

Summary of Comments and Responses on Phase IIB Report- April 14, 2011			
Comment	Reviewer	Location	Response
Study relies on generalizations and assumptions	State commenters; Chehalis Tribe	Throughout	Added section on "Restricted Scope of Study" in "Introduction and Scope" chapter.
Supporting documentation is lacking	Chehalis Tribe	General comment	Additional citations added in various locations. Further source materials will be provided for specific requests.
The report only deals with the proposed water storage projects, not basin-wide solutions	Chehalis Tribe	General comment	True. Prior studies in the Basin did not consider the proposed dams or recent increases in the severity of flooding. Phase I studies considered the potential for water storage facilities throughout the Basin but identified these sites as the only ones that warranted further study in Phase II.
Study deals inadequately with fish and environmental issues, including costs of mitigation	State commenters; Chehalis Tribe	Throughout	Fish and environmental issues, including mitigation, are not part of the Corps' methodology for national economic development benefit-cost analyses. In addition, these issues are being addressed in the Anchor QEA study, which was not available for this report. Further analysis and review of these issues will also occur in the permitting process.
Study counts recreational benefits associated with the new reservoir but neglects recreational costs due to presumed losses of salmonid habitat	Chehalis Tribe	Various places	The Anchor QEA study is expected to provide additional information on these points - existing information is inadequate.
Differences in tone in different sections of the report and different titles for the report used; recommend calling this a "Preliminary Feasibility Study".	Vince Panesko	Various places	Clarifications were made throughout the report.
There is no official design, just assumptions for evaluating feasibility. Cost uncertainties remain high and the benefit/cost ratio is too uncertain to make decisions on the future worthiness of the project.	Vince Panesko	Executive summary	New section added that clarifies assumptions, including the need to update the benefit/cost ratio based on further studies and as more information becomes available.
Mainstem dam is just upstream of Pe EII and should be called this to avoid giving the impression the dam is a long way from Pe EII.	Vince Panesko	Throughout	Comment noted. Nomenclature of "Mainstem" structure retained.
Costs in Table ES-1 are preliminary and do not include other costs identified in Appendix B.	Vince Panesko	Executive summary	Language in section indicates preliminary nature of report.
No discussion of operational costs, including management of sediment and debris, repair of grout curtain, and vegetation management.	Vince Panesko	Executive summary	The need for more information is acknowledged and further research will be needed as the project matures.

Both Phase I and IIB claim to be "high level reconnaissance analysis". The distinction is lost if the term is used in both reports.	Vince Panesko	Executive summary	The language throughout the report has been clarified.
Concerns about structure designs and potential fatal flaws due to geology inadequately addressed; suggested adding language.	Vince Panesko	Throughout	Comment noted and caveat language clarified where appropriate.
Concern about description of Doty gage data.	Vince Panesko	Executive summary, Table 1	Comment noted; language in report identifies that Doty gage area covers more area than the retention structure. Language added clarifying that gage washed out in 2007.
Concern of misleading the public about protecting I-5 from all flooding.	Vince Panesko	Executive summary	Language clarified.
No preliminary design work done as there is no official design document to date.	Vince Panesko	Executive summary	Comment noted.
No description or cost analysis of system necessary to maintain free flowing river.	Vince Panesko	Executive summary	Language clarified to identify what is meant by free flowing structure.
Benefit cost ratio has great uncertainty due to the number of construction and operational costs not included in the analysis.	Vince Panesko	Executive summary	Language clarified.
Premature to conclude that project is cost effective because all costs have not been determined and assumptions costs.	Vince Panesko	Executive summary, throughout	Language throughout report updated to reflect need for additional study.
Fish mitigation costs could be underestimated here, leading to faulty benefit-cost analysis	Chehalis Tribe; Cummings, Dept. of Ecology	Economic analysis	The need for more information is acknowledged.
Development of engineering designs and cost estimates was appropriate for this stage of analysis, but more must be done at subsequent stages	Cummings, Dept. of Ecology	Project costs section	The need for more information is acknowledged and further research will be needed as the project matures.
Justify 20-foot and 30-foot freeboard	Chehalis Tribe		Information added.
Justify the statement that the water storage capabilities of the multi-purpose structures offer potential benefits to wildlife and agriculture	Chehalis Tribe		Information added.
The proposed dams do not prevent all flooding of downstream areas including I-5	Chehalis Tribe; NW Steelhead and Salmon Conservation Society ("NWSSCS"); Vince Panesko		True. These are flood reduction structures, intended to reduce the frequency and severity of flood events, not to prevent them altogether, which would be prohibitively expensive, if it could be done at all. The report recognizes the need for modest improvements to the Airport Levee to help protect I-5 in conjunction with storage.
Explain different estimates of structure costs	NWSSCS		Table ES-1 (\$165,230,000) lists construction costs, while Table ES-2 lists 50 year total cost of project on a NPV basis.

