DOCUMENT E-1

INITIAL ADVISORY COMMITTEE INPUT ON CORPS MEASURES

February 27, 2009

The following table provides initial input from the Skagit Comprehensive Flood Hazard Management Plan (CFHMP) Advisory Committee (AC) on the Skagit GI measures. The input was developed at a workshop the AC held on February 18, 2009. The AC discussed and provided initial input on 27 of the 37 Army Corps measures identified in the Skagit GI study. The AC intends to complete its review and comments on the remaining 10 measures, along with any refinements on these comments, at the next AC meeting, on March 16, 2009. For each measure that has already been considered, the AC provided its thoughts on whether the measure should be further evaluated by the Army Corps, along with comments, suggestions and questions related to the measure. Additionally, the AC considered potential local projects, though they intend to further consider these at their next meeting.

The purpose of this effort is for the AC to provide a local perspective on the Skagit GI measures for the Corps to consider as it begins the process of narrowing and lumping individual measures into a more focused and shorter list of alternatives. Additionally, the work of the AC will be used as one of the processes for determining which projects should be recommended in the CFHMP.

At this point, the effort is not intended to be a detailed, final prioritization of measures. The AC will complete a more detailed evaluation in the spring of 2009 and pass its recommendations onto the FCZD Board of Supervisors for their consideration. While the decision of the Board of Supervisors will be the final work product related to impressions of the measures and various local projects, it is expected that the Army Corps will consider the results of this initial effort in the narrowing process.

In parallel with the AC evaluation of the measures and local projects, the AC is developing criteria for screening measures and projects. While these criteria have not been completed, they have been considered by the AC and were part of the process of commenting on the measures. It is anticipated that the AC criteria discussion notes will be considered by the Army Corps in narrowing the measures. The AC hopes to complete its work on selecting screening criteria in the spring of 2009 also.

Table 1 summarizes the AC's discussions of the measures. Comments from each of the technical committees, along with additional AC comments are shown. Green highlighted projects could be eligible for early action implementation. Yellow highlighted projects need additional analysis, development, design, and alternative packaging. Red highlighted projects should be abandoned, considering any caveats listed under comments.

Measures presented in Table 2 were not discussed by the AC at its February 18 meeting, but will be discussed at its March 16 meeting. Input from each of the technical committees is shown for consideration by the AC. The AC will consider and incorporate this input to the extent agreed upon by the committee. Additional AC input and a recommendation from the AC regarding each measure will be documented at the meeting.

Table 1 - Advisory Committee Input on Skagit GI Measures
WHOLE BASIN EFFECTS -Storage
(Range of Possible Additional Storage for Each Measure)

Comments (Focused on Criteria)	Missing Info.	Linkage with Other Measures
Measure #1—Upper Baker		
Recommend continued evaluation/project development. ▪ Meets all criteria ▪ Must be consistent with Baker Settlement Agreement ▪ Need more PSE involvement. This has limited ability to understand this project. PSE expressed willingness to actively participate when Upper and Lower Baker are being discussed. Contact – Mark Killgore ▪ Need to make sure WCM working for flood concerns ▪ Many environmental concerns. Understanding among Baker Settlement Committee is that Skagit GI must be complete and license reopened for this to go forward. Aquatics Research Group would be logical starting point. ▪ Maximize storage and modify operations to reduce flood flows (Measure #1C)	Need to continue Corps analysis and modify WCM Skagit GI Analysis Need PSE input What about increasing flood storage capacity by raising the dam?	tbd
Measure #2—Lower Baker		
Recommend continued evaluation/project development. ▪ Same comments as for Measure #1 ▪ Continues to demonstrate significant benefits during recent events. Dike Districts request that the Interim Protection Plan remain in effect until Corps Skagit GI study is completed. ▪ Maximize storage and modify operations to reduce flood flows (Measure #2C)	Same as for Measure #1	tbd
Measure #3—Ross		
Recommend continued evaluation/project development. ▪ Meets all criteria and could be improved with operational changes. ▪ Maximize storage and modify operations to reduce flood flows ▪ This is the only measure that would help the people above Concrete. ▪ This concept has been discussed for about 20 years. Serious concerns include – impacts to fish, need for FERC license amendment, financial costs, and normal flow issues. Revenue loss to SCL would be very large. Downdrafting the reservoir can't be done quickly in anticipation of flood. ▪ As proposed, project would have high impacts to Chinook and pink salmon. May be workable if consistent with Skagit Settlement Agreement and Skagit GI. Recent dam operations have resulted in tremendous gains for fish. Dewatering of redds was problem before.	Quantify hydropower loss Need Corps analysis to modify WCM Skagit GI Analysis Need Seattle City Light input	tbd

