

**Washington Department of Ecology
Frequently Flooded Areas Guidance
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Critical Area Ordinances and Frequently Flooded Areas

- The Growth Management Act (GMA) calls for periodic review and update of Critical Areas Ordinances (CAO).
- Frequently Flooded Areas are Critical Areas.
- Regulations for Critical Areas, including Frequently Flooded Areas, should be cross-walked for consistency and improved integration.
- As recommended in WAC 365-190-030(8), "Frequently flooded areas" are lands in the flood plain subject to at least a one percent or greater chance of flooding in any given year, or within areas subject to flooding due to high groundwater...."

Recommended Guidance WAC 365-190-110

Frequently flooded areas. Flood plains and other areas subject to flooding perform important hydrologic functions and may present a risk to persons and property.

(1) Classifications of frequently flooded areas should include, at a minimum, the 100-year flood plain designations of the Federal Emergency Management Agency and the National Flood Insurance Program.

100 to 500 Year Flood

Special Flood Hazard Areas (SFHA) on FEMA maps are based on a one percent chance in any given year that flooding will inundate specified areas.

These areas are defined by computer modelling with data from past years. In reality, much greater flooding may occur both inside and beyond the **SFHA**.

Hurricanes like **Sandy** and **Katrina** demonstrate these are real concerns that can happen anytime, perhaps many times in a given century.

Frequently Flooded Areas regulations can reasonably be designed to account for the danger and prevent unsafe development.



Recommended Guidance, WAC 365-190-110(2)

Counties and cities should consider the following when designating and classifying frequently flooded areas:

- a) Effects of flooding on human health and safety, and to public facilities and services;
- b) Available documentation including federal, state, and local laws, regulations, and programs, local studies and maps, and federal flood insurance programs, including the provisions for urban growth areas in RCW [36.70A.110](#);
- c) The future flow flood plain, defined as the channel of the stream and that portion of the adjoining flood plain that is necessary to contain and discharge the base flood flow at build out;
- d) The potential effects of tsunami, high tides with strong winds, sea level rise, and extreme weather events, including those potentially resulting from global climate change;
- e) Greater surface runoff caused by increasing impervious surfaces.

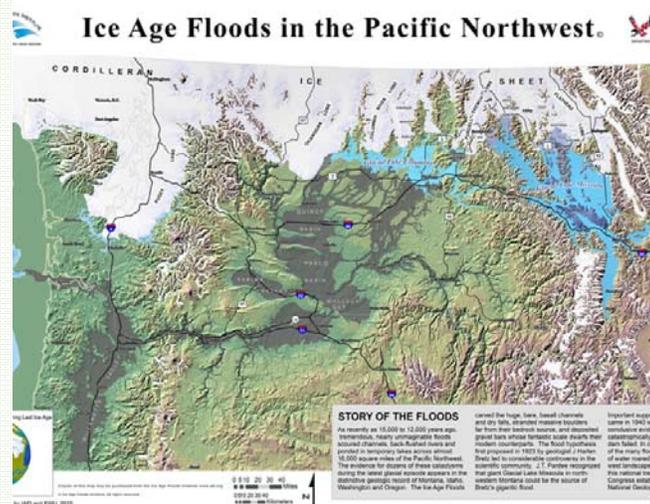
Future Flow Flood Plain/ Climate Change

We are often asked what Washington State is doing about Climate Change.

University of Washington has a group focused on refining estimates, predictions, and appropriate responses.

Ecology has a NOAA Coastal Fellowship position who interacts with UW and other agency staff involved in this area.

Recommendations and resources are being developed gradually. Definitive requirements are not prescribed.



