small-scale kiln or the actual kiln (depending on what testing is required) and that, if Method 5 is used, all filterable PM is assumed to be PM10/PM2.5. Region 10 believes the use of Method 5 as opposed to method 201A to measure filterable PM may bias the overall PM10/PM2.5 results high only slightly as most particulate matter is expected to be in the PM2.5 size range. According to testing conducted by NCASI at Pineland, Texas, 86 percent of filterable PM is filterable PM2.5.

With respect to the comment that Reference Method 201A cannot be used in small-scale kiln testing, if water droplets are present in the exhaust of the small-scale kiln, modifications to the test method can be made to address the condensation issue as illustrated in the testing performed by NCASI at GP's Pineland, Texas facility. NCASI states on page 7 of its test report (included in the administrative record):

M201A is normally conducted with an in-stack cyclone and filter assembly that is maintained at a reasonably constant stack gas temperature in order to meet the cyclone performance criteria. The in-stack cyclone and filter assembly for this lumber kiln test effort, however, was not expected to remain at a constant temperature. As the direction of air flow within the stack reverses from inlet air (cool) to exhaust air (hot), the hot humid sample gas entering the cooled cyclone assembly at the start of each sample run could potentially cause condensation to occur within the in-stack assembly until the stack temperature was reached. M201A allows for an alternative configuration for the in-stack assembly whereby the in-stack cyclone is attached to a heated glass-lined probe and an out of stack heated quartz filter. NCASI added a further modification by wrapping the in-stack cyclone assembly with heat tape to maintain it at a temperature of 250°F, the same temperature required to be maintained for the heated glass probe and out-of-stack quartz filter. This alternative configuration was incorporated to avoid the problem posed by condensation within the cyclone and filter.

Comment H.3: One commenter notes that the draft Permit Analysis states (on page 14) that the LK-6 PM2.5 emissions are insignificant, implying that requiring source testing is therefore particularly inappropriate.

Response: For the reasons discussed in our response to Comment H.1, the final minor NSR permit does not require testing to measure lumber drying emissions generated by a small-scale kiln (in lieu of testing LK-6 itself). Region 10 notes, however, that the use of the term "insignificant" to characterize LK-6's emissions that the commenter is referencing was made in the context of comparing PM2.5 emissions from LK-6 to PM2.5 emissions from the rest of the SMC. Region 10 was discussing the relatively small reduction in emissions (as compared to SMC's total emissions) that would result from requiring that LK-6 be equipped with a capture and control system for purposes of implementing the control technology requirement. With respect to this project, the expected PM2.5 emissions from the proposed LK-6 are more than any of the emissions increases resulting from increased operation of the project's existing emission units. See Table 3-4 in the final minor NSR Permit Analysis. In any event, Region 10 has revised the control technology review discussion in the final Permit Analysis to avoid any implication that Region 10 believes the increase in PM2.5 emissions, or the ambient impact of PM2.5 emissions, from LK-6 to be insignificant.

Comment H.4: One commenter states that draft minor NSR permit Condition 4.20, which requires that LK-6 be operated normally during the source test, cannot be met while testing a small-scale kiln because the testing is not conducted on LK-6.

Response: For the reasons discussed in our response to Comment H.1, the final minor NSR permit does not require testing to measure lumber drying emissions generated by a small-scale kiln (in lieu of testing LK-6 itself). Given that testing is no longer required, this comment is no longer germane to the permit proceedings.

Comment H.5: In requesting that the small-scale testing requirement for PM2.5 be removed, one commenter suggests that the minor NSR permit rely on opacity observations for verifying

dry kiln PM10/PM2.5 emissions compliance. The commenter states that the monitoring and testing requirements in draft Conditions 4.8 to 4.11 provide a very effective demonstration for dry kiln PM10/PM2.5 compliance and that monthly opacity observations will ensure that LK-6 is continuously operated in a manner that minimizes PM10/PM2.5 emissions.

Response: For the reasons discussed in our response to Comment H.1, the final minor NSR permit does not require testing to measure lumber drying emissions generated by a small-scale kiln (in lieu of testing LK-6 itself). Region 10 notes, however, that measuring visible emissions will not generate information useful to determining whether LK-6 emissions are less than the limits in Conditions 3.6 and 3.7 of the final minor NSR permit. Region 10 is not aware of any existing information that could be relied on to establish a relationship between visible emissions from LK-6 and the proposed kiln's PM2.5 mass emission rates.

Comment H.6: One commenter contends that Reference Method 5 will over-estimate PM2.5 emissions from Baghouse 2 and Baghouse 3 (PCWP-PM-SH and PCWP-PM-SD) and requests confirmation that the PM2.5 testing required for those units under draft minor NSR permit Condition 4.3 is a one-time test.

Response: Region 10 has amended the draft minor NSR permit to allow the Permittee to use either Reference Method 5 or 201A to quantify filterable particulate matter at the Permittee's option. This addresses the commenter's concern that testing with the required method will overestimate PM2.5 emissions. Region 10 confirms that each baghouse is subject to a one-time test, with each test consisting of three runs. Region 10 has authority under Section 114 of the CAA, 42 U.S.C. § 7414, or under Title V of the CAA, 42 U.S.C. § 7401*et seq.*, to require additional source testing, as appropriate.

Comment H.7: One commenter contends that the source testing requirements and load-based emission calculations in Condition 3.4.1 of the draft minor NSR permit are not warranted for the CE and Riley Boilers for several reasons. First, the commenter contends that once LK-6 is installed and operational, the historical boiler low steam load condition that occurred on weekends will no longer occur because the addition of the new kiln will maintain higher steam load conditions on both facility boilers. Second, the commenter asserts that the PM2.5 emissions presented in the permit application and the emission limits for both boilers in the proposed permit are conservatively overestimated by almost 100% because they are based on total PM (filterable PM plus CPM), not just PM2.5, and NCASI Tech. Bulletin 1013 indicates that PM2.5 emissions from boilers with electrostatic precipitators (ESP), as both boilers have here, are 41% of filterable PM. Third, the commenter states that the Permittee's August 2018 AQIA analysis did not show the CE and Riley boilers, which conservatively modeled all PM, not just PM2.5, as significant contributors to the modeled concentrations of PM2.5. Finally, the commenter asserts that Region 10 based the requirement to conduct annual source testing on the fact that the Permittee did not use the highest PM source test result from more recent Boiler MACT (40 CFR Part 63, Subpart DDDDD) testing, but that, in the August 2018 modeling update, the highest test results (for medium and high load conditions) were used for PM2.5 calculations. The commenter requests that Region 10 remove the additional PM2.5 testing for the Riley and CE Boilers, as well as the requirement to use hourly steam flow conditions to calculate boiler emissions.

