

# MEMORANDUM [DRAFT]

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**Date:** December 8, 2020  
**To:** Andrea McNamara-Doyle, Office of Chehalis Basin  
**From:** Jennifer Tice and Ken Ghalambor (Ross Strategic)  
**Cc:** Chrissy Bailey, Office of Chehalis Basin  
**Re:** Summary of Tribal and Local Jurisdiction Implementation of Floodplain Land Use Recommendations

This memorandum summarizes the status of tribal and local jurisdiction implementation of previously identified floodplain management recommendations in the Chehalis Basin. These recommendations were identified in previous studies, as summarized in Appendix 1 to this memo. This information will be used as context for the Chehalis Basin Board and Implementation Advisory Group's discussions about recommendations regarding land use and floodplain management to reduce the potential for flood damage to future development in the Chehalis Basin. This memo previews the discussion questions for the December 16 Implementation Advisory Group meeting, provides a high-level summary of responses to a survey administered to local and tribal government staff in the Chehalis Basin, and highlights the land use recommendations identified as potentially being the most important and relevant to the Local Actions Program.

The Chehalis Basin Board has provided guidance for how they will evaluate a Local Actions Program and what the potential elements of the program may be. The Chehalis Basin Board has also agreed upon several outcome measures for a Local Actions Program, with the following outcome being the most directly relevant to local and tribal government implementation of floodplain management recommendations:

- No new structures would have been developed that are vulnerable to channel erosion or mainstem or tributary flooding from 2080 predicted 100-year flood levels, 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.

## Implementation Advisory Group December 16 Discussion

The Implementation Advisory Group (IAG) will continue its discussion about land use recommendations and the results of surveys and conversations with local governments at its December 16 meeting. The purpose of this session is to better understand if existing recommendations to manage development in

potentially flood prone areas are sufficient to achieve the Local Actions Program outcome regarding preventing future at-risk development, or if additional recommendations should be considered.

## **Questions for the Implementation Advisory Group**

As you prepare for the meeting, consider these questions:

- Are the existing recommendations to manage development in potentially flood-prone areas sufficient relative to achieving the Chehalis Basin Board approved outcome for the Local Actions Program regarding preventing future at-risk development? Are there other measures or actions that should be considered to accomplish the Local Actions Program outcome?
- Are there additional land use and floodplain management recommendations that should be considered?
- Do you agree with the land use recommendations identified below as being most important and relevant to the Local Actions Program?

## **Survey Overview**

In November 2020, the Office of the Chehalis Basin (OCB) and OCB consultant staff conducted a survey of tribal and local jurisdictions in the Chehalis River Basin about the implementation status of previously identified floodplain management recommendations. All of the counties and larger jurisdictions responded to the survey; a total of 11 of 15 jurisdictions responded to the survey or provided supporting information. The survey requested information on whether the jurisdictions had implemented recommendations identified in the 2010 Chehalis River Basin Comprehensive Flood Hazard Management Plan and those identified by the Chehalis River Basin Flood Authority in 2016, as well as the rationale for adopting or not adopting them (see Appendix for the list of questions with recommendation details). The recommendations cover topics including zoning, building modification requirements (new development and remodeling), planning data, and integration of floodplain, shoreline, and critical areas protection.

An additional survey was distributed to Implementation Advisory Group members that asked about the relative sense of importance of these recommendations under different current land uses: rural undeveloped areas, undeveloped high-density zoned areas, infill lots, existing development, and commercial or industrially zoned areas.

## **Implementation of Floodplain Land Use Recommendations**

Table 1 below summarizes the results from the survey of tribes and local jurisdictions about whether they had adopted the floodplain land use recommendations. The average implementation rate of the floodplain land use recommendations (across all of the recommendations) for survey respondents was 66% full adoption, 6% partial adoption, 26% not adopted, and 1% not relevant. Recommendations were divided into four major categories.

***Data and Planning Recommendations***

The survey included recommendations related to land use data and planning, including the use of the flood of record, use of best available data where Flood Insurance Rate Maps (FIRMs) do not provide base flood elevations (BFEs), and determination of the BFE when there is no flood insurance study.

***Building Modification Recommendations***

The survey included recommendations related to structural modifications to buildings or requirements for *new development*, including freeboard for commercial/industrial properties, approved foundations, a zero-rise policy, and elevating streets to at or above BFE. It also contained recommendations that relate to *remodeling/rebuilding*, including non-conversion agreements to limit enclosures below the BFE, lowering the threshold for substantial improvements below 50%, and tracking substantial improvements over time.

