

Chelan County Comprehensive Flood Hazard Management Plan

County Commissioner Meeting #2



December 16, 2016

Today's Speaker

Rob Flaner –Floodplain Management Plan Technical Lead, Tetra Tech, Inc.

- Technical consultant to Chelan County Department of Public Works.
- 20+ years experience in FEMA Hazard Mitigation program implementation.
- Former Community Rating System (CRS) Specialist for FEMA Region X.



What We will Talk About

- Present the Draft Chelan County Comprehensive Flood Hazard Management plan.
 - Process
 - Layout
 - Risk Assessment Results
 - Policies
 - Actions



What is a CFHMP?

An overall strategy of programs, projects, and measures aimed at reducing the adverse impacts of flood hazards on the community.

What is a CFHMP?

A well prepared plan will:

- Perform a comprehensive review of alternatives;
- Identify and prioritize actions;
- Involve the public;
- Educate the public;
- Meet defined goals and objectives.

Why is Chelan County Developing a CFHMP?

Because it floods in Chelan County!

- There have been *8 state or federal flood-related disaster declarations in Chelan County since 1960.*

The newly formed Flood Control District

- *CFHMP will serve as the master plan for the Flood Control District*

The Community Rating System

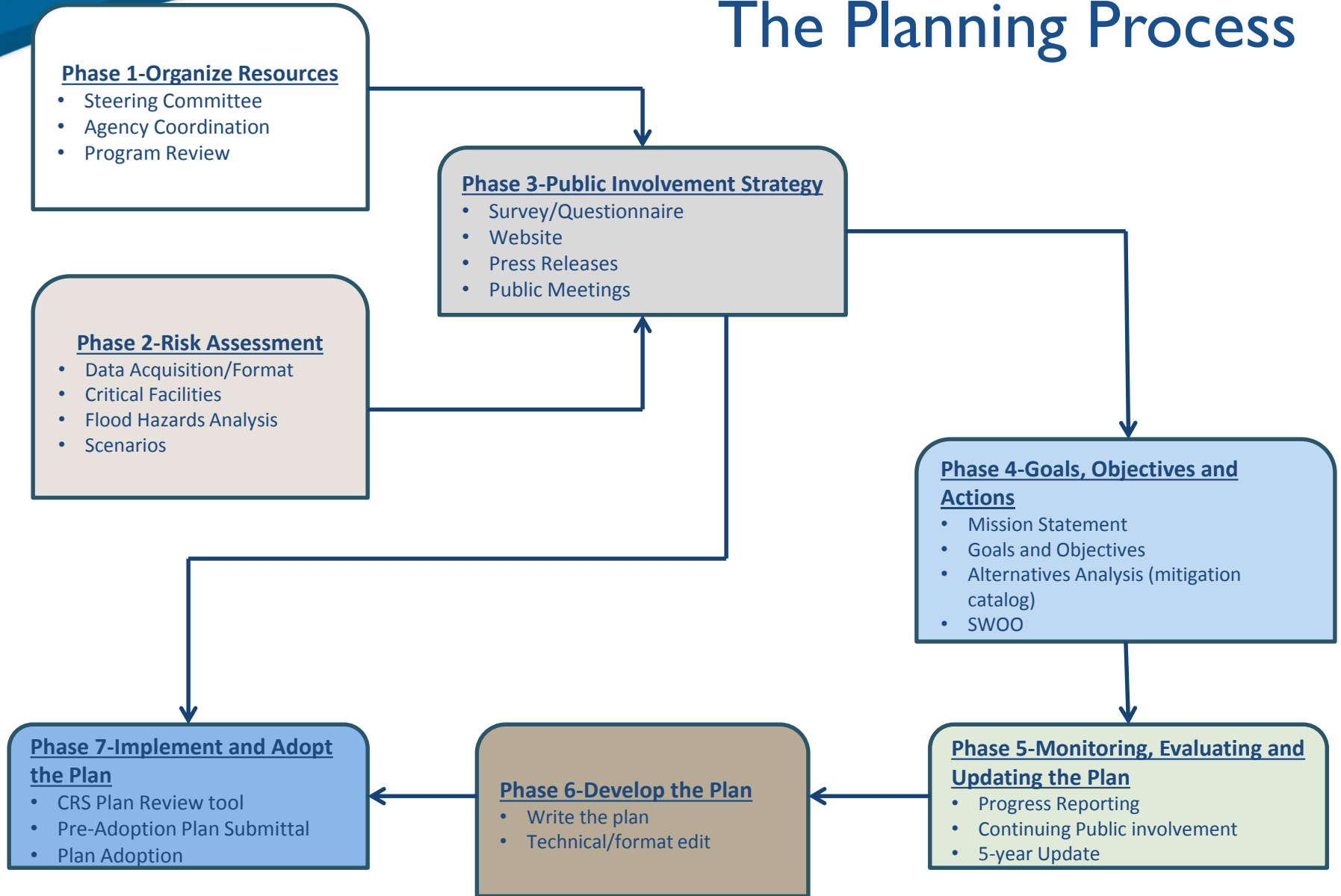
- *Can gain flood insurance premium Discounts*

