Attachment 1:

Detailed Comments on Proposed Chehalis River Basin Flood Damage Reduction Project

Chehalis River Basin Flood Control Zone District

February 4, 2026

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
SUMMARY				
1	SUMMARY	S-13, S-16		The RDEIS mistakenly says that the FRE is inconsistent with the site's FRL zoning designation or forest resource land designation in Lewis County's comprehensive plan. Those designations are consistent with governmental services. LCC 17.42.020 Table 2. Therefore, the use is lawful in the zone. The RDEIS is also mistaken about lack of compliance with the Lewis County Shoreline Master Program, which has provisions for flood hazard management facilities (SMP 4.05). These are allowed in rural conservancy environments under the plan (SMP 4.05.02.G, SMP 6.01.01 Table 6-1). The FEIS should correct these errors.
2	SUMMARY	S-14 to -19		In numerous instances, the RDEIS finds impacts significant and unavoidable unless mitigation is feasible. However, the RDEIS declines to determine whether mitigation is feasible because of uncertainty, delegating that to later permit processes. This essentially causes the RDEIS to find numerous significant and unavoidable project impacts by discounting all avoidance, minimization, and mitigation aspects of the project. This is despite the fact that the RDEIS identifies numerous mitigation measures proposed by the applicant and the permits by which the project would be required to implement mitigation successfully, or else it could not proceed. Moreover, an EIS must include evaluation of mitigation proposed by an applicant. In short, the RDEIS does not address the project's probable impacts, as it is extremely improbable / impossible that the project could proceed without implementing successful mitigation. The RDEIS instead addresses the project's hypothetical worst-case-scenario impacts in the unlikely or impossible event that it could proceed without mitigation or permit requirements. This is especially bewildering because, in some discipline reports, the RDEIS concludes that the proposed mitigation would offset the proposed Project's impacts. Yes, the RDEIS concludes these impacts are "unavoidable" anyways.
3	SUMMARY	What Would Be Impacted by the Proposed Project?	Page S-9, second paragraph	The summary states that there would be significant impacts to Tribal resources and cultural resources, and also that determinations of impacts and mitigation for these resources will be made in Government-to-Government consultation with state and federal governments and through the federal National Historic Preservation Act Section 106 process, which is currently in progress. Appendix B (Cultural) does not clearly demonstrate significant adverse impacts based on this ongoing process. The FEIS should defer to that process and wait for effects to be determined.
4	SUMMARY	Significant Impacts from Proposed Action	Page S-13, Exhibit S-5	The write up of cultural is a bit misleading since the analysis is relying on Section 106. Under the Section 106 process, if archaeological resources are not eligible for the NRHP, they are not assessed for effects. Effects to the one NRHP-eligible site are being minimized by relocation of the project and are still currently being determined through the Section 106 process. The resources have not yet been fully described, so discussing effects to them is not yet warranted. Mitigation for any identified effects would follow from the Section 106

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				process. Recommend updating the narrative on the graphic to reflect comments/edits in Appendix B (Cultural).
5	SUMMARY	Significant Adverse Environmental Impacts and Proposed Mitigation Summary	Page S-14, Exhibit S-6	Row 1 is misleading. Given that the analysis is relying on Section 106, if archaeological resources are not eligible for the NRHP, they are not assessed for effects. Effects to the one NRHP-eligible site are being minimized by relocation of the project and are still currently being determined through the Section 106 process. The resources have not yet been fully described, so discussing effects to them is not yet warranted. Mitigation for any identified effects would follow from the Section 106 process. The language in Row 1 should be updated for accuracy in-line with the comments/edits to Appendix B (Cultural).
MAIN BODY: SECTIONS 1-11				
6	MAIN BODY	1-11	Key Findings of the Environmental Health and Safet Analysis	RDEIS states 'While unlikely, if ground shaking from a large earthquake damaged the FRE structure while the inundation pool is holding water, the impact would be significant and unavoidable. The FRE will be designed to accommodate seismic forces when the inundation pool is impounded such that the risk of an uncontrolled release of the inundation pool is minimized and so unlikely as to be considered negligible. RPDR Section 3.3 of Appendix F outlines industry design guidance and the risk-informed approach which will serve as the basis for design. The risk-informed design framework considers a range of hazard levels (return periods) in combination with the anticipated severity of consequences with each. These are compared against the limited risk tolerance described in USACE, USBR, and FEMA public protection guidelines. Mitigation is proposed through design approach making the impact avoidable.
7	MAIN BODY: SECTIONS 1-11	2.3.1		Description is correct but fails to mention the change that only one of the sites will be selected for development once further characterization of the quarries is completed.
8	MAIN BODY: SECTIONS 1-11	2.3.3	Page 13, paragraph 3	The statement "The Applicant has proposed to assess and update Pe Ell's water supply to avoid impacts to the water supply." Additionally, Appendix 1 Section 3.2.3 states the project includes maintaining an uninterrupted water supply to the town of Pe Ell. It appears this aspect of the project has not been considered appropriately in the determination of impact. See also Comment #379
9	MAIN BODY: SECTIONS 1-11	2.3.3		High level summary is generally correct. Note: It would take a significant redesign to pass the pipe through the FRE structure and providing adequate valving and head controls could be significant, particularly if the water supply pipeline requires operation during periods when the facility is in flood operations which could put head of over 200 feet onto the intake, pipeline, and discharge facilities.
10	MAIN BODY: SECTIONS 1-11	2.3.3.1		Drilling rigs are used for more than blasting and will be used for blasting (quarry and FRE structure), instrumentation installation, target explorations, grouting/treatment. Quarry pre- and post-stockpile locations are not discussed here nor conveyors and intermediate transfer stations and general stockpiles.
11	MAIN BODY: SECTIONS 1-11	2.3.3.1		The concrete production facility description is very general and incomplete and should be expanded to include the cement and all possible supplemental cementitious material (SCM)

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				descriptions such as fly ash, slag, natural pozzolans that might be used. Proper storage facilities for these materials will be provided as part of the concrete production facilities.
12	MAIN BODY: SECTIONS 1-11	2.3.5	Page 23, paragraph 1	States an anchored log boom would capture large wood floating. This was further developed since the RPDR. Based on the draft Debris Management During Flood Retention Report (Attachment 1 to Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum), multiple anchored log booms, log broncs, and work boats will operate to capture the large wood floating.
13	MAIN BODY: SECTIONS 1-11	2.3.6	Page 24 paragraph 2	SEIS states there is only one debris collection area. This was further developed since the RPDR. In the draft Debris Management During Flood Retention Report (Attachment 1 to Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum), there are two proposed debris storage areas.
14	MAIN BODY: SECTIONS 1-11	3.1	2nd paragraph	Text states: "This EIS uses a more updated flow rate, which includes data from the past 40 years..." The document is dated November 2025, so it can be inferred that data from 1985-2024 is being used. Completing a Bulletin 17C analysis with data from this date range yields a 100-year flow of ~90,350 cfs. However, on the next page (Exhibit 3-1) the 100-year flow is stated as 75,100 cfs. Also, on Table N-6, there is a footnote talking about data being used from 1970 to 2015. Completing a Bulletin 17C analysis of this date range yields a 100-year flow of ~87,000 cfs. So, it is not possible to recreate the 100-year flow with the given information in the documentation.
15	MAIN BODY: SECTIONS 1-11	5.1	Key Finding and Water Analysis summary	The summary is overly critical and pessimistic. The write-up in the section paints a more detailed view showing that impacts are manageable and not significant. This is not the case in the summary section. Please correct the summary section to summarize the results detailed in the section.
16	MAIN BODY: SECTIONS 1-11	5.1	Key Finding and Water Analysis summary	The stated impacts include impacts farther downstream, outside of the construction area, due to reduced shade and cover. How is it possible to have impacts in a segment of stream that has not been modified?
17	MAIN BODY: SECTIONS 1-11	5.1	Key Finding and Water Analysis summary	The area upstream of the inundation pool is no different than a pool-riffle region of the natural river. Why is this accounted for as significant when it is similar to natural riverine system?
18	MAIN BODY: SECTIONS 1-11	5.1	Key Finding and Water Analysis summary	It is unclear if the RDEIS accounted for areas within the conduits and endsill that increase the DO accounted for. This analysis should be included in the key findings.
19	MAIN BODY: SECTIONS 1-11	5.1	Page 47, paragraph 1 of Key Findings of Water Analysis	The District has conducted modeling of project-related effects on stream temperature based on shade losses from facility construction, and mitigating factors including VMP implementation. The values summarized herein are outdated and do not reflect the Mitigation Plan actions. Please refer to comments on Appendix N (Water) for more information on project effects on stream temperature.

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20	MAIN BODY: SECTIONS 1-11	5.1	Page 48, paragraph 1	The RDEIS assumes up to 2 million gallons of water would be withdrawn from the Chehalis River for construction use, equivalent to approximately 3.7 cfs per day. The District has refined the construction water needs analysis since the Revised Project Description. Over each construction year, the weighted average peak use of water is approximately 0.63 cfs, or 407,000 gallons per day. This quantity is well below the amount assumed in the RDEIS, and upon which a “less than significant” determination was made for changes in habitat over most months. Please see Attachment 4: Water Demand During Construction (Draft) Technical Memorandum to these comments. The FEIS should incorporate this refinement into its analysis.
21	MAIN BODY: SECTIONS 1-11	5.1 (Water)	Page 48	The EIS analyzes 2 million gpd water needs during construction based on information available at the time of its analysis, from the Revised Project Description. However, the District has conducted a more refined construction water supply analysis, attached as the Construction Water Demand TM, which estimates actual construction water needs to be much less. The highest average monthly construction water demand would be 0.88 cfs (in July, at the height of construction season), with a lower average demand in other months. This figure weights in peak demand more heavily than it would likely occur, and so it is conservative. Even adding an additional conservative buffer of 20% above this 0.88 cfs, the projected maximum average monthly demand would be 1.06 cfs. That means that the highest-demand month would, on average, use less than a third of the water previously proposed. The average annual demand is predicted to be even lower, at 0.63 cfs. The FEIS should incorporate this updated water estimate into its analysis.
22	MAIN BODY: SECTIONS 1-11	5.1.2.1	Page 51, paragraph 1	Please explain the causal mechanism for statements claiming construction will negatively affect dissolved oxygen and stream temperatures. These statements are made with no foundation or support for the effects. Effects on dissolved oxygen from construction are dismissed as "negligible" in the last paragraph of this page, and effects on temperature are stated to be "within the allowable range pursuant to water quality standards."
23	MAIN BODY: SECTIONS 1-11	5.1.2.1	Page 53, paragraph 1	The following statement is incorrect and should be changed. The original statement reads as follows; "This water diversion would temporarily block and change the natural flow and bed of the river channel." This sentence should be changed to the following; "This water diversion would change the natural flow and bed of the river channel." The project doesn't "block” but does change.
24	MAIN BODY: SECTIONS 1-11	5.1.2.1	Page 53, paragraph 2	"Because the Proposed Action would use, divert, obstruct, and change the…" The project doesn't "obstruct" normal river flows. It doesn't retain flood flows. Please change this sentence and remove "obstruct."
25	MAIN BODY: SECTIONS 1-11	5.1.2.2	Page 56, paragraph 3, sentence 3	These frequencies are relatively similar to those under 04P1 and P2 operations for future climate.
26	MAIN BODY: SECTIONS 1-11	5.1.2.2	Page 57, paragraph 1	Operational refinements have reduced the number of inundation days. See detailed comments on operations in Appendix N (Water).

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27	MAIN BODY: SECTIONS 1-11	5.1.2.2	Page 57, paragraph 1, sentence 1	The REIS does not reflect updates to Project operations. The District has refined the operational scenarios since the Revised Project Description was issued. Under refined operational scenarios, temporary pool drawdown rates would be increased to 20 feet per day for areas below elevations of 500 feet. These areas have low landslide risk and will result in a faster pool drawdown, and less days of temporary inundation upstream of the facility during flood events.
28	MAIN BODY: SECTIONS 1-11	5.1.2.2	Page 57, paragraph 5	See District's updated modeling results for stream temperature in the Mitigation Plan prepared for the project and submitted to Ecology in 2024. As this section addresses operations, any increase in temperature assumed in this EIS during the November to March period when flood would occur is less than significant with regard to effects on water quality.
29	MAIN BODY: SECTIONS 1-11	5.1.2.2	Page 62, Exhibit 5.1-5	This table should be updated to reflect refined operational scenarios.
30	MAIN BODY: SECTIONS 1-11	5.2	Key Findings of Earth Analysis	The key findings and impact statements in this section related to the consequence of FRE structure failure appear to be based on postulated events that far exceed typical design criteria for large, high hazard dams to which the facility will be designed. The document would be much improved by including and/or expanding the context for these impact statements. For example, considering that the risks associated with credible potential dam failure modes will be mitigated to meet public protection guidelines of the USACE, USBR, and FEMA, the impact analysis findings would warrant a significant reduction in the stated impacts.
31	MAIN BODY: SECTIONS 1-11	5.2	Page 68, Key Findings of the Earth Analysis:	RDEIS states the large woody material would be removed from the river system and be a significant and unavoidable adverse impact. The statement does not provide what the impact to the system is. The District has a long-standing commitment to move LWM collected at the Project, including LWM remaining in the temporary inundation area, to below the FRE for aquatic habitat mitigation. See, e.g., RPDR page 80, HDR, Large Woody Material Downstream Passage and Placement Clarification Technical Memorandum (Jan. 4, 2021). That document states “LWM would be captured, staged, and sorted for use in downstream habitat enhancement projects as determined by the proposed mitigation program…”. Furthermore, Section 8.4 of the Mitigation Plan explicitly outlines the District’s detailed LWM recovery and relocation plans to mitigate the disruption of wood transport both during flood and non-flood operations, including 15 proposed mitigation sites for LWM recruitment and placement. Mitigation Plan pages 18 and 185-89 (Large Wood Material Recruitment and Placement Plan). The RDEIS ignores this aspect of the proposed project. The FEIS should correct this error.
32	MAIN BODY: SECTIONS 1-11	5.2	Page 68, paragraph 2	The District has provided detailed comments on the effects of the Project on Earth resources in Appendix F. This section should be updated to reflect the District's comments and refined analyses.

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33	MAIN BODY: SECTIONS 1-11	5.2	Page 68, paragraph 3 under Key Findings of the Earth Analysis	Global comment regarding statements about the Mitigation Plan's potential infeasibility. Actions proposed under the Mitigation Plan are part of the Project and will be requirements of any authorizations issued by regulatory entities. Funding of the Mitigation Plan, including long-term monitoring and adaptive management, is an incumbent component of this public project and all mitigation work will be funded as part of the Project. The District will be coordinating funding on a parallel track with construction and operational funding.
34	MAIN BODY: SECTIONS 1-11	5.2 (Key Findings)		The FRE retention structure and related outlet (including fish passage conduits), and spillway will be designed to modern dam safety standards. The current design provides stability of the FRE structure under normal, flood, or post-earthquake conditions assuming all sections of the FRE structure are stable under “gravity loading conditions.” The design does not consider the potential for development of arch action (due to curvature of the FRE structure) that would transfer some of the FRE structure gravity loads to the abutments under inundation pool storage (flood) and earthquake loading conditions. Further, if any loading such as a flood, earthquake or seiche wave were to induce some differential deformation between monoliths within the FRE structure, the resulting “damage state” condition would not result in a large release of a inundation pool, but a more limited release through damaged monolith joints that would result in downstream damages that are significant less than assigned in the environmental analysis. Hence the current design is judged to have a significant level of surplus stability capacity, and consequences associated with damage to the FRE structure during extreme loadings would be relatively small. Future preliminary design analyses will include development of a full 3D structural analysis model that will quantify the structural capacity and expected behavior of the FRE structure under all critical design loading conditions. The potential for failure of the FRE structure will be evaluated with a full quantitative risk analysis, and results will demonstrate that risk of failure of all credible potential failure modes (PFMs) including earthquake, flood and seiche waves due to landslides will be well below risk tolerance guidelines of the USACE/USBR/FEMA.
35	MAIN BODY: SECTIONS 1-11	5.2 (Key Findings)		The FRE will be a concrete gravity structure that will be capable of withstanding overtopping events that may occur. While a specific and large overtopping event has not been postulated and evaluated with stability/structural response models, such an event would be judged highly unlikely, and the FRE structure will be designed to withstand such an event. Such a potential failure mode will be included in a formal risk analysis that will be performed as part of preliminary design to verify that the facility would meet the risk guidelines of the USACE/USBR/FEMA. On a related note, the FRE structure will be designed to have freeboard capable of safely routing a full probable flood event (PMF). This freeboard, as well as additional freeboard that would be available as the inundation pool is drawn down following a flood retention event would be capable of mitigating landslide induced seiche wave events.
36	MAIN BODY: SECTIONS 1-11	5.2 (Key Findings)		The report states that during the 2007 flood, an estimated 5.7 to 8.7 tons of sediment entered the river upstream of the proposed FRE facility. The basis for these numbers is not supported in the RDEIS nor in the literature. In addition, the numbers appear to reflect yield

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				throughout the entire upper Chehalis River basin, not all of which would influence habitat or geomorphology within the Project reach. See also Comment #325.
37	MAIN BODY: SECTIONS 1-11	5.2.2.1	Earthquake Risk subheading, 1st paragraph	The "Earthquake Risk" text indicates that the Cascadia Subduction Zone can trigger large, "damaging" earthquakes in or close to the Chehalis Basin. The use of the term "damaging" in this context is subjective and should be removed. The damage potential of an earthquake is based on the type and design of the structure of interest; it is not a property of the earthquake itself.
38	MAIN BODY: SECTIONS 1-11	5.2.2.1	Page 74, paragraph 3	The refined operations plan includes drawdowns of up to 20 feet per day at elevations below 500 feet where landslides are unlikely to occur with proposed stabilization measures as part of the Project.
39	MAIN BODY: SECTIONS 1-11	5.2.2.1	Page 77, paragraph 1	This assessment does not reflect the District's analysis. Please review the District's Mitigation Plan, Appendix A, for an analysis of sediment transport through the facility.
40	MAIN BODY: SECTIONS 1-11	5.2.2.1	Page 77, paragraph 2	Please clarify this statement: Current levels of large wood are low in the Chehalis River; a large amount entered the river during the 2007 flood but has since been removed.
41	MAIN BODY: SECTIONS 1-11	5.3.2	Page 87 (for entire section under **Findings for the Proposed Project**)	The District has made comments on expected impacts on fish and aquatic resources in Appendix E (Fish). Please refer to those comments for this section.
42	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 88, first full sentence on page	The REIS questions whether BMPs for noise and vibration from construction would fully minimize effects on aquatic species. The primary impact minimization measure for in-water work and associated effects of noise or vibration is to conduct such work "in the dry," in isolation from aquatic habitat. Conducting work in the dry is a standard practice and permit requirement to minimize effects on aquatic species. Thus, there is no uncertainty that this measure will reduce or eliminate effects from noise or vibration, and the EIS should state this explicitly and remove the ambiguity.
43	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 89, Construction Impacts on Salmonids	The District has requested the model inputs used to derive the estimated changes in salmonid abundance reported in the SEPA revised draft EIS. However, the estimates do not consider baseline conditions for passage, which would be mimicked in the construction bypass. There is no spawning habitat in the construction reach, and the number of spring Chinook Salmon spawning upstream of Crim Creek has varied from zero to a few fish, with a maximum of two redds reported by WDFW during redd surveys conducted from 2013 to 2019. See Ronne et al. (2020) and Ashcraft (2018).
44	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 90, paragraph 2 under Operation Impacts on Aquatic Habitats	The REIS suggests reduced fish passage to areas upstream of the facility could impact aquatic habitat upstream of the temporary inundation area over the long term because salmon carcasses would no longer contribute nutrients to the system. This determination ignores the operation and function of the FFPF. During operations, the FFPF will collect upstream migrating fish. Collected adult salmonids and Pacific Lamprey would be released upstream of the temporary pool to continue to spawning areas. During normal (non-flood) operational periods, the dedicated fishways will provide access to upstream habitats. The

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				fishways will be designed to meet NOAA Fisheries and WDFW passage criteria. Thus, access to habitats upstream of the facility will be maintained. Any statements implying "impacts" to habitats upstream from reduced nutrient loading should be removed from this EIS.
45	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 90, paragraph 3 under Operation Impacts on Aquatic Habitats	See District comments on Appendix E (Fish). Operation of the facility would reduce bed scour compared to flood conditions without the facility.
46	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 91, paragraph 2	See the District's comments on Appendix E (Fish). While formation of a temporary pool will likely result in some mortality of salmonid eggs, the primary spawning areas within the temporary inundation area are between Big Creek and Fisk Falls. Under the District's refined operational scenario, this reach will be inundated under flood waters for a few days, and some survival is expected. Complete elimination of spawning or rearing habitat will not occur, and fine sediment transport will move fines out of the temporary inundation area within two months of each event.
47	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 91, paragraph 3	The District's proposed Mitigation Plan includes ongoing measures to pass large wood, and supplement downstream areas with large wood over time to address project-related changes in channel geomorphology. This analysis assumes no mitigation actions will be implemented and should be revised to reflect the District's plan, which must be implemented to comply with expected conditions of future permits.
48	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 92, paragraph 1 under Operation Impacts on Salmonids	The effects of climate change on salmonids without the project (i.e., future baseline conditions) must be considered. The effects of the project must be compared to those future baseline conditions/effects over time.
49	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 92, paragraph 1 under **Operation Impacts on Salmonids**, sentence 3	While a "worst case" scenario may predict one outcome that reflects an unlikely scenario, the most likely operational effect should be analyzed considering facility operations will span decades. Using the "worst case" scenario to quantify impacts does not present the likely outcome and overestimates the Project's probable impacts to a level with catastrophic outcomes. The analysis should be focused on describing the Project's probable impacts, not unlikely, worst case scenarios.
50	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 92, paragraph 2	Because most floods that would trigger operations will occur from November through March, the potential overlap with steelhead spawners (and kelts) is limited temporally because they typically do not begin spawning until February. This periodicity and likely overlap with steelhead adult spawners, and subsequent kelt life history, should be explained and captured in this REIS. As currently stated, this impact assessment is overly conservative and inaccurate because it does not portray what is reasonably likely to occur (i.e., most steelhead will spawn later in the spring, after the typical period when flood operations are expected to be necessary).

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51	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 92, paragraph 3	See comments on Appendix E (Fish) related to expected fish passage performance for the dedicated fishways through the facility and the FFPF structure.
52	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 93, paragraph 2 under Chehalis Basin Perspective on Salmonid Impacts	Spawning reach identification for arguments appears to presume high use of spring Chinook Salmon spawning upstream of the FRE. Please define where the reaches of these primary spawning areas are located. During redd surveys conducted by WDFW from 2013 through 2019, only a handful of spring Chinook redds were reported upstream of the proposed FRE site.
53	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 93, paragraph 3, both bullet points under **Chehalis Basin Perspective on Salmonid Impacts**	Please calculate the percentages of each species that contribute to overall Chehalis Basin populations from spawning use of the temporary inundation area only. Significant spawning occurs in tributaries and upstream of the temporary inundation area, and habitat in those areas will not be affected by the Proposed Action.
54	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 94, Exhibit 5.3-3	Misleading title of Exhibit 5.3-3. Estimated Abundance of Salmon and Steelhead Above Crim Creek. The caption for this figure is misleading and should make clear tributaries and mainstem habitats upstream of the modeled temporary pool are included in these estimates. In addition, please provide the source of abundance estimates. WDFW redd survey data does not indicate such high numbers of spring Chinook. Fall Chinook numbers are also high, and reflect peak spawning years (2018, for example), but do not provide mean estimates using redd count data that was made available to the District from WDFW.
55	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 95, paragraph 1	Following construction, during "normal" periods when the facility is not operating for flood damage reduction, there will be no effect on creek hydrology. During low flow periods, flow would be directed into one or both of the dedicated fishways to provide passage, but no flow would be removed from the system. Accordingly, the Project will not "worsen" summer flows following construction. There is no spawning habitat for Pacific Lamprey in the FRE footprint and operations will not reduce or eliminate spawning areas downstream to Elk Creek. These statements are speculative and not supported by citations or evidence. In the absence of the facility, major floods will scour spawning substrates downstream and reduce survival and productivity for cohorts spawned prior to the flood event.
56	MAIN BODY: SECTIONS 1-11	5.3.2.1	Page 95, paragraph 2	During flood operations, the outflow will be reduced to 300 cfs as the facility conduits close and the temporary pool forms upstream of the facility. This minimum outflow was determined in coordination with a technical subcommittee for fish and aquatic resource protection and is higher than winter baseflows. Mussels are expected to be established in deeper areas of the river channel, in stable substrates that are typically watered year-round. Facility operations are highly unlikely to dewater occupied habitats from late fall through spring, when precipitation will also

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				contribute to consistent hydrology along stream margins that will be rewatered after a few days of flood retention. The rationale for this effect is oversimplified, and the effect is overstated, and lacks context and consideration of mitigating variables, including the wet-season timing of flood events.
57	MAIN BODY: SECTIONS 1-11	5.4.2.1	Page 103, paragraph 1	This conservative approach to tree mortality (and subsequent effects on wildlife habitats) should be revisited with operational refinements that will reduce the duration and depth of inundation, particularly in upstream portions of the temporary pool that will be drawdown within days of flood retention operations.
58	MAIN BODY: SECTIONS 1-11	5.4.2.1	Page 103, paragraph 2	The VMP planting palette was selected to include species that can endure prolonged inundation. This statement is speculative and includes no evidence or support.
59	MAIN BODY: SECTIONS 1-11	5.4.2.1	Page 103, paragraph 4	Portions of the Mitigation Plan that address forested habitat conversion and long-term complex forest conservation are feasible and an integral part of the action. The benefits of these actions should be included in this section, particularly as related to marbled murrelet habitat retention and improvement over the long-term compared to baseline conditions. The reader should be reminded that, under existing conditions, habitat within the temporary inundation area consists of managed forests with homogenous tree stands harvested every 40-50 years. Such forests do not typically support trees that meet minimum size requirements or contain nesting platforms necessary to support marbled murrelets. The District has committed to a pre-construction nesting habitat suitability survey of trees to determine the quantity and quality of suitable marbled murrelet nesting habitat, and this survey will better inform BMPs for tree removal. The District's proposed Mitigation Plan is expected to more than offset losses of suitable nesting trees over the long term, through preservation and protection of conifers from future harvest.
60	MAIN BODY: SECTIONS 1-11	5.4.2.1	Page 104, paragraph 2	The reader should be made aware of the findings in Appendix P (Wildlife), which indicate little, if any, use of trees within the study area by nesting marbled murrelets.
61	MAIN BODY: SECTIONS 1-11	5.4.2.1	Page 105, paragraph 1, first full sentence on page	Loss of habitat from quarry use is misleading. Please provide the calculations used to arrive at this acreage estimate. Only one of the three quarries is likely to be used and failure to reiterate this is misleading.
62	MAIN BODY: SECTIONS 1-11	5.4.2.1	Page 106, paragraph 2	Please refer to comments on floodplain inundation in Appendix P (Wildlife).
63	MAIN BODY: SECTIONS 1-11	5.6	Page 120	Should be updated based on the comments/edits in Appendix L (Tribal).
64	MAIN BODY: SECTIONS 1-11	5.6.2.1	Page 122, second paragraph bullet list, and third paragraph bullet list	Impact discussion would benefit from explanation of current access.

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
65	MAIN BODY: SECTIONS 1-11	5.6.2.2	Page 127, last paragraph	This section is inconsistent with Appendix B, which states that the levee overlaps certain sites. Additionally, the rationale for listing these archaeological sites under the Tribal section is unclear. Please clarify whether these sites are tribally affiliated.
66	MAIN BODY: SECTIONS 1-11	5.7.2.1	Page 133, third paragraph	The RDEIS is mistaken in asserting that the proposed Project would conflict with Lewis County land use policies. The Project site is defined as Forest land in the Lewis County Comprehensive Plan is zoned as Forest Resource Land. *See* Lewis County Comprehensive Plan at 28, *available at* https://lewiscountywa.gov/media/documents/Volume1_CompPlan_ysRfkKW.pdf; LCC 17.30.430. Such land allows "rural government services" with an administrative approval, LCC 17.42.020, which means "those governmental services historically and typically delivered at an intensity usually found in rural areas" of Lewis County, LCC 17.10.180. Lewis County's rural area already has two large traditional dams operated by a government entity for many decades (the Mayfield and Mossyrock Dams, operated by Tacoma Power). Therefore, this Project is a use permissible within the zoning. The FEIS should withdraw this significant adverse impact finding.
67	MAIN BODY: SECTIONS 1-11	5.7.2.1	Page 133, sixth paragraph	The RDEIS is mistaken in asserting that the proposed Project would conflict with Lewis County Shoreline Master Program (SMP) policies. The SMP includes flood hazard prevention as one of its goals. Lewis County SMP 2.09. An entire section of the SMP is dedicated to flood hazard management policies and regulations. SMP 4.05. New structural flood hazard management measures are permittable as shoreline modifications. SMP 4.05.02.G. In-water shoreline modification structures are permittable as conditional uses in Rural Conservancy shoreline areas, which is the Project site's designation, SMP 6.01.01 Table 6-1, and there is a specific set of regulations for structural hazard flood reduction measures. SMP 6.08. In short, the Lewis County SMP has many provisions that allow and regulate facilities like the Proposed Project, which the project will simply follow in the permitting process. The RDEIS's reliance on other reports to conclude that such a permit would be impossible to obtain is misplaced as those other reports decline to credit the project's mitigation plans, leaving such details to permitting. Here, the RDEIS has identified the necessary permits and constraints they would place on the project to mitigate its impacts. The permit requirements are not uncertain; the FEIS should analyze them as it does for Best Management Practices (BMPs) and other permit requirements, conclude that they would mitigate the project or else it cannot be built, and withdraw this significant impact finding.
68	MAIN BODY: SECTIONS 1-11	5.9	Page 149, Key Findings of the Cultural Resources Analysis	List all consulting Tribes, not just a few.
69	MAIN BODY: SECTIONS 1-11	5.9	Page 149, Key Findings of the Cultural Resources Analysis	Use terminology consistent with NHPA Section 106 as the analysis is relying on the Section 106 process.

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
70	MAIN BODY: SECTIONS 1-11	5.9	Page 149	Should be updated based on the comments/edits in Appendix B (Cultural).
71	MAIN BODY: SECTIONS 1-11	5.9.2.2	Page 151	Section 5.9.2.2 states that impacts will be reviewed; however, elsewhere the document states that there are significant adverse effects on TCPs. These conflicting statements should be reconciled and revised.
72	MAIN BODY: SECTIONS 1-11	5.9.2.6	Page 153	Section 5.9.2.6 states that no determination of impacts has been made because the Section 106 process is ongoing. However, other sections state a significant adverse impact. The analysis needs to be consistent throughout the document and Appendix B. The RDEIS may not reasonably conclude that there are significant and unavoidable impacts while simultaneously acknowledging that no determination of impacts has occurred.
73	MAIN BODY: SECTIONS 1-11	Exhibit S-6 5.2.2.1 5.2.2.4 5.6.2.1 5.10.2.4 5.12.2.1		The joint probability of a breach occurring due to an earthquake at the same time as a flood that initiates water being impounded is so low that we do not consider this type of joint probability during a Potential Failure Mode Analysis (PFMA) for a dam safety study. This is outside the standard dam safety practice and should be removed. The joint probability of two remote events occurring at the same time is improbable. The probability of two such remote occurrences happening at once is so unlikely that it does not advance the purposes of SEPA to describe them in this manner.
74	MAIN BODY: SECTIONS 1-11	5.10		The FRE will be designed to accommodate seismic forces when the inundation pool is impounded such that the risk of an uncontrolled release of the inundation pool is minimized and so unlikely as to be considered negligible. RPDR Section 3.3 of Appendix F outlines industry design guidance and the risk-informed approach which will serve as the basis for design. The risk-informed design framework considers a range of hazard levels (return periods) in combination with the anticipated severity of consequences with each. These are compared against the limited risk tolerance described in USACE, USBR, and FEMA public protection guidelines. Mitigation is proposed through the design approach.
75	MAIN BODY: SECTIONS 1-11	5.12		The design criteria for the FRE structure present all populations and infrastructure downstream of the proposed facility with the same levels of protection as other high hazard dams across the U.S. while providing significant flood reduction benefits.
76	MAIN BODY: SECTIONS 1-11	5.15.2.1	Page 194, paragraph 4	The REIS states there is one debris management storage area previously operated by Weyerhaeuser and it will be accessed by the FR 1000 route. This has been further developed since the RPDR. The draft Debris Management During Flood Retention Report (Attachment 1 to Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum), states there are two debris storage areas in different locations than the previously chosen Weyerhaeuser operated area.
77	MAIN BODY: SECTIONS 1-11	10		The scale of the maps is too great to see any discernible differences in floodplain extents and depths reported. Major and minor roads are shown, but many of them do not have labels which makes them difficult for understanding locations.

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APPENDIX 1: PROJECT DESCRIPTION – ALTERNATIVES				
78	APPENDIX 1: PROJECT DESCRIPTION - ALTERNATIVES	Whole Appendix	Whole Appendix	As discussed in Section II.E. of the Detailed Comments to which this table is attached, the Project Description has been materially updated to further avoid, minimize and mitigate for potential Project impacts identified in the RDEIS. These updates must be reflected in the FEIS's Project Description, environmental impact analyses and probably adverse impact findings. Specifically, please update the FEIS to reflect the information provided in the following: • Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum • Attachment 1: Debris Management During Flood Retention Report (Draft) • Attachment 2: Reservoir Operations Analysis (Draft) Technical Memorandum • Attachment 3: Inundation Analysis with 2024 Project Design and 2025 (O4P2) Operational Scenario Technical Memorandum • Attachment 4: Riparian Shade Temperature Model with 2024 Project Design and 2025 (O4P2) Operations Technical Memorandum • Attachment 3: Fish Passage Design Report to Inform SEPA • Attachment 4: Water Demand During Construction (Draft) Technical Memorandum
79	APPENDIX 1: PROJECT DESCRIPTION - ALTERNATIVES	Whole Appendix	Whole Appendix	At many points in this Appendix, the RDEIS correctly references the proposed Project's Mitigation Plan as part of its revised project description submissions. Yet, the RDEIS treats the mitigation plan differently than the rest of the project description in terms of analysis, declining to consider the mitigation actions' effects on probable environmental impacts due to uncertainty regarding feasibility or economic practicability. As noted in the cover letter, this is incorrect, and the mitigation should be considered. Conceptually, it is also nonsensical: the proposed Project itself is a very large public work that, due to cost and many other factors, also faces uncertainty regarding feasibility and economic practicability, and yet the RDEIS analyzes its probable impacts. It is anomalous to use uncertainty as a bar to analysis for one half of the project but not the other. Finally, even if the mitigation were distinct and need not be analyzed, the proposed Project contains a number of avoidance and minimization measures designed to reduce potential adverse environmental impacts that are not mitigation; they are baked into the project design as avoidance mechanisms. These include, among other things, (1) a phased construction plan in which construction occurs mostly in the dry; (2) a construction bypass designed to mimic the natural river hydraulics, allowing volitional fish passage for nearly the entire construction period without resort to trap and transport or a tunnel; (3) a fish outlet works allowing volitional fish passage during the facility's normal, flow-through operations (which has now been improved through consultation with the National Marine Fisheries Services on improved fish passage); (4) an operations plan that minimizes impacts to fish from flood operations (which has now been improved to reduce the period and impacts of temporary inundation); and (5) a vegetation management plan that avoids and minimizes loss of vegetation due to temporary inundation, thereby minimizing wildlife, temperature, and water quality impacts. By declining to analyze these measures fully on the theory that

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				feasibility and economic practicability will be determined in permitting, the RDEIS fails to analyze the probable significant adverse impacts of the proposed Project, not the mitigation—because these avoidance measures are aspects of the project design itself.
80	APPENDIX 1: PROJECT DESCRIPTION - ALTERNATIVES	3, 3.2.4.1, 3.3, 3.3.4, 3.3.5	Page 17, para. 3; Page 35, para. 2; Page 41, key elements box and para. 1; Page 45, sec. 3.3. 4; Page 46, fig. 1-11	The RDEIS states in several places that there will be one debris sorting area and that removal of large woody material (LWM) will take up to 14 days, thus slowing the drawdown rate of the temporary inundation area. This description and the discussion of environmental impacts that flows from that description are no longer accurate. As described in the attached Debris Management During Flood Retention Report, the District is proposing two debris storage areas as well as multiple anchored log booms, log broncs, and work boats to capture the floating LWM. Through these changes, the time to clear the LVM from a 100-year flood is reduced from up to 14 days to up to just 5 days. Additionally, the two log storage areas are located lower in elevation and closer to the FRE structure, resulting in a shorter duration of inundation for most instances of flood operations. The results of the change in operation are described in the attached Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Operations technical memorandum. The FEIS should incorporate these refinements through revisions to the Project Description and its analysis throughout the FEIS.
81	APPENDIX 1: PROJECT DESCRIPTION - ALTERNATIVES	3.1.1.3	Page 23	The design of the proposed outlet works have been refined since issuance of the Revised Project Description Report that is used to define the Proposed Action in this SEPA RDEIS. The refinements to the outlet works further avoid and minimize impacts during normal flow-through operation of the proposed project. Refinements include the addition of two dedicated fishways running parallel to the conduits located to the left and right of the conduits and conduit stilling basin. The fishways provide a substantive improvement in fish passage survival as the fishways improve the reliability of the passage routes, provide more passage routes, and provide better fish passage performance through the FRE structure. In addition to the fishways, an additional primary conduit has been added and the size and number of secondary and evacuation conduits have been refined to improve the open channel flow capacity of the conduits, provide finer control of and more fish-friendly discharge of flows during flood retention operation, and improve sediment transport through the FRE structure and sediment continuity in the Chehalis River system. Details of these refinements to avoid and minimize impacts are included in the Attachment 3: Fish Passage Design Report to Inform SEPA and the appendices and attachments thereto.
82	APPENDIX 1: PROJECT DESCRIPTION - ALTERNATIVES	3.3	Page 41	Proposed debris management during flood retention events and operating rules for flood retention events have been refined by the District since issuance of the Revised Project Description Report that is used to define the Proposed Action in this SEPA RDEIS. Refinement of proposed debris management and flood retention operation allowed for additional refinement of the Vegetation Management Plan. Refinement of these three portions of the proposed project resulted substantive decreases in proposed future river water temperatures and, together with reductions in future water temperature, in avoidance and minimization that substantially reduced the environmental impact of the proposed project. Refinements to these portions of the proposed project, how these refinements built on each other to further avoid and minimize impacts, and the estimated future fish

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				populations resulting from these refinements are attached to these comments in the Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Operations technical memorandum and the attachments thereto.
APPENDIX 2: CUMULATIVE IMPACTS				
83	APPENDIX 2: CUMULATIVE IMPACTS	3.2.1		The RDEIS mistakenly discounts proposed avoidance, minimization, and mitigation due to uncertainty: "During construction, sediment could be delivered to the river due to erosion of excavation surfaces … Mitigation is proposed to reduce erosion and design for slope stability and may reduce some of these impacts; however, there is currently uncertainty regarding whether such mitigation measures are technically feasible or economically practicable." As described in the cover letter to which these comments are attached, the FEIS must consider the proposed mitigation when determining the proposed Project's probable impacts.
84	APPENDIX 2: CUMULATIVE IMPACTS	3.3.1	Page 19, bullets 2 & 3	These bullets incorrectly state that the Project will have significant adverse impacts on fish during construction due to degraded habitat and passage. As described in Appendix D-3 of the 2024 Revised Project Description, the construction bypass will support passage conditions similar to those under baseline through the reference reach and is expected to have no adverse impact on migratory fish.
85	APPENDIX 2: CUMULATIVE IMPACTS	3.3.1	Page 19, bullets 2 &3	These bullets incorrectly conclude that construction noise will have a significant adverse effect on fish. In-water work noise, including pile driving and blasting, that could affect fish, will occur in isolation from the active flow. By constructing the facility in the dry, noise and vibration is not expected to affect fish behavior or degrade habitat near the construction area. This is a fundamental Project construction design feature that the RDEIS misunderstands, resulting in findings of adverse impacts that are incorrect. This must be corrected throughout the document's descriptions, analyses and findings.
86	APPENDIX 2: CUMULATIVE IMPACTS	3.5.1	Page 22, bullet 6	The statement that the Project would have significant adverse effects on downstream wetlands and waterbodies is inaccurate. When the facility is not operating to reduce downstream flooding, it will have no effect on downstream hydrology and floodplain connectivity. During flood retention periods - lasting approximately 30 days and occurring, on average, every 2-3 years under future climate scenarios, flows would be temporarily reduced. These periods overlap with plant senescence periods, or are outside of peak growing periods, in the rainy season from November through March. These brief periods of operation in the wet season should not alter the condition or function of wetlands or waterbodies downstream. Indeed, the wetlands in question cannot be hydrologically dependent on major or catastrophic flood inundation because such inundation occurs too infrequently (less often than the 2-year flow) to impact wetland hydrology under accepted scientific guidance. This description and the incorrect analyses and Project impact findings that flow from this fundamental misunderstanding of the Project must be corrected throughout the document.

