QUESTIONS AND COMMENTS ON SCOPING FOR SKAGIT RIVER FLOOD DAMAGE REDUCTION FEASIBILITY STUDY

30 March 1998 Draft

The following table contains the written comments and/or questions the Corps/Skagit County Study Team has received in response to the October 19, 1997 Notice of Intent to prepare an Environmental Impact Statement (EIS) for the study. Initial answers and/or responses are provided for many of the comments/questions for your information. We have tried to include all written comments received at and following the December 11, 1997 Public Meeting. This table will be revised and updated periodically as we go through the study. Answers and responses may change in future drafts as additional information is received and specific study tasks completed. Not all comments or questions are answered at this time but we intend to address them during the study. Not all the verbal comments received at the December meeting are included. For the next draft of this table we intend to review the videotape of the meeting to better document the verbal comments provided at the meeting. If we have misstated your comment or question, please let us know and we will correct it.

We want to thank the following persons or organizations who took the time to provide written comments and/or questions on the study.

Barbara Austin
Mark Backlund
Bud Belcoe
Lawrence Boettcher
Joe Booth
Al Bridgeman
Darwin Geerdes
Leonard Halverson
William & Suella Hershaw
Jennifer Hess
Glen Johnson
Dave Jones
Gary Jones
Jeff & Laurie Kaspar
Larry Kunzler
Duane & Joan Melcher
Michael Roozen
Phyllis Rowan
Allen Rozema
Ann Sameyer
Rupert Schmidt
Pat Severin
John Spence
Scott Thompson
Tony Trish
Melody Wallace
Susan Willis
Fred Winyard
Tiffany Youngren
Tom Zimmerman
National Marine Fisheries Service
Skagit System Cooperative
U S Fish & Wildlife Service
Washington Department of Natural Resources

If you have further comments and/or questions as we move through the study, please contact us by mail, by phone, by Fax, or e-mail as listed below:

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QUESTIONS AND/OR COMMENTS	ANSWERS AND/OR RESPONSES
GENERAL COMMENTS/QUESTIONS	
Would it be possible to use the information now available to resolve the problem? ***[Spence]***	The last major study of the river flooding was done to support floodplain mapping by the Federal Emergency Management Agency (FEMA) in the early 1980's. This work was largely based on the previous Corps 1979 design report for the Levee & Channel Improvements Project (this project has subsequently been deauthorized). More recently, limited analyses were performed by the plaintiffs and defendants in the recent lawsuit. It would be difficult, if not impossible, to complete a study based solely on available information. We will be using as much existing information as possible in the Feasibility Study.
…I would love to see a study (especially one as expensive as the one you mentioned in your e-mail) that encompasses ideas that will work, and that have not been studied and restudied many times before (unless, of course, they have been found to work - although if they work and we do another study on it, it would be nice to see a working system implemented. ***[Youngren]***	Based on the reconnaissance report, there appear to be a limited number of real options available and most, if not all, have been considered at some time in the past in one form or other. The most important factors for Skagit County citizens are: the recognition by the community at large that floods pose a significant unacceptable risk to life and property, the determination by the entire community that measures to reduce the existing level of risk are needed, and the commitment by the people to support necessary funding for appropriate measures.
The public and County should address the need to develop a financing plan for any project. In order to stay on track; maybe dual efforts are needed, separating the two processes: funding and engineering/alternatives ***[Public Meeting]***	Skagit County, as local sponsor for the study, is responsible for providing the non-federal share of study and project costs. A funding agreement would be signed between the Corps and the County verifying the availability of funds before construction would begin.
At the public meeting on December 11, 1997, Dave Brookings, Skagit County Public Works Surface Water manager made the statement, "This is Skagit County's study. We are in charge of it. We own it." I feel it imperative that the Corps inform the County that this study is funded to the tune of 2 million dollars by federal taxpayers. Strict compliance with the National Environmental Protection Act (NEPA) is not only expected it is demanded and that the Corps will settle for nothing less. Simply because an element of this study will show results unfavorable to Skagit County's long history of abuse is no reason or justification for not proceeding with the study in strict compliance with NEPA standards. ***[Kunzler]***	The study is being conducted as a Federal-local partnership. The Project Study Plan was developed in full cooperation with Skagit County, which is responsible for half the study costs, $2 million. The challenge is to develop a plan that will meet all federal, state, and local laws and policies, while remaining within the ability of the partners to finance. The Corps will be responsive to the County's requests and desires during the study, as long as those requests do not violate legal statues or policies. Full NEPA compliance is required for this project to move forward through the study stage and Congressional authorization to construction.
LARGE SCALE FLOOD DAMAGE REDUCTON ALTERNATIVES	
	All proposed large scale alternatives will be examined by the study team. However, some alternatives may be eliminated at an early phase because they are impossible to construct, clearly would not have a positive benefit-to-cost (B/C) ratio, or contain environmental impacts which are restricted by law. This screening process will take place during the next year.

