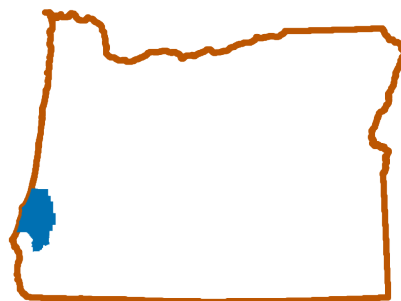




# Coos County

## MULTI-JURISDICTIONAL NATURAL HAZARDS MITIGATION PLAN

- Coos County
- City of Bandon
- City of Coos Bay
- City of Coquille
- City of Lakeside
- City of Myrtle Point
- City of North Bend



- City of Powers
- Port of Coos Bay
- Port of Bandon
- Bay Area Hospital
- Southern Coos Hospital
- Haynes Drainage District



**FEMA**

Effective Month XX, 2023 through Month XX, 2028

The 2023 Coos County Multi-Jurisdictional Hazards Mitigation Plan is a living document that will be reviewed and updated periodically to address the requirements contained in 44 CFR 201. It will be integrated with existing plans, policies, and programs. The Disaster Mitigation Act of 2000 (DMA2K) and the regulations contained in 44 CFR 201 require that jurisdictions maintain an approved mitigation plan in order to receive federal funds for hazard mitigation grants. This plan meets those requirements as evidenced by FEMA approval which is effective per the cover date range of this plan.

**Cover photos:** (clockwise): Allegany landslide (CCEM, 4/4/22), Dec. 2015 Hwy 42 landslide (ODOT, 12/26/15), Jan. 2021 King tide wave at Shore Acres State Park (D. Mueller, 1/13/21), 2022 Coquille R. floodwaters off Hwy 42 (D. Mueller, 1/11/22), Jan. 20, 2022 windstorm impacts, Bandon (Joanne Simon, 1/8/22).

## **Coos County Multi-Jurisdictional Natural Hazard Mitigation Plan Mission:**

*To create a disaster-resilient Coos County.*

Comments, suggestions, corrections, and additions are encouraged to be submitted from all interested parties.

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# Acknowledgements

The 2023 Coos County Natural Hazard Mitigation Plan (NHMP) update was conducted via a multi-jurisdictional partnership of Coos County and the Cities of Bandon, Coos Bay, Coquille, Lakeside, Myrtle Point, North Bend, and Powers, and the special districts of the Port of Coos Bay, the Port of Bandon, the Bay Area Hospital, the Southern Coos Hospital, and the Haynes Drainage District.

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In 2018, the Department of Land Conservation and Development (DLCD) applied for and received FEMA Pre-Disaster Mitigation grant PDMC-PL-10-OR-2018-005 from FEMA through the Oregon Department of Emergency Management (OEM) to assist Coos County.





**FEMA FINAL APPROVAL LETTER**



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# I. RISK ASSESSMENT

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# A. Introduction

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The 2023 Coos County Multi-Jurisdictional Natural Hazard Mitigation Plan (NHMP) applies to Coos County; the cities of Bandon, Coos Bay, Coquille, Lakeside, Myrtle Point, North Bend, and Powers; and the special districts of the International Port of Coos Bay, Port of Bandon, Bay Area Hospital, Haynes Drainage District, and the Southern Coos Hospital. City and District-specific information is called out where relevant. In addition, this chapter can assist with addressing Oregon Statewide Planning Goal 7 – Areas Subject to Natural Hazards.

Risk of natural disaster is defined graphically in the figure below. Ultimately, the goal of hazard mitigation is to reduce the area where hazards and vulnerable systems overlap.

**Figure I-1. Understanding Risk**



Source: Oregon Partnership for Disaster Resilience.

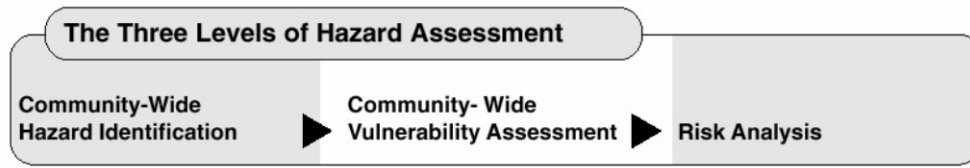
The information presented in the sections below, along with hazard specific information presented in the Natural Hazard chapters and community characteristics presented in the Community Profile, is used to inform the risk reduction actions identified in the Mitigation Strategy.

## What is a Risk Assessment?

A risk assessment consists of three phases: hazard identification, vulnerability assessment, and risk analysis. This three-phase approach to developing a risk assessment should be conducted sequentially because each phase builds upon data from prior phases. However, gathering data for a risk assessment need not occur sequentially. The following figure illustrates the three-phase risk assessment process:



**Figure I-2. Three Phases of a Risk Assessment**



Source: Planning for Natural Hazards: Oregon Technical Resource Guide, 1998

- Phase 1: Identify hazards that can impact the jurisdiction. This includes an evaluation of potential hazard impacts – type, location, extent, etc.
- Phase 2: Identify important community assets and system vulnerabilities. Example vulnerabilities include people, businesses, homes, roads, historic places and drinking water sources.
- Phase 3: Evaluate the extent to which the identified hazards overlap with, or have an impact on, the important assets identified by the community.

## Hazard Identification

Coos County identifies ten natural hazards that could have an impact on Coos County and each of the participating jurisdictions. Summary information for each hazard is presented below; additional information pertaining to the types and characteristics of each hazard is available in the State of Oregon Natural Hazard Mitigation Plan Region 1 Risk Assessment. The table below lists the hazards identified in the county in comparison to the hazards identified in the State of Oregon NHMP for Coastal Oregon (Region 1), which includes Coos County.

**Table I-1. Hazards: Coos County NHMP vs. Oregon NHMP**

Coos County Hazards 2023	Oregon Coast Region 1 Hazards 2020
Coastal Erosion	Coastal Hazards*
Drought	Droughts
Earthquake	Earthquakes
--	Extreme Heat
Flood	Floods
Dam Failure	Dam Safety
Landslide	Landslides
Tsunami	Tsunamis
--	Volcanoes
Wildfire	Wildfires
Wind Storm	Windstorms
Winter Storm	Winter Storms

\*In the Oregon NHMP, Coastal Hazards include Coastal Erosion (short/long term), Landslides, Earthquakes, and Tsunami.  
 Source: Coos County NHMP Steering Committee (2021) and State of Oregon (Draft) NHMP, Region 1: Coastal Oregon (2020).