Response: The Permittee submitted modeling in May 2019 that more accurately reflects expected PM2.5 (as opposed to PM) emission rates for PB-1and PB-2 as illustrated in Table H-2.

Table H-2: Permittee Changes to PB-1 and PB-2 PM2.5 Emission Factors (lb/mlb steam)

Emission Unit	Test-Derived Average EF	Pre-public Comment Period	Post-public Comment Period	Decrease (%)
PB-1	0.0108	0.0206	0.01488	28
PB-2	0.0048	0.0105	0.00722	31

In response to the comment, Region 10 has revised the emission factors presented in Tables 7-2 and 7-3 of the final minor NSR Permit Analysis to reflect information presented in the NCASI March 2013 Technical Bulletin No. 1013 entitled, "A Comprehensive Compilation and Review of Wood-Fired Boiler Emissions." Test information presented in the NCASI document shows that PM2.5 emissions are a fraction of total PM emissions using Reference Method 5 for wood or bark-fired boilers employing ESPs or fabric filter. The revised emission estimates of actual emissions suggest that the PB-1 and PB-2 emission rates used in the May 2019 AQIA overestimate emissions. The 0.01488 lb/mlb steam emission factor used to calculate PB-1 PM2.5 emissions for the AQIA is 138 percent of the 0.0108 lb/mbf four-test-average emissions (excluding low-load testing and assuming CPM emissions are unchanged from a single 2008 test). The 0.00722 lb/mlb steam emission factor used to calculate PB-2 PM2.5 emissions in the AQIA is 150 percent of the 0.0048 lb/mbf five-test-average emissions (excluding low-load testing and assuming CPM emissions are unchanged from a single 2008 test).

As discussed in Section 7 of the final Permit Analysis, although these revised emission estimates suggest that the PB-1 and PB-2 would be expected to meet the emission rates used in the May 2019 AQIA, PM2.5 testing has never been performed on the Riley Boiler and apparently only once on the CE Boiler (in July 2009 as reported by NCASI). The boilers' CPM emissions data is over ten years old. The final permit therefore retains some testing of the boilers—a one-time test to verify compliance with the minor NSR permit and determine a new emission factor for determining emissions under the permit thereafter. To minimize the burden on the Permittee, however, the one-time test is to be conducted at the same time the Permittee is required to conduct testing of the boilers under the Boiler MACT, which requires CO, HCl, Hg and RM5 PM testing. Testing of the different pollutants can be on different schedules, and the PM2.5 testing requirement may not necessarily align with Boiler MACT RM5 PM testing. It may align instead with any of the other three Boiler MACT pollutants. See final minor NSR permit Condition 4.1 and Section 7 of the Permit Analysis.

The Permittee is required to conduct Reference Method 201A (or Method 5 in lieu of Method 201A) and Reference Method 202 testing at least eight months after LK-6 has begun operation and the first time thereafter that unit-specific testing of each boiler is required under the Boiler MACT. This approach minimizes the overall testing requirements for the Permittee by allowing testing for this permit to be conducted at the same time as testing required under the Boiler MACT standard. The eight-month delay allows for the collection of data to determine the representative steaming rate(s) at which the boilers must be operated while testing is conducted. The Boiler MACT requires testing to be conducted under such conditions as EPA specifies based

on the representative performance of the boiler for the period being tested. See 40 CFR 63.7520. If, pursuant to the authority of the Boiler MACT, Region 10 requires the Permittee to conduct the testing of one of the boilers under 40 CFR 63.7520 at more than one load, Condition 3.9.1 of the final minor NSR permit (Condition 3.4.1 of the draft) specifies how those emission factors are to be used in calculating emissions. To assure the use of the most representative emission factor (lb/mlb steam) for any particular hour, the factor to be used will depend upon the amount of steam generated during that hour. Where testing at only one load is required for purposes of the Boiler MACT and, therefore, under the final minor NSR permit, hourly calculations are not required. The commenter provided no alternative methodology to the one proposed (and finalized) other than to argue that no new testing be required, no new factor(s) be created, and therefore no methodology is needed for calculating hourly emissions (when more than one emission factor has been determined to be representative of boiler operations under different conditions).

I. Minor NSR permit – Monitoring, recordkeeping and reporting

Comment I.1 (PD18): One commenter contends that the monitoring requirements referenced in Condition 2.13 of the draft minor NSR permit, requiring monitoring parameters for the boilers, sawmill, and planer mill immediately on permit issuance instead of upon startup of LK-6, are excessive in light of the insignificant emissions from the specific units and the State of Idaho's observations that stationary sources are not the primary contributor to adverse air quality impacts in the attainment area. The commenter asserts that the area is not noted by IDEQ as an area of concern in any materials on state-wide non-attainment threats. The commenter contends that it does not currently have in place the data acquisition and storage (DAS) to track additional information on boiler, sawmill, and planer mill operations. Although the commenter states that the Permittee is planning on installing a DAS system in 2019, the commenter continues that that system has not been designed to comply with the requirements of Condition 2.13 and reconfiguring the DAS to do so would require a significant capital investment, delay implementation, and require additional personnel. The commenter requests that Region 10 delete these conditions, or at least revise these conditions so that they become effective on startup of LK-6, not on the date the permit becomes effective.

Response: After considering this comment, Region 10 has revised draft minor NSR permit Condition 2.13 (now Condition 2.14). The final minor NSR permit requires the Permittee to track boiler, sawmill, and planer mill operations beginning with startup of LK-6 rather than on permit issuance. This change provides the Permittee time to install the data acquisition system necessary to calculate and record the information required to be tracked in final minor NSR permit Conditions 4.5 and 4.6. The test plans for the required testing for PB-1, PB-2, BH-2 and BH-3, which are required to be submitted to Region 10 for approval, will be sufficiently informed by monitoring data collected after LK-6 startup.

We disagree that these sources have an insignificant impact on air quality and that monitoring and testing these sources should therefore not be required. See response to Comments F.1 and F.2. The commenter has not specifically identified in this portion of its comments which aspects of the monitoring for the identified emission units the commenter finds overly burdensome. See

response to Comments I.3, I.4, and I.5 below for Region 10's responses to specific comments on the monitoring in the minor NSR permit.

