April 16, 2014

TO: Flood Authority Members

FROM: Scott Boettcher, Staff

SUBJECT: Local Projects Update

The purpose of this memo is to update you on the status of the local projects effort we discussed at our last Flood Authority meeting (March 20, 2014, Montesano, https://www.ezview.wa.gov/site/alias__1492/34798/meetings_2013-15.aspx). At that meeting I walked you through the process and criteria being used by the Anchor QEA/HDR/WSE team to identify and evaluate projects for next step design and costing assistance. Outlined below is where that effort has landed with regard to a final listing of projects identified for further design and costing assistance. This list was recommended by the Anchor QEA/HDR/WSE team and endorsed by the Flood Authority's Project Committee. Feel free to call or email if you have any questions (i.e., 360/480-6600, scottb@sbgh-partners.com).

Local Projects Effort

a. **Task/Purpose at Hand** → Identify approximately 10 projects with flood hazard reduction benefits that are ready for and need further design and costing assistance. Once complete, projects will be added to the larger list of projects with known costs that can be considered as part of the 2015-17 Capital Budget decision-making process.

b. **Projects Identified for Further Design and Costing Assistance** → Following projects have been identified as having flood hazard reduction benefits and as being ready for and needing further design and costing assistance (projects are presented here solely on the basis of their geography, i.e., Upper-Basin to Lower-Basin):

1. City of Napavine, **Kirkland Road Flooding**	• Potential project: Install a culvert along the north side of Kirkland Road to guide water to the Newaukum River via the culvert and an existing slough. • Potential project: Raise Kirkland Road as a means of eliminating flooding issues on the road itself. Benefits of the project include alleviating flooding to major businesses in the area, ensuring emergency vehicle access and reducing impacts to traffic getting on and off the freeway at Exit 72. • Major businesses include McDonald's, Burger King, Ramblin Jacks Restaurant, Subway, gas stations, and the Bethel church as well as many families living in the area.
2. WSDOT/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. • Potential project: Install box culverts under SR 6 east of Scheuber Road and elevate roadway. • Flow channel would act as high flow by-pass.

3.	City of Chehalis, **Dillenbaugh Creek Realignment****	• Current alignment of the creek goes under I-5 multiple times. • Flooding occurs in Chehalis and along I-5. • Potential 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.
4.	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.
5.	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.
6.	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.
7.	Chehalis Tribe, **Moon Road**	• Roadway floods in two places south of Highway 12. • Potential project: Raise roadway elevation and install culverts to keep Moon Road open during moderate flooding events similar to completed project on Anderson Road.
8.	Chehalis Tribe, **Black River Bridge**	• Existing bridge constricts flow during higher flows. • WSDOT has studied replacing the bridge. • Potential project: Replace existing bridge with a wider, longer bridge.
9.	Chehalis Tribe, **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.
10.	Grays Harbor County, **Wynoochee Valley Road Regrade**	• Flooding on the Wynoochee River causes flooding and closure of road. • The road is used as an alternate route when Highway 12 is closed due to flooding. • Potential project: Elevate a portion of the roadway near Milepost 1.
11.	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.

c. **What this List of Projects Means and Does Not Mean** → This is a listing of projects with flood hazard reduction benefits that are ready for and need further design and costing assistance. This is not a listing of final projects being recommended for 2015-17 construction funding. Once the costs of these projects are known they will be placed on the larger listing of all projects (see Attachment A). The process to determine which

projects will be considered for the 2015-17 Capital Budget has not yet been determined, but will likely involve consideration of projects on the Attachment A list.

d. **More About this List of Projects** → Several aspects about this particular combination of projects:
- Projects are distributed throughout the Basin.
- Projects are largely mainstem or near mainstem.
- Projects need and are ready for next step design/costing assistance.
- Projects have been on the drawing boards and been identified as local flood hazard reduction solutions for some time, with many having had background studies done.
- Projects identified with two asterisks ("**") present a coordination opportunity with WSDOT and their effort to develop I-5 protection alternatives.
- Following Google maps site displays larger listing of projects in the Basin with the above projects displayed in green -- https://mapsengine.google.com/map/edit?mid=z33VOynYGAcw.kBi7VaobZrQg (see too Attachment C.)

