Welcome

YOU ARE IN THE RIGHT SPOT. WE WILL START AT 9:00 AM.

1

Flood Plains

FEBRUARY 17, 2021

Washington Department of FISH and WILDLIFE

Washington State Department of Commerce

DEPARTMENT OF ECOLOGY State of Washington

2021 Critical Areas and Shoreline Monitoring & Adaptive Management Online Workshops

Welcome to

Flood Plains

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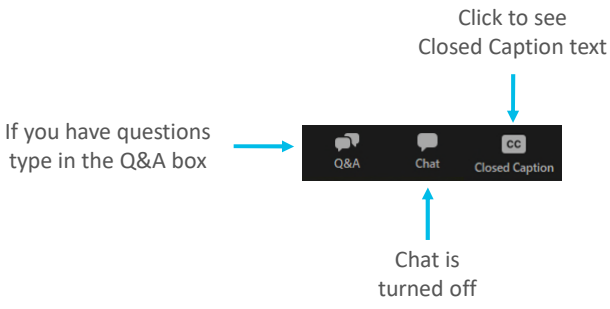
2021 Critical Areas and Shoreline Monitoring & Adaptive Management Online Workshops



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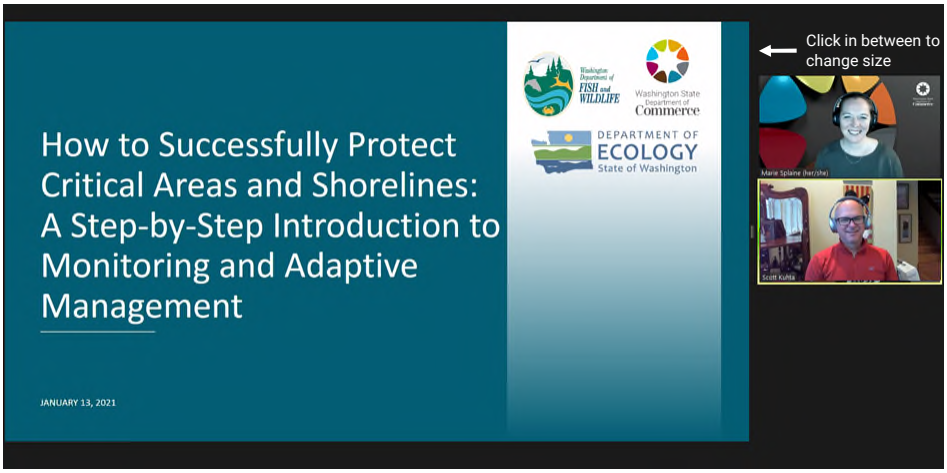
2021 Critical Areas and Shoreline Monitoring & Adaptive Management Online Workshops



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Visit Project Website for More Information

https://www.ezview.wa.gov/site/alias__1992/37576/overview.aspx

6

2021 Critical Areas and Shoreline Monitoring & Adaptive Management Online Workshops

This project has been funded wholly or in part by the United States Environmental Protection Agency under assistance agreement PC-01J2230116-05251 through the Washington Department of Fish and Wildlife.

ASSOCIATION OF STATE FLOODPLAIN MANAGERS

We are pleased to offer 2.5 hours of CFM credit for certified floodplain managers. David Radabaugh will ensure you get your credit if you stay for the session.

7

Workshop Wednesday Series Lineup

Register using Zoom.

January 13 - 9:00 a.m. - 11:00 a.m.
How to Successfully Protect Critical Areas and Shorelines: A Step-by-Step Introduction to Monitoring and Adaptive Management

January 20 - 9:00 a.m. - 11:00 a.m.
Setting the Stage: Successful adaptive management and critical areas monitoring program basics

January 27 - 9:00 a.m. - 11:00 a.m.
Wetlands

February 3 - 9:00 a.m. - 11:00 a.m.
Geologically Hazardous Areas

February 10 - 9:00 a.m. - 11:00 a.m.
Fish and Wildlife Habitat Conservation Areas

February 17 - 9:00 a.m. - 11:00 a.m.
Frequently Flooded Areas

February 24 - 9:00 a.m. - 11:00 a.m.
Critical Aquifer Recharge Areas (CARAs)

March 3 - 9:00 a.m. - 11:00 a.m.
Shorelines

March 10 - 9:00 a.m. - 11:00 a.m.
Permit Implementation Monitoring Tools

March 17 - 9:00 a.m. - 11:00 a.m.
CAO Performance Indicators

March 24 - 9:00 a.m. - 11:00 a.m.
Adaptive Management Interactive Workshop

Note: Workshop names may change but topic will stay the same.

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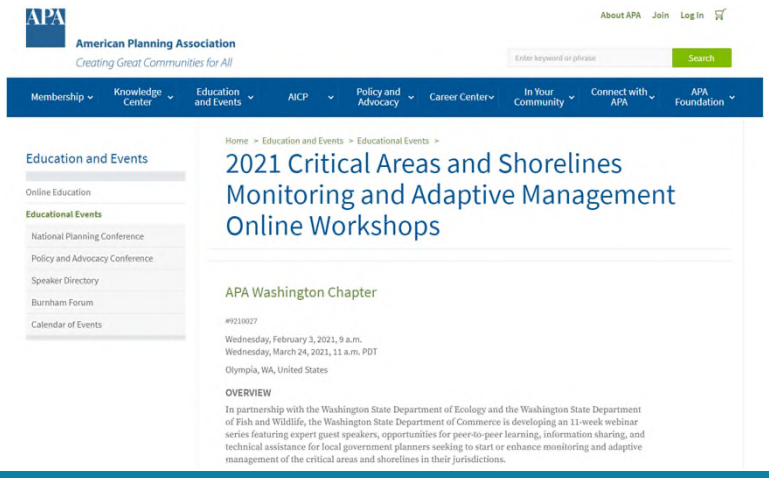
American Planning Association Education Credit

GO TO: [HTTPS://PLANNING.ORG/EVENTS/EVENTMULTI/9210027/](https://planning.org/events/eventmulti/9210027/)



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Land Acknowledgment

Discover which tribal lands you reside on text your zip code to (907) 312-5085.

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Poll

- What size jurisdiction do you work with?
- What is your role?
- How long have you worked on critical areas?
- Certified Floodplain Manager?

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Poll

- Are the effective Flood Study and accompanying Flood Insurance Rate Map adequate for defining flood risk in your community?
- Does your community have defined frequently flooded areas outside of the special flood hazard area?

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Meet Your Presenters

David Radabaugh, AICP, CFM, is the State of Washington National Flood Insurance Program Coordinator at the Washington Department of Ecology. Mr. Radabaugh holds a Bachelor of Science Degree from Humboldt State University in Natural Resources Planning and Interpretation.

Mr. Radabaugh has worked in land use planning and permitting in western Washington for the past 25 years. Mr. Radabaugh's current work includes providing technical support for the National Flood Insurance Program, grant management, and floodplain management planning.

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The Role of Local Governments in Floodplain Management

David Radabaugh
Department of Ecology

DEPARTMENT OF ECOLOGY
State of Washington

State of Washington Floodplain Laws

- RCW Chapter 86.16: Floodplain Development Regulatory Requirements
- WAC Chapter 173-158: Floodplain Development Administrative Rules for Regulations
- RCW Chapter 86.15: Legal Authority for Local Flood Districts
- RCW Chapter 86.12: Flood Control By Counties
- RCW Chapter 86.26: State Participation in Flood Control Maintenance
- WAC Chapter 173-145: Administration of the Flood Control Assistance Account

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Definitions

- **Floodplain:** Any land area susceptible to being inundated by water from any source.
- **Special Flood Hazard Area or FEMA floodplain:** The area that FEMA has mapped as having a one percent chance of being flooded in any given year.
- **Channel Migration Zone:** The area in which a stream channel moves and shapes the floodplain through time.