Comment I.2: Several commenters request that the monitoring in Condition 4.4.1 of the draft minor NSR permit be reduced. The commenter requested that:

1) Similar to the comment summarized in Comment E.2, the monitoring in Condition 4.4.1 of the draft minor NSR permit be reduced to exit air temperature and volume of wood species dried consistent with competitors' requirements.
2) Condition 4.4.1.6 be simplified to track hours of operation instead of venting time.
3) The condition requiring identification of each wood piece by species and size be deleted because dimensions depend on whether the piece is measured green or dry, planed or rough, or after trimming, and that, although the Permittee has business reasons for measuring the wood, these details are not relevant to air quality.
4) The requirement to report kiln operating parameters for each lumber charge and to monitor daily kiln production be deleted because this level of detail is not required for air emissions monitoring because daily PM10/PM2.5 emissions are based on maximum kiln design and it is not physically possible to exceed this limit.
5) Monitoring and reporting be reduced to monthly.
6) The requirement to measure the lumber moisture content every hour during drying be deleted because the commenter is not aware of any reliable instrumentation for measuring green moisture content before or during drying and that measuring technologies that are available, such as density sorters and in-kiln moisture measuring technologies, are approximate, unreliable, and do not provide continuous data output. The commenter contends that lumber moisture content is estimated during drying by using temperature readings from thermocouples located inside the kiln and that none of the internal kiln temperature monitoring equipment is meant to meet the precision and availability requirements of air emissions monitoring equipment.

Response: Upon consideration of the comments received, Region 10 has made a number of revisions to the LK-6 monitoring requirements in draft minor NSR permit Condition 4.4.1.1 through 4.4.1.9. The final monitoring requirements are included in Conditions 4.3.1 through 4.3.7 of the final minor NSR permit, and a summary of the changes and the rationale for them is detailed below:

- Draft Condition 4.4.1.1 (identification of wood species) is included in the final minor NSR permit as Condition 4.3.1. The final permit continues to require that each species of wood in a batch be identified because Condition 3.1 prohibits the Permittee from drying any species other than Grand Fir, White Fir, and Western Hemlock. Also, each batch's emissions are calculated based upon a 0.051 lb/mbf emission factor. Because the same emission factor is used under the final minor NSR permit, however, to calculate emissions for the entire batch regardless of species, it is no longer necessary to identify the approximate proportion of each in the batch. Therefore, that monitoring aspect of the draft requirement is not included in the final minor NSR permit.
- Draft Condition 4.4.1.2 (lumber dimensions) is not included in the final minor NSR permit. This provision was included in the draft minor NSR permit to help ensure that the

small-scale kiln testing performed to comply with draft permit Condition 4.1 would be representative of the facility's operations. Information collected about the dimension of lumber dried in the kiln would help inform the decision as to what dimension of lumber to dry during small-scale kiln testing. None of this discussion is germane, however, given that the final minor NSR permit does not require testing to measure lumber drying emissions generated by a small-scale kiln for the reasons discussed in response to Comment H.1.

- Draft Condition 4.4.1.3 (volume of lumber per batch) is included in the final minor NSR permit as Condition 4.3.2. Measuring and recording the volume of lumber dried in each batch and over the course of a year is necessary to determine the batch's emissions. Emissions are required to be determined daily and annually to determine compliance with Conditions 3.6, 3.7 and 3.8 in the final minor NSR permit.
- Draft Conditions 4.4.1.4 through 4.4.1.6 (venting duration per day; venting duration for drying cycle; equivalent volume of lumber dried per day) are included in the final minor NSR permit as Conditions 4.3.3 through 4.3.5. In response to the comments received, the final minor NSR permit requires tracking of batch drying cycle duration rather than venting duration. This change reduces the monitoring burden (from that proposed) but still requires collection of enough information to allow for the calculation of daily emissions. Tracking and recording the total duration of a batch's drying cycle along with that portion occurring on a particular day is necessary to determine the batch's equivalent volume of lumber dried in a day. If more than one batch of lumber is dried on a particular day, summing the batches' equivalent volume of lumber dried for that day is necessary to determine the total equivalent volume dried that day. This total, when multiplied by the emission factor, produces a value reflecting the day's emissions. Emissions are required to be determined daily and annually to determine compliance with final minor NSR permit Conditions 3.6, 3.7 and 3.8.
- Draft Condition 4.4.1.7 (equivalent volume of lumber dried each year) is not included in the final minor NSR permit. Because the final minor NSR permit requires the same emission factor to be used to calculate emissions regardless of species dried, it is no longer necessary to separately track total volume of wood dried annually by species. Instead, final minor NSR permit Condition 4.3.2 requires the Permittee to track total volume of lumber dried in a year. Calculation of annual emissions is achieved by multiplying annual lumber volume by the emission factor (common to all batches).
- Draft Condition 4.4.1.8 (moisture content) is included in the final minor NSR permit as Condition 4.3.7. This condition was initially included to help determine appropriate conditions under which to perform testing but is included in the final permit to provide compliance assurance for the work practice requirements. One commenter interpreted proposed minor NSR permit Condition 4.4.1.8 as requiring the Permittee to measure the moisture content of each board in a batch. That was not the intent and final Condition 4.3.7 clarifies that only a sample of a batch's lumber must be continuously monitored for moisture content. With respect to the comment regarding the reliability of moisture measurement equipment, final Condition 4.3.7 (unlike draft Condition 4.4.1.8) specifies the use of a capacitance-based in-kiln moisture measurement system. According to information presented by a lumber dry kiln manufacturer at a NCASI regional conference in June 2018, capacitance-based in-kiln moisture measurement systems are accurate, reliable, and provide continuous data output. The systems are simple to use, able to

withstand harsh environments, and are robust. The systems have been in service for nearly 25 years. The commenter's concerns regarding the limitations of in-kiln monitoring equipment are not compelling in light of information in the administrative record.