AVON BYPASS	
Many comments supported consideration of the Avon Bypass alternative ***[Austin, Backland, Bridgeman, Geerdes, Halverson, Hess, D Jones, Kunzler, Melcher, Roozen, Rowan, Sameyer, Schmidt, Spence, Thompson, Trish, Wallace, Willis, Winyard]***	The Avon Bypass will be examined as a project option using the new hydraulic model during Stage 1 to determine whether it should be carried forward in detail to Stage 2.
I hope that the environmental study of the feasibility of rural overtopping levees will use more than one alternative and that the environmental impact of the Avon Bypass Project will be part of the study. The Avon Bypass proposal has been studied and authorized in the past. It should make a good comparison, even if it does not prove to be the preferred alternative. It benefits most of the land in the flood plain. The idea should, however, be subjected to appropriate scrutiny as to its adverse environmental impacts. ***[G Jones]***	Comment noted. If selected for detailed study, the impacts of the Avon Bypass proposal will be identified.
One person suggested multiple spill ways or channels or culverts leading to the bay with property owners paid for leasing their land during a flood. ***[Public Meeting]***	Comment noted.
Our home may have to be taken for the Bypass. It does not matter. What matters to us is what is best for the people of the Skagit Valley. ***[Melcher]***	Comment noted
The Avon Bypass makes so much sense. It will create a channel to take the extra water when the river is high. With the Bypass there will never be another flood in the Skagit Valley, Period! Please don't think it can not be built. With the Bypass no one will have to take any water ever. If the Panama Canal could be built, then why can't the Bypass be built? ***[Melcher]***	Comment noted. However, the Avon Bypass as envisioned in past studies would not have completely eliminated flooding in the Skagit River delta. Past designs controlled flooding through the 50 to 100-year events, usually in combination with levee system improvements and/or additional upstream storage.
While the Reconnaissance Addendum states that "no further consideration of this alternative in the Feasibility Study is anticipated", I strongly urge you to add the Avon Bypass to the Feasibility Study. It appears that it was dropped because of "opposition from the Washington Department of Ecology because of anticipated significant changes that could occur in the Padilla Bay National Estuarine Research Reserve resulting from the fresh water flood flows and accompanying sediment adversely impacting the estuarine habitat." A more ridiculous opposition has never been stated. The Padilla Bay Estuary is an "orphaned estuary". It was orphaned when the Skagit River changed course over 1,700 years ago due to an eruption of Glacier Peak. the Skagit River built the estuary as it is building the estuary in Skagit Bay. If there are going to be adverse impacts the proper place to analyze the impacts would be in the Environmental Impact Statement (EIS). ***[Kunzler]***	Comment noted. During the reconnaissance study, the Washington Department of Ecology expressed concerns over the possible impacts to the estuary that the Avon Bypass could cause. If the Bypass is studied in detail, both the negative and the positive impacts of the proposal will need to be identified.
Is it Still Feasible With Floodplain Development?	
Create the Avon Bypass to Padilla Bay relieving down river pressure but doing little for Burlington (increasing the flow rate will help). ***[Roozen]***	Comment Noted
Has newer construction such as malls eliminated this option (Avon Bypass) or are there other reasons why it is not part of the proposed study? ***[Schmidt]***	The Avon Bypass was dropped during the reconnaissance phase of the study for the reasons noted above in one of the Kunzler comments. The new hydraulic model should be able to determine the effect that the development in southern Burlington has on flooding.

Can It Handle a Flood?	
Will the Avon Bypass be included in your study of the Skagit River floodplain? Is this an option which cooperates with the natural flow of the Skagit River in full flood? ***[Winyard]***	The major problem for the delta is that for major floods there is too much water in the river at Sedro Woolley to be contained within the existing downstream levee system. Even if impacts to the Sterling-Nookachamps area were to be ignored, It is probably not practical for a number of reasons to raise the levees high enough for a high level of protection (100-year) for the entire delta. There is an excess of about 80,000 to 100,000 cubic feet per second (cfs) with no place to put it. A bypass could carry this excess floodwater to the bays.
Use Highway 20 Right of Way	
It would appear to me that a strictly engineering view would say that another channel as short as is possible to do the job would be the answer. This is why the Avon Bypass option that was discussed several years ago would be the best option. But there is no way that this, or any other option, would be possible without just and proper compensation for the owners of the property effected. In fact this may be a very inexpensive option because it may be possible to use land already owned by the state. The Washington State Department of Transportation (WDOT) already owns most of a possible right of way through the area. This right of way is useless to them because of the amount of wetland areas that it runs through. Having an overtopping levee put more water into a wetland area should cause little or no environmental problems. ***[D. Jones]***	Comment noted. A possible partnership with WDOT will be examined.
Utilize Wetland Banking to Make the Bypass Pay for Itself	
I also urge the Corps to include in its B/C analysis economic ways of making the Avon Bypass pay for itself (i.e. purchasing the land outright in the name of the taxpayers and selling the land to developers for wetland mitigation banking purposes.) ***[Kunzler]***	In examining lands needed for the right-of-way for an Avon Bypass, environmental benefits from acquisition and possible restoration of those lands may be considered.
…the Avon Bypass to Padilla Bay from at least a hydraulic standpoint must be analyzed. The cost benefit analysis will probably not work out but financing could still be obtained through either wetlands mitigation banking or litigation involving federal, state and local governments who have by not enforcing federal, state and local regulations acquired an astronomical amount of liability. More than enough to cover the cost of the Bypass. ***[Kunzler]***	The use of the easements and mitigation banking lands will be examined in the study. However, all proposed measures must conform with Corps regulations and requirements, such as having a B/C ratio greater than 1 to 1.
ADDITIONAL FLOOD CONTROL STORAGE	
I believe before any water is overtopped or a Bypass constructed that additional storage that is available at Skagit River dams be purchased for flood control…. ***[Halverson]***	Skagit River dam storage is governed by provisions of each dam's Federal Energy Regulatory Commission (FERC) license. Previous analyses have indicated that further increasing flood control storage at dams on the Skagit River will not necessarily produce large improvements in flood damage reduction for the lower river. This is due to the significant runoff from the Sauk River which would remain uncontrolled. The potential for additional flood control storage will be reviewed during Stage 1 to determine whether further detailed analysis is warranted in Stage 2. In addition, any impacts resulting from additional flood storage would have to be renegotiated in the FERC licenses for the dams.
Make the capacity of the lakes behind the dams to hold more water. ***[Trish]***	Comment noted.