RCW 86.12

- *To provide regional consistency in floodplain management programs within a planning area.*



The Planning Process



The Steering Committee

- A 19-member, stakeholder Steering Committee has been integral to the planning process.
- Made up of governmental and non-governmental members with a stake in flood risk reduction within Chelan County.
- Met 11 times from July 2015 through September 2016.
- Oversaw the development of key planning milestones (Vision, Goals, objectives, alternatives, public engagement strategy)



Name	Title	Jurisdiction/Agency
Dan Frazier (Chair)	Director of Public Works	City of Wenatchee
Bob Whitehall (Vice-Chair)	Consultant	City of Entiat
Eric Pierson	FCZD Administrator	Chelan County Public Works
Jason Detamore	Environmental Manager	Chelan County Public Works
Doug Lewin	Floodplain Administrator	Chelan County Community Development
Herb Amick	Director of Public Works	City of Leavenworth
Jason Peterson	Engineering/Minerals Staff Officer	U.S. Forrest Service
Robert Goedde	Mayor	City of Chelan
Mike Cooney	Mayor	City of Chelan
Michael Cushman	Resource Specialist	Cascadia Conservation District
Michelle Gilbert	Floodplain Management Specialist	WA Department of Ecology
David Morgan	Executive Director	Chelan-Douglas Land Trust
Kent Sisson	Sergeant	Chelan County Emergency Management
Katherine Rowden	Service Hydrologist	National Weather Service
David Toften	Hydraulics Engineer	WA Department of Transportation
Tim Larson	Real Estate Manager	Chelan PUD
Mark Botello	Planning Director	City of Cashmere
Aaron Young	Citizen	
Phylisha Olin	Citizen	



Public Outreach Strategy

- The Public has had access to all phases of the plan's development:
 - Website- <http://www.co.chelan.wa.us/flood-control-zone-district>
 - All SC meetings open to the public and advertised as such
 - Survey- received over 200 surveys
 - Press coverage- Cashmere Valley record and Wenatchee World



The Plan Layout

- The plan has been segregated in to 3 parts:
 - Part 1- Planning process and project Background
 - Part 2-Risk Assessment
 - Part 3- Mitigation Strategy



Part I-Planning Process and Project Background

- Chapter 1-Introduction
- Chapter 2- Plan development methodology
- Chapter 3- Chelan County profile
- Chapter 4- relevant programs and regulations
- Chapter 5- regional consistency



Part II-Risk Assessment

- Chapter 6- Risk Assessment Methodology
- Chapter 7- Chelan County Flood Hazard profile
- Chapter 8- Flood Hazard Exposure
- Chapter 9- Flood Hazard Vulnerability
- Chapter 10- Climate Change Considerations for Flood Hazard management



Part III- Mitigation Strategy

- Chapter 11-Mission Statement, Goals and Objectives
- Chapter 12- Policies
- Chapter 13- Mitigation Actions
- Chapter 14- Plan Adoption
- Chapter 15- Plan Maintenance Strategy



County-wide Risk Assessment

- Key component of CFHMP
- Comprehensive Flood Hazard Risk Assessment is the cornerstone of the plan
- Looks at Riverine, Alluvial Fan, Post-fire, Channel migration flood hazards.
- Quantitative assessment using National BMP's (Hazardus-MH)