- Condition 4.4.1.9 (dry bulb and wet bulb temperatures entering and exiting the load) has been revised in the final minor NSR permit and is now Condition 4.3.6. Final Condition 4.3.6 requires the Permittee to measure dry bulb temperature of the heated air that exits each load of lumber in each zone of the kiln in order to demonstrate compliance with final minor NSR permit Condition 3.2. Upon further consideration of the comments regarding dry bulb inlet and wet-bulb entry and exit temperature monitoring, Region 10 has removed the requirement that the Permittee measure these temperatures.[21] This provision was included in the draft minor NSR permit to help ensure that the small-scale kiln testing required in the draft minor NSR permit would be representative of LK-6's operations. As discussed above in response to lumber dimension monitoring, operating data would have been required to be provided to Region 10 upon request pursuant to draft Condition 4.1.1 to inform decision making as to the conditions under which small-scale kiln testing must be conducted. None of this discussion is germane, however, given that the final minor NSR permit does not require testing to measure lumber drying emissions generated by a small-scale kiln for the reasons discussed in response to Comment H.1.

With respect to comments that some of the information required to be monitored may be confidential business information, 40 CFR Part 2 has provisions for claiming information required to be submitted to EPA as confidential. Region 10 notes, however, that under 40 CFR 2.301, "emissions data," is not entitled to confidential treatment. "Emissions data" includes, among other things, any information to determine the identity, amount, frequency, or other characteristic (to the extent related to air quality) of the emissions, which, under an applicable standard or limitation, the source was authorized to emit (including, to the extent necessary for such purposes, a description of the manner or rate of operation of the source). The information Region 10 is requiring to be monitored is needed to calculate emissions to show compliance with the PM2.5 daily and annual emission limits.

Comment I.3: One commenter states that the Permittee already monitors steam production rates and excess oxygen for Boiler MACT compliance, but that there is no regulatory purpose for the additional boiler monitoring requirements in Condition 4.4.2 of the draft minor NSR permit. The commenter notes that Region 10's Permit Analysis states that the additional tracking is necessary to determine conditions for source testing but asserts that only steam generation rates are necessary for that purpose. The commenter requests that Region 10 remove these additional monitoring requirements from the minor NSR permit.

Response: After considering the comment, we have removed some of the monitoring from the final minor NSR permit, but continue to believe that some of the identified information is needed to calculate daily and annual PM2.5 emissions from the boilers, as well as to monitor the

[21] Monitoring wet bulb temperature exiting the load is part of the computerized kiln management system required by final Condition 3.4 to control the entire drying process. Wet bulb temperature monitoring (as a part of the air temperature measurement systems) is also required to be addressed in the operation and maintenance manual required by final Condition 3.5.

indicators of boiler and control device performance to assure the representativeness of the emission factors used to calculate emissions. Even with the emission reductions achieved by the multiclone and ESP, projected increases from the boilers in connection with the project contribute appreciably to PM2.5 impacts as indicated in Table 11 of Appendix C to the Permit Analysis. Notably, PB-1 (CE Boiler in the referenced table) has the sixth highest impact from among the emission units listed in Table 1-1 of the permit that comprise the project. Comparing the one-hour average values for these parameters on an on-going basis with the values measured during testing (at or near that steaming rate) provides an indication of whether the emission factor is representative of emissions generated during that hour. The final monitoring requirements for PB-1 and PB-2 are included in Conditions 4.5.1 through 4.5.6 of the final minor NSR permit, and the rationale for these conditions, along with any changes made in the final minor NSR permit, is detailed below:

- Draft Condition 4.4.2.1 (steam production) is included in the final minor NSR permit as Condition 4.5.1. The commenter does not request changes to this condition.
- Draft Condition 4.4.2.2 (steam pressure) is not included in the final minor NSR permit. The permittee monitors the steam pressure generated by the boilers. Tracking steam pressure provides an indication of potential changes in boiler duty over time and allows an estimation of steam heat content. Tracking this parameter, however, does not provide a measure of the degree to which the boiler is being operated in a manner consistent with good air pollution control practices for minimizing emissions. Therefore, on further reflection, Region 10 agrees with the commenter that steam pressure is not necessary to calculate the boilers' emissions as the emission factors are specified in units of pounds pollutant per 1,000 pounds steam generated. Upon request, however, boiler steam pressure operating data must be provided to Region 10 pursuant to final Condition 4.1.1 to inform decision making as to the conditions under which testing must be conducted.
- Draft Condition 4.4.2.3 (boiler excess oxygen) is included in the final minor NSR permit as Condition 4.5.2. The Permittee (the commenter) acknowledges that it currently tracks excess oxygen. Measuring and recording the concentration of oxygen downstream of the combustion chamber reflects whether the boiler operator is using good combustion practices. Too little oxygen (relative to levels measured during testing at similar loads) in the combustion chamber (measured downstream in the boiler exhaust) could indicate that not enough air is being introduced for the amount of hog fuel on the grate. The resulting incomplete combustion unnecessarily generates unburned hydrocarbons that may also be CPM. Too much oxygen could indicate too much air is being introduced, which also results in incomplete combustion that unnecessarily generates unburned hydrocarbons that may also be CPM.
- Draft Condition 4.4.2.4 (pressure drop across the multiclone) is included in the final minor NSR permit as Condition 4.5.3. At a given steaming rate, the pressure drop across the multiclone is dependent almost exclusively on the physical condition of the multiclone. Therefore, pressure drop can be used to evaluate mechanical problems within the collector that could impair performance. An increase in the pressure drop at a given process operating rate could indicate solids plugging at the inlet to the cyclonic tube of the multiclone collectors. A decrease in the pressure drop at a given steaming rate could be due to a variety of problems, including: (a) erosion of the outlet tubes, (b) failure of one or more of the gaskets on the clean side tube sheet, or (c) erosion of the axial inlet

spinner vanes. The static pressure gauge provides the only data that can be used to readily identify these problems while the unit is operational. For more information, see Chapter 7 of EPA's January 2000 document entitled, "Control of Particulate Matter Emissions."