e. **Timeline** → The Anchor QEA/HDR/WSE team has been directed to develop a schedule/plan to work with the above jurisdictions and projects on design and costing over the next several months. Costs for all projects will ultimately need to be known by early-Fall. Once a more precise schedule has been developed I will share it with the above projects.

f. **Supporting/Background Materials** → Attached to this memo are several attachments providing greater detail and specificity to the evaluation and analysis used to arrive at the above listing of projects. These attachments are:
- Attachment A -- All Projects (Underway; Not Underway; Multi-Purpose) [see pg. 4].
- Attachment B -- Projects Scored and Ranked for Further Design and Costing Assistance [see pg. 7].
- Attachment C -- Map Showing All Projects [see pg. 9].
- Attachment D -- Evaluation Criteria [see pg. 10].
- Attachment E -- Project Descriptions [see pg. 11].

ATTACHMENT A
ALL PROJECTS -- UNDERWAY; NOT UNDERWAY; MULTI-PURPOSE

PROJECT LOCATION	PROJECT NAME	SCORING								
** = Likely to be affected by WSDOT I-5 alternatives; Requires more coordination.		Primary Weighting					Secondary Weighting			
		Criteria 1a	Criteria 1b	Criteria 2	Criteria 3	Sum	Criteria 4	Criteria 5	Criteria 6	Criteria 7	Sum
PROJECTS UNDERWAY IN GRAYS HARBOR COUNTY (NOT SCORED)											
Aberdeen	Burger King Trail/Dike										
Aberdeen	Dike Bank of Wishkah North of Highway										
Aberdeen	Market Street Dike										
Aberdeen	Southside Dike/Levee Certification										
Chehalis Tribe	Oxbow Lake Reconnecttion										
Chehalis Tribe	***Sickman-Ford Overflow Bridge***	***PROJECT COMPLETE, NO FURTHER FUNDING NECESSARY***									
Cosmopolis	Mill Creek Dam Improvement										
Grays Harbor County	Elma-Porter Flood Mitigation ["South Bank Road (MP 16.9)"]										
Grays Harbor County	Satsop River Floodplain Restoration (Phase I)										
Grays Harbor County	Wishkah Road Flood Levee ["Sheet-pile flood levee (Wishkah Road MP 2.2 to 2.7)"]										
Montesano	***Revetment for Montesano Rd., Sewage Treatment Plant, Mary's River Lumber***	***PROJECT UNDER CONSTRUCTION, NO FURTHER FUNDING NECESSARY***									
WA Department of Fish and Wildlife	Satsop River Floodplain Restoration (Phase II)										
WSDOT/Grays Harbor County/City of Montesano	SR 107 Relic Channel Restoration										
PROJECTS UNDERWAY IN LEWIS COUNTY (NOT SCORED)											
Boistfort Water District	Wildwood Sediment Pond Addition										
Centralia	China Creek										
Chehalis Tribe	Oxbow Reconnection at RM 78										
Lewis County	***Adna Levee***	***PROJECT COMPLETE, NO FURTHER FUNDING NECESSARY***									
Lewis County	Airport Levee (Phase I)										
Pe Ell	***Wastewater Treatment Plant Flood Prevention Dike***	***PROJECT FUNDED, NO FURTHER FUNDING NECESSARY***									
WA Conservation Commission	***Critter Pads, Evacuation Routes (Phase I)***	***PROJECT COMPLETE, NO FURTHER FUNDING NECESSARY***									
PROJECTS UNDERWAY IN THURSTON COUNTY (NOT SCORED)											
Bucoda	***Bucoda Levee***	***PROJECT UNDER CONSTRUCTION, NO FURTHER FUNDING NECESSARY***									
Chehalis Tribe	Allen Creek Restoration										
Chehalis Tribe	***Flood Gage Station***	***PROJECT COMPLETE, NO FURTHER FUNDING NECESSARY***									

OTHER PROJECTS UNDERWAY (NOT SCORED)	
TBD	Basin-wide Aquatic Species Plan
WA State Conservation Commission	Critter Pads, Evacuation Routes (Phase II)
WA State Department of Natural Resources	Geomorphic Analysis (see pg. 8)