Example of Best Available Science for Frequently Flooded Areas – Climate Change

- Intergovernmental Panel on Climate Change
<http://ipcc.ch/report/ar5/wg3>
- University of Washington Climate Impacts Group
<https://cig.uw.edu>



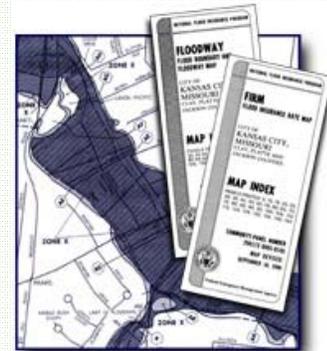
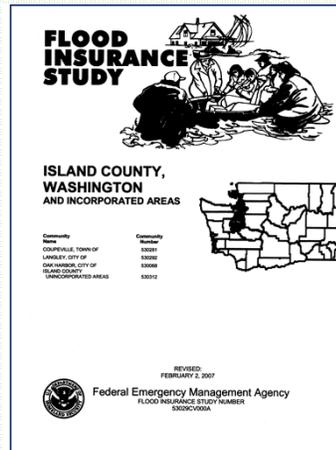
Example of Best Available Science for Frequently Flooded Areas – Sea Level Rise

- *“Sea Level Rise in the Coastal Waters of Washington State”*
Mote, et. al., 2008
- *“Sea-Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future”*
National Academy of the Sciences, 2012



Examples of Best Available Science for Frequently Flooded Areas

- Flood Insurance Studies and Flood Insurance Rate Maps



Mapping Frequently Flooded Areas Tools for Mapping Areas Subject to Flooding

- Effective FIRMs
- Preliminary FIRMs
- Other mapped flood hazards



Other Identified Areas of Flooding

- Areas inundated by the “flood of record.”
- Areas of groundwater flooding.
- Streams where the path of flood waters can be unpredictable.