DREDGING AND CLEARING RIVERS	
The only measure necessary is to dredge the river out like was done in the past!!! You can walk across the mouths of the Skagit River now, where only 25 years ago there was deep water because the river was dredged for navigation. ***[Public Meeting]***	Comment noted. However, although dredging of the river for navigation was performed for many years by the Corps' snagboats, there was little or no direct flood control benefit. The dredging was only intended to maintain sufficient depths for vessel traffic. The dredged material was taken from the navigation channel and side-cast near the bank back into the river from the snagboat. Thus, there was no appreciable flood control benefit from the dredging.
I believe before any water is overtopped or a bypass constructed that…the existing river corridor must be widened and cleared of obstructions to provide maximum flow. ***[Halverson]***	Comment noted. Clearing of the river has been examined in previous studies. While some flood damage reduction benefits can be obtained from clearing debris from the river, these benefits are typically offset by continuous maintenance costs and impacts to fish populations which depend upon debris for habitat.
Dredge the river from Sedro Woollev to the mouth of the river thus increasing the channel volume. ***[Roozen]***	Comment noted. Dredging for flood control has been studied in the past. However, due to its short-term benefits and potential for severe environmental impacts it has not been attractive in the past as an alternative on the Skagit River. The 1979 Corps studies determined that high levels of flood protection could not be provided by dredging alone and that a combination of dredging and levee improvements would be more expensive than a levee only project for comparable levels of protection.
Since the river is no longer dredged beyond the lower reaches, the now constrained channel is filling with silt which in the past flowed out into the valley. Filling the channel will continue to decrease the capacity of the river, and continue to increase flooding in unprotected areas upstream of the urban areas which the County wishes to protect. If certain lands are to remain unprotected and will suffer increased impacts from additional diking, then the possibility of dredging the river further up the channel must be explored. ***[Kaspar]***	Comment noted. Channel cross sections obtained in 1990 by Skagit County were compared with 1960 sections at the same locations. This comparison showed very little change in total cross sectional area. Some changes in depositional loading (i.e., new sandbars or erosion areas) were noted. As part of the current study, check sections are being obtained to confirm this earlier analysis.
Put out a request for proposal for private entity to dredge 3-4 miles at mouth of North Fork. ***[Johnson]***	Comment noted.
Ownership of Gravel Removed	
Washington State asserted ownership (through Article XVII of the State Constitution) to the "beds and shores of all navigable waters in the state . . . " except those sold according to law. The State of Washington owns it's aquatic lands in fee and abutting owners and others wishing to use state-owned aquatic lands must obtain prior authorization for use of the land from the state. No material removals can take place on state-owned aquatic lands without prior written authorization from the Washington Department of Natural Resources (WDNR). This authorization may involve a material purchase agreement from the state. **RCW 79.90.150 Material removed for channel or harbor improvement or flood control - Use for public purpose.** states, ". . . Prior to removal and use, the state agency, municipality, county, or public corporation contemplating or arranging such use shall first obtain written permission from the department of natural resources. No payment of royalty shall be required for such gravel, rock, sand, silt, or other material used for such public purpose, but a charge will be made if such material is subsequently sold or used for some other purpose . . ." Public purposes include, but are not limited to, construction and maintenance of roads, dikes, and levies. ***[Washington Department of Natural Resources-WDNR]***	Coordination with the WDNR will occur before removal of any material on state-owned aquatic lands occurs.

Sediment Removal Project near Highway 9	
At no expense to Skagit County, the State of Washington or the Corps of Engineers, we will construct and maintain a catch basin spanning the Skagit River (on our property to the north and south), with the dimensions of 50 yards wide and 30 feet deep. The project location would be approximately 1/4 mile below the Highway 9 bridge…The catch basin would fill with gravel, sand silt and other debris that normally flows down the river and builds up on islands and bridges, clogging the channel...The equipment that will be used is a skyline excavator system…We are ready to proceed whenever the permits are approved…it is a cost-effective benefit for the residents of the Lower Skagit Valley. ***[Hershaw]***	We thank Mr. Hershaw for his offer and will coordinate with him as our study proceeds. However, if this specific excavation proposal is considered as part of the Feasibility Study, our time line for construction is some years in the future, which may not match his plans. The report should be completed in about three years with any construction following some years later after Congressional authorization. As part of our study, sediment transport will be reviewed and if determined to be a significant contributor to flood damages, sediment removal measures, such as this proposal, will be considered during Stage 2 of the study.
RING DIKES FOR URBAN AREAS	
Ring Dikes ***[Public Meeting]***	Ring dikes will be reviewed during Stage 1 to determine whether they should be evaluated in detail in Stage 2 of the Feasibility Study
OVERTOPPING LEVEES	
This proposal would allow about seven areas of overtopping and is in my opinion a poor one because there is no way all that water will find its way out. This may be a good option if we are looking at making lakes out of some people's property. ***[D. Jones]***	The new hydraulic model being developed for the Feasibility Study will be used to determine flow paths for overflow waters both for the existing condition case, where levees fail, and for any proposed overflow plan. Based on this analysis the existing drain system at the sea dikes will be reviewed to determine whether any improvements at the bays are appropriate. Unfortunately, floods always make some people's properties into lakes, as has been often experienced by the Sterling and Nookachamps residents in the past. Many Burlington and/or Mount Vernon residents will be just as wet sometime in the future when levees break.
Create a multiple overtopping program for 34 to 36 foot rivers. This is problematic by virtue of the amount of winter crops in the affected areas such as berries, apples, bulbs, and seed. If you think the lawsuits are large now in the Nookachamps, wait till you flood out producing berries with 12,000 to 18,000 dollar replacement costs. ***[Roozen]***	The overtopping levee system will be examined during the Feasibility Study. Impacts to agricultural activities are an important consideration and will be examined. As a comparison to any flood damage reduction plan, the NO ACTION alternative, which assumes break(s) in the levee system will occur with resulting flooding of agricultural activities, will be developed. The estimated flood damages resulting from expected future floods in absence of any Corps project will be compared with the expected flood damages with each of the final alternatives in place as part of the study.
The idea of rural overtopping is probably a good idea, but people impacted will need to be compensated. They should be notified by the County and the Corps how they will be affected, and terms of compensation should be agreed upon prior to being impacted. ***[Thompson]***	Comment noted.
While compensation for the affected property owners is expensive, no project can expect to be completed without it. It seems to me that the proposed overtopping levee proposal that is the starting point for your study is more expensive because you have more property owners to deal with. ***[J Jones]***	Comment noted.
What are you going to do with the big pond? The majority of the water in the flats goes in drainage district's ditches and back into the Skagit. Kind of sounds like a huge detention pond without a relief system…Give the downstream some conveyance capacity, possibly opening up traditional paths in the valley. ***[Severin]***	Comment noted.