## DOGAMI Natural Hazard Risk Report for Coos County, Oregon

*Open-File Report O-21-04, Natural Hazard Risk Report for Coos County, the cities of Bandon, Coos Bay, Coquille, Lakeside, Myrtle Point, North Bend, and Powers, and the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians and the Coquille Indian Tribe, and the Unincorporated Communities of Bunker Hill, Charleston, Glasgow, Green Acres, Hauser, and Millington. 2021. By Matt C. Williams, Ian P. Madin, Lowell H. Anthony, and Fletcher E. O'Brien of the Oregon Department of Geology and Mineral Industries: Portland, OR.*

The DOGAMI Natural Hazard Risk Report for Coos County was developed by the Oregon Department of Geology and Mineral Industries (DOGAMI) in 2018 and was formally published in 2021. It includes the cities of Bandon, Coos Bay, Coquille, Lakeside, Myrtle Point, North Bend, and Powers, and the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians and the Coquille Indian Tribe, and the Unincorporated Communities of Bunker Hill, Charleston, Glasgow, Green Acres, Hauser, and Millington. Matt C. Williams, Lowell H. Anthony, and Fletcher O'Brien. As such, it will be cited with the authors' names and the publication date: Williams et al, 2021.

The purpose of this project is to provide communities in Coos County detailed risk assessments of natural hazards that affect them and to enable communities to compare hazards and act to reduce their risk. The risk assessments contained in this project quantify the impacts of natural hazards to these communities and enhance the decision-making process in planning for disaster. (Williams et al, 2021.)

The Natural Hazard Risk Report for Coos County will be the principal risk assessment reference for the 2023 plan update. The primary findings and conclusions of this project are included by hazard below. The map plates associated with the project are available online with the report download as is a story map of the hazards.

The following table clarifies which hazards and which community areas are evaluated in the Risk Report.

**Table I-2. Hazards Analysis Extent of DOGAMI Risk Report for Coos County**

Communities	Coastal Erosion	Drought	Earthquake	Flood	Landslide	Tsunami	Wildfire	Windstorm
Unincorporated Coos County			X	X	X	X	X	
Unincorporated Communities: Bunker Hill Charleston Glasgow Green Acres Hauser Millington			X	X	X	X	X	
City of Bandon			X	X	X	X	X	
City of Coquille			X	X	X	X	X	
City of Coos Bay			X	X	X	X	X	
City of Lakeside			X	X	X	X	X	
City of Myrtle Point			X	X	X	X	X	
City of North Bend			X	X	X	X	X	
City of Powers			X	X	X	X	X	
Port of Bandon								
Port of Coos Bay								
Southern Coos Hospital District								
*Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians			X	X	X	X	X	
*Coquille Indian Tribe			X	X	X	X	X	

Source: Williams et al, 2021.

## Federal Disaster Declarations

Reviewing past events can provide a general sense of the hazards that have caused significant damage in the county. Disaster trends indicated by declarations can help inform hazard mitigation project priorities. President Dwight D. Eisenhower approved the first federal disaster declaration in May 1953 following a tornado in Georgia. Since then, federally declared disasters have been approved within every state as a result of natural hazard related events. As of April 2021, FEMA has approved a total of 38 major disaster declarations, four emergency declarations, and 57 fire management assistance declarations in Oregon (sixteen occurring in 2020). When governors ask for presidential declarations of major disaster or emergency, they stipulate which counties in their state they want included in the declaration based on data and coordination provided by county emergency management staff.

Table I-2 summarizes the major disasters declared in Oregon that affected Coos County since 1955. Coos County has had fourteen major disaster declarations, two since the last plan update (COVID-19 and 2020 wildfires/wind event). Eleven of these were related to severe wind or storm events resulting primarily in flooding, landslides, and wind damage. One declaration was related to a distant tsunami event triggered by the 2011 Tohoku Earthquake in Japan.

**Table I-3. Declared Disasters in Coos County**

Number	Date Declared	Incident Date	Incident	Individual Assistance	Public Assistance (PA) Categories
DR-4562	9/15/2020	9/7/2020-11/3/2020	Oregon wildfires, straight-line winds	None	B only
DR-4499	3/28/2020	1/20/2020-continuing	COVID-19 pandemic	Yes	B only
DR-4432	5/2/2019	2/23/2019-2/26/2019	Severe winter storms, flooding, landslides, mudslides	None	A, B, C, D, E, F, G
DR-4258	2/17/2016	12/6/2016-12/23/2016	Severe winter storms, straight-line winds, flooding, landslides, mudslides	None	A, B, C, D, E, F, G
DR-4055	3/2/2012	1/17/2012-1/21/2012	Severe storm, flooding, landslides, mudslides	None	A, B, C, D, E, F, G
DR-1964	3/25/2011	3/31/2011	Tsunami wave surge.	None	A, B, C, D, E, F, G
DR-1733	12/8/2007	12/01/2007-12/17/2007	Severe storm, flooding, landslides.	None	A, B, C, D, E, F, G
DR-1632	3/20/2006	12/18/2005-1/21/2006	Severe storm, flooding, landslides.	None	A, B, C, D, E, F, G
EM-3228	9/7/2005	8/29/2005-10/1/2005	Hurricane Katrina evacuation	None	B only
DR-1405	3/12/2002	2/7/2002-2/8/2002	Severe windstorm	None	A, B, C, D, E, F, G
DR-1160	1/23/1997	12/25/1996-1/6/1997	Severe storm, flooding	Yes	A, B, C, D, E, F, G
DR-1099	2/9/1996	2/4/1996-2/21/1996	Severe storm, flooding	Yes	A, B, C, D, E, F, G
DR-413	1/25/1974	1/25/1974	Severe storm, flooding	Yes	A, B, C, D, E, F, G
DR-184	12/24/1964	12/24/1964	Heavy rains, flooding	Yes	A, B, C, D, E, F, G

FEMA. (2021).

