Chehalis Basin Local Actions Program • Technical Advisory Group

MEETING 6 SUMMARY

Date: Monday, January 25, 2021
Time: 8:00 am – 12:00 pm PST
Location: Zoom online meeting

Purpose of Meeting

The purpose of the Local Actions Program Technical Advisory Group (TAG) Meeting 6 was to continue discussion of:

- Discuss TAG input identified during Meeting #5
- Preview feedback from the Implementation Advisory Group regarding community buyouts and relocation programs
- Continue discussion of the near-term approaches for:
    - Addressing channel migration and floodplain erosion hazards
    - Providing structural flood protection

Next Steps and Summary of Follow-Up Actions

The next TAG meeting is scheduled for Monday, February 8, 2021, from 1:00 PM to 5:00 PM PST. There is also a co-meeting with the Implementation Advisory Group on Monday, February 1, 2021, from 1:00 PM to 5:00 PM PST.

Below is a summary of follow-up actions identified during the meeting:

- Larry Karpack will review the results from previous WSDOT 25% increase and provide information on how it compares to the currently used 26% and 50% increases in climate change predictions
- TAG members will let Andrea or Jim know if they want to be part of the offline follow-up conversations with Natural Systems Design regarding erosion before the next advisory group meeting.
- Andrea will send out PowerPoints from the meeting to the TAG group (attached with draft notes).
- Andrea and Jim will get back to the TAG regarding remaining issues that the TAG thinks are important to discuss (see notes below).

Meeting Notes

These meeting notes are intended to be a public record of key points, questions, and discussion topics raised during the meeting. They are not intended to be transcripts. The meeting was recorded on Zoom.

Potential Structural Flood Protection Actions

WSDOT I-5 Alternatives Review

Bart Gerhart, WSDOT, reviewed the recent projects along I-5 from Rush Road to SR 121 that have used $10M of the approximately $75M provided for congestion relief in this area through the last major state transportation revenue package (Connecting Washington). The flood-prone area is between Exit 76 and Exit 81 (5-mile section, 13th Street to Mellen Street). During a flood event that inundates or threatens to flood I-5, a 20-mile stretch needs to be closed on either side of the flood-prone area to take advantage of available off-ramps and detours. Bart reviewed the alternatives that were previously evaluated by WSDOT, including conceptual designs, proposed operations during flood events, and some of the pros and cons of each approach. The alternatives that considered bypass lanes, a viaduct, or relocating I-5 outside the floodplain faced many technical, environmental, and community obstacles such as:

- Not solving traffic congestion problems and WSDOT's need to widen I-5.
- Creating many new stream crossings that would require expensive new fish passage facilities.
- Significant wetland impacts that would need to be mitigated.
- Cutting off important commercial areas and local roadways adjacent to the freeway that would not be connected to new freeway tie-ins/touch-downs.
- Bifurcating the communities, which WSDOT policy seeks to avoid in all future projects.

Some of the potential issues for Alternative 1 (protect I-5 with flood walls and levees) include:

- Challenges associated I-5 being 8 feet below the existing airport levee grade.
- Uncertainty of acquiring necessary railroad right of way since the railroads have superior rights to state DOTs.
- Existing bridges may not be capable of withstanding the necessary modifications, requiring expensive rebuild/retrofits.
- Some of the mitigation concepts for Alternative 1 included buyouts and raising structures, which may not be eligible for funding from gas tax revenues due to state constitutional restrictions.
- Magnitude of climate change impacts described in the Draft SEPA EIS requires a re-assessment of the alternative. There is a much greater chance for flood waters to overtop or re-infiltrate I-5 infrastructure.

Some of the potential issues for Alternative 2 (raise and widen I-5) due to climate change impacts described in the Draft SEPA EIS:

- With climate change, the bridges would need to be raised even higher. By the time I-5 offramps reconnected with the local roadways, it would be bypassing the city center and would no longer connect to existing local roadways.
- There are also challenges with staging during flooding.

