



Quinault Indian Nation

Forest Practices Technical Analyses Review– Proposed Chehalis River Basin Flood Damage Reduction Project, NEPA DEIS

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Permits

1. The information and analysis presented in the NEPA DEIS regarding the FRE facility and the future expanded facility is insufficient, will result in unavoidable substantial impacts, and lacks any feasible mitigation; consequently, the conclusions regarding impacts to the Chehalis River and its tributaries are not adequately disclosed. Specifically, the information provided in the DEIS on permits and approvals required for construction falsely assumes actions would meet the Washington Department of Natural Resources (WDNR) regulations (Appendix H, H-27). The NEPA DEIS fails to acknowledge that compliance with the WDNR Forest Practice Rules is unattainable for the following reasons:
 - a. The NEPA DEIS fails to acknowledge that a Class IV- Special permit would be required from the Washington Department of Natural Resources (WDNR) for proposed activities including the harvest of trees and conversion of forested to non-forested lands. For a Class IV-Special authorization, WDNR requires the proponent to provide specific mitigation measures and prescriptions for proposals that include timber harvest, construction of roads, landings, gravel pits, rock quarries, or spoil disposal areas on or around potentially unstable slopes or landforms that have the potential to deliver sediment or debris to a public resource or has the potential to threaten public safety (WAC 222-16-050 (1)(d)). The NEPA DEIS and appendices fail to provide **site-specific** mitigation measures and prescriptions to meet forest practice standards for construction of the FRE facility on potentially unstable slopes or landforms.

Citation: WAC 222-16-050: Accessed April 8th, 2020.
<https://apps.leg.wa.gov/WAC/default.aspx?cite=222-16-050>

- b. Because the NEPA DEIS grossly underestimates the occurrence of unstable slopes and the potential for landslides (see *Critical Review of Proposed Chehalis River Basin Flood Damage Reduction Project NEPA DEIS: Geology Discipline Report Review*, NSD and Saturna 2020), the conclusions regarding impacts to natural resources from the formation, filling, draining, and vegetation management in and around the proposed reservoir are not accurately disclosed. The DEIS does not provide sufficient information or analysis of

road stability and sediment delivery impacts to satisfy the Washington Forest Practice Act and related regulatory requirements for potentially unstable slopes and landforms. WDNR requires the proponent to submit the following information relating to forest practice activities in and around potentially unstable slopes or landforms (WAC 222-10-030: Accessed April 8th, 2020. <https://apps.leg.wa.gov/WAC/default.aspx?cite=222-10-030>, emphasis added):

*1) In order to determine whether such forest practices are likely to have a **probable significant adverse impact, and therefore require an environmental impact statement**, the applicant must submit the following additional information, prepared by a qualified expert as defined in subsection (5) of this section. **The qualified expert must describe the potentially unstable landforms in and around the application site and analyze:***

(a) The likelihood that the proposed forest practices will cause movement on the potentially unstable slopes or landforms, or contribute to further movement of a potentially unstable slope or landform;

*(b) **The likelihood of delivery of sediment or debris to any public resources, or in a manner that would threaten public safety;** and*

(c) Any possible mitigation for the identified hazards and risks.

(2) The department's threshold determination will include an evaluation of whether the proposed forest practices:

(a) Are likely to increase the probability of a mass movement on or near the site;

(b) Would deliver sediment or debris to a public resource or would deliver sediment or debris in a manner that would threaten public safety; and

(c) Such movement and delivery are likely to cause significant adverse impacts.

If the department determines that (a), (b) and (c) of this subsection are likely to occur, then the forest practice is likely to have a probable significant adverse impact.

*(3) **The department will evaluate the proposal, using appropriate expertise and in consultation with other affected agencies and Indian tribes.***

*(4) **Specific mitigation measures or conditions must be designed to avoid accelerating rates and magnitudes of mass wasting that could deliver sediment or debris to a public resource or could deliver sediment or debris in a manner that would threaten public safety.***

The failure of the NEPA DEIS to consider these requirements as part of its impacts analysis renders it incomplete, at best. The NEPA DEIS ignores the possibility that a WDNR forest practices permit might not be issued, particularly in light of the consultation required to occur with the Quinault Indian Nation. The uncertainty of the viability of this project meeting these WDNR permitting requirements should have been disclosed so that the Corps can make an informed decision about the proposed project's compliance with other regulatory processes and authorizations.

