MEMORANDUM

Date: December 2, 2013
To: Jim Kramer
From: Beth Peterson, HDR
Cc: Greg Summers, Anchor/QEA, Bob Montgomery, Anchor/QEA
Re: Chehalis Basin Strategy: Reducing Flood Damage and Enhancing Aquatic Species, Scenario of Small Projects, Draft list of potential projects

Overview and Process

As part of the evaluation of projects to reduce flood damages, the Work Group and the Anchor consultant team, with the support of the Flood Authority and state and local agencies will explore the potential benefits and potential adverse impacts of a combination of smaller local projects across the Basin, focused on protecting key infrastructure, reducing shoreline erosion, and improving flow conveyance and drainage at key points in the Basin. Potential projects will be explored in both "with a dam" and "without a dam" scenarios. A program of smaller projects aimed at protecting key infrastructure and priority areas throughout the Basin may provide a measureable reduction in damages from major floods. Further analysis of such a program needs to determine how much damage reduction is possible, and at what cost, and provide additional context for considering large-scale projects. The Anchor consultant team will work with the Flood Authority, local governments, conservation districts and other interested parties to identify flood damage reduction projects and assess the potential benefits and potential adverse impacts of a suite of small projects with and without a water retention structure and alternatives to protect I-5.

The process to identify and analyze small projects will include:

1. Review the project list and previous process conducted by the Flood Authority and SBGH consulting to determine how the previous work can be used.
2. Develop screening criteria for the type of projects that should be identified and the criteria for how the projects will be evaluated.
3. Meet with local cities and counties, conservation districts and others to expand and/or refine the list of potential projects
4. Determine the suite of projects that need to be included in a small project scenario for comparison with and without a dam and alternatives for I-5.
5. Assess the benefits, costs and potential impacts of the suite of small projects.
6. Work with the Work Group and Flood Authority to determine which projects should be further assessed for potential inclusion into the next biennium capital budget (consultant resources are available to develop conceptual designs for up to 10 projects).

7. Utilize as appropriate the Flood Authority's "**Future Small-Scale Local Flood Hazard Reduction Projects (beyond 2013-15)**" webpage at https://www.ezview.wa.gov/site/alias__1492/34489/local_projects.aspx to facilitate ease of information transfer, broader stakeholder awareness, overall enhance transparency.

Types of Projects under consideration

Projects that:

1. Have already been started so they can be completed.
2. Have cost-sharing resources available to them.
3. Reduce flood elevations, reduce shoreline erosion, reduce velocity where needed, improve conveyance, elevate or flood proof structures.
4. Protect multiple properties.
5. Protect public infrastructure.
6. Are affected by mainstem flooding.
7. Are affected by flooding from any tributary to the mainstem.
8. Do not include major projects like long levees along mainstem, dredging or other projects that have been assessed before and not proposed for further study.
9. Direct flood waters to willing landowners, historic locations, tributaries and natural systems where practical and feasible.
10. Reduce flood insurance premiums for homeowners and rate-payers.
11. Reduce capital losses to farmers and ranchers.

Criteria to Evaluate Projects

1. Ability to affect a broader area (not just a local area, i.e. does the project provide basin wide flood reduction and provide downstream benefits?)
2. Value and size of the area/infrastructure the proposed project will protect (Estimated flood damage reduction benefits).
3. Is the project permitable?
4. Is the project implementable?
5. Is the project appropriately resourced to cover "beyond construction" costs (e.g., operations, maintenance, repair, inspections, etc.)?
6. Ability to provide environmental benefits.
7. Population/value of structure at risk.
8. Adaptability (can the project be adaptable to provide benefits under various scenarios (i.e. climate change, with or without other projects, etc.).

List of Potential Projects

Potential Projects

LOCATION	PROJECT NAME	DESCRIPTION
City of Aberdeen	Fry Creek	• High tides and flooding on the Chehalis River cause neighborhood and highway flooding • Potential project: Install new tide gate and pump station to reduce flooding • No work has been done to date
City of Cosmopolis	Mill Creek	• Flooding on Chehalis River causes backwater and flooding of neighborhoods • Replacement of failed dam at Mill Creek Park • Assessment and possible medication to tide gate with installation of pump station • Assessment of culverts along Mill Creek for needed improvements • Some work has been done to date and City received partial funding
City of Elma	Wasterwater Treatment Plant	• The streambank at the outfall is eroding • The outfall is exposed • The outfall is on Grays Harbor County property • Potential project: Relocate outfall and provide streambank protection
City of Chehalis/Lewis County	Airport Levee Phase 2	• Phase 1 is currently underway • Phase 1 is widening the base of the existing levee and restoring the high to design level • Project: Construct the levee to 3 feet above the 100-yar flood elevation
Lewis County	SR 6 Overflow	• Flood waters pond behind SR 6 and overtop the road • Flood relief channel to reduce the backwater effect of SR 6 upstream • Project: Install box culverts under SR 6 east of Scheuber Road and elevate roadway • Flow channel would act as high flow by-pass
City of Centralia/Lewis County	Salzer Creek	• Flooding occurs east of I-5 due to backwatering during high flows on the Chehalis River • Potential Project: Install backwater control
City of Napavine	Kirkland Road Flooding	• Flooding of Rush Road underpass and shallow flooding upstream along Kirkland Road during floods on the Newaukum River • Project: Planning study to look at causes and potential solutions • City is also interested in WSDOT's plan for the Rush Road overpass alternative