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APPENDIX A: AIR				
87	APPENDIX A: AIR	2.4.1, 3.2.2.1.1	Page 17, bullet 1; Page 29 paragraph 2	It states there is one debris management sorting area, but this has been further developed since the RPDR. In the draft Debris Management During Flood Retention Report (attached to Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum) there are two debris storage areas.
APPENDIX B: CULTURAL				
88	APPENDIX B: CULTURAL	Summary	Page iv, first paragraph.	The terminology is confusing in this Appendix, which conflates and mixes terms. Historic properties are those cultural resources that are eligible or listed in the NRHP. These include archaeological and built environment resources and TCPs. It seems that the term 'historic properties' is being used herein to mean historic built environment resources (e.g., buildings, structures, and objects). The District recommends using the term 'historic built environment resources' for built resources so that the terms 'historic properties' and 'historic property' are retained for usage consistent with 36 CFR Part 800 and inclusive of all resource types that are listed in or eligible for the NRHP. This will make the FEIS consistent with Section 106 practice, which it should follow in this case.
89	APPENDIX B: CULTURAL	Summary	Page iv, last paragraph	This paragraph is not accurate. If adverse effects on NRHP eligible properties are determined to be a result of the project, then the Section 106 consulting parties will consult to resolve adverse effects on those properties. Mitigation measures are agreed upon during Section 106 consultation and a Programmatic Agreement or Memorandum of Agreement that includes the agreed-upon mitigation measures is executed. The FEIS should credit this process and conclude that it will mitigate for any potential adverse effects.
90	APPENDIX B: CULTURAL	1.1	Page 1, first paragraph	This Discipline report is misguided, since the analysis is relying on Section 106 of the National Historic Preservation Act (NHPA). Under the Section 106 process, if archaeological resources are not eligible for the National Register of Historic Places (NRHP), they are not assessed for effects. Effects to the one NRHP-eligible site are being minimized by relocation of the project and are still currently being determined through the Section 106 process. The resources have not yet been fully described, so discussing effects to them is not yet warranted. Mitigation for any identified effects would follow from the Section 106 process. The FEIS should employ the effects determination from that process.
91	APPENDIX B: CULTURAL	1.1	Page 1, third paragraph	This terminology (i.e., historic property) is imprecise and conflates terms within the Section 106 process. Suggest use of 'historic built environment resources' when referring to built environment resources that are historic in age. The term historic property means a site, structure, object, building, or district that is determined eligible for or listed in the NRHP.
92	APPENDIX B: CULTURAL	1.1	Page 1, fourth paragraph	This is the first reference of the NRHP. The analysis should introduce the register for all resources, not just Traditional Cultural Places (TCP). The NRHP includes eligible buildings, structures, objects, sites, and districts that are archaeological and historic built environment

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				too, not just TCPs. This unclear use of technical language is part of a broader pattern in which the RDEIS does not adequately reflect the totality of the cultural resources analysis. Potential project effects on cultural resources may include effects to nontribal cultural resources as well as tribal cultural resources. The FEIS should more clearly distinguish the general cultural resources and tribal analyses.
93	APPENDIX B: CULTURAL	1.1	Page 1, last paragraph	This sentence is confusing. Recommend striking it entirely. A "recommendation" is not part of the Section 106 evaluation process - only those resources that are determined eligible or formally listed are subject to regulation. Unevaluated resources are often said to be 'treated as eligible' under Section 106 until either they can be evaluated or assessed for effects like an eligible resource. It is unclear what is intended when the RDEIS uses the term “recommendation.”
94	APPENDIX B: CULTURAL	1.1	Page 2, first paragraph	This statement is not entirely accurate because a permit may still be needed in the Area of Potential Effects (APE) depending on the resource. This cannot be determined until the APE is established and the identification stage of the evaluation process is completed.
95	APPENDIX B: CULTURAL	1.2	Page 5, third paragraph	The FEIS needs to clarify the verification process referenced in this paragraph. Add citation because it is not stated in EO 21-02 yet this paragraph is drafted as if it is included in the Executive Order. EO 21-02 states: 1. Agencies shall consult with DAHP and affected tribes on the potential effects of projects on cultural resources proposed in state-funded construction or acquisition projects that will not undergo Section 106 review under the National Historic Preservation Act of 1966 (Section 106), including grant or pass-through funding that culminates in construction or land acquisitions, to determine potential effects to cultural resources.
96	APPENDIX B: CULTURAL	2.2	Page 6, second paragraph	Cultural resources analysis should be based on the Proposed Project’s effect on the current condition of the resource. The FEIS must clarify whether this reference to a catastrophic flood is natural or the result of the project.
97	APPENDIX B: CULTURAL	2.4	Page 21, last paragraph	Section 2.4 addresses methodology but fails to clarify whether the flood scenarios are due to the FRE. This section should be reworked to clearly reflect the project nexus to project effects on cultural resources.
98	APPENDIX B: CULTURAL	2.4	Page 23, second paragraph	Section 2.4 addresses 2 of 8 archaeological sites but does not address the remaining 6. The FEIS should indicate the outcome of the remaining 6 sites.
99	APPENDIX B: CULTURAL	2.4	Page 24, Figure B-5	This Study Area extends far outside the area covered by surveys yet the RDEIS includes no explanation as to why there were no surveys conducted in the whole area. There should be some justification or explanation why surveys were not needed in the entire study area. The project effects analysis must reflect a nexus to the proposed project and have data supporting the same. Notably, although the Study Area may be the same as for other disciplines that consider the full extent of the project’s flood-reduction capability, in this Discipline report that study area makes little sense. There is no reason offered, nor reason to believe, that the proposed project poses specific effects to cultural resource in so great an expanse. The Section 106 process is currently identifying relevant resources. The FEIS

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				should decline to use such a large unsupported study area and conform to the Section 106 conclusions.
100	APPENDIX B: CULTURAL	3.4	Page 38, final three paragraphs	The RDEIS analyzes how, in the no-action alternative, catastrophic and major floods may bury, inundate, scour, or otherwise impact historic and cultural resources, but it minimizes or discounts those effects because they are ostensibly natural and have long been part of the landscape. This analysis is flawed because it artificially exaggerates the adverse impacts of the proposed Project: the inundation or potential burial of historic or cultural properties in the temporary inundation pool (give those resources' locations based on archaeological work cited in the RDEIS) is comparable to, and perhaps less destructive than, the inundation from major or catastrophic flood flows and the landslides that they have historically engendered. It is not appropriate to count one as an impact but discount the other because it is longstanding. The RDEIS notes that the severity of such flows and their attendant landslide and scour risks is increasing, most likely due to human-caused climate change. These things are not innate to the environment and should not be discounted in the manner the RDEIS discounts them. Further, the proposed Project includes landslide mitigation measures and a temporary pool that might ameliorate scour and landslide risks to these sites upstream of the facility, and its flow regulation downstream would certainly reduce risk to cultural and historic properties downstream. Consider, for example, that the 2007 flood destroyed the historic Tin Bridge, which the proposed Project might have prevented if it had existed at that time. The FEIS should analyze the impacts of major and catastrophic flood flows found in no-action alternative and local action alternatives without bias or discounting of these impacts, and it should consider the ways in which the proposed Project reduces those impacts. The proposed Project's potential adverse effects upon cultural resources cannot be properly analyzed without reference to the positive and negative effects of the project on this same topic. Nor can the public or decision makers properly compare the proposed Project to the alternatives analyzed if the effects of the latter, and the way that the proposed Project might reduce those effects, are not discussed.
101	APPENDIX B: CULTURAL	2.2.1	Page 10, Figure B-3	The study area for cultural resources appears to be the same study area as for the entire RDEIS, but it includes some figures showing a much smaller portion of the area than is shown in many of the other figures. The closeup of the study area depicted in this figure displays a hole in the middle of the study area, without explanation. The FEIS should either correct this figure, if it is not supposed to have such a hole, or it should explain why the study area excludes this small region. Further, this figure should reflect the entirety of the Study Area if the FEIS will include an analysis that exceeds the Section 106 APE.
102	APPENDIX B: CULTURAL	2.2.1	Page 6, second paragraph	The appendix should use consistent terminology for the resources that are analyzed in the appendix, which should be defined from the beginning. For example, Section 2.2.1 mentions "Native American place names;" however, this term was not used prior in the appendix where the types of resources included in the analysis were described.
103	APPENDIX B: CULTURAL	2.2.5	Page 15, Table B-5	The FEIS should identify which of these are in location of physical disturbance versus viewshed or buffer. This information is important to assess project effects on resources. It is

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				understood that the RDEIS does not do this because cultural resources are still be identified in the Section 106 process, and the analysis is relying on the Section 106 process. However, the RDEIS should not have prejudged or presupposed the outcome of that process and the effects.
104	APPENDIX B: CULTURAL	2.2.5	Page 15, Table B-5	This table suggests there are 166 archaeological resources "yet to be determined." However, neither the table nor the accompanying narrative states explain what "not yet determined" means in terms of the analysis or if there is project nexus to potential impacts on these resources. The FEIS should clarify. Or, better yet, it should narrow its study area to those areas that might potentially be affected, as identified in the Section 106 process.
105	APPENDIX B: CULTURAL	2.2.5.1	Page 16, first paragraph	The RDEIS's description of "known" archaeological resources that "would be impacted" by the proposed Project effects is mistaken. To be precise, since the analysis is using the Section 106 process, it must follow that process. These resources have not been determined eligible by the lead federal agency yet, and SHPO concurrence has not yet been obtained for these determinations of eligibility. Therefore, it is entirely predeterminate and presumptive to make conclusions on project effects. The applicant's archaeological team identified many of these archaeological resources in prior survey work and recommended that only some of them were eligible. DAHP is included in the NHPA Section 106 consultation process in which this work was presented for comment over a period of several months, and DAHP did not suggest any changes to those recommendations, nor have the consulting tribes suggested changes to date. It is too ungenerous to state that this is merely the applicant's recommendation with no concurrence from other Section 106 participants. The FEIS should include additional information generated through Section 106 consultation, which will evaluate which resources are determined eligible.
106	APPENDIX B: CULTURAL	2.2.5.1	Page 16, first paragraph	The RDEIS uses 'vicinity', an undefined term throughout Appendix B. Generally, cultural resources are described in proximity to the Section 106 APE (i.e., within the APE). Project effects are then assessed within the APE, not in a 'vicinity. Reliance on the term "vicinity" is ambiguous and should be replaced to more appropriately indicate whether there are the archaeological resources are within the APE as established in the Section 106 process.
107	APPENDIX B: CULTURAL	2.2.6	Page 16, first paragraph	The RDEIS uses the term "historic properties" when in fact "historic built environment resources" might be the subject of this section. Recommend that the FEIS uses terminology consistent with Section 106 because the State's analysis will depend upon the determinations of eligibility that are being completed as part of the Section 106 process.
108	APPENDIX B: CULTURAL	2.2.6	Page 16, first paragraph	The final sentence, in bold font, is a conclusion lacking any supporting analysis. There is no indication whether potentially existent archaeological sites would incur any project effects. It is improper to make a conclusion of project effects with no analysis.
109	APPENDIX B: CULTURAL	2.2.6	Page 17, Table B-6	The description herein is too high level to understand where the potentially impacted resources are located. It is important to identify what is in the project footprint and what will incur project effects.
110	APPENDIX B: CULTURAL	2.2.6.1	Page 18, first paragraph	This resource (the Tin Bridge) is no longer within the FRE facility site, and it should be made clear that it is no longer extant and thus, does not need to be considered herein. The

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				reference to the Pe Ell Water system's historic features is imprecise, as well. Although those features of the water system were recorded as a built environment resource, the District's archaeological firm recommended that the proposed Project would only potentially impact the non-contributing components of that system, and so would not adversely affect the historic property. (Ostrander and Scott 2022; Ostrander 2025). The U.S. Army Corps agreed with this finding.
111	APPENDIX B: CULTURAL	2.2.7	Page 18, second paragraph	The statement about historic-era cemeteries needs more context. The FEIS should indicate the number of cemeteries that were relocated and should indicate whether they relocated into the Study Area and the area where project effects will occur (i.e., the Section 106 APE).
112	APPENDIX B: CULTURAL	2.2.7	Page 18, Table B-7	Specify whether these recorded cemeteries are within the footprint and Section 106 APE. This is important to know for impacts analysis and the data lacking any nexus to the proposed project does not offer context.
113	APPENDIX B: CULTURAL	2.2.8	Page 20, first paragraph	This paragraph is confusing because it indicates the following list is not related to either this RDEIS study area or project reviewed by this RDEIS. It is confusing to have a list of 6 general statements untethered to this proposed project. Further, several of the itemized elements lack source data and appear to be conclusions without supporting analysis. If the RDEIS lacks meaningful information to substantiate its analysis, the FEIS should await the outcome of the Section 106 process for a better understanding of identified resources and APE.
114	APPENDIX B: CULTURAL	3.2.1.1.1	Page 26, second paragraph of section	This is unclear whether there is a reference to impacts here rather than effects. Under Section 106, effects are not assessed on all resources; effects are assessed on resources that are eligible for or listed in the NRHP (i.e., historic properties). Because this analysis relies on the Section 106 process, it would be prudent to use consistent terminology.
115	APPENDIX B: CULTURAL	3.2.1.1.1	Page 27, first paragraph	If determined eligible, the NRHP-eligible sites will be assessed for effects, and if those effects are determined to be adverse, the USACE will determine appropriate mitigation in consultation with the Section 106 parties.
116	APPENDIX B: CULTURAL	3.2.1.1.1	Page 27, fifth paragraph	Terminology is confusing in this context. "Historic property" means an eligible or listed site, building, structure, object, or district. The RDEIS should stay consistent with NHPA Section 106 terminology as this analysis is relying on the Section 106 process. However, the conclusion that there would be no adverse effects to the Pe Ell Water System is correct,
117	APPENDIX B: CULTURAL	3.2.1.1.1	Page 27, sixth paragraph	This same statement about an Inadvertent Discovery Plan (IDP) should be included above for archaeological resources.
118	APPENDIX B: CULTURAL	3.2.1.1.1	Page 27, seventh paragraph	Project activities should be described above as these are common for all resource types, not just TCPs. Here, documented TCPs should be described and assessed for impacts.
119	APPENDIX B: CULTURAL	3.2.1.1.1	Page 28, third paragraph	It is unclear what TCPs are discussed herein. These are not described and thus, the analysis is not verifiable. The lack of details derives from these potential TCPs being identified and evaluated in the Section 106 process; the FEIS should await the evaluation

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				and determination of potential effects from that process rather than prematurely presuming effects or impacts here.
120	APPENDIX B: CULTURAL	3.2.1.1.1	Page 28, fourth paragraph	Concluding that significant adverse impacts would occur to unrecorded archaeological resources is not substantiated and potentially predeterminate. Significant adverse impacts occur if significant (or eligible) sites are impacted to the extent they can no longer convey their significance. It is presumptive to conclude that any unrecorded site would be significant. Moreover, these impacts are not adequately compared to impacts in the absence of the project due to major or catastrophic flooding. If the proposed facility does not meaningfully increase the disruption such flooding will cause the sites, it is not a significant impact.
121	APPENDIX B: CULTURAL	3.2.1.1.1	Page 28, fourth paragraph	It is premature to conclude that the impacts to archaeological sites will be significant when such sites are still being evaluated in the Section 106 process, in which DAHP is participating and may concur with the USACE's. The FEIS should consider the impacts and mitigation analysis that arises from further information generated in the Section 106 process.
122	APPENDIX B: CULTURAL	3.2.1.2	Page 29, third paragraph	Discussion of archaeological resources should be moved to the archaeological sites and isolates paragraph above. Additionally, an IDP would be needed for archaeology as well, not just human remains.
123	APPENDIX B: CULTURAL	3.2.2.1.1	Page 30, second paragraph	The accumulation rate anticipated during time when the water is being stored may be relevant in this analysis. Burial may take longer than the short-term storage event. Moreover, effects from operations must be compared against the effects of major or catastrophic flood flows under the No Action Alternative and the landslides that have historically attended such floods, which could also inundate, erode, bury, or destroy such sites.
124	APPENDIX B: CULTURAL	3.2.2.1.1	Page 30, second paragraph	There is an undefined reference to increased wet/dry cycles. There should be some analysis whether the proposed project increases those over natural conditions, especially for any sites that are in the floodplain already (or in light of the high quantity of precipitation such sites naturally endure).
125	APPENDIX B: CULTURAL	3.2.2.1.1	Page 31, first paragraph	Under Section 106, adverse effects have to be avoided, minimized, or mitigated. If adverse effects cannot be avoided or minimized, then they are mitigated. The Section 106 consulting parties identify appropriate mitigation, which is included in an agreement document. The FEIS should clearly reflect the Section 106 process.
126	APPENDIX B: CULTURAL	3.2.2.1.1	Page 31, third paragraph	Archaeological resources should be discussed in the Archaeological Sites and Isolates section above, not here in the Human Remains and Cemeteries section.
127	APPENDIX B: CULTURAL	3.2.2.1.1	Page 31, third paragraph	An IDP applies to archaeological resources, not just human remains. The IDP should include archaeological resources as well.
128	APPENDIX B: CULTURAL	3.2.2.1.1	Page 31, fifth paragraph	Same comment applies here as in Section 3.2.1.1.1, which states: Concluding that significant adverse impacts would occur to unrecorded archaeological resources is not substantiated. Significant adverse impacts occur if significant (or eligible) sites are impacted

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				to the extent they can no longer convey their significance. It is presumptive to conclude that any unrecorded site would be significant.
129	APPENDIX B: CULTURAL	3.2.2.1.1	Page 31, fifth paragraph	Notably, the proposed Project has attempted to minimize impacts on the site noted in the RDEIS. The Section 106 process to fully evaluate the resource for eligibility, determine potential effects, and determine any mitigation is ongoing, and it is premature to determine significant impacts before that process concludes. The FEIS should follow the outcomes of the Section 106 process.
130	APPENDIX B: CULTURAL	3.2.2.3	Page 33, first full paragraph	The cross reference to the Fish report is misplaced because, as noted dozens of times in the comments to that Appendix, the adverse impacts noted in the RDEIS are overstated and conflate climate change impacts with the project impacts. The proposed Project's mitigation plan includes measures that would reduce river temperatures downstream of the facility. The increased temperatures and lower flows shown in the RDEIS's modeling, which affect the culturally significant Lamprey, result from climate change in the No Action Alternative, not the proposed Project. As such, the cultural implications of such fish impacts are not impacts of the proposed Project. The FEIS should correct the Fish report and cross-references to its incorrect conclusions through the document.
131	APPENDIX B: CULTURAL	3.2.3	Page 33, second paragraph of section	This is not accurate. If adverse effects on NRHP eligible properties are determined to be a result of the project, then the Section 106 consulting parties will consult to resolve adverse effects on those properties. Mitigation measures are agreed upon during Section 106 consultation and a Programmatic Agreement or Memorandum of Agreement that includes the agreed-upon mitigation measures is executed. The FEIS should credit this process and conclude that it will mitigate for adverse effects.
132	APPENDIX B: CULTURAL	3.2.3	Page 34, first paragraph	IDPs also include the process to follow in the event human remains are inadvertently discovered.
133	APPENDIX B: CULTURAL	3.2.4	Page 34, bullet list	These first two bullets are not appropriate mitigation measures - they are identification efforts.
134	APPENDIX B: CULTURAL	3.2.4	Page 34, bullet list	An IDP is not considered a mitigation measure under Section 106 and typically under the DAHP standards. An IDP is a best management practice (BMP) and is a tool to avoid or minimize potential effects. An IDP is similar to BMPs in other permitting contexts that are discussed in the RDEIS mitigation sections.
135	APPENDIX B: CULTURAL	3.2.4	Page 34, first paragraph	The FEIS should reflect there would be an agreement document - that is standard practice when adverse effects cannot be avoided or minimized.
136	APPENDIX B: CULTURAL	3.2.4	Page 34, third paragraph	Mitigation would include measures that benefit the Tribes, the public, and professional understanding, as typical in Section 106 and DAHP processes. The DAHP website provides some guidance on mitigation: https://dahp.wa.gov/project-review/mitigation-ideas. The FEIS should credit and follow the Section 106.
137	APPENDIX B: CULTURAL	3.3.1.1	Page 35, second paragraph of section	There is no support or content for how this analysis can assert that all impacts could be avoided. For example, there is no analysis concerning what archaeological sites or isolates

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				may be in the footprint or APEs of such local actions, in part because such actions are nonspecific and not yet proposed or identified. Here is one example of a potential local action, however: an airport levee improvement built without the reduction in inundation from the District's proposed Project would likely need to be a ring levee. Construction of new levee components to complete the ring, outside of the current levee footprint west of Interstate-5 in the airport vicinity, would pass through areas that are denoted in the statewide predictive model on the public side of WISAARD as having a high risk of containing archaeological resources. Before a survey is conducted of the area, it is premature to conclude whether any resources would be present and whether they would be affected, let alone whether such effects could be avoided or mitigated. To be similar to the treatment of the proposed Project, rather than concluding that such impacts would be avoided or mitigated, the FEIS should note that such impacts are indeterminate, and could potentially be significant and unavoidable, unless mitigated.
138	APPENDIX B: CULTURAL	3.3.1.1	Page 36, first paragraph	It is unclear how construction could cause impacts. Would historic buildings and structures be demolished? The appendix needs to explain and analyze further to support this conclusion so that the level of effort is commiserate with the analysis for the proposed Project. This is not to say that the District disagrees with the conclusion; daylighting China Creek would include modifications through the heart of historic Centralia, including City Hall and Centralia College, among other historic buildings. It is only that the FEIS should provide more analysis to put the alternatives on equal footing to the proposed Project.
139	APPENDIX B: CULTURAL	3.3.1.2	Page 36, first paragraph of section	This analysis does not assess indirect impacts as defined in Section 2.1, which states: A direct effect occurs at the same time and place with no intervening cause and includes visual, physical, or auditory effects. Indirect effects to historic and cultural resources are those caused later in time or that are farther removed in distance but still reasonably foreseeable. Indirect effects include regulatory or policy changes that would change cultural resources review processes or increase public access to locations that would otherwise be inaccessible, resulting in damage to or looting of cultural resources. This analysis confuses the definition of direct and indirect impacts from how those are defined in Section 2.1. It is prudent to be consistent in applying definitions throughout the entire analysis. This is not to say that the District disagrees that local actions such as daylighting China Creek could have indirect effects on historic properties. For example, changes in land use related to the daylighted corridor could, ultimately, cause development or redevelopment of historic properties or those adjacent to them, which could affect the nature of those properties or their cultural significance. The District encourages the FEIS to include more analysis of the alternatives to put them on equal footing with the proposed Project.

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APPENDIX C: ENVIRONMENTAL HEALTH & SAFETY				
140	APPENDIX C: ENVIRONMENTAL HEALTH & SAFETY	3.2.2.1.1; 3.2.5	Page 19, 2nd paragraph, and Page 35	This section makes a significant adverse impact determination based on the potential for a large enough earthquake to occur while the temporary inundation pool is full, leading to catastrophic failure having downstream effects. It also mentions how as design progresses it would be subject to Ecology's DSO which would ultimately determine if the FRE structure design were safe enough and approve construction. Such approval would require seismic compliance to withstand an extremely rare earthquake (1 in 10,000-year quake), which would have to occur in the very small percentage of time when the temporary pool is full; the net result of these two unlikely scenarios is a shrinkingly small risk that these potential adverse effects would occur. DSO permit requirements are not uncertain or infeasible. The FEIS should credit these requirements as mitigating this risk such that it is no longer a significant *probable* adverse impact. The RDEIS currently analyzes this impact as if it were probable, when it is not probable under current industry guidelines, this risk of failure is so low that it would not be considered a credible risk. If the purpose for discussing this non-credible risk is to address public comments on the 2020 DEIS, the FEIS should note that this is the purpose of the discussion, and that the impacts addressed on this point are not probable.
141	APPENDIX C: ENVIRONMENTAL HEALTH & SAFETY	3.2.2.1.3	Page 23 3rd paragraph; Page 26, 5th paragraph	This section of the Discipline Report and the corresponding section of the main SEPA RDEIS both reference the benefits of the facility during times of major or catastrophic flooding through reductions in needs for emergency services, improved emergency service response (by safeguarding road access), and reduced public exposure to harmful contaminants. Yet, the stand-alone summary RDEIS document and the similar summary at the outset of the RDEIS contain no reference to these benefits; only the very unlikely catastrophic earthquake impacts are mentioned there, in the same table and in essentially the same format as probable significant adverse impacts. Fronting the adverse impacts over the much-more-likely beneficial impacts of the project is misleading, requiring the public to read hundreds of pages of materials to see the likely project impacts. The FEIS should include both positive and negative impacts in its summary to provide the public with a fair assessment of the proposed Project's probable impacts.
142	APPENDIX C: ENVIRONMENTAL HEALTH & SAFETY	3.2.2.1.3	Page 26, 5th paragraph	This section correctly analyzes how the proposed Project will reduce inundation levels and therefore reduce the number of inundated hazardous materials sites that would mobilize contaminants. The section's conclusion that the project results in "less than significant adverse impacts" understates that the Project has positive environmental impacts in this regard. The analysis also understates the benefit the facility would create in several respects. First, it considers only hazardous materials sites. Many homes and businesses have household hazardous waste that can be mobilized into floodwaters if they are sufficiently inundated. By reducing or eliminating inundation levels in these structures, the proposed Project reduces a diffuse and widely dispersed release of chemicals into the environment. Second, many inundated structures contain trash or other *nonhazardous* materials that can nevertheless leach harmful chemicals into floodwaters and, ultimately, surface and groundwater. Reducing or preventing inundation reduces such leachate. Third, the analysis fails to consider flood impacts on public services, particularly the risk that

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				flooding impacts public water supplies, sewer or septic systems, or electricity service. Reducing the severity of flooding, on the margins, reduces drinking water contamination and sewer or septic leachate (particularly from septic systems dependent on electric pumps). Fourth, the analysis considers only the release of chemicals into the environment generally, without noting the environmental health implications of such chemicals (or fecal coliform, offal, mud, other unhealthy contaminants) washing and soaking into homes and businesses. Reducing inundation reduces these contaminants' lingering presence in occupied structures, as well as reducing mold or other moisture-related health risks in those structures. All these items result in a far greater environmental health benefit than this section analyzes. The FEIS should consider these environmental health benefits in this Discipline Report as well as in the discipline reports analyzing aquatic species outcomes and water quality, since the reduction in mobilization of the above-described contaminants affects those reports' analysis of probable significant adverse impacts.
143	APPENDIX C: ENVIRONMENTAL HEALTH & SAFETY	3.2.4.1	General comment for section	Although this Discipline Report discusses DSO review of the design and safety standards necessary for the proposed Project to be permitted and constructed, the RDEIS does not include such design review and approval as a permit-required mitigation measure. The FEIS should note this important mitigation measure because it addresses the very impact that this Discipline Report most often highlights: the earthquake risk. DSO design requirements will require the proposed Project to meet rigorous seismic standards that make the earthquake mentioned in the RDEIS extremely unlikely. Indeed, this earthquake risk, mentioned several times in the RDEIS, is far, far less likely than any of the mitigation measures the RDEIS declines to analyze due to "uncertainty", demonstrating that the RDEIS easily could have analyzed those mitigation measures despite the uncertainty.
APPENDIX D: ENVIRONMENTAL JUSTICE				
144	APPENDIX D: ENVIRONMENTAL JUSTICE	2.3	Page 15, 3rd-5th bullets	(CEQ 1997), (USEPA 1998), and (NEPA Committee and EJ IWG 2016) are referenced in body text, but are not listed in references section of the appendix. The FEIS should identify these sources.
145	APPENDIX D: ENVIRONMENTAL JUSTICE	3.2.1	Page 20, paragraph 1	The RDEIS states there is one debris management storage area, but this has been further developed since the2024 Revised Project Description. In the draft Debris Management During Flood Retention Report (Attachment 1 to Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum), there are two debris storage areas. The FEIS should reflect the project update.
146	APPENDIX D: ENVIRONMENTAL JUSTICE	3.2.1	Page 20, 3rd bullet	This section incorrectly states that three quarry sites will be developed. The project is exploring three quarry sites, but no more than 2 quarries are proposed for disturbance as correctly stated in the SEPA RDEIS main document section 2.3.3.1, pg. 16 and Appendix 1 section 3.2.6 pg. 37. Additionally, Section 7.4 of the RPDR (2024) states that ultimately one quarry will be selected as the primary quarry keeping a second option permitted in the case there are issues with the first site. Revise the RDEIS and revise its findings accordingly such that the FEIS correctly characterizes the project.

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147	APPENDIX D: ENVIRONMENTAL JUSTICE	3.2.2.1	General comment for section	Direct Impacts of the Local Action and No Action alternative on communities of color and low-income populations should be directly compared with the reduced flood damage associated with the FRE. This section is focused wholly on the very unlikely occurrence of FRE structure failure and ignores the disproportionate effects existing today, and exacerbated with climate change, on vulnerable populations in the basin.
148	APPENDIX D: ENVIRONMENTAL JUSTICE	3.2.2.1	Page 26, 1st bullet	In the Environmental Health and Safety report the FRE structure failure probability was not included in the RDEIS but was included in the 2020 DEIS. That probability was stated as 1 in 2.5 billion in 2020 and unless otherwise further analyzed, should be stated for the pubic to see the very small likelihood of that impact.
149	APPENDIX D: ENVIRONMENTAL JUSTICE	3.2.3.1	General comment for section	This section should refer to the rigorous design and approval process for a structure of this type. This includes an independent panel of dam safety experts who will review and comment on the design to ensure the structure meets or exceeds all applicable dam safety criteria.
150	APPENDIX D: ENVIRONMENTAL JUSTICE	3.2.3.2	General comment for section	This section should refer to the rigorous design and approval process for a structure of this type. This includes an independent panel of dam safety experts who will review and comment on the design to ensure the structure meets or exceeds all applicable dam safety criteria.
151	APPENDIX D: ENVIRONMENTAL JUSTICE	3.4	Page 38, 3rd and 5th bullets	In this section there are estimates for losses of structures and environmental health contamination from flooding under the No Action Alternative. The RDEIS's conclusion that "Some changes may affect communities of color and low-income populations" is anemic and inconsistent with the analysis elsewhere in the Discipline Report. The FEIS should clearly categorize these losses as disproportionate to EJ communities. This Discipline Report already identifies these communities in the study area as being disproportionately impacted by flooding; the No Action Alternative's future flood projections are greater than current flooding risks, which will lead to even greater EJ impacts. The FEIS should systematically analyze, not minimize, the No Action Alternative's adverse environmental impacts and should describe when the proposed Project would reduce those impacts, to allow the public and decisionmakers to meaningfully compare the alternatives.
APPENDIX E: FISH				
152	APPENDIX E: FISH	Summary	Pages i-iv	Summary tables are misleading. | The title of Table E-1 indicates that this table presents a summary of Significant Adverse Impacts. The format of this table lists columns that, when read left to right are Impact, Impact Finding, Mitigation Proposed, and Significant and Unavoidable Adverse Impact. This implies to the reader that the determination of Significance presented (yes or no) considered all of the information provided in the cells to the left, when in fact they did not. For example, the Water Discipline Report (page 90, Appendix N) states: "...the Applicant is proposing a Surface Water Quality Management Plan that would provide sufficient shade for mitigation." Yet, in the fish summary table (and the water summary table), the RDEIS states that water temperature effects are Significant and Unavoidable. This presentation can lead the reader to a mistaken conclusion and in

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				that way, lacks transparency, and does not meet Ecology's obligation to identify the Project's probable impacts for the public and local and state decision makers.
153	APPENDIX E: FISH	Summary	Page 31	Inconsistencies in abundance between Table E-7 and text and identified sources. | Several of the values for adult salmon and steelhead abundance upstream of Crim Creek that are presented in Table E-7 are inconsistent with those presented in the identified source Ronne et al. (2020) and are also inconsistent with the text that follows in Sections 2.2.2.1.1, 2.2.2.1.2, 2.2.2,1.3, and 2.2.2.1.4. Average values for 2013-2018 from Table 2 in Ronne et al. (2020) for spring Chinook Salmon, fall Chinook Salmon, Coho Salmon and Steelhead are 23, 320, 858, and 1142, respectively, while averages presented in table E-7 are 20, 363, 1070, and 1214. These numbers and the associated affected environment descriptions should represent the data available for the system. If additional data were used to update those numbers, then additional citations should be provided to support the estimates. Further, the text that follows Table E-7 and describes these subpopulations inconsistently relies on either the Ronne et al. (2020) numbers or the numbers from Table E-7 but no additional citation is provided. For example, average abundance for spring Chinook Salmon and Steelhead are the same as in Table E-7, while averages presented for fall Chinook and Coho salmon were taken from Ronne et al. (2020) and are considerably different than the averages presented in the table. These inconsistencies are not only confusing to the reader but also make it hard to understand how existing conditions are or are not consistent with models used to evaluate impacts to these subpopulations. The FEIS must explain whether other sources were used to support these averages and, if so, how the data from the two sources were used together and how they informed impact modeling.
154	APPENDIX E: FISH		General	The evaluation of potential impact is not consistent across Project-related actions, nor does it compare the Project Actions to the No Action Alternative to allow for a transparent determination of probable Project-related impacts. | 1. While only negative impacts are discussed for the FRE facility, benefits and negative impacts are discussed for the Local Actions alternative. One interpretation of this could be that the FRE facility would have no potential benefits, but that is not the case. For example, one potential benefit of the FRE facility would be the reduction in bed scour that would result from holding back a major or catastrophic flood. Reducing bed scour could in turn result in increased survival of eggs and embryos that are in the gravels in both the reach upstream of Crim Creek and the reach from Rainbow Falls to Crim Creek. SEPA requires an objective and impartial evaluation of probable impacts. Presenting only negative impacts of one alternative, while presenting potential benefits of other alternatives, is not consistent, impartial, or transparent. 2. While the Life-Cycle Model appears to have considered both future Project impacts and future No Action conditions, the results are not presented in a way that facilitates this comparison. Instead, both graphic and written descriptions of model results compare the future with the Project against a more current baseline condition and, in doing so, misleadingly conflate the impact of future conditions (i.e., climate change) with the Project's impacts, making it appear that the Project is causing impacts related to climate change.

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				The FEIS must transparently compare the Project to the No Action alternative so that the Project's probable impacts are clear, and the impacts of climate change are not ascribed to the Project. 3. The models used to predict potential impacts related to the Project in the SEPA analysis are not in alignment with current conditions nor smolt to adult returns that have been observed in the upper river over the past decade. Thus, they were not configured to perform in a reliable way. The EDT model's 2-year average flow scenario was developed to reflect a baseline condition that would then be changed to capture future conditions that would support specific levels of productivity and capacity of each modeled scenario. Unfortunately, the modeled SEPA EDT baseline condition does not represent the patterns of abundances that have been observed in the upper river in the past decade. The data available from WDFW surveys between 2013 and 2021 demonstrate that Chinook Salmon upstream Crim Creek subpopulations have fewer fish than the subpopulations between Rainbow Falls and Crim Creek. The difference for spring-run Chinook salmon is dramatic with recent WDFW abundance estimates an order of magnitude greater downstream as compared to upstream of Crim Creek; yet the SEPA EDT outputs for baseline conditions were estimated as slightly more adult Spring Chinook spawners upstream of Crim Creek as compared to downstream. These outputs are then used in the SEPA Life-Cycle Model to predict future conditions. While the District has not had the time to review and compare all input files used in the SEPA EDT model, we have identified several that look to be dissimilar to current conditions and would warrant further consideration and modification. For example, the model appears to be underestimating habitat conditions that are currently affecting the salmon populations including, for example, bed scour, area of side channel and pool habitat, and embeddedness within the FRE footprint. Using unvalidated parameters appears to be resulting in higher estimates of productivity and capacity than exists based on recent field surveys. It is worth noting that the District collected data on habitat conditions from 2022-2025 and presented both the methods and potential for inconsistencies with previous EDT ratings to the agencies in the spring of 2025. While the technical committee advising on the OCB EDT considered and agreed to incorporate relevant data to that model, it appears that the SEPA team opted not to consider these data when updating their EDT. This undermines the validity of the SEPA EDT results. There may be other habitat parameters of the model that are causing it to perform poorly in predicting baseline populations; additional testing of the model would be required to understand where it could be improved to reflect current conditions. In its current configuration, using the EDT abundance estimates as initial model abundance estimates for the SEPA Life-Cycle Model also calls into question the reliability of the outputs of that model. Overall, the model, as parameterized, does not align with empirical data collected by WDFW and others. For example, the model predicts more spring and fall-run Chinook spawners upstream of the FRE facility as compared to downstream of the facility, but in reality, the majority of spawning by Chinook salmon upstream of Newaukum occurs below the FRE. Based on 2018 redd data, 81% of spring-run Chinook salmon redds were located

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				below the FRE and 57% of fall-run Chinook salmon redds were located below the FRE. Results from the EDT model suggest that 60% of the fall-run Chinook spawners utilize the area upstream of the FRE and 52% of the spring-run Chinook spawners utilize the area upstream of the FRE. This suggests the model is parameterized incorrectly given the disparity between empirical and predicted data. Page 78 of Appendix E suggests the EDT model was validated with fish escapement numbers, but this does not appear to be the case, raising questions regarding the reliability of the model results and associated Project impact analyses.
155	APPENDIX E: FISH		General (page iii)	Inadequate impacts analysis of Local Actions alternative | On page iii, the RDEIS discusses the Local Actions alternative and suggests purchase of at-risk properties in the floodplain. In the Chehalis River basin, most of the at-risk property that is in the historical floodplain consists of farms/agriculture, raising questions regarding the legitimacy of this suggestion. No Land use impact was attributed to this proposed loss of agricultural resource land; that impact should have been addressed. Moreover, the Local Actions alternative was not evaluated via EDT/LCM while all other actions/alternatives were evaluated. This erroneously assumes that the Local Actions alternative would have no fish impacts, which is untrue: at a minimum, it would have the same fish impacts as the No Action alternative (which included the extirpation of some salmon species from Rainbow Falls to Crim Creek and which should also include fish impacts in the uppermost basin from major and catastrophic flooding that the RDEIS is currently not capturing in its modeling). Beyond that, some local actions under consideration in the upper Chehalis include levees that would likely have adverse impacts. The FEIS should analyze the impacts of all alternatives, not merely the proposed Project.
156	APPENDIX E: FISH	1 Introduction	Page 40	Based on Figure E-6b, EDT model assumption for fall-run Chinook salmon spawning distribution does not accurately reflect existing or historic spawning information. | As is evident from Figure E-6b, fall-run Chinook Salmon have been documented spawning in four tributaries that were not included in the modeled fish distribution - the East Fork, Thrash, Crim and Lester Creeks. By excluding the contribution of spawning in these tributaries from the EDT model for this subpopulation, the model would underestimate the contribution of these fish that would not be impacted by the inundation pool and would overestimate impacts to this subpopulation as a whole. Using 2018 WDFW redd data provides an estimate of the proportion of the fall-run Chinook salmon spawning habitat and population excluded from the SEPA EDT and LCM models. While survey efforts were not the same every year, the 2018 data is considered the most comprehensive spawning survey data and thus represents the best recent data for salmon distributions in the upper Chehalis River. In 2018, no fish were observed spawning in Thrash Creek, but the combined proportion of spawners in Crim Creek, Lester Creek, and the East Fork would have been approximately 5% of the total run that year. By not including this portion of the subpopulation, EDT and LCM model results potentially overestimate impacts to this subpopulation.
157	APPENDIX E: FISH	1 Introduction	Page 59	Substantial effects of flooding on macroinvertebrates would occur in No Action, changes to these would need to be considered under FRE. | As described in Section 2.2.2.4 of

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				Appendix E, under the current condition, flooding and especially major or greater floods may be causing impacts to macroinvertebrates that require years for populations to recover. As described in Section 2.2.3, these floods are anticipated to occur with more intensity and more frequency based on future climate predictions, suggesting that this impact would be even greater under the No Action Alternative. High-flow events, including major and catastrophic floods, present suboptimal in-channel conditions for rearing salmonids (Jeffres et al. 2008) and increase risk of mortality from sources like stranding (Junk et al. 1989). Given this information, any potential risks to juvenile salmonids associated with FRE operation should be interpreted in the context of risks faced during high flow events under No Action conditions which includes more frequent and intense flooding, and increased channel degradation in the upper Chehalis River. By not making that comparison, the potential impacts associated with the future FRE facility are inappropriately inflated.
158	APPENDIX E: FISH	2 Methodology	General Comment	Lack of transparency and consistency in model assumptions. | Jorgensen et al. (2021) modeled the Chehalis Basin using the HARP model; within that model was a juvenile salmonid redistribution model. Within the salmon redistribution model, all movements are in the downstream direction. Proportions of fish moving downstream were guided by the Chehalis Basin Scientific Review Team. The downstream movement text is at odds with text regarding upstream movement within this section. Furthermore, based on Jorgensen et al. (2021), only 5% of young of year Coho Salmon would move downstream to the mainstem which is substantially less than what the modeling presented. As written, the RDEIS incorrectly suggests that all, or nearly all, Coho Salmon upstream of the FRE are impacted by FRE operations by eliminating their ability to move downstream.
159	APPENDIX E: FISH	2 Methodology	Page 73	Lack of clarity and inconsistency in describing Proposed Action assumption for EDT modeling make it difficult to determine if the model accounted for potential future habitat changes as described for No Action. | On this page, it is stated that the analysis of the FRE "facility incorporated changes over time in salmonid habitat potential due to projected effects of a changing environmental baseline" and specifies hydrology, temperature, and "several other factors" that appear to be consistent with the assumptions for the No Action. The reader is then referred to Attachments E-2 and E-3. In Attachment E-2, the No Action Modeling Assumptions section clearly lists specific assumptions for land use degradation, culvert actions, ASRP early actions, and tree growth. We were unable to identify anywhere in the Proposed Action (FRE) Modeling Assumptions that similar assumptions were made resulting in habitat rating changes when modeling the FRE. If these future habitat conditions were included, specifics should be provided in this section of Attachment E-2. If they were not and an additional model run is not planned, then the text should be revised to be clear in the Methods section. However, upon review of model assumptions in Attachment E-2, where the assumptions for the No Action are clearly identified in a footnote to Table E. 2-1, this footnote appears to only apply to the No Action Timeline not the FRE Facility Timeline model scenarios.