Bart also reviewed the I-5 flood detour options for freight via US 12 and SR 7. It is currently a 2-lane road that may or may not be open due to flooding or erosion (caused during a flood that closes I-5) and can only handle a quarter of the freight. Freight movement during a flood would be based on a permit system addressing priorities such as food or other critical supplies.

These are preliminary issues associated with climate change projections, but a new assessment would be required to understand the full implications. Previous analysis (2014) included a 25% increase in climate change predictions, which resulted in a 3-foot freeboard above current levels. The following gages were used in the WSDOT analysis: Doty, Grand Mound, Newaukum, and Skookumchuck. Larry Karpack will review the results from the WSDOT 25% increase and provide information on how it compares to the currently modeled 26% and 50% increases in climate change predictions.

Discussion from the TAG:

- There is funding available from the 2015 Connecting Washington package and Gas Tax. The purpose of the funding is to widen I-5 and provide congestion relief in the vicinity of Chambers Way ($75M in the packages, but WSDOT used $10-15M to raise Chambers Way and widen the roadway). It would take a legislative action to repurpose the remaining $60M package for other uses.
- City of Chehalis and the local WSDOT office are in the planning phase for providing congestion relief for Chambers Way. It would be important to coordinate any decisions/recommendations from the Chehalis Basin Board regarding I-5 flood protection with the assumptions being considered in the alternatives analysis underway for congestion relief.

U.S. Army Corps of Engineers (Corps) Flood Damage Reduction Studies

Merri Martz, Anchor QEA, reviewed the Corps' 2003 and 2012 flood damage studies. As part of the presentation, the baseline hydrology from the Corps studies was compared to the current climate change predictions (26% and 50%) for the 100-year flood in 2080. The Corps' studies baseline hydrology is about 30% lower than current climate change predictions (26% and 50%).

The Corps' proposed plan was focused on Chehalis, Centralia, and I-5. The plan included: Skookumchuck dam modifications, Chehalis River levees (100-year protection and including levees along portions of Salzer Creek), and Skookumchuck River levees (100-year protection). The life cycle cost would be $113M and additional analysis would be required for interior drainage (China Creek) and Skookumchuck Dam stability. During the 2011/2012 Corps design phase, the Corps determined that the plan did not provide 100-year protection for I-5 with sufficient certainty with the updated 100-year hydrology (post 2007 and 2009 floods). The updated hydrology would require higher levees/floodwalls that would increase water surface elevations outside the levees and affect more structures and properties upstream and downstream. The effect to more structures and properties resulted in more community concerns as well. During the analysis, the Corps also determined that the cost-benefit ratio was no longer greater than 1. As a result of these factors, the study was terminated in 2012.

Discussion from the TAG:

- The Corps project was focused on the Twin Cities (prior to the development of ESHB 2020, HB 2856, etc.) to develop a basin wide solution. Thus, their proposed level of protection and assumptions for the development of hydrology (and hydraulic model) was not necessarily focused on a basin wide solution.

Potential Local Actions Flood Protection Facilities

Merri reviewed the priority areas that could be protected and described the screening elements for the proposed priority areas. Based on input from the TAG, the ratings were broken out into bands of high, medium, and low. The bands considered the number of structures that would be protected, whether or

not infrastructure is present and could be protected, impacts to natural environment, and impacts to upstream/downstream effects to other structures (not quantified).