## B. Community Profile

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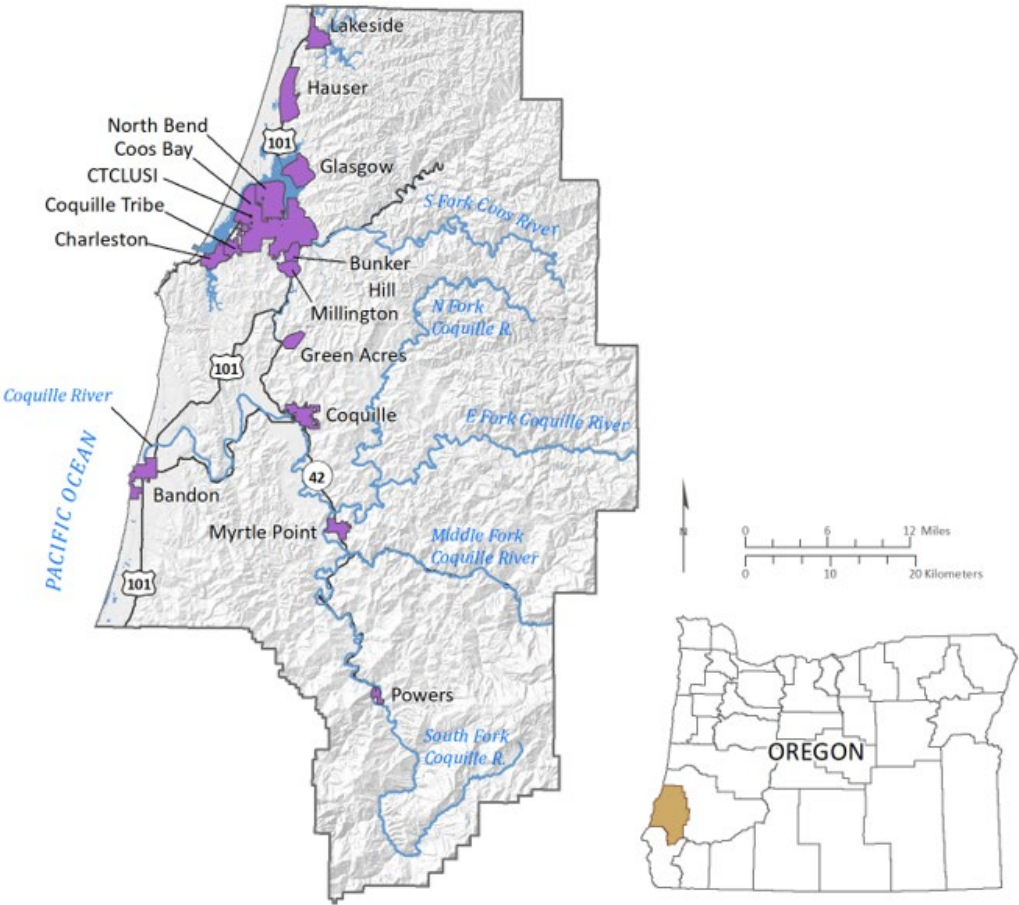


# Geography

Covering 1,596 square miles, Coos County, Oregon is bordered by Douglas County, Oregon and Curry County, Oregon. Of Oregon’s thirty-six counties, Coos County is the 23rd-largest county by area. There are seven cities and five special districts addressed in this Natural Hazard Mitigation Plan update.

Coastal geography of this region consists of rocky and irregular shores and dune-backed beaches, estuarine areas, and coastal lowlands. The heavily timbered interior of the county is very rugged and is comprised of portions of the Oregon Coast Range which transitions to the Klamath Mountains in the southern half of the county.

Figure I-3. Map of Coos County

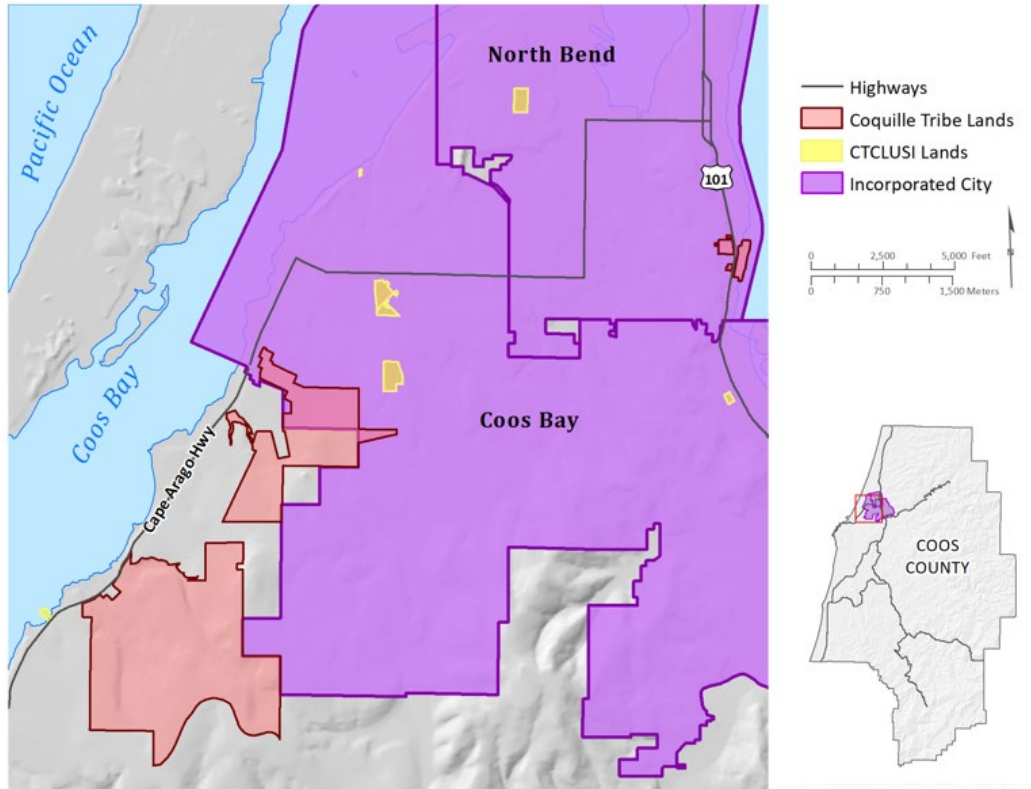


Source: Williams et al, 2021

The Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians (“CTCLUSI”) and the Coquille Indian Tribe are two federally recognized tribes and communities within the study area. The areas that comprise the tribal lands used in the analyses are made up of several noncontiguous areas within Coos County. The cities of Coos Bay and North Bend have tribal lands adjacent to and within.

**Figure I-4. Tribal Lands map**

**Figure 1-2. Cities of Coos Bay and North Bend with overlapping tribal lands.**



Source: Williams et al, 2021

## Environment

Coos County has a unique geography and climate that features many rivers and streams, the largest estuary on the Oregon Coast, many inland coastal lakes, and low-elevation Coast Range forests that are some of the most productive in the world. The capacity of the natural environment is essential in sustaining all forms of life including human life, yet it often plays an underrepresented role in community resiliency to natural hazards. The natural environment includes land, air, water and other natural resources that support and provide space to live, work and recreate. Natural capital such as wetlands and forested hill slopes play significant roles in protecting communities and the environment from weather-related hazards, such as flooding and landslides. When natural systems are impacted or depleted by human activities, those activities can adversely affect community resilience to natural hazard events.

### Environmental Vulnerabilities

- Environmental assets, particularly those along the coastal margin, are vulnerable to sea level rise, salt water intrusion and ocean acidification. Changes in these categories are largely being driven by changes in global temperature and climate regimes.
- Higher sea levels and more powerful storms will alter coastal shorelines, shorelands and estuaries. Increased wave heights and storm surges can also lead to loss of natural buffeting functions of beaches, tidal wetlands and dunes.
- Forest ecosystems are also vulnerable to drought, wildfire and severe storm impacts.

## Population

The socio-demographic qualities of a community can influence the community’s ability to cope, adapt to and recover from natural disasters. Population demographics such as age, disability, income, veteran status, language, race and ethnicity, and educational attainment can indicate the type of help that is needed or the resources a community has to build resilience. Historically, a lack of support for people in need in a disaster has put the burden of meeting these needs on those at risk. Population vulnerabilities can be reduced or eliminated with proper outreach and community mitigation planning.