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160	APPENDIX E: FISH	2 Methodology	Page 73	The statement "…potential of a major or larger flood occurring during construction and backwater effects that could temporarily inundate area upstream of the diversion dam" is inaccurate. A diversion dam is not proposed as part of the project. Additionally, flow through the project site is conveyed in the existing river channel, the bypass river channel, and through the proposed FRE conduits during the different phases of construction. Backwater upstream of the project site would only occur when the river is flowing through the FRE conduits and the flood flows exceed the open channel capacity of the conduits (9,500 cfs in the project description; 13,700 cfs in the current design.
161	APPENDIX E: FISH	2 Methodology	Page 78	Annual Ocean Productivity changes with model scenarios and lacks transparency. | In Section 2.4.2.1.3, it states "Annual ocean productivity in the LCM is treated as a density-independent function, where there is no limit in capacity and productivity is held constant among the flood scenarios modeled." Yet, upon review of the LCM files, we noted that for some scenarios for spring-run Chinook Salmon (mostly under the proposed action scenarios) the ocean survival and capacity was not density-independent. This may be moot and may have no impact on LCM; however, the input files provided show density dependence in marine survival and capacity for spring-run Chinook. If this is how the model was run it would be incorrect and inconsistent with general knowledge of marine ecology. Clarification and, perhaps correction, to the density-dependent marine survival and capacity assumptions is needed.
162	APPENDIX E: FISH	2.1	Page 7, 3rd paragraph	Pre-supposing conclusion | "...extending from approximately 6 miles upstream of the proposed FRE facility to RM 5 east of Cosmopolis, where the effects on fish would be most noticeable." This is the Methods section, and it is inappropriate to reach a conclusion here that effects would be "noticeable." In fact, as set forth elsewhere in these comments, the RDEIS overestimates the potential impacts of the proposed Project by declining to analyze the reduction in impacts from mitigation and required permitting processes, by not clearly delineating the effects of the proposed Project from those of baseline future conditions due to climate change, and by relying on models that make inappropriate assumptions or otherwise fail to represent the conditions they propose to represent. To the extent that the proposed Project's fish effects are noticeable in portions of the study area, such as the area by Cosmopolis, it is because these are actually effects of the No Action alternative that are being incorrectly attributed to the proposed Project. Meanwhile, the No-Action and Local Actions alternatives' adverse fish impacts due to increased flooding are minimized, as is the proposed Project's reduction of those negative effects. The result is that the effects of the proposed Project that the RDEIS find noticeable are highly exaggerated.
163	APPENDIX E: FISH	2.2.1	Page 12, last paragraph	Insufficient information, Unsupported statement/conclusion. Please revise the analysis for the FEIS per the following: 1. "Solar heating is the primary driver of water temperatures…" This statement ignores importance of air temperatures as a primary driver and does not distinguish seasonal effects; for example, with climate change, summer water temperatures are predicted to increase with air temperature. Following the EIS' logic, solar heating would be the primary driver that causes the predicted increases of climate change, which is clearly incorrect. 2. "The water frequently exceeds maximum temperature thresholds in summer that salmon

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				and steelhead prefer" This is an overly generalized statement and not technically correct with respect to inferring impacts. For example, a temperature may not be in the range preferred by fish but is not stressful, so it cannot be automatically concluded that fish are being impacted.
164	APPENDIX E: FISH	2.2.1	Page 18, last paragraph	Insufficient information, Unsupported statement/conclusion | The statement ending with "...throughout the Chehalis Basin have resulted in a stream channel that is more simplified (predominantly a single-thread channel) compared to historical conditions" is overly generalized. It is unlikely to be true in the upper Chehalis River upstream of the South Fork, where the channel is predominantly entrenched and confined by bedrock.
165	APPENDIX E: FISH	2.2.1.1	Page 20, last paragraph	Inaccurate citation and interpretation | "The mainstem Chehalis River is more linear and simplified compared to historical conditions, particularly downstream of Crim Creek (RM 108) (Beechie et al. 2021)." Beechie et al. (2021) did not identify Crim Creek as a transition point. Moreover, given the river is mostly confined and entrenched with negligible bankfull channel migration down to above the South Fork, it is not clear how it can be more linear now compared to historic conditions.
166	APPENDIX E: FISH	2.2.1.1	Page 21, first paragraph	Insufficient information provided | Regarding landslides, the associated harvest practices involved are no longer occurring. The writing ignores that current forest practices rules protect against landslides too.
167	APPENDIX E: FISH	2.2.2.1.1	Page 33	Not considering best available information | Appendix B of the Revised Mitigation Plan provides important information on distribution of Chinook spawning habitat that provides important context for evaluating significance of effects; that information was not considered. For example, WDFW data indicates the proportion of spring run Chinook Salmon spawning in the upper Chehalis river is minor compared to spawning numbers in the major tributaries, and that most spawning in the upper Chehalis occurs downstream of Pe Ell.
168	APPENDIX E: FISH	2.4.2.1.4	Pages 79-80	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | The bullets on these two pages comprise a large number of sources of uncertainty, but the inherent uncertainty within each does not appear to have been estimated explicitly and evaluated in the LCM modeling, either directly through error propagation or through prior distributions if Bayesian modeling was performed. In addition, the uncertainty around assumptions presented in Attachment E-2 is limited and does not address all the uncertainty associated with using hypotheses to predict future environmental parameters such as bed scour, percent fines, wood, etc. To help facilitate the use of this model to inform decisions regarding flood control in the Chehalis River basin, the SEPA DEIS should identify all of the model parameters used and provide a level of uncertainty with that. Where appropriate, they should indicate how and where uncertainty increases. For example, how uncertain is the bed scour input that is generated from a calculator based on six parameters, most of which also have some level of uncertainty associated with them. In this way, the DEIS can provide transparency about their models. Based on the available documentation, it appears that the only way stochasticity was integrated in the modeling was by a form of Monte Carlo modeling where the sequence of

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				flows each year was selected randomly 100 times; it is furthermore unclear what distribution was assumed in the random selection of flows.
169	APPENDIX E: FISH	2.4.2.1.4	Pages 79-80	Model assumptions do not appear to match model input data, nor proposed FRE facility operation | As described in the last bullet that begins on page 78, the EDT modeled specific, representative floods such that, "if a flood event occurred in January, that timing affects the salmon and steelhead in the LCM" and "if floods occur at a different time of the year than was modeled," then different impacts could result. Later in the DEIS (page 146), it states that because no downstream passage would be provided during an FRE facility closure, it was conservatively assumed ... that juveniles attempting to pass during a major or catastrophic flood would not survive." As described in Attachment E-2, the 2009 "major" flood occurred in January and the 1996 flood occurred in February, so those months should define the FRE operating periods for FRE facility scenario models. However, when reviewing the EDT model inputs provided by Ecology, we noticed a significant inconsistency with what is described in Appendix E and Attachment E-2. The obstruction input dataset for SEPA EDT model runs with FRE facility showed that the FRE would be 100% impassible to juvenile salmon for 6 months, October through March, not just "conservatively" for the month when the facility would be operating. This is an inaccurate representation of the FRE operation and impact. There has been no model developed that predicted such extended operation of the FRE. Consequently, the condition modeled by the SEPA DEIS does not reflect the proposed, nor anticipated need for FRE operation. Instead, the SEPA DEIS presents unrealistic FRE modeling scenarios that artificially inflate the negative impacts of the FRE operation.
170	APPENDIX E: FISH	2.4.2.2	Pages 80-82	Insufficient information provided, incomplete analysis of effect and justification of assumptions, and not considering best available information likely affecting conclusions | Caldwell et al. (2004) PHABSIM upper Chehalis River study site was located above a long bedrock chute below Big Creek, where the District's spawning habitat mapping indicates some of the more extensive wetted gravel riffles and pools are located within the temporary impoundment reach. The site does not appear to be generally representative of most of the habitat in that reach and is also not representative of habitat-flow relations downstream of Crim Creek and the FRE facility location to Pe Ell. Therefore, the RDEIS incorrectly interprets analysis of Caldwell et al.'s site data as being appropriate for representing habitat in the rest of the river.
171	APPENDIX E: FISH	2.4.2.2	Page 81, Table E-9	Insufficient information provided | 1. Bass are not found in the impounded reach and are unlikely to be introduced upstream of Elk Creek in the future. 2. The resulting WUA-flow curves are not presented, and this is critical for interpreting the results that are tabularized in Section 3. Without this information, neither the District nor other interested parties or members of the public can provide meaningful comments on the RDEIS's analysis. Also see Comment #245 that describe how the manner in which WUA has been used to infer an impact constitutes a circular argument, and that thus the analyses involving WUA cannot be used to infer impacts of FRE facility construction and operation.

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172	APPENDIX E: FISH	3 Technical Analysis and Results	Page 88	Assumes fish would reside in temporary pool, would not leave and would perish. | The RDEIS expressly assumes that "juvenile and adult salmonids and other fishes migrating downstream would reside in the temporary inundation pool for up to 35 days." Assuming that all fish that remain in the temporary inundation pool and eventually will perish is not a reasonable assumption. Some fish are expected to choose to leave the inundation pool and move upstream to the riverine section of the mainstem or tributaries. The behavior of fish movements in inundation pools has been well documented throughout the Pacific Northwest and includes fish moving upstream as well as remaining along the shallow edges of the inundation pool. This is an important distinction to characterize because variability in fish behavior would likely include avoidance of deep-water habitats and therefore reduce exposure of these individuals to less suitable habitat conditions. The RDEIS's assumption that all fish remain in the temporary inundation pool until the die is not consistent with the best available science and leads to analyses and impact determinations that are inaccurate and unscientific. These errors must be corrected in the FEIS, which must recognize that fish behavior is flexible and fish are adaptable; therefore, fish would be expected to use edge habitats to move upstream to riverine habitats that would be available for rearing until the riverine condition is restored.
173	APPENDIX E: FISH	3 Technical Analysis and Results	Pages 204-206	LCM results for future No Action scenario are compared to median population abundances simulated for year 2035, with no explanation of how this was simulated. | This is the only mention of a simulation of median initial population abundances for fish populations in simulation year 2035. No further information is available about how these estimates were simulated or if they were validated against past escapement estimates. When comparing the median initial population abundances for the Life-Cycle Model (presented in Section 3.2.2 by subpopulation) to the WDFW survey estimates presented in Section 2.2.2.1 of the DEIS, the abundances for fall-run Chinook Salmon and Coho seem reasonable approximations of field estimates. In contrast, abundances for spring-run Chinook Salmon and steelhead appear to be inconsistent with WDFW escapements. Chinook are four times higher than the WDFW average from 2013 to 2018 and would be 10 times higher or even more if that average were to include the additional survey years from 2018 to 2024 (Number of spring-run Chinook redds upstream of the FRE by year: 2015 = 1; 2016 = 2; 2017 = 3; 2018 = 1; 2020 = 7; escapement 2.5, 5, 7.5, 17.5; average 8, thus 10 times higher). Yet, given how low the recent spring-run Chinook Salmon escapement to the upper Chehalis River has been, it is reasonable to assume that with some better water years, recent runs could increase on average to something greater than 20 fish. That said, an increase from an average of 20 to 80 would be unrealistically high given the median initial population abundance was simulated for 10 years in the future and predictions are for drier, not wetter, and warmer summer conditions that would be expected to further reduce migrating and spawning habitat suitability with respect to temperature and depth. In addition, the simulated median abundance for the steelhead subpopulation upstream of Crim Creek showed a different pattern than the other species and represented considerable fewer steelhead, approximately 42% of the WDFW average escapement. This steelhead median initial abundance is problematic as a more robust initial population could be

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				expected to perform differently within the Life-Cycle Model. One might expect a population of 1,214 steelhead to be more robust than a population of 514, and impacts to that population may be less under future model scenarios. In addition, these medians are the same numbers as EDT Equilibrium Abundance outputs. If these simulated median abundances are in fact SEPA EDT outputs from a 2035 2-year average condition model, it raises the question of whether the SEPA EDT overestimated habitat capacity/productivity for spring-run Chinook Salmon and underestimated habitat capacity/productivity for steelhead, because the simulated median initial abundances are considerably more and less, respectively, than estimated escapement for these subpopulations in the upper Chehalis. The simulated median initial population sizes for Rainbow Falls to Crim Creek subpopulations also appear to vary considerably from WDFW escapement estimates. As reported by Ronne et al. 2020, comparable peak supplement surveys in 2018 documented an order of magnitude more redds for spring-run Chinook Salmon downstream of the proposed FRE facility, 39 as compared to 1 upstream; whereas the numbers of fall-run Chinook Salmon redds downstream of the FRE facility were 3.45 times those upstream. In contrast, the median initial population abundances for these two subpopulations downstream of the FRE facility were both smaller than those used for modeling the upstream Chinook subpopulations. If inaccurate, these initial population abundances would affect the output of the LCM such that the model would predict more dramatic reductions to these population than if validated initial population abundances had been used.
174	APPENDIX E: FISH	3.2.1	Page 85, Table E-10	The Draft SEPA EIS presents construction-phase fish-passage survival estimates as low as 34% yet provides no traceable scientific or technical basis for these values. On Page 86, section 3.2.1 it is stated that anecdotal discussions "were used qualitatively to assess fish passage impacts." The EIS does not identify the underlying empirical studies or expert-judgment parameters used to derive these survivability estimates. Without such documentation, reviewers cannot determine whether these numbers reflect best available science, outdated assumptions, or are simply placeholders.
175	APPENDIX E: FISH	3.2.1	Page 85-86, Table E-10	Faulty logic used to estimate passage survivals adversely affects validity of EDT-LCM modeling predictions | See comment Comments #255 for Attachment E-3, p.3-11, Table E.3-2. It is not described in the RDEIS whether the EDT model is retaining the fish that do not attempt passage and allows them to survive or treats the survival numbers in Table E-10 as a multiplier to all fish arriving at the project site, which then effectively 'kills' those fish that do not make the attempt. The RDEIS's text and tables imply that they are simulated to simply die. In which case, the passage "survivals" summarized in Table E-10 would have been applied incorrectly and do not accurately represent total survival as traditionally treated in a population model and are as a consequence extremely and unreasonably low (irrespective of the observation that the component numbers used to calculate them are also unreasonably low). Accordingly, the population numbers generated by the EDT-LCM analyses are likely to be significantly in error and are inappropriate for inferring impacts of the FRE facility construction and operation. This appears to be a serious error in the RDEIS's analysis that would undermine its assessment of probable Project impacts. This

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				should be transparently corrected with an explanation for the error and modification in the FEIS.
176	APPENDIX E: FISH	3.2.1	Page 86, Table E-10	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | Multiple survival numbers provided in Table E-10 are unsupported by citations and references and so contrary to well-established and widely recognized, peer-reviewed science as to make their inclusion in the RDEIS and the RDEIS's reliance on them inappropriate. Accordingly, the RDEIS's reliance on numbers that are contrary to evidence results in an RDEIS that does not provide a credible, reliable assessment of the Project's probable adverse environmental impacts. Specifically: 1. See comments on Tables E-3.2 through E-3.8 and E-10 in Attachment E-3 regarding individual numbers in the columns likely being too low in general, and what happens to overall survival estimates for upper Chehalis River fish if the same numbers are applied to other passage obstacles downstream and upstream of the FRE facility 2. Of special note, the 0% survival for juvenile downstream passage in the flood retention scenario is not justified. For example, using that number implies there should be no anadromous runs of salmonids and Pacific Lamprey in the Columbia River basin above the first dam encountered. 3. In general, FRE operations are likely to occur more frequently over the winter and early spring, before downstream migration of smolts occurs. This does not appear to have been considered. 4. Justification for the numbers for Cutthroat Trout is not provided. They appear low, and significantly low in the construction scenario. 5. Justification for the numbers for lamprey is not provided. In addition, ammocoetes reside in fine sediments with a specific grain size distribution that would likely be thoroughly scoured out during the floods requiring FRE facility operation. 6. The survival numbers in this table fail to compare fish passage survival to baseline conditions. For example, identify the locations immediately downstream of the project that are impassable to specific species and juvenile fish during low-flow conditions in the Chehalis River, such as summer flows, and revise survival numbers in this table so they compare with baseline (current pre-project) conditions. 7. Table E-10 must be replaced with survival numbers that are based on credible science. Attachment 3: Fish Passage Design Report to Inform SEPA provides a table titled Estimated Percentage of Fish Passing the FRE Facility / Construction Location and Surviving Beyond the FRE Facility Location for the Construction and Operation of the FRE Facility. This table is similar to E-10 in the RDEIS with survival numbers that more appropriately reflect the Proposed Action. Citations and reasoning supporting the numbers in the table are provided in the attached Fish Passage Design Report to Inform SEPA. The Applicant requests Ecology use the numbers provided in the attachment instead of those in table E-10 of the RDEIS, in the context in which they are provided and that Ecology account for the timing, displacement, and productivity of species and life stages not addressed in this table rather than assume complete loss of those individuals and their productivity as currently appears to be done in the RDEIS.

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177	APPENDIX E: FISH	3.2.1	Page 85-86, Table E-10, Paragraph 7	Additional explanation and justification for the listed fish passage survival rates is requested. The statement says these rates were used to qualitatively assess passage impacts. Were these survival rates applied to the EDT-LCM modeling, which yielded quantitative results?
178	APPENDIX E: FISH	3.2.1	Table E-10	The construction-phase bypass design follows NMFS (2011) and WDFW (2000; 2009) criteria, which govern nearly all major fish bypass facilities in the Columbia and Snake River basins. These systems consistently achieve survival rates between 90 and 99 percent, far exceeding the 34 percent figure used in the Draft EIS. Research demonstrates this performance across multiple facilities. Muir et al. (2001) reported survival rates of 95 to 99 percent for yearling Chinook and 93 to 98 percent for steelhead at Snake River bypass systems. Ferguson et al. (2007) documented approximately 95 percent survival through the modified Bonneville Powerhouse 2 juvenile bypass. Adams and Evans (USGS 2011) found survival rates ranging from 90 to 98 percent through surface weirs and non-turbine passage routes at McNary Dam. NOAA's Federal Columbia River Power System standards further reinforce these expectations, requiring 96 percent survival for spring migrants and 93 percent for summer migrants at each dam. Collectively, these results form the scientific foundation for modern NMFS design criteria, which have been adopted for the Chehalis construction-phase system. The estimates in Table E-10 are also outdated as they were based on a decade-old design; therefore, survival estimates should be updated based on the new project design. The Applicant requests that Ecology utilize the survival values provided in the table titled Estimated Percentage of Fish Passing the FRE Facility / Construction Location and Surviving Beyond the FRE Facility Location for the Construction and Operation of the FRE Facility in the Attachment 3: Fish Passage Design Report to Inform SEPA instead of 0% survival listed in table E-10 of the RDEIS.
179	APPENDIX E: FISH	3.2.1	Table E-10	The State Environmental Policy Act (SEPA) obligates agencies to ground environmental impact analyses in the best available science and to fully disclose assumptions, uncertainties, and methodological limitations. The Revised Draft EIS does not meet this standard when it relies on a single pessimistic survivability estimate (e.g., 34%) without transparent justification or supporting evidence. If Ecology intends for this low value to represent a conservative approach, SEPA practice requires a sensitivity analysis that evaluates a range of plausible outcomes (e.g., low, medium, and high scenarios). This approach ensures decision-makers and the public understand how results vary under different assumptions. Embedding a single pessimistic point estimate, particularly one that is inconsistent with regional performance of comparable NMFS/WDFW-compliant trap and transport systems, fails to provide the transparency and scientific rigor SEPA mandates.
180	APPENDIX E: FISH	3.2.1	Table E-10	NMFS and WDFW have established design criteria for juvenile fish passage systems that are widely implemented in the Columbia and Snake River basins. These standards are based on decades of research and operational experience and aim to achieve survival rates that consistently exceed 90 percent, often approaching 95 to 99 percent. NMFS criteria specify hydraulic conditions, approach velocities, and structural features designed to minimize injury and delay, while WDFW criteria provide state-level standards to ensure compliance with biological performance goals. Observed performance in systems built to

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				these standards is well documented in peer-reviewed studies, such as Muir et al. (2001) and Ferguson et al. (2007), which report survival rates consistent with these benchmarks. By ignoring these established standards and substituting an unsubstantiated low survival estimate, the analysis departs from recognized best practices and undermines its scientific credibility. SEPA expects agencies to rely on these proven benchmarks when evaluating impacts, not arbitrary figures that conflict with decades of empirical data.
181	APPENDIX E: FISH	3.2.1	Table E-10	The event based passage survival rates in Table E10 appear unreasonably conservative and likely overstate biological mortality, particularly under flood retention operations where several entries show 0% downstream survival across species and life stages. Because the Revised Draft EIS describes the FRE as a flowthrough facility most of the time, with gates closed only during major/catastrophic floods, interpreting these 0% survival values as representative of seasonal outcomes, without credit for delayed passage post closure, operational timing, or mitigation (e.g., trap-and-haul, bypass flows, salvage), is not well documented or supported in the discipline report narrative and risks inflating modeled mortality beyond realistic exposure windows. Table E-10 is not transparent regarding (a) whether Table E10 values reflect instantaneous event survival versus seasonal survival, (b) the fraction of migrants expected to encounter closures by timing window, and (c) the routing and mitigation assumptions used to derive 0% survival entries; regardless, the assumptions stated and implied withing the RDEIS are inconsistent with the project's stated operating regime and with basin lifecycle modeling practices that treat passage and survival probabilistically across multiple routes, attempts, and time steps rather than as complete loss during a single operational state. Performance inefficiency does not equate to mortality and attempting to having a direct tie via the modeling for performance x survival = remaining fish is a flawed approach. Many outcomes other than mortality occur if a fish is delayed, falls, back or is displaced. Rather the analyses could indicate whether an individual is affected (some degree of impact from additional energetic investment up to mortality) could be characterized, but a definitive outcome of mortality based on performance is flawed. The assumption of 0% downstream survival during flood retention events should be revised to reflect the short duration (~4 weeks or less) and infrequent occurrence (once every 5 to about > once per year) when a temporary pool is held upstream of the FRE structure and the high performance of the pressurized conduits when the pool depth is below the fish sounding depth (less than 1 atmosphere). Paired-release PIT-tag experiments in the Columbia–Snake system document survival of 95.3–99.4% for yearling Chinook and steelhead passing through pressurized bypass routes (Muir et al., 2001; Ploskey et al., 2011). NOAA and PNNL analyses further report dam-passage survival near or above 96–98% across multiple years (Ploskey et al., 2011). However, data is less readily available for mortality due to short-duration holding in temporary pools. Upon assessing the hydraulic modeling of the proposed project under multiple scenarios, a critical review was undertaken relative to standard passage criteria (NOAA 2023a-c), past design experience and outcomes, along with project-specific understanding. The result of that review led to

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				prescribed downstream survival rates in the 60% to 70% range based on the compilation of existing information and professional judgement. The rates provided do not fall outside of other research and findings within the literature but provide an incrementally improved and tailored assessment specific to the project. The Applicant requests that Ecology utilize the survival values provided in the table titled Estimated Percentage of Fish Passing the FRE Facility / Construction Location and Surviving Beyond the FRE Facility Location for the Construction and Operation of the FRE Facility in the Attachment 3: Fish Passage Design Report to Inform SEPA instead of 0% survival listed in table E-10 of the RDEIS.
182	APPENDIX E: FISH	3.2.1.2, 3.2.1.3	Pages 87-89	Fish behavior changes during high flow events. Fish find velocity refugia and slower moving parts of rivers and streams to wait until river flows decrease below flood levels. This natural behavior is the basis for state and federal definitions for fish passage design flows. The statement that near-field hydraulics could create velocity barriers within the FRE conduits is inaccurate because fish movement upstream must be occurring in order for there to be a barrier to passage. No evidence has been provided in the RDEIS indicating a potential for velocity barriers would exist. The RDEIS later confirms in Section 3.2.4.2.1.1 that fish are expected to reside below the facility until flow subsides and passage conditions improve. Separately, as discussed elsewhere in these comments and their attached associated technical memoranda, the fish passage design has been improved since the RDEIS stopped receiving new information. The updated design reflects consultation with the National Marine Fisheries Services to improve upstream fish passage through dedicated fishways that meet standard passage criteria. Meeting these criteria improves passage for all species at all life stages. The FEIS should be updated to correct the misstatements and consider the improved design.
183	APPENDIX E: FISH	3.2.1.3	Page 88, last bullet	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | The EIS does not consider what the annual recurrence interval of the 35-day figure is, and what the corresponding days of inundation-frequency curve looks like at the FRE facility location; i.e., in how many years out of 100 does the pool inundation last 35 days, 30 days, 25 days, etc. This needs to be considered with respect to how biological implications would change and how they would compare to some biologic criteria, which are also missing.
184	APPENDIX E: FISH	3.2.2	Page 89	Relative change in abundance between current and future conditions is the wrong metric for evaluating the No Action versus Action Alternative. | Although not transparent in Appendix E, it appears that the relative change in abundance was evaluated for current and future conditions using the EDT model (this is also presented in Attachment E-2 on page 2-1, last paragraph). While this is an appropriate approach for an EDT evaluating change over time, it is not the appropriate approach for evaluating impacts of the FRE facility because the future condition scenarios would include changes to habitat and salmon population that would be expected from other factors independent of the FRE, such as climate effects. This confusion is increased by the presentation of EDT results as discussed below. The appropriate comparison for understanding potential future impacts of the FRE facility is to compare the FRE facility in the future time period against a No Action condition in the same future time period, which was modeled and shows impacts from climate

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				change when compared to the baseline condition. The RDEIS's overt exclusion of direct comparisons between the future No Action and Proposed Action in Appendix E while presenting the comparison in Attachment E-2 is unfair to the Project and calls the RDEIS's analysis and conclusions into sharp question. When comparisons between equilibrium population levels of the No Action and Proposed Action for the same climate model and timeframe are made, it is clear that operation of the FRE has *reduced impact* on the spawning populations below the facility (spring- and fall-run Chinook). The main driver of population decline is climate change for this reach as currently modeled. Above the FRE, equilibrium numbers are more disparate and the RDEIS's modeling gives the appearance that the FRE has a much larger impact than it would. Given this, the RDEIS's use of higher upstream equilibrium numbers for Chinook upstream of the FRE versus downstream do not reflect empirical data. By modeling a larger percentage of the population as being upstream of the FRE, the RDEIS gives the misimpression that the FRE would have a greater sub-population level impact. Also, when looking at relative change and drawing conclusions, it assumes similar level of parameter value uncertainty under both sets of conditions being compared, and that the difference between the two scenarios is outside of the prediction errors of each scenario. That has not been demonstrated.
185	APPENDIX E: FISH	3.2.2	Page 89-90, 5th paragraph	Insufficient information, Unsupported statement/conclusion | The statement, "If the construction period were longer, it is expected that integrated model and EDT model results would converge, similar to the operations modeled" is unsupported and illogical. First, the RDEIS does not refer to specific EDT model results making it unclear which results could support this conclusion. Second, EDT model results were input to the LCM as part of the integrated modeling approach, thus the statement implies that, over the long term, the LCM predictions should not matter and would effectively give the same results as EDT alone. This is illogical because they are two different modeling frameworks with different parameters and algorithms. The statement also implies that conditions during construction are similar to conditions with the FRE facility in place, which is not accurate. These errors must be corrected in the FEIS.
186	APPENDIX E: FISH	3.2.2	Pages 92, 97, 102, 107	EDT results (Figures E-12, E-17, E-22, E-27) are misleading with respect to what change would result from the FRE versus future habitat changes under a No Action alternative. | Figures E-12, E-17, E-22, and E-27 depict changes in salmon and steelhead abundance from EDT modeling of four salmon/steelhead runs under the future FRE facility scenario. What is presented and described in the text is the relative change in subpopulations from the 2-year average (2035 baseline condition) to future FRE facility and then separately. Much later in a different section of the DEIS (starting on page 182), the relative change from the 2-year average to future No Action is presented. A comparison of future No Action to future FRE facility is missing in the DEIS; therefore, the results are misleading with regard to the predicted potential impacts that could result due to the FRE facility operation.

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187	APPENDIX E: FISH	3.2.2	Pages 93-96, 98-101, 103-106, 108-111	LCM results (Figures E-13-E16, E-18-E21, E-20-E23, E-24-E27) are misleading as they show only FRE modeled impacts and do not also provide the No Action alternative's impacts in the same view to allow comparison. | To convey the probable adverse impact of the FRE facility, it is critical that the model results of both the FRE facility and No Action are present in the same figure. If this were done, the reader would be able to interpret the model predictions; for example, it would be made clear that the reduction in spring-run Chinook Salmon for the Rainbow Falls subpopulation occurs in the No Action Alternative and is not further reduced by the FRE where the projected fish abundance is the same between the two model scenarios. Similarly, the Coho Salmon and steelhead Rainbow Falls to Crim Creek subpopulations all are projected to be extirpated under the No Action Alternative; therefore, there would be no additional impact assigned to a future FRE facility for these subpopulations. By presenting only the FRE results without the context of the No Action Alternative, the RDEIS misleads the reader to think all of this impact is attributed to the FRE, and that is not what the model indicates based on written results presented in Section 3.4.3.2.
188	APPENDIX E: FISH	3.2.3	Page 113 (paragraph 5) and 114 (bullet 1)	The RDEIS states that there will be one debris sorting area. This description and the discussion of environmental impacts that flows from that description are no longer accurate. As described in the attached Debris Management During Flood Retention Report, the District is proposing two debris storage areas as well as multiple anchored log booms, log broncs, and work boats to capture the floating large vegetative material. This should be revised throughout the Project Description and wherever it is referenced in the RDEIS.
189	APPENDIX E: FISH	3.2.3	Page 113, paragraph 6	The EIS incorrectly describes the flow capacity of the fish passage channels during construction as 2,200 cfs and creating backwater effects at flows above 2,200 cfs. The river passes through the project site in its existing natural channel in construction Phase 1; in the construction bypass channel in construction Phase2; and via the proposed FRE conduits in construction Phases 3 & 4. The Construction Bypass Hydraulic Modeling TM (Chehalis RPDR Appendix D3 Apr 2024) states the bypass channels are designed to convey up to the 25-yr event (26,800 cfs). Multiple locations in the EIS, including in Appendix E Fish Species and Habitats Discipline Report Section 3.2.4.2.1.1, state the open channel flow capacity of the conduits as 9,500 cfs. Moreover, as provided in Attachment 3: Fish Passage Design Report to Inform SEPA, the District has refined the Project design to allow for 13,700 cfs flow through the conduits. The FEIS must use the correct, refined conduit information to reflect both the 13,700 cfs flow rate and the minimized backwatering, which will only occur at flows above 13,700 cfs.
190	APPENDIX E: FISH	3.2.3.1.1	Page 116, 6th paragraph	Faulty logic and resulting overly conservative estimates likely incorrect; cannot rely on EDT and LCM results accordingly | The RDEIS's fish passage assumptions are fundamentally flawed and scientifically unsupported. The RDEIS's reliance on these numbers for its assessment of Project impacts is inappropriate and unreliable.
191	APPENDIX E: FISH	3.2.3.1.1	Page 117, last paragraph	The RDEIS suggests explosive use for blasting may be washed into the river, resulting in harmful effects on fish. Although the RDEIS acknowledges water quality BMPs required for blasting under state and federal permits may mitigate such effects, the District notes that all

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				blasting will occur in the dry and washdown water will be hauled offsite. Further, prior to construction, the selected contractor will be required to prepare a blast plan with BMPs to address water quality issues following re-watering of isolation reaches after construction.
192	APPENDIX E: FISH	3.2.3.1.1	Pages 118-120	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | The analysis does not define minimum required distance between blasting charge and water, and whether the 7.3 psi criterion of Timothy (2013) would be exceeded by the proposed activities. Empirical analysis methods exist that estimate over-pressure dissipation with distance for a blasting charge in water (e.g., Carlson et al. 2011; Dunlap, K.N. 2009. Field measurements have found that near-surface blasting in ground next to streams resulted in over-pressures that were substantially lower than 2 psi (cf. Rasmussen and Mulcahy 1985. Study of particle velocities and water overpressures as related to construction blasting adjacent to anadromous streams. Alaska Dept of Transportation and Public Facilities, Project F-RF-RS-071-1 (25). Equations exist for estimating overpressure at the rock-water interface based on assuming all explosive energy is transmitted through the rock (cf. Alaska Department of Fish and Game [ADFG] 1991; Wright and Hopky 1998; Carlson, and Johnson 2010. Pacific Northwest National Lab (PNNL) used a spreadsheet developed for the USACE and presented a graph and numeric results that indicated over-pressures in psi dissipate to the -1.2 power of distance. The RDEIS does not take this best available science into consideration and is likely overstating impacts accordingly. In addition, the RDEIS's analysis does not reflect that the District would require the selected contractor to prepare a blasting and debris management plan for agency submittal and approval at least 60 days prior to blasting activities. No blasting will occur within the active river channel (i.e., where there is water flowing); rather, blasting waterward of the OHWM will be conducted behind isolation structures, in the dry. Because water transmits shock waves more effectively than air, isolating blasts from water is an effective means of reducing blasting effects on aquatic resources. The minimum distance between anticipated blasting locations and the wetted channel varies from approximately 100 to 200 feet. To reduce or eliminate potential blast-related effects on fish, or to keep fish out of areas with potentially harmful blasting pressure, the selected contractor will be required to attenuate vibration transference if blasting is proposed within 50 feet of the active Chehalis River flow or its tributaries. Attenuation will include maintaining a dry in-water work area within this zone or potential use of sheetpile isolation structures. Blasting shock waves will also be reduced by selecting the minimum-sized charge and type of explosives required to accomplish the required excavation. The FEIS must reflect these District commitments which are an integral part of the proposed Project.
193	APPENDIX E: FISH	3.2.3.1.1	Page 119, 4th paragraph	Insufficient information provided | The statement, "Sound is also extremely important to fish and is used for communication, prey and predator detection, and navigation" is not supported with relevant citations. We are unaware of evidence of salmonids communicating with sound, using sound to detect prey or predators, or relying on sound for navigation in a turbulent, rough river channel. In the extended sense of salmon spawning relying on vibrational pressure stimuli for gamete release, there does not appear to be any spawning habitat present within the likely range of sounds generated by construction.

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194	APPENDIX E: FISH	3.2.3.2	Page 122, first sentence	Faulty logic regarding potential impact on mussels | The RDEIS states that the loss of mussel beds in the construction area would prevent future colonization as they would be permanently lost, but then says there are no known mussel beds within the FRE facility footprint. The latter statement corroborates 2020 survey data presented in Section 2.2.2.3 and calls into question the RDEIS's conclusion that the Project could impact species that have never been documented in that reach of the Chehalis River.
195	APPENDIX E: FISH	3.2.3.2.1	Page 124, 2nd and 3rd paragraphs	Faulty logic and resulting overly conservative estimates likely incorrect; cannot rely on EDT and LCM results accordingly | In addition, these paragraphs incorrectly imply that the values in Table E-10 and the conclusions in these paragraphs were based on comparing to the existing stream channel within the affected construction footprint only, and on assuming that other natural passage restrictions downstream would be less restrictive at base flows. This implication is incorrect because the bypass channel will afford passage at lower flows where passage is blocked elsewhere in the river. Passage conditions will accordingly be better in the bypass than at various other locations downstream and upstream.
196	APPENDIX E: FISH	3.2.3.2.1	Page 124, paragraph 3	This conclusion is made: "Overall, reduction of fish passage during construction of the FRE facility would have a significant adverse impact on anadromous fish because the FRE facility would permanently change the hydraulic conditions so that conditions would not match the hydraulics of the existing stream channel." This conclusion is incorrect. Section 3.3.1.4 of Appendix I: Fish Passage Design technical memorandum of the Applicant's Revised Project Description Report states "A reference reach design approach (per WDFW's 2013 Water Crossing Design Guidelines) is utilized for… the construction phase Chehalis River and Crim Creek bypass channels." Further, Section 5.4.6, paragraph 1 on page T6-26 of WDFW's 2012 Stream Habitat Restoration Guidelines states "A more conservative approach (to fish passage design) is to develop fish passage (design) standards using the characteristics of the natural channel in reaches adjacent to the project reach… closely matching the profile, cross section, and bed texture of the reference reach usually insures fish passage." This stated position by WDFW that the reference reach approach, if performed according to their guidance documents, such as the 2013 Water Crossing Design Guidelines, is a conservative approach to fish passage and usually ensures fish passage is one of the primary reasons the Applicant selected this design approach for the bypass channels. In addition, the bypass channels will meet all NMFS criteria for fish passage as well, for the same reasons. Bypass channels designed to meet WDFW and NMFS guidelines and standards are included as part of the project as stated in the Applicant's Revised Project Description. The bypass channels should be evaluated as meeting WDFW and NMFS design standards and should reflect highly effective volitional fish passage as stated in WDFW's own guidance. As such, the RDEIS should reflect no impact on fish passage for the bypass channels compared to the No Action alternative.
197	APPENDIX E: FISH	3.2.3.2.2.1	Page 126	Unsubstantiated impact to subpopulation downstream for habitat degradation in the construction area. | This section indicates that a projected decline in both the spring-run and fall-run Chinook Salmon subpopulations downstream would be driven by aquatic

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				habitat degradation within the FRE facility construction area, which is located upstream. However, the RDEIS does not explain which of three types of construction-related habitat degradation identified, including (i) 10 acres of aquatic habitat loss (that includes both riparian and in-channel areas), (ii) in water-work, or (iii) dewatering a stretch of reach upstream, would be responsible, nor does it explain the mechanism (e.g., prey reduction, temperature) by which this degradation could potentially affect fish spawning and rearing downstream of the canyon reach in a manner that would result in a population level response. The RDEIS therefore fails to provide an adequate explanation for the modeled effects of an 11% to 12% decrease in spring-run Chinook Salmon and a 13 to 19% decrease in fall-run Chinook Salmon subpopulations downstream of the FRE. The aquatic habitat within the FRE facility construction area contains rearing and migratory habitat with little to no value to salmon or steelhead spawning, based on only redd ever observed there (WDFW publicly available data showed 1fall Chinook salmon redd observed in 2015). The DEIS does not specifically identify the habitat value of this area, and since rearing, migratory and spawning habitat would not be limiting factors for the subpopulations downstream, it is difficult to understand the level of population effect equated with the loss of 10 acres of aquatic and riparian habitat.
198	APPENDIX E: FISH	3.2.3.2.3	Page 128, 4th paragraph	Contradictory text | Three paragraphs earlier, the RDEIS states that, "No freshwater mussels were found within the FRE facility footprint. The closest known mussel beds to the FRE facility location are 7 miles downstream near the town of Doty." The RDEIS cannot reasonably then conclude, just paragraphs later, that, "Loss of habitat in the footprint ... would create a significant adverse impact on freshwater mussels … by permanently eliminating functional habitat.". Since functioning habitat has not been documented for mussels within the FRE facility footprint, assigning functional value to some potential future condition without any habitat data or analysis is unsubstantiated. This conclusion should be reconsidered.
199	APPENDIX E: FISH	3.2.4	Page 130, 1st paragraph	Inaccurate/faulty statements | 1. The 950 feet and 2,000 feet figures refer to width of the temporary impoundment, not the channel per se. This should be clarified accordingly 2. The statement, "and reduced channel-shaping forces downstream of the FRE facility that would normally occur during a major to catastrophic flood" is based on a flawed analysis in Appendix F, Earth. See respective Comment #329 and #330 regarding faulty basis of assumptions regarding what constitutes a channel-forming flood.
200	APPENDIX E: FISH	3.2.4.1.1	Page 131, 1st paragraph	Insufficient information provided | There is no basis in the RDEIS for the statement, "Fish passage upstream to tributary streams would be impaired." The Project will not impair fish passage upstream to tributaries. See Comment #325 for Appendix F (Earth) regarding faulty argument based on assuming incision.
201	APPENDIX E: FISH	3.2.4.1.1	Page 131, 2nd paragraph	Insufficient information provided | It is unclear how, "sediment deposited in the reservoir area during a flood retention event [would create] a barrier to fish movement." The statement is inconsistent with results and processes described in Appendix A in the District's Revised Mitigation Plan. There is no explanation of the physical process assumed, where a barrier would form, or how it would differ from the No Action alternative's condition.

