

November 14, 2012

**NEXT STEPS FOR CHEHALIS BASIN FLOOD DAMAGE REDUCTION
Actions for the Next Biennium 2013-2015**

Over the last century major floods in the Chehalis River Basin have occurred about twice per decade, causing loss of human life and livestock and damage to homes, businesses, farms, roads and railways. The worst floods on record have happened recently – in 1990, 1996, 2007 and 2009. The economic damages of the 2007 flood alone were estimated at over \$900 million, with a third of that damage coming from disruption and damage to the transportation system, I-5, state highways, and rail lines. These recent floods prompted governments and residents of the Basin to re-commit to the task of flood damage reduction. There is broad agreement in the Basin that more should and can be done to reduce damages from large floods.

Since the 2007 flood there has been active engagement of leaders in the Basin to determine a program of flood damage reduction investments. Progress has been made in preparing for future floods, potential flood damage reduction projects have been scoped and evaluated, the flood warning system has been improved, and new tools, such as a hydrologic model, have been developed to better understand flooding in the Basin and the potential impacts of flood damage reduction projects. Decisions and actions are now needed to reduce flood risks for people that live along the Chehalis River.

The 2011 Legislature required the Office of Financial Management (OFM) to prepare a report addressing a series of technical questions and—in coordination with tribal governments, local governments, state and federal agencies—to recommend priority flood damage reduction projects for the Chehalis Basin. Based on the recommendations of Basin stakeholders, OFM asked the William D. Ruckelshaus Center at the University of Washington and Washington State University to coordinate development of the report, working with the entities mentioned above. A draft report – the *Chehalis Basin Flood Mitigation Alternatives Report* -- was made available for public review in July 2012.

In August 2012, as a follow up to the draft report, and in recognition that a time for decision making has come, the Governor tasked a small work group -- David Burnett, Vickie Raines, Karen Valenzuela, J. Vander Stoep, Jay Gordon and Keith Phillips -- to develop recommendations for flood damage reduction projects. The group was asked to develop recommendations that other Basin leaders and the Governor could consider for endorsement and action. Each member also was asked to interact with their respective constituents to inform the small group's discussions.

This document contains the group's final recommendations to the Governor. Draft recommendations were reviewed by the Chehalis Flood Authority and the Chehalis Tribe. Both broadly support the recommendations.

OBJECTIVES

Flooding from the mainstem of the Chehalis River and tributaries impacts people and communities throughout the Basin; accordingly a Basin-wide approach to reducing flood damages is needed. A Basin-wide approach needs to significantly reduce flood damage for people and communities throughout the Basin by maximizing benefits and avoiding or minimizing adverse human and environmental impacts of flood damage reduction actions. It needs to ensure public safety and protect key community infrastructure and maintain public services during emergencies. A Basin-wide approach can't solve one community's flooding problems by making another community's problems worse.

A Basin-wide approach to flood damage reduction must go hand in hand with improvements in the environmental health and resiliency of the Basin. Flood damage reduction projects must avoid or fully mitigate environmental impacts. Floodplains, water, and shorelines should be managed in ways that reduce future flood damage and enhance overall environmental conditions and habitat for aquatic species. Fish mitigation and enhancement projects should be implemented in concert with flood damage reduction projects. It is critical that harvestable resources of the basin are increased as flood damage is reduced.

Even with efforts to reduce flood damages, flooding is a natural occurrence and will continue to occur. Communities need to be as prepared as possible with flood warning and emergency response systems. Future development in the Basin should not put more people or development in harm's way, and should not increase damages or costs to people already living in and using the floodplain. By planning ahead, respecting what the river can do, and managing floodplains smartly, the Basin can reduce the risks from future floods.

STRATEGY

A great deal of research has been completed on flooding in the Chehalis Basin and options to reduce flood damages. Much has been learned since the 1996, 2007 and 2009 floods, and much work has already been accomplished to protect people and property in the Basin from potential future flood damages. These recommendations set forth a two-fold course of action over the next two years that promotes real improvements through implementation of a series of known smaller-scale projects and investments to reduce flood damage, and completes the analysis needed for decisions about the best mix of additional large and small-scale projects to significantly reduce flood damages in the future.

Based on current knowledge, the group believes a combination of actions is needed to significantly reduce damages from major floods. The emphasis is on substantial damage reduction from flood events like those in 1996, 2007 and 2009, although many of the projects contemplated also would reduce damages from more frequent, less severe flooding. Actions needed include: (1) large-scale capital projects affecting a broad geographic area like a water retention, and/or improvements to protect Interstate 5; (2) smaller-scale capital projects with more localized benefits; (3) environmental projects to enhance overall conditions, aquatic habitat, and abundance of fish in the Basin; (4) land use management to help people already in

the floodplain and reduce the potential that new development will increase flood damage; and, (5) an effective system of flood warning and emergency response.

No single project or set of projects will completely protect the Basin from all damage during major floods. There are significant differences amongst leaders in the Basin about the right balance for investment in each of the five categories of action, but there is broad agreement that some investment is needed in each category to substantially reduce flood damage. There also is agreement that we can act now with certainty to implement some actions; other actions, including large-scale capital projects, need more feasibility analysis before decisions about the best way to proceed can be made.