Citation: Natural Systems Design and Saturna Watershed Sciences. 2020. Geology Discipline Report Review - Addendum. Prepared for Quinault Indian Nation for Proposed Chehalis River Basin Flood Damage Reduction Project. Draft Environmental Impact Statement NEPA review. October 2020.

- c. The Proponent fails to acknowledge that an Alternate Plan will be required under WAC 222-12-040 and must provide protection to public resources at least equal in overall effectiveness as provided by the forest practice act and rules. The proposed activities for the FRE facility construction including timber harvest, road construction, and quarry expansion are within riparian management zones, wetland management zones; rule identified unstable slopes and sensitive sites. In time and place, mitigation is not logistically feasible to compensate for the magnitude of permanent environmental and public resource damage proposed as a result of construction. The Alternate Plan would require an on-site review by an interdisciplinary team, which would include Quinault Indian Nation representatives. The Quinault Indian Nation will not support an Alternate Plan of this nature because of the impacts to its federally protected treaty rights, which were not even considered or analyzed in the NEPA DEIS.

Citation: WAC 222-12-040: Accessed April 8th, 2020.
<https://app.leg.wa.gov/wac/default.aspx?cite=222-12-040>

- d. The NEPA DEIS insinuates that conversion from forested to non-forested lands would be under Lewis County jurisdiction and omits analysis of the requirements of the Washington State Forest Practice Act. Lewis County does not meet population requirements to warrant transfer of jurisdiction for the conversion of forested to non-forested lands for the proposed project per RCW 76.09.240 and WAC 222-16-050. If a Class IV special and general review is approved by the WDNR, the proponent can move forward to apply for a conditional use permit with the County. It is unlikely that a Class IV special permit will be approved due to insufficient information, unavoidable significant impacts, lack of feasible mitigation presented, and lack of support by the Quinault Indian Nation.

“The Applicant would also need to work with Weyerhaeuser and Lewis County to ensure that the land use change is consistent with other land use plans and policies. This would include but not be limited to Weyerhaeuser’s HCP, the Washington State Forest Practices HCP, Lewis County critical areas regulations, and the Lewis County Comprehensive Plan.” NEPA DEIS PG 179

Citation: “RCW 76.09.240 Accessed April 8th, 2020.
<https://app.leg.wa.gov/RCW/default.aspx?cite=76.09.240>

“WAC 222-16-050:” Accessed March 8th, 2020.
<https://apps.leg.wa.gov/WAC/default.aspx?cite=222-16-050>

Roads

2. The NEPA DEIS fails to assess the scope or magnitude of impacts of forest roads on water quality and fish habitat caused by FRE construction and operation. The impact analysis related to roads is broad-brushed, insufficient, and does not adequately consider the significance of the impacts. The NEPA DEIS fails to acknowledge substantial impacts that will occur from road usage including but not limited to the following:

- i. The NEPA DEIS indicates 7.6 to 10 miles of road would be inundated during FRE facility operation during a major and catastrophic flood. However, because the NEPA DEIS omits any analysis of climate change impacts (see *Critical Review of Proposed Chehalis River Basin Flood Damage Reduction Project NEPA DEIS: Climate Change Impacts NSD October 22, 2020*) the frequency, duration, and extent of logging road inundation is underestimated in the NEPA DEIS. Furthermore, the DEIS fails to quantify the amount of sediment-laden road runoff that would be delivered to local streams during each inundation and the draw down period. The NEPA DEIS impact determination and conclusions do not follow its analysis: the DEIS admits an unquantified yet “substantial percentage” of water and sediment would be delivered, yet only concludes the impacts of a major flood as being ‘low to medium’. This assertion is not justified by the analysis.