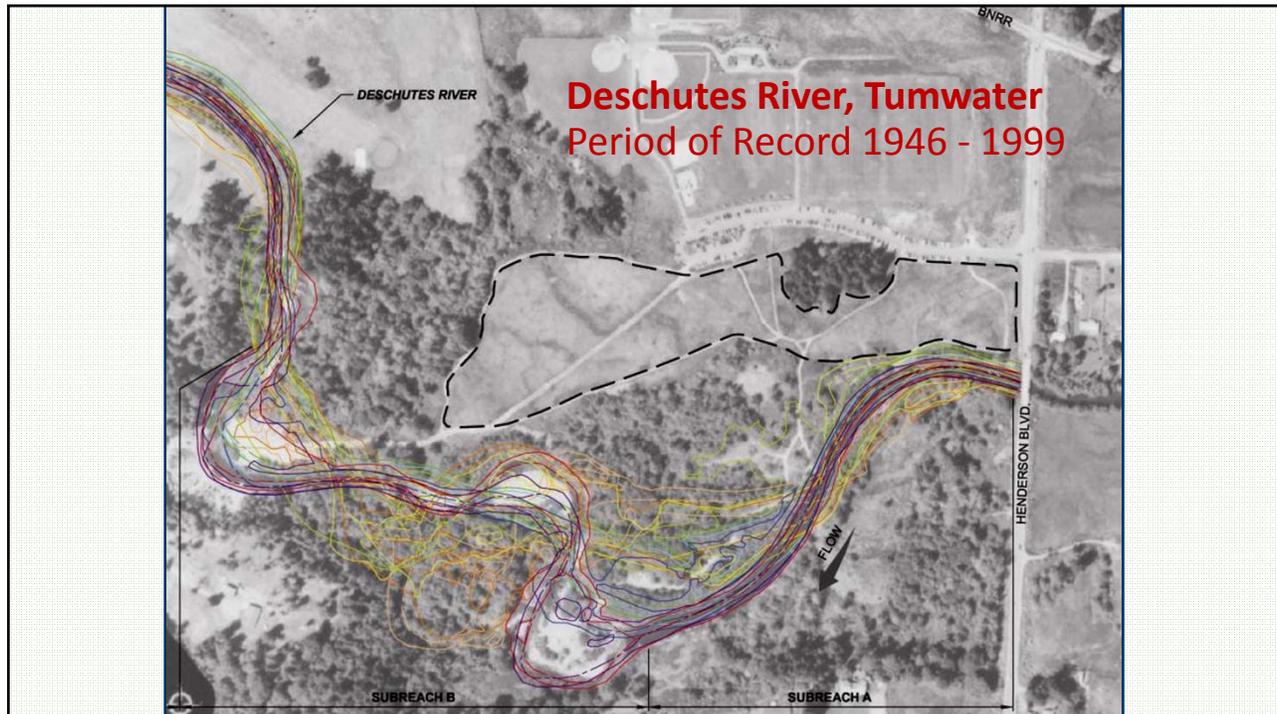
Channel Migration Zones

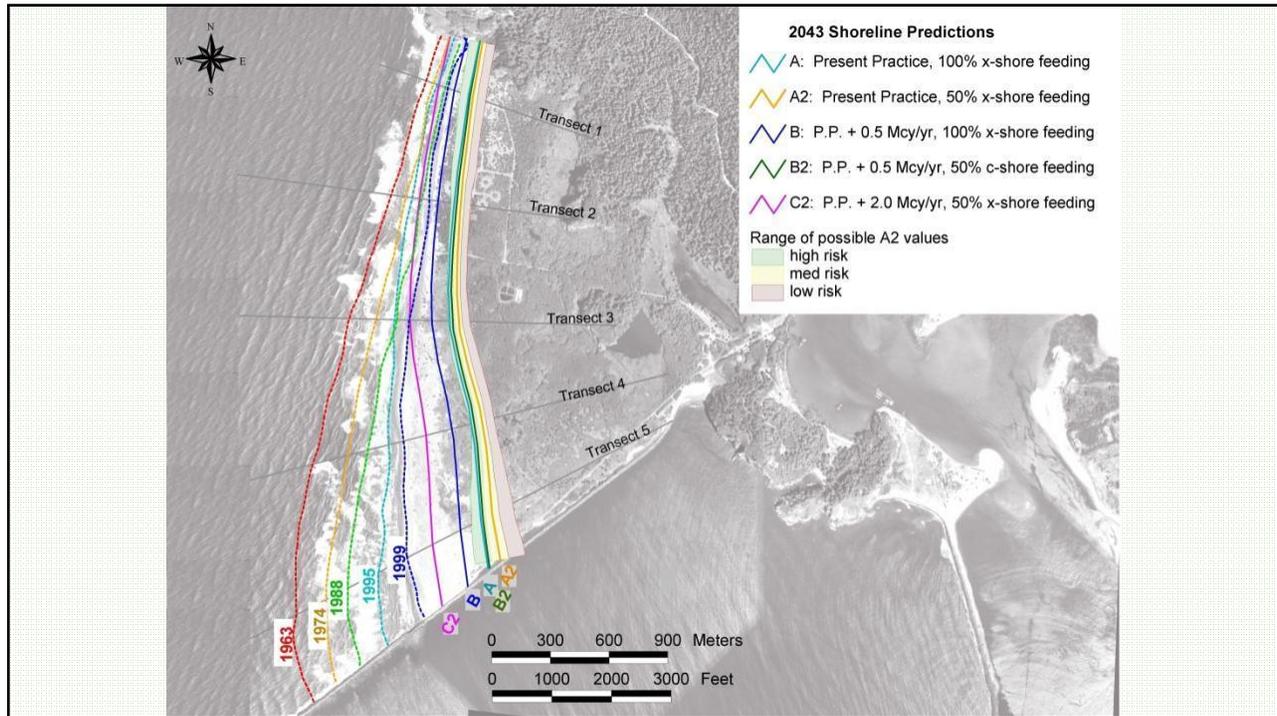
- Areas where the river channel is likely to shift or “migrate” over time.
- Channel migration can create important off-channel habitat for salmon and other species.
- Development is vulnerable to long-term damage.
- Opportunity to limit development that may be vulnerable.



Deschutes River, Tumwater

- Urban land uses clustered away from frequently flooded areas.
- Open Space is in the lower elevation areas.
- River is left with room to change course over time without damage to homes and property.