PROJECT LOCATION	PROJECT NAME	SCORING									
** = Likely to be affected by WSDOT I-5 alternatives; Requires more coordination.		Primary Weighting					Secondary Weighting				
		Criteria 1a	Criteria 1b	Criteria 2	Criteria 3	Sum	Criteria 4	Criteria 5	Criteria 6	Criteria 7	Sum
PROJECTS NOT UNDERWAY (SCORED)											
WSDOT/Lewis County	SR 6 Overflow**	3	-1	4	4	**10**	1	2	2	0	**5**
City of Chehalis	Airport Levee Phase 2**	3	-1	4	4	**10**	1	2	0	1	**4**
City of Chehalis	Dillenbaugh Creek Realignment**	2	-1	3	3	**7**	1	0	2	1	**4**
City of Chehalis	Main Street Regrade**	0	0	2	3	**5**	3	3	1	1	**8**
Confederated Tribes of the Chehalis Reservation	Black River Bridge	1	-1	3	2	**5**	2	3	2	1	**8**
Confederated Tribes of the Chehalis Reservation	Roundtree Creek	0	0	2	2	**4**	2	1	3	1	**7**
City of Oakville	Subdivision Flooding	0	0	2	2	**4**	2	1	3	1	**7**
Grays Harbor County	Wishkah Road (MP 3.7 to MP 4.1) Flood Study	0	0	2	2	**4**	2	1	1	1	**5**
Lewis County	Salzer Creek	1	-1	2	2	**4**	1	1	1	2	**5**
City of Elma	Wastewater Treatment Plant Outfall Repair	0	0	3	0	**3**	3	2	2	1	**8**
Town of Bucoda	Main Street Regrade	0	0	1	2	**3**	3	3	0	1	**7**
City of Aberdeen	Fry Creek	0	0	2	1	**3**	2	2	1	2	**7**
Confederated Tribes of the Chehalis Reservation	Moon Road	0	-1	2	2	**3**	2	3	1	1	**7**
Grays Harbor County	Wynoochee Valley Road Regrade	0	0	2	1	**3**	3	3	0	1	**7**
City of Montesano	WWTP Lagoon/Wynoochee River Erosion	0	0	3	0	**3**	1	2	2	1	**6**
Grays Harbor County	South Bank Road (MP 8.2)	0	0	2	1	**3**	2	1	1	1	**5**
City of Napavine	Kirkland Road Flooding	0	-1	2	2	**3**	1	1	1	1	**4**
City of Napavine	Newaukum River Bridges	0	0	0	2	**2**	1	2	1	1	**5**
Town of Bucoda	Restoration of Relic Channel	0	0	0	1	**1**	1	1	2	2	**6**
City of Chehalis	Potential Storage	0	0	0	0	**0**	2	4	4	1	**11**
City of Centralia	Skookumchuck River Mitigation	0	0	0	0	**0**	2	2	3	1	**8**
Thurston County/City of Centralia/Town of Bucoda	Skookumchuck Dam Operations	This project will not be ranked due to it's previous studies, complexity and ownership issues outside the scope of work of this project.									

PROJECT LOCATION	PROJECT NAME	SCORING									
** = Likely to be affected by WSDOT I-5 alternatives; Requires more coordination.		Primary Weighting					Secondary Weighting				
		Criteria 1a	Criteria 1b	Criteria 2	Criteria 3	Sum	Criteria 4	Criteria 5	Criteria 6	Criteria 7	Sum
MULTI-PURPOSE PROJECTS IDENTIFIED BY ECOLOGY AND WDFW IN 2012 (SCORED)											
		Primary Weighting					Secondary Weighting				
		Criteria 1a	Criteria 1b	Criteria 2	Criteria 3	Sum	Criteria 4	Criteria 5	Criteria 6	Criteria 7	Sum
Lewis County	WDFW Pheasant Farm	0	0	0	0	**0**	2	2	4	1	**9**
Lewis County	Salzer Creek Lower Mile Oxbow Reconnection and Riparian Restoration	0	0	0	0	**0**	2	2	4	1	**9**
City of Chehalis	Stan Hedwall Park Floodplain Reconnection	0	0	0	0	**0**	2	2	4	1	**9**
Grays Harbor County	Gaddis Creek Fish Barrier Culvert Project	0	0	0	0	**0**	2	2	4	1	**9**
City of Centralia	RM 68 Oxbow Reconnection	0	0	0	0	**0**	1	2	4	1	**8**
Grays Harbor County	RM 36 Oxbow Reconnection	0	0	0	0	**0**	1	2	4	1	**8**
Grays Harbor County	RM 43 Oxbow Reconnection	0	0	0	0	**0**	1	2	4	1	**8**
Lewis County	RM 78 Oxbow	0	0	0	0	**0**	1	2	4	1	**8**
Lewis County	Salzer Creek at Centralia Alpha Road Floodplain Storage and Riparian Restoration	0	0	0	0	**0**	1	2	4	1	**8**
Lewis County	Oxbow Lake Reconnection	0	0	0	0	**0**	1	2	4	1	**8**
Thurston County	Allen Creek Restoration	0	0	0	0	**0**	1	2	4	1	**8**