*“Within the inundation zone, the existing road network would be an additional source of surface erosion and slope failure. Approximately 7.6 miles and 10 miles of road would be inundated within the temporary reservoir during a major flood and catastrophic flood, respectively. Water draining from the saturated roadbeds on steep slopes would have the potential to cause slope failure. Depending on location, this material would be delivered to local streams and the Chehalis River. The draining water would also cause some surface erosion of the road surface. Additionally, there would be surface erosion of the roadside slope while the water drained out of it. Depending on the local road configuration, some of this water and sediment would be delivered onto local forest floor and would not reach streams. However, **some substantial percentage of this water and sediment would be delivered to local streams and the Chehalis River via roadside ditches and culverts.** Water draining from the upslope side of the ditch would also cause erosion with the material delivered directly to the ditch. **This erosion would occur over a period of approximately 2 weeks during drawdown.** Similar to the landslide discussion previously, **the impact of the major flood, catastrophic flood, and back-to-back floods would be low to medium, medium, and high, respectively.**” (Appendix H, H-38 emphasis added).*

- ii. The proposal does not demonstrate compliance with the Washington State Clean Water Act Assurances under the Federal Clean Water Act. This includes ensuring forest practice activities that have the potential to deliver fine sediment to streams achieve compliance with water pollution control laws. Due to the lack of information provided on sediment delivery from roads and timber harvest during operation and construction, it is reasonable to conclude the FRE facility will not comply with water pollution control laws.
- iii. Riparian management zones act as a vegetative filter for runoff between disturbed areas such as roads, tracks, and other compacted areas because of forest practice activities (Croke and Hairsine 2006). Significant amounts of riparian management zones will be harvested completely and thus will not actively filtering fine sediment delivery; the implications for water quality and sediment delivery of this impact are not adequately considered in the DEIS.
- iv. The intensity of traffic usage is also a key factor in the persistence of sediment delivery from roads (Croke and Hairsine 2006). The NEPA DEIS estimates approximately 40,000 to 60,000 truck round trips will be required between the quarries and FRE construction site (DEIS PG 206) and an additional 4,000 to 6,000 truck round trips from

the FRE construction site to off-site locations (DEIS PG 207). The intensity of traffic would be a substantial increase than current levels and the NEPA DEIS fails to analyze the associated impacts related to increases in fine sediment delivery to the Chehalis River and its tributaries. The NEPA DEIS, therefore, underrepresents the scale and intensity of impacts related to increased traffic usage and fails to present any site-specific measures to mitigate impacts in any meaningful way.

Citations: Croke, J C, and P B Hairsine. "Sediment Delivery in Managed Forests: A Review." Environmental Reviews 14, no. 1 (March 1, 2006): 59–87. <https://doi.org/10.1139/a05-016>.

Natural Systems Design. 2020. Critical Review of Proposed Chehalis River Basin Flood Damage Reduction Project NEPA DEIS: Climate Change Impacts. Prepared for Quinault Indian Nation for Proposed Chehalis River Basin Flood Damage Reduction Project. Draft Environmental Impact Statement NEPA review. October 2020.

3. The NEPA DEIS fails to substantiate the claim that there would be low adverse impacts on soil loss and erosion from construction and usage of temporary roads placed within the FRE facility (Appendix H, H-27) and proposed upgrades on existing roads (Appendix H, H-26). The NEPA DEIS failed to quantify sediment delivery, including the magnitude of sediment delivered by landslides, the application of proposed BMP's, and the effect of road configuration, all of which should have been incorporated into the NEPA DEIS. The NEPA DEIS should utilize a physics-based model that consolidates best available science, requires strict variable validation, and incorporates an uncertainty analysis to accurately estimate sediment delivery from forest roads (Baihua et. al 2005).

Citation: Fu, Baihua, Lachlan T.H. Newham, and C.E. Ramos-Scharrón. 2010. "A Review of Surface Erosion and Sediment Delivery Models for Unsealed Roads." Environmental Modelling & Software 25 (1): 1–14. <https://doi.org/10.1016/j.envsoft.2009.07.013>.