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Four Basic Parts to the NFIP

- Floodplain Mapping
- Floodplain Development Regulations
- Flood Insurance
- Hazard Mitigation Planning and Implementation

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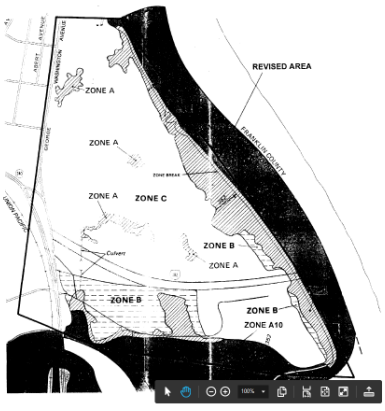
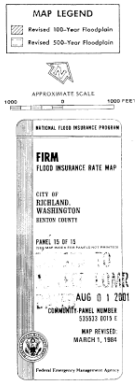
NFIP Floodplain Mapping

- FEMA maps floodplains on a county by county basis
- Mapping is based on historic hydrology
- Climate change is not considered
- FEMA provides maps
- FEMA handles the appeal process for FEMA maps
- FEMA map updates take years to complete





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NFIP Regulatory System

- Floodplain regulations from Code of Federal Regulations and state law
- NFIP is primarily concerned with how buildings are constructed
- NFIP standards do not cover infrastructure
- Limited concern about impacts to other property
- Regulations are not focused on environmental concerns

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Growth Management Act

- 36.70A RCW: Growth management Act
- 365-190: Critical Areas
- WAC 365-190-110: Frequently Flooded Areas

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Critical Area Ordinances and Frequently Flooded Areas

- Washington's Growth Management Act (36.70A RCW) requires identification and regulations relating to Critical Areas, including 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.
- 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. These areas include, but are not limited to, streams, rivers, lakes, coastal areas, wetlands, and areas where high groundwater forms ponds on the ground surface.

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Frequently Flooded Areas Chapters are Based on Best Available Science

- WAC 365-195-905 provides criteria to help assist communities in determining Best Available Science.
- The Department of Commerce has prepared a Critical Areas Guidebook (2018) that can assist local governments in preparing a CAO update, including that for frequently flooded areas.
- The Critical Areas Guidebook is found at the Washington State Department of Commerce, Growth Management Services website.

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Flood Risk Reduction Beyond FEMA Minimums

Additional Freeboard

Restrict Development in Floodways and CMZs

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Additional Considerations

- Dual Purpose Frequently Flooded Area Chapter and Flood Damage Prevention Ordinance (NFIP Ordinance).
- Discuss dual purpose ordinances with your Regional Floodplain Management Specialist.
- Need for internal consistency between Frequently Flooded Area Chapter and Flood Damage Prevention Ordinance (NFIP Ordinance).

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Combined CAO/NFIP Ordinance

- PROS
- Floodplain regulations located in one place
- Can better address associated environmental issues

- CONS
- Need to be able to clearly distinguish NFIP requirements from critical area requirements
- More complex
- Still need to address FEMA concerns

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How Floodplain Regulations Can Support Floodplain Management

- NFIP Regulations
- Creates building standards
- Higher standards possible
- Identifies engineering standards
- Floodway standards
- Well established structure
- Aligned with building codes

- Critical Area Regulations
- Address climate change
- Higher standards
- Can map additional flood hazard areas
- Address channel migration
- Integrate with natural habitat concerns

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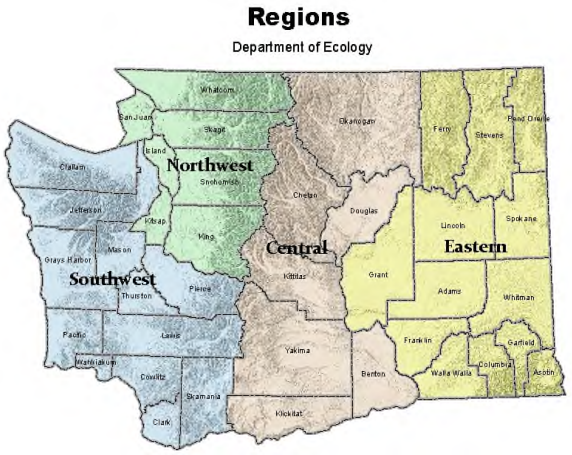
Department of Ecology
Regional Floodplain Management Specialists

- **Central Washington, Sandra Floyd,**
  (509) 457-7139, Sandra.floyd@ecy.wa.gov
  (Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, and Yakima counties)
- **Eastern Washington, Lynn Schmidt,**
  (509) 329-3413, lynn.schmidt@ecy.wa.gov
  (Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, and Whitman counties)
- **Northwest Washington, David Radabaugh,**
  (425) 649-4260, david.radabaugh@ecy.wa.gov;
  (Island, King, Kitsap, San Juan, Skagit, Snohomish, and Whatcom counties)
- **Southwest Washington, Alex Rosen,**
  (360) 407-6521, alex.rosen@ecy.wa.gov
  (Grays Harbor, Mason, Lewis, Thurston, and Wahkiakum counties)
- **Southwest Washington, Matt Gerlach,**
  (360) 407-0271, matthew.gerlach@ecy.wa.gov
  (Clallam, Clark, Cowlitz, Jefferson, Pacific, Pierce, and Skamania counties)



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Questions?

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Poll

Does your community have GIS resources to assist with your floodplain management program?

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Meet Your Presenter

Jerry Franklin is a geographer with over twenty of years' experience in GIS, GPS, and remote sensing technologies. He currently serves as the WA State RiskMAP Coordinator and GIS Analyst at the Washington State Department of Ecology. Jerry's role partners Ecology with the Risk Analysis Branch of the Federal Emergency Management Agency with the shared mission to deliver natural hazard risk reduction programs, strategies, and tool to all stakeholders in Washington. Jerry partners with several State and Federal agencies in support of Ecology's shorelines, coastlines, wetlands, and floodplain management programs.

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Identification of Frequently Flooded Areas:

Resources for Best Available Science

Jerry Franklin
Washington State Department of Ecology
February 17, 2020

DEPARTMENT OF ECOLOGY
State of Washington

Provide informative guidance in support of communities defining & adapting to their FFA's

FEMA Flood Map Service Center
Official Flood Hazard Map Panels
National Flood Hazard Layer (NFHL)
Effective FIRM's in paper format

WA State RiskMAP Program
RiskMAP ArcGIS online mapping application
Current Status of maps and projects
Multi-Hazard Risk Assessments

County and Local GIS Resources

WA DNR Geologic Portal
Digital High-Res Topography

WA Dept. of Ecology
Channel Migration Zone Mapping

FEMA

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State of Washington

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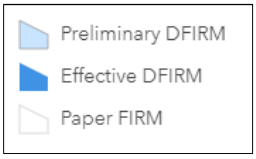
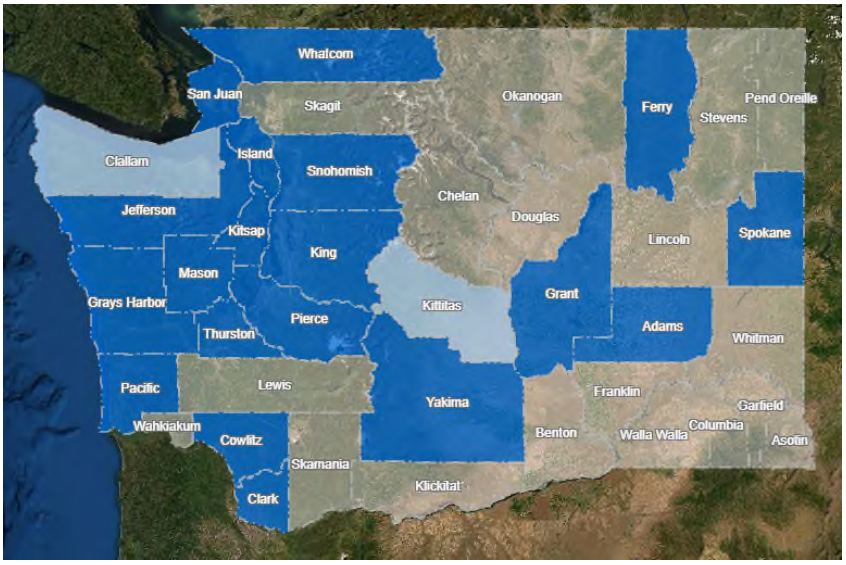
Flood Map Status – Digital or Paper

Current Countywide status of digital mapping

Preliminary data can be accessed thru the Map Service Center or viewed thru Ecology's RiskMAP application.