***Zoning and Permitting Recommendations***

The survey included recommendations related to zoning and the location of development, including avoidance when siting critical facilities, minimizing floodplain development within new subdivisions, adopting low density residential zoning within floodplains, and requiring conditional or special use permits for development in floodplains.

***Water Quality/Critical Areas Recommendations***

The survey included recommendations related to the integration of floodplain protection, shoreline management, and protection of critical areas, wetlands, and water quality.

**Table 1: Implementation Status of Floodplain Management Recommendations**

Recommendations	Chehalis Tribe	Grays Harbor Co.	Lewis County	Thurston County	Aberdeen	Bucoda	Centralia	Chehalis	Elma	Hoquiam	Montesano	Total Responses	Fully Adopted	Partially Adopted	Percent Fully/ Partially Adopted
<b>Data and Planning</b>															
Flood of record*	N	P	P	Y	Y	Y	P	Y	Y	N	Y	11	6	3	82%
Best available data	P	Y	Y	N	N	Y	Y	P	Y	Y	Y	10	7	1	80%
No available flood data	Y	P	Y	Y	N	Y	Y	Y	Y	Y	N	11	8	1	82%
<b>Building Modifications / Requirements</b>															
Commercial/ industrial freeboard	P	Y	Y	Y	Y	N/A	Y	N	Y	Y	Y	10	8	1	90%
Foundation	Y	P	Y	Y	Y	Y	Y	P	Y	Y	N/A	9	8	1	100%
Non-conversion agreements	P	Y	Y	Y	Y	Y	Y	P	Y	Y	Y	10	9	1	100%
Lower threshold for substantial improvements	N	N	N	N	N	Y	N	N	Y	N	N	11	2	0	18%
Substantial improvement tracking	N	N	Y	Y	Y	N	Y	N	Y	Y	Y	11	7	0	64%
Zero rise policy*	N	N	Y	Y	N	Y	P	Y	Y	Y	N/A	10	6	1	70%
Street elevation	N	N	N	Y	N	Y	N	P	Y	Y	N/A	9	4	0	44%
<b>Zoning / Permitting</b>															
Critical facilities*	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	11	10	0	91%
Subdivision set asides*	Y	Y	N	Y	Y	Y	Y	N	P	Y	Y	11	8	1	82%
Low density zoning*	Y	N	N	Y	N	Y	Y	N	Y	Y	N/A	10	6	0	60%
Floodplain dev't restrictions	Y	N	P	Y	N	N	N	N	Y	N	Y	11	4	1	45%
<b>Water Quality / Critical Areas</b>															
Stormwater manual	N	Y	Y	Y	Y	N	Y	N	Y	Y	N/A	10	7	0	70%
Floodplain protection in critical areas ordinance	P	Y	Y	Y	N	Y	Y	Y	N	Y	N/A	10	7	1	80%
Wetland & stream buffers	Y	P	Y	Y	Y	Y	Y	Y	P	Y	N/A	10	8	2	100%
Impervious surface limits	Y	N	Y	Y	N	Y	Y	P	P	Y	N/A	9	6	1	78%
Shoreline Master Program updates	NR	Y	Y	N	Y	Y	Y	N	Y	Y	N/A	10	7	0	70%
Associated wetlands in shoreline mgt zone	NR	Y	Y	Y	Y	Y	Y	N	Y	Y	N/A	10	8	0	80%
Compensatory storage for fill	P	N	Y	Y	N	Y	Y	Y	Y	Y	Y	11	8	1	82%
Hazardous materials	P	Y	Y	Y	Y	Y	P	N	Y	Y	Y	11	8	2	91%
<b>Total</b>												193	128	12	73%

N = No; N/A = Not Available; NR = Not Relevant; P= Partially Adopted; Y = Yes

\*Potentially most important and relevant to the Local Actions Program for preventing future at-risk development

## Recommendations Identified as Potentially Most Important and Relevant

Based on responses to the survey sent to the Implementation Advisory Group and additional conversations with local government staff, the following land use recommendations were identified as potentially being the most important and relevant to the Local Actions Program, especially in relation to achieving the outcome regarding preventing future at-risk development:

- **Flood of Record:** The highest flood of record is used to determine the extent of the regulatory floodplain and the regulatory flood elevation where there is no base flood elevation (BFE) shown on the FIRM or where the flood of record is higher than the BFE shown on the FIRM.
- **Critical Facilities:** Place limitations on critical facilities in the floodplain, or, to the extent possible, new critical facilities shall be located outside the limits of the base floodplain. If they are in the base floodplain, they will be protected from damage and loss of access to the 500-year flood level or the base flood elevation plus three feet, whichever is higher.
- **Subdivision Set Asides:** Adopt subdivision and development regulations that avoid or minimize development in floodplains, or, require new subdivisions and other large developments that are both in and outside the floodplain to have all parcels with buildable sites on the higher ground outside the floodplain.
- **Low Density Zoning:** Minimize residential development in the floodplain by adopting low density zoning in the floodplain.
- **Zero-Rise Policy:** Adopt a zero-rise policy in the floodplain, or, in riverine areas where the FIRM does not have a floodway, any increase in flood heights caused by the development must be acceptable to affected property owners.
- **Placement of Wastewater and Water Supply Infrastructure:** Require increased standards for residential construction of wastewater and water supply infrastructure. (Note that this recommendation was not listed in the survey but was identified as important through conversations with local government staff.)

## Next Steps

At the December 16 Implementation Advisory Group meeting, we will provide a short presentation on the information in this memo and have interactive discussions around the following questions:

- Are the existing recommendations to manage development in potentially flood prone areas sufficient relative to achieving the Chehalis Basin Board approved outcome for the Local Actions Program regarding preventing future at-risk development? Are there other measures or actions that should be considered to accomplish the Local Actions Program outcome?
- Are there additional land use and floodplain management recommendations that should be considered?

- Do you agree with the land use recommendations identified as being most important and relevant to the Local Actions Program?

## Appendix 1: Survey Questions with Floodplain Management Recommendations

Source	Question and Supporting Recommendations
Flood Authority 2016	Have you adopted the flood of record as the regulatory floodplain extent/elevation? E.g., Flood of record: The highest flood of record is used to determine the extent of the regulatory floodplain and the regulatory flood elevation where there is no base flood elevation (BFE) shown on the FIRM or where the flood of record is higher than the BFE.
Flood Authority 2016	Have you adopted regulations that require the use of best available data (base flood elevations developed by WSE) where Flood Insurance Rate Maps (FIRM) does not provide a base flood elevation? E.g., Best available data: Where the FIRM does not provide a base flood elevation, the BFEs developed by Watershed Science & Engineering for the Flood Authority are used.
Flood Authority 2016	Do your regulations require determination of a base flood elevation where there is no Flood Insurance Study? E.g., No available flood data: Where the FIRM does not provide a base flood elevation and there is no available flood study, the BFE must be calculated by either the permit applicant or the community before a permit is issued for a new building or substantial improvement.
Chehalis Basin Comprehensive Flood Plan 2010	Do you have a freeboard requirement for commercial or industrial structures? If so, what is that requirement? E.g., Require that all new commercial or industrial structures in the floodplain be built 1 foot or more above the base flood elevation (BFE) or be floodproofed so that areas located 1 foot above the BFE or lower are watertight.
Chehalis Basin Comprehensive Flood Plan 2010	Do you require buildings in the floodplain to have an approved foundation (per the requirements of NFIP Technical Bulletin 11-01)? E.g., Require that buildings in the floodplain have an approved foundation (per the requirements of NFIP Technical Bulletin 11-01).
(1) Chehalis Basin Comprehensive Flood Plan 2010 (2) Flood Authority 2016	<p>Have you adopted regulations that discourage building owners or residents from finishing elevated areas? E.g., Adopt regulations that limit enclosures below the BFE to discourage finishing elevated areas. or</p> <p>Non-conversion agreements: An applicant for a permit for a building elevated on walls must sign an agreement that the area below the flood protection elevation will not be converted to a use or dimension contrary to the building's originally approved design. The agreement authorizes the Floodplain Administrator to periodically inspect the area.</p>
Chehalis Basin Comprehensive Flood Plan 2010	Have you adopted a lower threshold for substantial improvements (lower than 50%)? E.g., Require a lower threshold for substantial improvements.
(1) Chehalis Basin Comprehensive Flood Plan 2010 (2) Flood Authority 2016	<p>Do you require that substantial improvements to structures be tracked cumulatively, over time? E.g., Require that substantial improvements be counted cumulatively within a specific time period such as 10 years. or</p> <p>Substantial improvement tracking: Improvements and repairs to existing buildings are tracked for five years or more. If during that time the total improvements exceed 50% of the value of the building, the building must be brought up to the flood protection standards for a new building.</p>