Table 1 (cont.) - Advisory Committee Input on Skagit GI Measures

WHOLE BASIN EFFECTS - Nonstructural

Comments (Focused on Criteria)	Missing Info.	Linkage with Other Measures
Measure #25— Nonstructural (Evacuation, Flood Warning, Floodproofing)		
Recommend inclusion in Corps alternatives and CFHMP ▪ No downside. ▪ Support good land use decisions. ▪ Need to review existing and potential land use regulations; including Shoreline Management Act ▪ May include proposed Measure 38 – interior drainage ▪ Includes flood proofing, flood warning, and evacuation systems	Needs to be coordinated with DEM Need information on specifics	tbd
Measure #27— Debris Management		
Recommend inclusion in Corps alternatives and CFHMP ▪ Need debris management program to keep LWD passing bridge structures ▪ Railroad bridge upstream from Highway 9 is particularly bad for trapping debris. Bridge needs to be removed. ▪ Ongoing maintenance needs to be coordinated better. ▪ LWD should be passed downstream rather than pulled out. In nonemergency situation, need to be more consistent about how LWD is handled. Can pieces be removed and replaced downstream? ▪ Standardized guidance may be needed so individual entities understand requirements for LWD to stay in the system. ▪ Corps views as local responsibility. Would look at bridge designs, bypass channels, etc. for debris passage.	Programmatic permits	tbd
Measure #23— Estuarine Restoration		
Recommend continued evaluation/project development. ▪ Prioritize projects that have a positive impact on flood control and improve interior drainage and outlet facilities. Example: New Stanwood outlet WCS at bayfront. ▪ Design should meet Salmon Recovery goals.	Need location and design	tbd

Table 1 (cont.) - Advisory Committee Input on Skagit GI Measures

UPPER BASIN

Comments (Focused on Criteria)	Missing Info.	Linkage with Other Measures
Measure #22— Cockreham Island Levee Removal		
Recommend continued evaluation/project development. • Emphasis on potential environmental benefits. Habitat restoration potential is good. Some concern about potential loss of main stem habitat. • As flood project, some concern that it impacts farm land with minimal flood control benefits. • County may need to address because of legal issues • Corps analysis concludes it doesn't pencil out for flood reduction, but environmental benefit could be good.	Need design info Impacts unknown Flood control benefits unknown	tbd
Measure #24— Riparian Restoration		
Recommend continued evaluation/project development. • Combine with flood projects - "combined" may be as mitigation • Not meant to threaten existing infrastructure. • Corps approach – what are best flood projects, then what are riparian restoration projects that are appropriate with those.	Impacts to critical infrastructure Design, and specific projects Existing list could be expanded	tbd
Measure #26— Hamilton Relocation		
Recommend inclusion in Corps alternatives and CFHMP • Meets criteria • Incorporate wetland and slough habitats where possible	Funding sources	tbd

Table 1 (cont.) - Advisory Committee Input on Skagit GI Measures
MIDDLE/LOWER BASIN - Small-Scale Storage

Comments (Focused on Criteria)	Missing Info.	Linkage with Other Measures
Measure #4— Nookachamps		
Recommend dropping from further analysis by GI and CFHMP • Technical feasibility is poor because of overflow timing requirements and ability to get water back out of Nookachamps following overflow • Environmental concerns related to new hardened structures along the river • Concerns about upstream and downstream impacts • Any additional consideration would require new design. • Cost	n/a	n/a
Measure #5— Hart's Slough		
Recommend dropping from further analysis by GI and CFHMP • Recommend dropping for same reasons as Measure #4	n/a	

Table 1 (cont.) - Advisory Committee Input on Skagit GI Measures
MIDDLE/LOWER BASIN - Levees

Comments (Focused on Criteria)	Missing Info.	Linkage with Other Measures
Measure #9— Overtopping Levees		
Recommend continued evaluation/project development. • Overtopping would have happened very infrequently based on historical floods. Under Corps analysis it may happen more in the future. • Since overtopping happens anyway, need to direct flow to reduce damages. • Levees would need to be strengthened in areas designed for overtopping. • Concern if existing level of protection is reduced for adjacent areas. • Problems from Corps perspective – where would overtopping happen, and ability to quantify benefits. • Critical to have interior drainage addressed in conjunction with this measure (new measure #38). • Cost must include flowage easement – this is significant cost. • May fit more in CFHMP than GI	Locations Fish loss and up/downstream effects Flow paths and easements needed	tbd