ATTACHMENT B

PROJECTS SCORED AND RANKED FOR FURTHER DESIGN AND COSTING ASSISTANCE

Google Maps

https://mapsengine.google.com/map/viewer?mid=z33VOynYGAcw.kBi7VaobZrQg

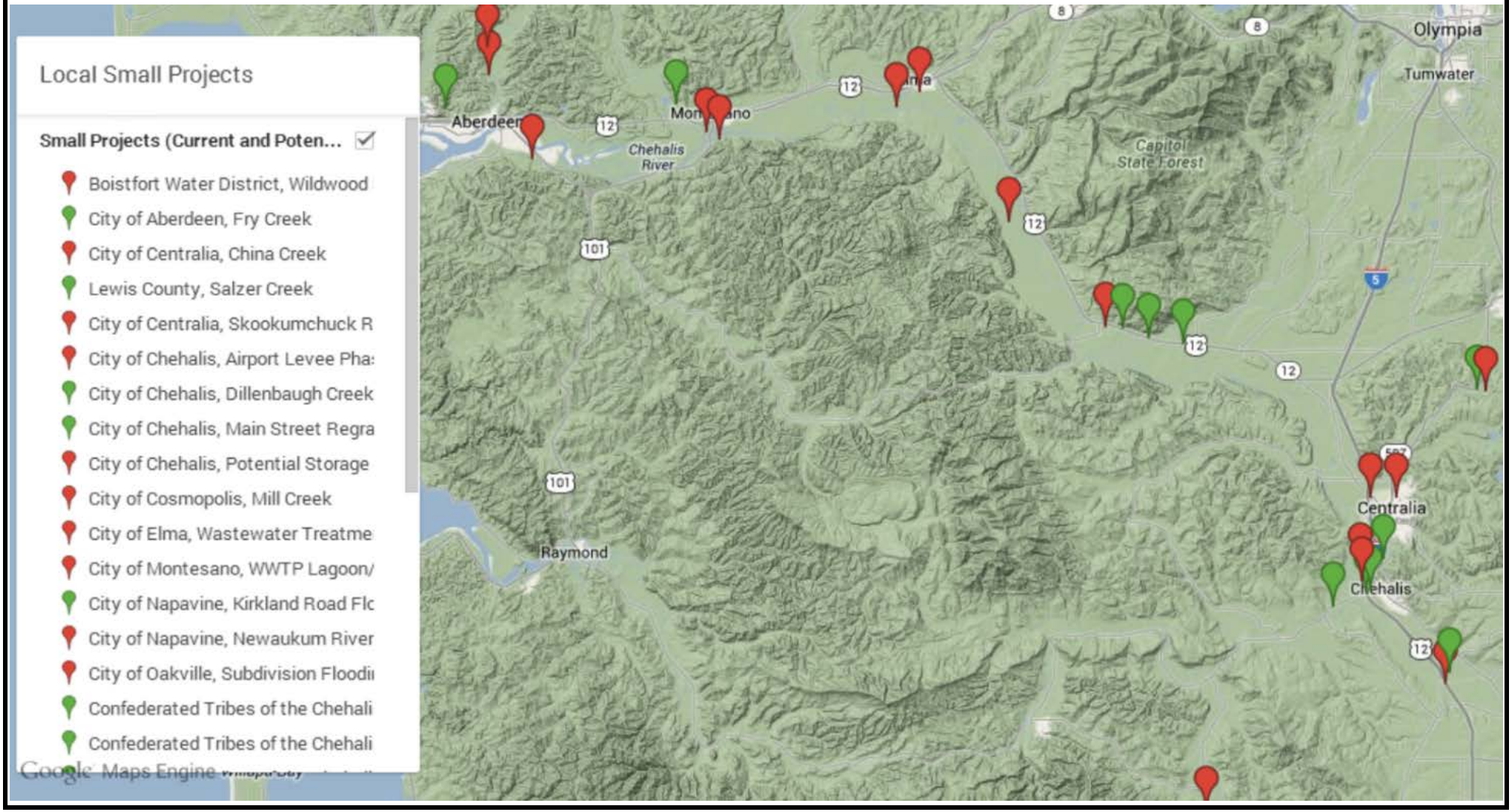
PROJECT LOCATION	PROJECT NAME	SCORING										Mainstem (plus affected tribs)	Comment	Prior Studies, Analyses?
** = Likely to be affected by WSDOT I-5 alternatives; Requires more coordination.		Primary Weighting					Secondary Weighting							
		Crit 1a	Crit 1b	Crit 2	Crit 3	Sum	Crit 4	Crit 5	Crit 6	Crit 7	Sum			
PROJECTS NOT UNDERWAY (SCORED)														
WSDOT/Lewis County	SR 6 Overflow**	3	-1	4	4	**10**	1	2	2	0	**5**	Y	**1**	**Yes (WSE)**
City of Chehalis	Airport Levee Phase 2**	3	-1	4	4	**10**	1	2	0	1	**4**	Y	Presume they don't need next step engineering/design assistance	**Yes**
City of Chehalis	Dillenbaugh Creek Realignment**	2	-1	3	3	**7**	1	0	2	1	**4**	Y	**2**	**Yes**
City of Chehalis	Main Street Regrade**	0	0	2	3	**5**	3	3	1	1	**8**	Y	**3**	
Confederated Tribes of the Chehalis Reservation	Black River Bridge	1	-1	3	2	**5**	2	3	2	1	**8**	Y	**4**	**Yes (WSDOT)**
Confederated Tribes of the Chehalis Reservation	Roundtree Creek	0	0	2	2	**4**	2	1	3	1	**7**	N	**5**	
City of Oakville	Subdivision Flooding	0	0	2	2	**4**	2	1	3	1	**7**	N	Next step is a study of problems and potential solutions. Roundtree Creek project may help here too.	
Grays Harbor County	Wishkah Road (MP 3.7 to MP 4.1) Flood Study	0	0	2	2	**4**	2	1	1	1	**5**	N	Next step is a study of problems and potential solutions.	