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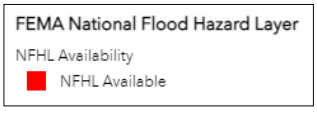
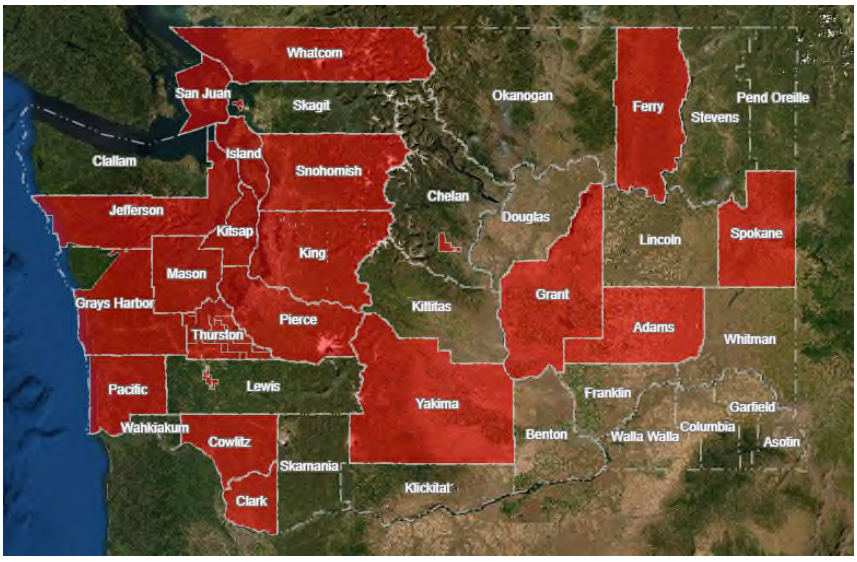
FEMA's National Flood Hazard Layer

SFHA's and much more in areas where we have digital flood hazard data

Users can download GIS data thru the Map Service Center or access thru ArcGIS online as a map service





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FEMA Map Service Center

FEMA Flood Map Service Center (MSC) – Official Flood Insurance Rate Maps or panels
Effective, Preliminary, and sometimes historic flood hazard maps
Navigating the MSC – *interactive* https://msc.fema.gov/portal/home

Effective FIS & FIRMs in paper format

National Flood Hazard Layer (NFHL) – FEMA maintained web service & downloadable Digital Flood Hazard Layers in GIS format

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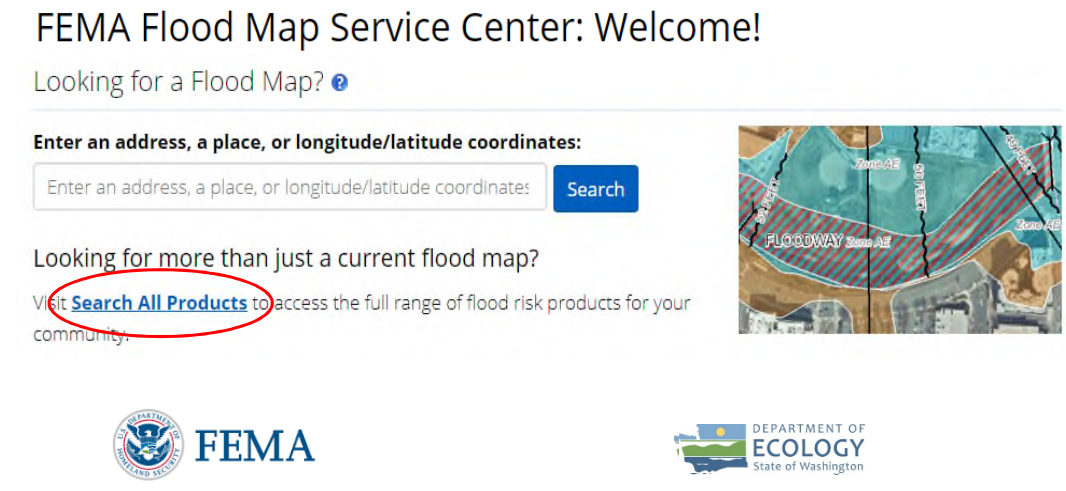
FEMA Map Service Center

download products for internal uses



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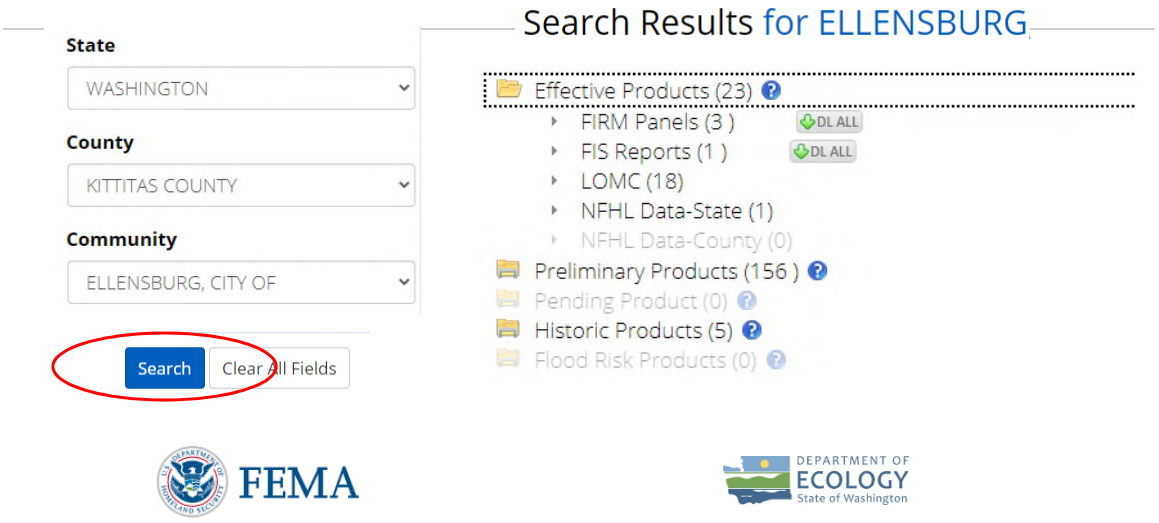
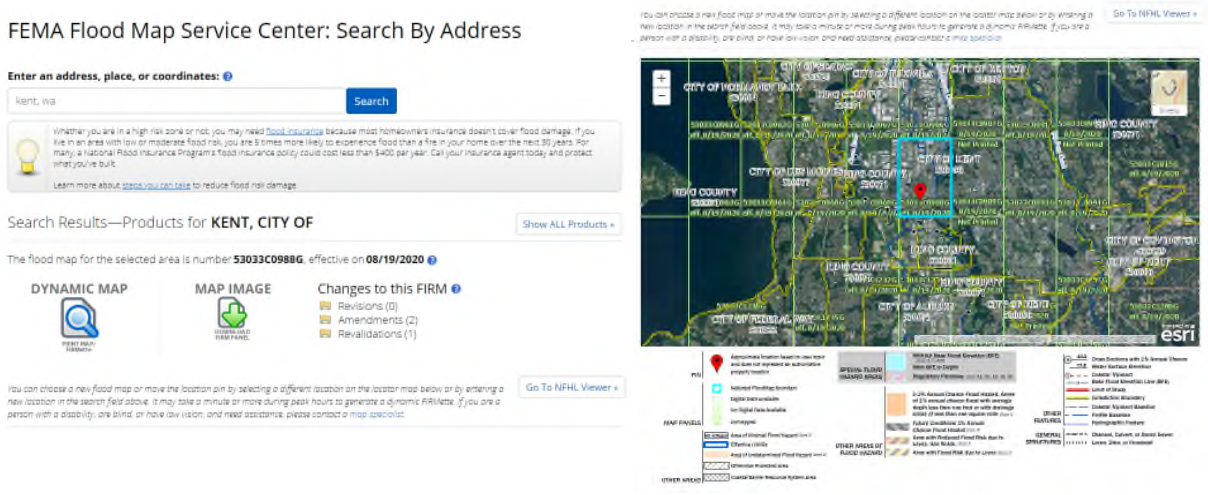
Search All Products...*Floodway Handout*



FEMA Map Service Center

View Products



WA State RiskMAP Program

Risk MAPPING ASSESSMENT & PLANNING

Mission is to increase our resilience to natural hazards through data-driven risk assessments that map, evaluate, and provide mitigation solutions to reduce our exposure and risk.

Regulatory - Digital Flood Hazard Maps & Flood Insurance Studies

Non-Regulatory (where available information contributes to quality data)

- Flood Depths
- Areas sensitive to increases in coastal inundation
- Earthquakes (including several likely scenarios)
- landslide Inventories
- Tsunami Inundation Areas
- Building damage estimates and exposure to multiple hazards

All project data is delivered to the communities in a Risk Report & GIS database

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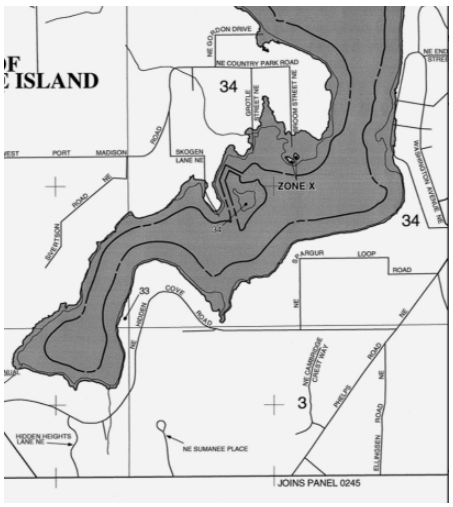
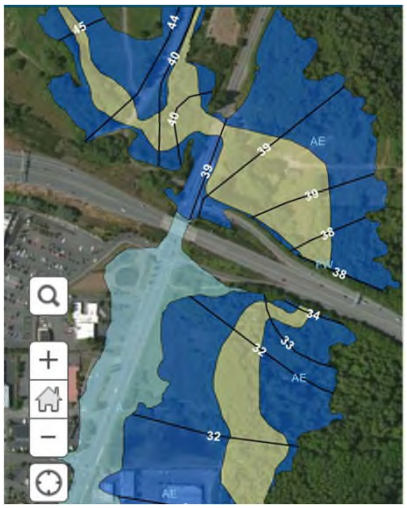
Update Flood Hazard Mapping

Prime objective remains to modernize flood hazard data to better suit the technologies used by stakeholders.