Table 1 (cont.) - Advisory Committee Input on Skagit GI Measures

MIDDLE/LOWER BASIN - Levees

Comments (Focused on Criteria)	Missing Info.	Linkage with Other Measures
Measure #11— Raise All Levees		
Recommend dropping from further analysis by GI and CFHMP • Big concern if levees are raised to provide 100-year protection for rural areas. Moderate concern if levees raised to provide less than 100-year protection for rural areas • Does not meet environmental criteria		
Measure #12— Setback Levees with Excavation		
Recommend continued evaluation/project development. • Several setback levee measures are presented - #7, 8, 10, 11, 12, 13. While the Committee believes the concept of setback levees has merit, there are some concerns as well. Those are listed here for all setback levee measures, and comments specific to each measure are listed with the individual measure. • Farmland impacts must be addressed. Compensation should include future agricultural production (i.e. if farming is possible in setback area, need to compensate for inability to grow crops that must overwinter). • The concept of no net loss of farmland (potentially a criterion) is incompatible with setback levees, so this will have to be reconciled somehow for all setback levee options • Existing levee / rock armoring needs to be removed with minor excavation as needed to install effective fish habitat features. Needs to restore riverine processes. • Upstream/downstream impacts must be identified and addressed. • Cost is a big factor. • Excavation can't increase risk to levees	Need locations, design, and elevation Needs additional analysis. Incorporate habitat restoration	tbd
Measure #13— Setback Levees Entire System		
Recommend continued evaluation/project development. • See Measure #12 regarding general comments on setback levees, farm impacts, environmental design considerations, critical infrastructure protection, cost and impacts analysis. • Some preference for Measure # 12, because existing levee/rock armoring needs to be removed with minor excavation as needed to install effective fish habitat features	Cost	tbd

Table 1 (cont.) - Advisory Committee Input on Skagit GI Measures
MIDDLE/LOWER BASIN - Levees

Comments (Focused on Criteria)	Missing Info.	Linkage with Other Measures
Measure #8— Levee Setback 3-Bridge		
Recommend continued evaluation/project development. • See Measure #12 regarding general comments on setback levees, farm impacts, environmental design considerations, critical infrastructure protection, cost and impacts analysis. • Should be noted that this project is phased. 1st phase is levee setbacks. 2nd phase will be modifications to bridge(s) • Must be combined with other measures, especially downstream	Impact analysis Design, hydraulic and sediment transport impacts	tbd
Measure #7— Levee Setback below 3-Bridge (Main stem, S. & N. Fork)		
Recommend continued evaluation/project development. • See Measure #12 regarding general comments on setback levees, farm impacts, environmental design considerations, critical infrastructure protection, cost and impacts analysis. • Preferred over Measure #10, which does not include the south fork.	Locations, elevations, levee heights Design, hydraulic and sediment transport impacts	tbd
Measure #10— Levee Setback below 3-Bridge (Main stem & N. Fork)		
Recommend continued evaluation/project development. • See Measure #12 regarding general comments on setback levees, farm impacts, environmental design considerations, critical infrastructure protection, cost and impacts analysis. • Measure #7 is preferred because of opportunity to restore riverine functions to south fork.	Design, hydraulic and sediment transport impacts Analysis regarding levee heights	tbd
Measure #14— Improve Left Bank Levees		
Recommend dropping as stand-alone concept. May be needed in specific areas. ▪ Doesn't meet criteria as stand-alone. ▪ Improving all levees along one side will cause increased hazard on the opposite side. ▪ In reality, these would be in combination with other measures, including setback levees.	Location and elevation	