In 2022, the population of Coos County was 65,215. The 2022 proposed population forecast for the incorporated communities in Coos County were Bandon (3,678), Coos Bay (16,044), Coquille (4,376), Lakeside (1,918), Myrtle Point (3,548), North Bend (10,439), and Powers (718). The proposed population forecast for areas outside of urban growth boundary of the cities was 24,494 (PSU PRC, 2022). In Oregon, the Portland State University’s Population Research Center analyzes US Census Data and makes statistical analyses to inform community planning. The most recent report is titled the Coordinated Population Forecast 2022 through 2027: Coos County Urban Growth Boundaries (UGBs) & Area Outside UGBs. The statistical analysis used creates estimates that are the most accurate representation of the US Census survey data. For detail of county population; births and deaths; migration; age structure; and race/ ethnicity, see the full report.

**Table I-4. Total Projected Population Coos County 2022-2072**

<b>Total Population</b>							
<b>Area / Year</b>	<b>2022</b>	<b>2030</b>	<b>2040</b>	<b>2050</b>	<b>2060</b>	<b>2070</b>	<b>2072</b>
Coos County	65,215	65,267	65,046	65,528	66,234	66,949	67,093
Bandon	3,678	3,867	4,195	4,787	5,468	6,235	6,400
Coos Bay	16,044	16,256	16,397	16,625	16,887	17,124	17,169
Coquille	4,376	4,305	4,209	4,174	4,147	4,113	4,106
Lakeside	1,918	2,005	2,079	2,135	2,197	2,257	2,269
Myrtle Point	3,548	3,449	3,326	3,256	3,193	3,127	3,113
North Bend	10,439	10,720	10,956	11,190	11,449	11,695	11,742
Powers	718	697	684	701	720	738	742
Outside UGB Area	24,494	23,967	23,201	22,659	22,172	21,659	21,553

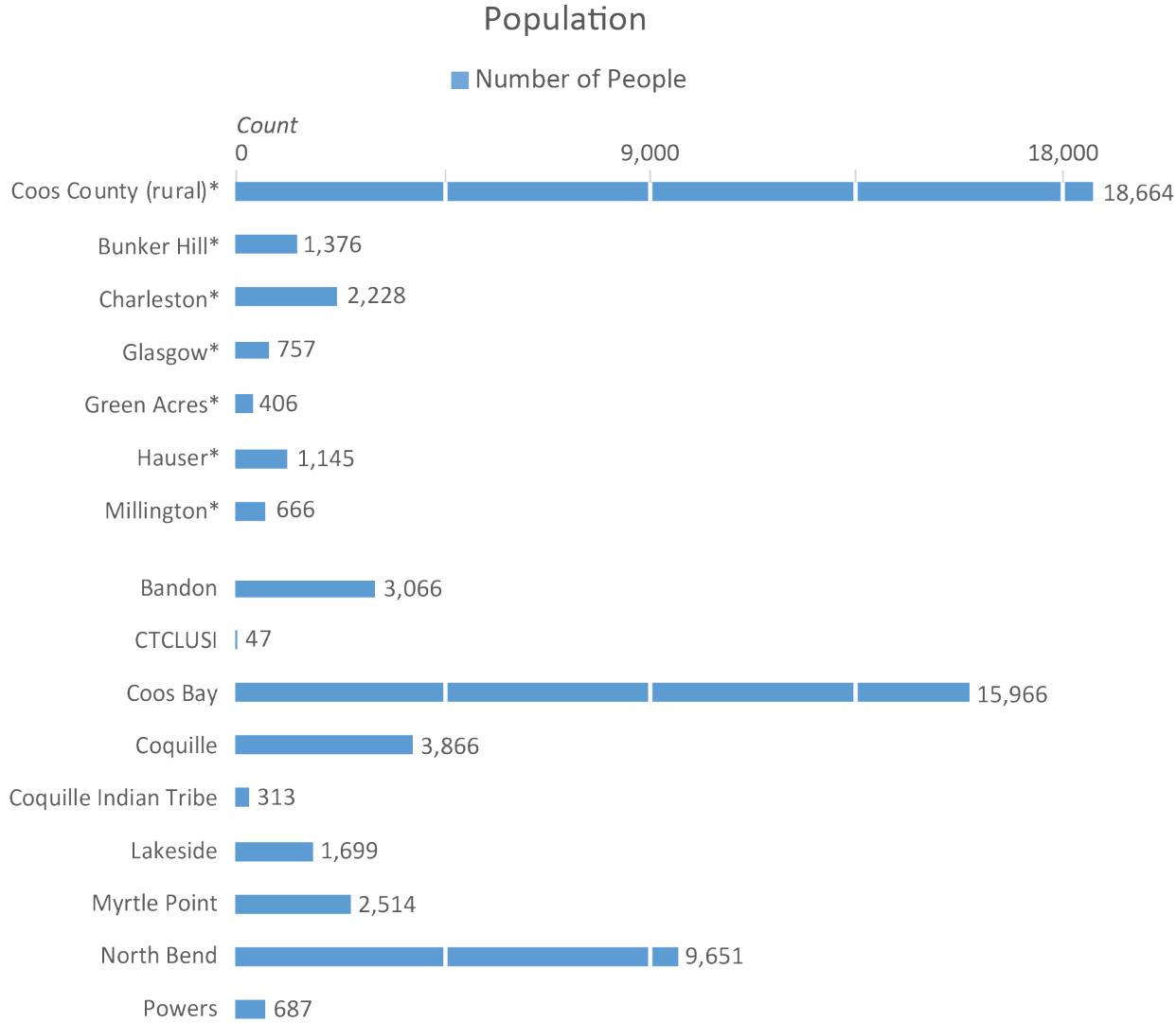
Source: PSU PRC, 2022. Proposed Population Forecast Note: All UGBs are referred using their city names.

**Table I-5. Broad Age Group Population Estimate, 2021**

	<b>Total Population</b>	<b>Ages 0-17</b>	<b>Ages 0-17 % of Total Population</b>	<b>Ages 18-64</b>	<b>Ages 18-64 % of Total Population</b>	<b>Ages 65 and over</b>	<b>Ages 65 and over as % of Total Population</b>
<b>OREGON</b>	4,266,560	861,013	20.2	2,596,204	60.9	809,343	18.9
<b>COOS</b>	65,154	11,792	18.1	35,139	53.9	18,223	28.0

Source: PSU PRC, 2021.

**Figure I-5. Total Population by Coos County Community, 2010**



\*Unincorporated

Source: Williams et al, 2021; US Census 2010.

**Population Vulnerabilities**

Some individuals and groups within the population in Coos County may face more challenges than others when exposed to the hazards addressed in this mitigation plan. It is recommended that local jurisdictions work to refine their understanding and approach to these potential needs by working with community-based organizations to provide services. A list of community organizations follows this section.

- In 2022, the 50-64 age group is projected to continue aging forward while the youngest age groups are expected to decline in shares. Moving forward, the age structure in the county is projected to have larger middle-age and old-age population than younger population (PSU PRC, 2022).