- Draft Conditions 4.4.2.5 through 4.4.2.7 (voltage, current, sparking rate) have been revised and are now included in the final minor NSR permit as Conditions 4.5.4 and 4.5.5. Final Condition 4.5.4 requires secondary voltage and current to each field of the ESP to be tracked. Current is a measure of the current supplied to the discharge electrodes and is a partial indicator of the energy or power consumed by the ESP. The secondary current is usually measured in conjunction with secondary voltage to calculate the power. A drop in current may indicate a loss of power. Current at too high a level indicates a short-circuit or sparking. Measuring the secondary current helps in identifying which fields are operating properly. Secondary voltage is a measure of the voltage applied to the discharge electrodes and is a partial indicator of the energy or power consumed by the ESP. Increases in voltage result in increased corona, greater particle charging, and increased control efficiency up to a critical voltage, above which excessive spark occurs and control efficiency decreases. A decrease in voltage indicates lower particle charging. A decrease in voltage with a corresponding increase in current indicates a short circuit or sparking. Measuring the secondary voltage helps in identifying which fields are operating properly. Final Condition 4.5.5 therefore requires sparking rate in each field of the ESP to be tracked. Under normal operation, electrical current repeatedly surges from the discharge electrodes to the collector plates in the form of sparks. Sparks result in an instantaneous termination of the electrical field (i.e., a short circuit in the field). As the secondary voltage increases, particle charging and sparking increase. As a result, there is an optimal range of spark rates within which there is a high degree of particle charging without excessive sparking. Spark rates outside this range generally indicate a decrease in control efficiency. The final minor NSR permit does not include the proposed requirement to track primary voltage and current to each field of the ESP. Although low primary current levels indicate a potential problem with ESP operation, secondary current is a better indicator of ESP power consumption. In addition, although primary power can be used to identify a field that is not operating, this parameter generally does not vary.
- New Condition 4.5.6 requires the Permittee to calculate secondary power consumed by each field of the ESP. The secondary corona power is a measure of the energy consumed in the removal of PM from the gas stream. A decrease in power generally indicates a decrease in control efficiency. Secondary corona power is the product of the secondary voltage and the secondary current, and final Condition 4.5.4 requires each of those parameters to be measured.

Comment I.4. (NCASI11): One commenter states that, with respect to Condition 4.2 of the draft minor NSR permit, it is unclear how PM2.5 emissions measured at high-load and low-load "representative" operating scenarios of PB-1 and PB-2 can be used in "calculating and recording" the prior week's daily PM2.5 emissions. The commenter also states that the intent of this permit condition is unclear.

Response: See response to Comment H.7 and Section 7 of the final Permit Analysis with respect to this condition. To the extent the approved test plan for the Boiler MACT testing required by

40 CFR 63.7520 provides for testing at one load, final Condition 3.9.1. directs that daily emissions be calculated by multiplying the daily steaming rate (mlb steam/day) by the new test-derived emission factor (lb PM2.5/mlb steam). To the extent the approved test plan for the Boiler MACT testing required by 40 CFR 63.7520 requires testing at more than one load, final Condition 3.9.1 provides that the required factor for any particular hour will depend on the amount of steam generated during that hour to assure the use of the most representative test-derived emission factor (lb PM2.5/mlb steam). The Permittee is required to calculate daily emissions no later than the end of the week following the week in which the emissions were generated pursuant to final Condition 4.8.

Comment I.5: One commenter requests that the requirement to continuously measure and record the quantity of lumber entering the mill be removed from draft Condition 4.4.3 because it is not needed to demonstrate compliance with any regulation or permit condition. The commenter continues that it would be appropriate to monitor planer mill throughput during a test of a baghouse used to reduce emissions from the planer mill to ensure that throughput during testing is representative of normal operation.

Response: Draft Condition is 4.4.3.4[22] is included in the final minor NSR permit as Condition 4.6.3 because monitoring planer throughput is necessary to calculate PCWR-PM-SH and PCWR-PM-SD daily and annual emissions pursuant to final Conditions 3.6 and 3.7 (draft Conditions 3.2 and 3.3). Region 10 agrees that it is appropriate to monitor planer mill throughput during a test of BH-2 and BH-3 to ensure that throughput during testing is representative of normal operation. It is also necessary, however, to monitor planer throughput during a test of BH-2 and BH-3 to calculate an emission factor based upon planer mill throughput. An emission factor based upon throughput (lb/mbf) may be more representative than an hourly emission factor (lb/hr) because emissions are directly related to PM loading to the baghouse.[23] Because planer mill throughput is directly proportional to PM loading to the baghouse, it is appropriate to create an emission factor based upon planer throughput. The Planer Mill operates across a range of throughput rates and emissions will fluctuate from hour to hour based upon PM loading to the baghouse. If actual throughput eclipses that observed during source testing, use of a test-derived "lb/hr" emission factor may underreport emissions as the emission factor does not take into account emissions resulting from higher PM loading to the baghouse.

Comment I.6: One commenter requests that Region 10 remove the requirements in Condition 4.4.4 of the draft minor NSR permit for tracking gallons of water/chemical applied, frequency of water/chemical applied, and frequency of sweeping. The commenter contends that there is no way to accurately measure these proposed conditions and that the Permittee already tracks hours of watering on paved and unpaved roadways, hours of sweeper operation, and chemical application to unpaved roadways. The commenter also contends that fugitive dust from the roadways at the SMC has relatively small calculated emissions and a small ambient impact on PM2.5 NAAQS compliance.

Response: Contrary to the comments noted above, commenter (the Permittee) appears to agree to monitor the frequency of water and chemical applications to paved and unpaved areas and the

[22] The draft permit was misnumbered and should have been presented as Condition 4.4.3.3.
[23] Exhaust flow rate is assumed to be constant regardless of the fluctuating degree of PM loading to the baghouse.

frequency of trips to sweep paved areas based upon the commenter's mark-up of the draft permit offered to Region 10 during the public comment period. After further consideration, Region 10 is revising draft Conditions 4.4.4.1 through 4.4.4.3 consistent with the marked-up permit offered by the commenter. Region 10 acknowledges the difficulties of accurately measuring gallons of water/chemical applied. The revised tracking requirements are included in final Conditions 4.7.1 through 4.7.3.

Comment I.7: One commenter requests that Condition 4.8 of the draft minor NSR permit be limited to equipment affected by the project and not the entire SMC. The commenter also notes that Condition 4.8.5 requires equipment to be operating, which may not be possible for some facility equipment. The commenter contends that fugitive dust emissions from miscellaneous sources at the SMC has very low calculated PM2.5 emissions and negligible ambient impact on PM2.5 NAAQS compliance.

Response: Final minor NSR permit Condition 4.11 (draft Condition 4.8) applies only to equipment that is a part of the project. Final minor NSR permit Condition 2.1 (a new condition) specifies that the terms and conditions of the permit apply to the emission units and control devices/work practices identified in Table 1-1 of the permit. In describing emission unit PT in Table 1-1, the final minor NSR permit has been revised to clarify that PT is "Plant traffic by vehicles on paved and unpaved roads related to lumber manufacturing."