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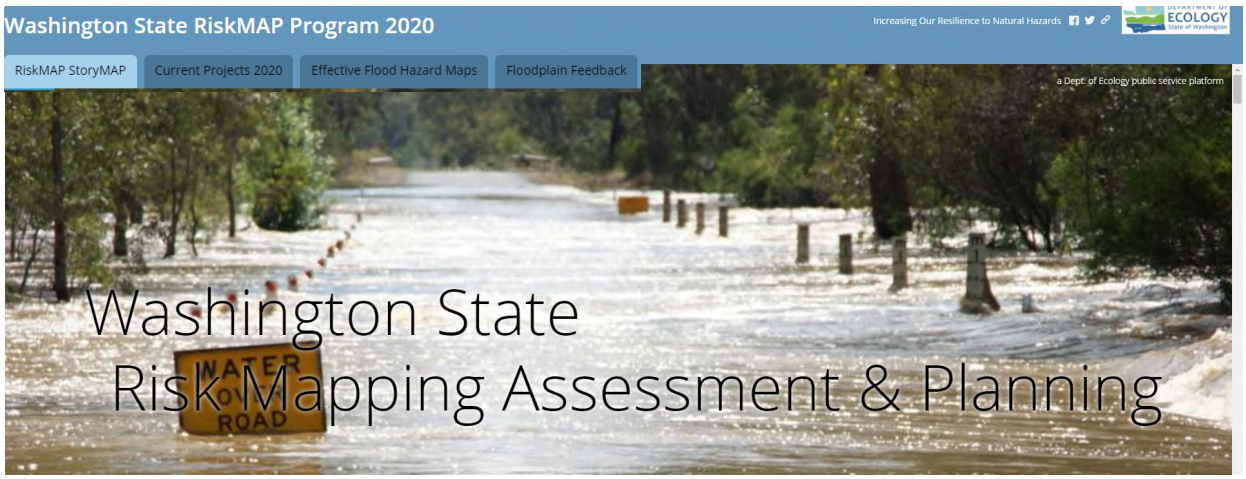
RiskMAP online mapping application



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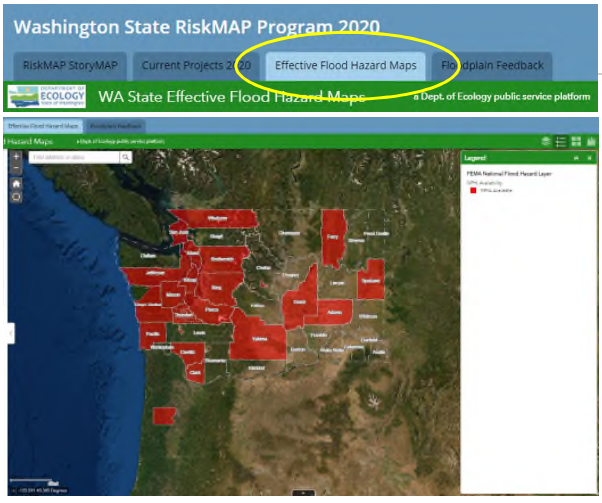
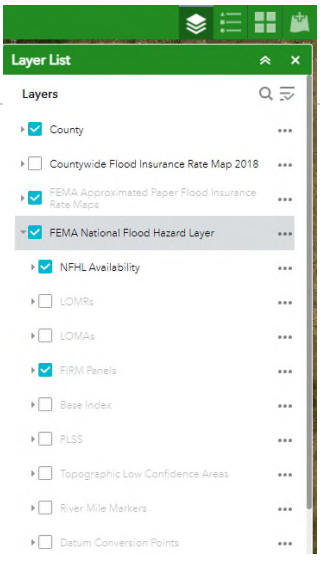
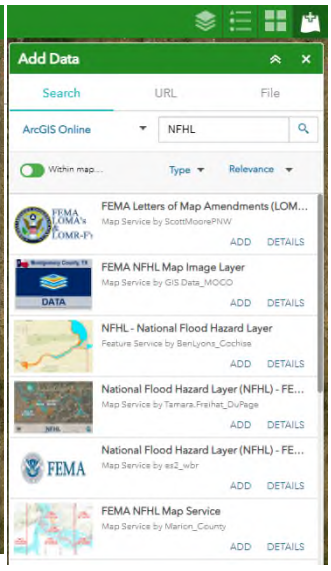
RiskMAP application tools







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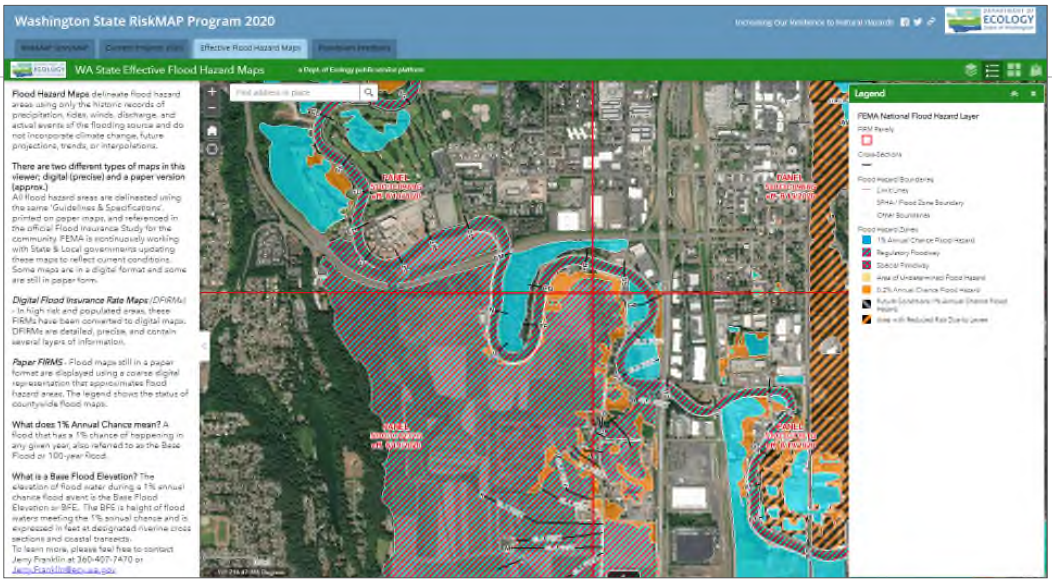
FEMA Flood Hazard Areas – Effective



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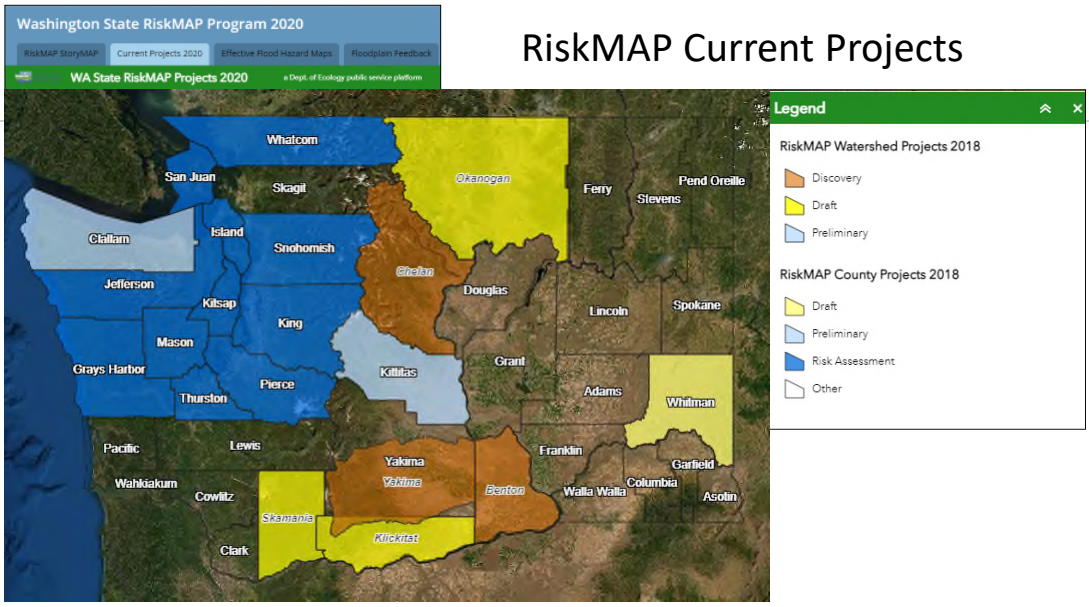
RiskMAP Current Projects