Install 3 relatively small spillways. One across Fir Island. One from about where Memorial Highway meets the dike, carefully directing the water mostly west shallowly toward La Conner. Another would put water from just west of the Interstate Highway 5 bridge northwest into old Gages Slough, directing water along Highway 20 to exit at Twin Bridges or thereabouts. These are all set to take about 10,000 cfs. At about 34 feet in Mount Vernon. Start overtopping at 33 feet. Raise Dikes to equal height of 35 feet. ***[Johnson]***	Comment noted.
AVON BYPASS WITH OVERTOPPING LEVEES	
Perhaps overtopping and the Avon Bypass in concert is the solution. ***[Thompson]***	Comment noted.
RIVER WIDENING/SETBACK LEVEES	
…any overtopping or bypass should start below I-5. This would entail the widening of the river channel from above the BNRR bridge through the bridge corridor where massive amounts of illegal fill has been placed in the floodway. ***[Halverson]***	Comment noted.
Widen the river from the Highway 9 bridge in Sedro Woolley to the mouth. ***[Trish]***	Comment noted.
Utilize setback levees where feasible. Setback levees are preferred, because they facilitate the natural processes that usually enhance, rather than degrade, habitat features. ***[US Fish & Wildlife Service-USFWS]***	Comment noted.
Avoid expansion of levees riverward of the existing levees. ***[USFWS]***	Comment noted.
SAMISH BYPASS	
I do not believe we should divert the Skagit River water into the Samish River Basin at the Sterling Hill location as is experienced under the current man made conditions. ***[Halverson]***	Comment noted.
Create a Sterling Bypass to the Samish Basin relieving down river pressure. ***[Roozen]***	Comment noted.
Create a channel from just west of Sedro Woolley, across Highway 20. Bend west, build Cook Road up to accommodate 100-year event, have perhaps ¼ mile wide floodway south of Cook Road. Have opening to this channel start flow at 30 feet. Create south dike out of dredging this channel deeper in the middle of the ¼ mile wide floodway. Put 20-6' culverts under Interstate Highway 5, ¼ mile south of Cook Road. Have this floodway then turn slightly south and west through lowest ground, meandering between Cook and Maiben, south of Sakumas up against Bayview Hill. Use hill as dike coming out about ¼ mile with dike following hill to Padilla Bay at Merritts. Cut across bay to deep water south of Strawberry Island. This water course would have small water in all but big events. Purchase as little ground as possible, perhaps a deeper strip 100-yards-wide where diking material is purchased from. ***[Johnson]***	Comment noted.

NON-STRUCTURAL MEASURES	
Take advantage of the rivers natural predisposition to break and flood on Fir Island. Buy the residents of the Island, deed the land back and allow them to farm the summer crops (peas & spuds etc.) that predominate now. ***[Roozen]***	Comment noted. Purchase and deed-back to the prior owner probably is not possible under provisions of the Uniform Relocations and Assistance Act.
The EIS should also suggest and analyze non-structural (house raising and buy outs) ways of helping those who are already impacted adversely by the filling of the floodway. ***[Kunzler]***	Comment noted. At the end of Stage 1, when the hydraulic model for existing conditions has been developed and calibrated, a review of the floodplain will be made to determine areas where non-structural measures may be most appropriate. Coordination with the Federal Emergency Management Agency (FEMA) will occur to identify repetitive loss areas. Stage 2 work would include detailed studies for selected areas.
Raise everyone home in the floodplain where there is no dikes. ***[Trish]***	Comment noted. Currently FEMA is helping Mount Vernon with removing a number of homes in West Mount Vernon that are riverward of the levee. They are also funding a home raising project in Centralia with an average cost of about $30,000. As the study progresses, coordination will be maintained with FEMA to identify any opportunity for their help in the Skagit Valley.
Every landowner probably must prepare for his own protection. Every land owner should be given an elevation map to assist them to make a decision. ***[Boettcher]***	Comment noted. The Flood Insurance Program and Floodplain and Floodway mapping is the responsibility of FEMA. When the hydraulic model is completed, elevations throughout the floodplain would be available. However, a formal redo of the existing floodplain & floodway mapping would occur under FEMA auspices.
Something should be done to help the homeowners that get frequent flooding…There has been no help for the people in the Sterling Addition, only more flooding. All of the grant money so far is proposed to be used for Mt. Vernon and Burlington. We need help of some sort to lower the water levels during floods. ***[Booth]***	Comment noted. See above.
SMALLER SCALE FLOOD DAMAGE REDUCTION MEASURES	
	All proposed smaller scale measures will be considered by the study team. However, some may be eliminated at an early phase because they are impossible to construct, clearly would not have a positive benefit-to-cost ratio, or contain environmental impacts which are restricted by law. This screening process will take place during the next year.
Sand and Gravel Bars and Log Jams	
Scalp sand and gravel bars and removal of log jams from the Skagit River. ***[Halverson]***	Comment noted.
Clean up log jams and debris in a controlled effort to reduce the size of big sand and gravel bars ***[Trish]***	Comment noted
Hamilton & Cockerham Island	
The impacts of the Cockerham Island levee on theTown of Hamilton and Day Creek community must be studied for possible improvement on flood flows. ***[Halverson]***	Comment noted.
I am also concerned that the study as currently being considered does not do enough for residents upstream of the Burlington Northern Santa Fe Railway (BNSFR) bridge. The study should include floodway analysis of the Skagit County owned and operated levee on Cockerham Island and its effects on the town of Hamilton.***[Kunzler]***	Comment noted.