4. The NEPA DEIS fails to consider climate change impacts on road issues. Macdonald and Coe (2008) found climate change can greatly increase road- induced landslides and road surface erosion.

"In steep, wet climates roads can cause a 10- to 300-fold increase in the landslide erosion rate, and this increase is due to the effects of roads on hillslope flow paths and the structural integrity of hillslopes"

Citation: MacDonald, L.H., and D.B.R. Coe. 2008. Road sediment production and delivery: processes and management. In: Proceedings of the First World Landslide Forum, International Programme on Landslides and International Strategy for Disaster Reduction. United Nations University, Tokyo, Japan, pp. 381–384.

5. The NEPA DEIS fails to consider that WDNR forest practice rules have specific limitations on the construction of new stream-adjacent roads, due to the high volume of sediment delivery they exhibit. The proposal includes new stream-adjacent roads, and the proponent fails to acknowledge the limitations the Forest Practice Rules have outlined in WAC 222-24-020 (2). Similarly, the

NEPA DEIS fails to consider that proposals with new stream-adjacent parallel roads will require an on-site review by an interdisciplinary team, which would include Quinault Indian Nation representatives. Quinault Indian Nation representatives would not agree to the proposed alignment of the construction access and timber harvest roads.

Citation: *WAC 222-24-020 (2): Except for crossings, new stream-adjacent parallel roads shall not be located within natural drainage channels, channel migration zones, sensitive sites, equipment limitation zones, and riparian management zones when there would be substantial loss or damage to fish or wildlife habitat unless the department has determined that other alternatives will cause greater damage to public resources. Proposals with new stream-adjacent parallel roads will require an on-site review by an interdisciplinary team. (Accessed April 8th, 2020. <https://apps.leg.wa.gov/wac/default.aspx?cite=222-24-020>, emphasis added)*

Timber Harvest

6. The NEPA DEIS bases its analysis solely on the presumption of 485 acres of vegetation removal for FRE construction. In comparison, the SEPA DEIS evaluated a 600-acre area for tree removal during construction and an 847-acre area for the maximum extent of the temporary reservoir because of the larger inundation area with climate change. The NEPA omits substantial analysis and consideration of climate change and subsequently underestimates all impacts related to FRE operation, including the frequency, spatial extent, and duration of inundation within the FRE reservoir (see further details in *Critical Review of Proposed Chehalis River Basin Flood Damage Reduction Project NEPA DEIS: Climate Change Impacts NSD October 22, 2020*). This ultimately underestimates the amount of vegetation removal required for FRE construction and operation and the corresponding impacts to natural resources such as water quality, aquatic habitat, geology, and geomorphology.

“The EIS evaluates a 600-acre area for tree removal during construction and an 847-acre area for the maximum extent of the temporary reservoir because of the larger inundation area with climate change, as described in Exhibit 2-4” (SEPA DEIS PG 21)

In total, it was assumed that approximately 485 acres of vegetation may need to be removed (NEPA DEIS PG 21)

Citation: Natural Systems Design. 2020. Critical Review of Proposed Chehalis River Basin Flood Damage Reduction Project NEPA DEIS: Climate Change Impacts. Prepared for Quinault Indian Nation for Proposed Chehalis River Basin Flood Damage Reduction Project. Draft Environmental Impact Statement NEPA review. October 2020.

7. The NEPA DEIS fails to adequately assess the loss of riparian functions to streams and wetlands during construction and fails to present any feasible measures to mitigate impacts in a meaningful way. The following impacts to riparian functions were not evaluated, ultimately resulting in the underestimation of the extent, intensity, and consequence of the ecosystem impacts from the harvest of regulatory riparian management zones:

a. Hydrologic Impacts

- i. Riparian systems provide valuable hydrologic functions such as moderation of downstream flood peaks through upstream water storage, flood energy dissipation, and groundwater recharge (Gonzalez et al. 2006; Reid & Hilton 1988;). The NEPA DEIS fails to analyze how tree removal during construction and operation will affect riparian hydrologic functions. See related summary of impacts to groundwater in *Critical Review of Proposed Chehalis River Basin Flood Damage Reduction Project NEPA DEIS: Addendum to Cascade of FRE Ecosystems Effects Technical Memo, October 28, 2020.*