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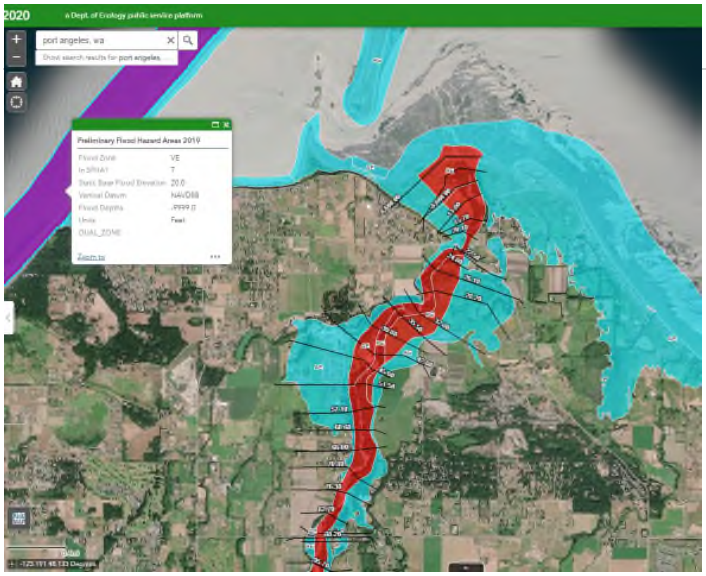
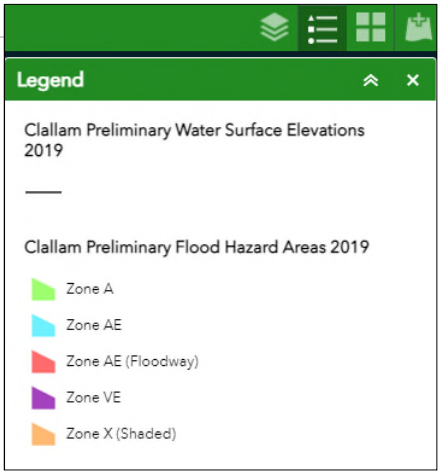
RiskMAP Current Project Data…





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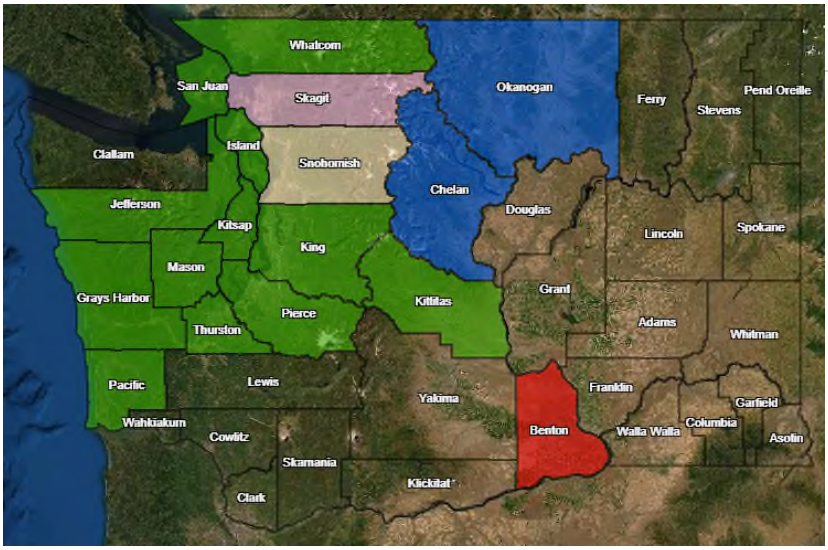
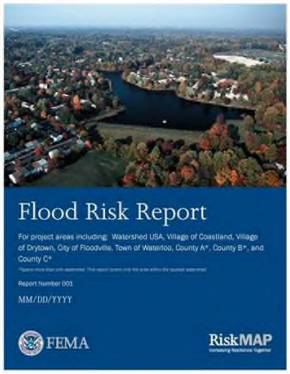
Non-regulatory Products – Risk Assessments





ECY_Co_Risk_Assessments_2020

- Coastal Flood building damages only
- EQ and Flood building damages, landslide and Tsunami exposure, essential facilities
- EQ only
- EQ, Flood, landslide and Tsunami exposure, essential facilities
- EQ, Landslide, flood hazard exposure, essential facilities

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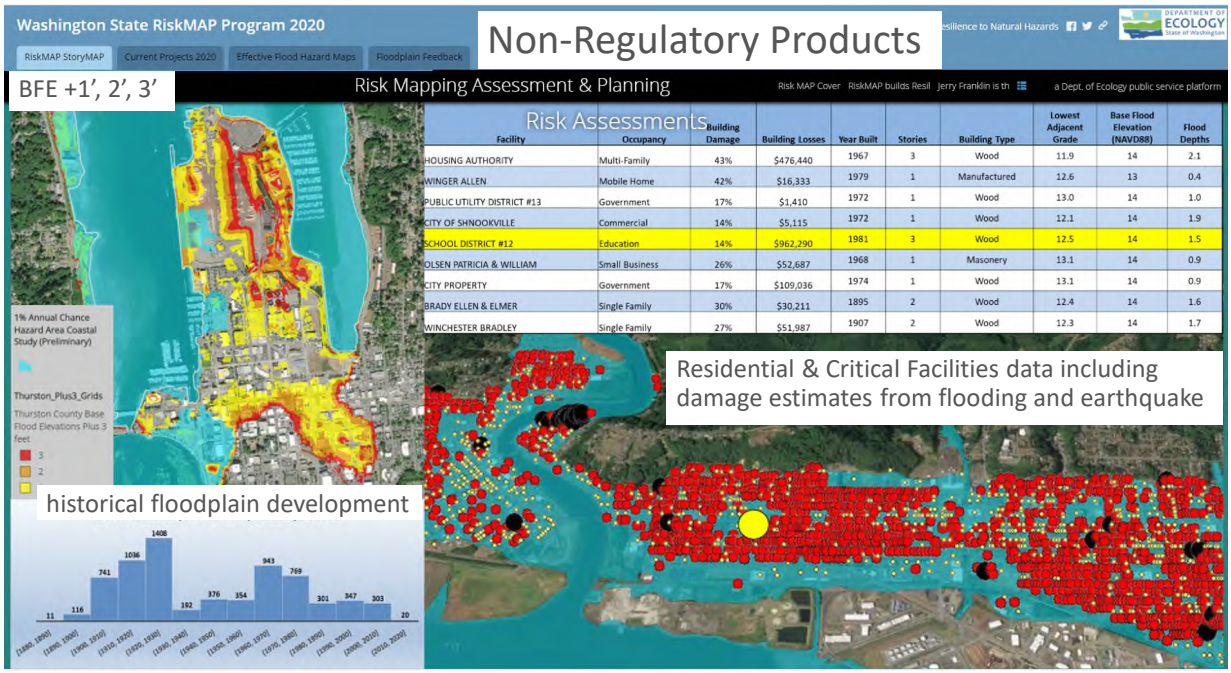
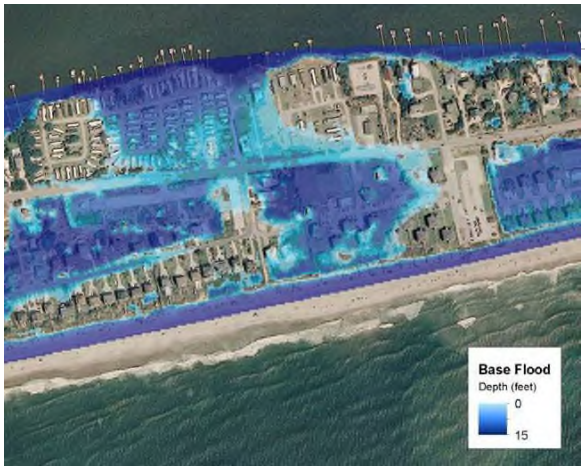
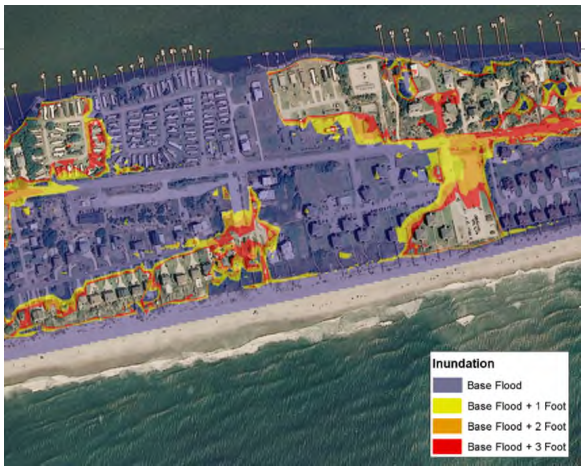
Non-Regulatory Products