Lewis County	Salzer Creek	1	-1	2	2	**4**	1	1	1	2	**5**	Y	**6**	
City of Elma	Wastewater Treatment Plant Outfall Repair	0	0	3	0	**3**	3	2	2	1	**8**	Y	This is a straightforward outfall repair project.	
Town of Bucoda	Main Street Regrade	0	0	1	2	**3**	3	3	0	1	**7**	N	**7**	
City of Aberdeen	Fry Creek	0	0	2	1	**3**	2	2	1	2	**7**	N	**8**	
Confederated Tribes of the Chehalis Reservation	Moon Road	0	-1	2	2	**3**	2	3	1	1	**7**	Y	**9**	

Grays Harbor County	Wynoochee Valley Road Regrade	0	0	2	1	**3**	3	3	0	1	**7**	N	**10**	
City of Montesano	WWTP Lagoon/Wynoochee River Erosion	0	0	3	0	**3**	1	2	2	1	**6**	N	Next step is a study of problems and potential solutions.	
Grays Harbor County	South Bank Road (MP 8.2)	0	0	2	1	**3**	2	1	1	1	**5**	Y	Don't really know what this is.	
City of Napavine	Kirkland Road Flooding	0	-1	2	2	**3**	1	1	1	1	**4**	N	**11**	
City of Napavine	Newaukum River Bridges	0	0	0	2	**2**	1	2	1	1	**5**	N		
Town of Bucoda	Restoration of Relic Channel	0	0	0	1	**1**	1	1	2	2	**6**	N		
City of Chehalis	Potential Storage	0	0	0	0	**0**	2	4	4	1	**11**	Y		
City of Centralia	Skookumchuck River Mitigation	0	0	0	0	**0**	2	2	3	1	**8**	Y		**Yes (WSDOT)**
Thurston County/City of Centralia/Town of Bucoda	Skookumchuck Dam Operations	This project will not be ranked due to it's previous studies, complexity and ownership issues outside the scope of work of this												