Table 1 (cont.) - Advisory Committee Input on Skagit GI Measures

MIDDLE/LOWER BASIN - Levees

Comments (Focused on Criteria)	Missing Info.	Linkage with Other Measures
Measure #15— Improve Right Bank Levees		
Recommend dropping as stand-alone concept. May be needed in specific areas. ▪ Doesn't meet criteria as stand-alone. ▪ Improving all levees along one side will cause increased hazard on the opposite side. ▪ In reality, these would be in combination with other measures, including setback levees.	Location and elevation	
Measure #16— Mount Vernon Floodwall		
Recommend continued evaluation/project development ▪ Major environmental concerns ▪ Existing levee/rock armoring needs to be removed with minor excavation as needed to install effective fish habitat features ▪ Needs to restore riverine processes. ▪ Concerned about cost-benefit if this project goes forward separately. ▪ Funding is not fully secured ▪ Project is redevelopment of downtown area. ▪ Want downtown Mt. Vernon to be elevated. LUTC did not believe analysis of this was appropriate to their role. ▪ EIS complete and public process ongoing		

Table 1 (cont.) - Advisory Committee Input on Skagit GI Measures
MIDDLE/LOWER BASIN - Levees

Comments (Focused on Criteria)	Missing Info.	Linkage with Other Measures
Measure #6a— Sterling Levee		
Recommend dropping from further analysis by GI and CFHMP • See Measure 6b		n/a
Measure #6b— Sterling Levee		
Recommend continued evaluation/project development. • Recommend a better design that combines Measures #6a and #6b. • Need more complete info from Burlington project. Believe Burlington project is similar to 6b with overtopping. • Concerns about any new hardened structures along the river • More study needed	Realign per proposal from City of Burlington Trigger flows	tbd

Table 1 (cont.) - Advisory Committee Input on Skagit GI Measures
SPOT ISSUES
Ring Dikes

Comments (Focused on Criteria)	Missing Info.	Linkage with Other Measures
Measure #28— Sedro-Woolley Ring Dike		
Recommend dropping from further analysis by GI and CFHMP • Project concept not technically feasible		n/a
Measure #29— Sedro-Woolley WWTP Ring Dike		
Recommend inclusion in Corps alternatives and CFHMP • Design needs to address any habitat issues		tbd
Measure #30— Sedro-Woolley Hospital Ring Dike		
Recommend inclusion in Corps alternatives and CFHMP • Must be coordinated with Burlington project. • Design must address any habitat issues • Must have plan in place to evacuate patients. Could increase risk if levee breaks on "pressure" side.		tbd

Measure #37— Anacortes WTP Ring Dike			
AC	**Recommend inclusion in Corps alternatives and CFHMP** • Need to update Corps measure with Anacortes plant upgrade design which includes flood protection for facility. Need to incorporate this design. • Levee upgrade to 100 year protection already underway • Would like more involvement from City of Anacortes	Anacortes design Update from Anacortes	tbd

Table 2 – Measures Input Discussion Document for March 16 Meeting

MIDDLE/LOWER BASIN - Bypass

Committee	Comments (Focused on Criteria)	Missing Info.	Linkage with Other Measures
Measure #17— Swinomish Bypass – To be evaluated by AC March 16th Assignment to TC: What would be an acceptable design for measure #17 – under what circumstances would this be acceptable? Dry vs. wet or hybrid. Request to Corps for Cost to do studies for all bypass. Preliminary level of detail? Draw off scope previously developed – talk to Mike Scidari			
DD	Yellow – Depends on design. Needs to protect impacted infrastructure. Support for farmed floodway concept.		
ENV	Yellow – Acceptable range of flows (when initiated and how much); design needs to include "significant" restoration	Biggest issues are: fish stocks and sedimentation	Yes
LU	Yellow Bypasses in general were deemed too expensive for the benefits derived		Perhaps necessary if levees are setback upstream

AC

Different generation of Avon bypass project

Skeptism that it will ever get built because of cost

Only project that would actually stop flooding in lower valley, although stopping flooding may not be best thing for farming in lower valley

Skeptism that cost would be prohibitive – don't have enough information to make this determination

Would have to be done in a way that would have substantial fish and wildlife benefits

What is level of knowledge about possible fish benefits?

Design dictates a lot – is it?

- Dry bypass
- Wet bypass
- Grass weir

If it's to stay on the list, project needs better definition

Salmon money could be possible if wet channel design

Could decide through the following:

1. If only wet acceptable for environmental interests
2. If only dry acceptable to farming community
3. Then not worth pursuing

Expense of operation is extremely high.

- Would have to create new dike district
- Conflicts with existing infrastructure – pipelines
- Annual maintenance needs and requirements

Under what circumstances could people support – possible TC assignment

Measure 38 could interact with this one – possible outlet for interior drainage

Real estate would have to be purchased by County

Concern about dropping this project off before we have more conclusion on the hydrology – may or may not need it based on that.

