

Re: Weyco Raymond CDK Addendum

Aaron Manley <aaron.manley@orca.org>

Fri 3/1/2024 12:32 PM

To: Matt Goldman <Matt.Goldman@trinityconsultants.com>

Cc: Nancy Liang <NLiang@trinityconsultants.com>; Beth Ryder <bRyder@trinityconsultants.com>; Nolan, Michael <Michael.Nolan@weyerhaeuser.com>; Yanik, Christine <Christine.Yanik@weyerhaeuser.com>; Jennifer DeMay <jennifer.demay@orca.org>

Thank you Matt. I'll consider these proposals as I continue my review. The head engineer sent me their comments and I am working through responding to the comments and am adding items and information from the application addendums we received.

Sincerely,

Aaron Manley, P.E.

Engineer II

+++++

Olympic Region Clean Air Agency

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From: Matt Goldman <Matt.Goldman@trinityconsultants.com>

Sent: Friday, March 1, 2024 11:54 AM

To: Aaron Manley <aaron.manley@orca.org>

Cc: Nancy Liang <NLiang@trinityconsultants.com>; Beth Ryder <bRyder@trinityconsultants.com>; Nolan, Michael <Michael.Nolan@weyerhaeuser.com>; Yanik, Christine <Christine.Yanik@weyerhaeuser.com>; Jennifer DeMay <jennifer.demay@orca.org>

Subject: RE: Weyco Raymond CDK Addendum

Hi Aaron,

To address emission capture and testing for the CDK, Weyerhaeuser is proposing the following permit conditions:

- Monitoring Terms and Conditions:
 - **CDK Source Testing.** No source testing protocol currently exists for CDKs that is available and demonstrated to produce high quality emission factors in the industry. At ORCAA's request, after such a testing protocol becomes available and is approved by EPA, Ecology, or ORCAA, the permittee shall be required to conduct source testing of the CDK in a timely manner.
- Applicable Requirements:
 - **CDK Maintenance and Inspection Plan.** The permittee shall develop and implement a maintenance and inspection plan to minimize fugitive emissions from the ends of the CDK. The plan shall contain,

but shall not be limited to the following measures:

- A plan for maintaining the efficacy of the CDK's exhaust system, including maintenance during shutdown.
- A standard inspection schedule to be conducted no less than weekly.
- A standard log for recording repairs on the CDK.
- A standard log for recording inspection findings.
- The permittee shall develop and submit the Plan to the Administrator for approval upon request.
- Recordkeeping Terms and Conditions:
 - **CDK Maintenance and Inspection Records.** The owner or operator shall maintain the records identified below and retain them for five consecutive years of operation. All required records shall be made available for inspection by ORCAA upon request.
 - The maintenance and inspection plan described in AR##.
 - Repair and maintenance logs for the CDK. Records shall include:
 - a) Date and time the action commenced;
 - b) Description of the action;
 - c) Description of outcome or findings;
 - d) Date and time the action was completed;
 - e) Name of person or company performing the maintenance; and
 - f) Duration of time the subject equipment was not operational.
 - Inspection logs for the CDK. Records shall include:
 - a) Date and time of the inspection;
 - b) Description of findings;
 - c) Name of person performing the inspection; and
 - d) Description of any corrective actions taken.

Do you have an update on where the application review stands? Let us know if you have any questions.

Best,
Matt

Matt Goldman (he/him)

Consultant | Trinity Consultants — Seattle

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Email: matt.goldman@trinityconsultants.com



From: Nancy Liang <NLiang@trinityconsultants.com>

Sent: Monday, February 26, 2024 5:17 PM

To: Aaron Manley <aaron.manley@orcaa.org>

Cc: Beth Ryder <bRyder@trinityconsultants.com>; Nolan, Michael <Michael.Nolan@weyerhaeuser.com>; Yanik, Christine <Christine.Yanik@weyerhaeuser.com>; Jennifer DeMay <jennifer.demay@orcaa.org>; Matt Goldman <Matt.Goldman@trinityconsultants.com>

Subject: RE: Weyco Raymond CDK Addendum

Importance: High

Hi Aaron,

Attached is the combined BACT analysis for the Weyerhaeuser Raymond CDK project, which pulls in information from the NOC application report, addendums, and recent BACT cost calculations.