Discussion from the TAG

- Additional technical issues that should be considered if the Board is interested in further evaluation of levees along I-5 and parts of Centralia/Chehalis:
    - Any option would need to balance buy outs, raising structures and relocation.
    - Evaluate whether there can be additional openings to allow water to pass through under I-5 and determine the effect on communities. This could reduce the level of impact on the river side.
    - Need to assess alternatives given the updated climate change predictions (26% and 50% increases). This is especially the case for widening and raising roadways.
    - Evaluate floodplain management repercussions due to placement of the levees and floodwalls (due to backwater and flow of water around levees/floodwalls).
    - The benefits and impacts of constructing the airport levee were previously evaluated for flood protection. It is proposed in its current location because it prevents overtopping of I-5 by flood waters. The upstream backwater would not be eliminated if the levee were moved to a different location. The City of Centralia noted that the levee was built in WWII to allow the airport to be used by the Department of Defense (currently use the airport for cases of emergency). The Department of Defense would not allow the levee to be removed.
    - Need to determine impacts upstream, especially backup of China Creek, Coal Creek, and Salzer Creek. The concern is compounded flooding in these creeks.
    - Seems like flood storage in the tributaries (e.g., Skookumchuck) needs to be included in any consideration. Has there been an analysis of specific locations?
    - Potential for flood storage at Skookumchuck Dam and possible wetlands and aquifer recharge storage opportunities (Skookumchuck and Scatter Creek).
    - Interest in updating the Corps and WSDOT studies with new climate change hydrology to know if levees/floodwalls could be feasible. What is status/condition of existing Skookumchuck levees?
    - Important to consider long-term solutions, we do not want to have to come back and replace projects later.
- What further analysis could be conducted in the near-term on high priority areas without conducting additional hydraulic modeling?
    - Identify frequency of flooding for the 14 priority areas (do they flood at lower flows?)
    - A summary and side-by-side comparison of the Corps and WSDOT studies to understand what each does and does not protect would be helpful.
    - Better understanding of costs and missing pieces in Corps and WSDOT studies (effects on tributaries, etc.)
    - Lower Newaukum routinely floods Stan Hedwell park, which is a highly used park. The park would need to be protected from erosion impacts.
    - What type of community impacts and benefits could occur from structural solutions?

Potential Approaches for Addressing Channel Migration and Floodplain Erosion Hazards

Merri reviewed possible components of a draft erosion management strategy, which was developed based on discussions at previous TAG meetings. She summarized the following three draft principles that could guide any erosion management element of a local actions program:

- Channel migration and bank erosion are natural processes that form and maintain habitats. However, erosion rates can become accelerated above natural rates due to land uses, facilities, hard bank protection or other factors.
- Recommend that erosion management projects included within the Chehalis Basin Strategy occur only where they can be combined with ASRP projects or where critical infrastructure is present and threatened and an expanded reach-scale project can be pursued that benefits both public and private landowners and enhances habitat.
- Recommend that erosion management projects should be developed and implemented in the context of reach-scale conditions and geomorphic processes…and promote the use of bioengineering techniques.

Additionally, draft criteria to determine potential for an erosion management project was reviewed, based on input from the last TAG meeting:

1. A local project sponsor is willing to develop a reach-scale project with multiple landowners.
2. Erosion area is within a delineated CMZ or erosion hazard area, or other erosion priority area identified by local jurisdiction.
3. Erosion risk is immediate or near-term (within next 5 years) that that would cause significant damage to valuable structures, infrastructure, or productive agricultural land ("significant" loss or damage).
4. Landowner is willing to consider relocation that would provide long-term reduced erosion (or flooding) risk (either with or without an associated bioengineered or habitat solution).
5. Landowner is interested in a bioengineered solution and willing to maintain a bioengineered solution as part of a funding agreement.
6. Opportunities exist for a reach-scale approach to reduce velocities through reconnecting former channels/swales, placement of large wood, riparian revegetation, bank sloping/terracing, or other elements that would benefit the reach and maintain or restore natural processes and/or habitats.
7. Project is likely to provide significant benefits for the cost to multiple landowners.

Merri also reminded the group that the bioengineered techniques currently being considered include 26 types of bioengineering techniques (see Summary and Evaluation of Potential Bank Protection Strategies Memo (October 23, 2020), which fall into four major categories:

- Fabric stabilization techniques
- Live planting techniques
- Large wood techniques
- Grading and gravel augmentation techniques

The TAG provided input via Jamboard regarding the following questions, which is followed by a summary of feedback from TAG members:

What other technical considerations could be included to help determine priority for erosion management projects?