Non-regulatory Products - Flood Depth Grids & BFE+ Grids



Flood depth grids allow users get flood depths from a 1% AC flood at user-defined locations, just click on the map



Base Flood Elevation grids or BFE+ grids display increases to the BFE at 1', 2' and 3' intervals

Dept. of Natural Resources

WA Dept. of Natural Resources is our Natural Hazards experts specializing in:

- Geologic hazards
- Wildfire
- Landslides
- Tsunamis
- Earthquake

Statewide LiDAR Portal for distribution of high-resolution digital topography used in RiskMAP projects.

FEMA

The Washington Geologic Information Portal puts complex geologic and hazards information into the hands of everyone, including you. This application allows you to quickly compare and synthesize data of different types to help solve a variety of problems. Enter the Portal by clicking the icon below.

GEOLOGIC INFORMATION PORTAL

DEPARTMENT OF ECOLOGY State of Washington

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Channel Migration Resources…a common risk in WA

Sanpoil River, Ferry County, early 2017

Mill Creek near Walla Walla, Feb. 2020

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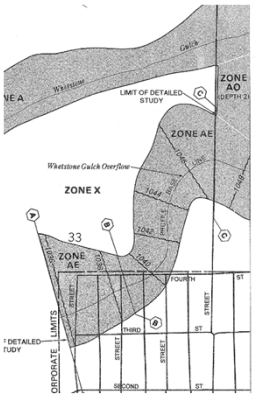
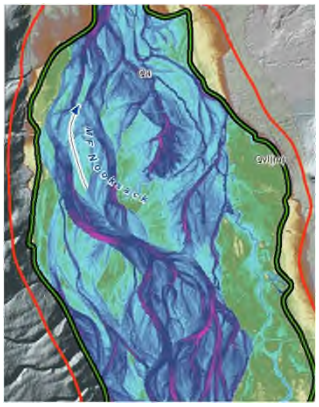
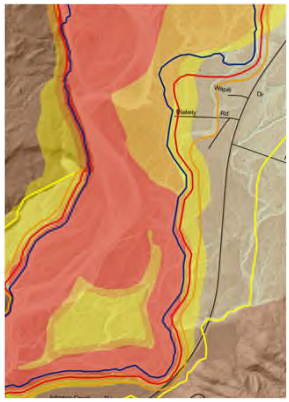
Levels of CMZ Delineation

- Approximated as 100-year floodplain
- Planning Level CMZ
- Detailed CMZ Study







Lynn Schmidt, Ecology flood engineer at lynn.schmidt@ecy.wa.gov or 509-344-9692

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Questions? Need more assistance?

Please feel free to reach out as needed…

Floodplain Management, Mapping, and Mitigation Specialists across the State

- Floodplain management
- Natural hazard mapping
- Channel migration zones
- Comprehensive planning
- Plan-to-project assistance
- Training
- Engineering
- Mitigation
- Online map viewers
- Technical guidance

FEMA

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Poll

Have you experienced flooding in your community that surprised you? (E.g. King tides; Wave run-up; flooding in unexpected places)

Is your community capturing the extent/magnitude of flood events (e.g. high water marks, king tides)?

Is your community tracking flood-related damages? (e.g. infrastructure/development damages)

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Recommendations for monitoring Frequently Flooded Areas

David Radabaugh
Department of Ecology

DEPARTMENT OF ECOLOGY
State of Washington

Frequently Flooded Area Regulation

- Are regulations working?
- How much flood damage has your community seen during the past few decades?
- Is freeboard working?
- Are regulations being followed?

55

Track Floodplain Development

- Amount
- Types of Development
- Location
- Number of Buildings
- Area developed

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Sea Level Rise

- King tides
- Documenting king tides
- Survey high water marks
- Sea level rise modelling for your area
- https://cig.uw.edu/resources/special-reports/sea-level-rise-in-washington-state-a-2018-assessment/

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Mapping and Using High Water Marks

- Identify high water marks in the field after major floods
- Survey identified high water marks
- Map high water marks when higher than the Base Flood Elevation
- This can be best available information

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Channel Migration

- Mapping channel migration
- Planning level mapping methodology
- Detailed mapping methodology
- Areas with channel migration damage

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Post-Wildfire Flood Risk

- Obtain burn severity reports and maps
- After The Fire website https://afterthefirewa.org
- Map fire hazard areas
- Map burned areas
- Map 1,000-year flood at Risk Map product

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Other Identified Areas of Flooding

- ID areas with inadequate storm drainage
- Areas of groundwater flooding
- Streams where the path of flood waters can be unpredictable

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Questions

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Poll

Have you been involved in a Community Assistance Visit before

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Meet Your Presenter

Matt Gerlach is a floodplain management planner with the Department of Ecology's Southwest Regional office. Matt provides technical assistance to local governments implementing the National Flood Insurance Program, manages Floodplains by Design grants and assists with Comprehensive Flood Hazard Planning. Matt has a Bachelors and Master's Degree in Geology from West Chester University of Pennsylvania and the University of Rhode Island, respectively. Outside of work, Matt enjoys biking, hiking and snowboarding with his family and friends.

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Adaptive Management in the National Flood Insurance Program: Community Assistance Visits

Matt Gerlach
Washington State Department of Ecology
February 17, 2021

DEPARTMENT OF ECOLOGY
State of Washington

Presentation motivation

- *Showcase how elements of a technical assistance visit for the National Flood Insurance Program (NFIP) can help communities in WA adaptively manage development in FFAs.*

FEMA

NATIONAL FLOOD INSURANCE PROGRAM®

DEPARTMENT OF ECOLOGY
State of Washington

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Community Assistance Visit (CAV) in WA

- *Scheduled visit to an NFIP community to assess implementation and understanding of floodplain management requirements.*
- **Desired Outcome**: Determine if a community is meeting their NFIP flood risk reduction objectives through a compliant floodplain management program.

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Elements of a CAV

1. Floodplain tour
2. Floodplain mapping
3. Development review process
4. Development regulations
5. Permit and record review
6. Training needs

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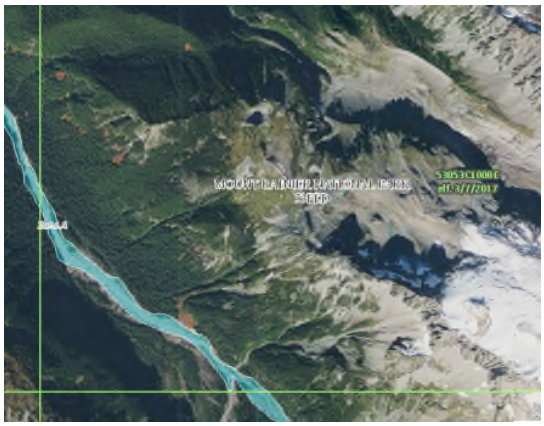
Understanding floodplains: desktop/field exploration



FEMA Map Service Center
https://msc.fema.gov/portal/home

*GIS layers can be imported into GPS to help with field tours.

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Floodplain exploration: what to look for/ be aware of

- Critical facilities
- Existing floodway development
- Questionable development
- Repetitive loss properties

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Floodplain exploration: standards being met to ensure safe development?