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City of Napavine	Newaukum River Bridges	• Suspect backwaters on Newaukum River due to I-5 and City's bridge downstream of I-5 • Project: Study to look at causes and potential solutions
City of Chehalis	Dillenbaugh Creek Realignment	• Current alignment the creek goes under I-5 multiple times • Flooding occurs in Chehalis and along I-5 • Project: Construct new channel from undercrossing at Rice Road through Stan Hedwall Park • Creek would then discharge to Newaukum River • Rerouting reduces flooding and provides habitat enhancement • Some work has been done to date
City of Chehalis	Main Street Regrade	• Main Street floods and closes access from downtown Chehalis to I-5 • Potential project: Elevate Main Street and keep access open between downtown and I-5 • Construction of a dam in the upper basin may alleviate flooding along Main Street
City of Chehalis	Potential Storage	• Brainstormed areas of open land that may have potential to increase storage • Potential storage areas: o Between railroad and N. National Ave o By old WWTP o Salzer Creek – area of large wetland and floodplain
Grays Harbor County	Wynochee Road Regrade	• Flooding on the Wynochee River causes flooding and closure of road • The road is used as a by-pass to Highway 12 • Potential project: Elevate a portion of the roadway near Milepost 1
Grays Harbor County	Wishkah Road Regrade	• Flooding causes road closures and cuts off hundreds of properties in Wishkah Valley • Study identified 4 areas which should be raised to eliminate road closures • Project: Raise the grade of the areas identified in previous study
Grays Harbor County	South Bank Road	• Flooding on the Chehalis River causes the road to wash out near Mile Post 8.2 • Potential project: Construct bridge to allow floodwaters to flow under the bridge and eliminate flooding and wash out of roadway
City of Montesano/Grays Harbor County	SR 107 Relic Channel Restoration	• Erosion issues in area • Potential project: Restoration of relic channel and cutting off oxbow

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City of Montesano	WWTP/Wynochee River Erosion	• Migrating river bend exposing the embankment of the treatment plant sludge lagoon • In 2007 City installed emergency bank protection • Project: To install a long-term measure to protect WWTP facilities
City of Oakville	Subdivision Flooding	• Flooding occurs in SE Oakville likely due to Harris Creek, Black River and another unnamed stream • Potential project: Study to determine flooding causes and potential solutions
City of Centralia	China Creek	• China Creek floods downtown Centralia due to backwatering of the Chehalis River during high flows • Project: Creating storage in upper basin to reduce flooding of downtown • Some work has been done to date to look at alternatives
Thurston County/City of Centralia/Town of Bucoda	Skookumchuck Dam Operations	• Dam currently is not operated for flood storage • If the dam becomes available for other uses and/or ownership, potential project is to study the operations of the dam for multiple uses including flood storage
Town of Bucoda	Main Street Regrade	• Skookumchuck River overflows and closes intersection of 11th Street and Main Street – blocking access from the adjacent neighborhood to the highway • Potential project: Install culvert/bridge at the intersection and raise Main Street to allow access during high flows
Town of Bucoda	Restoration of Relic Channel	• Evaluate excavating the relic channel as a high flow by-pass on the Skookumchuck River on the southeast side of the town • Could alleviate flooding in the town
Thurston County	Culvert Improvements	• Numerous culverts within the County causes localized flooding throughout the County • Potential projects: Improve culvert crossings. No specific locations have been identified yet.
Washington State Conservation Commission	Critter Pads	• Construct critter pads in various locations in Grays Harbor, Lewis and Thurston counties
Confederated Tribes of the Chehalis Reservation	Moon Road	• Roadway floods in two places south of Highway 12 • Potential project: Raise roadway elevation and install culverts
Confederated Tribes of the Chehalis Reservation	Black River Bridge	• Existing bridge constricts flow during higher flows • WSDOT has studied replacing the bridge • Project: Replace existing bridge with a wider, longer bridge

LOCATION	PROJECT NAME	DESCRIPTION
Confederated Tribes of the Chehalis Reservation	Roundtree Creek	• Roundtree Creek flows into Harris Creek which floods the City of Oakville • The channel is no longer in its original alignment • Potential project: Restore Roundtree Creek to its original alignment, reducing flooding downstream and potential habitat improvement