To address the concern that some equipment may not be operating, the permit condition has been revised to provide that the requirement to visually survey each potential source of fugitive dust or visible particulate emissions each month only applies to emission generating activities that operated that month (or that quarter if eligible for a reduced monitoring frequency).

With respect to the comment that fugitive dust emissions from miscellaneous sources at the SMC have very low calculated PM2.5 emissions and negligible ambient impact on PM2.5 NAAQS compliance, the commenter is correct that fugitive emissions from miscellaneous processes at the SMC (such as materials handling) have a minimal impact on ambient PM2.5 levels. Fugitive dust emissions from sawmill traffic, however, contribute significantly to both the 24-hour and annual maximum PM2.5 impacts. See Table 11 of Appendix C to the Permit Analysis. In addition, the emissions for fugitive emissions from miscellaneous processes at the SMC (such as materials handling) as well as for sawmill plant traffic are premised on the requirement that all activities listed in Table 1-1, including associated air pollution control equipment, be operated in a manner consistent with good air pollution control practice for minimizing emissions (final minor NSR permit Condition 3.11) and that reasonable precautions are taken to prevent fugitive dust (final minor NSR permit Condition 3.13). The periodic visible PM surveys and monitoring required to be conducted pursuant to final minor NSR permit Conditions 4.11 through 4.16 (draft Conditions 4.8 through 4.13) assure compliance with final minor NSR permit Conditions 3.11 and 3.13.

Comment I.8: One commenter requests that Condition 4.10 (final minor NSR permit Condition 4.13) be deleted from the draft minor NSR permit. The commenter contends that there is no regulation that states that equipment is limited to 0% opacity and that this condition assumes that all equipment should have 0% opacity. The commenter also states that fugitive dust from

miscellaneous sources at the SMC has very low calculated emissions and negligible ambient impact on PM2.5 NAAQS compliance.

Response: Final minor NSR permit Conditions 4.11 through 4.16 (draft Conditions 4.8 through 4.13) serve as the monitoring for several fugitive and particulate matter emission limitations and work practice requirements in the permit. This requirement applies to emission sources that normally do not exhibit visible or fugitive emissions. These permit conditions do not prohibit visible emissions, but instead require investigation and, as necessary, corrective action if visible emissions are observed, and then a visible emissions observation with the reference test method if visible emissions remain. In this respect, these conditions help ensure that visible emissions of fugitive particulate matter are minimized to the extent practicable and that the applicable opacity limit of 20% is not exceeded. See final minor NSR permit Condition 4.17 (draft Condition 4.14) for emission units that are exempted from these requirements. See also response to Comment I.7.

Comment I.9: One commenter requests that Condition 4.14 of the draft minor NSR permit, which excludes the boilers from fugitive requirements of the permit, be revised to exclude all other point sources at the SMC.

Response: Final minor NSR permit Condition 4.17 (draft Condition 4.14) exempts PB-1 and PB-2 from monthly/quarterly visible PM survey monitoring and recordkeeping requirements because the Permittee measures visible emissions from each boiler continuously by employing a continuous opacity monitor, as required by the Boiler MACT. The Permittee does not measure visible emissions continuously from any other emission units at SMC and an appropriate method for assuring compliance with the applicable opacity limit is therefore required. The Commenter did not suggest an alternative means for assuring compliance with the opacity limit for these other point sources.

J. Other Comments Pertaining to Both Permits

Comment J.1: One commenter asked that Conditions 2.12 of the draft PSD permit and draft minor NSR permit be deleted. The commenter states that these provisions would allow Region 10 to add new monitoring requirements (i.e., gapfill) to the Title V permit if the new source review permit lacked adequate monitoring requirements for permit conditions. The commenter requests that Condition 2.12 of the draft permits be removed because the Title V program is separate from and outside the scope of new source review. The commenter also states that the condition implies the draft PSD permit and the draft minor NSR permits do not contain enough monitoring requirements, whereas the commenter contends the draft permits contain more than adequate monitoring requirements.

Response: EPA's authority to include monitoring, recordkeeping, and reporting in Title V permits is well established. Permitting authorities have an obligation to incorporate applicable monitoring requirements into the Title V permit, add monitoring when no underlying monitoring exists, and supplement existing monitoring that is not sufficient to assure compliance with permit terms and conditions. 40 CFR 70.6(a)(3)(i)(A), 70.6(a)(3)(i)(B), 70.6(c)(1); see also *Sierra Club v. EPA*, 536 F.3d 673 (D.C. Cir. 2008); *In the Matter of Citgo Refining and Chemicals Company L.P., West Plant, Corpus Christi, Texas*, Order on Petition No. VI-2007-01 (May 28, 2009). EPA

has a similar obligation to require monitoring, recordkeeping, and reporting as necessary to assure compliance with permit terms and conditions in Title V permits issued by EPA. See 40 CFR 71.6(a)(3)(i)(A), 71.6(a)(3)(i)(B), 71.6(c)(1). During the process of issuing the Title V permit, EPA must consider whether additional monitoring, recordkeeping, and reporting requirements are necessary to assure compliance with terms of a PSD permit or minor NSR permit and to otherwise meet the requirements of 40 CFR Part 71. Condition 2.12 of the draft permits (Condition 2.13 of the final permits) does not in any way modify that obligation.

Region 10 also has inherent authority under the PSD regulations and specific regulatory authority under the Tribal Minor NSR regulations to establish monitoring, recordkeeping, and reporting requirements to ensure that the permit conditions are practically enforceable and to determine the types of monitoring, recordkeeping, and reporting requirements that are appropriate in each case. See 40 CFR 49.155(3), (4), and (5) (Tribal Minor NSR regulations). In addition, EPA has recognized the authority to amend previously issued PSD permits in some circumstances, so long as the amended permit continues to meet PSD requirements. In accordance with this EPA discretion under PSD and the Tribal Minor NSR regulations, draft Condition 2.12 authorizes Region 10 to use Title V *procedures* at a later date to establish alternatives to monitoring, recordkeeping, and reporting requirements established in the PSD and minor NSR permits.