Flood Risk Reduction Beyond FEMA Minimums

Additional Freeboard



Restrict Development in Floodways



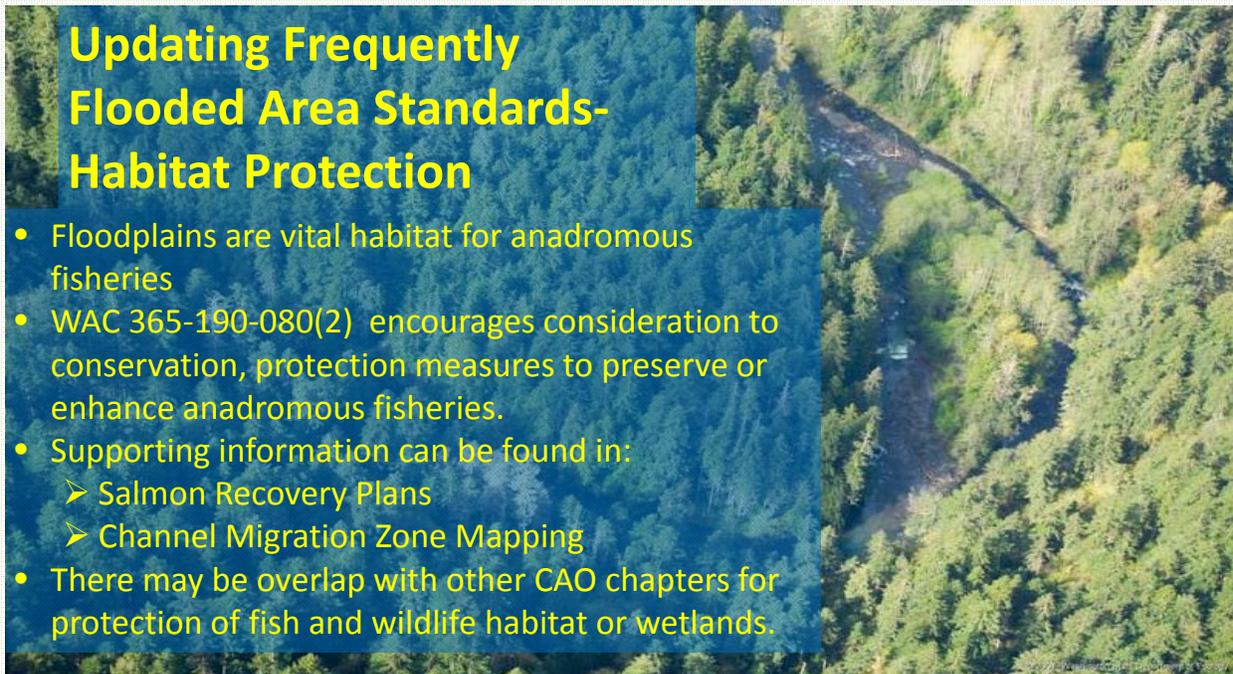
Updating Frequently Flooded Area Standards Address unique Circumstances and Climate Change

- Tsunamis
- Sea-Level Rise
- Increased Severity of Flood Events



Updating Frequently Flooded Area Standards- Habitat Protection

- Floodplains are vital habitat for anadromous fisheries
- WAC 365-190-080(2) encourages consideration to conservation, protection measures to preserve or enhance anadromous fisheries.
- Supporting information can be found in:
 - Salmon Recovery Plans
 - Channel Migration Zone Mapping
- There may be overlap with other CAO chapters for protection of fish and wildlife habitat or wetlands.



FEMA Puget Sound Biological Opinion (BiOp)

- Local Governments responsible for protection of Endangered Species as Flood Ordinance is administered.
- FEMA framework for addressing the Puget Sound Biological Opinion
 - Door 1- Adopt FEMA's Model Ordinance
 - Door 2 – Programmatic Response
 - Door 3 – Case-by-case Habitat Assessment

Programmatic Response to NFIP Puget Sound Biological Opinion

- A Frequently Flooded Areas chapter can be part of a programmatic response to the Puget Sound Biological Opinion.
- A complete programmatic response will likely include wetland, fish and wildlife protection and possibly other chapters.
- FEMA has guidance for proposing a programmatic response at <http://www.fema.gov/media-library/assets/documents/85336>
- Always consult with FEMA before proposing a programmatic response to the Puget Sound Biological Opinion.