100 Year Flood Depth (Feet) High : 22.19 Low : 0
 Basemap Data Provided by ESRI
 0 0.25 0.5 1 Miles

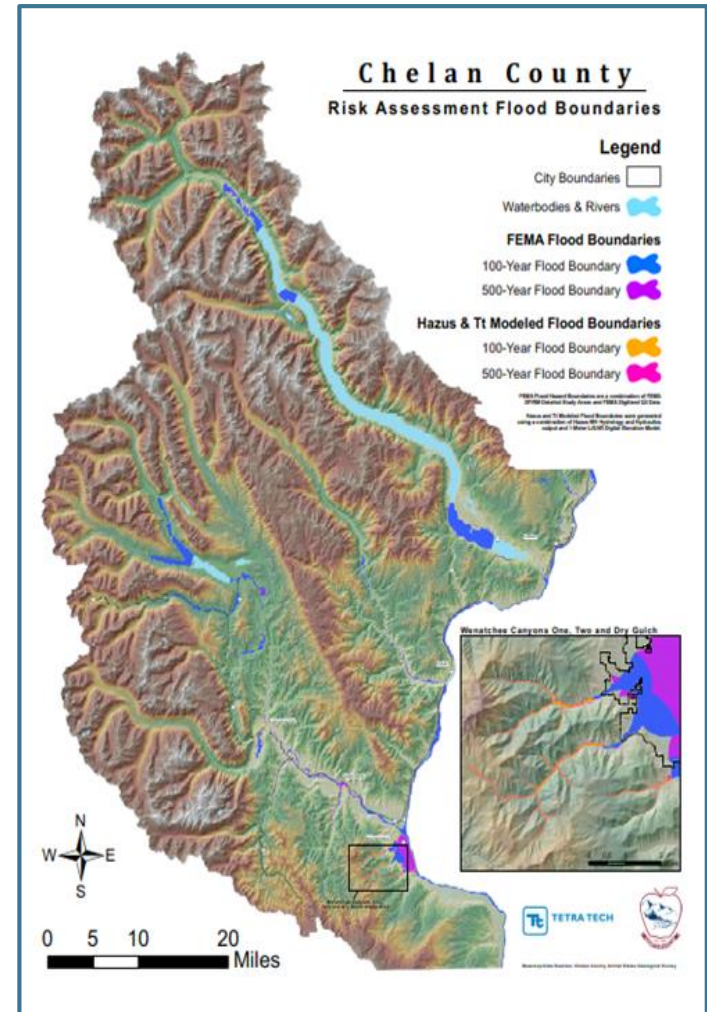


Legend
 FEMA DFIRM 100-Year Flood Boundary HAZUS and T1 Generated 100-Year Flood Boundary
 FEMA DFIRM 500-Year Flood Boundary HAZUS and T1 Generated 500-Year Flood Boundary
 0 0.25 0.5 1 Miles



Risk Assessment Results

- Three floodplains were analyzed:
 - *FEMA 100-year*
 - *FEMA 500-year*
 - *Hazus generated (Canyons)*
- Flood Depth Grid analysis
- USACE Damage functions



Risk Assessment Results

- 25,823 Acres of mapped 100-year floodplain
- 3,637 structures exposed to 100-flood
- \$1,123,300,222 in exposed value to 100-year flood
- \$128,499,762 in estimated damages from 100-year
- \$912,880,022 in estimated damages from 500-year
- Over 6,500 displaced population (100-year)
- 5,946 needing short term shelters
- Over 15,000 tones of debris could be generated by a 100-year flood



Policies

- The plan identifies 40 policies that have been broken down in to the following 6 categories:
 1. *General*
 2. *Flood Hazard Area Land Use*
 3. *Flood Risk Reduction*
 4. *River Channel Maintenance*
 5. *Flood Warning and Emergency Response*
 6. *Funding and Financing*
- These policies also provide guidance for decision-making at the program and project level and define the level of discretion Chelan County has available in flood management decisions.