These Title V procedures include the issuance or renewal of the Title V permit to the source, or as a significant modification to the Title V permit. In that respect, Condition 2.12 is a permit streamlining provision, based on PSD and Tribal Minor NSR authority, that is intended to ease the burden to both Region 10 and the Permittee to make any changes needed to monitoring, recordkeeping, and reporting requirements in the PSD and minor NSR permits so long as such revised permit terms meet the requirements for such permits.

Note that the draft PSD permit contained an incorrect reference to the “Tribal minor NSR requirements” instead of to the PSD requirements at 40 CFR 52.21. Region 10 is correcting this error in the final PSD permit.

Comment J.2: One commenter requested that Conditions 5.4 in the draft PSD and minor NSR permits, which require the reporting of permit deviations, be removed from the proposed permit. The commenter contends that Region 10 is citing Title V (40 CFR Part 71) for this condition, regulatory language that belongs in a Title V permit and not a PSD or minor NSR permit. The commenter also notes that Region 10 did not define “prompt” in the draft PSD or minor NSR permits.

Response: Region 10 disagrees that provisions requiring the prompt reporting of deviations should be limited to Title V permits. Permit deviation reporting requirements serve an important function in most permits to ensure the permitting authority is aware of potential instances of noncompliance. Indeed, the Tribal Minor NSR Rule specifically requires that all permits include provisions for the prompt reporting of deviations from permit requirements. See 40 CFR 49.155(a)(5)(ii). EPA has inherent authority to include in PSD permits provisions to facilitate the administration and enforcement of the permit, such as provisions for the reporting of permit deviations.

Condition 5.4 of the draft minor NSR permit included most of the required language of 40 CFR 49.155(a)(5)(ii). As the commenter notes, however, the draft permit did not define "prompt" in the permit in relation to the degree and type of deviation likely to occur and the applicable emissions limitations, as required by 40 CFR 49.155(a)(5)(ii). To address this omission, Region 10 has revised the minor NSR permit to include a definition of "prompt" that is consistent with the default definition of "prompt" under the federal Title V operating permit regulations in 40 CFR 71.6(a)(3)(iii)(B) and (C). Because the SMC is required to have a Title V issued under 40 CFR Part 71, making the definition of "prompt" in the final minor NSR permit consistent with the permit deviation reporting language in Part 71 will reduce the reporting burdens on the Permittee and facilitate the inclusion of the final minor NSR permit into the Title V Permit for the SMC.

With respect to the PSD permit, as explained in the draft Fact Sheet, to ensure consistency with the minor NSR permit for the project, Region 10 drafted Condition 5.4 in the draft PSD permit to be consistent with the deviation reporting requirements for minor NSR permits in 40 CFR 49.155(a)(5)(ii), as well as with the deviation reporting requirements under Title V in 40 CFR 71.6(a)(3)(iii)(B) and (C), because the SMC is subject to Title V. As the commenter also notes, the draft PSD permit did not define "prompt" in the permit. As with the minor NSR permit, to address this omission, Region 10 has revised the final PSD permit to include a definition of "prompt" that is consistent with the default definition of "prompt" under the federal Title V operating permit regulations in 40 CFR 71.6(a)(3)(iii)(B).

Comment J.3: One commenter states that, because the Permittee submitted an application certifying that the facility is an existing major source under PSD regulations and that the project requires PSD review for the proposed VOC emission increase, there was no reason for Region 10 to create or re-create a facility-wide potential-to-emit (PTE) inventory as part of the PSD permit issuance process. The commenter states that certified emission inventories for the facility were provided to Region 10 with past submittals and that the Region did not discuss or preview with the Permittee the methodology used to update past facility-wide PTE inventories, nor did the Region notify the Permittee that prior PTE inventory information was deficient. Two commenters assert that Region 10 has not explained the basis for the changes it made in its revised PTE inventory for the facility. One commenter states that the pre-project PTE in the Permit Analysis for the minor NSR permit includes emissions from equipment that are beyond the scope of the proposed project.

Response: Region 10 acknowledges that the Permittee did not submit a PTE inventory in its PSD and minor NSR permit application. The Permittee did, however, submit a PTE inventory in a previous application for a part 71 operating permit. Region 10 included a facility-wide PTE inventory as part of the draft Fact Sheet for the draft PSD permit action to document Region 10's understanding that the facility is a PSD major source only for VOC. Region 10 also included a facility-wide PTE inventory as part of the draft Permit Analysis for the minor NSR permit to document Region 10's understanding of the applicability of the minor NSR program to the facility. The facility-wide PTE inventory did include emissions from equipment beyond the scope of the proposed project because such emissions are relevant to determining the applicability of PSD and minor NSR to the facility.

Region 10 provided a draft of Region 10's facility-wide PTE inventory to the Permittee in the summer of 2017 as part of Region 10's review of the facility's Part 71 permit application, and again in the summer of 2018 as part of this PSD permit action. Region 10 did make some revisions to the Permittee's facility-wide PTE inventory. For example, in calculating the PTE for PM of PB-1 and PB-2, the Permittee used emission factors reflecting test-derived post-control emissions. In contrast, Region 10 used emission factors reflecting the most stringent regulatory emission limit (PM Boiler MACT limit) because PTE is determined based upon enforceable emission limitations. As another example, the Permittee's calculation of the LK-5 VOC PTE did not assume exclusive drying of the highest-emitting species. Region 10 used that assumption in the PTE calculation because the Permittee is not prohibited from exclusively drying the highest-emitting species.

The Permittee did not provide any substantive comments on a unit-by-unit basis on Region 10's facility-wide PTE inventory at either time Region 10 shared a pre-proposal draft with the Permittee. The Permittee has also not provided any substantive comments on a unit-by-unit basis on Region 10's proposed PTE inventory for the facility in this PSD permit action.

In any event, any differences between the facility-wide PTE inventory submitted by the Permittee in its PSD application and the facility-wide PTE inventory developed by Region 10 and included in the support materials for this action are immaterial to the final PSD permit decision in this case. The Permittee is a PSD major source under both emission inventories and the commenter has not identified any permit terms or conditions that are affected by the differences. The permit does not regulate any emissions sources at the facility that are not part of the project.

Comment J.4: The permittee requests that the email addresses for the company contacts in the draft PSD permit, draft minor NSR permit, and support documents be updated.

Response: Region 10 has made the requested change.

