

# MEMORANDUM

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**Date:** August 27, 2020  
**To:** Chehalis Basin Board  
**From:** Andrea McNamara Doyle, OCB Director  
**Re:** Outcomes for Potential Chehalis Basin Local Actions Program

This memorandum outlines OCB staff recommendations on a draft set of outcomes for a basin-wide non-dam alternative (Local Actions Program), including options for potential measurable flood damage reduction outcomes to be achieved within a 20-year timeframe. The draft outcomes were developed by OCB staff in response to the Board's suggestion that measurable outcomes should first be considered and agreed to by the Board and would then be used in the design of the process requested by the Governor in his letter. The draft outcomes in this memo have been revised based on feedback received from voting Board members and Ecology staff subject matter experts.

The Governor's July 22, 2020 letter to the Chehalis Basin Board requested that the Board:

- Define a process and timeline for developing and evaluating a basin-wide non-dam alternative to reducing flood damage.
- Continue evaluating the issues raised regarding the retention project and other flood risk reduction projects and the potential to avoid, minimize, and mitigate the identified impacts.
- Deliver a consensus recommendation on the process back to the governor no later than the end of September 2020 that will lead to a long-term strategy for consideration by the governor and the legislature in the first quarter of 2021.

Based on feedback from the Board on the draft Local Actions Program outcomes in this memo, staff will propose options for the Board's process designed to provide you with sufficient information about the potential feasibility of a non-dam alternative and the feasibility of the proposed flood retention project's potential to avoid, minimize, and mitigate identified impacts to make decisions about your long-term strategy by March 2021.

## Staff Draft Local Actions Program Outcomes

At the August Board meeting, the Board directed staff to develop draft outcomes for a Local Actions Program. Based on the Board's discussion during the June and August meetings of possible goals for a Local Actions Program, staff developed the following outcomes for the Board's consideration. The outcomes seek to address the many different kinds of flood events and flood damage that occur in different subareas of the basin. They also assume the Board seeks to address future flooding conditions that are predicted to occur as a result of climate change. The proposed outcomes are informed by, but

more expansive across the basin than, the objectives identified by the Flood Control Zone District for the proposed flood retention facility and airport levee project.

It should be noted that achieving the proposed outcomes would require action by all levels of government (local, state, and federal), the voluntary participation of scores of affected landowners, and the active cooperation of many other stakeholders. Funding to accomplish these proposed outcomes would also require a combination of multiple funding sources in addition to state capital budget appropriations sought and overseen by the Chehalis Basin Board. Staff has not yet developed any preliminary cost estimates associated with the proposed outcomes but assumes the Board will expect some form of cost-benefit analysis of the program as part of the long-term strategy assessment.

By proposing these draft outcomes for the Board's consideration, OCB staff is *not* suggesting that OCB or the Board fund, direct, or manage all aspects of the actions that will be needed to achieve the outcomes. Rather, the outcomes would be used to design a process the Board would oversee in collaboration with the local governments and other parties who will need to help fund and implement a non-dam Local Actions Program.

## **RECOMMENDATION 1:**

**Staff recommends the Board consider a timeframe of 20 years to implement the actions necessary to achieve the draft outcomes outlined below.**

Staff recommends the Board establish a timeframe for the outcomes to be achieved by the Local Actions Program. Identifying the time horizon by which you expect or desire certain results is an important sidebar to creating a shared vision of realistic/feasible outcomes. It will also assist staff in developing options for interim progress measures. Given the scale of the effort that will be required to implement the many different kinds of actions needed in multiple different sub areas of the basin, 20-years seems a reasonable initial target for a comprehensive, basin-wide program. The starting point for the 20-years would begin once the program is approved and funded for implementation.

## **RECOMMENDATION 2:**

**Staff recommends the Board utilize future flood conditions that are predicted for the late-century when considering the outcomes and actions to include in a Local Actions Program.**

All future predictions have an inherent degree of uncertainty, and the further out in time, the more uncertain the predictions become. For purposes of these outcomes, "catastrophic floods" refer to flooding events that are currently considered "100-year" events based on water volume but due to climate change will occur more frequently by late century, on average 1 in 27 years. The "100-year" event (1 percent chance of occurring in a year) flow is estimated in the Draft SEPA EIS to increase by 26% by 2080 which would increase the area flooded. "Major floods" refer to events that under current

conditions are considered a 7-year flood based on water volume but due to climate change will become 4-year flood events, with a 25% chance of occurring in any given year.