Large scale capital projects

A number of water retention alternatives have been investigated over the last two decades. Based on exploring large and small water retention options, the only known single water retention project that is potentially feasible and could significantly reduce peak flood elevations (and thereby reduce flood damages) for both upstream and downstream communities during major flooding is a large upstream water retention or storage facility on the mainstem of the Chehalis River. Such a structure could hold back storm flows when the mainstem of the Chehalis is the principal source of major flooding, and it could hold back mainstem flows when tributaries like the Skookumchuck and Newaukum are flooding.

Preliminary feasibility studies on a large upstream water retention structure have been done; however, at this time, it is not yet known whether this type of water retention structure is actually feasible. The next steps are to refine the engineering designs, further study dam safety, and identify more specifically the implications for water quality, quantity, and aquatic species. When this additional information is available, the assessment of the economic benefits weighed against its cost of large upstream water retention will need further refinement.

We know from the studies done over the last year that there will be environmental impacts, and there is the potential for environmental benefits, from a large upstream water retention structure. We need to know if the optimum structure is one that would remain open to the river (and to the passage of out migrating salmon) except during flooding, or if the optimum structure would be one holding a permanent reservoir allowing the release of water during summer months with the potential to improve water quality downstream. We need to better understand how and where fish currently use the river and to know what it will take to fully offset any risks to fish and water quality from water retention. In order to build the necessary coalition of support, we need to determine whether and how a large-scale water retention structure could be packaged with other investments to significantly improve the conditions for fish in the Basin.

Given the potential of large-scale water retention to significantly lower peak flood elevations during major floods and thereby provide Basin-wide flood damage reductions, answering these questions should be a primary task for the coming biennium. Many of the analyses contemplated also would support other work in the Basin including smaller-scale capital projects, fish and ecosystem enhancement efforts, and land-use management.

Even with an upstream water retention structure, Interstate 5 would still require major flood protection investments in Chehalis and Centralia, though the investments would be smaller than otherwise would be needed. As the evaluation of a large upstream water retention facility is completed, there also is a need to complete evaluation of I-5 protection alternatives.

Smaller scale local projects

With or without large-scale water retention, local projects will be needed to protect key infrastructure, control shoreline erosion, and improve water conveyance and drainage at key points in the Basin. A program of smaller projects aimed at protecting key infrastructure and priority areas through the Basin may provide a measureable reduction in damages from major floods. As the evaluations of large-scale water retention and I-5 protection alternatives are completed, we also should explore the benefits from a combination of smaller projects across the Basin, and continue to construct projects that provide near-term local flood damage reduction benefits. Further analysis of such a program will help determine how much damage reduction is possible, and at what cost, and provide additional context for considering large-scale projects.

Fish and ecosystem enhancement projects

There should be a continued effort to explore options for a range of actions that can serve multiple benefits of flood damage reduction and environmental enhancement. There also is a need to develop a coordinated Basin-wide strategy with goals and objectives for enhancement of aquatic species and restoration of ecological functions in concert with flood damage reduction. At the same time there are a number of high priority actions that can be taken in the next biennium to improve conditions for aquatic species and floodplain function and improve understanding of how, when, and where fish use the Basin. These actions should be implemented.

Land use, flood warning, and emergency response

The Basin has significantly improved its flood warning system, and individual Basin governments continue to improve their emergency preparedness efforts. Progress on floodplain management policies and programs also has been made, though additional improvements are both needed and possible. Further enhancements to state and local land use policies will help ensure new development and other land management activities do not increase the risk of additional flood-related damages and, to the extent possible, reduce damages and costs to existing development affected by flooding. It will also be important to continuously improve the information base and tools needed to understand flood impacts and to optimize actions to reduce flood damage while improving the environmental health of the Basin.

WORKPLAN FOR THE NEXT TWO YEARS (2013-2015 state biennium)

- A. Determine the feasibility and, in consultation with Basin residents and leaders, select large-scale capital projects that will significantly reduce flood damage across a large geographic area, including upstream water retention and I-5 improvements.
 - Determine the feasibility of upstream water retention. Determine the optimum water retention structure to meet the objectives of the goals of a Basin-wide solution, further define dam safety requirements and permitting feasibility, so that by December 2014 a

policy decision can be made on whether to proceed to permitting a water retention facility as a preferred alternative. Determine the preferred water retention approach between a flood control only dam, multi-purpose dam or single-purpose dam that could be converted to multi-purpose in the future.