Weyerhaeuser would like to emphasize the following points to highlight that CDK emissions cannot be tested, and no add-on controls are considered BACT:

- The kiln vendor has reported that the target designed vapor capture for the vapor extraction module (VEM) stacks is 80%. This design target will be difficult to confirm. Confirmation by visually assessing the amount of moisture vapor exiting the kiln can be misleading due to differences in pressure and temperature. Designing the VEM stacks to capture and release the entire kiln exhaust (both water vapor and dry gas) is operationally not an option. The capture of all kiln exhaust would require an excessive negative pressure within the kiln that would impact drying efficiency, extract heat from the drying zone, and short-circuit the energy recovery zone. All of these issues would counteract the intended design benefits provided by CDKs. As a consequence, the VEM stacks are not intended to capture and convey the entire kiln's process gas stream in a manner that meets EPA reference air test methods.
- The CDK being installed at the Weyerhaeuser Raymond sawmill will incorporate state-of-the-art kiln drying technology that is designed to increase energy efficiency and minimize over drying of lumber. The improvements in lumber drying efficiency offered by CDKs require that a critical design balance be maintained between heat input and the exhaust of moisture vapor generated from drying lumber. For the Raymond CDK, a portion of the generated water vapor will be exhausted through four short fan driven stacks. These stacks are designed to elevate the point of vapor release to alleviate a workplace safety issue associated with process steam build up that occurs at the loading and unloading zones at each end of the CDK. Dry kilns, whether of the batch or CDK design, are not designed such that the entire kiln process exhaust is collected and conveyed to a single point. Any such design applied to CDKs will have negative impacts on drying efficiency, such as the extraction of excessive heat from the drying zone or short-circuiting the energy recovery zone, which counteract other design benefits provided by CDKs. The fundamental design of the Raymond CDK, therefore, is the same as other existing CDKs in that the emission release points are not designed or configured to meet the criteria for EPA air emission reference test methods. For this reason, any effort to determine emission factors for the Raymond CDK will likely only yield an estimate that is expected to be no more accurate than the existing emission factors that have been derived from engineering tests conducted at CDKs outfitted with temporary stacks or kiln end hoods.
- As shared in the attached BACT memo, on May 18, 2023, the EPA released the preamble for the proposed 40 CFR 63, Subpart DDDD, otherwise known as National Emission Standards for Hazardous Air Pollutants (NESHAP) for Plywood and Composite Wood Products (PCWP), which explains the proposed Maximum Available Control Technology (MACT) standards for lumber dry kilns. At a high level, CDKs may be designed with fan-powered stacks, like the Raymond CDK's VEMs, which are able to direct 40-80% of the kiln exhaust upward. As the vendor states in the equipment specifications, the VEMs are installed in order to pull water vapor up and away from the CDK ends as a method of reducing fog hazard in the loading areas. However, while the stacks are fan-powered, the fans cannot be operated at levels necessary for emission capture and control as this would disrupt the CDK's ability to precondition green lumber with the heat and steam from dried lumber, an essential energy-transfer function. Due to this design constraint, the EPA has determined it to be technically infeasible to "to capture emissions from the openings at each end or directly measure the total gas flow rate from a CDK as needed to prescribe or enforce an emission limit." Additionally, CDKs have a significantly high volumetric fugitive emission rate, so even if emission points could be identified for source testing, only emission concentrations would be able to be measured. These data would have limited practicality as the total volumetric flow rates, and thus emission rates, out of the CDK are indeterminable.
- Regarding emission capture, testing, and control, the arguments provided above, in the BACT memo, and in previous NOC application materials are in line with current science regarding CDKs. Notably, these arguments align with evidence brought forward by industry experts at NCASI, as well as statements presented by EPA Headquarter in the preamble for proposed PCWP MACT changes.
- At this time, Weyerhaeuser maintains that the BACT assessment attached to this email provides ample evidence to meet the state-level BACT requirements of ORCAA Rule 6.1.4(a)(2) and WAC 173-400-113. Further, the technical and economic feasibility assessments for CDK controls align with those presented in Weyerhaeuser's CDK permit applications in other EPA regions. To satisfy Region 10's BACT request, Weyerhaeuser is currently expending significant time and resources to designing and estimating capital, construction and operating costs for 2 control devices. While this will take some time, early indications lead to costs being significantly higher than those found in the EPA tables.

Also, as mentioned during our previous call, the project will incorporate state-of-the-art kil drying technology, resulting emissions reduction since the PTE of the CDK is less than that of the existing batch kilns. We look forward to seeing the draft permit soon!

Nancy Liang (she/her)

Please Note New Phone Number

P 253.867.5600 x4819 D 425.966.2973

From: Matt Goldman <Matt.Goldman@trinityconsultants.com>

Sent: Thursday, February 22, 2024 10:53 AM

To: Aaron Manley <aaron.manley@orca.org>

Cc: Nancy Liang <NLiang@trinityconsultants.com>; Beth Ryder <bRyder@trinityconsultants.com>; Nolan, Michael <Michael.Nolan@weyerhaeuser.com>; Yanik, Christine <Christine.Yanik@weyerhaeuser.com>; Jennifer DeMay <jennifer.demay@orca.org>

Subject: Weyco Raymond CDK Addendum

Hi Aaron,

See attached files for Weyerhaeuser's response to EPA and ORCAA's comments. Please forward to relevant EPA Region 10 personnel for the call.

Best,
Matt

Matt Goldman (he/him)

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