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				For example, the tributaries are generally steep and high energy and appear to transport large cobble readily downstream to their confluence with the Chehalis River. Any material that deposits within a tributary at the interface with the temporary impoundment would be expected to be distributed over a long reach rather than piled up at one location because the elevation of the impoundment would be continually changing location. As another example, under the No Action condition, the mouth of Big Creek is a steep cobble-boulder fan that is elevated above base flows. Fish passage into Big Creek is likely restricted to times when both Big Creek and the Chehalis River are at higher flows. In addition, the District's sediment transport work demonstrated that the Chehalis River upstream of the proposed Project can mobilize coarse sediment that may deposit at the mouth of a tributary at frequently recurring flows, and that these high probability flows mobilize more coarse sediment overall (due to their frequency) than the rarer major and catastrophic flood flows. The FEIS should credit this conclusion and update its impacts analysis according.
202	APPENDIX E: FISH	3.2.4.1.1	Page 132, 2nd bullet	Incorrect assertion and Contradictory text | The statement that the "Daily maximum temperatures of the Chehalis River could increase by up to 2°C to 3°C in mid- to late summer in the temporary reservoir" is incorrect because the FRE facility is not expected to operate during summer months, so there would be no temporary inundation pool at that time. In addition, the assertion that the FRE facility operation would result in lethal temperatures for some cold-water adapted species is unsubstantiated and contradicts the RDEIS's own analysis of FRE facility mitigation on future water temperatures that is presented in Appendix N. That Water Discipline Report (tasked with formally evaluating water quality, unlike this report) concludes that the proposed Project's mitigation would, if designed and implemented as proposed, offset the temperature impacts of the facility. The Fish Discipline Report in the FEIS should credit this conclusion and analyze the project's *probable* environmental impacts, rather than describing the highly improbable scenario in which the facility is permitted to be constructed without such mitigation.
203	APPENDIX E: FISH	3.2.4.1.1	Page 132, 3rd bullet	Potentially contradictory text and does not consider best available information | It is not clear if the reduction in availability in large wood delivered by landslides to the channel is assumed to be due to landslides being reduced by FRE facility operation (in which case stands in contrast to Appendix F asserting that landslides could increase), or that wood delivered by landslides would be removed as part of flood operations and not be in the channel anymore (which ignores the proposed Project's plan to reuse such wood for habitat purposes). Either way, this bullet point is incorrect. The upper Chehalis is currently a wood-poor system, and the proposed Project, including its plans to collect and use large woody material for habitat purposes, will not result in the impacts described.
204	APPENDIX E: FISH	3.2.4.1.1	Page.133, 1st bullet	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | 1. The RDEIS incorrectly assumes that the habitat quality in the area upstream of the proposed Project is superior to its actual baseline quality. There essentially is no large wood presently preventing scour in the spawning habitats in the temporary inundation area. Bed scour should therefore not be expected to increase over baseline in this manner The FEIS should correct this error.

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				2. The RDEIS also fails to take into account that potentially extreme bed scour would otherwise occur during a major or catastrophic flood event, but the proposed Project's operations would reduce or avoid that scour. This should be accounted for here, as it modifies the probable effects of the Project and would offset the effect in the next bullet (i.e., suffocation of redds is effectively not an impact beyond baseline if those same redds would have been scoured out in the absence of the project). This is part of a larger pattern in which the RDEIS fails to properly analyze the adverse environmental impacts of the No-Actions and Local-Actions alternatives from major or catastrophic flood flows and essentially compares the proposed Project to a hypothetical world in which major or catastrophic flooding is not occurring. In its failure (1) to qualitatively compare the proposed Project's impacts during flood operations to what would be occurring during such a flood in the absence of the project, and (2) to quantitatively consider the adverse impacts of major and catastrophic flood flows, the RDEIS minimizes the No-Action and Local-Actions alternatives' environmental impacts and unfairly exaggerates the proposed Project's impacts by comparison. Moreover, the RDEIS does not consider the proposed Project's reduction of those alternatives' negative impacts. The FEIS must correct these errors to determine the significance of the proposed Project's probable adverse impacts, as their significance cannot be determined without reference to the baseline conditions and the proposed Project's net change (positive and negative) to that baseline.
205	APPENDIX E: FISH	3.2.4.1.1	Page 133, 4th bullet	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | The statement, "This backwatering effect would degrade the habitat more intensively in this area and could create hydraulic conditions that impair fish passage through open FRE facility conduits" is unsupported: it provides no evidence as to why such rare and short backwatering would have any meaningful habitat effect; it has been established in the District's sediment transport analyses that the river has a high capacity for quickly transporting any sediments that might deposit temporarily in the river at frequent flows in which a backwater would not form. It also ignores the RDEIS's conclusion in 3.2.4.2.1.1 that backwater would not affect fish passage overall. See Comment #189 and 253.
206	APPENDIX E: FISH	3.2.4.1.1	Page 133, 5th bullet	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | Significant bed scour that would otherwise occur during a major or catastrophic flood event would be avoided or reduced by operation of the Project, both upstream and downstream. The effect on scour should be accounted for here, as it modifies the probable effects of the Project and would likely offset the effect of the No Action alternative (and of the Local Actions alternative without the FRE facility), where data collected by the District indicate that survival of redds in the temporary impoundment reach would likely be effectively zero because of spatially extensive, deep scour in spawning habitats during floods with a magnitude triggering FRE facility operation. In addition, reduced scour downstream of the facility, where more extensive spawning occurs, would be associated with greater survival with the FRE facility than without. Accordingly, the impact of suffocating some redds is not likely to be associated with a net change in overall outcomes compared to conditions without the FRE facility.

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207	APPENDIX E: FISH	3.2.4.1.1	Page 133, 6th bullet	Relying on flawed assumptions | Regarding likely invalidity of assumptions and modeling presented in Appendix F, Earth concerning deposition and resuspension of sediments, and erosion within vegetated areas of temporary inundation pool. The FEIS should correct its incorrect assumptions in the Earth Discipline Report and carry forward the corrected work into all other disciplines, including this one.
208	APPENDIX E: FISH	3.2.4.1.1	Page.133, 8th bullet (extending onto page 134)	Relying on flawed assumptions, disregarding mitigation plans | The RDEIS notes that because the proposed Project would manage large wood debris that accumulates in the temporary inundation pool during flood events, it would starve the area above the facility of large wood for habitat formation purposes. It also suggests that removal of wood from the trashrack would starve the downstream river of large wood. Both assumptions ignore the proposed mitigation plan to manage this large woody debris with mitigation or restoration as its first/primary potential use. This would restore the best quality large wood debris to the river system for habitat benefit. Moreover, the RDEIS ignores that most of the large woody debris that historically has entered the river system from major and catastrophic flooding ends up on privately-owned riparian banks (often farmland), where it is removed by private landowners and does not contribute to habitat formation. The RDEIS notes that much of the large wood from 2007, for example, was removed, and that the upper Chehalis is currently wood-poor. So, under existing conditions, the influx of large wood does not provide substantial habitat benefit, and the proposed mitigation plans to install this wood for habitat benefit may be an improvement in habitat outcomes over baseline. The FEIS must, here as elsewhere, accurately analyze the baseline in the no-action and local actions alternatives and consider how the proposed Project and its mitigation plans would improve upon those alternatives. These considerations are necessary to determine the probable impacts of the proposed project and their significance, and to allow adequate comparison with the alternatives.
209	APPENDIX E: FISH	3.2.4.1.1	Page 134, 1st bullet	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | Same comment as Comments 226 and 364 concerning fine sediments also applies to turbidity. Moreover, the District could not fully analyze turbidity effects because, despite request, Ecology did not provide its turbidity modeling tool to the District and did not provide its WEPP model to the District until it was too late for the District's environmental scientists to evaluate it.
210	APPENDIX E: FISH	3.2.4.1.1	Page 134, 2nd bullet	Not considering best available information | Statement does not consider sediment transport modeling and analyses described in Appendix A of District's Revised Mitigation Plan, where it is evident that the reported model predictions of changes in storage and grain size may be incorrect, can differ substantially based on the assumptions and parameters specified in the modeling, and accordingly cannot be used to infer impact. Please see Comment 287.
211	APPENDIX E: FISH	3.2.4.1.1	Page 134, 3rd bullet	Insufficient information provided | " The effect of the FRE facility to reduce peak flows would also reduce the geomorphic forces that cause large wood delivery to the channel in reaches downstream…" — this is an overly broad statement lacking context and definition. It is not explained what the "geomorphic forces" they are referring t and how they act at

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				different flood levels. Moreover, it stands at odds with the facts that channel-forming flows recur much more frequently and at much lower flows than the major and catastrophic flood flows in which the proposed Project regulates flow, that much of the riparian zone downstream is degraded in alluvial reaches where wood delivery would otherwise occur, and that large conifers are generally firmly rooted in bedrock and upper banks in entrenched reaches where they are difficult to dislodge by channel-forming flows. Furthermore, the statement effectively assumes that baseline habitat conditions are superior to their actual conditions and thereby exaggerates the proposed Project's impacts by suggesting it will create effects that are already present. The FEIS should consider baseline conditions more accurately when analyzing impacts; it must also correct the Earth Discipline Report's fundamental misunderstanding of the geomorphic processes regarding channel-forming flows in the upper Chehalis River and carry that correction forward into all other disciplines.
212	APPENDIX E: FISH	3.2.4.1.1	Page 134, 7th bullet	Relying on flawed assumptions | See Comment #329 and #330 for Appendix F Earth regarding flawed definition of channel forming floods in EIS. Dominant channel forming flows would not be truncated or effectively attenuated by FRE operations.
213	APPENDIX E: FISH	3.2.4.1.1	Page 135, 3rd & 5th bullets	Inconsistency with other text | Reduced bed scour is treated as an impact here and increased scour is treated as an impact elsewhere in the RDEIS. Increased and reduced scour cannot both be treated as impacts. It is reasonable to infer that increased bed scour increase mortality risk to eggs and would be considered a potential impact to habitat function.
214	APPENDIX E: FISH	3.2.4.1.1	Page 135, 3rd bullet	Not considering best available information | Ignores sediment transport modeling and analyses described in Appendix A of District's Revised Mitigation Plan, where it is demonstrated that the river has more than sufficient capacity to transport substrates downstream when the FRE facility is not being operated.
215	APPENDIX E: FISH	3.2.4.1.1	Page 135, 4th bullet	Relying on flawed assumptions | See Comment #329 and #330 for Appendix F, Earth regarding flawed definition of channel forming floods in EIS. Dominant habitat forming flows would not be truncated or effectively attenuated by FRE operations
216	APPENDIX E: FISH	3.2.4.1.2	Page 135, 2nd paragraph	Relying on flawed assumptions | See Comment #329 and #330 for Appendix F, Earth regarding flawed definition of channel forming floods in EIS. Habitat formation in the upper Chehalis River is not associated primarily with major or larger floods during which the FRE facility would be operated.
217	APPENDIX E: FISH	3.2.4.1.2	Page 136, 2nd, 3rd and 5th paragraphs	Insufficient information provided, relying on flawed assumptions, and not considering best available information | These are overly generalized statements. Note that the references regarding impacts to peak flows and flow variability are with respect to long term effects of regulated flows below dams, which is not representative of the FRE facility. Moreover, see Comment #329 and #330 for Appendix F, Earth regarding flawed definition of channel forming floods in EIS: Dominant channel forming flows would not be truncated or effectively attenuated by FRE operations, and considerable flow variability would remain. The statements also do not consider sediment transport modeling and analyses described in

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				Appendix A of District's Revised Mitigation Plan that demonstrate flows passing through the FRE facility when it is not operated are associated with an order of magnitude greater net transport of coarse sediments that form within-channel bars and islands compared with the FRE facility operation-level floods.
218	APPENDIX E: FISH	3.2.4.1.2	Page 136, 4th paragraph	Insufficient information provided | These are overly generalized statements. No supporting evidence or arguments are given demonstrating that these generalized statements apply to the Chehalis River, and moreover this paragraph ignores hydraulic modeling showing that the paragraph does not apply to entrenched reaches where the 100-year flood is confined to the channel in the upper river under the No Action alternative, and that the active floodplain is still extensively engaged in the middle and downstream reaches when the FRE facility is operated.
219	APPENDIX E: FISH	3.2.4.1.2	Page 136, 5th paragraph	Not considering best available information | The paragraph disregards large wood mitigation plan element where large wood trapped upstream and at the FRE facility will be placed downstream of the facility, thereby avoiding significant reduction in large wood transport downstream
220	APPENDIX E: FISH	3.2.4.1.2	Page 137, 1st paragraph	Not considering best available information | This paragraph disregards that the major avulsion referenced no longer is associated with off-channel habitat — the original channel has completely filled with sediment. The paragraph is overly generalized.
221	APPENDIX E: FISH	3.2.4.1.2	Page 137, 3rd paragraph	Contradictory text | If there is "a high degree of uncertainty around potential changes to habitat creation," it is unclear how a conclusion of "significant adverse impacts to aquatic habitat" can be made.
222	APPENDIX E: FISH	3.2.4.1.3	Pages 137-138	Non-specificity of impact conclusion | The RDEIS does not specify where such impacts would be expected, nor how and why they would be impacts. There are not many off-channel habitats for fish under the No Action alternative, so the RDEIS should be able to identify which backwater habitats specifically would be impacted, especially upstream of the South Fork. Downstream of the South Fork, including in the vicinity of Bunker Creek, hydraulic modeling predicts that the 2-year flood can have greater inundation extent than the 10-year flood, in large part because of the flood influences of the Newaukum and Skookumchuck Rivers. Thus, effects of FRE operation on backwater and off-channel habitats downstream of the South Fork would be expected to be equivocal.
223	APPENDIX E: FISH	3.2.4.2	Page 139, 3rd paragraph	Insufficient information/reasoning provided, Inconsistent with best available science | The statement, "Lake-type habitat would be unusable for many of the fish…" does not specify which fish species to which it refers nor how many would find the habitat unusable. Further, no literature, citation, or other rationale for the inability of these animal groups to adapt to changing conditions was presented. Salmon and steelhead in the Pacific Northwest frequently leave riverine habitats and encounter lake-type habitat during their outmigration. In some cases, this includes seasonally impounded rivers including at many USACE dams with a primary purpose of flood control. These flood control reservoirs are drawn down annually to provide storage capacity during high-flow events, such that downstream flows are moderated in a similar way to the proposed FRE facility operation. Fish are able to use

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				these lake-type habitats, and even experience increases in growth, but downstream migration can be delayed without the flow cues they rely on for volitional downstream migration (Monzyk et al. 2015). In the Willamette Basin, the USACE has been drawing down select flood storage reservoirs to riverine conditions between flow events to facilitate outmigration of juvenile salmon. This approach to downstream fish passage was first implemented at Fall Creek Reservoir (2011-2021), located on Fall Creek, a tributary to the Middle Fork of the Willamette River. Two weeks of riverine conditions were sufficient to both increase downstream migration of juvenile Chinook Salmon and reduce predation on juvenile fish by native and non-native fish predators (Murphy et al. 2019). The populations of fish and invertebrates in this system have adapted to the modified hydrologic regimes and this system has seen increased adult returns since implementing the operational drawdown. The success of the Fall Creek operational drawdown has been documented and now the USACE, in consultation with state and federal agencies is implementing a similar annual drawdown for other Willamette Project dams in Oregon including Green Peter, Lookout Point, and Cougar Dam (USACE 2025). Accordingly, the RDEIS's broad generalization regarding "fish" not using lake-type habitat is inconsistent with the best available science and, if it is intending to reference salmon and steelhead species, fails to take into account that such species can be expected to remain in the pool or move into riverine habitats upstream. The FEIS must be revised consistent with the best available science and unsupported, conclusory statements like the one identified above must be removed.
224	APPENDIX E: FISH	3.2.4.2	Page 139, 3rd paragraph	Insufficient information/reasoning provided for overly generalized statement | "Localized high turbidity will occur at levels that impair fish behaviors like migration and foraging." The RDEIS's statement that localized turbidity would impair fish behavior is not adequately supported and results in conclusions regarding Project impacts that are not accurate. The highest turbidity would be expected in the inflowing water as it enters the temporary impoundment and potentially in an underflowing turbidity current; turbidity can be expected to be reduced moving away from the immediate inflow channel due to dispersion processes. If high turbidity does occur in localized areas, these areas would be avoidable by fish. Juvenile salmonids are not passive recipients of potential turbidity stress and can employ avoidance behavior as a primary response. They exhibit strong behavioral plasticity and actively redistribute in reaction to changes in conditions to find more suitable microhabitats (Bisson and Bilby 1982; Bjornn and Reiser 1991). Further, there is no evidence that the turbidity that may occur within the temporary pool would be any greater than that occurring during winter storms under the future No Action Alternative. In fact, under the No Action Alternative, there would be no mitigation and both the temporary inundation area and the land upslope from it will remain as industrial forest with an approximately 40-year clear cutting rotation so conditions associated with landslides and turbidity will continue and may even increase with greater intensity and duration of winter storms. In contrast, as part of the FRE facility minimization and mitigation measures, the District has committed to

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				transitioning more than 2,000 acres of timberland to native forest, woodlands, and shrublands, as well as decommissioning several miles of forest road. The vegetation conversion and road decommissioning would occur both within and upslope of the temporary inundation area and would effectively reduce erosion and capture runoff of fine sediments prior to them reaching riverine habitats. Accordingly, the RDEIS's conclusion that the Project will result in high turbidity that impairs fish behavior is wrong, not supported by the science, and fails to reflect the Project as proposed, including its minimization and mitigation measures.
225	APPENDIX E: FISH	3.2.4.2	Page 139, 3rd paragraph	Insufficient information/reasoning provided, Inconsistent with best available science | "Deposition of sediment will smother incubating salmon embryos and sessile organisms like shellfish and lamprey ammocoetes." While some deposition of sediment is likely, the actual extent and duration of this deposition – and thus its impact on salmon embryos and sessile organisms -- will be dependent on a number of environmental variables including flood levels, groundwater inflows, potential for hydraulic gradients associated with turbidity currents, and the amount of source material, the latter of which is dependent on future potential for landslides, vegetation, and soil conditions in the temporary pool. Ammocoetes reside in fine sediments and are highly mobile therein. For example, they have been observed to move quickly up out of fine-grained substrates that became suddenly exposed during downramping and move back into the channel (e.g., in the White River). Thus, lamprey can be expected to move up readily if needed in the deposited sediment. Moreover, the degree of impact for salmon embryos and sessile organisms should be considered in the context of what would potentially occur otherwise under the No Action condition. Under the current No Action condition, redds and sessile organisms within the temporary impoundment reach are either partially or fully scoured out, and/or likely experience substantial fine sediment intrusion during smaller flood flows under which the FRE facility would not be operated. Redds and sessile organisms are likely to be completely scoured out or significantly impacted by fine sediment intrusion or burial during extreme floods when the facility is proposed to be operated. Furthermore, under the future No Action condition, increases in winter storms and flooding as compared to the current condition have been predicted. These wetter and more frequent winter storms would likely increase incidence and severity of bed scour and sediment intrusion in the highly confined Upper Chehalis mainstem even more, which in turn would likely further increase mortality to incubating salmon embryos and sessile organisms as compared to current conditions. Conversely, during near-term and future FRE facility conditions, the potential for extreme scour, fine sediment intrusion, and burial impacts that would occur under current and projected future conditions would be reduced downriver whenever the FRE facility is operated.
226	APPENDIX E: FISH	3.2.4.2	Page 139, 3rd paragraph	Insufficient information provided to support impact | "Salmon spawning habitat would be eliminated by inundation and deposition of fine sediment." While some loss of spawning habitat is likely during years when large floods are retained, the extent of that loss is expected to vary with flood level, inundation depth and duration at the redd, as well as

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				presence of hyporheic and/or turbidity flows in the temporary pool. All salmon spawning habitat will not be “eliminated” as suggested by this statement in the RDEIS. Throughout 2024 and 2025, the District worked diligently evaluating FRE facility operations that would help minimize environmental impacts. Once 2024 operational revisions were selected, the District conducted an inundation analysis to demonstrate how redd inundation impacts could be minimized with operations. The reduction in the number of redds that would be inundated varies by both flood type and species as presented in Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum.
227	APPENDIX E: FISH	3.2.4.2	Page 139, 3rd paragraph	Insufficient information provided, supporting citation relevance in question | "The benthic macroinvertebrate community that provides food for fish would be eliminated during inundation (Lepori and Hjerdt 2006)." The DEIS provides no support for the assertion that intermittent inundation would eliminate the macroinvertebrate community; this is not supported by literature, particularly when evaluated over short temporal scales. Flooding studies have shown that while the macroinvertebrate abundance may be reduced and assemblage composition may shift immediately after flooding, shifts in the community structure may be less than seasonal variation (Angradi 1997) and shifts may continue across years with seasonal flooding as the community adjusts to more variable habitat conditions (Robinson et al. 2003). Floodwaters would be expected to contribute fine organic material, leaf litter, and terrestrial invertebrates into inundated areas, which can be rapidly colonized by aquatic invertebrates and zooplankton (Junk et al. 1989; Benke et al. 2000). Seasonal inundation can contribute detrital carbon sources from the floodplain to increase food web production (Jeffres et al. 2020a). Once flooding has subsided, source populations upstream in mainstem and tributary habitats would be available to recolonize the reach within the inundation area. In addition, the cited reference appears to address flooding impacts, not conversion to lake environment, and does not report other studies supporting the statement.
228	APPENDIX E: FISH	3.2.4.2	Page 139, 4th paragraph	The RDEIS states "...large logs (larger than can pass through 24-inch-wide trash rack spaces) would not pass downstream of the FRE facility, eliminating a primary source of large wood supply to the Chehalis River." This potential impact is unsubstantiated and disregards information about the proposed project description that was shared with Ecology in the late summer of 2021, prior to their cutoff date for incorporating new information into their SEPA analysis. The two relevant technical memoranda were cited as HDR (2021) and HDR (2021a) on page 2-28 of Attachment E-2 of the DEIS, but do not appear to be considered in determination of impacts presented in Section 3.2.4.2 of Appendix E. These memoranda were written by the District to clarify that large wood would be passed or placed downstream. The HDR (2021a) memorandum explicitly stated that, "During non-operating periods, most smaller debris will be either passed through the conduits or removed from the trash racks and hauled downstream to be released back into the river," and "LWM would be captured, staged, and sorted for use in downstream habitat enhancement projects as determined by the proposed mitigation program (Kleinschmidt 2020)."

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229	APPENDIX E: FISH	3.2.4.2	Page 139, 5th paragraph	Incorrect basis for conclusions of impact | "...reductions in peak flows would impede processes that increase salmon and steelhead habitat complexity and create off-channel rearing habitats and viable spawning areas for these fishes over time." The premise and conclusions that FRE operation would adversely affect channel forming flows are unsubstantiated. There is no evidence presented to support this statement that infers that peak flows during which the FRE facility would be operated are needed to create healthy and productive habitat for fish over time. In fact, the opposite is true, and in the Chehalis River the channel forming flows are below those that are likely to trigger the FRE facility operation. As stated in Section 5.2.1.3 of Appendix F to the SEPA DEIS, "Based on the analysis of migration rates between 1945 and 2013, it appears that channel migration takes place during even small peak floods in unconfined areas in response to flow against banks on the outside of meanders. This is consistent with research in other gravel bedded river systems that suggests flows of approximately 1.5-year to 5-year peak flow recurrence intervals do the most "work" over the long term at controlling and maintaining channel form (Schmidt and Potyondy 2004; Surian et al. 2009)."
230	APPENDIX E: FISH	3.2.4.2	Page 139, 5th paragraph	Incorrect basis for conclusions of impact | "...limiting high-water events that infiltrate the floodplain would also limit the input of terrestrial nutrients to the stream, which would have negative impacts on juvenile salmon and steelhead growth." This assertion is over simplified and not substantiated. There have been floods in which Doty flows are higher than the 10-year flood, and yet the Grand Mound gage did not reach 38,800 cfs (Nov. 2012); in such floods, the FRE facility would not operate, and floodplains between Doty and the Newaukum confluence may be inundated at flows greater than the 10-year level. Such high flow events would bring nutrients to the stream. In addition, the District's proposed vegetative management plan includes plantings and maintenance of flood-tolerant species within the temporary inundation area that would promote transfer of allochthonous and detrital inputs into the pool during operation. The temporary pool would act similar to natural floodwater areas (Junk et al. 1989; Benke et al. 2000) and would transport fine organic material, leaf litter, and terrestrial invertebrates into the temporary pool. Juvenile salmon are opportunistic feeders and readily exploit such prey subsidies when available (Bottom et al. 2005). Seasonal inundation would be expected to change fish prey availability, but there is no evidence that there will not be food for fish, or that fish growth would be impacted.
231	APPENDIX E: FISH	3.2.4.2	Page 140, 1st paragraph	Incorrect basis for conclusions of impact | Per Comment #329 and #330 on Appendix F (Earth), the premise and conclusions that FRE operation would adversely affect channel forming flows are flawed.
232	APPENDIX E: FISH	3.2.4.2.1	Pages 140-141	Incorrect basis for conclusions of impact | Per comments on Attachment E-3, the assumed survival rates are generally not justified nor realistic.

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233	APPENDIX E: FISH	3.2.4.2.2	Pages 142-145	Impacts of No Action are conflated with FRE facility. | The impacts presented in this section are attributed to the FRE facility as compared to a 2035 baseline condition, but those impacts would occur in the future even without an FRE facility as is described in the No Action impact section. The comparison between the future FRE and a 2035 baseline is inappropriate. The future FRE must be compared to a future No Action. Comparing the future FRE to a 20235 baseline could lead the reader to a mistaken conclusion that all future impact would result from the Project – which it is not accurate. In fact, the FRE facility-specific modeled impacts show no impact to spring-run Chinook Salmon, Coho Salmon and steelhead Rainbow Falls to Crim Creek subpopulations beyond the impacts that would already occur under the No Action Alternative. Further, some level of impact to all other subpopulations would occur under the No Action Alternative and, thus, when compared to the No Action alternative, the impact associated with the FRE facility itself would be *reduced* from what is presented in the SEPA DEIS. The RDEIS's presentation of this information must be revised in the FEIS to clearly demonstrate the Project- specific effects independent of future action outside of the Project's influence.
234	APPENDIX E: FISH	3.2.4.2.2	Page 142-147	Incorrect basis for conclusions of impact | 1. Per comments on Attachment E-3, the assumed passage survival rates are not justified, are not based on the best available science, and are unrealistically low. 2. The modeling relied on and overall discussion in this section disregards the deep and extensive scour anticipated within the temporary impoundment reach under the No Action Alternative. Scour would be extensive during major and catastrophic floods and would adversely impact salmon and steelhead spawning. This impact would increase over time as climate change results in increased major and catastrophic flood frequency. Conversely, the Project will reduce scour risk during major and catastrophic floods, thus reducing impacts on salmon and steelhead spawning compared to the No Action alternative. Site specific data on bed scour under 2-year average flow conditions was collected by the District and shared with Ecology. Two years of data demonstrated that bed scour was impacting redds under this average flow, suggesting that the potential impact would be more substantial for redds than has been indicated by the SEPA EDT model. The SEPA EDT model instead relied upon a bed scour calculator designed to estimate bed scour based on other model attributes which in turn may not be based on site-specific data, compounding potential for bed scour inputs that do not match reach specific conditions.
235	APPENDIX E: FISH	3.2.4.2.2.5	Page 145, last paragraph	Incorrect basis for conclusions of impact | The DEIS states that Coho Salmon would experience a 98% decline due to flood retention events and ascribes this purported effect to juveniles unsuccessfully attempting to move downstream during flood retention events. This assumption fails to take into appropriate account the migration periods for fish species as presented in Figure E-4 in the RDEIS. Outmigration for all salmon species starts in March and continues into June. Further, Coho Salmon in the Chehalis basin exhibit complex life history with "as many as six distinct juvenile life history strategies" some of which likely include migrating out of rearing streams at different ages and different times of the year (Jorgensen et al. 2021). Because of this complex life history, any effects from flood retention would be limited to those fish that occur during the specific month that the facility is operated during a flood event; it would not impact an entire year's cohort of juvenile fish

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				of a particular species. Further, based on the migration patterns presented in Figure E-4,outmigrating salmon should not be affected by a modeled catastrophic flood that occurs in February given the outmigration for these species begins in March. One possible reason for such a dramatic decline in Coho Salmon would be the incorrect assumption, evident in SEPA model inputs, that the FRE would provide a complete obstruction for downstream passage from October through March. This would include March when coho salmon smolt outmigrating begins similar to Chinook Salmon but also would affect any Coho Salmon redistributing within the upper Chehalis River during fall. Any such erroneous assumptions must be corrected in the modeling and these conclusions revised in the FEIS.
236	APPENDIX E: FISH	3.2.4.2.2.5	Page 146, 5th paragraph	Incorrect basis for conclusions of impact | The assumption that all juveniles attempting to pass downstream during a flood when the FRE facility is operating would not survive has no ecological basis, is inappropriate and does not reflect the best science, and must be changed in the FEIS. Throughout the Columbia River basin, fish migrate downstream of tributaries and encounter reservoirs and use these lentic habitats. In many river basins in Oregon and Washington, these fish have exhibited behavioral plasticity and the ability to adapt different life history strategies to survive. In some reservoirs, when no dedicated fish passage has been provided, it has been well documented that some salmon will find a way out, even if that means passage through turbines which many fish can survive. Other fish will hold and reside in the reservoir for a period of time. Subyearling and smaller juvenile salmon tend to hug the shoreline of these reservoirs while larger juvenile salmon may occupy deeper waters. In larger reservoirs, such as several of the Willamette Project reservoirs, juveniles may rear for extended periods of time and exhibit growth before even attempting to move downstream through turbines, or if food is plentiful, may opt for an alternative life history strategy and return after a few years to spawn upstream without leaving the reservoir. The abundance of information available from decades of studying fish use of reservoirs in the Columbia River basin provides ample evidence to refute the SEPA RDEIS's assumption that all fish within the proposed FRE facility would perish from being held in a temporary pool for up to approximately one month, which would be the maximum duration of the temporary pool. This assumption – which is demonstrably false – must be corrected in the FEIS.
237	APPENDIX E: FISH	3.2.4.2.2.5	Page 147, 1st paragraph	Inaccurate statement | The RDEIS asserts that the summer temperatures are responsible for declines in juvenile productivity of models. In order to objectively state the impact of the proposed project, the increase in summer temperature due to the FRE facility should be compared to the increase in summer temperature for the No Action Alternative. Also, this statement ignores the temperature modeling completed by the District that showed how mitigation would reduce temperature impacts. Further with recent refinements to reservoir operations, the effect on FRE-related shade loss and water temperature increases has been minimized. The Applicant requests that the FEIS incorporate the latest refinements to reservoir operations and subsequent effects on reservoir vegetation, river shading, and river temperature as provided in Attachment 2: Environmental Impact Reduction Due to

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				Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum to these comments.
238	APPENDIX E: FISH	3.2.4.2.2.5	Page 148, Table E-12	Lack of context for results promotes confusion for the reader | Table E-12 is an example of how the presentation of modeling results can lead to incorrect assumptions. While the table claims to present numbers representing impacts to salmon and steelhead abundance from the Project, in fact, much of the loss ascribed to the Project in this table also occurs under the No Action alternative – it is not an impact of the Project. In addition, this table misrepresents the loss of coho and steelhead subpopulations from Rainbow Falls to Crim Creek. This presentation of percentage impacts appear high but were not put into context of the entire basin which would show them to be much smaller. For example, while the model predicts a complete loss of steelhead in the Rainbow Falls to Crim Creek subpopulation, that subpopulation started with 13-14 adults under the baseline condition. This calls into question whether this truly represents a subpopulation as clearly it would not be considered a self-sustaining population for salmon. While this may represent an aggregation of steelhead within the EDT model, it should not be treated as an independent subpopulation. Similarly, Coho Salmon in this model reach started with only 50 fish, and spring-run Chinook Salmon likely have a similarly small population upstream of Crim Creek, although the initial subpopulation abundances are not representative of recent abundances for both of those subpopulations, complicating things further. In arbitrarily defining subpopulations within the Project Area that likely do not represent phenotypically or genotypically distinct populations, the model predicts not only a loss of fish in this reach, but that loss is also an artificially inflated into a reduction in Diversity to the overall Chinook River population for these two species. With starting populations of 13 to 50 adults under baseline conditions, any loss of Diversity would be an artifact of model configuration and not a real ecological consequence to Coho Salmon or steelhead. Finally, the RDEIS fails to explain that, while 50% to 100% looks dramatic, it equates to less than 1% to 1.2% for spring-run Chinook Salmon. The FEIS must consider the relative importance of these relatively small populations to the persistence of the overall Chehalis River populations as part of the evaluation of any future action in the basin.
239	APPENDIX E: FISH	3.2.4.2.2.5	Page 149 4th paragraph	Unsupported statement | The text states that the "fall-run Chinook salmon abundance ranged as low as two fish in the Above Crim Creek Subbasin." This statement is directly contradicted by Figures E-18 and E-20 which depict the range of all iterations around fall-run Chinook Salmon integrated modeling median was greater than approximately 50 (reading the graphs).This statement overexaggerates the potential impact potentially misleading the reader to a mistaken conclusion of potential impacts associated with the FRE facility.
240	APPENDIX E: FISH	3.2.4.2.2.5	Page 149 4th paragraph	Unsupported statement | This text suggests that the year-to-year variability under the FRE facility scenario would impact access for fishing and implies that the interannual variability of the subpopulation abundances are greater than under the No Action Alternative. Based on the No Action Alternative results presented in E-32 to E-51; however, it appears that this

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				model does not depict any interannual variability nor mid- and late-century scenarios, which is of note given variability of escapement estimates to the upper basin between 2013 and 2020 (Ronne et al.).
241	APPENDIX E: FISH	3.2.4.2.2.5	Page 155, 2nd paragraph	Incorrect basis for conclusions of impact | "In addition, a large fraction of salmon and steelhead spawn in the proposed FRE facility inundation area" — this statement is potentially misleading. The percentages reported are for just those fish that spawn upstream of Crim Creek; however, the actual percentages of the total Chehalis River run, including those that spawn in Crim Creek and in the mainstem and tributaries downstream of Crim Creek, are significantly smaller for each species overall. Those numbers should be reported here for accuracy.
242	APPENDIX E: FISH	3.2.4.2.3	Page 156, 1st paragraph	No basis for statement | This statement implies that Largemouth bass would likely expand their range due to warmer water temperatures, even though, as described on page 162, Rainbow Falls is considered a barrier to these fishes.
243	APPENDIX E: FISH	3.2.4.2.3	Page 157-164	Insufficient information provided, Incorrect basis for inferring impacts | The changes in WUA (weighted usable area, which is a sum of areas weighted by probability of use criteria treated as independent variables) appear to be for months in which the FRE facility would not be operated. These changes appear to be with respect to climate change, not FRE operation during flooding, as the FRE would not operate in summer nor affect summer base flows. It thus appears that changes in flow due to climate change are being conflated with construction and operation of the FRE
244	APPENDIX E: FISH	3.2.4.2.3	Page 160 and 161, Tables E-26, E-27	Incorrect information provided | The footnote pertains to the Caldwell et al. (2001) site upstream of Crim Creek, not the Normandeau (2012) sites below Pe Ell.
245	APPENDIX E: FISH	3.2.4.2.3	Page 163, 2nd and 4th paragraphs	Incorrect basis for conclusions of impact | The statements, "modeled changes in WUA indicate that habitats for rearing adults will be reduced or eliminated in the hottest months" and "The estimated change in WUA over time ...based on average daily temperatures" are based on a circular argument. WUA is calculated based on depth, velocity, substrate, and other physical structural elements, not temperature. In IFIM, temperature is a modifier for whether a reach will support a species and life stage irrespective of the WUA quantity present. Based on an example in the 2017 operations plan (Figure 3.2 in Anchor 2017), it can be inferred that temperature was simply used to scale the WUA-flow relation vertically, without changing the fundamental underlying shape of the curve, which brings up the following problems in its application here: 1. The scaling predetermines any conclusion concerning magnitudes of WUA. That is, it is assumed in the scaling that WUA for the same patch of streambed at a given flow, with the same depths and velocities, is 'worth' more when the water is cooler than when it is warmer (cf Anchor 2017). Hence, predictions of warmer water are automatically associated in the EIS' conclusions with more WUA, which is taken to be a positive, and the converse is taken to be a negative. This is not proof of effect but is a circular argument. 2. Note that WUA is a relative index of habitat availability at a given flow relative to other flows, and its magnitude is not an absolute predictor of population carrying capacity. 3. The effect of temperature should not be represented as a scaled percentage of WUA for

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				a given set of depth and velocity conditions when those conditions are the same for all temperatures considered. The scaling provided in the RDEIS is not biologically sound.
246	APPENDIX E: FISH	3.2.4.2.3	Page 163, 6th paragraph	Incorrect basis for conclusions of impact | The section of the report ascribes the expansion of non-indigenous fishes upstream of Rainbow Falls to the FRE facility, even though the mechanism of that expansion would need to be human intervention, since Rainbow Falls is a natural barrier. Any effect to non-indigenous fish populations is properly considered a cumulative effect, not an effect of the Project. In addition, the analysis does not address the potential for this species expansion under a No Action Alternative thus incorrectly and misleadingly attributing this potential impact entirely to the FRE facility. It also disregards the analysis presented in Appendix N, which shows how the mitigation proposed by the District is expected to mitigate any water temperature impact.
247	APPENDIX E: FISH	3.4 and 3.4.1	Entire Sections	This section discusses the modeling of fish abundance for the No Action alternative using the same integrated model approach used for the proposed Project. Section 3.4 cross-references Section 2.2.3, which details the background information considered and acknowledges the adverse effect increases flood flows have on salmon populations. Section 3.4 also cross-references the explanation of the methodology in Section 2.4.2.1, which includes modeling the impacts of a recurring flood period of three major or greater floods in three consecutive years. Section 3.4.1 reiterates how this recurring flood period is depicted in a series of graphs showing the output of the Life Cycle Model for different fish species in the early-, mid-, and late-century time periods under the median and maximum climate scenarios. The purpose of the modeling is to show how a period of three large floods in three consecutive years affects population abundance depending on whether this recurring flood period never occurs versus occurs in the early, mid, or late century. Strikingly, for all fish species at all time periods in all climate scenarios, the recurring flood period shows no population effects whatsoever. In each figure, there is no difference between the “no recurring flood” graph in the upper left versus any of the other three graphs. The fact that the model shows no abundance impact of any kind from recurring major-or-greater floods in three consecutive years is an indication that the model, as configured by the RDEIS, simply does not capture the effects of major or catastrophic flooding on fish populations. The RDEIS acknowledges and cites background authority that such increase flood flows should have a significant impact on fish populations, but the model shows none. Widely accepted work by Ronne et al. from 2020 in the Chehalis Basin notes that such an impact from flooding has been observed. WDFW has publicly stated recently that the large floods in the Skagit River and other area rivers will likely have significant impacts on three years of salmon returns. WDFW has made similar statements about prior floods, including those in the Chehalis Basin. In sum, then, the RDEIS life cycle model results’ failure to show any impact from three major-or-greater floods in three consecutive years represents a failure of the model configuration to capture the real-world phenomena it was intended to capture: the impacts of the No Action alternative due to increased flood flows. This is a critical modeling error on perhaps the most critical resource examined in the RDEIS. The FEIS must correct this error to properly inform the public and decisionmakers about the impacts of the No Action Alternative.