Figure 2 and accompanying text are misleading or incomplete regarding the frequency of flooding as demonstrated by Doty gage data records	Pickett and Olson, Dept. of Ecology; Vince Panesko	Hydrology section	Text modified and expanded. Additional text distinguishes recent increases in frequency of "severe flooding" compared to less severe overbank events.
Use higher instream flow to more accurately evaluate benefits of hydro generation	Olson, Dept. of Ecology	Cost estimates, hydro component	Hydropower generation is the last priority for system operation, following flood control (highest priority) and maintenance of optimal instream flows.
Carbon impacts of construction might offset carbon reduction benefits due to hydropower	Olson, Dept. of Ecology	Benefit-cost analysis - alternatives analysis	Analysis of this effect is beyond the scope of this study and of the Corps' methodology for such studies, and that the bulk of construction emissions will likely be associated with building the dam(s) solely for flood control, so hydro benefits will be a net gain.
Local calibration of Corps and HAZUS damage-prediction models is desirable	Olson, Dept. of Ecology	Benefit estimation - flood damages to structures	Local calibration would be desirable but is beyond the scope of Phase IIB analysis.
Account for benefits to agriculture or groundwater recharge due to flooding that will be lost if flooding is stopped	Chehalis Tribe; Olson, Dept. of Ecology	Benefit estimation - flood damages to agriculture	Such benefits are conjectural and these analyses lie outside the Corps' methodology. The report also acknowledges that some degree of flooding will still occur.
Erroneous damage calculation for flooding impacts to crop damage because farmers expect flooding and do not risk planting marketable crops in low lying areas.	Vince Panesko	Benefit estimation - flood damages to agriculture	Comment noted.
Debris removal costs difficult to understand.	Vince Panesko	Debris removal benefits.	Language clarified. Additional study may be needed.
Untrue to say that I-5 is closed during all flood events	Vince Panesko	Benefit estimate about I-5	Language clarified.
Mud Mountain Dam is a poor reference for calculating recreation benefits; potential reservoir land is not open to the public and benefits should be deleted.	Olson, Dept. of Ecology; WDFW commenters; Vince Panesko	Multi-purpose benefits - recreation	This was the best available local model. Licenses and permits for the flood control reservoirs can contain conditions that will enhance their value for recreation.
Figure 15 for reservoir location and forest stages of insufficient detail to be helpful. Update to show reservoir area and forest stages around reservoir. Update spelling in section.	Vince Panesko	Multi-purpose benefits	Comment noted for future analysis. Spelling updated.
Need to distinguish ecosystem values for rivers and lakes. Trees more valuable than reservoir.	Pickett and Olson, Dept. of Ecology; Vince Panesko	Alternative analysis - environmental benefits	This is beyond the scope of this study and more research and analysis would be needed. Value of trees versus value of reservoir subject to future study.