- All seven criteria do not need to be met - flexibility is important because situations differ.
- Add some criteria/rubric to convey uncertainty of outcomes.
- Some of the criteria might be difficult for agricultural lands to meet, e.g. the CZM/erosion hazard area criteria.
- The requirement to be in a "CMZ" is problematic because there are few CMZ studies. Also, if an erosion area is not within a delineated CMZ, there is something wrong with the study.
- If a scoring rubric is developed, consider referencing the Floodplains by Design criteria. It includes agricultural and multi-benefit considerations.
- Consider the concept of temporary action with follow up permanent action.
- Be clear that the project has benefit to public resources when using public funds.
- Need to recognize maintaining viability of private agriculture as a public benefit.
- In place of "property owners" in order to determine level of impact; consider "owners/users" in order to quantify the number of people affected. Parks, medical centers, etc.
- Not sure how the 'willing to relocate' criteria plays out in real life. Do they just have to say that they'd consider it?
- Has a sediment balance study been looked at for the basin as a whole or parts?
- Is there an inventory of bulkheads/hard armored segments along the Chehalis? Are there any aside from bridges?

What additional technical input do you have regarding erosion management?

- Still need some way to value/define what is "significant" loss, especially for agricultural land in context of broader agricultural viability.
- If an agreement is made for responsibility of maintenance with the property owner, there should be indication of assistance (e.g., State assistance) for necessary permitting and technical support.
- Consider the long-term maintenance needs of a project, who will be responsible and how it will be funded.
- Other options are available besides ASRP for funding wholistic floodplain restoration projects.
- Landowner is willing to provide a functional riparian buffer if erosion is managed on their property. This is a problem we have been dealing with for some of the Early Action Reach projects; landowners want their bank protected but are not willing to provide a functional buffer.
- Recognize that erosion can extend into areas beyond the CMZ (e.g., lower Satsop River).

Do you have any additions or refinements to the three elements/principles of erosion management strategy?

- Concur w/ three elements - these are key overarching principles.
- Agree with them. For #1 might be good to acknowledge that increased erosion rates can be induced by natural causes too.

- The second element requiring it to be only in areas where ASRP reach actions are located is misleading. I think actions can happen in areas of priority as long as it does not compromise the ASRP and be adverse to it.
- Andrea suggested the following refinement to the second guiding principle: Recommend that erosion management projects included within the Chehalis Basin Strategy occur only where: (1) they can be combined with ASRP projects; or (2) where critical infrastructure is present and threatened; or (3) an expanded reach-scale project can be pursued that benefits both public and private landowners and enhances habitat.

Community Buyout and Relocation Programs

Ken Ghalambor, Ross Strategic, provided a summary of research conducted to date on other community buyout and relocation programs. This information has been shared with the Implementation Advisory Group over the past two meetings. Common aspects among the researched programs include:

- Voluntary landowner engagement (no eminent domain examples)
- Importance of community engagement
- Multiple funding sources across all levels of government are needed; stable state and local funding sources are imperative given competition and pace at federal level
- Legal considerations for any buyout/relocation program include takings limitations, negligence claims, and cross-jurisdictional governance structures

A summary of challenges when implementing community buyout and relocation programs include landowner/homeowner/community interest, long timeframe (2+ years) to receive federal funds, and shifts in tax bases. Potential incentives to initiate and implement a major floodplain acquisition program were also described.

Next steps in the process include interviewing people associated with the example case study areas to determine where could some of the approaches be feasible in the basin? Along with what factors make it feasible or not? Discussions in this regard will continue with the Implementation Advisory Group, including pursuing feasibility of implementing a program like this in the Chehalis Basin and where would it make the most sense to do.