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248	APPENDIX E: FISH	3.4.3.2.1.5	Page 209	Modeling results inconsistent with basic data | Scour depth data collected by the District under typical seasonal floods indicate that, for the No Action Alternative, (i) scour mortality is higher above Crim Creek than downstream to Rainbow Falls in typical seasonal floods, and (ii) scour mortality above Crim Creek is likely to be extremely high in major floods and effectively near 100% in catastrophic floods. This is not reflected in the model predictions summarized in the tables on this page, just as it is not reflected in the integrated model results on pages 183 through 201. The FEIS must update its modeling to capture the observed phenomenon that major and catastrophic flood flows impact salmon populations, so that it can properly identify the probable significant impacts of the No Action and local actions alternatives (neither of which would reduce high flood flows in the upper Chehalis River).
249	APPENDIX E: FISH	Attachment E-2	Page 2-28	Table 3-25 incorrectly asserts 100% of wood will be removed and lost to the system downstream, citing HDR 2021 and 2024. | From HDR (2021), Revised Project Description, "Debris removal will occur during reservoir drawdown, where the rate of drawdown will be slowed for up to 14 days to allow maintenance personnel to collect and remove debris from the trash rack and temporary reservoir. For further discussion see HDR 2021a." HDR (2021a) is a technical memorandum written specifically to clarify that large wood would be passed or placed downstream; specifically, it states, "During non-operating periods, most smaller debris will be either passed through the conduits or removed from the trash racks and hauled downstream to be released back into the river," and "LWM would be captured, staged, and sorted for use in downstream habitat enhancement projects as determined by the proposed mitigation program (Kleinschmidt 2020)." Inexplicably, none of this information provided in the 2021 memo about passage of smaller wood and reuse of large wood was included in the RDEIS's assessment of wood impacts. In addition, Section 8.4 of the 2024 Revised Mitigation Plan (Kleinschmidt 2024) identified specific actions for mitigating any disruptions of wood transport downstream of the FRE, including creation of a wood bank for future mitigation or restoration projects downstream, the collection and relocation of wood to a location downstream, and the intentional use of large wood for eight habitat enhancement actions downstream. The Earth and Air Quality discipline reports collectively credit the proposed Project's plans to reuse wood in construction, non-flood operations, and flood operations, yet this discipline report fails to do so without explaining its different rationale. The FEIS should remove this incorrect impact.
250	APPENDIX E: FISH	Attachment E-2	Page 2-31, Table E.2-7	Unrepresentative and incorrect assumption | This table describes an invalid assumption used to characterize FRE facility operation and duration during winter conditions. In the SEPA EDT, for the reach of the river from the FRE facility upstream approximately 6 miles, the habitat type was changed from riverine to reservoir for winter months under the FRE facility model scenarios. Instead of modeling impacts specific for the months in which the FRE facility would operate during a major or catastrophic flood, as was presented in Figures E.2-3 and E. 2-4 (page 2-11 of this document), the SEPA EDT model assumed no spawning habitat and 100% mortality for incubating eggs in this reach for 6 "winter" months (October through March):"This condition will be assumed for the entire winter period, because although inundation would occur for a period of days up to a month, it is assumed any spawning/incubating would not be successful for the entirety of that winter period." This

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				assumption inappropriately and artificially increases the perceived impact of the FRE facility. The modeled duration of reservoir habitat is *six times longer* than the *maximum* inundation duration of the District's proposed FRE facility. Thus, the SEPA EDT is not representative of the catastrophic or major flood conditions (1996 and 2009) nor of the simulated FRE operations from 1990-2022 that would have occurred either in January or February. Under the SEPA RDEIS representative major and catastrophic modeled years, the temporary pool would have been inundated either in January (2009, 19 days) or in February (1996, 19 days). The upper extent of the pool would have been inundated for a shorter duration. The inundation period used in evaluating potential spawning impacts is critical to the accuracy of its modeled impacts. Given salmon from each of the runs spawn and eggs incubate across different temporal windows, a temporary pool in December might be expected to have a greater effect on Chinook than Coho Salmon, while the effect might be expected to be reversed with greater impact to coho salmon from a temporary pool in March. By contrast, steelhead redds should not be impacted as they begin to emerge from redds in April and the majority spawn upstream of the inundation area (Light and Herger 1994).The SEPA DEIS's approach to determining incubating egg mortality does not appropriately evaluate all operational months/scenarios. Operations in different months would result in different impacts to different species, specifically the egg to fry survival in this example. A modeling approach which assumes the Project would operate for six straight months --- which it will never do – is misleading and inappropriate and fails to identify the Project's probable impacts. There are at least two approaches that the SEPA DEIS could have taken to evaluate the proposed FRE facility's probable impacts on incubating eggs. First, six EDT scenarios could have been run with the FRE facility operating in a different month during the wet winter period under each scenario. Alternatively, the model could be run for two or three scenarios where the FRE operates in months that, based on the ecology of the salmon species, would represent the greatest impact to each species, thus providing a greater understanding of potential impacts. In either case, the results would more accurately predict run-specific effects on embryo survival that could be used as input to the LCM. Either of these approaches could be used to more realistically and responsibly model the potential effects of the FRE facility as proposed by the District. Using the assumption of reservoir habitat all "winter" invalidates the use of the SEPA Integrated Model as a tool for evaluating the potential effects of the proposed FRE facility. These models do not rely on the actual Project nor the ecology of the salmon species in this upper basin and thus, their results do not demonstrate the probable impact expected to occur to these species as a result of the proposed FRE facility's operation.
251	APPENDIX E: FISH	Attachment E-2	Page 2-4	Erroneous model result? | Review of EDT model results for Coho show Adult (SAR) capacity values of 100,000,000,000,000,000, mainly for the No Action Alternative. Obviously, this is impossible. Values for capacity under FRE facility operational scenarios

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				for the 10-year and 100-year maximum and median climate change scenarios range from 4,667 to 8,614 Coho Salmon. The variation between scenarios is extreme and suggests an issue with the model or that a model artifact (e.g., placeholder number instead of infinity) was mistakenly left in place.
252	APPENDIX E: FISH	Attachment E-3	Page 3-7	Impacts of No Action are conflated with FRE facility. | Although this section is titled "quantitative analyses of anadromous salmonid passage," the values presented are in fact qualitative best guesses by WDFW's Fish Passage Subject Matter Experts panel. This section must acknowledge in the text and through a change in the title that this is not a quantitative analysis. Furthermore, the District's own experts disagree that survival rates through the Project's conduits will be lower than at the Federal Columbia River Hydropower System's high head dams, as the passage assumptions described here suggest. Such a conclusion is inconsistent with the best available science. Moreover, the Project is being designed to meet all NMFS fish passage criteria, and it is therefore unreasonable to assume that survival would not meet those criteria.
253	APPENDIX E: FISH	Attachment E-3	Page 3-10, 10th bullet	Faulty logic and resulting assumptions likely incorrect | The RDEIS describes assumptions made regarding fish passage performance that were incorporated into EDT and the integrated modeling approach. Among those, the RDEIS states that upstream juvenile salmonid foraging movements "will be impeded" during high-flow conditions and during FRE backwatering This should be true throughout the river, and especially at the various falls and in the canyon downstream where upstream passage of juveniles is either prevented or impeded as well. The same performance metrics need to be included in an overall assessment, rather than attributing passage impacts to the population only to the FRE facility.
254	APPENDIX E: FISH	Attachment E-3	Page 3-10, 4th bullet	Analyzing effects based on outdated operations | The bypass channel can easily be designed to provide passage corridors with 1-foot depths at the low passage flow; (e.g., V-shaped low flow channel). Construction bypass channel fish passage will meet National Marine Fisheries Service fish passage criteria. Ecology is aware that the District's coordination with NMFS is already underway.
255	APPENDIX E: FISH	Attachment E-3	Page 3-11, Table E.3-2	Faulty logic and resulting overly conservative estimates likely incorrect; cannot rely on EDT and LCM results accordingly | Table E.3-2 provides estimated construction passage effectiveness percentages that are the foundation for the RDEIS's assessment of Project construction-related impacts on fish passage. The survival numbers included in this table are not consistent with the best available science. To demonstrate this fact, consider that these numbers – if true – would also apply, at a minimum, to Rainbow Falls, Meskill Falls, and the Canyon reach below Crim Creek, locations where passage conditions are more restrictive than would likely occur in the bypass channel. If these survival numbers were accurate (which they are not), spring run Chinook Salmon would experience a net cumulative run survival of 4% (=0.343) by the time they reach Crim Creek. Above Fisk Falls, that number would decrease to 1% -- or less given the much more difficult conditions there. For fall run Chinook, the corresponding numbers are 27% and 18%, respectively. Survival rates of this nature are unreasonably low and do not comport with the best

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
				available science regarding spring- and fall-run Chinook Salmon, particularly given the nature-like fishway channel is designed to be more passage friendly than many natural locations in the river. Indeed, if these passage survival numbers were accurate, there would likely be no Chinook Salmon in the Chehalis Basin, which is demonstrably not the case. These survival numbers -- which underpin the RDEIS's entire analysis of construction-related fish passage impacts – must be revised to reflect scientifically supportable passage survival numbers for the proposed bypass channel, which will mimic natural conditions. Indeed, the sensible way of analyzing a reach mimicking or exceeding natural conditions is to say it creates no impact, since survival would be no different than on the natural river.
256	APPENDIX E: FISH	Attachment E-3	Page 3-11, Table E.3-2	Faulty math affecting EDT and LCM modeling results | Table E.3-2 and the surrounding text implies that the EDT model assumes, in a manner inconsistent with the best available science, that all fish that do not attempt passage are killed. In which case the cumulative fish passage numbers are incorrect. Moreover, if those numbers were used as input to the EDT or Integrated model, then those results are also erroneous. For example, in the case of spring-run Chinook Salmon, if 100 fish arrive at the construction bypass, and only 50% of them are likely to pass upstream, then 50 of those 100 fish are expected to turn around and find spawning habitat downstream. Of the 50 that are likely to pass upstream, and with the 80% survival rate presumed in this table , 20% of the fish would die during transit, and of the 40 fish that survived, 15% of them would die due to delayed mortality, meaning 34 of the 50 upstream migrating fish would survive (68%) and 84 of the original 100 fish would survival overall (84%). The RDEIS's conclusion that only 34% would survive is misleading and without basis in sound science. Moreover, the survival rate percentages used in Table E.3-2 are not based on the best available science and are unreasonably low. The survival rate of spring-run Chinook Salmon would therefore be significantly higher than 84%. Furthermore, as noted above, if the inappropriately presumed 34% survival rate has been used as an input in the EDT-LCM modeling, then the modelers are going to predict unrealistically low survival rates overall and those predictions may not be relied upon as the best available information and are so misleading as to prejudice the Project.
257	APPENDIX E: FISH	Attachment E-3	Page 3-12, 4th paragraph	Incomplete analysis of effect and justification of assumptions likely affecting conclusions; cannot rely on EDT and LCM results accordingly | Information is missing regarding what velocities are involved and how they compare to Columbia River dam spillways. Note that USACE studies of PIT-tagged Chinook smolts at the Ballard Locks in Seattle found fish that recycled multiple times after passing through high velocity (15-20 ft/s) flumes discharging to surface water. Velocities through the conduits when the flow is open channel should be identified versus when the conduits are flowing full. Consideration is missing regarding behavior where fry tend to reside in quieter water near the channel margins. Furthermore, following the second paragraph on this page, parr and smolts are more surface-oriented in deep water when the conduits are flowing full.
258	APPENDIX E: FISH	Attachment E-3	Page 3-13, Table E.3-4	Table conflicts with preceding statements | Information presented above on the same page indicates mortality would likely be zero "for larger-sized fish (20 centimeters in length) and smaller-sized fish (10 centimeters in length) when velocity was less than 66 and 58 fps, respectively.". Nevertheless, the RDEIS indicates that these were laboratory studies, and

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
				suggests that for that reason, different survival numbers in Table E.3-4 were adopted. However, laboratory studies are a valid manner of determining likely mortality rates and, in the absence of reliable conflicting information, should be relied upon as the best available science to identify probable Project impacts. Moreover, fish passage through a relatively short conduit is not the same as through a dam, where the pressure drop and turbine mechanical injury potential are greater. Accordingly, basing survival estimates on studies of survival through dams can lead to over-estimates of mortality through the FRE facility conduits. These numbers need to be revisited.
259	APPENDIX E: FISH	Attachment E-3	Page 3-13, Table E.3-5	Faulty logic and resulting overly conservative estimates likely incorrect; cannot rely on EDT and LCM results accordingly | Comment #258 regarding Table E.3-2 applies here, too since these numbers are taken directly from that table.
260	APPENDIX E: FISH	Attachment E-3	Page 3-16, Table E.3-7	Incomplete analysis of effect and justification of assumptions likely affecting conclusions; cannot rely on EDT and LCM results accordingly | Table E.3-7 provides estimates for upstream juvenile migrant passage rates during construction and normal Project operations but fails to distinguish passage rates at low, medium, and higher flows. At low flows, juveniles are blocked from moving upstream at numerous drops and falls throughout the upper river before they could reach the bypass channel and conduits. Passage conditions would likely be better in the channel and conduits than at many other locations. At medium flows, juveniles would navigate numerous riffles and cascades with passage conditions similar to the bypass channel and conduits. The cumulative effectiveness of passing those riffles and cascades is being ignored in the RDEIS; it shouldn't be, because doing so artificially over-ascribes impacts to the FRE facility. For example, assuming 64% effectiveness at a single passage restriction would be equivalent to five consecutive restrictions (e.g., riffles and cascades) equating to a cumulative 10% effectiveness (and it should be noted that if the 10% number were to be applied in the EDT model, then the predicted fish numbers would likely not match anything close to observed). At high flows, juveniles are more likely to be finding refuge locally than moving upstream. Because Table E.3-7 fails to accurately reflect passage rates at different flow levels, it does not represent the best science and is inadequate for assessing probable Project impacts. Similarly, the EDT-LCM modeling must also consider varying passage rates at different flow levels in order to reliably and reasonably predict probable Project impacts.
261	APPENDIX E: FISH	Attachment E-3	Page 3-16, Table E.3-8	Insufficient information provided; Faulty logic and overly conservative estimates likely incorrect; cannot rely on EDT and LCM results accordingly | Table E.3-8 provides passage effectiveness estimates for downstream migrating steelhead kelts during construction and normal operations, but does not provide any basis for these numbers, which appear to be extremely low. For example, studies of kelt passage in a Central California reservoir, where water temperatures are generally warmer overall than in the Chehalis River, recorded kelt downstream passage effectiveness of 87% (Ohms and Boughton 2021). Similar arguments should apply to other locations where downstream passage is constricted, such that applying the 43% number cumulatively to natural passage restrictions at Fisk Falls and farther downstream implies zero survival of kelts under the No Action condition. This is clearly incorrect, thus the numbers in Table E-3.8 are in error.

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
262	APPENDIX E: FISH	Attachment E-3	Page 3-19, 4th bullet	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | The assumption of sounding is speculative and likely incorrect. As noted on page 3-12, juvenile outmigrants tend to be surface oriented. Sounding by juveniles is a phenomenon that more likely reflects warming of surface water temperatures rather than seeking a route downstream, but the FRE facility would be operated during winter and possibly spring flows before water temperatures become an issue. Assuming they sound to deep water translates to assuming they are passing through the conduits under higher pressures and pressure drops (i.e., higher risk of mortality) than when they pass through after the water level has lowered sufficiently.
263	APPENDIX E: FISH	Attachment E-3	Page 3-20, bullet	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | The RDEIS alleges general uncertainty regarding "basic information from any species on their swimming capabilities and behavior" through "these types of structures" and a lack of "refined velocity estimates." In fact, however, there are various studies of the effectiveness of naturalized channels with non-salmonids after barrier removal; e.g., Bruno, A.J., 2025; Tabor, Waterstrat, and Olden. 2020. The FEIS should include an accounting of such references that indicate high passage success rates.
264	APPENDIX E: FISH	Attachment E-3	Page 3-13, Paragraph 2	Notes that estimated juvenile salmonid downstream migrant passage effectiveness is similar but reduced compared to passage through the bypass channel. A difference of 0% to 10% is noted between tables E.3-3 and E.3-4, species dependent. On page 3-9, water quality during construction is noted as a factor when developing fish passage survival estimates, specifically that turbidity, temperature, and dissolved oxygen will likely be degraded. If these conditions are worsened during construction, would these not affect juvenile outmigrants? These conditions would seemingly be more impactful than navigating the FRE conduits, but contradictory to the conclusions on page 3-13. In fact, since the Water Discipline report concluded that there would be no significant effect on turbidity, temperature, or dissolved oxygen from the proposed Project's construction (Water Discipline Report at 66 and 68), assuming negative impacts from these factors to influence construction fish passage is inappropriate.
265	APPENDIX E: FISH	Attachment E-3	Page 3-2, paragraph 1	Paragraph states FRE conduits to be fully submerged for flows greater than 4,500 cfs. This is not correct. Pressurization begins around 13,700 cfs.
266	APPENDIX E: FISH	Quantitative Analyses of Anadromous Salmonid Passage; Methods; Construction	Page 3-10, bullet 4	The RDEIS states that the bypass channel "does not have ideal depth and flow for fish passage of big-bodied fish during low-flow conditions despite being based on reference reaches." This statement appears to misunderstand the reference reach conditions. In fact, the bypass channel was designed to function identically to the reference reach, or baseline, with regard to fish passage. In this reach, under natural conditions, summer flows have not met minimum instream flows for many years over the last decade. The fact that the bypass reach will mimic these conditions – and therefore also represent low flow conditions in summer months – is not a Project impact, but rather an impact of the No Action alternative. Moreover, if necessary – and unlike under the No Action alternative -- the bypass channel can be adaptively managed in response to agency requests as needed by the addition of

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
				low flow deflectors to reduce the wetted width and increase channel conveyance capacity. Accordingly, the RDEIS should conclude that the Project's probable impacts are the same as the No Action alternative and, in fact, provide opportunities for improvement over natural, baseline conditions that the No Action alternative does not provide.
267	APPENDIX E: FISH	Quantitative Analyses of Anadromous Salmonid Passage; Methods; Construction	Page 3-9, bullet 3	The RDEIS erroneously concludes that construction noise "may be a deterrent for adult upstream fish passage and juvenile upstream and downstream foraging events." This is demonstrably false and fails to consider the Project's construction plans. Specifically, all in-water work that would create noise, including pile driving and blasting, will occur *in isolation from the active flow*. By constructing the facility in the dry, noise and vibration is not expected to affect fish behavior or degrade habitat near the construction area. The RDEIS's failure to take into account a fundamental feature of the Project's construction plan results in misleading conclusions regarding construction impacts that, in fact, will not occur. The FEIS must be revised to accurately reflect the District's proposed construction plan.
268	APPENDIX E: FISH	Quantitative Analyses of Anadromous Salmonid Passage; Methods; Construction	Page 3-9, bullet 4	The RDEIS erroneously states that spring-run Chinook Salmon will "hold in reaches downstream of the FRE" and that resulting physiological stress will cause this species to be "less likely to move upstream through a bypass channel." This suggests that any spring-run Chinook Salmon holding is a Project effect, which it is not. Low flow conditions in the summer are a baseline condition; the Project will not increase the physiological stress of spring-run Chinook that may or may not hold downstream of the FRE. Furthermore, the construction bypass will fully isolate the work area and provide conveyance capacity identical to baseline conditions.
269	APPENDIX E: FISH	Quantitative Analyses of Anadromous Salmonid Passage; Results; Construction	Page 3-11, Table E.3-2	No literature, case studies, or passage performance at other facilities are provided to support the adult salmonid construction passage numbers provided in Table E.3-2. To the extent that these numbers were based on the opinion of three Ecology SMEs, the RDEIS should provide citations to specific data or studies relied upon by those SMEs in formation of their opinions, but no such support for these numbers is provided, calling into question the credibility of these numbers. The FEIS must rely on the best available science, not merely SME opinion.
270	APPENDIX E: FISH	Quantitative Analyses of Anadromous Salmonid Passage; Results; Non-flood operation	Page 3-13, Table E.3-5	In addition to the other problems noted herein concerning the RDEIS's unreasonably low and unsupported fish passage number, the RDEIS departs from the 2020 SEPA DEIS fish passage estimates without justification. The 2020 SEPA DEIS Fish Discipline report on page E-79 lists passage for species as follows: Spring-Run Chinook 2020 DEIS, Table E-9 - 94% Fall-Run Chinook 2020 DEIS, Table E-9 - 94% Coho 2020 DEIS, Table E-9 - 94% Steelhead 2020 DEIS, Table E-9 - 96%. Even Ecology, when writing the prior DEIS, disagreed with the current RDEIS fish passage estimates. The FEIS must revise these estimates using the best available science.
APPENDIX F: EARTH				
271	APPENDIX F: EARTH	Summary	Page v, Table F-1 - Construction – Geomorphology	Conflating change with impact without providing basis for conclusion | Permanent alteration of channel within footprint represents a change in channel form locally, but how that translates to a specific impact and what that impact is are not defined.

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
272	APPENDIX F: EARTH	Summary	Page v - viii, Table F-1	"A landslide that occurs when water is impounded, resulting in a wave that damages the FRE or overtops and dam" - Mitigation Proposed states "None." LS-4 is the mapped landslide with the largest likelihood of initiating this impact because of its direct line-of-site with the FRE. From the Shannon and Wilson 2017 Technical Memorandum Chehalis Basin Strategy: Reducing Flood Damage and Enhancing Aquatic Species Project Phase 2 Chehalis Dam Site Characterization Landslide Stability Improvement Evaluation, mitigation strategies have been evaluated and shown to meet stability criteria for LS-4. Therefore, the Mitigation Proposed should be changed to "Design for slope stability." - LS-4 is the only landslide in direct line-of -site for the FRE structure. For landslide-induced overtopping of the FRE structure, the landslide typically needs direct line-of-site access to the FRE structure. Otherwise, the induced wave attenuates energy each time is it redirected by reflection off a wall or obstacle. Other landslides that may occur when water is impounded are not in direct line-of-site of the FRE structure the risk of overtopping or damaging the FRE is significantly lower than LS-4. Mitigation strategies, presented in S&W 2017, can be implemented to other landslides. - Significant and Unavoidable Adverse Impact states "Yes." Mitigation strategies for LS-4 has been discussed above. Significant and Unavoidable Adverse Impact should state "No." Mitigation is proposed through stabilization in Table F-5.
273	APPENDIX F: EARTH	Summary	Page v - viii, Table F-1	"'Increased risk of a deep-seated landslide temporarily blocking the river, impacting river flow and resulting impacts when the landslide dam is breached or eroded" - Impact statement does not state that a deep-seated landslide that blocks the river would be due to the project nor whether the blockage is upstream or downstream of the FRE. The impact statement does not state what the impact is, only that there are resulting impacts when the landslide dam is breached or overtopped. If the landslide occurs downstream of the dam the impact finding is likely less than significant and likely not because of the dam. If the landslide occurs upstream, it may assist with sediment transport further downstream. - Mitigation proposed says "None." Mitigation has been proposed in the Shannon and Wilson 2017 Technical Memorandum Chehalis Basin Strategy: Reducing Flood Damage and Enhancing Aquatic Species Project Phase 2 Chehalis Dam Site Characterization Landslide Stability Improvement Evaluation. Mitigation strategies for deep-seated mapped landslides that would be impacted by flood retention operations have been evaluated and shown to meet stability criteria. Therefore, the Mitigation Proposed should be changed to "Design for slope stability." - Significant and Unavoidable Adverse Impact says "Yes." Mitigation strategies have been evaluated and shown to meet stability criteria avoiding any adverse impact. Therefore, the Significant and Unavoidable Adverse Impact should state "No." Mitigation is proposed through stabilization in Table F-5.
274	APPENDIX F: EARTH	Summary	Page v - viii, Table F-1	"An earthquake that occurs when a reservoir is impounded…" - Mitigation Proposed states "None." - The FRE will be designed to accommodate seismic forces when the inundation pool is impounded such that the risk of an uncontrolled release of the inundation pool is minimized and so unlikely as to be considered negligible. RPDR Section 3.3 of Appendix F outlines

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
				industry design guidance and the risk-informed approach which will serve as the basis for design. The risk-informed design framework considers a range of hazard levels (return periods) in combination with the anticipated severity of consequences with each. These are compared against the limited risk tolerance described in USACE, USBR, and FEMA public protection guidelines. These federal guidelines require critical individual PFM risks as well as cumulative PFM risks to fall below established public protection guidelines. The statement does not adequately consider the degree of care that will be completed to characterize site conditions, design of the FRE structure, and construction of the facility that will provide a high level of risk reduction for such failure modes. Estimated risks of failure for the FRE structure under earthquake loading is expected to be less than 1:10,000 (0.0001) to 1:100,000 (0.00001) when estimated with a quantitative risk analysis to be completed on the preliminary design. Mitigation is proposed through the design approach. - Significant and Unavoidable Adverse Impact states "Yes." This impact is avoidable through design. Significant and Unavoidable Adverse Impact should state "No."
275	APPENDIX F: EARTH	Summary	Page vi, Table F-1 - Operations – Geomorphology	Incomplete analysis of effect | Alteration of substrate composition and sediment transport within the footprint of the temporary inundation area fluctuation zone – this is a temporary phenomenon, which should be noted in table.
276	APPENDIX F: EARTH	Summary	Page vi, Table F-1 - Operations – Geomorphology	Basis for impact conclusion conflicts with other text | Reduction of large wood downstream of FRE is categorized as a significant and unavoidable impact – Large Wood Management Plan including moving all trapped large wood downstream was designed as mitigation, which is acknowledged in Section 5.4.3 but not in this table.
277	APPENDIX F: EARTH	Summary	Page vi, Table F-1 - Operations – Geomorphology	Basis for impact conclusion insufficiently defined and incorrect | Truncation of peak flows during periods of impoundment affecting channel forming flow processes – non-specific impact – this is based on an incorrect definition of channel forming flow (see Comment #329 and #330)
278	APPENDIX F: EARTH	Summary	Page vii, Table F-2 - Geomorphology	Basis for impact conclusion insufficiently defined and incorrect | Increased tributary incision in the impoundment reach claimed because of incision along mainstem Chehalis River – the mainstem is already entrenched/incised with base level control provided by bedrock, thus mainstem channel is unlikely to incise further over the life of the project
279	APPENDIX F: EARTH	Summary	Page v - viii, Table F-1	"Sediment delivered to the river due to shallow landslides" - This should be omitted from the impact statement as shallow landslides are naturally occurring, largely initiated by excessive rainfall – not through FRE operations. "or landslide movement caused by fluctuations in reservoir water level during reservoir operations" - Mitigation proposed says "None." Mitigation has been proposed in Shannon and Wilson's 2017 Technical Memorandum Chehalis Basin Strategy: Reducing Flood Damage and Enhancing Aquatic Species Project Phase 2 Chehalis Dam Site Characterization Landslide Stability Improvement Evaluation. Mitigation strategies for mapped landslides that would be impacted by flood retention operations have been evaluated and shown to meet stability

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
				criteria. Therefore, the Mitigation Proposed should be changed to "Design for slope stability." - The EIS also does not consider that with the passage of more restrictive and protective allowable forest practices in the mid-2000s, especially with respect to not building roads across or clear cut harvesting on areas mapped as landslide hazard areas, that the average annual rates of landslide inputs of gravel and large wood will be less than historically associated with timber harvest activities. Thus, the future condition of the upper Chehalis River is likely to involve reduced spawning habitat and instream habitat complexity compared with present because of reduced frequency and severity of anthropogenic landslides. - Significant and Unavoidable Adverse Impact says 'Yes'. There is extensive literature documenting how landslides are beneficial for long term supply of spawning gravels and large wood to the channel in typically gravel-starved rivers of the Coast Range. This literature is ignored in the EIS. Also, mitigation strategies can avoid any adverse impact. Therefore, the Significant and Unavoidable Adverse Impact should state 'No'. Mitigation is proposed through stabilization in Table F-5.
280	APPENDIX F: EARTH	Summary	Table F-1 - Section Proposed Action (FRE Facility and Airport Levee Changes) - Operations: First three Geology Impacts	HDR's 2023 TM provides documentation of landslide mitigation. Specifically, the preliminary design development to date anticipates mitigation of all the landslides in proximity to the FRE structure to prevent landslide failure during flood retention operations for those landslides that could impact the operation of the flood control outlet works. The smaller landslides that would not significantly impact operations, would not be mitigated with the intention that sediment load from such failures would be passed through the structure to provide materials to the stream channel downstream of the FRE structure to mimic, to the degree possible, natural geomorphic processes. While specific designs have not been developed and presented, our documentation considers two specific mitigation actions for the larger landslide features in relatively close proximity to the FRE structure: 1) instrumentation of the landslides to monitor performance including any activity that would indicate the need for further corrective actions to prevent landslide failure during the operation phase of the project, and 2) to complete excavations and contouring of landslides to increase stability factors of safety and to configure stabilizing berms at the critical landslides using excess excavated materials to provide adequate factors of safety so that those landslides would not fail during or following flood operations. The FRE structure has significant freeboard and adequate stability margins of safety to mitigate the potential for adverse performance (failure) of the FRE structure associated with a landslide failure that could generate an impact loading to the upstream face of the FRE structure/outlet, or a seiche wave capable of overtopping the FRE structure. To date, evaluation of deep-seated landslides has identified none that would fail during inundation pool drawdown in such a way that would result in a seiche wave that could overtop the FRE structure. As part of the usual engineering process, this potential will be evaluated further during subsequent investigation and design phases. If a condition is identified that could

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
				result in development of a seiche wave capable of overtopping the FRE structure, an appropriate mitigation strategy will be developed and incorporated into the project design such as monitoring and stabilization to mitigate this hazard and eliminate the potential for any significant and unavoidable impacts to occur. It is also noted that the concrete gravity section of the FRE structure will be capable of withstanding significant overtopping without failure. Such a potential failure mode would be included in a quantitative risk analysis completed as part of the preliminary design. The project design configuration will, when completed, contain all necessary actions and features to address critical PFMs so that estimated risks are well below the risk tolerance guidelines published by FEMA, USACE, and USBR. Such actions represent proposed mitigation. With the mitigation meeting design criteria, these issues should be rated as No Significant and Unavoidable Adverse Impact.
281	APPENDIX F: EARTH	Summary	Table F-1 - Section Proposed Action (FRE Facility and Airport Levee Changes) - Operations: Fourth and Fifth Geology Impacts	While the table summarizes an opinion of No Significant and Unavoidable Adverse Impact, the column summarizing Mitigation Proposed is not accurate. For example, the 4th item list erosion mitigation measures but does not indicate that the disposal sites for excavation/quarry spoils will be designed to a high engineering standard. It is important that these sections of the document properly characterize the engineering design that are targeted to provide a high level of environmental protection. This includes quarry high wall stability and efforts to provide containment of the completed quarry to minimize the potential for long-term discharge of waste, slope failure, or sediment laden discharge waters within the quarry closure design that will be executed by the construction contractor.
282	APPENDIX F: EARTH	Table F-2	Proposed Action (FRE Facility and Airport Levee Changes) - Construction	The RDEIS impact states, "Quarry wall failure during construction that creates sediment or exposes soil and rock to erosion" with no mitigation proposed. The District's engineers will design and construct the quarry walls in accordance with current stability standards to prevent instability and erosion. Construction will be performed in controlled lifts, and erosion and sediment control measures will be implemented. Revise the RDEIS Mitigation Proposed to 'Best management practices would be implemented to contain eroded soil and limit transport of sediment to the river'
283	APPENDIX F: EARTH		General	Non-defined terms/conclusions of impact | Definition of what is a Geological/geomorphic "impact" is not given, nor of what distinguishes a "significant" vs. "less than significant" impact. For any specific aspect of the Proposed Project where an "impact" is said to be "significant," the following details are missing in the context of geology and geomorphology: What the impact is specifically, and how and why it would be significant (i.e., specific descriptions/explanations of the mechanisms whereby an impact would occur, how and why it would be significant, and what aspect of the environment/resource would be impacted). It appears that any "change" qualifies as an "impact," but that does not mean that the change is ecologically or environmentally meaningful.

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
				Concluding that an impact could be significant is not the same as concluding that an impact would be significant.
284	APPENDIX F: EARTH		General	Not considering best available information | Did not consider District's coarse and fine sediment transport analyses, scour data, and spawning habitat data, and the implications thereof with respect to impact and (non)significance of impact.
285	APPENDIX F: EARTH	2.2.3	Page 6, middle of paragraph	RDEIS states "The geologic conditions beneath the footprint of the proposed FRE facility are illustrated by a cross-section profile along the centerline of the FRE facility (Figure F-3)." Should state Figure F-3a.
286	APPENDIX F: EARTH	2.2.3.1	Throughout section	Throughout Section 2.2.3.1 clearly articulates planned landslide mitigation. The proposed mitigations, as presented in Table F-5, does not seem to translate into the summary Table F-1. This table should reflect proposed mitigation that is an integral part of the proposed Project.
287	APPENDIX F: EARTH	2.2.3.1	Page 7, 1st paragraph	Insufficient information provided | "There are many mapped and unmapped deep-seated and shallow, surficial landslides." The number of unmapped landslides cannot be quantified as "many" until they have been mapped or areas with high risk-related features have been analyzed and mapped; until then, the number must be unknown. Moreover, it is unclear if this is referring to the project site or the Willapa hills region in general. There is no basis for postulating the presence of numerous unmapped landslides in the project site.
288	APPENDIX F: EARTH	2.2.3.1	Page 8, end of first paragraph	Text states "Five of the deep-seated landslides show signs of activity." Figure F-4 only shows three. Table F-5 does not identify the deep-seated landslides. Unable to validate which show signs of activity.
289	APPENDIX F: EARTH	2.2.3.1	Page 8, second paragraph	RDEIS states "Two seismic lines extending across portions of Landslide LS-1 were completed in 2024 in conjunction with additional assessment of this landslide." In HDR's Geologic Data Report: Figure 3-1; assuming the RDEIS is referring to seismic lines GSL24-10 and GSL24-09, a small portion of seismic line GSL24-02 also traverses LS-1.
290	APPENDIX F: EARTH	2.2.3.1	Pages 8, 11, 12, Figure F-4 & F-5	The text identifies which landslides could affect the structure and how. The landslides are identified through landslide ID's (i.e., LS-4). Figure F-4 and F-5 do not identify the landslides and therefore, the reader is unable to identify and validate the landslides (and their impact to the structure) as referenced in the text. Figures should be updated to identify the landslides referenced in the text.
291	APPENDIX F: EARTH	2.2.3.1	Page 11, Figure F-4	Landslide ID's are not included in the figure to validate the deep-seated and active landslides. It appears LS-3 and LS-3a are not indicated as active landslides in these figures. The RPDR describes LS-3 and LS-3a as active landslides.
292	APPENDIX F: EARTH	2.2.3.1	Page 14, first paragraph	Text states "Which deep-seated landslides may require mitigation measures, and what the specific mitigation measures may be, has not been determined by the Applicant." In fact, however, the Shannon and Wilson 2017 Technical Memorandum Chehalis Basin Strategy: Reducing Flood Damage and Enhancing Aquatic Species Project Phase 2 Chehalis Dam Site Characterization Landslide Stability Improvement Evaluation evaluated which landslides may require mitigation measures and what those mitigation measures may be.

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
				The language also presumes that landslides have an overall negative effect that requires mitigation. This is not correct. Landslides are a primary recruitment source of gravel to the alluvial-bedrock channel, which would be beneficial.
293	APPENDIX F: EARTH	2.2.3.1	Page 14, 4th paragraph	Text indicates that 21 landslides are classified as debris flows but Figure F-6 does not indicate which of the mapped features are debris flows. Morphology of some mapped features in Figure F-6 is inconsistent with typical landslide morphology; erosional and depositional processes associated with ongoing stream channel evolution are not the same as a landslide.
294	APPENDIX F: EARTH	2.2.3.1	Pages 14-15, Figure F-6	Text states Weyerhaeuser geologists identified and mapped shallow, rapid and shallow landslides that could be potentially affected by mid or late-century major or catastrophic floods on Figure F-6. Figure F-6 does not indicate which 7 of the 12 shallow, rapid landslides and which 15 of the 35 shallow landslides could potentially be affected, therefore the veracity of the statement is unknown. Text also does not state that shallow, rapid and shallow landslides are naturally occurring and can be initiated by high intensity rainfall, not solely because of the inundation pool.
295	APPENDIX F: EARTH	2.2.3.1	Page 14, last paragraph	Paragraph is a generalized statement and does not provide how high-intensity rainfall and forest practices relate to the project area or how this informs the Project's probable impacts.
296	APPENDIX F: EARTH	2.2.3.2	Page 16	Overly generalized statement | This section should acknowledge that there is relatively little alluvium upstream of the South Fork, and less upstream of Pe Ell.
297	APPENDIX F: EARTH	2.2.3.4	Page 16, 3rd paragraph	RDEIS states "Gabbro is a high-to very-high-strength, dark gray to black, fine-to medium-grain rock that ranges from massive to blocky. It was only identified in one boring." Geologic Data Report Section 5.2.1 states that gabbro was encountered in borings AL-24-08, NNQ-24-01, and NNQ-24-02. Only one gabbro core sample was lab tested. Also, testing for the gabbro sample showed a compressive strength, Poisson's ratio, and Young's Modulus lower than the average values for basalt samples. The gabbro at the site is not high-to-very-high-strength material.
298	APPENDIX F: EARTH	2.2.3.6	Page 16, paragraph 6	RDEIS states "These sedimentary interbeds are more consolidated and stronger than the overlying McIntosh Formation rocks." This has not been documented in past references and the statement is not referenced to allow the reader to verify the statement. Provide the reference supporting this statement in the RDEIS.
299	APPENDIX F: EARTH	2.2.4.2	Page 17, end of paragraph 2	RDEIS states "Other fault zones and faults present in the vicinity of the Chehalis Basin, such as the Grays Harbor Fault Zone, Willapa Bay Fault Zone, Rainbow Falls Fault, and the Olympia Structure (Figure F-2)." The statement "in the vicinity of the Chehalis Basin" does not define what the vicinity is. The statement should clarify if these faults will impact the structure. Only faults that impact the structure should be listed based on a seismic evaluation looking at magnitude-distance. The closest fault zone to the proposed FRE

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				structure site is the Doty Fault zone, ~8 miles north. Figure F-2 shows faults/fault zones over 50 miles away from the site. Is that "in the vicinity"?
300	APPENDIX F: EARTH	2.4.1.2	Page 20, start of paragraph 2	RDEIS states "Sampling in the explorations included soil sampling with a split-spoon sampler and rock coring." The Geologic Data Report Section 3.2.2 states that Shelby tube, Dames & Moore, and Mod-Cal samples were also taken.
301	APPENDIX F: EARTH	2.4.1.2	Page 20, end of paragraph 2	RDEIS states "Vibrating wire piezometers (VWPs) were installed in selected borings to monitor groundwater levels." Geologic Data Report Section 3.6 states that inclinometers and standpipe piezometers were also installed in select borings. VWP's are used to collect groundwater data in rock and stand-pipe piezometers to collect data in soil.
302	APPENDIX F: EARTH	2.4.1.4	Page 20, last paragraph	RDEIS states "Index testing consisting of water contents, grain-size analysis, and Atterberg limits was performed on the overburden soils. Testing on rock cores included unconfined compressive strength, slake durability testing, direct shear tests, point load tests, specific gravity tests, and petrographic analysis." In the RPDR, Geologic Data Report Section 5.7.1 states that unit weight analyses were also performed on the overburden soils. Section 5.7.2 states that moisture/density and splitting tensile testing was also performed. S&W's 2019 Phase 3 Chehalis Dam Geotechnical Data Report Section 3 states that torsional ring shear tests and hydraulic conductivity tests using a flexible wall permeameter were also performed.
303	APPENDIX F: EARTH	2.4.1.5.1	Page 21, 1st paragraph	The seismic engineering analysis deems the FRFA conditions from the 2017 analyses (CBS 2017) sufficient for preliminary engineering assessment of the FRE structure. While we do not disagree with this statement, we recommend additional context be included in this section for consideration in the impact analysis. Specifically, unlike the straight-axis FRFA, the proposed FRE will be a curved-axis gravity structure which achieves stability through gravity load effects across the base of the section (cantilever) resistance like the FRFA with additional stability provided against sliding and overturning failure mechanisms through development of horizontal arch action (due to the curvature) which transfers a portion of the driving forces against the structure into the abutments.
304	APPENDIX F: EARTH	2.4.1.5.2	Page 23, end of first paragraph	RDEIS states "it may be necessary to improve the properties of the weathered rock beneath the concrete mat by other means, such as consolidation grouting or installation of a system of caissons." RPDR Appendix E (Geotech Design Report) of the RPDR: Section 6.4 Foundation Treatment Plan states "the preliminary foundation treatment plan includes a system of treatments, including a foundation cutoff wall, grout curtain, consolidation grouting, surface treatments such as slaking protection to achieve a good bond between the dam and foundation shaping block and foundation bedrock, and drainage treatments downstream of the seepage cutoff system."
305	APPENDIX F: EARTH	2.4.1.5.2	Page 23, bottom of second paragraph	RDEIS states "Consolidation grouting would be conducted to improve the deformability and seepage properties of bedrock within 10 to 30 feet of the dam foundation." RPDR Appendix E (Foundation Treatment TM) "Consolidation grouting will typically be completed to a depth of 10 to 30 feet depending on rock type, weathering, and observed properties during construction". The statement in the RDEIS suggests that all grouting will be completed