- Determine the best combination of walls, levees, pumps, bypasses and other structures needed to protect Interstate 5 traffic, the airport and key urban areas of Centralia and Chehalis, if a mainstem water retention facility is in place. Evaluate changes to the project that would be needed to secure comparable protection without a retention facility.
- B. Continue to invest in smaller projects that provide local flood benefits where any adverse flooding or environmental impacts can be avoided or mitigated. This could include protecting water treatment facilities, protecting shorelines, improving existing local levees, and improving water conveyance at bridges. Continue to explore smaller-scale projects that can provide flood damage reduction and environmental benefits, and, in consultation with Basin residents and leaders, identify and implement high priority projects.
- C. Evaluate the extent of flood damage reduction that could be possible through a Basin-wide program of smaller-scale projects. To the extent it is not already summarized in the Alternatives Report by the Ruckelshaus Center, summarize existing information (and any new information) on what is known about the relative contribution to reduction in peak flood level elevations (and concomitant flood damage reduction) from various floodplain management practices, including channel dredging, riparian wetland restoration, forest practices, flood easements on farm lands, road maintenance, removing bridges and constrictions, and removing, protecting, or avoiding floodplain development.
- D. Develop and implement a coordinated strategy with goals and objectives for improving the conditions for fish and ecological function in the Basin in conjunction with flood damage reduction projects and implement known initial high priority projects.
- E. Implement a strategic program of buyouts and flood proofing for structures that have recurring damage requiring frequent public and private expenditures for repairs after flood events.
- F. Continue to improve the Chehalis Basin hydrologic model and other data and analysis that support understanding of potential flood impacts and optimization of flood damage reduction actions.
- G. Ensure flood warning and flood preparedness systems are ready and effective for the public and emergency responders.
- Coordinating Basin-wide flood awareness and provide opportunities for people living and working in the floodplain to be aware of risks, warning systems, and emergency preparedness and response.
 - Ensuring emergency supplies and equipment are available and ready at the start of each flood season.
 - Maintaining the flood warning system.

- Conducting training and drills.

We recognize that to realize this effort, additional and ongoing work will be required of the state agencies with relevant expertise and responsibilities, including the Departments of Fish and Wildlife, Ecology, Natural Resources, Commerce and Transportation.

MOVING FORWARD

We believe implementation of these recommendations will involve an ongoing investment of time and expertise as well as the capital investments contemplated above. Through our work together and with the Flood Authority and the state team, we see the value of a policy-task force of Basin leaders with the Governor's Office working in concert with technical and other advisors. Although the work we were originally asked to do is complete with these recommendations, we respectfully offer that, if requested, we could continue to serve as a policy task force through this fiscal year, shepherding this effort through the Legislative process and its initial implementation. We see an ongoing role in this remainder of this fiscal year to:

- Communicate with the legislature and other opinion leaders as the legislature considers the Governor's recommendations.
- Oversee initiation of the critical path fish studies in a manner that is transparent, objective and trusted by the interested parties.
- Oversee development of the technical scopes of work and requests for proposals for the other dam feasibility studies and other programmatic recommendations so that the work can start immediately once the budget is approved.
- Assist with transition to whatever governance and management structure may be put in place for the 2013-2015 biennium.

Lead roles will need to be determined in this fiscal year so work elements of the framework are ready to go and can be accomplished in 2013-15 biennium. These include lead roles for:

- Dam scoping including engineering, geotech, fish studies, benefit cost, hydraulics/hydrology, permit scoping, and project management.
- Aquatic species and ecosystem enhancement strategy and projects.
- Identification and analysis of a suite of smaller scale capital projects.
- Implementing a comprehensive approach reducing repetitive loss and land use.

This effort will require robust ongoing management and governance to be successful, especially in the timelines contemplated.

In the short term, we recommend that, whether you choose to continue with a policy task force such as ours or not, you ensure a project manager to coordinate the work. We also recommend a team of technical experts be convened to develop scopes of work and requests for proposals for the work contemplated to start immediately at the beginning of the next biennium. This group should rely heavily on expertise from the current state team and the Chehalis Tribal staff and bring in other expertise as appropriate. There is a need to begin some of the fish studies in this fiscal year to have the data and analysis ready in time for key decisions in the next biennium. In

addition, we recommend continued coordination and collaboration with the Flood Authority to serve as a broader sounding board for the work. This collaborative structure will ensure that work is transparent, broadly supported, and ready to go as soon as the new budget is available.

In the 2013-2015 biennium there is a need for both continued management and technical work and policy decisions to implement this framework.

We recommend that the next Governor appoint a policy task force in spring 2013 to oversee initial implementation of this framework and make the recommendation to the Governor and Legislature about the feasibility of the dam, preferred alternative for I-5, and next expenditures needed to continue implementation of the framework beyond 2015. We recommend the next Governor should consider the following factors in appointing this task force: skill and capacity to forge consensus amongst diverse interests in the Basin, broad geographic representation, and ability to create broad support for action across the Basin.

The Flood Authority should continue to serve as a sounding board, recommend local capital projects for the 2015-17 biennium, and oversee implementation of the local capital projects funded in the 2013-15 biennium. The Flood Authority also should oversee the strategy for reducing repetitive flood loss and land use management, evaluate a suite of local flood damage reduction projects, and implement and maintain the flood warning system.

The technical steering committee should continue to oversee the ecosystem enhancement and fish studies and dam scoping work, and make recommendations to the policy group as necessary.

A project manager/facilitator is needed support the policy group, Flood Authority, and technical steering committee in the short term and through the 2013-2015 biennium.

There are a number of areas where Federal funding could add to the proposed state funding and increase immediate efforts to reduce flood damage. These opportunities should be pursued aggressively.