Citation: González-del-Tánago, M., Garcia-Jalón, D., 2006. Attributes for assessing the environmental quality of riparian zones. Limnetica 25(1-2), 389-402

Reid, L.M., Hilton, S., 1998. Buffering the Buffer. United States Department of Agriculture Forest Service General Technical Report PSW-GTR-168. Pacific Southwest Research Station, Redwood Sciences Laboratory, Arcata, California

Natural Systems Design. 2020. Addendum to Cascade of FRE Ecosystems Effects Technical Memo. Prepared for Quinault Indian Nation for Proposed Chehalis River Basin Flood Damage Reduction Project. Draft Environmental Impact Statement NEPA review. October 2020.

- ii. Recent literature has demonstrated that timber harvest can decrease summer base flows and the NEPA DEIS fails to analyze how the proposed tree removal in addition to ongoing forest management activities above the proposed FRE facility will impact summer low flows on the Chehalis River (Perry & Jones 2017; Segura et al. 2020). See related assessment of failure to assess climate change effects on low flow conditions in *Critical Review of Proposed Chehalis River Basin Flood Damage Reduction Project NEPA DEIS: Climate Change Impacts NSD October 22, 2020.*

Citation: Perry, Timothy D., and Julia A. Jones., 2017. "Summer Streamflow Deficits from Regenerating Douglas-Fir Forest in the Pacific Northwest, USA: Summer Streamflow Deficits from Regenerating Douglas-Fir Forest." Ecohydrology 10 (2): e1790. <https://doi.org/10.1002/eco.1790>.

Segura, Catalina, Kevin D. Bladon, Jeff A. Hatten, Julia A. Jones, V. Cody Hale, and George G. Ice., 2020. "Long-Term Effects of Forest Harvesting on Summer Low Flow Deficits in the Coast Range of Oregon." Journal of Hydrology 585 (June): 124749. <https://doi.org/10.1016/j.jhydrol.2020.124749>.

b. Microclimate and Soil Temperature

- i. The NEPA DEIS fails to evaluate how the proposed timber harvest will change riparian microclimate functions. Intact riparian canopies influence thermal and moisture environments by reducing solar radiation, precipitation, and winds speed near ground level and increases longwave radiation received at the surface (Moore et. al 2005).

Citation: Moore, R Dan, D L Spittlehouse, and Anthony Story.,2005. "RIPARIAN MICROCLIMATE AND STREAM TEMPERATURE RESPONSE TO FOREST HARVESTING: A REVIEW." JOURNAL OF THE AMERICAN WATER RESOURCES ASSOCIATION, 22.

c. Sediment Filtering

- i. Sediment trapping and nutrient filtration is an important riparian function that will be eliminated post-harvest. Structural attributes of riparian vegetation have a significant influence on sediment filtering capacity and can have substantial consequences for downstream water quality and topography (Capon & Pettit 2018). The loss of this filtration function was not adequately addressed in the NEPA DEIS. The NEPA DEIS used unrealistic estimates for fine sediment eroded from bare slopes after impoundment and rainfall events, further adding to the underestimation of impacts (see *Critical Review of Proposed Chehalis River Basin Flood Damage Reduction Project NEPA DEIS: Addendum to Cascade of FRE Ecosystems Effects Technical Memo, October 28, 2020*).

*Citation: Capon, Samantha J., and Neil E. Pettit. 2018. "Turquoise Is the New Green: Restoring and Enhancing Riparian Function in the Anthropocene." Ecological Management & Restoration 19 (S1): 44–53.
<https://doi.org/10.1111/emr.12326>.*

Natural Systems Design. 2020. Addendum to Cascade of FRE Ecosystems Effects Technical Memo. Prepared for Quinault Indian Nation for Proposed Chehalis River Basin Flood Damage Reduction Project. Draft Environmental Impact Statement NEPA review. October 2020.