Sedro Woolley Area	
Provide ring dike around Sedro Woolley. ***[Johnson]***	Comment noted.
…include specific analysis of the impacts of the levee system on the Sedro Woolley sewage treatment plant and outlet to the Skagit River. ***[Halverson]***	Comment noted.
Replace approach to Highway 9 bridge from Sedro Woolley with piers. Take replaced fill and build up dike around Sedro Woolley. ***[Johnson]***	Comment noted.
Remove the old railroad bridge at Highway 9. ***[Halverson]***	Comment noted.
Clear Lake and Beaver Lake Area	
…a one way gate on the north fork of Nookachamps Creek at Highway 9 should be studied to prevent flood damage into Clear Lake and Beaver Lake. ***[Halverson]***	Comment noted.
The Beaver Lake Valley…is a different situation than the official Nookachamps area. We crest 10-12 hours after the river crests…The water is forced under Highway 9 south of Clear Lake. Your goal of overtopping at 146,000 cfs will not help…It would need to overtop at much less cfs…We need a quicker way to unpile the water—perhaps the Avon Bypass—It has to get away quicker in order to be any help in the Nookachamps—Beaver Lake—Clear Lake area. ***[Austin]***	Comment noted.
Burlington/Gages Slough	
Open up Gages Slough for extra water. ***[Trish]***	Comment noted.
Strawberry Point & District 12 Wing Dike	
The river at this point is only 360 feet wide from the toe of the wing dike to the timber on the opposite side of the shore. This backs up 3.5 feet of water in a small flood, filling Sterling and Nookachamps before any storage benefit for the lower valley can be achieved. At this point there has been massive amounts of illegal fill and riprap placed in the floodway. ***[Halverson]***	Comment noted.
Above the BNSFR Bridge	
Remove the illegal riprap obstructions above the BNSFR bridge. This was done without the benefit of permits and holds 1.5 feet of water in even a small flood. ***[Halverson]***	Comment noted.
Mt. Vernon Bridge Corridor	
Widen bridge corridor at Mount Vernon. ***[Halverson]***	Comment noted.
Upgrade the BNRR bridge to allow more flow. ***[Halverson]***	Comment noted.
Remove cement pile for the old interurban railroad. ***[Halverson]***	Comment noted.
Replace the Old 99 bridge between Burlington & Mt. Vernon to carry 100-year flood flows or more. ***[Halverson]***	The design of a replacement bridge is currently underway. The new bridge will be built in the next few years. Coordination is ongoing to insure the bridge as constructed will accommodate a widening of the overbank area on the north end of the bridge. The north abutment of the bridge will be able to serve as a pier in the future if studies show widening of the overbank is appropriate.
Widen the I-5 bridge. ***[Halverson]***	Comment noted.
Avon Bend	
Remove riprap from Avon Bend.***[Halverson]***	Comment noted.

Overtopping at Mount Vernon and Left Bank	
Robert Herzog of the Great Northern Railroad, wrote in his report in 1922 that approximately 90,000 cfs must be diverted in the Avon area to Padilla Bay in a 100 year flood event. I see little or no benefit to overtopping on the left bank or on the Mount Vernon side of the river. ***[Halverson]***	Comment noted.
West Mount Vernon/Young's Bar	
Remove spur dike just upstream of Young's Bar in West Mount Vernon to reduce erosion on east bank. ***[Bellcoe]***	Comment noted.
Redesign Roads and Stormwater Drainage	
Combined engineering of roads and stormwater drainage could greatly reduce flood damage ***[G Jones]***	Comment noted.
Put culverts under all of the elevated roads. ***[Severin]***	Comment noted.
La Conner Dike	
Is there a need for a dike to protect La Conner from Skagit River flooding? If so, what can be done to reinstall such a structure? ***[Zimmerman]***	The need for a cross dike to protect La Conner will be evaluated during the study. If such a dike appeared necessary, it would be included in appropriate alternative(s) for consideration. Since it would be a very small part of a much larger project, consideration could be given to splitting it off to accomplish separately.
South Fork Wildlife Area Dikes	
Improve flow on South Fork by removing dikes on the State Wildlife Area. ***[Halverson]***	Removal and relocation of some of the dikes on the State Wildlife Area along Deepwater Slough is being considered by the Corps under a separate feasibility study. The sponsor for that project is the Washington Department of Fish and Wildlife (WDFW). The project would restore tidal influence to 250 acres of the 430 acre island in the refuge. Public review of the project report and environmental assessment is scheduled for August 1998.
Widen North Fork bridge at boat launch area. ***[Halverson]***	Comment noted.
Removal of jetty at the north fork of the Skagit River. ***[Halverson]***	Comment noted.
Mouth of the River	
Clean out mouth of the river and lower it by 14 to 20 feet. ***[Trish]***	Comment noted.
OTHER QUESTIONS AND/OR CONCERNS	
ACCURATE IMPACT ASSESSMENT	
…we (the people of Skagit County and the Corps of Engineers as lead agency) are suppose to be identifying the significant issues to be analyzed in depth in the EIS. The EIS shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration... ***[Kunzler]***	Elements of the environment to be analyzed in the EIS will be developed based on scoping comments, technical knowledge, and legal requirements. For all practicable alternatives, detailed evaluations of impacts will be developed and presented.