Source	Question and Supporting Recommendations
(1) Chehalis Basin Comprehensive Flood Plan 2010 (2) Flood Authority 2016	<p>Have you adopted regulations related to critical facilities in the 100-year floodplain? E.g., Place limitations on critical facilities in the floodplain. or</p> <p>Critical facilities: To the extent possible, new critical facilities shall be located outside the limits of the base floodplain. If they are in the base floodplain, they will be protected from damage and loss of access to the 500-year flood level or the base flood elevation plus three feet, whichever is higher.</p>
(1) Chehalis Basin Comprehensive Flood Plan 2010 (2) Flood Authority 2016	<p>Have you adopted subdivision regulations that avoid or minimize development in floodplains? E.g., Adopt subdivision and development regulations that avoid or minimize development in floodplains. or</p> <p>Subdivision set asides: New subdivisions and other large developments that are both in and outside the floodplain are required to have all parcels with buildable sites on the higher ground outside the floodplain.</p>
Chehalis Basin Comprehensive Flood Plan 2010	Have you adopted zoning or made future land use recommendations that minimize residential development in the floodplain? E.g., Adopt low density zoning in the floodplain.
Chehalis Basin Comprehensive Flood Plan 2010	Have you adopted Ecology's current Stormwater Manual? E.g., Adopt the current version of the Department of Ecology's Stormwater Manual.
Chehalis Basin Comprehensive Flood Plan 2010	Have you adopted floodplain regulations as part of your Critical Areas ordinance? E.g., Include floodplain protection in the Critical Areas Regulations or adopt floodplain regulations as part of the Critical Areas Regulations.
Chehalis Basin Comprehensive Flood Plan 2010	Does your Critical Areas ordinance protect ecological functions of floodplains, wetlands and streams? E.g., Adopt wetland and stream buffers that protect the natural and beneficial functions of wetlands and streams.
Chehalis Basin Comprehensive Flood Plan 2010	Does your Critical Areas ordinance limit impervious surfaces in wetland and stream buffers? E.g., Restrict activities allowed in wetland and stream buffers to those that do not increase impervious surfaces.
Chehalis Basin Comprehensive Flood Plan 2010	Have you updated your Shoreline Master Program (SMP) in accordance with the current SMP guidelines? E.g., When Shoreline Management Programs are updated, incorporate Shoreline Management Program guidelines for flood hazards.
Chehalis Basin Comprehensive Flood Plan 2010	Does your SMP include associated wetlands in shoreline jurisdiction? E.g., Include "associated wetlands" as part of the shoreline management zone.
Chehalis Basin Comprehensive Flood Plan 2010	Do you participate in the Community Rating System (CRS) program?
(1) Chehalis Basin Comprehensive Flood Plan 2010 (2) Flood Authority 2016	<p>Have you adopted compensatory storage requirements as part of your floodplain or flood hazard management regulations? E.g., Require compensatory storage for fill in the floodplain. Consider a 1:1 or 1.5:1 requirement for storage. or</p> <p>Filling restrictions: In order to maintain the floodplain's capacity to store flood waters in riverine areas, any filling must be compensated by removal of an equal amount of fill.</p>



Source	Question and Supporting Recommendations
(1) Chehalis Basin Comprehensive Flood Plan 2010 (2) Flood Authority 2016	<p>Have you adopted a zero-rise policy in the floodplain? E.g., Adopt a zero-rise policy in the floodplain, or</p> <p>No adverse impact: In riverine areas where the FIRM does not have a floodway, any increase in flood heights caused by the development must be acceptable to affected property owners.</p>
Chehalis Basin Comprehensive Flood Plan 2010	<p>Do you require conditional/special use permit or reasonable use exception for development in the floodplain? E.g., Restrict development in the floodplain, requiring all development proposals to acquire a special permit or reasonable use exception.</p>
Chehalis Basin Comprehensive Flood Plan 2010	<p>Do your regulations require that new streets in the floodplain be at or above the base flood elevation? E.g., Require new streets in the floodplain to be at or above base flood elevation</p>
(1) Chehalis Basin Comprehensive Flood Plan 2010 (2) Flood Authority 2016	<p>Do you have regulations related to the storage of hazardous materials in the floodplain? E.g., Prohibit the storage of hazardous materials in the floodplain or require that such materials be stored above the flood protection elevation for residential structures, or</p> <p>Hazardous materials: Hazardous materials are prohibited from the regulatory floodplain. This does not apply to small quantities of these materials kept for normal household use or to the continued operations of existing facilities.</p>