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				between depths of 10 and 30 feet, but the RPDR states it will typically be done there but it is not limited to those depths.
306	APPENDIX F: EARTH	2.4.1.5.2	Page 23, bottom of second paragraph	RDEIS states "Consolidation grouting would be conducted under low to moderate pressures while higher injection pressures would be used for grout curtain construction, which will occur at a greater depth." RPDR Appendix E (Foundation Treatment TM) Section 4.2, "the grout curtain elevations are measured from the top of bedrock. The extents and depths of the grout curtain should be refined as part of future design efforts." Consolidation grouting and the grout curtain will both be done in bedrock in different areas along the FRE foundation. Additionally, no comparison of grouting pressures is described in HDR's supporting documents. The grout curtain pressures would not be automatically higher than the consolidation grouting pressures.
307	APPENDIX F: EARTH	2.5	1st paragraph, 6th bullet point	The RDEIS is supposed to address *probable* significant adverse impacts. See Comment #140, above, for how the combined likelihood of a significant earthquake occurring during a period of temporary inundation pool storage is extremely remote that the associated failure mode on which the impact analysis is based would be considered non-credible for a high-hazard dam based on current industry guidelines.
308	APPENDIX F: EARTH	3.2.1.1	Page 28, second paragraph	The RDEIS states that certain construction activities “would modify the existing geological conditions and create sediment that could enter the Chehalis River.” The mechanisms whereby sediment “could” enter the river are not described, let alone how probable and why. Sediment impact could be significant, or it could not. Information is insufficient to be able to say one way or the other.
309	APPENDIX F: EARTH	3.2.2.1	Page 30, second to last paragraph	The RDEIS states that there is a “very low potential” for a deep-seated landslide occurring when the Project is in flood operations and, further, a “very low potential” that landslide movement would cause a landslide-induced wave to impact the FRE structure. This is incorrect. In fact, there is no potential for this action. The only deep-seated landslide with the potential for overtopping is LS-4, which is in direct line of site of the structure. LS-4 will be stabilized to prevent landslide potential. Other deep-seated landslides are not in direct line of site of the FRE structure. Mitigation is proposed through stabilization in Table F-5.
310	APPENDIX F: EARTH	3.2.2.1	Page 31, second paragraph	RDEIS states mitigation is proposed to develop of Surface Water Quality Mitigation Plan to mitigate impacts. Statement does not provide what the impacts are and why they would be significant. There is extensive literature documenting how landslides are beneficial for long-term supply of spawning gravels and large wood to the channel in typically gravel-starved rivers of the Coast Range. Mitigation is proposed through stabilization in Table F-5.
311	APPENDIX F: EARTH	3.2.2.1	Page 31, paragraph 4	Decommissioning roads is associated with reduced risk of sediment delivery through both surface erosion and landslide generation. The latter may offset or avoid potential for landslides – this is not identified or discussed or considered in the preceding paragraphs.
312	APPENDIX F: EARTH	3.2.2.1	Page 31, second to last paragraph	RDEIS states ‘ Impacts from instability, failure, or erosion of the stockpiled material and the slopes and ground on which the stockpiled material is place could be significant.’ Statement does not provide what the impacts are. Disposal locations have not been decided, nor has

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				it been defined that disposal will 'likely' be within the temporary inundation pool area. Best management practices will be used for disposal.
313	APPENDIX F: EARTH	3.2.2.1	Page 31, last paragraph	RDEIS states '…impacts due to quarry wall collapse and erosion of material used to restore the quarry would be significant.' Mitigation is proposed, as stated in the paragraph "The impacts would be mitigated by the proposed quarry site restoration following completion of quarry operations and FRE facility construction by addressing soil stability and water conditions and vegetating the site(s) (FCZD 2024),". Because mitigation is proposed the impact is not significant. Since the revised project description, the District has completed additional studies; however, the original proposed mitigation identified in the 2020 EIS for the quarries remains credible and should be considered.
314	APPENDIX F: EARTH	3.2.2.1	Page 30, third paragraph	RDEIS states 'Should landslides occur in response to FRE facility operations, these events could have a significant impact'. RPDR Appendix E (Geologic Data Report) provides summary of proposed landslide stability mitigation to stabilize landslides that were evaluated as risk of instability that could affect the FRE. The Appendix also provides reference to S&W's landslide evaluation that provided stability analysis of landslides that were evaluated to potentially impact the structure. RDEIS provides the mitigation proposed through stabilization in Table F-5. Additionally, the impact is not defined. Mitigation has been proposed and therefore this impact (undefined) is not significant.
315	APPENDIX F: EARTH	3.2.2.1	Page 30, last paragraph	Text states 'There is potential for a deep-seated landslide to occur at any time after FRE facility construction and for the landslide to temporarily block the river.' RPDR Appendix E (Geologic Data Report) provides summary of proposed landslide stability mitigation to stabilize landslides that were evaluated as risk of instability that could affect the FRE. The Appendix also provides reference to S&W's landslide evaluation that provided stability analysis of landslides that were evaluated to potentially impact the structure. RDEIS provides the mitigation proposed through stabilization in Table F-5. Text then states 'Impacts associated with subsequent breaching of the blockage and river erosion of landslide material would be significant.' Impacts are not defined (i.e., environmental? Damage to the structure?). If impact is relating to damage to the FRE, this is unlikely because mitigation strategies for deep-seated landslides and provided. Furthermore, for a breach to damage the FRE, it would require a direct line of site for the inundation wave to impact the FRE. If not in direct line of site, the inundation wave will propagate against meanders. Therefore, impacts need to be further defined, and the impact is likely not significant.
316	APPENDIX F: EARTH	3.2.2.1.1	In response to whole section	Substantial mitigation measures will be implemented for the FRE structure and flow through outlet to address the seismic and landslide failure modes described in the RDEIS. Constructed projects must meet permit requirements and standard of care for design. In the EIS, the design should be considered as meeting industry guidelines/standard of care that results in these failure modes having estimated annual exceedance probabilities significantly less than 1:10,000 years and perhaps one or two orders of magnitude lower. These risk reduction/mitigation measures do not seem to have been considered in the

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				RDEIS document and assessments of "Significance." The standards for design and construction of flood control structures like the FRE are well established in the U.S. and around the world. Modern risk-informed regulatory guidelines have established well accepted public protection guidelines. Modern structures designed to meet the federal public protection guidelines of FEMA, USACE, USBR, and various state agencies should therefore not have credible dam safety potential failure modes that fall below (risk of failure less than) public protection guidelines assigned significant adverse impacts. Non-credible potential failure modes should not be assessed under environmental reviews.
317	APPENDIX F: EARTH	3.2.5	First bullet	RDEIS states 'A breach of the FRE structure may occur at the same time water is impounded in the temporary reservoir….However, if a breach of the FRE structure did occur when the temporary reservoir was holding water, the results would be significant and unavoidable' The result of significant and unavoidable because of a breach does not take into consideration the likelihood of the event. The comment acknowledges the structure will be built to current dam design standards making this event avoidable.
318	APPENDIX F: EARTH	3.2.5	Second bullet	RDEIS states 'There is uncertainty about the ability to identify and accurately characterize the potential for identified deep-seated landslides to mobilize due to reservoir inundation and reservoir level fluctuations or due to other causes (extended precipitation).' The statement does not provide information on why uncertainty exists. Comprehensive landslide evaluations have been completed, as provided in the RDEIS Table F-5. The landslides have been comprehensively mapped and characterized. Landslide evaluations will continue to develop through the design phase. RDEIS states 'There is uncertainty about the potential monitoring programs to effectively identify landslides….' Statement does not provide information about why they are uncertain about monitoring programs. Monitoring programs will follow best practices for deep-seated landslides deemed of concern. This statement implies all deep-seated landslides are of concern and will impact the structure. This is not correct, RDEIS Table F-5 identified the deep-seated landslides and mitigation strategies. RDEIS states 'The potential for a landslide to move sufficiently to block the river may increase due to reservoir impoundment. Such an event would be significant and unavoidable.' Based on the above notes, mitigation and monitoring programs have been approved and will be further developed. Proposed mitigations makes this avoidable.
319	APPENDIX F: EARTH	3.2.5	Third bullet	Statement does not take into consideration the positive benefits of the re-introduction of gravels for spawning. Shallow landslides can be activated through natural high-intensity rainfall events, and it is not accurate to presume a shallow landslide would not have been activated in the rainfall event itself, with or without the inundation pool. RDEIS Table F-5 provides mitigation strategies provided under the current landslide study. Statement does not provide clarity of where the uncertainty comes from. Table F-5 provides

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				mitigation strategies. Currently there are no instances where mitigation is not technically feasible and mitigation strategies will continue to develop through design.
320	APPENDIX F: EARTH	5.2.1.1	Page 42, 3rd paragraph	Insufficient information provided | Soft sedimentary origin particles are easily broken apart, so need to know what fraction of the coarse riverbed substrates they comprise. Regarding "the instream gravel samples," it is unclear where and which ones, collected by who and when.
321	APPENDIX F: EARTH	5.2.1.2	Page 43, 2nd paragraph	Insufficient information provided | regarding which "geographic information system (GIS) database (using the LiDAR data)" and data specifically.
322	APPENDIX F: EARTH		Page 46, Table F-8: Reach 2B comments	Basis for statement insufficiently defined and likely incorrect | There is exposed bedrock and armored large cobble throughout this reach, which is generally not characteristic of aggraded state.
323	APPENDIX F: EARTH		Page 49, Figure F-9	Inaccurate presentation of data | This figure does not accurately depict upstream-downstream trends and differences in gravel and cobble distributions because: 1. the horizontal axis is not linear, where the bars represent discrete observation locations and do not represent equal distances between bars; 2. the caption title is incomplete: the data were reportedly collected on bar surfaces, not the riverbed; and 3. the presence of bedrock is neglected.
324	APPENDIX F: EARTH		Page 50, Figure F-10	Data missing | The figure legend does not reflect the caption title – both lines appear to be for the surface layer, not the sub-surface.
325	APPENDIX F: EARTH	5.2.1.2.2	Page 51, 3rd paragraph	Basis for statements insufficiently defined and likely incorrect | The statements in this paragraph are unsupported and lead to exaggerating the potential sediment supply to the system and associated impacts of FRE operation. At minimum the following need to be addressed: 1. The RDEIS states that an estimated 5.7 to 8.7 million tons of sediment from landslides were supplied to the Chehalis headwaters (upstream of the proposed FRE facility) during the 2007 flood, citing Watershed GeoDynamics [WGS] and Anchor QEA 2017. However, those numbers are not found in the cited document, and it is unclear where those numbers originated. 2. The RDEIS refers to 3.3-5 million tons of cobble and gravel material being delivered to the channel as a result of landslides. These numbers are inconsistent with WGS' formally published values for all sediments, see Table II in: Nelson and Dubé. (2016). 3. The numbers were not differentiated in the source study between upstream and downstream of the FRE location; the RDEIS appears to attribute all of it to upstream; 4. The RDEIS asserts without scientific support that there is still a "huge volume" of sediment stored in the stream valley and bed upstream of RM 104. In actuality, there is a significant quantity of bare bedrock in some of the reaches upstream of RM 104. The RDEIS's conclusions are suspect when it misapprehends the facts about the area it analyzes. Moreover, the RDEIS has a pattern of overestimating habitat potential in the upper Chehalis reaches leading to incorrect fish impact analysis, as well as

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				underestimating the transport capacity of the Chehalis River in 2-year flood events leading to incorrect observations about the proposed Project's downstream geomorphic, habitat, wetland, wildlife, and fish impacts. Incorrect descriptions like the one in this paragraph show that the picture that the RDEIS's is painting and its analysis are mistaken.
326	APPENDIX F: EARTH	5.2.1.2.2	Page 51, 4th paragraph	Incomplete analysis potentially leading to incorrect conclusion(s) | There is some error in extracting channel widths from older aerial photographs that are not georeferenced in space and are of variable resolution and picture quality. A rough estimate of digitizing error is that it was at least +/- 15 feet and possibly more (see Section 2.2.1.2 in Appendix J of the District's 2024 Revised Mitigation Plan). Many of the differences depicted in Figure F-11 therefore may reflect the digitizing error rather than a real physical change. This error is acknowledged briefly on page 55 (top paragraph), but the analysis then does not attempt to evaluate the effect of error on the results and corresponding conclusions drawn. This has bearing on inferring impacts to channel forming processes and off-channel habitats in Appendix E Fish. The FEIS should improve this analysis to avoid overstating fish impacts.
327	APPENDIX F: EARTH	5.2.1.2.2	Page 53, 1st paragraph	Basis for statement insufficiently defined | Quantitative evidence is not presented supporting the statement that "Following the 2007 flood, the channel has slowly been narrowing as vegetation grows on the gravel bars." This has been inferred in Appendix E Fish to be associated with attenuation of extreme flood flows leading to reduced habitat complexity. However, as discussed in Comment #329, #330, #335 and elsewhere in these comments, and as recognized in the RDEIS at pages 55 and 57, channel-forming flows are largely driven by lower-flow flood events (in the Chehalis, typically 2-year flows as in other gravel bed systems), and such flows are not regulated by the proposed Project.
328	APPENDIX F: EARTH	5.2.1.2.2	Page 53, 1st paragraph	Basis for statement insufficiently defined | Need details regarding how stored sediment volume and average bedload transport rates were calculated, how that resulted in concluding it would "likely take several decades," and whether that indicates the channel is presently (i.e., two decades later) near or at its pre-2007 condition, or that it will still take several more decades. This is important for context regarding impacts to available spawning habitat, and how much is actually available over the long term. It is part of a larger pattern in which the RDEIS seems to regard upper Chehalis habitat not as it is in current conditions, but as a more idealized version of habitat in which, for example, more spawning habitat and redds occur upstream of the proposed Project than below it (a fact demonstrated to be false by WDFW's redd mapping over several years, but nevertheless used in the RDEIS modeling).
329	APPENDIX F: EARTH	5.2.1.3	Page 57, last paragraph	Contradictory text | Elsewhere in the RDEIS, it asserts that the Project operations will adversely affect channel forming discharge. Those statements are refuted here, where the RDEIS correctly states: "Based on the analysis of migration rates between 1945 and 2013, it appears that channel migration takes place during even small peak floods in unconfined areas in response to flow against banks on the outside of meanders. This is consistent with research in other gravel bedded river systems that suggests flows of approximately 1.5-year to 5-year peak flow recurrence interval do the most "work" over the long term at controlling and maintaining channel form..."

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330	APPENDIX F: EARTH	5.2.1.3	Page 55, 3rd paragraph	Statement conflicts with other text and conclusions | "However, average channel migration rates during the other time periods did not correlate directly with the peak flow between photographic periods (Figure F-14), suggesting channel migration occurs even during small peak flows with a recurrence interval of 1 to 2 years." – These are characteristic channel forming flows in unconfined channels; thus the statement effectively contradicts subsequent claims of adverse impacts of FRE operations to channel forming discharge and off-channel habitat availability and accessibility.
331	APPENDIX F: EARTH	5.2.1.4	Page 58, 4th paragraph	Insufficient information provided | It is unclear if wood was cleared from the channel or primarily from the floodplain after the 2007 event, and where along the river clearing was performed. This is important for context regarding what constitutes a change from baseline conditions that can be attributed to the Project. Several impacts are attributed to the Project related to reducing large wood (often because the RDEIS discounts the proposed plan to use large woody material collected in flood events for habitat purposes). These impacts findings do note that the upper Chehalis is already wood-poor, and that the proposed mitigation offers a mechanism to retain large wood from catastrophic flooding in the river system rather than letting it be removed, as was done in 2007.
332	APPENDIX F: EARTH	5.2.1.4	Page 59, 1st paragraph	Statement conflicts with conclusions | "Additionally, large storms (such as the December 2007 storm) provide a key supply of LWM to the Chehalis. In the upper watershed, large wood is delivered by landslides and debris torrents. Landslides and debris torrents are critical mechanisms for nourishing the mainstem Chehalis and floodplain with the scale and volume of large wood necessary for meaningful aquatic habitat complexity." Along with resupplying the channel with gravel for spawning and channel forming processes, landslides are described here as a benefit in the context of the Chehalis River salmon population. Yet landslides associated with the FRE operation are concluded in the RDEIS to be a significant (implied adverse) effect. The FEIS needs to resolve this contradiction: if landslides are an important source of spawning gravel and LWM to the upper system, and occur naturally, they should not be considered significant adverse effects of the proposed Project.
333	APPENDIX F: EARTH	5.2.1.5	Page 60, 1st paragraph	Insufficient information/reasoning provided and not considering best available information to support conclusion of effect | It is unclear if the statement: "there is minimal published research on the effects of losing high peak flows in dammed systems" refers to flood retention (or, 'dry') dams specifically. There is a substantially greater amount of research literature on downstream effects of blocking dams vs. dry dams, which likely reflects a lower (and plausibly negligible) impact generally of dry dams historically. Note that dry dams are found in the United States and elsewhere; it is only the scale of the proposed Project that makes it unusual. In any case, there is an extensive history of publications in the geophysical and hydraulic engineering literature on the effects of dams and anthropogenic peak flow reductions on hydrology and channel form downstream in general and specifically for dry dams, and on flows needed to emulate the effects of channel forming flows. For example, see Sumi 2008: Graf 2006; Magilligan and Nislow 2005; Inbar 1990. The fact that the RDEIS is not aware of this body of literature might explain its erroneous conclusion, contrary to its own observations and Ecology's guidance on ordinary

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				high water marks, which reducing major and catastrophic peak flows will interrupt channel-forming processes. The FEIS should abandon this unsupported conclusion and make the necessary changes to its impacts analysis in this and all other discipline reports.
334	APPENDIX F: EARTH	5.2.1.5	Page 61, 2nd paragraph	Basis for statement insufficiently defined and conflicts with other text | The statement that "Major avulsions that occur with large-magnitude floods have a key role in maintaining the long-term dynamic between creation and loss of off-channel habitats" ignores that major avulsions that maintain off-channel habitats also happen during smaller floods and contradicts statements elsewhere that smaller floods can be associated with channel migration. It is unclear what that role is, how it works, and what "maintaining the long-term dynamic between" means.
335	APPENDIX F: EARTH	5.2.1.5	Page 61, 3rd paragraph	Incorrect basis for conclusions of impact | The premise in the EIS behind what comprises a channel forming flood is flawed and thus all conclusions based on postulated changes in channel forming floods and corresponding impacts are unsupported; key counter arguments include: 1. Ecology defines channel-forming flood/bankfull discharge as that flow occurring "…at the maximum product of flow frequency and sediment transport." See Ecology, Determining the Ordinary High Water Mark for Shoreline Management Act Compliance in Washington State, No. 16-06-029, at 33 (Oct. 2016), available athttps://apps.ecology.wa.gov/publications/documents/1606029.pdf. The definition in the RDEIS is inconsistent with Ecology's definition. 2. Ward et al. (2002) is used incorrectly as a supporting primary citation and is not an appropriate reference nor basis for defining what is a "channel forming discharge" because no analyses, neither empirical or theoretical, were performed evaluating the nature of channel forming discharge, and they did not identify 10- to 25-year floods as an important channel forming framework. The paper is a broad conceptual framework discussion piece only. Neither are the other citations in this section as they are also essentially conceptual framework discussions. 3. While the greater stream power of individual events within the 10- to 25-year and longer recurrence interval flood range might affect bedrock channel morphology more effectively than individual, more frequent peak flow event magnitudes, because of the controlling influence of rock strength on erosion rate, the corresponding time scale for resulting changes in channel form is much longer than for an alluvial or bedrock-alluvial river channel and the FRE facility lifespan; see the following examples: Wohl. and Merritt (2001), Wohl and David (2008). Instead, research indicates that frequent flows are more impactful on channel form in bedrock-alluvial channels over timeframes relevant to assessing impacts of FRE facility operations. For more thorough accounts, see examples: Blom et al. (2017); Wohl and Wilcox (2005); Wohl and David (2008). Therein they show through data that the infrequent events are less important for channel forming purposes than the frequent event, consistent with Wolman and Miller (1960) and Ecology's definition. 4. Kleinschmidt (2024) determined via sediment transport modeling that the 2-year flood cumulatively transported orders of magnitude more sediment than the 10-year or 100-year floods, but this was not acknowledged in the RDEIS.

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				5. Wohl et al. (2015) is also used incorrectly as a supporting citation – the premise of that conceptual framework paper is that it is important to maintain sediment continuity downstream. The bedload transport modeling performed by Kleinschmidt (2024) indicates that such continuity will be maintained with the Proposed Project.
336	APPENDIX F: EARTH	5.4.1.1	Page 62, 1st paragraph of section	Not considering best available information | The statement that "This calculation does not include any root strength factor from shrubs or trees on the hillslope, which would contribute to increased slope stability as vegetation grows but would not contribute when vegetation dies off after inundation events" ignores the time lapse between inundation/drawdown and loss of root strength. As an analog, root strength is maintained for several years after clearcutting before a landslide occurs. Also, vegetation has not appeared to die off at Mud Mountain Dam as evidenced by historic aerial photographs on Google Earth.
337	APPENDIX F: EARTH	5.4.1.2.1	Page 63	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | The section pertains to the fate of suspended washload (fine silt and clay particles) entering the temporary inundation area, depositing, and being resuspended. The basis/supporting arguments behind each assumption in this section are missing, however, and some assumptions may be wrong that affect the results. For example, in the cited reference for the model (Anchor 2019), the suspended sediment settling velocity was assumed to be 0.1 m/day based on a 2014 geomorphology report. Representative settling rates for quartz clay and fine silt in still water are on the order of 0.1 m/day and 10-20 m/day, respectively. The starting fraction/concentration of silt and clay in the water column, and corresponding volume of sediment deposited, are not specified, and it is possible very different quantities of each fraction are resuspended by wave action and returned to the river. Any conclusions based on the analysis of effects are thus equivocal. Moreover, because this model is from 2019, it by definition could not consider any differences occasioned by the 2024 Revised Project Description and proposed mitigation plan. For example, the project moved upstream somewhat and its design was refined, affecting the size and shape of the temporary inundation area and perhaps its drainage of the temporary pool. Plus, it included a Vegetation Management Plan that would manage vegetation within the temporary inundation area. These things may affect the modeling of settling and resuspension of particles, but they were not considered because the model was not updated. Regrettably, the old model (including the assumptions and uncertainties described at the outset of this comment) was replicated without correcting those issues.
338	APPENDIX F: EARTH	5.4.1.2.1	Page 63	Basis for statement insufficiently defined and conflicts with other text | Explanation is missing regarding how wave action in regular reservoirs, where there is no vegetation below the full pool level to begin with, would be relevant to the FRE where there is still vegetation cover after the water level drops. The third paragraph recognizes this, yet it is discounted in the preceding paragraphs. Any conclusions based on the analysis of effects are thus equivocal.

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339	APPENDIX F: EARTH	5.4.1.2.2	Page 64, 1st and 2nd paragraphs	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | The WEPP modeling assumed sand-sized particles are deposited within 200 feet of the river, but support for this assumption is not provided, and closer examination indicates that it is not a reasonable assumption. The settling velocity of sand in quiet water ranges around 100-2,000 m/day depending on size. In addition, the channel is confined and entrenched, where the width of channel conveying suspended sand is much narrower than 200 feet on either side of the channel. As a consequence, most if not all suspended sand arriving at the head of the temporary inundation area can be expected to deposit in the vicinity of the channel bottom, not the side slopes, and remain mostly within the channel. The effects are thus likely incorrect and overstated.
340	APPENDIX F: EARTH	5.4.1.2.2	Page 64, 3rd paragraph	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | 1. Irrespective of whether the 200 feet deposition zone assumption is reasonable, there are issues with the WEPP hillslope model component used that preclude using it to quantitatively estimate erosion associated with a temporary impoundment with any confidence or expectation of realism. It is a 'black box' web-based interface with predefined overly broad parameters that estimates rill and inter-rill erosion for an assumed disturbed soil condition. Whether (and extent to which) the parameters embedded in the interface are applicable to the temporary inundation zone was not evaluated in the SEPA EIS. To the extent that can be inferred from NRCS and USFS websites, the soil erodibility data used to calibrate WEPP parameters were primarily from agricultural crop lands rather than forested hillslopes, and the data used to calibrate forested runs had prediction errors in suspended sediment concentrations in the receiving stream that were larger or smaller than measured by up to about a factor of 10 (e.g., https://www.fs.usda.gov/rm/pubs_other/rmrs_2006_conroy_w001.pdf). 2. There is no information on how the vegetation management plan was interpreted and parametrized in using the USFS web-based WEPP interface, particularly with respect to what the distinction was between flood-tolerant vs. non-flood tolerant in terms of erosion mechanisms, and how the difference affects calculated erosion rate. Any conclusions based on the analysis of effects are thus equivocal.
341	APPENDIX F: EARTH	5.4.2.1.2	Page 68, 2nd paragraph	Updated operations | Appendix N (Water) used flood operations developed by Anchor QEA in 2017 in its operations analysis. The Applicant has refined the operations since that time. Please see the Debris Management and Reservoir Operations Technical Memoranda, each attached along with these comments. The revised operations proposes a shorter-duration debris management period at a lower elevation; the inundation pool also tends to fill to a lesser extent and draws down faster. These changes would affect modeling predictions representing primarily fine sediment impacts, which may lead to different conclusions in the Earth and Fisheries discipline reports. The FEIS should consider the new information.
342	APPENDIX F: EARTH	5.4.5	Page 71	Insufficient information/reasoning provided to support conclusion of effect | 1. The statement, "…streamflows necessary for most channel-forming processes are reduced…" is unclear regarding what the specific "channel-forming processes" are, what the mechanisms are whereby they are influenced by flow, how they are influenced, and at

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
				what flows. It is furthermore unclear what level/amount of change is considered adverse, and why, and what is meant by “necessary." 2. Similar information is missing for the statement, “This reduction in peak flows, and corresponding reduction in large wood and sediment transport, would directly impact creation of habitats that depend on those channel-forming processes.” In actuality, the proposed Project does not regulate the channel forming flows, which are more frequent than major and catastrophic flood flows. Moreover, the RDEIS’s analysis ignores that flood conditions vary. In the period of record, some occasions when the Grand Mound gage flows have not exceeded 38,800 cfs have nevertheless had very high flows at the Doty gage. (November 2012 saw 22,300 cfs at Doty and only 27,000 cfs at Grand Mound, per USGS data) So, sometimes very high flows will occur above the Newaukum River confluence, even with the proposed Project. There is no basis to conclude that channel forming processes will be halted.
343	APPENDIX F: EARTH	5.4.5	Page 71, 4th paragraph	The RDEIS wrongly concludes that “During FRE flood operations, streamflows necessary for most channel-forming processes are reduced. This reduction in peak flows, and corresponding reduction in large wood and sediment transport, would directly impact creation of habitats that depend on those channel-forming processes.” First, as discussed elsewhere in these comments, and as concluded by RDEIS Appendix F itself at pages 55 and 57, channel-forming processes occur at smaller flows—typically the 2-year flows in the Chehalis as in other similar systems—than the Project would regulate. Second, the RDEIS consistently underestimates the system’s sediment transport capacity, ignoring again that lower, more-frequent flows than major flood flows can mobilize sediment and do most of the “work” (using the RDEIS’s words!) to create such habitat, such as by causing avulsions. There are ecological parallels to the 2-year flood’s geomorphic significance, as well. Wetland habitat, for example, under National Research Council guidelines is typically defined with reference to 2-year hydrology, so a wetland dependent on riparian flooding would have to be inundated by 2-year flood flows. Thus, lower, more frequent flood flows both form the channel and contribute to important habitat formation processes. Third, the upper Chehalis is a wood-poor system, and the wood entering the system during major and catastrophic floods has historically been cleaned up or removed, as it was following the 2007 flood. The proposed Project includes mitigation plans to use large wood collected in such storms for habitat mitigation or restoration, thereby preserving its presence in the river. During normal, non-flood operations, the Project proposes to pick up large wood that collects upstream of the facility and place it downstream. As a result, the conclusion above fundamentally misunderstands the Chehalis River system it analyzes and ignores aspects of the project Proposal. The FEIS should abandon the flawed reasoning above and remove the repeated references in this and other discipline reports, the main RDEIS document, and the Summary to disruptions to channel-forming

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				flows or the wetlands, wildlife, and fish impacts such disruption will create. These are not probable impacts of the Project.
344	APPENDIX F: EARTH	6.2.1.1	Page 72, second paragraph	The RDEIS states "Soil would be disturbed to construct the FRE facility, and up to 13.8 miles of unpaved access road would be widened for quarry and construction access." The District has refined quarry demand and anticipates using the same number of quarries with fewer roads. The Main document section 2.3.3.1, pg. 16 and Appendix 1 section 3.2.6 pg. 37 of this RDEIS correctly state that no more than 2 quarries with no more than 80 acres of total disturbance for the quarries are included in the Proposed Action. The above-quoted language should therefore be revised to state: “pending quarry selection, up to 6.2 miles of unpaved access road would be widened for quarry and construction access.”
345	APPENDIX F: EARTH	6.2.1.1	Page 73, 6th paragraph	Insufficient consideration of mitigation actions | Impacts would be localized at the site and mitigated offsite.
346	APPENDIX F: EARTH	6.2.1.1	Page 73, 5th paragraph	Insufficient consideration of mitigation actions | Mitigation of channel impacts within FRE construction footprint will occur offsite. It is physically impossible to mitigate channel changes by actions directly within the construction footprint.
347	APPENDIX F: EARTH	6.2.2.1.1	Page 74, 1st paragraph	Incorrect terminology | Use of the term “period of record flows” is not correct. In the 2020 draft EIS, a 30-year flow time series was synthesized for scenarios, which corresponds to a portion of the period of record.
348	APPENDIX F: EARTH	6.2.2.1.1	Page 74, 1st paragraph	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | regarding last sentence: The inflow doesn’t continuously exceed outlet capacity once the conduit become pressurized – the condition is temporary until sufficient head occurs to maintain a pressurized outflow equal to the inflow as the hydrograph is rising; on the falling limb of the hydrograph, the outflow temporarily exceeds the inflow until the open channel flow capacity is reached through the conduits. Modeling indicates the duration of the effect is on the order of hours, not days.
349	APPENDIX F: EARTH	6.2.2.1.1	Page 76, paragraph 2	It states the reservoir drainage rate will be 2 ft/day for 2 weeks, but this has been further developed since the RPDR. The draft Debris Management During Flood Retention Report (Attachment 1 to Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum) reports it will take up to 5 days for the 100-year flow to remove LWM based on Mud Mountain Dam operation rates. The drainage rate is not specified and can be increased from 2 ft/day depending on what elevations are available for navigation by log broncs and work boats and how much LWM is left to store.
350	APPENDIX F: EARTH	6.2.2.1.1	Page 76, 4th paragraph	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | 1. The premise that “Cobble, gravel, and coarse sand would be deposited in deltas…” is likely incorrect – the Chehalis River in the temporary impoundment reach is generally entrenched such that a delta, which represents an expanding depositional surface, cannot typically form; instead, coarse sediments would be expected to remain deposited in the channel as a depositional layer.

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				2. Fine sand has a fall velocity around 1.5 cm/s, which equates to settling out in 3-4 minutes in 10 feet of still water. Most fine sand should be expected to settle out within and near the channel. Most sediments depositing away from the channel would be expected to be clay and silt. 3. The likelihood of a turbidity current forming is not identified, where the denser, sediment laden water flowing into the temporary inundation area continues along the channel bottom (e.g., Cesare et al. 2001). This would tend to reduce the volume of sediment depositing away from the channel. It could also induce a hydraulic gradient across redds that maintains transport of oxygen to and metabolic waste products from developing salmonid embryos during the temporary impoundment and could be associated with reduced turbidity levels later during drawdown compared with the fully mixed water body assumption.
351	APPENDIX F: EARTH	6.2.2.1.1	Page 76, 6th paragraph	Analyzing effects based on outdated operations | The estimate of 32+ days for the temporary inundation pool to completely empty reflects the 2017 operation plan that assumed 2 weeks for debris removal. The basis for the 2 weeks for debris removal was operations at Mud Mountain Dam and an assumed shore collection point location for off-loading and storing wood collected by boat. This does not reflect planned operations for the FRE, in which a lower elevation collection point closer to the FRE is likely, and a shorter expected duration of wood debris collection ranging up to 5 days (Wood Management TM). Under the plan being developed by the District, the maximum time to drain has been observed via modeling of the 9 historic floods that would trigger operation would be less than 21 days. The Applicant requests that the description of the debris management during flood retention operation be updated and the impact analysis be revised in the FEIS per the recent refinements documented in Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum to these comments.
352	APPENDIX F: EARTH	6.2.2.1.1	Page 76, 6th paragraph	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | See Comment #337, 1st and 2nd paragraphs regarding assumption that “Coarser sand-sized particles would likely remain on the hillslopes” – those sizes are unlikely to deposit on the hillslopes in the first place. The purported effect is overstated and based on an incorrect assumption.
353	APPENDIX F: EARTH	6.2.2.1.1	Page 76-77, 7th paragraph, and exposition on Page 78	Unsupported analysis of effect and assumptions likely incorrect | The basis given behind assuming landslide potential is associated with drawdown after temporary inundation is lacking and may not be supported by equating to Mud Mountain Dam (MMD) or by literature. The terrain inundated by MMD (alluvial deposit and Osceola Mudflow geologic units) is very different from and more erodible than the hillsides that would be temporarily inundated during FRE operation (Tertiary extrusive volcanic rocks with sedimentary rock interbeds). Conversely within the literature, while the potential for unvegetated bank sloughing during deep drawdowns has been identified as a potential effect in the USACE's draft 2025 SEIS for Willamette Project reservoirs, shallow-rapid landslides above the waterline were not identified as a concern. More specifically, during rapid (e.g., 6 days) winter drawdowns in Fall Creek reservoir, erosion of unvegetated, deposited sediments appears to be the primary source of fine sediments downstream; initiation of landslides was

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				not identified as a concern (cf. Keith et al. 2024). The RDEIS provides no other evidence of shallow-rapid landslides occurring along the margins in reservoirs in the Washington and Oregon Coast Range that are drained rapidly (e.g., for juvenile salmon outmigration or sediment maintenance). Instead, it appears that the presumed physical processes of landslide initiation with water level drawdown are being conflated with riverbank collapse with falling river stage and with delayed slope instability after clearcut harvests, both of which are different in nature. The RDEIS's assumption that there is an increased landslide potential associated with temporary inundation drawdown is unsupported and leads to inaccurate and potentially misleading conclusions regarding potential Project impacts that are not consistent with the science.
354	APPENDIX F: EARTH	6.2.2.1.1	Page 77, 10th paragraph	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | The RDEIS does not provide a basis for assuming there would be temporary loss of root strength after temporary inundation. Root structure would likely still be present for an extended period before it decomposed sufficiently for loss of integrity. Historic aerial photography of the Mud Mountain Dam temporary impoundment area indicates vegetation on hillside, terrace, and riparian surfaces has persisted despite periodic temporary inundation. This analysis should be revised to reflect that root structure is expected to persist for extended periods.
355	APPENDIX F: EARTH	6.2.2.1.1	Page 79 wave erosion, 2nd paragraph	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | It is unclear if the 8,470- and 143,000-ton figures for the total amount of clay and fine silt are an estimate of what might have been deposited, and if so, how they were estimated. Relevant information includes the estimated inflow of suspended sediment over the period of inundation in tons per day, the estimated duration of inundation, what fraction of the inflow is composed of clay and fine silt by weight, what fraction is suspended over hillside and terrace areas, and of that, what fraction remains in suspension. Furthermore, it is unclear how the resuspended material is assumed to be transported downstream over time, whether it would occur all at once, progressively, or other pattern. Inferences of effect are therefore equivocal.
356	APPENDIX F: EARTH	6.2.2.1.1	Page 79-80 Surface erosion	Unsupported analysis of effect and assumptions likely incorrect | See Comment #339 and #340 on Section 5.4.1.2.2. The assumptions in the analysis are not supported and likely incorrect.
357	APPENDIX F: EARTH	6.2.2.1.1	Page 80-86 sediment transport	Insufficient information provided supporting validity and utility of model | It is unclear the extent to which the 2020 SEPA DEIS HEC-RAS model was modified for the 2025 DEIS analyses, and why/how they differed from each of the modifications that were implemented in the District's analyses (cf. Kleinschmidt 2024, which showed how the RDEIS modeling could end up with very different results depending on how the model is configured).
358	APPENDIX F: EARTH		Page 83 Figure F-18	Not considering best available information, inconsistency with other text, unfounded conclusions | This figure and conclusions based on it contradict/ignore fine and coarse sediment transport modeling and spawning gravel mapping performed by District indicating that the upper Chehalis River is generally transporting sediments that accumulated during the catastrophic 2007 input event downstream, where transport capacity exceeds supply.

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
				Accordingly, the long-term cumulative storage increases predicted in the RDEIS within the ~6-mile reach upstream of the proposed FRE location over time is highly unlikely for existing conditions and therefore wrong. Similarly, the predicted long-term decrease in cumulative sediment storage downstream is also highly unlikely and therefore wrong. These predictions are furthermore inconsistent with (i) the comment in Table F-8 that the river is "currently still reworking 2007 sediment input;", (ii) the first paragraph on page 53 that concludes with "…it will likely take several decades for the channel to return to pre-2007 coarser substrate and channel conditions;" and (iii) the note in Section 5.4.2.1.4 regarding the model predicting unrealistic deposition. Given the model predictions are unrealistic, conclusions regarding significance of an impact and whether it is adverse that are based on the predictions are unfounded.
359	APPENDIX F: EARTH		Page 84 Figure F-19	Incomplete analysis of effect and potential for misinterpretation leading to incorrect conclusion(s) | This figure indicates that the modeling is predicting storage primarily of fines and sand outside of the channel, but this point seems to have been missed in the RDEIS. In particular, the modeling is predicting that the river is capable of transporting gravel and cobble downstream with negligible storage predicted, but the reverse is predicted for fines and sand. That is illogical. Because of this inconsistency, the modeling predictions should not be relied on for inferring direct impacts of fines to fish in the channel. Furthermore, the process of floodplain storage of fines is generally considered beneficial for floodplain maintenance/evolution and to provide a future vegetation growth medium.
360	APPENDIX F: EARTH		Page 85 Figure F-20	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | 1. The text on p. 82 accompanying this figure is inconclusive. 2. Analysis is missing regarding how predictions of grain size compare to field data along the length of the river, which is important for interpreting the results and demonstrating model accuracy. Given the issue identified regarding inaccurate predictions of deposition, the predictions of grain size are also likely to be inaccurate and not representative.
361	APPENDIX F: EARTH	6.2.2.1.3	Page 86, 2nd paragraph	Conclusion inconsistent with analysis | With regard to fine sediment deposition, the RDEIS concludes that "These impacts could be detrimental to fish and aquatic habitat by increasing fine sediment deposition in the riverbed (substrate)." However, the model predicts that fine sediment deposition will be primarily outside of the channel. This is consistent with a finding that there will be negligible impacts to aquatic habitat in the riverbed, not that the impacts "could be detrimental." This finding should be revised to be consistent with the modeling results.
362	APPENDIX F: EARTH	6.2.2.1.4	Page 86-87, Figure F-21	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | Given that reach grade in the mainstem above the FRE is controlled by exposed bedrock, it is unlikely that the Project could result in an incision in the first place. The modeling results, which appear to be incorrect, are likely the outcome of assumptions regarding scour depth limiting parameter value in HEC-RAS model, not a physically representative simulation.
363	APPENDIX F: EARTH	6.2.2.1.5	Page 88, 2nd paragraph	Insufficient information provided | It is not described in the RDEIS whether the wood that entered the channel during the 2007 flood was removed mechanically or by high flows, and whether the wood was removed from the channel or the floodplain. This is critical for

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
				characterizing typical baseline conditions against which effects and mitigation should be compared, and whether there is a lot of wood typically in the channel or not. Generally, there is not, but this paragraph implies the 2007 event is the reference condition.
364	APPENDIX F: EARTH	6.2.2.1.5	Page 88, 3rd paragraph	Insufficient information/reasoning provided to support conclusion of effect | The statement "…few trees can be expected to survive inundation…," is non-specific about how long different species could survive and ignores the mitigation plan where flood tolerant species would be planted.
365	APPENDIX F: EARTH	6.2.2.1.6	Page 89, 2nd paragraph	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | 1. A 2-year flood can be associated with greater channel migration than a 10-year or larger flood event. During FRE operation, what would be a shorter duration extreme event could be transformed to a longer duration intermediate event with greater net channel migration. This beneficial environmental effect of the Project should be evaluated in the RDEIS. 2. Bank stabilization by riparian vegetation is generally considered to be a beneficial effect.
366	APPENDIX F: EARTH	6.2.2.1.6	Page 89, 3rd paragraph	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | Channel avulsions can and do occur at the 2-year flood, at which flow the wood collected in the temporary impoundment and placed downstream during Project flood operations would still be available to form jams, similar to existing conditions.
367	APPENDIX F: EARTH	6.2.2.1.6	Page 89, 5th paragraph	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | The RDEIS states that sediment deposition "in the form of deltas" would occur within the temporary inundation area (between RM 115 and RM 108) during flood operations. However, deltas typically do not form inside an entrenched channel. See Comment #350 on Section 6.2.2.1.1.
368	APPENDIX F: EARTH	6.2.2.1.7	Page 90-91, 5th paragraph	Incorrect basis for conclusions of impact | Following the Comment #329, #330, and #335 on Section 5.2.1.5, the premise and conclusions that FRE operation would adversely affect channel forming flows are flawed.
369	APPENDIX F: EARTH	6.2.4	Page 92, 2nd paragraph	Not considering best available information | The basis of design described in Appendix J in the District's Revised Mitigation Plan addressed and confirmed the technical feasibility of the proposed mitigation actions, in terms of both function and persistence. Cost estimates indicate that the cost of mitigation is less than that spent in the ASRP, so the measures should be economically feasible. The projects were sited at locations where the willingness of landowners is likely high based on initial interactions and circumstances.
370	APPENDIX F: EARTH	6.2.5	Page 93	Not relying on best available information, relying on flawed analyses, insufficient information/reasoning provided | The bullets are vague, overly generalized, and not substantiated both technically and with respect to how the conclusions were arrived at following the incorrect assertion that the proposed mitigation may not be technically feasible and economically practical. The RDEIS needs to explain its reasoning for why not, what the specific corresponding effects are, and how that leads to making these conclusions.