- 18.4% of the population was under the age of 18 years old for the period 2016-2020. Consideration should be given to the needs of parents, teachers, and others who work with children daily as well as how equipped schools and day cares may be in the event of a disaster.
- Nearly 50% (48.8%) of renter households during the period 2016-2020 spent more than 30% of their income on rent and utilities.
- 5.3% of the population speaks a language other than English in the home (for the period 2016-2020).
- 16.1% of the population lived below the poverty line during the period 2016-2020 in Coos County.

Table I-6. Population, Housing, Social and Economic Profile Coos County, Oregon

**Population, Housing, Social and Economic Profile  
Coos County, Oregon**

	2011-2015			2016-2020			Compare Statistically Different?
	Estimate	CV *	Margin of Error (+/-)	Estimate	CV *	Margin of Error (+/-)	
<b>POPULATION</b>							
Total population	62,775	●	*****	64,175	●	*****	**
Percent under 18 years	18.6%	●	0.1%	18.4%	●	*****	**
Percent 65 years and over	23.3%	●	0.2%	25.9%	●	0.2%	**
Median age (years)	48.1	●	0.3	48.7	●	0.3	**
Percent white alone, non-Latino	85.8%	●	0.3%	84.7%	●	0.3%	**
<b>HOUSING</b>							
Total housing units	30,482	●	94	31,246	●	83	**
Occupied housing units	25,888	●	565	27,819	●	496	**
Owner occupied	16,831	●	573	19,009	●	634	**
Percent owner-occupied	65.0%	●	2.0%	68.3%	●	2.1%	**
Renter occupied	9,057	●	586	8,810	●	629	
Vacant housing units***	4,594	●	576	3,427	●	495	**
Vacancy rate	15.1%	●	1.9%	11.0%	●	1.6%	**
Average household size	2.38	●	0.05	2.27	●	0.04	**
Renter households paying more than 30 percent of household income on rent plus utilities	54.5%	●	4.5%	48.8%	●	5.1%	
<b>SOCIAL</b>							
Age 25+ with a bachelor's degree or higher	18.3%	●	1.5%	19.9%	●	1.8%	
Foreign-born population	2,234	●	390	2,372	●	368	
Percent foreign-born	3.6%	●	0.6%	3.7%	●	0.6%	
Age 5+ language other than English at home	3,074	●	423	3,244	●	444	
Percent language other than English	5.2%	●	0.7%	5.3%	●	0.7%	
<b>ECONOMIC</b>							
Median household income (2020 dollars)	\$42,179	●	\$1,579	\$49,445	●	\$3,052	**
Per capita income (2020 dollars)	\$24,765	●	\$1,261	\$30,720	●	\$1,855	**
Percent of persons below poverty level	18.3%	●	1.8%	16.1%	●	1.8%	

\* Green, yellow, and red icons indicate the reliability of each estimate using the coefficient of variation (CV). The lower the CV, the more reliable the data. High reliability (CV <15%) is shown in green, medium reliability (CV between 15-30% - be careful) is shown in yellow, and low reliability (CV >30% - use with extreme caution) is shown in red. However, there are no absolute rules for acceptable thresholds of reliability. Users should consider the margin of error and the need for precision.

\*\* Indicates that the two estimates are statistically different based on results of z-test taking into account the difference between the two estimates as well as an approximation of the standard errors of both estimates.

\*\*\* Vacant units include those for sale or rent, those sold or rented but not yet occupied, those held for seasonal, recreational, or occasional use, as well as other vacant such as homes under renovation, settlement of an estate, or foreclosures.

\*\*\*\*\* Indicates that the estimate is controlled. A statistical test for sampling variability is not appropriate.

Source: U.S. Census Bureau, American Community Survey 5 year estimates. Surveys are collected over a 60 month period. Estimates represent average characteristics over the entire period. Tabulated by Population Research Center, Portland State University, with additional calculations from source data as needed.

Community Organizations

**Table I-7. Community Organizations**

Name and Contact Information	Description	Service Area	Populations Served							Involvement with Natural Hazard Mitigation
			Businesses	Children	Disabled	Seniors	English Second Language	Families	Low Income	
4-H Club/ OSU Extension Coos County 631 Alder St Myrtle Point, OR 97458 541-572-5263	Strengthening our community through trusted relationships, fostering youth skills, sustaining natural resources, building a community of health, enhancing farming and forestry practices, developing marine fisheries initiatives, and creating practical solutions for a thriving community.	Coos County	X	X					X	
Aging & People with Disabilities (APD) 2675 Colorado Ave North Bend, OR 97459 541-756-2017					X	X				X
Alternative Youth Activities 575 S Main St Coos Bay, OR 97420 541-888-2432				X					X	
American Red Cross 2520 Broadway Ave, North Bend, OR 97459 541-344-5244				X			X	X	X	
Bandon Youth Center 101 11th St Bandon, OR 97411 541-347-8336				X			X	X	X	

Name and Contact Information	Description	Service Area	Populations Served							Involvement with Natural Hazard Mitigation
			Businesses	Children	Disabled	Seniors	English Second Language	Families	Low Income	
Bay Area Senior Center 886 S 4th St Coos Bay, OR 97420 541-269-2626					X	X	X	X	X	
Boys & Girls Club (SWOYA) 3333 Walnut Ave or PO Box 1082 Coos Bay, OR 97420 541-267-3635 541-266-0844				X			X	X	X	
Coos County Veterans Services Office 217 N Adams St Coquille, OR 97423 541-294-8471			X		X	X	X	X	X	
Coos Curry County Agency on Aging 93781 Newport Coos Bay, OR 97420 541-269-2013					X	X			X	
The Coos Drop 1960 Sherman Ave North Bend, OR 97459 541-521-0043 971-334-9295 activatethe@youthera.org	The Coos Drop is staffed by Youth Peer Support Specialists who are committed to helping young adults empower themselves and successfully transition into adulthood.			X			X	X	X	

Name and Contact Information	Description	Service Area	Populations Served							Involvement with Natural Hazard Mitigation
			Businesses	Children	Disabled	Seniors	English Second Language	Families	Low Income	
Coos Forest Protective Association (CFPA) CFPA Headquarters 63612 Fifth Road Coos Bay, OR 97420 541-267-3161	Private, nonprofit corporation that provides protection from fires on 1.5 million acres of private, county, state, and Bureau of Land Management timber and grazing lands in Coos, Curry, and western Douglas counties.	Coos and Curry Counties	X	X	X	X	X	X	X	Participate in mitigation efforts
Coos Health & Wellness 281 LaClair Street Coos Bay, OR 97420 541-266-6700 <a href="https://cooshealthandwellness.org/community-resources/senior-services/">https://cooshealthandwellness.org/community-resources/senior-services/</a>				X	X	X	X	X	X	
Devereux Center 1200 Newmark Ave Coos Bay, OR 97420 541-888-3202 <a href="mailto:info@thedevereuxcenter.org">info@thedevereuxcenter.org</a>	The Devereux Center offers support systems and advocacy for the homeless, those suffering from mental illness, and veterans.				X	X			X	
Kairos Coastline Services 1913 Meade Avenue North Bend, OR 97459 541-756-4508	Kairos collaborates with young people, families, and communities across Oregon to provide intensive mental health services and instill hope.			X				X		
Kids' HOPE Center 1925 Thompson Rd Coos Bay, OR 97420 541-266-8806	Services for foster youth.			X			X	X		