- Elevated or Flood-proofed
- SPA (Storage, Parking, Access) below lowest floor
- No obstructions to flow (coastal areas)
  - Walls designed to collapse or break under wind/water load
- Manufactured homes and utilities anchored where needed

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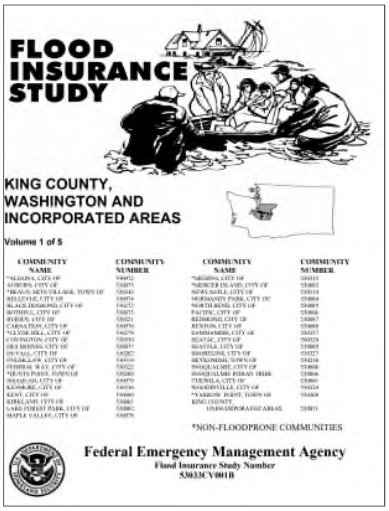
Floodplain Mapping

- Flood Insurance Rate Maps (FIRM): paper or digital product
  - Digitized version in GIS environment available?
- Mapping inaccuracies (e.g. has watercourse shifted?)
- Structures providing flood protection
  - Perceived or Quantified?
- Challenging areas (e.g. Unnumbered A zones)



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WA model flood damage prevention ordinance

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD DAMAGE PREVENTION ORDINANCE
WASHINGTON MODEL (REVISED 12/09/2019)

Close to 300 towns, cities, counties, and tribes within the State of Washington participate in the National Flood Insurance Program (NFIP). As a condition of participation in the NFIP, communities are required to adopt and enforce a flood hazard reduction ordinance that meets the minimum requirements of the NFIP; however, there are occasionally additional requirements identified by state law that are more restrictive. In these cases, the Federal Emergency Management Agency (FEMA) will require that communities meet those standards as well.

This model identifies the basic requirements and cross references them to appropriate Code of Federal Regulations (CFR), Revised Code of Washington (RCW), or Washington Administrative Code (WAC) requirements. It also encourages community officials to consider the direct insurance implications of certain building standards that, if adopted, can reduce (or increase) annual flood insurance premiums for local citizens. This ordinance, as developed by FEMA and the Washington Department of Ecology, supersedes previous versions and includes all the minimum standards required as a condition of participation in the NFIP. It will be used by FEMA and state staff as the basis for providing technical assistance and compliance reviews during the Community Assistance Contact (CAC) and Community Assistance Visit (CAV) process to ensure federal and state law are met.

- Recently updated in December 2019.
- **Ordinance >10 years old, consider voluntarily working with FEMA/Ecology to update.**

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Reviewing floodplain development permits

Community Objective: ensure development safe from flood damage

- ✓ Properly located
- ✓ Elevated lowest floor
- ✓ Flood openings
- ✓ Elevated utilities
- ✓ Flood resistant materials
- ✓ Flood-proofing (non-residential)

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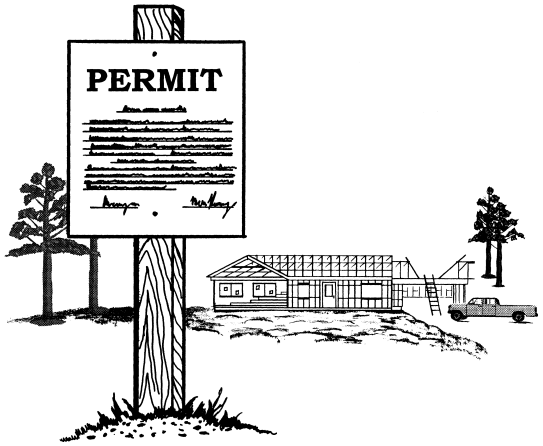
Permitting Process: Identify staff/department roles

- Permit intake/Site review
- Engineering review (if needed)
- Building/structure review
- Permit approval
- Final inspections



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Issued permits: information to maintain in perpetuity

- Elevation of lowest floor (as-built)
  - Elevation Certificate preferred
- Elevation to which structures were flood proofed
  - Flood proofing certifications
- Floodway encroachment certifications
- Variance records
- Improvement and damage calculations

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Training (mostly free and virtual!)

- FEMA Region X online workspace
  - Monthly newsletter highlights virtual training
- Association of State Floodplain Managers
- FEMA E0273 course (held in WA yearly)
- NFIP 101 in WA course (virtual in 2021)
- Individual community trainings

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Takeaways

- Regulating FFAs effectively begins with a community meeting their NFIP responsibilities. This is the foundation for branching out to regulating additional FFA's and higher regulatory standards.
- Think of the CAV as a needs assessment. Use the data generated to identify improvement areas in development review and permitting.
- Take advantage of state/federal technical assistance. Participate in free trainings!

FEMA NATIONAL FLOOD INSURANCE PROGRAM DEPARTMENT OF ECOLOGY State of Washington

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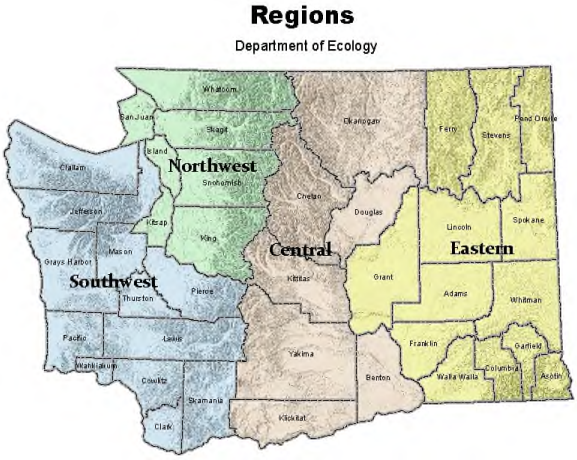
Need Help?
Floodplain Management Specialists

DEPARTMENT OF ECOLOGY
State of Washington

- **Central Washington, Sandra Floyd,**
  (509) 457-7139, Sandra.floyd@ecy.wa.gov
  (Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, and Yakima counties)
- **Eastern Washington, Lynn Schmidt,**
  (509) 329-3413, lynn.schmidt@ecy.wa.gov
  (Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, and Whitman counties
- **Northwest Washington, David Radabaugh,**
  (425) 649-4260, david.radabaugh@ecy.wa.gov;
  (Island, King, Kitsap, San Juan, Skagit, Snohomish, and Whatcom counties)
- **Southwest Washington, Alex Rosen,**
  (360) 407-6521, alex.rosen@ecy.wa.gov
  (Grays Harbor, Mason, Lewis, Thurston, and Wahkiakum counties)
- **Southwest Washington, Matt Gerlach,**
  (360) 407-0271, matthew.gerlach@ecy.wa.gov
  (Clallam, Clark, Cowlitz, Jefferson, Pacific, Pierce, and Skamania counties)



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Questions?


Photo: Lake Cushman

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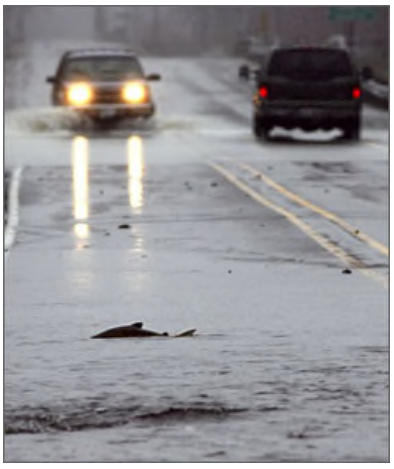
Using Adaptive Management Information

David Radabaugh
Department of Ecology

DEPARTMENT OF ECOLOGY
State of Washington

What Did You Learn From Monitoring?

- How is your permit system working?
- CAV results
- Flood damage
- Channel migration damage
- King tides



Channel Migration

- Have there been channel migration losses in your community?
- How much development is presently in CMZs?
- Does the Comprehensive Plan and CFHMP need to address channel migration?
- Do the regulations need to change to address channel migration?

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Channel Migration Adaptation Tools

- Observed Channel Migration
- Planning Level CMZ study
- Detailed CMZ study
- Overlay CMZ mapping with land use/zoning map
- Reconcile CMZ map with land use/zoning map.
- Adjust development standards to match risk

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Coastal Flooding

- What areas have been affected by king tides
- What areas are expected to be impacted by sea level rise?
- Does planning need to address sea level rise?
- Do regulations need to change to address flood safety due to sea level rise?

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Coastal Flooding Adaptation Tools

- Observed king tides
- Effective FIRM
- Risk Map Products
- 1, 2, and 3 feet above BFE Map
- Hazus data
- Climate Impacts Group Sea Level Rise Assessment
- Photos of king tides as a public information tool
- Map estimated sea level rise
- Analyze the amount of existing and potential development at risk from sea level rise
- Consider the effect and cost to infrastructure

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Coastal Flooding Adaptation Approaches

- Consider land uses at risk
- Consider infrastructure at risk
- Limit land uses in future flood zone
  - Utilize open space planning
  - Limit vulnerable land uses
  - Limit critical facilities
- Develop construction standards that meet the risk
  - Elevation of buildings and utilities
  - Foundation types

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Riverine Flooding

- What are your community's flood losses?
- How many of the losses were outside of the FEMA mapped floodplain?
- How much development in the community is located within mapped floodplains?
- How much at-risk development in the community is located outside of mapped floodplains?
- Document and map known flood prone areas outside of FEMA mapped floodplains
- Document and map areas subject to climate change flood risk
- Extend regulatory requirements to areas with know or mapped flood risk
- Adopt higher standards

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What Kinds of Higher Standards

- Additional freeboard
- Setbacks or buffers
- Grading limits
- Limit development in CMZs
- Limit development with a high post-wildfire mud flow potential
- Limit development in floodways.