Measure #18— Fir Island Bypass– To be evaluated by AC March 16th See notes above under Measure 17			
DD	Red – As presented. Support for increasing conveyance in both forks.		
ENV	Yellow – Same as # 17, acceptable range of flows (when initiated and how much); design needs to include "significant" restoration	Biggest issues are: year round flows	Yes
LU	Yellow		
AC	Note that DDD prefers setback levees to bypass in this area Environmental perspective – bypass has potential for big ecosystem restoration because of fish access to center of bay. Could be biggest restoration project potential in Puget Sound General question – will dike and drainage districts assume ownership and maintenance for new projects in their service area? Although this (and other bypass projects) are shown as straight channels, in fact they would not be. Wet, dry, or grass channel? Possible funding through salmon money is good reason to keep it on the list Connects to measure #38 (interior drainage) too Concern about south fork closing off. May not be hydrologically sustainable to distribute flow among three channels.		
Measure #19— Samish Bypass– To be evaluated by AC March 16th See comments under measure #17			
DD	Red – As presented. Yellow - If frequency is greater than 75 year event and low velocity flows. Design needs to focus on existing low areas and include interior drainage and outfall structure.	Flow, velocity, use frequency, flow pathway	Lower basin measures
ENV	Yellow – Same as # 17, acceptable range of flows (when initiated and how much); design needs to include "significant" restoration	Biggest issues are: fish stocks and sedimentation	Yes
LU	Red		
AC			
Measure #20— Mount Vernon Bypass– To be evaluated by AC March 16th See comments under measure #17			
DD	Red – As presented.		
ENV	Yellow – Same as #18, acceptable range of flows (when initiated and how much); design needs to include "significant" restoration	Year round flow impact to low flows	Yes
LU	Red		
AC			

AC = Advisory Committee; DD = Drainage District Technical Committee; ENV = Environmental Technical Committee; LU = Land Use Technical Committee

Table 2 (cont.) – Measures Input Discussion Document for March 16 Meeting

SPOT ISSUES – Ring Dikes

Committee	Comments (Focused on Criteria)	Missing Info.	Linkage with Other Measures
Measure #31— Burlington Ring Dike– To be evaluated by AC March 16th			
DD	Red – As presented. Yellow – Three sided and combined with interior drainage. Needs to address potential impacts	Design and evaluation of impacts	6a or 6b and 38
ENV	Red - As presented. Same as # 11, doesn't meet criteria 1 -3, 4 is maybe. Yellow - Same as # 13, existing levee / rock armoring needs to be removed with minor excavation as needed to install effective fish habitat features. Needs to restore riverine processes including restoration of Gages Slough.	Need Burlington design	24 & 24A
LU	Red as described Green if redesigned per latest City of Burlington Proposal. Not a ring dike but a 100 year levee certification project. See attached exhibits	City of Burlington proposal	
AC			

Burlington Levee Certification Project

- Burlington project (from MF) Not ring dike. Certify existing levee segments.
- What is Plan B? Only project being considered by Burlington
- Need to keep in mind that cities are doing reasonable thing to try to get lower flood levels on FEMA maps. Only way to do this is through levee certification. Also provide greater protection against flooding.
- Flaws in data that may indicate this project not needed? Skeptism that flow through railroad bridge limited to 170,000 cfs. If you assume more water can get through, then problem is not as severe for Burlington. Trouble is then you have to get rid of the water somehow. Historically you would only have had that happen once in the last 87 years. Some belief that don't need to certify levees, just need to make a way for more water to pass through that bridge corridor. Railroad bridge is a safety hazard – desire to pressure BNSF to remove bridge.