There are concerns about reliance on the Earth Economics report's estimates of benefits from the reservoirs for recreation, habitat, and ecosystem services.	Chehalis Tribe; Vince Panesko	Throughout	A more rigorous analysis is beyond the scope of this study. Due to the inherent uncertainty of the estimated benefits in the Earth Economics report, this study used values at the low end of the ranges presented in the Earth Economics report.
Various comments on dam design details	Chehalis Tribe		The Feasibility Study uses updated design details in response to comments provided to previous engineering studies; further design refinements will be needed.
Consider effect of flood reduction on existing wetlands in the floodplain	Chehalis Tribe; Olson, Dept. of Ecology	Alternative analysis - wetland benefits	This is beyond the scope of this study and calls for more research and analysis.
Report needs a statement about uncertainty	Pickett, Dept. of Ecology	Throughout	A new section on "Restricted Scope of Study" has been added to the "Introduction and Scope" chapter.
Exercise caution in drawing conclusions based on this analysis	Pickett, Dept. of Ecology	Throughout	The report has been modified to acknowledge uncertainty and limitations of the methodology and inputs.
Analysis does not list negative impacts of toxic materials and contaminants at the site(s)	Pickett, Dept. of Ecology	Alternative analysis - environmental benefits	The study presumes that management of toxic materials and contaminants at the site(s) will comply with regulations and best practices to avoid negative impacts. The analysis could list a benefit from contaminant spills avoided due to reduced incidence and severity of flooding. In any event, the Corps' methodology does not incorporate either suite of impacts.
Clarify which dam design(s) were considered in the "Alternative" and "Regional" benefit-cost analyses	Pickett, Dept. of Ecology	Benefit-cost analysis summary	Clarification made.
Confirm that value of environmental services for lakes does not include recreational benefits	Pickett, Dept. of Ecology	Alternative analysis - environmental benefits	Clarification made.
Pickett's comment 21): "Confirm that the low value for reservoir is used in Table 36 and Table 37"	Pickett, Dept. of Ecology		The language above Table 1 indicates the low value is used.
Justify the statement that the multi-purpose offer possible water quality benefits (multi-level intake towers) and acknowledge the complexity of water quality changes associated with low flow augmentation	Chehalis Tribe; Pickett, Dept. of Ecology; Vince Panesko	Alternative analysis - water quality	The study notes that subsurface waters in a reservoir are typically cooler than waters at the surface and acknowledges that these are complex phenomena that are difficult to predict and are the subjects of ongoing study.
Consider complexity of water quality changes associated with low flow augmentation in calculating intrinsic value	Pickett, Dept. of Ecology	Regional analysis - intrinsic value	The report acknowledges that more study is needed.

Additional study of impact of low flow augmentation should be recommended	Pickett, Dept. of Ecology	Conclusions & Recommendations	This item was added to the "needs more study" list
Consider impact of reduced flooding on current wetlands.	Callendar, Dept. of Ecology; WDFW commenters	General comment	This item was added to the "needs more study" list
Revise the cost of wetland creation to reflect current knowledge	Callendar, Dept. of Ecology	Alternative analysis - wetland benefits	There is no indication that the examples cited in this comment are comparable to local costs. Regardless, the magnitude of this cost component does not materially change the outcome of the benefit-cost analysis.
Claiming creation of wetlands during the summer is double book keeping.	Vince Panesko	Alternatives analysis-wetland benefits	Comment noted.
Cost of purchasing flood-prone properties should be considered as an alternative to flood control structures	Dept. of Fish & Wildlife	General comment	The Corps has considered this option, and will need to address it in the NEPA/SEPA analysis - not here. In any event, such measures do little to protect highways and other transportation infrastructure.
Provide detail on how numbers of protected houses were calculated in Table 38.	Vince Panesko		Detailed information available on request.
Increasing protection could encourage development in the floodplain, thereby putting more investment in harm's way	Dept. of Fish & Wildlife	General comment	This is addressed in the benefit-cost analysis.
Consider revising cost of environmental mitigation based on WDFW input	Dept. of Fish & Wildlife	Construction Costs - cost scenarios	An analysis of this factor can be done when the fish study has been concluded.
Include cost of operating a trap and haul fish facility	Dept. of Fish & Wildlife	Operation and Maintenance Costs	This information is included on page 25 of the Engineering report.
Remove reference to reduction of fish kills as a project benefit	Dept. of Fish & Wildlife	Alternative analysis - water quality	The language in the text identifies this as a potential benefit and acknowledges the need for more study.
Provide a case history of a dam that has provided benefits to native salmonids	Dept. of Fish & Wildlife	Alternative analysis - water quality	While these dams are not being designed as fish enhancement structures, the proposed project will be built with concerns for fish welfare squarely in the foreground as opposed to historic practice.
Additional study of wildlife impacts should be recommended	Dept. of Fish & Wildlife	Conclusions & Recommendations	This item was added to the "needs more study" list.
List of further studies should be expanded to include more complete costs, not just further benefits.	Vince Panesko	Conclusions & Recommendations	List of recommended studies noted.