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Other Flood Prone Areas

- Mapping areas that are affected by flooding but not mapped as such.
- Do regulations need to change to address the unmapped flood hazard.
- Will urbanization change runoff enough to change the amount of flooding?

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Department of Ecology
Regional Floodplain Management Specialists

- **Central Washington, Sandra Floyd,**
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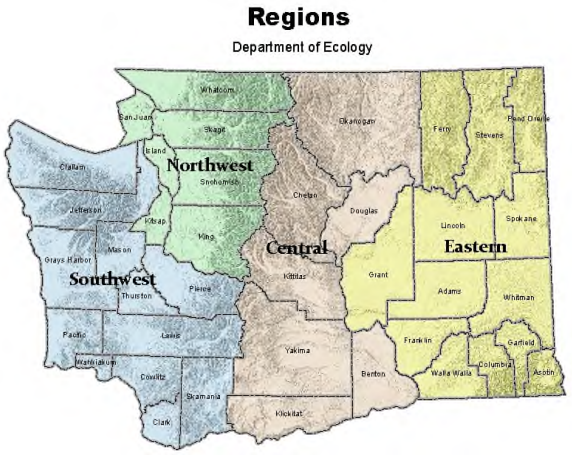

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Q&A

TYPE YOUR QUESTIONS IN THE Q&A BOX IN YOUR TOOLBAR

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Meet Your Presenter

Tim Rubert has been with Thurston County for 30 years and is certified as a Plans Examiner, Floodplain Manager, and a Fire Inspector II. He started out as an Assistant Plans Examiner and has done everything from addressing, grading, fire and building inspections to plan review. As the Floodplain Manager, Tim reviews all development within the Special Flood Hazard Areas and landslide hazard areas within in the county. Thurston County is in the NFIP Community Rating System and has a Class 2 rating.

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THURSTON COUNTY FLOOD OF RECORD

SPECIAL FLOOD HAZARD AREA PRESENTATION FEBRUARY 17, 2021

THURSTON COUNTY
WASHINGTON
SINCE 1852

Contact:
Tim Rubert, Floodplain Manager
Thurston County
Community Planning and Economic Development Department

OVERVIEW

- A Little History
- What is the Flood of Record
- Maps and Monumentation
- Constant Management
- Flood of Record Monument Example

A LITTLE HISTORY COUNTY FLOOD REGULATION

1994 – Thurston County Adopts Flood Ordinance Restricting Development in SFHA

1999 – County Flood Hazard Management Plan Adopted

1999- 2000 - Development Restricted in Surfacing High Ground Water Areas & Flood of Record

2018 – County Adopts 3ft Equivalent Freeboard

A LITTLE HISTORY – COMMUNITY RATINGS SYSTEM

COUNTY CODE DEFINITIONS UNIFIED BETWEEN CRITICAL AREAS AND FLOOD REGULATIONS

"Special flood hazard area" means the land in the flood plain within a community subject to a one percent or greater chance of flooding in any given year. Areas of special flood hazard are shown on a flood hazard boundary map or flood insurance rate map as Zone A, AE, AO, AH, VE, V or high ground water flood hazard areas resource map, on file with the department or the highest known recorded flood elevation.

(Chapter 14.38 Development in Floodplains)

COUNTY CODE DEFINITIONS
UNIFIED BETWEEN CRITICAL AREAS AND FLOOD REGULATIONS

Frequently flooded areas" means lands in the flood plain subject to at least a one percent or greater chance of flooding in any given year or areas within the highest known recorded flood elevation, or within areas subject to flooding due to high ground water. This includes all areas within unincorporated Thurston County identified on flood insurance rate maps prepared by the Federal Insurance Administration, as supplemented by "The Flood Insurance Study for Thurston County," dated November 17, 1980, as amended. (These maps and the referenced report shall be on file with the department at the Thurston County Permit Assistance Center). Frequently flooded areas may include special flood hazard areas as defined in Chapter 14.38 TCC or high ground water flood hazard areas, where high ground water forms ponds on the ground surface, or may overlap with other critical areas, such as streams, rivers, lakes, coastal areas, and wetlands.

(Chapter 24.20 Frequently Flooded Areas)

GIS MAPS AND MONUMENTATION

EXAMPLE: MONUMENT GIS METADATA

Coord Easting 985129

Coord Northing 554470

Description Fnd galv spike, 1' above ground, on South side of p.pole, SW quad of SR-12 & Forstrom Rd. Tied to tbm #7, bridge spike on East side of p.pole, 155' south of SR-12, West side of Forstrom Rd. Elev= 113.923'-ngvd 29.

Elev1996_NAVD88 115.46

Elev1996_NGVD29 112.01

Elev2007_NAVD88 116.79

Elev2007_NGVD29 113.33

Flood Source Black River & Chehalis

Highest Flood Date 12/6/2007

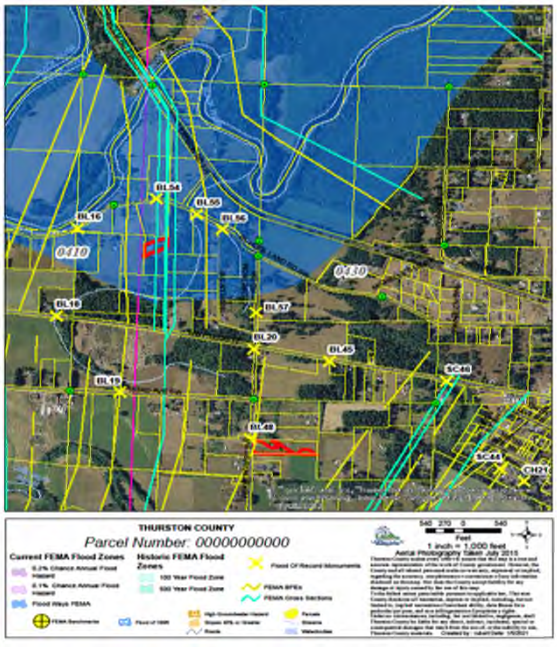
Historic Monument Number Reference Mon 1996: 9620 Spike 2007: 12

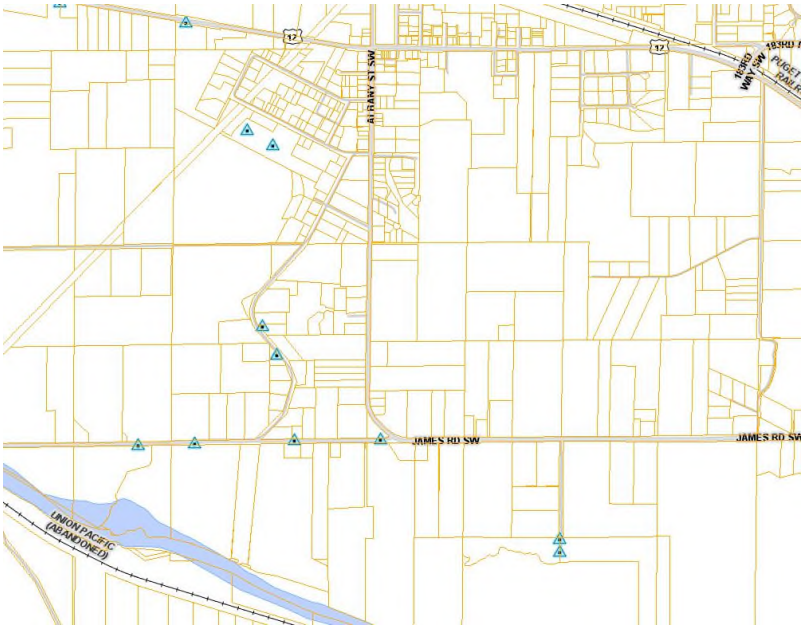
Monument Number BL20

Reset Yes

Reset Year 2007

Section Township Range 36 16 4W





ROCHESTER AREA FLOOD MONUMENTS

CONSISTENT MANAGEMENT

This is one of our Flood of Record monuments that has been reset to a higher elevation

MONUMENT EXAMPLE

2007 FLOOD OF RECORD

MONUMENT EXAMPLE

2007 FLOOD OF RECORD

Q&A

TYPE YOUR QUESTIONS IN THE Q&A BOX IN YOUR TOOLBAR

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Thank you!

David Radabaugh, AICP, CFM
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Washington Department of FISH and WILDLIFE

Washington State Department of Commerce

DEPARTMENT OF ECOLOGY State of Washington