Name and Contact Information	Description	Service Area	Populations Served							Involvement with Natural Hazard Mitigation	
			Businesses	Children	Disabled	Seniors	English Second Language	Families	Low Income		
Maslow Project 755 S 7th St Coos Bay, OR 97420 541-297-4448 (drop-in M-W 1:30-4pm)	Outreach for homeless youth.			X				X		X	
Newmark Family Center/ Care Connections 1988 Newmark Ave. Coos Bay, OR 97420 541-888-7957 800-611-7555	Our Family Center provides young children and their families with a nurturing, supportive environment that fosters their love of learning and their development as happy, healthy, responsible human beings who can achieve their fullest potential in society.			X				X	X	X	
North Bend Senior Center 1470 Airport Rd North Bend, OR 97459 541-756-7622					X	X			X	X	
Oregon Coast Community Action 1855 Thomas Ave Coos Bay, OR 97420 541-435-7080	Oregon Coast Community Action (OR-CCA), is a private non-profit organization that provides Meals on Wheels, children’s programs, and emergency services on the Southern Oregon Coast.	Curry and Coos Counties		X	X	X	X	X	X	X	Education and outreach Information dissemination Participate in mitigation efforts
OSU Marine Biology Extension Office			X								

Name and Contact Information	Description	Service Area	Populations Served							Involvement with Natural Hazard Mitigation	
			Businesses	Children	Disabled	Seniors	English Second Language	Families	Low Income		
South Coast Family Harbor Relief Nursery & Baby Closet 250 Hull St or PO Box 413 Coos Bay, OR 97420 541-982-3090	SCFH is dedicated to preventing child abuse and neglect by nurturing successful resilient children, strengthening parents and preserving families.			X				X	X	X	
South Coast Gospel Mission 1999 N. 7 <sup>th</sup> St Coos Bay OR 97420 541-269-5017 gospelmission@frontier.com				X	X	X	X	X	X	X	
Southwestern Oregon Community College, Coos County Campuses	Southwestern Oregon Community College fulfills the educational and cultural needs of our diverse communities by providing equitable access to exceptional teaching and learning in a collaborative, engaging, sustainable environment, which supports innovation, lifelong enrichment, and contribution to global society.	Coos, Curry, and Western Douglas Counties	X		X	X	X	X	X	X	Education and outreach Information dissemination Participate in mitigation efforts
United Way of Southwestern Oregon			X	X	X	X	X	X	X	X	

## Economy

Economic diversification, employment and industry are measures of economic capacity. However, economic resilience to natural disasters is far more complex than merely restoring employment or income in the local community. Building a resilient economy requires an understanding of how the component parts of employment sectors, workforce, resources and infrastructure are interconnected in the existing economic picture. The current and anticipated financial conditions of a community are strong determinants of community resilience, as a strong and diverse economic base increases the ability of individuals, families and the community to absorb disaster impacts for a quick recovery.

The largest employment sectors in Coos County are Local Government (20%) and Trade, Transportation, and Utilities (19%) followed by Education and Health Services (12%), Leisure and Hospitality (11%), and Professional and Business Services (11%). The largest revenue sectors in Coos County are Retail Trade (\$716 million), Health Care and Social Assistance (\$329.8 million), Manufacturing (\$279.1 million) and Wholesale Trade (\$260.8 million). The Education and Health Services sector is expected to have the most employment growth from 2012 to 2022 at 17%. Natural Resources and Mining and Leisure and Hospitality are the next closest growth sectors, with both projecting 9% growth from 2012 to 2022.

## Employment

In 2021, the State of Oregon Employment Department reported an annual average of 22,380 persons in the civilian labor force in Coos County. The major sectors of employment included:

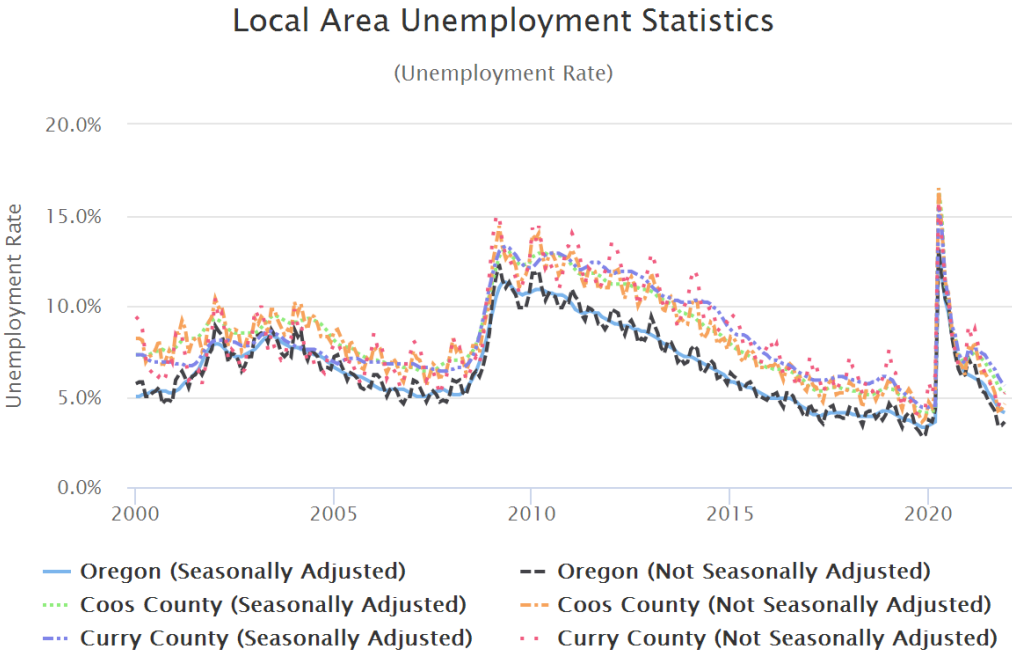
**Total nonfarm employment:** 22,380 (same when seasonally adjusted)

- Total private: 17,300
- Mining, logging, and construction: 1,430
- Manufacturing (wood and food products): 1,550
- Trade, transportation, and utilities: 4,330, of which 3,050 is retail trade
- Leisure and hospitality: 2,930
- Government: 5,090

Coos County unemployment has decreased from 9.9% in 2013 to 5.1% in September 2022. While Oregon lost 285,000 nonfarm payroll jobs from February to April 2020 due to the COVID-19 pandemic, by December 2021, Oregon's unemployment rate was 4.1% and Coos County's was just over 5%, after 20 consecutive months of declines in Oregon's unemployment rate (OED, 2022).