Programmatic Approach Considerations

- A Door Two programmatic approach takes time to set up but can streamline future permit reviews.
- Consider how many permits will be involved in deciding this is worth the effort and time.
- FEMA must review and approve all Door 2 submittals. Historically, FEMA review times have taken many months.
- There is no guarantee the proposal will be accepted, and if it is, further revisions may be required.



Keeping Current with FEMA as BiOp Evolves

- Changes have occurred over time in how the BiOp is understood and administered.
- Its essential to stay current with, keep checking.
- FEMA's Biological Opinion Website:

<http://www.fema.gov/national-flood-insurance-program-endangered-species-act>



City of Tumwater example

- High groundwater issues from 1996-99 during above average rainfall led to basin wide studies and code revisions.
- For more information about the Salmon Creek Drainage Basin, please see Thurston County's Salmon Creek Comprehensive Drainage Plan website.
- Very little if any need for Habitat Assessments in Tumwater, because their ordinance effectively prevents new development in the SFHA.



Ordinary High Water Mark

Where is the water's edge?

State law defines the Ordinary High Water Mark at 90.58.030

Ecology, DNR, and WDFW each have different statutes with corresponding, almost identical language.



Ordinary High Water Mark, RCW 90.58.030(c)

"Ordinary high water mark" on all lakes, streams, and tidal water is that mark that will be found by examining the bed and banks and ascertaining where the presence and action of waters are so common and usual, and so long continued in all ordinary years, as to mark upon the soil a character distinct from that of the abutting upland, in respect to vegetation as that condition exists on June 1, 1971, as it may naturally change thereafter, or as it may change thereafter in accordance with permits issued by a local government or the department: PROVIDED, That in any area where the ordinary high water mark cannot be found, the ordinary high water mark adjoining salt water shall be the line of mean higher high tide and the ordinary high water mark adjoining fresh water shall be the line of mean high water.

THE ORDINARY HIGH WATER MARK IS NOT REALLY A LINE!

- It is a statutory definition of a physical feature on the landscape.
- It is a transition zone between the aquatic and terrestrial environments.



Finding the OHWM

- In some places it is narrow and easily defined by vegetation or other visible markers.
- Elsewhere it is a broad and gradual change that is hard to discern.
- Using the appropriate indicators, there should be consistency between professionals.
- But it is not a line.



"ORDINARY HIGH WATER MARK"

on all lakes, streams, and tidal water is that mark that will be found by examining the bed and banks and ascertaining where the **PRESENCE AND ACTION OF WATERS** are so common and usual, and so long continued in all ordinary years,

...

Chapter 90.58 RCW, Shoreline Management Act of 1971

"ORDINARY HIGH WATER MARK"

... as to **MARK UPON THE SOIL** a character distinct from that of the abutting upland, ...



"ORDINARY HIGH WATER MARK"

... **IN RESPECT TO VEGETATION** ...



"ORDINARY HIGH WATER MARK"

. . . as that condition exists on June 1, 1971, **as it may naturally change thereafter, or as it may change thereafter in accordance with permits** issued by a local government or the department:...

Chapter 90.58 RCW, Shoreline Management Act of 1971

The OHWM can change with time.

"ORDINARY HIGH WATER MARK"

. . . PROVIDED, that in any area where the ordinary high water mark cannot be found, the ordinary high water mark adjoining salt water shall be the line of **mean higher high tide** and the ordinary high water mark adjoining fresh water shall be the line of **mean high water**.

Chapter 90.58 RCW, Shoreline Management Act of 1971

Only when other indicators are not present can the Mean Higher High Water Line be used.

"ORDINARY HIGH WATER MARK"

Means . . .

- **PRESENCE AND ACTION OF WATERS**
- **MARK UPON THE SOIL**
- **IN RESPECT TO VEGETATION**

Frequently Flooded Area Chapter Updates are an Opportunity

- Updates of Frequently Flooded Area chapters are an opportunity to address flood issues that communities often do not have a chance to address.
- The Department of Ecology guidance can be found at <http://www.ecy.wa.gov/programs/sea/floods/FloodedareaGuidance.html>



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