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
APPENDIX G: LAND USE				
371	APPENDIX G: LAND USE	2.4.2.1	Page 27, First Section	Appendix G cites the updated structure inventory described in Anchor QEA 2025 'Memorandum to: Nate Kale, Office of Chehalis Basin; Ken Chalambor and Jenn Tice, Ross Strategic. Regarding: Structure Database and Finished Flood Elevations – Updated October 2025.' It states that the database includes 14,784 structures within the land use study area. The Anchor QEA 2025 Memorandum identifies 18,882 structures. This raises concern about consistency and appropriate identification and tracking of structures that are impacted by flooding and subsequently removed from the floodplain through FRE operations under current and future climate conditions. This potentially incomplete structure database is then carried into the analyses described in Section 3.2.2.1.3.
372	APPENDIX G: LAND USE	3.2.1.1.1	Page 30, first full paragraph	The RDEIS is mistaken in concluding that the proposed Project is inconsistent with the Lewis County land use policies. It appears to be relying on outdated code that was updated when Lewis County finished its Growth Management Act periodic update in 2025. The project site is designated as Forest land in the Lewis County Comprehensive Plan and is zoned as forest resource land. *See* Lewis County Comprehensive Plan at 28, *available at* https://lewiscountywa.gov/media/documents/Volume1_CompPlan_ysRfkKW.pdf; LCC 17.30.430. Such land allows "rural government services" with an administrative approval, LCC 17.42.020, which means "those governmental services historically and typically delivered at an intensity usually found in rural areas" of Lewis County, LCC 17.10.180. Lewis County's rural area already has two large traditional dams operated by a government entity for many decades (the Mayfield and Mossyrock Dams, operated by Tacoma Power). Therefore, this Project is a use permissible within the zoning. The FEIS should withdraw this significant adverse impact finding.
373	APPENDIX G: LAND USE	3.2.1.1.1	Page 30, second to last paragraph	The RDEIS is mistaken in asserting that the proposed Project would conflict with Lewis County Shoreline Master Program (SMP) policies. The SMP includes flood hazard prevention as one of its goals. Lewis County SMP 2.09. An entire section of the SMP is dedicated to flood hazard management policies and regulations. SMP 4.05. New structural flood hazard management measures are permittable as shoreline modifications. SMP 4.05.02.G. In-water shoreline modification structures are permittable as conditional uses in Rural Conservancy shoreline areas, which is the Project site's designation, SMP 6.01.01 Table 6-1, and there is a specific set of regulations for structural hazard flood reduction measures. SMP 6.08. In short, the Lewis County SMP has many provisions that allow and regulate facilities like the proposed Project, which the project will simply follow in the permitting process. The RDEIS's reliance on other reports to conclude that such a permit would be impossible to is misplaced: those other reports decline to credit the project's mitigation plans, leaving such details to permitting. Here, the RDEIS has identified the permits necessary and the constraints they would place upon the project to mitigate its impacts. The permit requirements are not uncertain; the FEIS should analyze them as it does for BMP and other permit requirements, conclude that they would mitigate the project or else it cannot be built, and withdraw this significant impact finding.

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
374	APPENDIX G: LAND USE	3.2.2.1.3.1	Table G-10a and Table G-10b	It is not possible to verify the values with the data the state supplied. The District attempted to recreate the RDEIS's analysis and could not do so; it found a significantly higher structure count using the methods described in the document.
375	APPENDIX G: LAND USE	3.2.2.2.3	Page 53	The discussion on the possibility that the "full extent of the buildable area downstream of the FRE facility could be utilized…" if removed from the threat of a catastrophic flood and a finding of significant impact is extremely misleading. Changes to FEMA's SFHA area are developed in coordination and partnership with the local community. Local communities get a say in how development occurs in their floodplains. Development would not likely occur in a vacuum based on a FEMA map and no other awareness of risks and threats in a watershed. Development is allowed in both the 100-year and 500-year floodplains, so long as the regulatory floodway is maintained. Local communities that participate in the National Flood Insurance Program are required to adopt and maintain floodplain ordinances in alignment with federal standards for that development as a minimum (many communities across Washington and the United States adopt much more stringent ordinances for floodplain development, as is their right). The SFHA is also defined by the 100-year flood event, which is not being used in this study (favoring instead the "major" and "catastrophic" floods). It is noted that the return interval of both of those flows goes down (less than the 100-year event) in future climate, meaning those flows do not and cannot represent what the SFHA will look like in the future. In short, it is a logical stretch to assume that a reduction in floodplain footprint would lead to additional development that would then be at risk.
APPENDIX I: PUBLIC SERVICES & UTILITIES				
376	APPENDIX I: PUBLIC SERVICES & UTILITIES	2.2.2.2	Page 9, 4th paragraph	(The Chronicle 2018) is referenced in body of appendix but not listed in references section of appendix.
377	APPENDIX I: PUBLIC SERVICES & UTILITIES	2.2.2.2	Page 10, 2nd paragraph	(Greater Grays Harbor Inc. 2019) is referenced in body of appendix but not listed in references section of appendix.
378	APPENDIX I: PUBLIC SERVICES & UTILITIES	3.2.1.1.1	Page 15, 3rd paragraph	As accurately stated in Appendix 1 Section 3.2.3, maintaining "uninterrupted water supply to the town of Pe Ell during construction of the FRE facility" is part of the project. No evidence has been presented in this EIS or in the information provided by the Applicant that indicates maintaining an uninterrupted water supply to the town of Pe Ell is infeasible. Further, no description or technical discussion is provided in the EIS explaining what "reinforcing the water line in-place" is or entails. Additionally, there are multiple ways in which uninterrupted water supply can be provided to the town of Pe Ell besides "reinforcing the water line in-place." Also, it is inaccurate to describe means of maintaining uninterrupted water supply to Pe Ell, such as "reinforcing the water line," as mitigation as the information provided by the applicant and this EIS (App. 1 Sec. 3.2.3) identify providing

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				uninterrupted water supply to Pe Ell as part of the project. For these reasons, the EIS inaccurately identifies the construction of the FRE as having a significant adverse impact on the town of Pe Ell's water supply. The adverse impact to the town of Pe Ell's water supply should be identified as less than significant.
379	APPENDIX I: PUBLIC SERVICES & UTILITIES	3.2.1.1.2	Page 15, 3rd paragraph	Seems inconsistent. Above it says the Pe Ell waterline may require an "extensive" relocation which would have a significant adverse impact, but here utility relocations are considered less than significant. In both cases, it seems too early to tell what relocations would look like. "Extensive" is not well defined.
380	APPENDIX I: PUBLIC SERVICES & UTILITIES	3.2.2.1.1	Page 17, last paragraph	Please see the comments to the Environmental Justice Discipline Report noting that listing a catastrophic earthquake failure of the facility is so improbable that it is not a credible risk under industry standards. Moreover, it is anomalous to list this extremely improbable risk without also noting that reducing major and catastrophic flooding improves public services and utility availability during large flood events. It prevents power outages, allows service provides better transportation access to those who need services, reduces emergency response call volumes, and prevents contamination of public water supplies (and contamination from public sewer treatment facilities). The environmental benefits of the facility acting as it is designed to do are so much more likely than the impacts described here that the benefits should be discussed.
381	APPENDIX I: PUBLIC SERVICES & UTILITIES	3.2.4	General comment for section	Dam safety standards used in design should be listed as a form of permit-required mitigation.
APPENDIX J: RECREATION				
382	APPENDIX J: RECREATION	2.2.2	Page 8, last paragraph/ Page 9 first paragraph	(Lewis County Sirens 2018) is referenced in body of appendix but not listed in references section of appendix.
APPENDIX K: TRANSPORTATION				
383	APPENDIX K: TRANSPORTATIO N	3.2.2.1.1	Page 28, paragraph 4	States there is one debris management storage area previously operated by Weyerhaeuser and it will be accessed by the FR 1000 route. This has been further developed since the RPDR. It also states the woody material would be removed by truck. In the draft Debris Management During Flood Retention Report (Attachment 1 to Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum) there are two debris storage areas. It is unspecified how the LWM will be transported off-site.
384	APPENDIX K: TRANSPORTATIO N	3.2.2.1.3	Page 42, first paragraph	The RDEIS's modeling notes that I-5 would be flooded for considerable duration in the late-century (40-60 hours, depending on climate scenario) even with the proposed Project. The District is performing hydraulic and hydrologic analysis to recreate the conditions the RDEIS notes and will continue to refine the design to serve the project purpose and need.

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				Under current consideration is the possible addition of a floodwall on the east edge of I-5, which would help alleviate such flooding. Such a floodwall would be similar to, though less impactful than, a Local Actions Alternatives floodwall proposed in the area just west of I-5, which is analyzed in the RDEIS. The proposed location on the east side of I-5 would be shorter, less expensive, and less environmentally and culturally impactful to construct that the proposed local Actions Alternative floodwall because the eastside floodwall could be a shorter I-wall instead of a taller T-wall and would be in an already-disturbed highway area.
385	APPENDIX K: TRANSPORTATIO N	3.2.5	Page 87, last paragraph on page	The Transportation Discipline Report finds no significant and unavoidable adverse impact from the proposed Project, and in fact analyzes the potential transportation benefits of the proposed project at length. This is a model of how the FEIS should consider the project benefits when they are relevant to determining its environmental impacts.
APPENDIX L: TRIBAL				
386	APPENDIX L: TRIBAL	Summary	Page v, Table L-1, 1st row and 5th row (and subsequent duplicate mentions)	This table makes reference to the ongoing NHPA Section 106 process that should be explained above it in clear terms, including its identification of tribal resources, assessment of project effects, and consulting on ways to avoid, minimize, and/or mitigate adverse effects with the consulting parties. The FEIS should defer to the Section 106 process, as well as the Corp's government-to-government consultation with Tribes.
387	APPENDIX L: TRIBAL	1.1	Page 1, first paragraph	It is unclear why only two Tribes are included in this Tribal Resource Discipline report when the Cultural Resources report includes more tribes in the scope of that report. Explanation should be added or a correction made, especially because the Cowlitz Tribe is actively participating in Section 106 consultations.
388	APPENDIX L: TRIBAL	1.1	Page 1, first paragraph	The study area is not well defined. The study area for other impacts does not automatically translate into the tribal or cultural contexts. The FEIS will need to explain how the study area relates potential project impacts (i.e., physical, visual, auditory, and atmospheric impacts). The scope of "tribal resources" is defined to include "collective rights and access to traditional territories" yet this study does not include analysis access and does not include data relating to property ownership.
389	APPENDIX L: TRIBAL	1.2	Page 3, last paragraph	Please list which Tribes the USACE is consulting with under NHPA Section 106. It is prudent to include the full list of consulting Tribes, who are included in the Section 106 emails for this Project. It may also be useful to note that the Cowlitz Indian Tribe, Quinault Indian Nation, and Confederated Tribes of the Chehalis Reservation have all be active participants in such consultation. Additionally, the Corps' government-to-government consultation with Tribes should also be included.
390	APPENDIX L: TRIBAL	1.2	Page 4, first paragraph	Because it is not yet clear from the USACE's assessment whether or how the project would impact Tribal treaty rights, please re-phrase the sentence as follows: "The Corps is expected to assess potential impacts of the Proposed Action on Tribal resources, including potential impacts related to Tribal treaty rights, if any." Tribal sovereignty is outside the scope of the proposed Project's effects. The FEIS should omit references to sovereignty, which is not challenged by the proposed Project.

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391	APPENDIX L: TRIBAL	1.2	Page 4, fourth and fifth paragraphs	Although the District does not object to the discussion of the North of Falcon process or the culvert decision, this background discussion does not outline a nexus to this proposed project. Discussing such a nexus is a difficult issue that unnecessarily wades into the prerogatives of the U.S. Government and Tribes. For the FEIS, it might be better to defer to the Corps on this issue instead.
392	APPENDIX L: TRIBAL	2.2.2	Page 13, Table L-5	The District has no objection to quantifications of the Quinault's annual catch, but the RDEIS does not explain how the table data fit into the study area or the RDEIS's analysis of impacts. Discussing such a nexus is a difficult issue that unnecessarily wades into the prerogatives of the U.S. Government and Tribes. For the FEIS, it might be better to defer to the Corps on this issue instead.
393	APPENDIX L: TRIBAL	2.2.2	Page 14, Table L-6	Please see Comment #392, which applies equally to this table.
394	APPENDIX L: TRIBAL	2.2.4	Page 15, Table L-7	The FEIS should specify which of the listed species are in the study area to illustrate which could be potentially affected by the proposed Project.
395	APPENDIX L: TRIBAL	2.3	Page 18, bullet list	This list includes a work by Shannon et al. from 2019, which is cited elsewhere in the RDEIS as well. Although the Shannon et al. 2019 study may provide some background, it was reportedly not considered sufficient by consulting Tribes. An additional study, undertaken in consultation and collaboration with the Tribes, is ongoing and will be finalized through the Section 106 process. The FEIS should incorporate the information learned in that process.
396	APPENDIX L: TRIBAL	2.4	Page 18, first paragraph of section	This paragraph lacks any nexus to the proposed project. The FEIS should reframe the statement from "impacts" generally to those impacts from effects of the proposed project. In addition, there should be a differentiation of Treaty resources (i.e., those related to adjudicated Treaty rights) versus other types of resources.
397	APPENDIX L: TRIBAL	2.4	Page 19, first full paragraph and bulleted list	Not all of these Tribes are mentioned in preceding Section 2.2. The FDEIS should clarify whether these Tribes have interests and/or impacted resources in the study area. Did Tribes note such interests or impacted resources in the letters being referred to?
398	APPENDIX L: TRIBAL	3.1	Page 21, first paragraph	The phrasing would be clearer if the FEIS amended this sentence to note that construction is anticipated to last five years.
399	APPENDIX L: TRIBAL	3.2.1	Page 22, first paragraph, bullet list	The RDEIS discusses loss of access but does not analyze tribal access under current conditions for reference, nor does it specify where such access restriction would occur. For example, the discussion of access in this paragraph immediately follows discussion of the airport levee construction; loss of access there is an unusual impact to propose considering there is an existing levee and publicly maintained road. To the extent that this list is discussing potential loss of access to the area near the FRE, there is no information provided about current tribal access there for comparison. It would make more sense for the FEIS to defer to the ongoing Section 106 process, in which consultation with Tribes is underway to identify resources, determine effects, and determine what mitigation if any is appropriate, as well as the Corps' government-to-government consultation with Tribes. This

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				is especially true in light of the third and fourth bullet, which reference fish habitat loss, diminishment of fish for Tribal harvest, and loss of culturally significant wildlife and plants. As noted frequently throughout these comments, the RDEIS's analysis of all three of these issues is deeply flawed. At a minimum, the RDEIS (a) fails to properly model the negative impacts to fish habitat and abundance of the No Action alternative; (b) incorrectly overstates the Project's impacts to fish through incorrect model assumptions and calibration; and (c) incorrectly asserts that the project will damage habitat for wildlife and plants based on a misunderstanding of geomorphic and habitat formation processes. Because these incorrect conclusions in turn affect issues of Tribal cultural importance, the FEIS should correct them, but also it should await the information and outcomes from the Section 106 process in which Tribal impacts can be properly considered, as well as the Corps' government-to-government consultation with Tribes.
400	APPENDIX L: TRIBAL	3.2.1.1.1	Page 23, first paragraph and bullet list	As noted in Comment #399 above, the RDEIS here considers construction impacts to aquatic habitats and species and notes that significant adverse impacts on those resources have Tribal implications. However, as the comments to the Fish and Earth discipline reports note, those impacts are frequently mistaken or overstated. For example, the fish passage estimates result from SME opinion contrary to the weight of scientific literature on such passage and assume impacts from blasting and vibration that will occur in the dry, outside the river, despite literature suggesting these impacts are manageable through BMPs. This section also quotes the Fish Discipline report's turbidity conclusions despite the fact that the Earth Discipline report concluded that standard BMPs imposed in permitting would render such effects nonsignificant. In general, the aquatic habits and species impacts described in this section are generally mitigable through typical permitting practices and mitigation measures, and many such measures are proposed in the Project's mitigation plan, but the RDEIS discounts them as too uncertain. The FEIS must realistically consider the mitigation proposed in determining the project's probable impacts, rather than describe the highly improbable impact of the project being constructed without any mitigation. In so doing, it will necessarily have to reevaluate Tribal impacts, as a more realistic assessment of environmental impacts will result in reduced Tribal impacts.
401	APPENDIX L: TRIBAL	3.2.1.1.1	Page 24, first through third paragraphs	See Comment #400 above. As another example of the flawed assumptions on which the fish habitat is based (which gives rise to the Tribal impacts discussed here), the RDEIS says that Chinook spawning is "concentrated in" the temporary reservoir area. This is part of a pattern in which the RDEIS misapprehends the quality of the habitat in the Project's vicinity, idealizing it compared to current conditions. In fact, in the most recent comprehensive redd survey both above and below the proposed Project location (Ronne et al.'s 2018 survey), only a limited percentage of Chinook redds were found in the temporary inundation area. Most redds for coho, fall Chinook, and spring Chinook salmon and for steelhead were located either downstream of proposed Project site or upstream of where it would temporarily inundate. See the Inundation Analysis with 2024 Project Design and 2025 (O4P2) Operational Scenario, attached to these comments. It is difficult to correctly ascertain probable Tribal impacts when the information this section of the RDEIS relies on is mistaken. The FEIS should instead defer to the Section 106 process, in which resources

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				may be identified, effects determined, and mitigation agreed-upon where appropriate, as well as the Corps' government-to-government consultation with Tribes.
402	APPENDIX L: TRIBAL	3.2.1.1.1	Page 25, first bullet	The RDEIS repeats the Wildlife Discipline report's finding that marbled murrelet habitat in the Project vicinity will be impacted, in the context of traditional hunting treaty reserved rights that probably do not implicate murrelets; moreover, murrelet habitat is rare and may not be suitable near the project site due to stand age. Surveys during permitting are likely to help identify and mitigate for such impacts. Similarly, the proposed Forest Conversion plan can preserve habitat that would otherwise be logged, which would mitigate for wildlife impacts and potentially for Tribal impacts. These impacts are therefore not likely to be "unavoidable." They can be addressed in the Section 106 consultation and the Corps' government-to-government consultation with the Quinault on their treaty rights, and mitigation may be proposed to preserve tribal cultural or treaty-related access to hunting resources.
403	APPENDIX L: TRIBAL	3.2.1.1.1	Page 25, second and third bullets	The FEIS should clarify if these construction activities-related impacts are temporary and what type of impact. Moreover, the species listed again do not seem directly related to traditional hunting practices. The FEIS should try to more clearly distinguish between environmental impacts and Tribal impacts, even if there is overlap.
404	APPENDIX L: TRIBAL	3.2.1.1.1	Page 26, last paragraph	There is unclear terminology; perhaps this should be "less than significant impact," not "less than significant adverse impact." Recommend global correction on this terminology. Moreover, the RDEIS here cites the Water Discipline report's conclusion that construction water quality impacts are less than significant, which belies the Fish Discipline report's conclusions that construction water quality impacts will have significant adverse fish impacts that, in turn, are tribal impacts because of fish's cultural and treaty-rights significance. As noted in comments on the Fish Discipline Report (RDEIS Appendix E), the unreliability of the impacts analysis significantly impairs the RDEIS's Tribal impacts conclusions. The FEIS should correct these errors; it would do best to defer to the Section 106 process as well as the Corps' government-to-government consultation with Tribes.
405	APPENDIX L: TRIBAL	3.2.1.1.1	Page 27, first paragraph	Same as Comment #404: the Fish report incorrectly rejects the Water report's water quality conclusions; the Tribal report should not do the same.
406	APPENDIX L: TRIBAL	3.2.1.1.1	Page 27, last paragraph	The FEIS should use the term "less than significant impact" instead of "less than significant adverse impact" for clarity. Recommend global correction on this terminology.
407	APPENDIX L: TRIBAL	3.2.1.1.2	Page 28, fourth paragraph	This is unclear. If a resource has been documented as a TCP, and assuming that this documentation was done in collaboration with Tribes, the TCP already has connection to a Tribe or Tribes per the National Register Bulletin (NRB) 38.
408	APPENDIX L: TRIBAL	3.2.1.1.2	Page 28, second paragraph.	This section should clearly define who the Section 106 consulting parties are for this proposed project. Recommend identifying all of the consulting parties on the Section 106 email list, with a note as to which entities have been actively participating in consultation, if warranted.

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409	APPENDIX L: TRIBAL	3.2.1.1.2	Page 28, third paragraph	Formal consultation is discussed earlier in the appendix. It is unclear who is 'coordinating' here with who in this context in Section 3.2.1.1.2. Technically, EO 21-02 does not apply to this project; it applies when a project is not undergoing Section 106 consultation, but this project is subject to Section 106 consultation because it is federal undertaking. See Executive Order 21-02 ("Agencies shall consult with DAHP and affected tribes on the potential effects of projects on cultural resources proposed in state-funded construction or acquisition projects that will not undergo Section 106 review under the National Historic Preservation Act of 1966 (Section 106)…"). Since the Section 106 process seeks to identify resources, assess potential effects, and generate agreed-upon mitigation if appropriate, the FEIS should defer to that process. The US Army Corps of Engineers is the lead federal agency responsible for assessing effects from its undertaking in consultation with consulting parties. USACE will seek DAHP concurrence on determinations of resource eligibility and project effects.
410	APPENDIX L: TRIBAL	3.2.1.1.2	Page 28, fourth paragraph	The TCP report by Shannon et al. 2019 was reportedly not acceptable to the tribes; hence, a new TCP report is underway as part of ongoing Section 106 consultation. The new report will identify the resources more clearly; the Tribal Discipline report is premature in assessing potential effects before the resources are identified and fully evaluated. The FEIS should await information from the Section 106 consultation and incorporate its outcomes.
411	APPENDIX L: TRIBAL	3.2.1.1.2	Page 29, first paragraph	The FEIS should reframe direct/indirect effects assessment for resources based on Section 2.1 of the Cultural Resources Discipline Report in accordance with the D.C. circuit court March 2019 ruling: https://www.achp.gov/sites/default/files/2019-06/NPCA%20v%20Semonite.pdf. Also see ACHP June 2019 memo: https://shpo.nv.gov/uploads/documents/OGC_memo_to_ACHP_staff_re_meaning_of_direct_6-7-19.pdf.
412	APPENDIX L: TRIBAL	3.2.1.1.2	Page 29, first paragraph	Unclear and inconsistent use of terms throughout regarding "impacts" or "effects." The FEIS should be consistent in terminology and evaluation herein. If this appendix is defaulting to evaluation under Section 106, then it should clearly outline that evaluation process or cross reference to the Cultural Resources Discipline Report.
413	APPENDIX L: TRIBAL	3.2.1.1.2	Page 29, first paragraph	Under Section 106, if sites are determined not eligible for listing in the NRHP, then they do not get assessed for project effects. To state here that they are directly affected prior to discussing eligibility is inaccurate, confusing, and premature. The FEIS should clarify the assessment of impacts or effects and outline the assessment process in a clear manner.
414	APPENDIX L: TRIBAL	3.2.1.1.2	Page 29, second paragraph	Statement needs to be corrected for accuracy. The USACE makes determinations of NRHP eligibility in consultation with the Section 106 parties and seeks DAHP concurrence on such determinations. Evaluation of the sites is ongoing, so it is premature to discuss effects to them.
415	APPENDIX L: TRIBAL	3.2.1.1.2	Page 29, second paragraph	The FEIS should state what the other archaeological sites were determined; if this information is not yet known, that is an indication that it is too early to discuss effects to these sites.

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416	APPENDIX L: TRIBAL	3.2.1.1.2	Page 29, third paragraph	Under Section 106, if sites are determined not eligible for listing in the NRHP, then they do not get assessed for project effects. To state here that they are directly affected prior to discussing eligibility is inaccurate, confusing, and premature. The FEIS needs to clarify assessment of impacts or effects and outline the assessment process in a clear manner.
417	APPENDIX L: TRIBAL	3.2.1.1.2	Page 29, third paragraph	This appendix does not explain how the Section 106 process informs SEPA analysis. The FEIS needs to clearly explain the connection, and how and when updates will occur in the SEPA process as the Section 106 process progresses.
418	APPENDIX L: TRIBAL	3.2.1.1.2	Page 29, fourth paragraph	This analysis lacks any information about the NRHP eligibility of these sites and the status of consultation regarding eligibility determinations. Although the District does not object to the RDEIS's conclusion, the FEIS should appropriately protect such sites from unnecessary public identification, but it still needs to provide enough information to understand its analysis.
419	APPENDIX L: TRIBAL	3.2.1.1.2	Page 29, fifth paragraph	This sentence in unclear because it is hard to distinguish how the Section 106 process relates to the FEIS in this context. The District believes that the FEIS should defer to the Section 106 process and await and incorporate its outcomes.
420	APPENDIX L: TRIBAL	3.2.1.1.2	Page 30, first paragraph	This is the first mention regarding land ownership. This information is relevant to this analysis and should be identified earlier when discussing resources and access to resources. The starting point for an effects analysis on a place-based tribal resource should be whether the Tribes currently have access to the private property in question.
421	APPENDIX L: TRIBAL	3.2.1.1.2	Page 30, fourth paragraph	Unclear terminology. "[L]ess than significant adverse impact" seems like it is the same as "not adverse." It is more common to frame a conclusion as "not adverse."
422	APPENDIX L: TRIBAL	3.2.1.1.2	Page 30, fifth paragraph	This section should reflect how the Tribes currently access the locations being discussed because access is related to the baseline conditions analysis in Section 106 process and is imperative in understanding potential impacts to such access.
423	APPENDIX L: TRIBAL	3.2.1.1.2	Page 31, first paragraph	Property access information is relevant to this analysis and should be identified. The starting point for an effects analysis on a place-based Tribal resource, such as hunting, should be whether the Tribes currently have access to the property in question. Further it is premature to make a conclusion of a "significant adverse impact" when the identification phase of the Section 106 process is not complete and there are no eligible cultural resources yet identified.
424	APPENDIX L: TRIBAL	3.2.1.2.1	Page 31, third paragraph	It is premature to make a conclusion of a "significant adverse impact" when the identification phase of the Section 106 process is not complete and there are no eligible cultural resources yet identified. Furthermore, the Corps' government-to-government consultation with Tribes is ongoing. Moreover, the proposed impact is predicated on construction water quality impacts, but the Water Discipline report notes that such impacts will be less than significant. Since the wildlife impacts would derive from the water quality impacts, the absence of the latter suggests the absence of the former.

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425	APPENDIX L: TRIBAL	3.2.1.2.1	Page 32, first paragraph	Table L-7 does not specify which species are within the different project locations therefore it is premature to make conclusions about impacts. Knowing the location of the species in the table is important to assessing impacts. Moreover, the proposed Project's mitigation plans include measures, such as the Forest Conversion plan, which would offset the potentially lost or fragmented habitat through retaining forest that would otherwise be logged; these areas could help support Tribal resources or access.
426	APPENDIX L: TRIBAL	3.2.2.1.1	Page 34-36, multiple pages	The RDEIS repeats the conclusions from the Fish and Wetlands Discipline Reports concerning impacts from flood operations. But many of these purported impacts are overstate, based on flawed assumptions, or contrary to the best available science. For example, the aquatic habitat impacts are based on a host of incorrect assumptions that do not match the proposed project design, such as the incorrect notion that the all wood will be removed from the system, that sediment transport will be disrupted, that channel-forming flows will be eliminated, that fish passage will be abysmally low, and that much of the vegetation would die in each inundation. The imported analysis from other reports ignores the proposed project design and mitigation, the scientific evidence in the mitigation plan documents and other relevant literature, and often the analysis of different parts of the RDEIS itself. Moreover, the impact analyses often compare the project's operation in 2080 with a non-flood condition in 2025, for example by noting the habitat above the proposed facility as important for fish abundance in a warming climate. This analysis ignores that the Project's proposed mitigation would result in lowering river temperatures downstream of the facility, which could reduce this climate change impact. The analysis also fails to note that in the No Action Alternative, major or catastrophic flooding is predicted in the upper basin every 3 years. Such flood flows would have significant adverse effects on this upstream habitat through increased scour and disruption of spawning behaviors, a fact noted in the Fish Discipline Report, but not captured in its modeling of the No Action Alternative even when three major-or-greater floods in three consecutive years are modeled. By failing to capture these non-project effects, the RDEIS fails to capture the impact of the No Action alternative to which the project is compared, exaggerating the negative impacts of the project. The RDEIS also fails to capture the potential downstream benefit the proposed project could create by protecting redds from major or catastrophic flood flow scour. This is part of a pattern in which the RDEIS treats the proposed project as disrupting a pristine and valuable habitat, when the current conditions and projected future conditions suggest habitat that is struggling to provide full function now, and will be severely disrupted by forces other than the Project in the future. The FEIS must correct these misconceptions and idealizations to measure the *Project*'s probable significant adverse effects, not the adverse effects of climate change and other forces. Only then can it properly assess the Project's Tribal impacts, when so many of the environmental changes producing Tribal impacts are happening irrespective of the Project.
427	APPENDIX L: TRIBAL	3.2.2.1.1	Page 38, first and third paragraphs	Neither marbled murrelet nor Townsend's big-eared bat are listed in table L-7. There is no explanation why they being considered in Tribal resources.
428	APPENDIX L: TRIBAL	3.2.2.1.1	Page 38, second paragraph	The proposed impacts here derive from the Wetlands Discipline report's unfounded assertion that the project will create long-term changes in downstream habitat through

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				altering or eliminating channel-forming flows. This analysis is simply wrong. A number of scientific sources, the RDEIS's own observations of the Chehalis system and other gravel-bed systems, Ecology's own guidance concerning ordinary high-water marks, and the sediment transport work in the proposed Mitigation Plan all note that channel-forming processes occur at lower flows, typically 2-year flows. Furthermore, 2-year flow is considered the benchmark for wetland hydrology. So, lower flows than major-flood flows, which the Project will not regulate, will carry out the geomorphic and ecological processes that the RDEIS says the Project will disrupt. Even if that were not so, floods are not uniform: in some floods that do not reach the Project's operations trigger of 38,800 cubic feet per second at Grand Mound (e.g., 2012), the Doty flows may be higher than in some major floods. There is no reason to believe that the area downstream of the Project will lose habitat function as the RDEIS proposes. Nor would temperature increase downstream, but for the RDEIS's dismissal of the proposed vegetation management and riparian planting mitigation, which were modeled to *decrease* downstream temperatures compared to baseline conditions. The FEIS should abandon this analysis and revise its assessment of Tribal impacts accordingly.
429	APPENDIX L: TRIBAL	3.2.2.1.1	Page 38, third paragraph	This section should be edited to reflect whether the species listed are included in Table L-7. If not, the FEIS should explain why the species are relevant to Tribal impacts. Moreover, this is another instance in which the RDEIS compares the proposed Project with a hypothetical world in which a major or catastrophic flood is not occurring. The fact that less mobile species might not be able to escape the temporary inundation should be considered in context: such species would equally have trouble avoiding the high flood flows of a major or catastrophic flood and the landslides that have historically accompanied them, and downstream of the facility they might survive due to the Project's flood protection when they otherwise would have died. Catastrophic floods are *catastrophic*. The FEIS should consider the Project's impacts beyond a baseline, unregulated major or catastrophic flood.
430	APPENDIX L: TRIBAL	3.2.2.1.1	Page 39, first and second paragraphs.	It is unclear if this analysis focuses on the species listed in Table L-7 or all species. It's not clear what is being considered a Tribal resource, particularly as related to Treaty rights. This discussion is vague and hard to ascertain how a significant conclusion is supported. Moreover, the first paragraph relies on the incorrect assertion addressed in Comment #398.
431	APPENDIX L: TRIBAL	3.2.2.1.2	Page 39, last paragraph.	The downstream temperature impact finding from the Water Discipline report is recited here as a Tribal impact. However, that report notes that the proposed mitigation, if designed and implemented as described in the Project's mitigation plan, would suffice to offset these temperature impacts. The FEIS should credit the proposed mitigation and find these impacts to be avoidable.
432	APPENDIX L: TRIBAL	3.2.2.1.2	Page 40, third paragraph and last paragraph	The third paragraph should more clearly describe the Section 106 process. In the last paragraph, there is no context provided for why undefined non-salmon species are included in the cultural resources subsection. But even if there was a nexus to Tribal or cultural resources, the impacts are ascribed to alterations of *summer* flow from the Project's operations. The Project operates only in major or catastrophic floods, which do not occur in summer; they are wet-season phenomena and are anticipated to remain winter as

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				summers get drier. Perhaps this impact derives from the channel-forming flow being lessened, but if so, that conclusion is incorrect as noted in other comments regarding channel forming flows.
433	APPENDIX L: TRIBAL	3.2.2.1.2	Page 41, second paragraph	This section needs to identify and explain the baseline for this analysis and conclusion. Flooding would occur without the FRE; thus, it is unclear how ongoing flood risk is a project impact. Indeed, the Project reduces flooding at all relevant transportation locations and so provides a benefit over the No-Action Alternative. One of the areas that sees some flood benefit is the Chehalis Tribal Reservation itself, which would likely provide transportation benefit to Tribal members, although the benefit is modest because of flooding from another river system in that area.
434	APPENDIX L: TRIBAL	3.2.2.2.1.3	Page 41, last paragraph	The RDEIS repeats the Environmental Health Discipline Report's bizarre conclusion that the project would create a significant adverse impact if a catastrophic earthquake occurred at the time the project was holding a temporary inundation pool, leading to facility failure. As that report acknowledged, the facility will have to meet rigorous Dam Safety Office standards protecting against a 10,000-year earthquake. Given the infrequency in which the facility holds back water, the odds of such an earthquake coinciding with the flood is so small as to not merely be "very unlikely," as noted in this paragraph, but not a credible risk according to industry standards. Moreover, it is perverse to discuss this remote possibility as a significant adverse impact without noting the much more likely chance that the facility will work as intended, reducing floods, which provides a distinct Environmental Health benefit. The FEIS should analyze the *probable* impacts of the Project, rather than going out of its way to emphasize adverse effects and minimize beneficial ones.
435	APPENDIX L: TRIBAL	3.2.3	Page 43, second paragraph	The Corps will consult on Treaty rights, but Tribal sovereignty is outside the scope of the proposed Project's effects. The FEIS should omit references to sovereignty, which is not challenged by the proposed Project.
436	APPENDIX L: TRIBAL	3.2.3	Page 43, fourth paragraph	This paragraph should include all Section 106 consulting parties. Moreover, its description is inaccurate and omits most of the Section 106 process. This should be reframed to reflect that the Section 106 process requires the assessment of project-related adverse effects on NRHP eligible properties, then the Section 106 consulting parties will consult to resolve adverse effects on those properties. The next step in the process is for the Section 106 consulting parties to agree upon appropriate mitigation measures. Typically, a Programmatic Agreement or Memorandum of Agreement that includes the agreed-upon mitigation measures is executed.
437	APPENDIX L: TRIBAL	3.2.3	Page 43, fifth paragraph	It is not clear how additional cultural resources work would result in application of EO 21-02. The proposed Project is already undergoing the Section 106 process and is therefore outside the scope of EO 21-02.
438	APPENDIX L: TRIBAL	3.2.4	Page 44, first paragraph	All Section 106 consulting parties should be included here.
439	APPENDIX L: TRIBAL	3.2.4	Page 44, last paragraph	The RDEIS described a statement by the Quinault Indian Nation that "specific and enforceable mitigation measures must be disclosed within the EIS and not left to later

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				processes." While the District does not necessarily agree that such measures are legally required to be fully determined in an EIS, the District agrees in principle that it has proposed many specific mitigation measures, and that the RDEIS failed to credit those measures as the minimum mitigation expected to be imposed in permitting, as well as to analyze those measures. This failure did a disservice to the public and decisionmakers who wish to consider the EIS's analysis of the probable impacts of the project, not merely its improbable, unmitigated, "worst-case scenario" impacts. The FEIS should consider the proposed mitigation in its impacts analysis.
440	APPENDIX L: TRIBAL	3.2.5	Page 45, second paragraph	It is premature to make a conclusion of a "adverse impacts to TCP" when the identification phase of the Section 106 process is not complete and determinations of eligibility are ongoing. A later sentence in this same paragraph states "No determination of eligibility or adverse effects to cultural resources has been made yet as part of the Section 106 process."
441	APPENDIX L: TRIBAL	3.4	Page 49, second paragraph	The FEIS should explain what these best management practices would be to avoid or minimize adverse effects. In general, typical permitting requirements should be considered when analyzing the impacts of both the Project and the No Action Alternative. Just as the No Action Alternative is anticipated to avoid, minimize, or mitigate adverse effects through permitting (even for as-yet undefined, unproposed, unpermitted, and uncertain projects), the Project's impacts should be measured with the constraints of permitting in mind. This is especially true here, where the Section 106 consultation and the Corps' obligation to consult with Tribal treaty rights holders is underway—these processes will address tribal impacts, and the FEIS should incorporate their outcomes. The FEIS should also consider typical permitting constraints in its other discipline reports, for example fish passage requirements; globally, the FEIS should not dismiss as "uncertain" the measures and standards the Project would necessarily have to use to be permitted and constructed.
APPENDIX M: VISUAL				
442	APPENDIX M: VISUAL	3.2.2.1.1	Page 26, paragraph 4	States there is one debris management sorting area, and it is included in 107 acres. This acreage varies from previously stated 110 acres. This has been further developed since the RPDR. In the draft Debris Management During Flood Retention Report (Attachment 1 to Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum), there are two debris storage areas, and the acreage difference may impact the total clearing acreage.
APPENDIX N: WATER				
443	APPENDIX N: WATER	Summary	Page v Surface Water Quality	Insufficient information provided and incomplete analysis of effect | "…decreases of dissolved oxygen of more than 10% or 0.2 milligram per liter (mg/L), due to loss of riparian cover and stream shading that exceed water quality criteria" – although 303d listing is based on concentrations falling below 9.5 mg/L (e.g., listing IDs 77950, 77949, 10693, 77948, moving in downstream direction). The RDEIS needs to present what the actual

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				concentration that was predicted is and provide specific evidence that the predicted concentration is stressful, and for how long and when. It is doubtful that a 0.2 mg/L reduction is (i) detectable, and (ii) biologically meaningful. The RDEIS needs to distinguish between truly significant adverse vs. temporary minor impacts and provide specific biological justification/basis.
444	APPENDIX N: WATER	Summary	Page v Surface Water Quality	Basis for impact conclusion insufficiently defined and incorrect | "Exceedances of turbidity water quality criteria after major floods during inundation pool drawdown or during subsequent storms or high flows when the temporary inundation pool is not storing water due to resuspension of deposited sediments" The operation of FRE would reduce the peak turbidity experienced downstream by reducing the flows (suspended sediment concentration and thus turbidity increases exponentially with flow), such that the maximum turbidity level experienced under the No Action alternative would not be experienced with the Proposed Project. In addition, analyses and assumptions associated with the resuspension hypothesis are flawed – for example, see relevant comments for Appendix F Earth regarding what size classes deposit where in the channel vs the floodplain/hillslope, and the inadequacy of modeling used to simulate sediment availability for resuspension. Conclusion of impact is clearly unsupported without further appropriate analysis.
445	APPENDIX N: WATER	Summary	Table N-1, Proposed Action-Operations, Surface water quality	Concerns about turbidity exceedances have not been shown to be greater than that currently experienced during high flows in existing conditions.
446	APPENDIX N: WATER	Summary	Table N-2, Proposed Action-Operations, Surface water quality	In section 3.2.2.1.1.2 Surface Water Quality, potential pollutants including mercury and methylmercury were described as having <u>no adverse impacts</u>. Table N-2 lists the impact finding pollutant mobilization as having <u>less than significant</u> impacts instead.
447	APPENDIX N: WATER	2.2.2.2	Page 23, Table N-8	Table N-8 states the 10-year flow is the Major Flood. Multiple documents state the Major Flood as 38,800 cfs. Table N-6 states the Major Flood is a 7-year event.
448	APPENDIX N: WATER	2.2.2.4	Page 29, 3rd paragraph	Error | This paragraph is incorrect. Table N-14 does not list turbidity for the upper Chehalis River. The link for the DOE (2025a) citation shows only a 4.2-km-long reach of the Chehalis River listed (ID 15915) between Stearns Creek and the Newaukum River, based on 4 excursions beyond the criterion out of 12 samples collected between 1992 and 2001.
449	APPENDIX N: WATER	2.2.2.4.2 Temperature	Page 39	PSU 2025 Report is not provided | The temperature analysis cites to work described in "Chehalis River and Tributary Water Quality and Hydrodynamic Modeling: SEPA Revised Draft EIS Scenarios." This document has not been provided. Ecology had an obligation to provide this supporting material to inform review of the RDEIS and development of comments.
450	APPENDIX N: WATER	2.2.2.4.3	Page 40, 4th paragraph	Insufficient justification for conclusion | Just because concentrations fall below 10 mg/L does not mean they are sufficiently adverse to be biologically meaningful. Values of 9.2 to 9.3 mg/L during the summer are above levels associated with significant stress.