MULTI-PURPOSE PROJECTS IDENTIFIED BY ECOLOGY AND WDFW IN 2012 (SCORED)											
		Primary Weighting					**Secondary Weighting**				
		Crit 1a	**Crit 1b**	**Crit 2**	**Crit 3**	**Sum**	**Crit 4**	**Crit 5**	**Crit 6**	**Crit 7**	**Sum**
Lewis County	WDFW Pheasant Farm	0	0	0	0	**0**	2	2	4	1	**9**
Lewis County	Salzer Creek Lower Mile Oxbow Reconnection and Riparian Restoration	0	0	0	0	**0**	2	2	4	1	**9**
City of Chehalis	Stan Hedwall Park Floodplain Reconnection	0	0	0	0	**0**	2	2	4	1	**9**
Grays Harbor County	Gaddis Creek Fish Barrier Culvert Project	0	0	0	0	**0**	2	2	4	1	**9**
City of Centralia	RM 68 Oxbow Reconnection	0	0	0	0	**0**	1	2	4	1	**8**
Grays Harbor County	RM 36 Oxbow Reconnection	0	0	0	0	**0**	1	2	4	1	**8**
Grays Harbor County	RM 43 Oxbow Reconnection	0	0	0	0	**0**	1	2	4	1	**8**
Lewis County	RM 78 Oxbow	0	0	0	0	**0**	1	2	4	1	**8**
Lewis County	Salzer Creek at Centralia Alpha Road Floodplain Storage and Riparian Restoration	0	0	0	0	**0**	1	2	4	1	**8**
Lewis County	Oxbow Lake Reconnection	0	0	0	0	**0**	1	2	4	1	**8**
Thurston County	Allen Creek Restoration	0	0	0	0	**0**	1	2	4	1	**8**

OTHER POTENTIAL PROJECTS (recently identified; presently unscored/unevaluated)														
Lewis County/Centralia	Galvin Road													

ATTACHMENT C
MAP SHOWING ALL PROJECTS
https://mapsengine.google.com/map/viewer?mid=z33VOynYGAcw.kBi7VaobZrQg



ATTACHMENT D
EVALUATION CRITERIA

1. Ability to affect a broader area of the mainstem of the Chehalis River (not just a local area, i.e. does the project provide flood reduction upstream or downstream of the projects immediate benefits?
   A. Likely to positively affect other properties by reducing flood damages.
   B. Likely to negatively affect other properties by increasing flood damages.

2. Value and size of the area/infrastructure the proposed project will protect (Estimated flood damage reduction benefits).

3. Size of the human population at risk if flooding occurs.

4. Ability to permit and implement the project:
   A. Complexity of permit issues – Assessment of how many permits and resource agencies will be needed to permit the project, and are there permitting issues that make this project unpermittable.
   B. Schedule to obtain permits to determine construction schedule – Assessment of long lead time to obtain permits and how they affect the construction schedule.
   C. Real estate issues – Assessment of how many separate property owners own the land to complete the project, and has the land already been acquired or is land acquisition still needed.
   D. Stakeholder involvement - Assessment of how many stakeholders will be involved to complete the project and will the project take significant stakeholder involvement to implement the project.
   E. Constructability complexity - Assessment of construction access, construction phasing, critical area impacts, geotechnical issues (if known) traffic disruptions, etc.
   F. Timing for completion of project – Assessment of how long it will take the project to be implemented. Faster implementation is more desirable.

5. The need and complexity the project will have for "beyond construction" costs (e.g., operations, maintenance, repair, inspections, etc.) that need to be taken into consideration.