### **RECOMMENDATION 3:**

**Staff recommends the Board require that any projects funded through the Local Actions Program must be designed, implemented, and mitigated to avoid making downstream flood damage worse.**

Actions taken to reduce flooding in one area have the potential to change the rate and direction of flood flows in ways that can make flooding or flood damage worse in other areas. Examples include things like floodwalls that deflect or redirect flood water to adjacent properties or resizing bridges and culverts to pass more flood water and debris through more quickly. Concerns have been raised that large infrastructure projects could have unintended or unmitigated consequences in areas outside the local jurisdiction where the project is located.

**OPTIONS: Staff suggests the Board consider the following options for potential measurable flood damage reduction outcomes to be achieved within a 20-year timeframe:**

#### **1. VALUABLE STRUCTURES PROTECTED FROM MAINSTEM, CATASTROPHIC FLOODING**

The Draft SEPA EIS predicts in a “100-year” flood on the mainstem Chehalis that 2,245 buildings would likely be inundated to some level in mid-century and 2,955 buildings by 2080. It also predicts that in a major flood on the mainstem Chehalis, 366 buildings would likely be inundated to some level by mid-century and 517 buildings by 2080.

**1.A.** A potential outcome of the program could be: ***X percent [50% - 70% - 90%] of all structures in each [county/local jurisdiction] that could be flooded by the 2080 predicted 100-year flood levels would no longer be vulnerable to flood damage, because they are protected by localized infrastructure, flood-proofed/elevated, or the structure has been removed.***

**1.B.** In addition, or separate to outcome 1.A, an outcome could target protection from major flood events, by focusing on the smaller number of valuable structures that are more frequently vulnerable to flood events. ***X percent [70% - 85% - 100%] of all structures in each [county/local jurisdiction] that could be flooded by the 2080 predicted major flood levels would no longer be vulnerable to flood damage, because they are protected by localized infrastructure, flood-proofed/elevated, or the structure has been removed.***

**1.C.** ***The number of valuable structures vulnerable to flooding by the 2080 predicted 100-year flood levels for each sub-basin would be the same or less than the number of structures damaged in those sub-basins by peak flood levels in the 1990’s.***

## **2. HOMES & BUSINESSES PROTECTED FROM SEASONAL URBAN FLOODING**

In some cities and towns throughout the basin, urban stormwater runoff and undersized culverts and stormwater conveyance systems cause flood damage to homes and businesses even when there is not a major or catastrophic storm event. Typical stormwater systems are designed for 10 – 25-year events and are generally the responsibility of local government stormwater programs.

A potential outcome of the program could be: ***Municipal stormwater systems in all basin cities and towns would be capable of adequately accommodating stormwater runoff levels and protecting homes and businesses from seasonal flood damage.***

## **3. LOWER BASIN PROPERTIES & BUSINESSES PROTECTED FROM COASTAL STORM SURGES**

The Cities of Aberdeen and Hoquiam experience regular flooding due to coastal storm surges and winter storms. The North Shore Levee project is working to expand the accredited levee across the two cities, provide critical coastal flood protection and remove over 3,100 properties from FEMA's mapped Special Flood Hazard Area, which will lower flood risk and the cost of flood insurance for those properties.

A potential outcome of the program could be: ***The Cities of Aberdeen and Hoquiam will complete construction and certification of the North Shore Levee and obtain a letter of map revision removing at least 3,100 properties and 990 businesses from the FEMA Special Flood Hazard Area designation.***

## **4. FARMLAND AND RURAL STRUCTURES PROTECTED**

The natural migration of river channels can cause erosion that threatens the loss of productive farmland and valuable structures located near eroding riverbanks. Some areas of the basin are readily identifiable as being at high risk for near-term damage from channel migration (e.g., within 1-3 years), although a comprehensive long-term channel migration risk assessment for the entire basin has not been completed.

**4.A.** A potential outcome of the program could be: ***The number of locations where migrating river channels and bank erosion pose a high risk of near-term damage to valuable structures or loss of economically productive land uses would be reduced by an average of X [1 – 3 – 5] per year over 20 years.***

While bank erosion and loss of productive farmland is one kind of flood damage experienced in the rural floodplain, farmers also face other kinds of ag-related flood damages, including damages to farm structures, livestock, equipment, crops, and fields. Uncertainty about the depth and frequency of future flood levels complicates long-term investment decisions.