From J.5: One commenter states that source tests conducted by Oregon State University (OSU) show that most of the PM10/PM2.5 emissions from dry kilns consist of condensable hydrocarbons and that HAP and VOC emissions increase under sub-optimal drying conditions. The commenter notes that the forthcoming EPA work practice standards for dry kilns under the PCWP MACT will apply to all the dry kilns at the St. Maries Complex (SMC), not just to LK-6. The commenter continues that a significant reduction in wood hydrocarbons, including HAP and VOC, can be achieved through proper kiln operation and maintenance and that, for this reason, EPA is developing work practice standards for lumber dry kilns as part of PCWP MACT. The commenter recommends that Condition 4.2 of the draft PSD permit and Condition 4.4.1 of the draft NSR permit be replaced with a requirement for implementation of a dry kiln operation and maintenance plan to minimize emissions of HAP, VOC, and CPM.

Response: The commenter has not provided sufficient information for Region 10 to determine what OSU source test reports the commenter is referring to. As stated above, in response to Comment C.2, however, Region 10 agrees with the commenter that HAP, VOC, and CPM

emissions increase under suboptimal drying conditions. Non-uniform drying (creating "hot spots" in the kiln) and over-drying lumber are examples of two sub-optimal drying conditions that unnecessarily generate HAP, VOC, and CPM emissions. We agree with the commenter that these conditions can be avoided by operating a kiln in accordance with a good operation and maintenance manual, as is required by Condition 3.6 of the final PSD permit and Condition 3.5 of the final minor NSR permit.[24] We do not agree, however, that Condition 3.6 of the final PSD permit is a replacement for Condition 4.2 of the draft PSD permit (Condition 4.1 of the final PSD permit)[25]. Condition 4.1.1 through 4.1.3 of the final PSD permit are monitoring requirements that require the Permittee to track kiln operations in order to calculate annual emissions for the purpose of demonstrating compliance with Condition 3.2 of the final PSD permit (annual VOC limit). Conditions 4.1.4 and 4.1.5 of the final PSD permit are monitoring requirements that require the Permittee to track temperature inside the kiln and lumber moisture content in order to demonstrate compliance with final Conditions 3.3 and 3.4 (BACT work practice limits). Although an Operation and Maintenance Manual (satisfying Condition 3.6 of the final PSD permit) could specify implementation of the monitoring required in final Condition 4.1 of the final PSD permit, Condition 3.6 does not explicitly require the manual to do so. There is no need to do so given that the requirements in Condition 4.1 of the final PSD permit are independently enforceable.

K. PCWP MACT

Comment K.1: One commenter raises questions about HAP emissions and the relevance of the requirements in the PCWP MACT for this permit action. The commenter asserts that the only regulatory purpose for the HAP emission factors is to determine whether the facility is a major source of HAP and that, once a facility has been identified as a HAP major source, it becomes subject to MACT standards. The commenter also states that the SMC is subject to the PCWP MACT and that the work practice standards for lumber kilns that EPA is developing under PCWP MACT will reduce kiln VOC and PM10/PM2.5 emissions, in addition to HAPs. The commenter recommends that Region 10 refer to the work of the EPA office that is developing PCWP MACT work practice standards for lumber dry kilns

Response: Region 10 agrees that SMC is an existing major source of HAP and, as such, will be subject to any work practice standards that EPA promulgates for lumber kilns under the PCWP MACT. Because the PCWP MACT has not been amended to include requirements for lumber dry kilns, it is unknown the extent to which the PCWP MACT will regulate these emission units and whether new and existing units will be required to achieve the same level of emission reductions. The purpose of the PSD permit, however, is to address the requirements of EPA's PSD program, 40 C.F.R. § 52.21, with respect to VOC emissions. HAPs emitted during lumber drying are also VOC. HAP emission factors generated by drying Grand Fir/White Fir and Western Hemlock were factored into the derivation of the VOC emission factor equations in final Conditions 3.2.2 and 3.2.3.

[24] Note that the final PSD permit and final minor NSR permit also include other work practice requirements for PM10/PM2.5.

[25] As discussed in response to Comment E.2, for reasons unrelated to this comment, some of the requirements of Condition 4.2 of the final PSD permit have been revised from the comparable provisions in Condition 4.1 of the draft PSD permit.

L. Source Aggregation

Comment L.1: One commenter contests the accuracy of the statements in the draft PSD permit and Fact Sheet and in the draft minor NSR permit and Permit Analysis that the SMC is "adjacent" to the Lumber Drying Division (LDD). The commenter states that the LDD is located two and a half miles from the SMC, and the two facilities are separated by the St. Joe and Saint Maries Rivers. The commenter requests that the word "adjacent" be removed from the final permits and support documents.

Response: Region 10 is retaining the description of the relationship between the SMC and LDD in the final Fact Sheet and Permit Analysis as "adjacent" because that sentence is an accurate representation of the current situation. The LDD is located approximately one and one-half miles east of SMC[26] and outside the exterior boundary of the Reservation. IDEQ determined a number of years ago that the SMC and LDD are adjacent and comprised a single major stationary source.[27] There is no need to revisit that determination at this time because a different determination would have no impact on this permitting action. The PTE of the SMC alone exceeds the PSD major source threshold and, as such, the permitting requirements applicable to this project would not change. Emissions from the LDD have not been considered in this permitting action. Any determination as to the scope of the "stationary source" would need to be done in conjunction with IDEQ because the LDD is subject to IDEQ's permitting jurisdiction for CAA permitting purposes, whereas the SMC is subject to EPA's jurisdiction for CAA permitting purposes.

M. National Historic Preservation Act

Comment M.1: One commenter contends that Region 10's statement in the support documents for the draft PSD permit and the draft minor NSR permit that the Permittee declined to make a commitment to the Tribal Historic Preservation Officer (THPO) of the Coeur d'Alene Tribe is incorrect. The commenter states that the Permittee has discussed the project with the THPO and the Tribe and has committed to executing certain procedures should there be any inadvertent discoveries of cultural resources or human remains. The commenter requests Region 10 revise these statements accordingly.

Response: Region 10 has made some revisions to this discussion in response to the comment to reflect the Permittee's statements.

[26]Region 10 notes that, although the commenter is correct that the LDD is located approximately two and one-half miles from the SMC by road, it is located only one and one-half miles from the SMC in terms of actual distance. The relevant consideration for air emissions is actual distance, not distance by roads.

[27] See October 9, 1996 letter from IDEQ to Potlatch Corporation and the February 6, 1997 letter from the Idaho Attorney General's Office to Potlatch Corporation.