6. Ability to provide environmental benefits:
   A. Habitat
   B. Water Quality
   C. Affecting natural processes that create or maintain habitat
   D. Effect on exotic species

7. Adaptability (how readily can the project be adapted to provide benefits under various scenarios (i.e. climate change, with or without other projects, etc.)).

Scoring:

- Provide a score of 4 if the project strongly meets the criteria.
- Provide a score of 3 if the project meets the criteria.
- Provide a score of 2 if the project neither meets nor does not meet the criteria.
- Provide a score of 1 if the project does not meet the criteria.
- Provide a score of 0 if the project strongly does not meet the criteria.

Scoring for 1b:

- Provide a score of 0 if the project is not likely to cause negative impacts by increasing flood damages.
- Provide a score of -1 if the project is likely to cause minor negative impacts (but unquantified) by increasing flood damages.
- Provide a score of -2 if the project is likely to cause moderate negative impacts by increasing flood damages.
- Provide a score of -3 if the project is likely to cause significant negative impacts by increasing flood damages.

ATTACHMENT E
PROJECT DESCRIPTIONS

PROJECT LOCATION	PROJECT NAME	DESCRIPTION
1. 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.
2. Boistfort Water District	Wildwood Sediment Pond Addition	• Add a second sedimentation pond to the current facility. • Some preliminary engineering has been completed. • Ensures large population in upper-basin continuing access to potable water supplies post a future major flood event.
3. 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.
4. 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.
5. Centralia	China Creek	• China Creek floods downtown during high flows on China Creek. • Potential project: Creating storage in upper basin to reduce flooding of downtown. • Some work has been done to date to look at alternatives. • City intends to construct a project in the vicinity of the Agnew Mill Ponds for flood damage reduction and habitat enhancement.
6. Centralia	Skookumchuck River Mitigation	• The highway work completed by WSDOT near the Skookumchuck River may not sufficiently protect the floodplain of the river. • Look for opportunities to mitigate impacts to the floodplain from the transportation project.
7. 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.
8. Chehalis	Airport Levee Phase 2	• Phase 1 is currently underway. • Phase 1 is widening the base of the existing levee and restoring the top of the levee to existing design level. • Potential project: Construct the levee to 3 feet above the 100-year flood elevation.
9. Chehalis	Dillenbaugh Creek Realignment	• Current alignment of the creek goes under I-5 multiple times. • Flooding occurs in Chehalis and along I-5. • Potential 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.

10. 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.
11. 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.
12. Chehalis Tribe	Moon Road	• Roadway floods in two places south of Highway 12. • Potential project: Raise roadway elevation and install culverts to keep Moon Road open during moderate flooding events similar to completed project on Anderson Road.
13. Chehalis Tribe	Black River Bridge	• Existing bridge constricts flow during higher flows. • WSDOT has studied replacing the bridge. • Potential project: Replace existing bridge with a wider, longer bridge.
14. Chehalis Tribe	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.
15. Cosmopolis	Mill Creek	• Flooding of neighborhoods from Mill Creek and backwater of Mill Creek from Chehalis River flooding. • Replacement of failed dam at Mill Creek Park. • Assessment and possible modification 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 for dam replacement.
16. Elma	Wastewater 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.
17. Grays Harbor County	Wishkah Road (MP 3.7 to MP 4.1) Flood Study	• Next step is a study of problems and potential solutions.
18. Grays Harbor County	Wynoochee Valley Road Regrade	• Flooding on the Wynoochee River causes flooding and closure of road. • The road is used as an alternate route when Highway 12 is closed due to flooding. • Potential project: Elevate a portion of the roadway near Milepost 1.
19. Grays Harbor County	Sheet-pile flood levee	• Construction of sheet-pile along Wishkah Road between Milepost 2.2 and 2.7, based on design which was previously funded.