Andrea provided information from her participation in State-wide and national discussions regarding climate change resiliency. She noted that just responding to disasters is no longer enough and many states are moving to incorporate these kinds of programs at State-wide levels as part of their climate change resiliency planning. It is important to get the relationships between the regional efforts, State efforts, and local municipalities aligned. The lead needs to come from the local municipalities, since they have the most understanding of how flooding is affecting their communities. However, the local municipalities need to be supported at the State and regional level, especially in terms of data, studies, and funding.

TAG Meeting 5 Debrief

Jim discussed input from TAG members identified during TAG Meeting 5. Jim first reviewed the technical advisory group's work plan identified at the start of initiating the advisory group effort. Jim then reviewed what work has been completed based on input provided by the TAG related to modeling (to predict the cause and extent of flood damage), climate change, increasing flood storage, protecting high value structures and critical infrastructure, and addressing bank erosion damage.

Remaining TAG issues:

- Developing a technical statement regarding smaller and more frequent flood damage. A draft statement is currently being developed by Casey Kramer and will be circulated for review prior to the next TAG meeting.
- Further consideration of possible next steps for structural flood protection and erosion management. Progress to date will be discussed at the next Chehalis Basin Board meeting. There will also be smaller group discussions with members of the TAG in advance of the next TAG meeting.

Office of Chehalis Basin next steps:

- Identify differing technical and policy perspectives to the Board for their resolution
- Summarize technical and policy analyses and provide options for Board consideration
- Organize, facilitate, and summarize results from workshops (Merri reviewed an in-progress table that is being developed for the Chehalis Basin Board)

The TAG provided input via Jamboard regarding the following questions, which is followed by a summary of feedback from TAG members.

What are one or two things of significance you have learned about Chehalis Basin flooding issues through the TAG meetings and materials?

- The sheer scale and complexity of flood damage causes in the basin requires an equally diverse set of solutions - structural, nonstructural, and restoration-based.
- The scale of solving both late century catastrophic flood damage AND damage from smaller more frequent flooding seems overwhelming and will be difficult to prioritize given limited resources.
- Prioritizing local projects amongst the diverse rural and urban issues is difficult.
- Feasibility challenges associated with addressing the magnitude of a 2080 100-year event with a 50% increase in flows are even greater than previously considered when planning for current conditions or even 26% increases in flows.
- The clear value of using regional expertise to help define or focus issues of concern that cover basin-wide problems because 1) local flood storage options are somewhat limited and challenging, and 2) the basin-wide solution putting value towards important issues such as climate change, environmental justice, maintaining natural processes, and thinking long-term.
- There is an ability for this process to help other basins of concern in Washington and beyond to scale appropriately to the problems and be flexible.
- Many other communities throughout the U.S. are facing the same issues and have moved to address the issues.
- Significant flood water storage is not available without major buyouts and relocation efforts.
- It appears that the only option that provides basin-wide benefit is the retention facility and impacts can be mitigated. Localized storage project can help locally, but not basin wide.

- Both the Corps and WSDOT landed on a levee/floodwall-based solution for flood damage reduction in the Centralia/Chehalis/I-5 corridor, acknowledging that the scope of the two efforts was slightly different.

What remaining issues do you think are important to discuss?

- Can we recommend any projects as a result of this process?
- Phasing of next steps
- Identifying the process for receiving and prioritizing proposed projects.
- Summarizing additional studies that will be needed to better refine alternatives.
- Integration of ideas and conceptual layouts for proposed elements.
- Are there additional climate models that we should consider? There is considerable variability in model outcomes depending on available data. Maybe consider additional studies?
- How to integrate additional hydrologic and hydraulic modeling to support both the flood damage and ASRP needs.
- How will the TAG be able to respond and/or participate when the Board is making decisions based on this work?
- Define a process (including funding) for property acquisitions
- If buyouts and relocations are implemented, who will own the purchased land and who will be responsible for maintaining?
- Has urban stormwater runoff been evaluated due to impervious surface contributions? Stormwater basin planning may help lead to stormwater infrastructure improvements to reduce peak discharges to tributaries and the mainstem.