**4.B.** A potential outcome of the program could be: *Protective measures keep peak flood levels in each sub-basin with commercial agriculture operations at or below the peak flood levels experienced in those sub-basins in the 1990's.*

## **5. CRITICAL FACILITIES PROTECTED**

A number of existing essential public facilities and utility services (e.g., public schools, law enforcement and fire stations, hospitals, emergency management and response services, wastewater treatment plants and other utility facilities) are vulnerable to major or catastrophic flood events predicted to occur by the mid-century, and more will become vulnerable by the late century. For example, the Draft SEPA EIS identified ten critical facilities in the study area for the proposed flood retention project that are predicted to be inundated by catastrophic flooding by late century.

**5.A.** A potential outcome of the program could be: *X percent [70% - 85% - 100%] of all critical facilities that could be flooded by 2080 predicted 100-year flood levels would no longer be vulnerable to flood damage, because they are protected by localized infrastructure, elevated/flood-proofed, or relocated.*

**5.B.** In addition, or separately of outcome 5.A, an outcome could target protection from major flood events (rather than catastrophic flood events), by focusing on the smaller number of public facilities and utility services that are vulnerable to more frequent flood events. *X percent [70% - 85% - 100%] of all critical facilities that could be flooded by 2080 predicted major flood levels would no longer be vulnerable to flood damage, because they are protected by localized infrastructure, flood-proofed/elevated, or the facility has been relocated.*

## **6. TRANSPORTATION ROUTES PROTECTED**

Historically, flooding in the Chehalis Basin has closed roads, rail, and airport transportation for multiple days. Access for local communities, and people and goods moving through the basin on I-5 and state highways have been greatly affected by flood-related road closures.

A potential outcome of the program could be: *The overtopping and closure of I-5 would be reduced to no more than X [1 -2] days in a major or 100-year flood event at the predicted 2080 levels.*

Additional outcomes could be: *Key county and city intersections and interchanges would not be closed due to flooding and for major or 100-year flood events that result in short-term closures, alternative routes would be available to ensure emergency services are not interrupted.*

*State Highways 6 and 12 would not be closed due to major flooding, closures due to 100-year flood events would be reduced to no more than X [1-2] days; and alternative routes would be available to ensure emergency services are not interrupted.*

## 7. ENVIRONMENTAL JUSTICE ADVANCED

The Chehalis Basin includes a number of communities and residents with environmental justice considerations, including minorities and communities of color; low-income populations; and tribal populations. These communities with environmental justice concerns have been historically disproportionately burdened by adverse environmental health and safety conditions, such as living in areas particularly vulnerable to flooding. Additionally, typical grant programs that require communities or individuals to provide matching funds can create barriers to participation by economically disadvantaged communities and low-income populations.

A potential outcome of the program could be: ***Communities with environmental justice concerns would suffer less hardship and damage from flooding, would not be economically disadvantaged by displacement or otherwise disproportionately adversely affected by actions to reduce flood damage, and would be improved by flood solutions.***

## 8. PREVENT NEW AT-RISK DEVELOPMENT

In addition to taking remedial action to address existing structures, local governments have many tools such as land use planning and building regulations to incentivize development outside flood risk areas and to prevent or condition future development in ways that will minimize the risk of future flood damage. Each local jurisdiction has its own unique set of regulations and incentives in this regard, and are at different places along the path of adopting minimum recommended standards for flood damage protection.

A potential outcome of the program could be: ***No new structures have been developed that will be vulnerable to channel erosion or 100-year flooding from the mainstem or basin tributaries that is predicted by late century, because all basin local governments have adopted model floodplain management ordinances that exceed the State and National Flood Insurance Programs' minimum requirements; all local government construction and building code standards support flood damage risk reduction through measures such as subdivision set-asides, filling restrictions, freeboard height of new buildings, critical facility placement and protection, and non-conversion agreements; and incentives direct future development out of harm's way.***

## Next Steps

At the September 3, 2020 Board meeting, Board members will be asked to discuss and then approve, amend, or reject the draft recommendations and outcomes included in this memo. The approved outcomes will be used to guide the next steps in the process of developing and evaluating the feasibility of a Local Actions Program in response to the Governor's letter.

## Breakout Session Questions for September 3 Meeting:

In order to help the Board's deliberations on the draft outcomes included in this memo, Board members will be divided into breakout rooms to discuss and report out on the questions below at the September 3, 2020 Board meeting.

1. Do you support the 3 staff recommendations as presented or with modifications?
2. Should the outcomes be focused on the 100-year flood, major flood, or both?
3. Do you support the 8 measurable outcomes as presented or with modifications?