20. Grays Harbor County	South Bank Road	• Flooding on the Chehalis River causes the road to wash out near Mile Post 8.2. • Potential project: Design and construct bridge to allow floodwaters to flow under the bridge and eliminate flooding and wash out of roadway.
21. Grays Harbor County	South Bank Road	• Construction of overflow bridge at Mile Post 16.9, based on design which was previously funded.
22. Grays Harbor County, Montesano	SR 107 Relic Channel Restoration	• Erosion issues in area. • Potential project: Restoration of relic channel of the Chehalis River and cutting off oxbow. • Act as an overflow channel. • City has received initial funding for this project located in Grays Harbor County.
23. Lewis County, WSDOT	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. • Potential project: Install box culverts under SR 6 east of Scheuber Road and elevate roadway. • Flow channel would act as high flow by-pass.
24. Montesano	WWTP Lagoon, Wynoochee River Erosion	• Migrating river bend on the Wynoochee River exposing the embankment of the treatment plant sludge lagoon. • In 2007 City installed emergency bank protection. • Potential project: To install a long-term measure to protect WWTP facilities/lagoon. • Next step is a study of problems and potential solutions.
25. Napavine	Kirkland Road Flooding	• Potential project: Install a culvert along the north side of Kirkland Road to guide water to the Newaukum River via the culvert and an existing slough. • Potential project: Raise Kirkland Road as a means of eliminating flooding issues on the road itself. Benefits of the project include alleviating flooding to major businesses in the area, ensuring emergency vehicle access and reducing impacts to traffic getting on and off the freeway at Exit 72. • Major businesses include McDonald's, Burger King, Ramblin Jacks Restaurant, Subway, gas stations, and the Bethel church as well as many families living in the area.
26. Napavine	Newaukum River Bridges	• Suspect backwaters on Newaukum River due to I-5 and City's bridge downstream of I-5. • Potential project: Study to look at causes and potential solutions.
27. 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.
28. Thurston County, Centralia, 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.

Multi-Purpose Projects

29.	Lewis County, WDFW Pheasant Farm	200 acres (combined Washington Department of Fish and Wildlife [WDFW] and private landowner just downstream). WDFW owns a pheasant farm and may be open to conservation. Good floodplain area with potential excavation and enhancement. The area closest to the river already has a number of higher flow side channels and good riparian cover; existing good quality. There are a few fields that are hayed that could be excavated for wetlands and side channels and also revegetated.
30.	Lewis County, RM 78 Oxbow	Oxbow reconnection with mainstream of the Chehalis River, with side channel and floodplain storage enhancement and enhancement of low elevation areas, side channels, and floodplain habitat with vegetated benches and large wood vegetation.
31.	Lewis County, Salzer Creek at Centralia Alpha Road Floodplain Storage and Riparian Restoration	Create approximately 2,000 feet of sinuous stream and install LWD log clusters. Revegetate with native trees and shrubs. Excavate emergent wetland and revegetate with wetland plants.
32.	Lewis County, Salzer Creek Lower Mile Oxbow Reconnection and Riparian Restoration	Connect Salzer Creek to old Chehalis River oxbow. Includes revegetating and regrading banks of Salzer Creek to 2:1 slopes with a bench or 3:1 slopes and removing invasives/planting a native understory. Also includes wetland creation, enhancement, and installation of LWD.
33.	Grays Harbor County, Oxbow Lake Reconnection	Approximately 75 acres; 2 landowners. Improve connection to main channel—not currently a connection but when floodwaters exceed the bank elevation (something above a 2-year flow, maybe 5-year flow), then it may briefly connect. Will require about 12 feet of excavation to create a channel connection to Chehalis River for winter rearing (i.e., November to May).
34.	Thurston County, Allen Creek Restoration	Restore natural functions to the Allen Creek floodplain and slow the creek down and restore more natural flood flow paths and flood storage. Improve 2100 feet of salmon habitat in the Scatter Creek Watershed.
35.	Grays Harbor County, RM 36 Oxbow Reconnection	Reconnect oxbow with mainstem Chehalis. Enhance low elevation areas, side channels, and floodplain habitat with vegetated benches and LWD.
36.	Grays Harbor County, RM 43 Oxbow Reconnection	Reconnect oxbow with mainstem Chehalis. Enhance low elevation areas, side channels, and floodplain habitat with vegetated benches and LWD.
37.	City of Centralia, RM 68 Oxbow Reconnection	Reconnect oxbow with mainstem Chehalis. Enhance low elevation areas, side channels, and floodplain habitat with vegetated benches and LWD.