Coos Bay, North Bend, and Coquille City are areas with the highest job counts according to the Census Bureau (PSU PRC, 2022). Coos County median household income was 68% (\$44,698) of the state median (\$65,667) in 2021. Powers had the lowest median income of the incorporated cities at \$34,286. Lakeside, Bandon, Coos Bay, Myrtle Point and Coquille were all below the County median income. North Bend was the only city with a higher median income than the county at \$59,577. In 2013, the housing vacancy rate in Coos County was estimated at just over 10% with one-quarter of the housing units in Powers, one-fifth of the housing units in Myrtle Point and 17% of the units in Coquille were estimated to be vacant; Bandon, Coos Bay, Lakeside and North Bend were all under 10% vacancy. In 2018, of 30,971 total housing units, 4,331 were vacant. The resulting housing unit occupancy rate was 2.3% (owner) and 4.0% (rental) by vacancy rate type—and this 6%+ change reflecting the strong housing market.

**Table I-8. Local Area Unemployment Statistics**



● Source: Oregon Employment Department Qualityinfo.org

Economic Vulnerabilities

Coos County has the third lowest property tax rate in the state at 1.0799 per \$1,000 of assessed value.

Median household income was \$67,521 in 2020, a decrease of 2.9% from the 2019 median of \$69,560. This is the first statistically significant decline in median household income since 2011.

Between 2019 and 2020, the real median earnings of all workers decreased by 1.2%, while the real median earnings of full-time, year-round workers increased 6.9%. The total number of people with earnings decreased by about 3.0 million, while the number of full-time, year-round workers decreased by approximately 13.7 million.

The official poverty rate in 2020 was 11.4%, up 1.0 percentage point from 2019. This is the first increase in poverty after five consecutive annual declines. In 2020, there were 37.2 million people in poverty, approximately 3.3 million more than in 2019.

Private health insurance coverage continued to be more prevalent than public coverage, at 66.5% and 34.8%, respectively. Some people may have more than one coverage type during the calendar year. Of the subtypes of health insurance, employment-based insurance was the most common subtype of health insurance, covering 54.4% of the population for some or all of the calendar year.

Built Environment

For the purposes of the Coos County Natural Hazard Risk Report, DOGAMI created a building inventory consisting of assessor data and building footprints for which a significant portion of Coos County was already available from a previous DOGAMI project (Priest and others, 2013). Building footprints in the database were digitized from high-resolution lidar collected in 2009 (South Coast project, Oregon Lidar

Consortium). This inventory consists of all buildings larger than 500 square feet, as determined from existing building footprints or tax assessor data.

**Table I-9. Coos County Building Inventory**

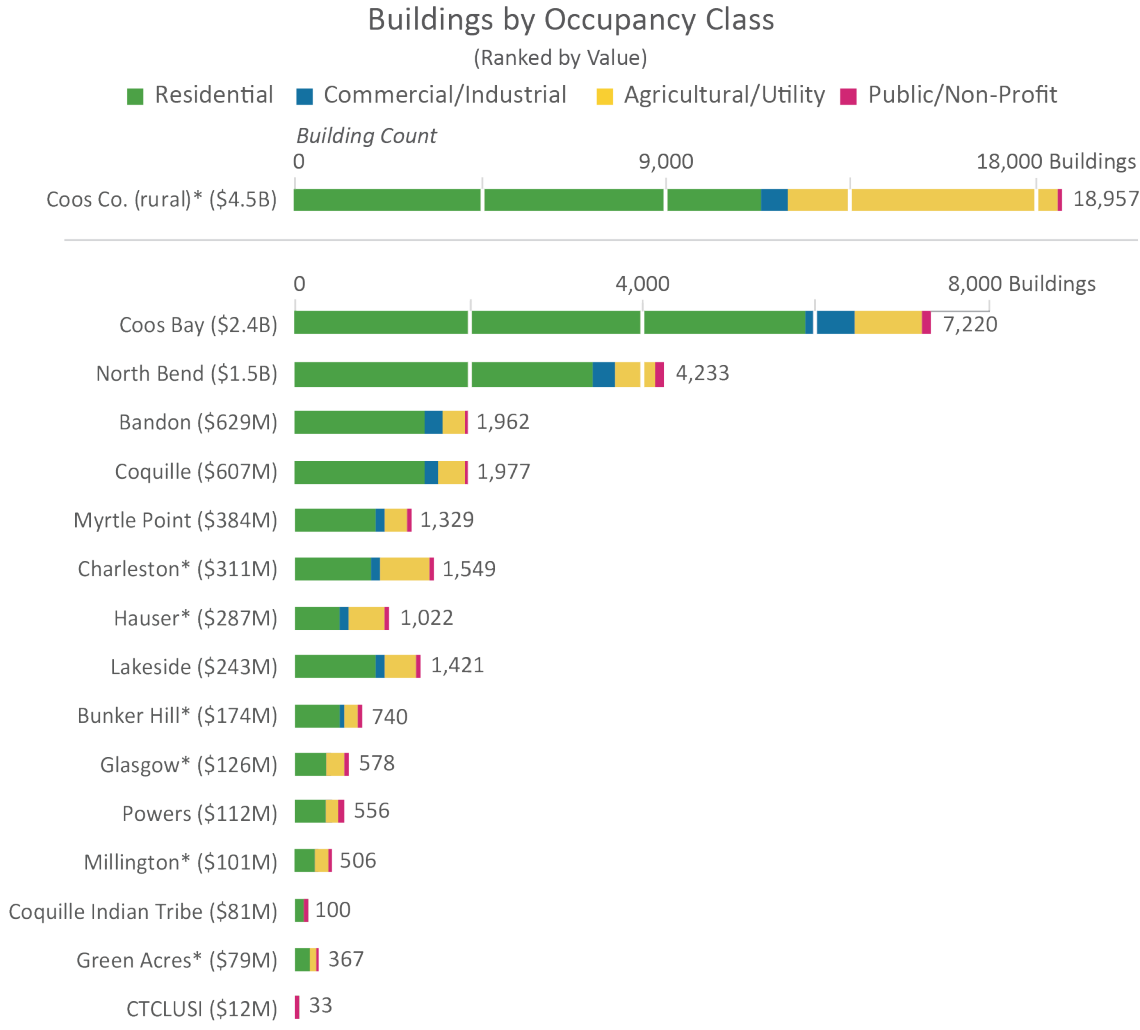
<b>Community</b>	<b>Total Number of Buildings</b>	<b>Percentage of Buildings of Coos County</b>	<b>Total Estimated Building Value (\$)</b>	<b>Percentage of Building Value of Coos County</b>
Unincorp. County (rural)	18,957	45%	4,476,885,000	39%
Bunker Hill	740	1.7%	173,872,000	1.5%
Charleston	1,549	3.6%	310,927,000	2.7%
Glasgow	578	1.4%	125,629,000	1.1%
Green Acres	367	0.9%	79,090,000	0.7%
Hauser	1,022	2.4%	286,877,000	2.5%
Millington	506	1.2%	100,571,000	0.9%
<b>Total Unincorp. County</b>	<b>23,719</b>	<b>56%</b>	<b>5,553,851,000</b>	<b>48%</b>
Bandon	1,962	4.6%	629,445,000	5.5%
CTCLUCCI	33	0.1%	12,470,000	0.1%
Coos Bay	7,220	17%	2,420,579,000	21%
Coquille	1,977	4.6%	606,670,000	5.3%
Coquille Indian Tribe	100	0.2%	80,721,000	0.7%
Lakeside	1,421	3.3%	242,768,000	2.1%
Myrtle Point	1,329	3.1%	383,743,000	3.3%
North Bend	4,233	9.9%	1,494,790,000	13%
Powers	556	1.3%	111,516,000	1.0%
<b>Total Coos County</b>	<b>42,550</b>	<b>100%</b>	<b>11,536,552,000</b>	<b>100%</b>