Existing recreational activities in the project area may have been underestimated	Chehalis Tribe		High-level analyses appropriate to this type of study found little evidence of recreational activities - further study is needed.
There's no accounting for recreational opportunities lost in connection with lands submerged as the reservoirs fill	Chehalis Tribe		The acreage of lands submerged is small relative to surrounding lands, and in any event the absolute and relative value of recreational opportunities of terrestrial versus aquatic activities needs additional study.
Explain and justify the analysis of net present value	Chehalis Tribe		The study used the well-established procedure prescribed by the Corps
Are benefits from reduced traffic delays double-counted with the benefit from avoiding the costs of raising the I-5 roadway?	Chehalis Tribe	Transportation	Such benefits are not double-counted but are treated independently depending on the timeframe; the text is clarified.
Consider appropriate fraction of trips that would use the detour route during a closure	Washington DOT	Transportation - Cost to Car Traffic	More study is needed.
Consider an appropriate traffic growth rate	Washington DOT	Transportation - Cost to Car Traffic	Developing an estimate of such a rate is beyond the scope of this study and lies outside the Corps' methodology.
Use different cost rate assumptions for business and non-business trips	Washington DOT	Transportation - Cost to Car Traffic	Developing an estimate of such a scaling factor is beyond the scope of this study and lies outside the Corps' methodology.
Provide the basis for the estimate of the weighted average of \$551 per truck	Washington DOT	Transportation - Cost to Freight Traffic	An explanation of the methodology was added to the text.
Caveats needed about further study and sub-surface evaluation needed for geological work.	Vince Panesko	Appendix B	Caveat language added.
First four pages of Appendix B redundant; delete.	Vince Panesko	Appendix B	Language left in Appendix B to allow it to be a stand alone document if needed.
If flood storage only structure is rarely filled, there may be problems with closing the gates. Vegetation growth needs to be addressed.	Vince Panesko	Appendix B	Language added.
Concern that language leads to the expectation that retention structures will contain all flood events.	Vince Panesko	Appendix B	Clarification made and caveat language added.
Additional modeling needed to show how much water could be held back if just one structure is proposed versus the two analyzed as part of Phase I.	Vince Panesko	Appendix B	Further study will be needed.

Why is reservoir drop limited to 20 feet for power production; explain how this relates to dam needing to be emptied for flood storage.	Vince Panesko	Appendix B	The graphic and analysis assume that the storage for flooding is "below" the storage for hydropower. The analysis was used to determine the required height of the dams, thus first counting the flood storage and next counting the storage necessary for hydro operations. In reality, the multi purpose reservoir would store water on the bottom for minimum flow requirement and hydro generation. The remainder of the reservoir would be empty except in the case of a flood.
List of future studies inconsistent; redundant.	Vince Panesko	Appendix B	List of studies moved to the main body of the report.
List of studies recommended by Shannon & Wilson should be included.	Vince Panesko	Appendix B	Studies recommended by Shannon and Wilson incorporated in main body of the report.
Impact to Pe Ell water supply underestimated at \$24,150; cost estimate placeholder should be more like \$10 million and included in costs, not contingency.	Vince Panesko	Engineers Drawings	Comment noted.
Volume of material to be removed from potential site is low, and costs underestimated.	Vince Panesko	Engineers Drawings	As noted elsewhere, additional study is needed of the sub-surface materials; further cost information will be developed upon additional study.
Cost to remove fill material and haul it elsewhere need further explanation, as well as explanation of debris disposal site.	Vince Panesko	Engineers Drawings	The cost and materials estimates were estimated based on construction cost guides, recent construction bids, preliminary drawings and professional judgment. These estimates included allowances and contingencies. As the project progresses and more information is known, these cost and material estimates can be further refined.
Include a higher placeholder for removal of rock materials.	Vince Panesko	Engineers Drawings	Cost estimates were based on existing information; they will be refined upon further study.
Adequacy, suitability, and availability of suitable borrow material for a dam needs further study.	Vince Panesko	Engineers Drawings	This is a topic for further study.
Recommend higher placeholder figure for rip rap	Vince Panesko	various places	The cost and materials estimates were estimated based on construction cost guides, recent construction bids, preliminary drawings and professional judgment. These estimates included allowances and contingencies. As the project progresses and more information is known, these cost and material estimates can be further refined.
A vertical shaft may be part of the Mainstem dam configuration; if so, add to the cost analysis.	Vince Panesko	Engineers Drawings	The cost of a vertical shaft was included in the Mainstem dam analysis.