FISH AND WILDLIFE IMPACTS	
We look forward to working with Corps throughout the life of the project to develop an alternative that is responsive to communities and individuals susceptible to flooding from the Skagit River, and is sensitive to the fish and wildlife resources present, especially salmonids… ***[USFWS]***	The environmental impacts of any proposal which is studied in detail in the feasibility study will be assessed as part of the NEPA process. Mitigation actions will be recommended when appropriate.
Impacts to Padilla Bay and fish stocks in the Skagit River must be evaluated if the Avon Bypass is proposed. ***[Agency Coordination]***	The environmental impacts of any proposal which is studied in detail in the Fasibility Study will be assessed as part of the NEPA process.
Impacts to salmonids must be considered in the analysis. Potential impacts include additions of more riprap, loss of fish through overtopping, and loss of habitat through removal of riparian vegetation. ***[Skagit System Cooperative-SSC]***	Design of studies to assess the impact of proposed projects is currently underway and will be coordinated with agencies and tribes.
Inventory fish and wildlife habitats of all areas that could be affected by the project. Utilize aerial photos to quantify and characterize terrestrial and riparian habitats that may be affected by the proposed project. Ground-truthing may be required to assess habitat quality. ***[USFWS]***	Inventorying fish and wildlife habitat is part of the study plan.
Include quantitative and qualitative assessments of aquatic and terrestrial species and their associated habitats as they relate to the project area, especially an assessment of fish losses due to modifications of in stream habitats, the stranding of fish following over bank flows, and the removal of large, mature trees that could be utilized as perches. ***[USFWS]***	Assessments of these impacts are included in the study plan.
Develop a fish and wildlife mitigation and monitoring plan in cooperation with the USFWS, the Environmental Protection Agency (EPA), the National Marine Fisheries Service (NMFS), Tribes, and state resource agencies. A monitoring and remediation plan should also be developed to determine the success of revegetation efforts (especially on erodible surfaces), aquatic habitat mitigation features, and mitigation features implemented to prevent or reduce stranding of adult and juvenile salmonids ***[USFWS]***	Development of a mitigation plan is included in the study plan.
Minimize disturbance to existing vegetation, especially riparian areas that provide shading and refuge during high flows. Revegetate disturbed areas where vegetation is removed or destroyed by construction activities. Plantings of indigenous grasses, shrubs, and trees are recommended. Revegetation efforts should occur in the first planting season following the disturbance. Construction equipment should be staged to avoid vegetation and wetlands. ***[USFWS]***	Comment noted.
Develop levee vegetation maintenance standards that allow for the retention of valuable woody riparian vegetation and encourage the planting of selected plant species to create additional habitat as well as to prevent erosion. ***[USFWS]***	Revisions to levee vegetation standards are currently being addressed by the Corps of Engineers headquarters.
Investigate opportunities to restore the floodplain by using setback levees or restoring freshwater flows to diked off sloughs, such as Dry Slough on Fir Island. Potential mitigation measures that should be considered if this project goes forward include: setback levees, mini-setback levees, restoring cut-off sloughs, culvert improvements, placement of large woody debris, restoration of riparian habitats, and modification of levee vegetation standards to allow for more natural overhanging vegetation. ***[USFWS]***	Comment noted.
The loss of the potential to reopen sloughs cutoff by levees must be addressed in the analysis. ***[SSC]***	The development of a project will not prohibit future reopening of sloughs. Skagit County has committed to developing a set of criteria to evaluate future proposals to reopen sloughs.

Any proposal to place a closure structure across Nookachamps Creek must evaluate the impacts to fish and wildlife resources. Conduct additional studies to address impacts if the Corps investigates the use of levees to protect the towns of Clear Lake and Beaver Lake. ***[USFWS]***	Any proposal to place closure structures or levees will evaluate impacts to fish and wildlife. Appropriate mitigation measures will be proposed.
The loss of riparian habitat could a significant impact from the project. ***[Agency Coordination]***	A survey of riparian vegetation on the river will be conducted and impacts calculated based on that survey and construction plans.
Consider overbuilding sections of levees land ward to allow for development of large woody vegetation riverward that would not normally be allowed to grow on most Public Law (PL) 84-99 levees. ***[USFWS]***	This measure will be examined as part of the development of the mitigation plan.
Rock groins, large boulders, and large woody debris should be incorporated into any proposal to place rip rap. These provide foundation material for bank armor and mitigate for lost fish habitat. Groins may be extended at selected locations to surface elevations of flows up to about 18,000 cfs (slightly above the mean flow of 16,000 cfs) and vegetated to offset habitat loss due to levee construction. ***[USFWS]***	These measures will be examined as part of the development of the mitigation plan.
Coordinate the construction season with the USFWS, the NMFS, Tribes, the WDFW, and state and local regulatory agencies to ensure protection of migrating salmonids. ***[USFWS]***	Comment Noted.
ENDANGERED SPECIES ACT	
We do have a significant interest in the outcome of this process…Our interest could be amplified soon if salmonid listings occur under the Endangered Species Act (ESA) this area. ***[National Marine Fisheries Service-NMFS]***	ESA coordination will be a part of this study
We look forward to working with Corps…to develop an alternative that is responsive to communities and individuals …and is sensitive to…threatened and endangered species. Complete consultation under the ESA. ***[USFWS]***	ESA coordination will be a part of this study
WATER QUALITY & WETLAND CONCERNS	
Wetland delineation should be conducted to determine the extent of wetlands in the project area. ***[USFWS]***	A wetland delineation on the proposed alignment will be conducted with Corps and Natural Resources Conservation Service (NRCS) staff.
Efforts should be made to protect and enhance wetlands that may occur along or adjacent to proposed levee or overflow weir alignments. ***[USFWS]***	Comment Noted. Opportunities to protect or enhance wetlands as part of the mitigation for the proposed project will be examined.
HYDRAULIC IMPACTS	
Accuracy of Flood Readings	
…any measurement of the River by volume would lead to problems. River flow volume will be a function of speed and channel volume. As the years have passed both of these factors have been impacted negatively. The channel volume has been reduced by virtue of silting. The speed of the River has been slowed by the trees and related debris on the banks. Consequently historical less significant events (10, 15, etc. year floods) like we had in 1990 become much more serious. ***[Roozen]***	The new hydraulic model will be calibrated to current conditions using past flood data..