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451	APPENDIX N: WATER	2.2.2.4.5	Page 42, 2nd paragraph	Error | See Comment #448. Table N-14 does not list turbidity.
452	APPENDIX N: WATER	2.2.2.4.5	Page 42, 3rd paragraph	Insufficient justification for conclusion(s) | 1. The mean daily flow at the Doty gage on 2/9/2017 (when the 610 NTU measurement near the FRE location reportedly occurred) was 9,340 cfs, which is less than the 2-year flood. According to Figure 2.4 in WGS & Anchor (2017), the estimated suspended sediment load at the gage is approximately 25,000 tons/day at 9,340 cfs, and at the 10-year flood (around 25,000 cfs), the estimated suspended load is approximately 200,000 tons/day. It is unclear what the NTU would be during FRE releases, but literature suggests an approximate linear increase in turbidity NTU exists with increase in suspended sediment concentration. For the reported 3/29/2017 measurement of 12.2 NTU at 1,920 cfs, the corresponding suspended sediment load based on Figure 2.4 would be approximately 300 tons/day. Converting these to concentrations of tons/ft^3 and extrapolating the NTU-tons/ft^3 numbers linearly to the equivalent concentration for a flow of 25,000 cfs and a load of 200,000 tons/day is equivalent to an estimated 1,880 NTU at the 10-year flood. There would likely be some dilution as the sediment flows through and disperses within the temporary impoundment, but the point is that there could be a similar amount of turbidity without the FRE in place. Based on the limited details provided in the EIS, this could constitute a significant adverse impact under the No Action alternative. FRE operation could thus reduce extreme turbidity levels compared with what would occur under the No Action scenario. 2. There is inherent ambiguity with respect to interpreting the water quality criterion when a water body is at flood stage and highly turbid. This should be recognized in the RDEIS.
453	APPENDIX N: WATER	2.3, 3.2.2.1	Pages 55, 77, 78	The FRE facility operations used in analysis are from the Anchor QEA 2017 report *Operations Plan for Flood Retention Facilities* which has been superseded by updated operations, which provide similar levels of downstream protection while reducing pool durations upstream of FRE structure.
454	APPENDIX N: WATER	2.4 Technical Approach	Page 56	The Reservoir Water Quality Report (Anchor QEA 2019a) is not provided | The DEIS states, "A combination of CE-QUAL-W2, HEC-RAS, and Water Erosion Prediction Project (WEPP) models were used to evaluate the different deposition and resuspension mechanisms for major and catastrophic floods; model details are documented in the Reservoir Water Quality Report (Anchor QEA 2019a)." The Anchor QEA (2019a) document was not provided and appears to include important modeling details that have yet to be evaluated. This report was requested from Ecology but was received too late to review and comment within the designated comment period. Additional comments may be forthcoming.
455	APPENDIX N: WATER	2.4 Technical Approach	Page 56	CE-QUAL-W2 Modeling Files not provided | CE-QUAL-W2 modeling files were provided from Ecology but did not include the impounded reservoir model. In addition, the footprint model that was provided did not have the turbidity module turned on. CE-QUAL-W2 modeling files for the impounded reservoir and for the footprint model with turbidity are required to evaluate modeling results and conclusions. These additional model files were

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				specifically requested from Ecology and will be reviewed along with additional model components, when delivered. Additional comments may be forthcoming at that time.
456	APPENDIX N: WATER	2.4 Technical Approach	Page 56	It is unclear if topographic shade is applied correctly in the CE-QUAL-W2 River Model | Review of the CE-QUAL-W2 modeling files showed that the footprint model uses topographic shade in the headwaters, but the river model (construction model files) does not use topographic shade in the incised section of the river model. This inaccuracy in the 2020 SEPA model was identified by the District's October 10, 2024 Mitigation Technical Memorandum. To understand the temperature effects downstream of the FRE facility, the same approach for topographic shade should be used in both the footprint model and river model. Although the Chehalis River valley is generally wide, very high riverbanks provide shade even where riparian vegetation is sparse.
457	APPENDIX N: WATER	2.4 Technical Approach	Page 56	Segment orientation angle is set to zero in the CE-QUAL-W2 footprint (construction) model | Segment orientation angle should be based on topographic maps and not set to 0. The results of an example simulation run by the District showed that temperature differences up to 0.45°C could occur in model runs with and without topographic segment orientation angle. The SEPA model's accuracy should be improved by incorporating this model parameter.
458	APPENDIX N: WATER	3.2.1.1.1.1	Table N-18	RDEIS Paragraph 3 on page 67 of Appendix N states acreage of disturbance for quarry sites and access roads listed in Table N-18 is based on the assumption that "Construction of the Proposed Action includes mining of rock from up to three potential quarry sites." The Main document section 2.3.3.1, pg. 16 and Appendix 1 section 3.2.6 pg. 37 of this RDEIS correctly state that no more than 2 quarries with no more than 80 acres of total disturbance for the quarries are included in the Proposed Action. The Project should be accurately described, and acreages of disturbance in Table N-18 and other findings of impact should be revised to accurately reflect the Proposed Action and its probable impacts.
459	APPENDIX N: WATER	3.2.1.1.1.2	Page 67, paragraph 2	RDEIS states there is access to one debris sorting yard, but this has been further developed since the RPDR. In the draft Debris Management During Flood Retention Report (Attachment 1 to Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum), there are two debris storage areas, and they will be accessed from the same proposed access roads.
460	APPENDIX N: WATER	3.2.1.1.1.2	Page 67, paragraph 2	RDEIS states there is one debris sorting yard, but this has been further developed since the RPDR. In the draft Debris Management During Flood Retention Report (Attachment 1 to Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum), there are two debris storage areas.
461	APPENDIX N: WATER	3.2.1.1.3	Page 73, 1st paragraph	The construction water demand is stated as 3.7 cfs. The actual demand has been updated based on an HDR analysis since the Revised Project Description. Please see the Construction Water Demand Technical Memorandum, which estimates that the highest average monthly construction water demand would be 0.88 cfs (in July, at the height of

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				construction season), with a lower average demand in other months. This figure weights in peak demand more heavily than it would likely occur, and so it is conservative. Even adding an additional conservative buffer of 20% above this 0.88 cfs, the projected maximum average monthly demand would be 1.08 cfs. That means that the highest-demand month would, on average, use less than a third of the water previously proposed. The average annual demand is predicted to be even lower, at 0.63 cfs. The FEIS should incorporate this updated water estimate into its analysis.
462	APPENDIX N: WATER	3.2.2.1	Page 77, 3rd paragraph	This paragraph is unclear on how frequently the inundation pool would operate during the 1989-2018 historical period. Our modeling showed only 7 initiations, while the paragraph initially states 13, then 7 occurrences for the historical period.
463	APPENDIX N: WATER	3.2.2.1	Page 77, 3rd paragraph	It appears that this paragraph may be conflating active operations, when water is being stored based on downstream conditions, with short-term backwater effects when conduit capacity may be temporarily overwhelmed by high inflows for a matter of minutes to hours. The phrasing of the paragraph makes it unclear what is occurring at the FRE site for these "24 high-flow events."
464	APPENDIX N: WATER	3.2.2.1	Page 78, 4th paragraph	Analyzing effects based on outdated operations | The revised mitigation plan proposes a shorter duration for woody debris retrieval by moving the location of on-land transfer of collected wood to closer to the FRE facility than indicated in the 2017 operation report on which the 14-day figure is based.
465	APPENDIX N: WATER	3.2.2.1; 3.2.2.1.1.1	Page 78, 2nd and 3rd paragraphs; Page 80, 3rd paragraph	These drawdown procedures are outdated and have been updated in consultation with geotechnical engineers to safely expedite the emptying of the pool.
466	APPENDIX N: WATER	3.2.2.1	Page 78, 3rd paragraph	The debris removal period has been shortened to 5 days based on further study of expected debris accumulation and removal rates.
467	APPENDIX N: WATER	3.2.2.1	Page 78, paragraph 3	States the removal process will take up to 14 days. This was further developed since the RPDR. In the draft Debris Management During Flood Retention Report (Attachment 1 to Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum), it is reported to take up to 5 days for the 100-year flow to remove LWM.
468	APPENDIX N: WATER	3.2.2.1	Page 78, last paragraph	The discussion on operation of the FRE changing sediment transport and channel-forming processes by eliminating large peak flows is misleading and incorrect. The example used is the 2007 flood, with a peak flow at the FRE location estimated as 34,700 cfs being attenuated to 6,450 cfs with FRE operations. The 34,700 cfs peak above Doty was an abnormally large (almost a 500-year flood at Doty). Catastrophic floods are not usually used to define "channel forming" events.
469	APPENDIX N: WATER	3.2.2.1	Page 78, Footnote 20	The 60-day duration isn't supported by any given data.

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470	APPENDIX N: WATER	3.2.2.1	Page 79, second paragraph from the end	Is the Project, or FRE, being held responsible for the temperature impacts, summarized in section 3.2.5, due to climate change? Are temperature impacts due to climate change accounted for in the No Action or Local Actions Alternatives?
471	APPENDIX N: WATER	3.2.2.1; 3.2.2.1.1.1	Page 79, Table N-20; Page 80, 3rd paragraph	Minimum flow downstream of the FRE structure is not expected to drop below 300 cfs at any time during drawdown periods. The 260 cfs flowrate isn't explained in the report.
472	APPENDIX N: WATER	3.2.2.1; 3.2.2.1.1.1	Page 79, Table N-20; Page 80, 3rd paragraph	Modeled inundation pool releases have shown a maximum flow during drawdown periods around 10,000 cfs in some storm events.
473	APPENDIX N: WATER	3.2.2.1.1.1	Page 80, 3rd paragraph	Analyzing effects based on outdated operations | Operations have been revised since the 2017 operations plan that the 34 days figure is based on, and are associated with shorter times to drain the temporary impoundment (less than 21 days, maximum).See Attachment 2: Reservoir Operations Analysis (Draft) Technical Memorandum to Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum to these comments.
474	APPENDIX N: WATER	3.2.2.1.1.2 Surface Water Quality	Page 90	Relative modeling results are unclear. | The mid- and late-century conditions are compared to the No Action Alternative, but it should be compared to the No Action Alternative with climate change. It appears that the correct comparison has not been made.
475	APPENDIX N: WATER	3.2.2.1.1.2	Page 92, Dissolved Oxygen, 3rd paragraph	Insufficient justification for conclusion(s) | The predicted differences are reported to be negligible, and the ambient levels are below water quality criteria, so it is unclear how a negligible decrease can be considered a significant adverse impact. The decreases do not appear to be enough to push levels below some biologically meaningful threshold.
476	APPENDIX N: WATER	3.2.2.1.1.2	Page 92, 5th paragraph	No data is shown to surmise increased turbidity during pool drawdown above existing conditions during a flood.
477	APPENDIX N: WATER	3.2.2.1.1.2	Page 93, 3rd paragraph	No quantity of expected sediment increase within the temporary inundation pool area or expected sediment decrease in the 0.5-mile downstream of the FRE structure is shown. What quantities are expected given the existing geologic conditions at these sites?
478	APPENDIX N: WATER	3.2.2.1.1.2	Page 92-93, Turbidity, 3rd–7th paragraphs	Unsupported analysis of effect and assumptions likely incorrect | These inferences and conclusions are unsupported. See comments for Appendix F (Earth) regarding incomplete justification and adequacy of modeling and assumptions of increased sediment deposition in the channel vs. outside the channel, and resuspension.
479	APPENDIX N: WATER	3.2.2.1.1.2	Page 93, Turbidity, 8th paragraph	Analyzing effects based on outdated operations | These results are based on old operations with the 2-week wood debris removal scenario. This has been reduced substantially to generally 5 days or less (Attachment 1: Debris Management During Flood Retention Report (Draft) to Attachment 2: Environmental Impact Reduction Due to Refinement of Proposed Reservoir Operations & Debris Management During Flood Retention Operations Memorandum to these comments), and other aspects of operations have been updated in design to reduce the total time to drain.

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480	APPENDIX N: WATER	3.2.2.1.1.2	Page 93-94, Turbidity, 8th and 10th paragraphs	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | What is not considered sufficiently, and needs to be, is the relative difference in severity of turbidity during major and catastrophic floods under the No Action condition compared against the with-FRE facility operation condition, and what that means to aquatic organisms. Although the duration of elevated outflow turbidity compared to inflow turbidity after the floods recede may be extended when the FRE facility is operated, organisms downstream of the facility would not experience the extremely high turbidity levels compared with upstream. It is plausible that the downstream dose-response outcome under the with-FRE facility operation condition is less impactful than under the higher No Action turbidity levels, which would be a benefit, not an impact. Without such an analysis, the conclusion of impact is speculative.
481	APPENDIX N: WATER	3.2.2.1.1.2	Page 94, Turbidity, 9th paragraph	Insufficient information provided, unsupported analysis of effect, and assumptions likely incorrect | 1. It is unclear what modeling was performed and how. See comments for Appendix F (Earth) regarding invalidity of WEPP modeling for predicting storm runoff of deposited sediments, and CE-QUAL-W2 does not model storm runoff erosion/delivery/in-channel turbidity mechanisms. 2. Background turbidity would not be expected to be low during an intense rainstorm; details on when it would be low are not provided and should be.
482	APPENDIX N: WATER	3.2.2.1.1.2	Page 94, Turbidity, last paragraph	Incomplete analysis of effect and justification of assumptions likely affecting conclusions | Standardized water quality criteria are insufficient for determining whether a significant adverse effect is likely – need to perform a dose-response analysis (e.g., Pilkerton et al. (2025).
483	APPENDIX N: WATER	3.2.2.2.1	Pages 101-104, Figures N-16a thru N-17b,	Figure labels say "Change in depth" but the legend shows what is assumed to be total depth. As stated, it would show a greater than 25-foot reduction in depth in the channel which is not correct.
484	APPENDIX N: WATER	3.2.2.2.1	Page 107, 2nd paragraph	The potential for significant adverse impacts from the airport levee construction occurring before or without the FRE is misleading. The FRE and Airport levee are both part of the proposed action, will likely be permitted together, and will be coordinated in such a way to achieve the project goals of flood level reduction. In addition, any construction or alteration of facilities in the floodplain and floodway would be required to follow relevant local floodplain development ordinances. If adverse impacts are likely if completed first, the raising of the levee would not happen without the FRE being operational.
485	APPENDIX N: WATER	3.2.4.3	Page 115, second bold bullet point and its sub-bullets	The Agency Proposed Mitigation is of the right type (a Water Use and Rights Mitigation Plan), but its phrasing is unnecessarily restrictive. Existing stringent regulatory and permitting requirements under the Water Code, chapter 90.03 RCW and chapter 173-522 WAC (Chehalis River Basin Instream Flow Rule) already regulate any proposed withdrawals, diversions, and use of water. (This is part of the reason the FEIS should conclude that the proposed Project's impacts will be mitigated or avoided in the permitting process.) The RDEIS's description of purported required components of the Mitigation Plan prejudges some of that permitting process by including a limitation that the water be withdrawn from the Chehalis River, as opposed to from nearby tributaries, groundwater,

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				other sources, or some combination thereof. The law allows, and the permitting process could include and mitigate for the effects of, use of such water. The FEIS should describe the necessary components of the mitigation plan with reference to the Water Code and the Chehalis River Basin Instream Flow Rule, without otherwise restricting the range of options. Similarly, instead of suggesting that "mitigation measures should occur as close to the FRE facility as possible," the FEIS should allow the permitting process to employ mitigation measures that apply to surface water body reaches determined to be impacted, without reference to the location of the FRE facility.
486	APPENDIX N: WATER	3.2.5	Page 117, 2nd and 3rd bullets	The low-DO impacts identified in the RDEIS here are not probable, as they would only be engendered by flood operations occurring in the mid- to late-summer, which would not occur. Section 6.2 of Appendix J of the Revised Project Description states that "the normal operating period [of the FRE structure] will be September through April based on the historical record of floods large enough to trigger operation." The concern over decreased DO, both upstream and downstream of the structure, during flood operations in the mid- to late summer is unlikely due to the unlikely occurrence of flooding during the summer. The RDEIS's climate change predictions note that summer low-flows, not flood-flows, are likely. The FEIS should remove this impact because it is not probable.
487	APPENDIX N: WATER	3.2.5	Page 117, 5th bullet and preceding paragraph	The RDEIS incorrectly concludes that the construction water demand of the project will have significant and unavoidable impacts. As the RDEIS recognizes immediately below this text, a water use permit would be required for use of water for construction, and such a permit would address these impacts. As such, the impacts are not "unavoidable"; Ecology has identified the very process that will avoid them, or else the project cannot be constructed. Identification of the mitigation mechanism is enough; it need not be fully developed for the impact to be deemed avoidable. See Quinault Indian Nation v. Imperium Terminal Servs., LLC, 190 Wn. App.696, 708, 360 P.3d 949 (2015), *rev'd on other grounds*, 187 Wn.2d 460 (2017). The FEIS should identify this impact as avoidable.
488	APPENDIX N: WATER	3.3.2	Page 120, 5th paragraph	Stating that the scale of peak flow reduction from floodplain storage improvement projects under the Local Action Alternative during major/catastrophic floods may inaccurately suggest that the peak flow reduction is comparable to that achieved by the FRE structure alternative.
489	APPENDIX N: WATER	3.4.1	Pages 122-123	Incomplete analysis of effect | This section ignores effect of increased flooding with climate change on water quality downstream under the No Action scenario in terms of increased severity and frequency of turbidity.
490	APPENDIX N: WATER	3.4.2	Page 123	The RDEIS does not discuss potential effects of increased size and frequency of future winter storms on turbidity, increased flooding and channel erosion downstream, resultant channel widening, followed by reduced summer flows, shallower depths in wider channel reaches, and warmer summer temperatures. These are future conditions that should be expected and to which the FRE future condition should be compared.

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APPENDIX O: WETLANDS				
491	APPENDIX O: WETLANDS	3.2.1	Pages 40-41	Overstates significance; lacks functional loss and net-effect analysis | While the DEIS correctly identifies wetland impacts within the project footprint, its determination of significant adverse impact is not supported by SEPA criteria. The affected wetlands are Category II and III wetlands that are common within the Chehalis Basin, with no Category I or IV wetlands impacted. A substantial portion of the identified wetland and buffer impacts are temporary and would be restored following construction. The DEIS does not distinguish temporary disturbance from permanent loss, does not evaluate wetland functional loss, and does not assess net effects after compensatory mitigation. As such, the conclusion of significant adverse impact is not substantiated by the information presented.
492	APPENDIX O: WETLANDS	3.2.1.1.1	Figure O-11 and Figure O-12	RDEIS states "Quarry access and haul road work would impact 0.39 acre of wetlands (12 total wetlands) and 17.28 acres of wetland buffers…" Since the revised project description, the District has further evaluated the quarries and expects wetland impacts can be reduced during the permitting phase.
493	APPENDIX O: WETLANDS	3.2.1.1.2	Page 43	Neglects to account for created aquatic/riparian features and post-construction recovery; mischaracterizes relocation as permanent loss | The DEIS identifies temporary construction-phase disturbances associated with Crim Creek realignment and bypass channel construction, it does not acknowledge that the proposed action results in the creation of a new, permanent waterbody and associated riparian buffers. The relocated channel would establish a new ordinary high-water mark, convey aquatic flows, and support riparian vegetation following construction. As such, impacts represent a relocation and temporary disturbance of aquatic and buffer functions, not a permanent loss. The DEIS does not evaluate post-construction recovery, buffer revegetation, or net functional outcomes, which are necessary to support a determination of significant adverse permanent impact.
494	APPENDIX O: WETLANDS	3.2.1.2.2	Page 47	Contradicts downstream impact claims; confirms no adverse surface water quantity effects | The DEIS Appendix N 88, 2, states that, "There is no predicted increase in downstream flood extents, flood elevations, or flood frequency as a result of the FRE facility operation, and therefore FRE facility operation would result in no adverse impacts on surface water quantity downstream."
495	APPENDIX O: WETLANDS	3.2.2.1	Pages 48-50	Unsupported equivalency: temporary inundation misclassified as significant under SEPA | The DEIS asserts that recurring flood operations would have effects similar to major and catastrophic floods on downstream floodplain wetlands, while also characterizing wetland creation and loss dynamics as poorly understood. This conclusion is not supported as the RDEIS does not demonstrate comparable magnitude, duration, or probability of effects across flood scenarios, nor does it identify permanent wetland conversion. Temporary inundation shown in Tables O-16, O-20, and O-21 and Figures O-11 and O-12 does not constitute a significant adverse impact under SEPA. General scientific uncertainty regarding long-term floodplain evolution does not constitute a major information gap where impacts are temporary, reversible, and not shown to result in wetland loss.

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
496	APPENDIX O: WETLANDS	3.2.2.1.1	Pages 48-51	Unexplained significance change; climate and hydrology conflated | Section 3.2.2.1.1 concludes that probable adverse impacts to downstream floodplain wetlands and open-water/NHD habitats from inundation associated with FRE operations would be significant; however, this conclusion is not supported by new data or analysis and represents an unexplained departure from the findings of the 2020 SEPA DEIS, which determined that similar impacts would be less than significant. The Revised DEIS states that a "similar analysis" to the 2019 Downstream Floodplain Wetland Analysis was used, incorporating "updated data sources," but it does not clearly identify what those updated data sources are, how they differ from prior analyses, or how they justify a change in impact significance. The assessment of indirect hydrologic impacts to downstream floodplain wetlands relies primarily on model-derived wetland extents and changes in the frequency of overbank inundation, without adequately accounting for the multiple hydrologic inputs that maintain floodplain wetland function in the Chehalis Basin. These include groundwater inflow from valley side slopes, hyporheic exchange, precipitation-driven runoff, springs, and smaller tributaries, all of which reduce wetland dependence on mainstem overbank flooding. As a result, the analysis overstates the sensitivity of downstream wetlands to changes in river stage alone. In addition, the discussion blends the projected effects of climate change with the effects of FRE operations without clearly distinguishing between the No Action and Proposed Action Alternatives. While the analysis considers climate-driven changes in hydrology under the Proposed Action, it does not provide a comparable evaluation of climate change effects under the No Action Alternative, which is necessary to isolate project-related impacts. Moreover, FRE operations are expected to occur during the rainy season (November through March), when floodplain wetland soils are already maintained by precipitation and groundwater recharge, and when wetland vegetation is largely dormant. Climate projections indicating increased winter precipitation further suggest that precipitation-driven hydrology, rather than overbank flooding frequency, will remain the dominant control on downstream wetland moisture conditions. These same factors were identified in the 2020 SEPA DEIS Wetlands Discipline Report (pp. 0-50 to 0-53) as reasons why potential downstream floodplain wetland impacts would be minor. Notably, the Revised DEIS now identifies fewer acres of downstream wetlands as potentially affected than were identified in the 2020 analysis, yet reaches the opposite conclusion that impacts are significant, probable, and adverse. This change is not supported by the new evidence, functional assessment, or impact magnitude analysis and appears inconsistent with both the prior SEPA record and the information presented in the Revised DEIS.
497	APPENDIX O: WETLANDS	3.2.2.1.1	Pages 48-51	Infrequent flooding mischaracterized as controlling wetland hydrology | The wetland analysis is superficial and largely hypothetical, relying on remote sensing datasets and modeled future hydrology rather than an understanding of how these floodplain wetlands currently function. Under existing conditions, these wetlands are inundated, on average,

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				only during major flood events occurring approximately once every seven years. As such, they do not meet the National Research Council's (NRC) criterion for river overflow as a controlling source of wetland hydrology, which requires inundation or saturation to occur in at least one out of every two years to be considered hydrologically influential (NRC 1995). Consequently, these wetlands are not dependent on overflow from the Chehalis River under current conditions, and a reduction in the magnitude or duration of inundation during infrequent major floods would not affect their ecological function.
498	APPENDIX O: WETLANDS	3.2.2.1.1	Pages 51-54	Single-scenario flood modeling misapplied to dynamic wetland conditions | The wetland analysis incorrectly applies results from a hydraulic model that was developed to address a different question—flood risk reduction—and then extrapolates a single modeled 10-year flood scenario to represent all future 10-year floods. This approach does not reflect the dynamic nature of flood hydrology or the spatial variability of rainfall across the Chehalis Basin. It is incorrect to assume that the inundation pattern produced by a single modeled 10-year event would recur every 2 to 3 years. For example, when heavy rainfall occurs primarily in the Newaukum or Skookumchuck basins, the FRE facility would not operate, yet downstream floodplains may still be inundated. Conversely, there have been flood events in which flows at Doty exceeded the 10-year flood while flows at the Grand Mound gage did not reach the 38,800 cfs threshold (e.g., November 2012); in such cases, the FRE facility would not operate for flood retention, and floodplains between Doty and the Newaukum confluence could experience inundation exceeding 10-year levels. These and other plausible flood scenarios are not evaluated in the analysis. As a result, the modeling does not characterize the range of inundation patterns to floodplain wetlands patterns that may actually occur, and the outputs are applied outside their intended purpose. The model was designed to evaluate flood risk reduction, not wetland hydrologic dependency or ecological response, rendering its use for wetland impact determination inappropriate.
499	APPENDIX O: WETLANDS	3.2.2.1.1	Page 52	Inconsistent application of wetland hydrology criteria; infrequent flooding mischaracterized as impact | 2020 Appendix O EIS states, "these probable adverse impacts are considered minor for wetlands because the affected wetlands would not be eliminated or lose their primary hydrologic source but would no longer be inundated by overbank flooding that occurs infrequently." The USACE and EPA (Environmental Laboratory 1987) jointly define wetlands as, "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." Guidance from the National Research Council for determining wetland hydrology indicates that the water source must be present typically in 5 years out of 10 years, or more commonly referred to as occurring in 1 year out of 2 years (NRC 1995).
500	APPENDIX O: WETLANDS	3.2.2.1.1	Page 52, last paragraph	The RDEIS does not identify what wetland functions would be altered under baseline conditions for 2-4 days of flood inundation every 2-3 years. The District's BA provides an

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				analysis of potential effects on growth opportunities in overbank floodplain rearing habitat for juvenile salmon. Using studies from other systems, floodplain rearing growth potential is unlikely to be measurable unless floodplains are inundated for at least 15 days, with measurable growth after 30 days. An analysis of previous flood events indicates overbank flooding of floodplain habitats downstream of the FRE are limited to the area just upstream of the South Fork confluence, and flooding persisted for 2-4 days. This is not sufficient, under baseline conditions, to function as productive rearing habitat for juvenile salmon.
501	APPENDIX O: WETLANDS	3.2.2.1.1	Page 53	Deprecated data used; open water misclassified as wetlands | The DEIS includes open water and aquatic habitat classes derived from the deprecated 2016 modeled wetlands inventory as "potential wetlands," inflating wetland acreage and overstating impacts. Open water habitats do not meet regulatory wetland criteria and are not classified as wetlands under federal or state guidance. The inventory itself is medium resolution, identifies only potential wetlands, and is no longer supported by Ecology for regulatory analysis. Wetland impact conclusions should be based on field-verified delineations and functional assessments, as provided in the RMP, with open water habitats evaluated separately as aquatic resources.
502	APPENDIX O: WETLANDS	3.2.2.1.1	Pages 54	Contradicts floodplain science; misstates hydroperiod–vegetation relationship | The DEIS statement asserting that less frequent flood inundation may maintain floodplain wetlands in a wetter state and promote emergent or scrub-shrub vegetation is internally inconsistent and not supported by floodplain hydrology or vegetation science applicable to the Chehalis River. In the Chehalis Basin, reduced flood frequency is associated with decreased floodplain wetness, while shifts from forested to emergent or scrub-shrub vegetation occur under conditions of increased or prolonged inundation. Hydroperiod length, not reduced flooding, drives vegetation shifts (Mitsch & Gosselink 2015). Additionally, the Revised DEIS incorrectly concludes that the FRE will eliminate channel-forming flows and therefore interfere with wetlands formation and vegetative functions. As discussed in a comment to Appendix D (Earth), channel-forming flows in the Chehalis mainstem (as in most rivers) occur at flows of far less than the major-flood flow. Like most rivers, the channel forming flow in the Chehalis occurs at around the current 2-year flood flow; this is also the flow that typically drives wetlands formation and vegetative processes. Because the FRE would operate until what is now the current 7-year flood flow, it would not interfere with these channel- and wetlands-formation flows.
503	APPENDIX O: WETLANDS	3.2.2.1.2	Page 54, last paragraph under **Temporary Reservoir**	The stream miles provided in this paragraph are not correct. The correct numbers are: • 16.66 miles/109.89 acres of stream: • 6.6 miles mainstem Chehalis River • 10.0 miles of tributaries • Of this, 11.8 miles are fish-bearing. • Includes 0.48 mile affected by temporary construction disturbance: • 0.38 mile of the Chehalis River • 0.06 mile of Crim Creek • 0.04 mile of non-fish-bearing tributaries.

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
504	APPENDIX O: WETLANDS	3.2.2.1.2	Page 55–58	Contradicts downstream impact claims; confirms no adverse surface water quantity effects | The DEIS Appendix N 88, 2, states that, "There is no predicted increase in downstream flood extents, flood elevations, or flood frequency as a result of the FRE facility operation, and therefore FRE facility operation would result in no adverse impacts on surface water quantity downstream."
505	APPENDIX O: WETLANDS	3.2.2.1.2	Page 57	Contradicts downstream impact claims; confirms no adverse surface water quantity effects | The DEIS Appendix N 88, 2, states that, "There is no predicted increase in downstream flood extents, flood elevations, or flood frequency as a result of the FRE facility operation, and therefore FRE facility operation would result in no adverse impacts on surface water quantity downstream."
506	APPENDIX O: WETLANDS	3.2.2.1.2	Page 58	Unquantified sediment/wood impacts; ignores RMP re-entrainment and LWM mitigation | Instead, these wetlands are sustained primarily by shallow groundwater inputs, local precipitation, and their landscape position. The DEIS does not demonstrate that FRE operations would alter these dominant hydrologic mechanisms in a manner that would result in wetland degradation. By relying on modeled future hydrology rather than field-verified wetland conditions, the analysis does not meet SEPA's requirement for a reasoned evaluation of environmental impacts. While screening-level datasets are appropriate for identifying areas of potential concern, they are insufficient for determining impact magnitude or significance without site-specific verification.
507	APPENDIX O: WETLANDS	3.2.5	Page 67	Pre-judges the adequacy of mitigation | Section 3.2.5 states, "Impacts to wetlands and waterbodies from construction activities are more localized and therefore more easily replaced, but mitigation cannot fully replace the lost wetland and waterbody functions from frequent inundation of the temporary reservoir and the resulting downstream floodplain adverse effects." The assertion that mitigation cannot fully replace lost functions is premature. That determination will be made during a future permitting phase based on more specific characterization of existing wetlands and proposed mitigation and the associated functional analysis of both.
508	APPENDIX O: WETLANDS	3.4	Pages 72-74	The DEIS does not adequately analyze climate change effects on floodplain wetland hydrology under the No Action Alternative | The discussion of climate change effects on floodplain wetland hydrology is minimal in the No Action Alternative. The effects of climate change on floodplain wetland hydrology should be expanded to create a basis for more clearly distinguishing the effects of the proposed action from the effects of climate change. This is especially important because those effects potentially offset one another. Climate change effects on hydrology are part of the baseline condition and not attributable to the FRE operation. This point needs to be clearly stated and discussed as part of the No Action Alternative discussion.
APPENDIX P: WILDLIFE				
509	APPENDIX P: WILDLIFE	Summary	Page v, Table P-1, row 2	Minimizing construction impacts. | Nest abandonment can be avoided by conducting vegetation clearing and construction outside the bird nesting season. Mortality, disturbance,

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
				and injury to larger mobile bird and mammal species can be reduced by conducting construction activities when species are not tied to nesting or denning sites.
510	APPENDIX P: WILDLIFE	Summary	Page v, Table P-1, row 3	Construction impacts level determination. | The DEIS indicates that effects on migratory pathways are significant during construction but does not describe the magnitude or severity of those potential impacts that support that determination.
511	APPENDIX P: WILDLIFE	Summary	Page via, Table P-1, row 1	Mortality is not an inevitable result of reduced flooding hydrology.
512	APPENDIX P: WILDLIFE	Summary	Page vici, Table P-1, row 3	Operations impacts level determination. | The DEIS indicates that effects on migratory pathways are significant during construction but does not describe the magnitude or severity of those potential impacts that support that determination.
513	APPENDIX P: WILDLIFE	2 Methodology	Overarching Concern 1	Components of impacts to wildlife are not specifically addressed. | The four primary components of impacts to wildlife resources (magnitude, geographic extent, duration, and particularly the probability of occurrence) in general are not mentioned, with the lone exception of considering geographic extent (for habitat loss from the FRE facility and associated infrastructure). Instead, the text implicitly assumes that each of these components is substantial enough that, on balance across the four components, a summary conclusion of significant impacts is warranted. The analysis is incomplete and does not support the finding of significant impacts.
514	APPENDIX P: WILDLIFE	2 Methodology	Overarching Concern 2	Significant impacts determined without confirmed presence of the species. | Repeatedly, a conclusion of significant impacts to marbled murrelets and Townsend's big-eared bat rests on the assumption that suitable nesting trees (murrelets) and roosting trees (bats) occur in the study area and could be used by these species. Given the lack of confirmed observations of these two species in the proposed Project area, it is presumptuous to conclude that significant impacts will occur.
515	APPENDIX P: WILDLIFE	2 Methodology	Overarching Concern 3	Likely to be a lack of suitable mature forests for nesting marbled murrelets in Proposed Project area. | The District is not aware of old-growth stands occurring in the extensively developed, lower Chehalis River floodplain areas or in the commercially managed forests in the FRE facility and temporary inundation area in the upper river. Additionally, the probability of large stands of mature forest (which would provide suitable habitat for murrelets because of the reduction in edge effects and corvid predation in particular) occurring in the upper river portion of the proposed project area is likely low given the heavily fragmented and managed habitat in the area from years of commercial forest harvesting.
516	APPENDIX P: WILDLIFE	2.2.1.1	Page 7, paragraph 1	The Mitigation Plan considers the constraints of using the NLCD mapping in the FRE construction and temporary inundation area.
517	APPENDIX P: WILDLIFE	2.2.2	Pages 35-36	As the RDEIS states, Oregon spotted frog (OSF) do not occur in the study area as documented by field surveys (p. 35). The RDEIS's statement that OSF are part of the still-water breeding amphibian species assemblage in the study area is not accurate based on

Comment #	Revised Draft EIS Component	Main Body or Appendix Section	Location (page, paragraph, sentence, table, bullet)	Comment
				the RDEIS's own conclusions. Revise the FEIS to reflect that OSF do not occur in the project area.
518	APPENDIX P: WILDLIFE	2.2.2	Pages 35-36	Oregon spotted frog occurrence confusion. | Oregon spotted frog is mentioned as part of the still-water breeding amphibian species assemblage in the study area (p. 34) and then is noted as not occurring in the study area, as documented by field surveys (p. 35). This contradiction occurs elsewhere in Appendix P also. Neither Oregon spotted frog nor their habitat have been documented in the upper Chehalis Basin.
519	APPENDIX P: WILDLIFE	2.2.2	Page 37	Winter wren taxonomy. | Winter wrens on the Pacific Coast are now treated as a separate species, Pacific wren.
520	APPENDIX P: WILDLIFE	2.2.2	Page 37	Solitary vireo taxonomy. | Solitary vireos west of the Great Plains are now treated as a separate species, Cassin's vireo.
521	APPENDIX P: WILDLIFE	2.2.2	Page 37	Yellow warbler taxonomy | Yellow warbler is now formally the northern yellow warbler as the mangrove yellow warbler was elevated to full species status.
522	APPENDIX P: WILDLIFE	2.2.2	Page 37	Genus Dendroica taxonomy change. | The wood warbler genus Dendroica has now been revised to Setophaga.
523	APPENDIX P: WILDLIFE	2.2.2	Page 38	American wigeon spelling | American wigeon is the correct spelling; there is no "d" in wigeon.
524	APPENDIX P: WILDLIFE	2.2.2.1.2	Page 41	Old-growth forest stand occurrence. | Marbled murrelet is noted as possibly occurring "...if mature or old-growth forest stands with suitable nesting structure are present." Later on p. 50 when discussing Johnson's hairstreak, the text indicates "…there are no old-growth forests within the study area." The District's understanding is there are no old-growth forests remaining in the study area.
525	APPENDIX P: WILDLIFE	2.2.3.2.1, Marbled Murrelet	Page 49, paragraph 2	As described in the Mitigation Plan, the District has committed to conducting pre-construction nesting habitat suitability surveys to identify suitable marbled murrelet nesting trees in all forested areas in which tree removal is proposed, and in the disturbance-based threshold distance of 328 feet (for noise disturbance) from tree removal activities. The surveys will identify suitable nesting trees and inform tree removal timing to avoid tree removal during the nesting season. The District expects the quantity of trees to be preserved and taken out of timber production outside of the temporary inundation area (and thus to continue growth to attain larger size) as part of its Forest Conversion Plan will more than offset the amount of suitable nest trees that may be removed or disturbed within the facility footprint and temporary inundation area. Since the time of the Revised Project Description, the District has had many opportunities to observe the quarry sites and riparian corridor while conducting other site investigations. Suitable nesting trees were quite limited in these observations. Of the mature conifers observed with suitable diameters, most lacked the robust branch structure to support nesting platforms. Based on tree canopy height GIS analysis and opportunistic surveys

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				completed to date, the District conservatively estimates between 2 and 5 percent of coniferous trees within deciduous riparian corridors and mixed coniferous/deciduous transitional forests may be suitable for nesting. The District believes that future marbled murrelet habitat surveys during permitting will demonstrate that any such habitat impacts from the Project will be avoidable through mitigation.
526	APPENDIX P: WILDLIFE	3.2.1.1.2	Page 67, 3rd paragraph	Cited guidelines for noise harassment for murrelets are outdated. This noise threshold has been replaced with guidance from USFWS (2015). The noise threshold was replaced with a distance threshold from the edge of suitable nesting areas to the source of noise from specific activities.
527	APPENDIX P: WILDLIFE	3.2.1.1.2	Page 72, 1st paragraph	Geographic extent of impact recognized. | The geographic extent of impacts within the greater Chehalis Basin is recognized for habitat loss from construction of the FRE facility and associated infrastructure. This is helpful. Framing potential impacts within a regional context like this is one of the four primary components that should be addressed when assessing impacts to wildlife (see Overarching Concern 1 above).
528	APPENDIX P: WILDLIFE	3.2.1.1.2	Page 73, 2nd paragraph	Text misplacement? | Paragraph on bats and birds does not discuss migratory pathways impacts; the text seems misplaced.
529	APPENDIX P: WILDLIFE	3.2.1.2.1	Page 74, 1st two paragraphs	No BMPs mentioned. | The probability of turbidity and water drawdown impacts during construction of the FRE facility and associated areas occurring within the amphibian breeding season is not mentioned. No BMPs mentioned, which could reduce turbidity impacts.
530	APPENDIX P: WILDLIFE	3.2.1.2.1	Page 74, 5th paragraphs	No BMPs mentioned. | BMPs mentioned for construction of quarry sites and access roads to avoid and minimize impacts of turbidity and contaminants during construction; this results in a less than significant impact. This information was not mentioned in the discussion of construction impacts for the FRE facility and associated areas.
531	APPENDIX P: WILDLIFE	3.2.2.1.1	Page 86, last paragraph	The RDEIS assumes the facility would reduce flood inundation events to an extent that floodplains would no longer receive overbank flooding and provide habitat for aquatic species. With respect to juvenile salmonid rearing opportunities, the habitat made available from overbank flooding recedes within 2 to 4 days, a time period not sufficient to elicit a measurable response in growth potential based on studies along the Yolo bypass in northern California.
532	APPENDIX P: WILDLIFE	3.2.2.1.1	Page 87, paragraph 2	The RDEIS contends that flood retention operations will eliminate channel forming flows. Channel forming flows are equivalent to approximately the 2-year and 10-year events. The proposed facility is not expected to operate for flood retention during 2-year events, and operations to retain 10-year flows will be intermittent and likely limited based on refinements to the operational rule curves.
533	APPENDIX P: WILDLIFE	3.2.2.1.1	Page 87, 4th paragraph	Upland habitat also impacted by reduced flooding downstream? | Not clear how upland wildlife habitat, in addition to aquatic habitat, is also significantly impacted by reduced flows in the floodplain areas downstream. Generally, there should be an expansion of upland habitat in areas experiencing less overbank flooding.

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