Measure #32— North Mount Vernon Ring Dike– To be evaluated by AC March 16th			
DD	Red – As presented. Yellow – Only if critical infrastructure is protected and existing levees remain. Need to provide existing level of protection.		
ENV	Red - Same as # 11, doesn't meet criteria 1 -3, 4 is maybe. Yellow - Same as # 13, existing levee / rock armoring needs to be removed with minor excavation as needed to install effective fish habitat features. Needs to restore riverine processes.	Design	24 & 24A
LU	Yellow w/modifications	Needs to be modified	
AC	City of Mt. Vernon does not support this configuration – would probably like it to be further west. Difficult for AC to support without support and participation from Mt. Vernon. Expression that this is important project to protect freeway, railroad, and connect to downtown Mt. Vernon project Suggest support, but must connect on both ends Supported by DD17 to preserve farmland and protect critical infrastructure Need updated configuration – actual map with lines on it Needs to be linked with other project – AC wants to see how this connects to other projects		
Measure #33— West Mount Vernon Ring Dike– To be evaluated by AC March 16th			
DD	Red – As presented.		
ENV	Red - Same as # 11, doesn't meet criteria 1 -3, 4 is maybe. Yellow - Same as # 13, existing levee / rock armoring needs to be removed with minor excavation as needed to install effective fish habitat features. Needs to restore riverine processes and not preclude potential benefits of #20.	Design	24 & 24A
LU	Red		
AC	MV does not like this concept		

AC = Advisory Committee; DD = Drainage District Technical Committee; ENV = Environmental Technical Committee; LU = Land Use Technical Committee

Table 2 (cont.) – Measures Input Discussion Document for March 16 Meeting

SPOT ISSUES – Ring Dikes

Committee	Comments (Focused on Criteria)	Missing Info.	Linkage with Other Measures
Measure #34— East Mount Vernon Ring Dike– To be evaluated by AC March 16th			
DD	Green – Some concern about impact to DD #3 levees and other infrastructure. Provides localized benefits only. Concerned with potential expansion of Mount Vernon UGA.	Benefit and impacted areas	Yes
ENV	Red - Same as # 11, doesn't meet criteria 1 -3. Yellow - Same as # 13, existing levee / rock armoring needs to be removed with minor excavation as needed to install effective fish habitat features. Needs to restore riverine processes including restoration of Britt Slough.	Design	24 & 24A
LU	Yellow w/modifications		
AC	Support from WSDOT and MV No environmental benefit. Would need to combine with mitigation projects. Would not support as standalone as this would have environmental impact. May impact restoration project on opposite bank. What is linkage to other projects? Is there another project that would achieve similar outcome with less environmental impact? Problems – doesn't really connect into high ground. Levee setback in DD3 is probably a better project. MV wants 100 year flood protection for everything within City limits. What the specific project is will be fleshed out for each area.		
Measure #35— La Conner Connector Dike– To be evaluated by AC March 16th			
DD	Green – Get started. Localized impacts and benefits.	Design	
ENV	Red - Same as # 11, doesn't meet criteria 1 -3. Yellow - Same as # 13, existing levee / rock armoring needs to be removed with minor excavation as needed to install effective fish habitat features. Needs to restore riverine processes including restoration of Sullivan Slough.	Need LaConner design	24 & 24A
LU	Green Project should described as "gap filler"		
AC	Environmental concerns may focus on Sullivan Slough La Conner needs this project no matter what else is done. Environmental restoration would be part of the project Suggest rename from La Conner Ring Dike to La Conner Connector Dike		

Measure #36— Clear Lake Ring Dike– To be evaluated by AC March 16th			
DD	Green – Localized impacts and benefits.		
ENV	Yellow – needs to include restoration of wetland and slough habitats		24 & 24A
LU	Yellow	Need more information	
AC	Part of 1979 Corps project. Protects downtown Clear Lake from river coming over Highway 9. Most important is that Beaver Lake area still rising after water going down in this area. Flows up East Nookachamps Creek and down Beaver Creek. Very important project Needs good environmental analysis – fish use this area as a refuge during high flows		

AC = Advisory Committee; DD = Drainage District Technical Committee; ENV = Environmental Technical Committee; LU = Land Use Technical Committee

New Projects

From Dike and Drainage District Technical Committee:

#38 - Need interior drainage projects to handle excess flows.

Comments: Need to identify locations to direct overland flow to discharge via control structures into Samish, Padilla and Skagit bays. Everything needs to be engineered from the bottom to upstream.

Drainage or flood damage reduction? Flood damage reduction. Idea is reduce velocity of water coming onto and off the floodplain. And reduce water surface elevation. Increase capacity of drainage system. Also reinforcing the downstream face of road embankments to reduce erosion.

From Environmental Technical Committee:

Habitat restoration projects in Upper basin tributaries could be evaluated for habitat restoration projects with flood damage reduction potential. Benefits include reduction in sedimentation and LWD (mass wasting) and increased off channel flood water attenuation (storage). Possible locations include Hansen, Coal, Wiseman, Jones creeks etc. Sources of information include the Chinook Recovery Plan and the Skagit Watershed Council strategy document and "Three year list."