If the Thanksgiving flood of 1990 was a 35-year event, why did the upstream property owners within the delta area of the Nookachamps, Sterling area experience water levels within one to two inches of that 35-year event during the reported 12-year event of 1995. A 12-year event equals approximately 130,000 cfs at the Mt. Vernon gage. This is the same reported cfs reading during the 1975 flood. A flood event which produced 2 to 3 feet lower flood levels than those experienced in the 1995 flood event. The only thing different between the 1975 flood and the 1995 flood, besides increased flood levels, has been the filling of the floodway by the Skagit County Publics Works Dept., the Diking Districts, the Washington State Department of Ecology (WDOE) and the Corps of Engineers PL 84-99 projects…***[Kunzler]***	The Thanksgiving flood of 1990 cannot be used directly to compare either stage or discharge due to the double levee failure at Fir Island. The discharge at the Mt. Vernon gage for that event cannot be compared directly with other flood events that did not have comparable levee failures associated with them. We appreciate input from the public on what appears to be inconsistent or unusual information. As part of our study, we will review any apparent inconsistencies brought to our attention, investigate any verifiable stage records with a view to incorporating valid information into the new hydraulic model.
Drainage Improvements	
The study should balance the need to convey water to the Sound and the damage caused by greater velocity. Please study what can be done to expand capacity for drainage at outlets of Samish, Joe Leary, Gages, Indian, Telegraph, Sullivan, Higgins Sloughs, District #17 (Big Ditch) and both forks of the Skagit, including their sloughs. ***[G Jones]***	As part of the hydraulic modeling, drainage patterns will be analyzed and designs will be developed to move the water back to the river and bays.
Impacts of Overtopping	
How much more overtopping will we get when overtopping is at 146,000 cfs. if all the dikes hold? ***[Austin]***	Impacts for each of the final alternatives will be calculated in Stage 2 using the hydraulic model.
Sustained Overtopping Impacts	
The duration of flood events and the probability of levee embankment saturation should be considered in evaluating existing flooding and any proposed alternatives. ***[Rozema]***	The duration of flooding will be considered in the evaluation of the condition of the current levee system design to determine what protection it provides and in the design of any new levees, levee improvements, and overtopping structures.
The study should anticipate…various types of flood in order to provide assurance to those in the flood plain who rely upon the design under study. It has always been difficult to imagine a system of overtopping levees which would not produce different results under differing conditions. For example, some floods might occur because of a wave of water coming down the upper valley at high velocity. The more typical events vary in their intensity from rapid rise to very gradual rise and sustain crests of varying duration. It is easy to imagine a rapid rise or sustained peak which causes the upriver overflow to take more water than the downstream overflow with the expected environmental impact on the Samish or other upriver overflow areas. ***[G Jones]***	Various likely flood conditions will be examined in the hydraulic model. The concept for overflow developed in the reconnaissance study was to try to set the overflow elevations such that overflow would began at each location at the same time. An overflow alternative, assuming ungated overflow sections, could only do this for a single selected flood design condition. In reality, because of uncertainities in the analysis and variations of future flood events not all overflows would actually begin at the same time.
Sedimentation	
The sediment carry capacity of the Skagit River system needs to be considered in evaluating any alternative. ***[Rozema]***	Comment noted. Sediment studies are planned.
Include Bridges in Hydraulic Modeling	
--one commenter talked about the river running into problems at the bridges and that all our actions should be coordinated; also asked about the length of time the study would take and talked about the computer modeling—wanted to make sure the issue of bridges, etc., was included in the modeling ***[Public Meeting]***	Bridges will be included as part of the hydraulic model.
The study should include the impact of past and future public works on flooding. Especially important are I-5 and Highway 20 as they constrict or direct floodwater. ***[G Jones]***	Existing conditions will be used as the baseline for the hydraulic model.
Display of Model Results	

When the model is completed you should be able to produce a print out of flood levels during various scenarios. SHOW THEM A PICTURE. That they understand. ***[Kunzler]***	The feasibility of linking the output of the hydraulic model to a Geographic Information System to display outputs will be examined.
CUMULATIVE IMPACTS	
The cumulative impact of this fill material between 1977 and 1997 must be analyzed in the proposed project. Failure to do so will result in an EIS that will be most likely be challenged due to its inadequacy. ***[Kunzler]***	Determination of a baseline for the cumulative impacts analysis will be by the Corps. Typically, existing conditions are used as a baseline. Past actions can still be incorporated into the analysis, however.
…there is no more important step or issue that must be addressed in the EIS then to determine the existing cumulative impacts of the current diking system as well as the alterations to this diking system since the last Corps of Engineers Levee Improvement Project in 1977-1979....The cumulative impacts in the instant case would be not only the impacts on flood flows from the illegal filling of the floodway since 1977 but the mountains of landfill including Interstate 5, that has been placed in the floodplain of the Skagit River without the benefit of hydraulic analysis. ***[Kunzler]***	This comment will be considered by the study team to help determine the appropriate scope and extent of the cumulative impact analysis.
EIS PROCESS	
It is my understanding of NEPA that while the EIS is being prepared "no action concerning the proposal can be taken which would have an adverse environmental impact or limit the choice of a reasonable alternative." I interpret this to mean that no proposal such as subdivision of land within a possible Bypass alternative of the construction of a floodwall within the floodway could take place. I urge the Corps to inform local government of the consequences of such an action. ***[Kunzler]***	The comment refers to Section 1506.1 of Chapter 40 of the Code of Federal Regulations (40 CFR Sec. 1506.1) which applies only to actions by Federal agencies. It limits commitment of resources by Federal agencies before a Record Of Decision is issued by the agency. Local governments, including project sponsors, can undertake commitments of resources including land use actions which might impact the feasibility of certain alternatives. However, when local government make such decisions they can significantly affect the analysis of various alternatives and risk affecting their viability, which could stop a feasibility study if no viable alternatives remain economically justified.
FINANCIAL IMPACTS TO FLOODPLAIN RESIDENTS	
Although I understand Skagit County's desire to keep the costs within an acceptable range, if in so doing, the agricultural community is to be asked to make sacrifices, the true costs of lost crop land to flooding, must be assessed. Last July (1997), a flood occurred in the Sterling Nookachamps area severely damaging crops or planted earlier in the spring. Such an event may be more possible with the proposed alternative. During the proposed study, the local office of the NRCS along with the local agricultural community must be contacted to determine loss of valuable farmlands due to an increased incidence of flooding. Skagit County has a major resource in the productive capacity of its land, and such capacity will be limited if many crops can no longer be planted in the affected areas. Economic impacts must be analyzed, and reduction in values of impacted properties assessed, then mitigated. ***[Kaspar]***	The hydraulic model will be used to determine both without-project flood conditions and with-project flood conditions. Based on this information, without-project, with-project, residual, and any induced damages would be estimated.
How many of our Skagit County neighbors' homes would be impacted by the bypass theory, plus how the "compensation" would be decided. ***[Youngren]***	Comment noted.
While compensation for the affected property owners is expensive, no project can expect to be completed with out it. It seams to me that the proposed overtopping levee proposal that is the starting point for your study is more expensive because you have more property owners to deal with. ***[D Jones]***	Comment noted.
Finally, it is interesting that the County plans to save money by allowing continued excessive flooding at our home while substantially raising property taxes this year. Just the threat of the proposed option has caused real estate values in the Sterling area to decline, or properties to be not marketable due to the unknown	Comment noted.