General Policies

- G-1-Qualify Flood Events
- G-2- Flood Hazard Risks
- G-2- Flood Hazard Management Actions
- G-4- Inter-Governmental Coordination and Cooperation
- G-5-Intra-Governmental Coordination and Cooperation
- G-6- Multi-Objective Management
- G-7- Protecting Natural Functions and Values
- G-8-Technical and Planning Assistance
- G-9- Cities Subject to Consistency Evaluation
- G-10- Standards for Consistency Evaluation
- G-11- Consistency Evaluation
- G-12-National Flood Insurance Program



Flood Hazard Area Land Use Policies

- FLU-1: Future Conditions
- FLU-2: Channel Migration Hazard Areas
- LU-1: Subdividing Property
- LU-2: Compensatory Storage
- LU-3: Base Flood Depth and Base Flood Velocity
- LU-4: Development in Flood Hazard Areas
- LU-5: Utilities
- LU-6: Anchoring Structures
- LU-7: Critical Facilities



Flood Risk Reduction Policies

- FRR-1: Criteria for Taking Action
- FRR-2: Selecting Flood Risk Reduction Actions
- FRR-3: Property Acquisition
- FRR-4: Easements
- FRR-5: Management of Chelan County Properties
- FRR-6: Flood Facility Design and Maintenance Objectives
- FRR-7: Monitoring and Adaptive Management



River Channel Maintenance Policies

- CM-1: When to Remove, Reposition or Relocate Large Woody Debris
- CM-2: Relocation of Large Woody Debris
- CM-3: Comprehensive Sediment Management
- CM-4: Gravel Removal



Flood Warning and Emergency Response Policies

- FW-1: County Flood Warning
- FW- 2: Flood Emergency Response and Recovery
- FW-3: Sandbags
- FW-4: Agency Coordination
- FW-5: Emergency Response Actions



Funding and Financing Policies

- FF-1: Designated Emergency Fund Balance
- FF-2: Regional Funding
- FF-3: Grant Funding



The Action Plan

- An action plan that identifies 37 actions has been assembled
- Actions cover 6 mitigation categories that include:
 1. *Prevention*
 2. *Property Protection*
 3. *Public Education*
 4. *Natural Resource Protection*
 5. *Emergency Services*
 6. *Structural projects*
- Each action has been prioritized



Mitigation Categories

1. **Preventive** activities keep flood problems from getting worse. The use and development of flood-prone areas is limited through planning, land acquisition, or regulation. They are usually administered by building, zoning, planning, and/or code enforcement offices.
 - Floodplain mapping and data
 - Open space preservation
 - Floodplain regulations
 - Coastal setback/erosion regulations
 - Planning and zoning
 - Stormwater management
 - Drainage system maintenance
 - Building codes
2. **Property protection** activities are usually undertaken by property owners on a building-by-building or parcel basis.
 - Relocation
 - Acquisition
 - Building elevation
 - Retrofitting
 - Sewer backup protection
 - Insurance
3. **Natural resource protection** activities preserve or restore natural areas or the natural functions of floodplain and watershed areas. They are implemented by a variety of agencies, primarily parks, recreation, or conservation agencies or organizations.
 - Wetlands protection
 - Erosion and sediment control
 - Natural area preservation
 - Natural area restoration
 - Water quality improvement
 - Coastal barrier protection
 - Environmental corridors
 - Natural functions protection
4. **Emergency services** measures are taken during an emergency to minimize its impact. These measures are usually the responsibility of city or county emergency management staff and the owners or operators of major or critical facilities.
 - Hazard threat recognition
 - Hazard warning
 - Hazard response operations
 - Critical facilities protection
 - Health and safety maintenance
 - Post-disaster mitigation actions
5. **Structural projects** keep flood waters away from an area with a levee, reservoir, or other flood control measure. They are usually designed by engineers and managed or maintained by public works staff.
 - Reservoirs
 - Levees/floodwalls
 - Diversions
 - Channel modifications
 - Storm drain improvements
6. **Public information** activities advise property owners, potential property owners, and visitors about the hazards, ways to protect people and property from the hazards, and the natural and beneficial functions of local floodplains. They are usually implemented by a public information office.
 - Map information
 - Outreach projects
 - Real estate disclosure
 - Library
 - Technical assistance
 - Environmental education



Questions