From City of Burlington:

- Burlington levee segment certification project
- Clarify the three-bridge corridor project is in phases:
  1. certified setback levee with existing bridges
  2. setting back the bridges (like in 30 years)

Comments from the City of Mount Vernon about the USACE Skagit GI Measures that have a direct and significant impact on the City of Mount Vernon

Measure 16 – Mount Vernon Floodwall

Part of the GI Measures slide show mentions four "Potential Disadvantages" to the MV Floodwall.

The City has some level of concern with all four of the potential disadvantages comments.

- ***Does not provide significant flood protection as a standalone project*** – The floodwall will provide significant flood protection to downtown Mount Vernon. The City can show that this is the case with both the ACE GI Hydrology model and the Cities own modeling.
- ***Impacts to commercial structures (i.e. parking) –*** The Downtown and Waterfront Master Plan, which the flood wall is a key part of, calls for the replacement of all parking plus more in the downtown area. A parking structure will be built between the transportation hub and the waterfront. No long term affect on commercial business. The retail business will be replaced and additional upscale residential condos will allow local residents the full enjoyment of the Skagit River.
- ***Restricts public access to the river –*** The City will remove the existing parking revetment which is currently a restriction to public access to the river. The City intends to increase the density of downtown, building on and enhancing existing retail activity along First Street to create a vibrant, attractive and safe waterfront and downtown, with enhanced public access to the shoreline and river, new and improved public amenities, and mixed-use redevelopment that will generate new jobs and create housing that preserves the character of downtown Mount Vernon. It is a place where people come to live, work, and play, enjoying the riverfront promenade, boutique shopping, fine dining, and entertainment of all sorts. Its public spaces are enlivened to include a farmer's market and live music. People will come for its fairs, festivals, and riverfront setting.
- ***Need to determine if impacts to historic buildings –*** The City has completed the NEPA process and consultation with the tribes. As part of the NEPA process the City has a firm inventory of all the significant buildings within the area of impact. Of all the buildings in the area of impact only one was found to be of historic significance, the Eddy Laughlin building. The City mitigated the impacts of demolishing the building by working with the Skagit County Historical Museum and an architectural salvage company to save those building elements which have some value before we raze the building. The City of Mount Vernon inventoried the historic buildings within the entire downtown area. The City has all of the concerns addressed in a Memorandum of Understanding between the City, Washington State Historic Preservation Officer (SHPO), and the Skagit County Historical Museum.

On an additional note related to the floodwall and Skagit GI hydraulic model. It has come to the City's attention that the historic sandbag wall is not included in the existing conditions hydraulic model. The City has historically constructed flood protection along Main Street during every major flood event. In addition the City has recently purchased a mobile flood fence and constructed a concrete footing to further assure that the flood fighting operation in downtown Mount Vernon is facilitated. The City's concern is that if a 4-foot flood or sandbag wall is not included in the existing conditions hydraulic model but the proposed 4-foot Mount Vernon Flood Wall is added to the future conditions (measures) hydraulic model then the future conditions model may indicate changes in upstream and/or downstream conditions that, in reality, do not exist.

It is completely understandable that modeling protocols need to be followed. However, the decision makers and public still needs to understand what the actual impacts of the Mount Vernon Flood Wall will be. If the ACE modeling protocols require only permanent structures can be placed within the existing hydraulic model then this should be noted in any report. Any hydraulic report or modeling results associated with the change in conditions related to the floodwall should be fully explained to include the fact that upstream and downstream impacts may be insignificant or none at all due to the fact that the historic City of Mount Vernon sandbag wall was not included in the existing conditions hydraulic model.

Measure 20 – Mount Vernon Bypass

The bypass has some very good advantages and could provide substantial flood protection especially in conjunction with the floodwall.

One concern worth mentioning is low flow design. The City of Mount Vernon is working extremely hard to create a waterfront and downtown environment that enhances the public access to the shoreline and Skagit River. Many of the envisioned uses, like the farmers market, live music, fairs, and riverfront festivals, would take place during the traditional low flow season. The City would like to see a design that keeps the maximum amount of the river's low flows along Mount Vernon's historic downtown waterfront area.

The City appreciates all of the USACE's hard work and dedication. We look forward to an ongoing relationship and future successes.

Take care,

Blaine Chesterfield

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Program Coordination Division
Public Works
City of Mount Vernon