effects of the future Court and Corps action. These conditions must be assessed and the financial impacts included and mitigation proposed which via include the past improper activities for which the County has recently been found legally responsible.***[Kaspar]***	
The Avon Bypass seems to be the best alternative. As with overtopping some people will need to be compensated. ***[Thompson]***	Comment noted.
OPERATION OF OVERTOPPING LEVEES	
The "overtopping" proposed to be designed is unclear. When exactly and at what elevation would overflows be proposed? Historically, the flood waters have been illegally contained by threatened businesses and citizens sandbagging in areas which has prevented relief from the flood containment. How will this be prevented and enforced? In 1995, the City of Burlington caused water to raise at our home by sandbagging along Highway 20 even though they were told to stop (too late) by the Corps of Engineers. ***[Kaspar]***	Right now, the overtopping alternative is more a general concept than a specific plan. During the coming year, the new hydraulic model will be put together, existing conditions evaluated, and various alternative configurations tried, with a view to selecting the alternatives to be considered in detail during Stage 2 of the Feasibility Study. The local sponsor, Skagit County, would be required to operate and maintain any Corps project in accord with an Operation and Maintenance Manual prepared by the Corps. Such a manual would specify what the County must do and, conceivably, what the County must not do to operate the project as designed.
IMPACTS OF VOLCANOS AND EARTHQUAKES	
The study should anticipate volcanic activity, severe earthquakes damaging one or more dams upstream…***[G Jones]***	An analysis of these impacts will be made. However, levee design will be for specific flood stage events.
Within the last few years the United States Geological Survey (USGS) has issued two reports (one on Mt. Baker and one on Glacier Peak) which both identify the Skagit River as having a high risk of debris and mud flow events from the volcano's. An eruption from either volcano would have devastating impacts on any project proposed by the Corps. I feel very strongly that this element, under NEPA must be analyzed in the EIS and strongly urge you to include it. By not conducting such an analysis I feel that a levee project that would protect some from flood events would only be adding to the false sense of security that the residents of the lower valley already suffer from. ***[Kunzler]***	We agree that an eruption from either volcano could have devastating impacts whether or not any future flood damage reduction projects are built in the Skagit River valley. People who live along rivers often have a false sense of security from existing flood control measures, particularly, if the river has not had major floods in memory, as is the case with the Skagit only having 20 to 30-year floods this half century. Likewise, the danger posed to river valleys emanating from volcanos is not often realized by valley residents. Volcanic events usually will be much more severe but occur much less often than river floods. The planning horizon for flood events is tens to hundreds of years, while the major volcanic events follow thousands to tens of thousands of years. The EIS will consider the possible effects from volcanic events within the planning horizon for the study.
LEGALITY OF SKAGIT LEVEES	
As was testified to by the State Department of Ecology in the Halverson vs. Skagit County lawsuit…the entire system of levees along the Skagit River are illegal. They have been raised and widened within the floodway without the benefit of permits and in complete disregard for federal and state law as well as the safety of the people the levee system adversely impacts. This issue must be dealt with early on in this feasibility study process to determine if the Corps of Engineers can even participate in a project that will be expending federal dollars to enhance a system of illegal levees. I suggest to you that you receive a written legal opinion from at least the Seattle District Office of Counsel before you proceed. ***[Kunzler]***	Discussions have been held with Seattle District counsel. There is no legal impediment to a study of flood damage reduction measures for the Skagit River valley. Consideration of existing jurisdictional, legal, or institutional constraints is part of the study plan The study would identify changes, if any, needed in federal, state, or local law to implement the recommended plan. Since the output from the Feasibility Study will include a report with a recommendation for Congressional authorization of a project, any necessary changes in federal law would be part of the recommendations. If any changes in state or local law were to be required, these would identified as required item(s) of local cooperation for the local sponsor to accomplish.
…any project designed by the Corps of Engineers that does not reduce the induced flooding into the Nookachamp Sterling area by a minimum of two to three feet of water will result in yet another wasted effort by federal officials. The Corps of Engineers first recognized the induced flooding in its report by Colonel W. J. Barden authored on December 4, 1925. This report along with several subsequent reports all advised Skagit County to move its levees back away from the edge of the river. The County responded by moving the levees closer to the river (Dike District	Comment noted.

12) in 1956. Since that since the County has continued to raise the levees and conduct illegal filling of the floodway with excessive riprap projects and backfilling the riverward side of the levees, causing continued and increased induced flooding in the Nookachamps/Sterling basin. This highly illegal policy cannot be condoned nor continued into the twenty first century. ***[Kunzler]***	
PUBLISH "COMPLETE" B/C ANALYSIS	
I strongly urge the Corps to include as an appendix to the EIS the complete B/C analysis. To simply make a statement that this project or that project has a B/C ratio of 0.7 to 1.0 questions the adequacy of the EIS. Please, a full and complete compilation of all that went into the B/C analysis must be included as an appendix, including, but not limited to, the cost figures utilized by the Corps Real Estate Division. This will be especially critical with respect to the Avon Bypass alternative. It may very well be that the Avon Bypass cannot be constructed because of the B/C analysis, however, if this ratio is not properly justified the credibility of the entire EIS will be questioned. ***[Kunzler]***	The organization of the Feasibility Report and Environmental Impact Statement has not been decided at this time. However, such documents usually have appendixes that address each significant discipline contributing to the analysis. Among others, one appendix would contain the detailed Project Cost Estimate(s) and another the detailed Economic Analysis. Generally, cost estimates would be shown for each final alternative consider in detail.
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Waive B/C Ratio ***[Public Meeting]***	Current Corps regulations prohibit this.