Building occupancy types were then assigned to each of the buildings in the inventory. The four classes of occupancy are:

- Residential
- Commercial/ industrial
- Agricultural/ Utility
- Public/Non-Profit

The table below shows the buildings by occupancy by community.

**Table I-10. Community Building Value in Coos County**



\*Unincorporated

Source: Williams et al, 2021

Changes in Development

Coos County

Coos County recorded over 637 new private residential building permits between 2002 and 2013.

According to the PSU Population Research Center, a general survey received in 2021 showed “there has been an increase in permits for dwellings, additions, and remodels in addition to a substantial request for RV parks in Coos County compared to previous years. There has also been an increase in permits for dwellings, and an increase in second home ownership, short-term rentals, and primary homeownership. The primary migrating origins for people moving to Coos County are California and other parts of Oregon, and recent wildfires may play a role in people’s decision in moving to the County...” (PSU PRC, 2022) In addition, the following information was collected regarding changes in development from four jurisdictions.

Coos Bay

- Completed Housing Units: 23 units in 2019; 17 units in 2020; 25 units in 2021.
- Lack of housing and lack of affordable housing continue to be a challenge for Coos Bay.
- 400 single unit phased stick-built subdivision/PUD/Lindy Lane & Ocean Blvd. estimated year of completion 2025. 41 multi-unit affordable housing units / Pennsylvania street (not a subdivision) 15-unit Morrison PUD/subdivision 11 new units as a part of a mixed-use project downtown.
- Coos Bay Village, commercial development at 999 Front Street with an estimated 45 jobs 45,000 s.f. commercial development/Hwy 101 & Teakwood, estimated 25 jobs. Newmark new food businesses, (Arby’s, Starbuck, Mod Pizza, & Taco Bell) estimated 60 jobs.
- Wastewater Treatment Plant 1 – Phase 1 Upgrade, Pump Station 6 & 9 Upgrade, 5th & Bennet intersection & storm drain improvements, 9th Avenue/Lagoon Road Rehabilitation, Englewood School Brownfield Remediation, Front Street Brownfield Remediation & Green Parking Lot, Wastewater Treatment Plant 1 Headworks Upgrade, Wastewater Treatment Plant 2 Permanent Chemical Feed System, Pump Station 27 & Force main project, 3rd & Central Green Parking Lot.
- Addition of generous ADU standards Land Use development streamlining processes has been completed in the last two years and minimizes permitting processing time. Expedited development standards to loosen restrictions on new housing & commercial projects. Job creation with these revisions is anticipated.

Port of Coos Bay

- Ongoing discussions regarding wave energy projects off the coast.
- Port of Coos Bay work ongoing to secure a container ship project which could bring 500 construction jobs in two years & result in 200 family wage jobs.

According to PSU Population Research Center, changes to the population of Coos County include two trends. One trend is of people retiring in the area and the other is a new trend of people relocating families to more rural areas. As a result, several cities such as Bandon and Coos Bay are increasing in size, yet growth is constrained in Coos County by high housing costs and a lack of professionals (PSU PRC, 2022).

Housing Characteristics

The metric of ‘year structure built’ is intended to indicate which buildings in the jurisdiction were built to withstand seismic impacts. Seismic building code standards went into effect in Oregon in 1994. The 2018 Census has countywide data available for year structure built, as seen below.

**Table I-11. Year Structure Built, Coos County Housing Units**

	Year Structure Built						Total Units
	2014 or later	2010 to 2013	2000 to 2009	1990 to 1999	1980 to 1989	Before 1970	
Coos County	161	511	3,419	3,323	3,274	20,283	30,971

Source: ACS, 2018

Vulnerabilities

Mobile home and other non-permanent residential structures account for 14.4% of the housing in Coos County. In Lakeside, mobile homes account for over 30% of the housing total. These structures are

particularly vulnerable to certain natural hazards, such as earthquake, tsunami, windstorms and heavy flooding events.

Based on U.S. Census data, only 21% of the residential housing in Coos County was built after the current seismic building standards of 1990. Lakeside and Bandon are notable exceptions at 42% and 39% post 1990 respectively.



## Critical Facilities

For the purposes of the Coos County Natural Hazard Risk Report, DOGAMI used the DOGAMI Statewide Seismic Needs Assessment (SSNA; Lewis, 2007) for critical facilities. The critical facilities attributed include hospitals, schools, fire stations, police stations, emergency operations, and military facilities. Critical facilities are important to note because these facilities play a crucial role in emergency response efforts. Communities that have critical facilities that can function during and immediately after a natural disaster are more resilient than those with critical facilities that are inoperable after a disaster. The table below shows the critical facilities on a community basis.

**Table I-12. Coos County Critical Facilities Inventory**

Community	Hospital & Clinic		School		Police/Fire		Emergency Services		Military		Other*		Total	
	Count	Value (\$)	Count	Value (\$)	Count	Value (\$)	Count	Value (\$)	Count	Value (\$)	Count	Value (\$)	Count	Value (\$)
<i>(all dollar amounts in thousands)</i>														
Unincorp. County (rural)	0	0	0	0	14	17,574	0	0	0	0	7	49,986	21	67,560
Bunker Hill	0	0	1	9,335	0	0	0	0	0	0	0	0	1	9,335
Charleston	0	0	0	0	1	783	0	0	1	3,551	0	0	2	4,333
Glasgow	0	0	0	0	1	1,754	0	0	0	0	0	0	1	1,754
Green Acres	0	0	0	0	1	815	0	0	0	0	0	0	1	815
Hauser	0	0	1	17,261	1	1,886	0	0	0	0	0	0	2	19,147
Millington	0	0	0	0	1	1,099	0	0	0	0	0	0	1	1,099
<b>Total Unincorp. County</b>	<b>0</b>	<b>0</b>	<b>2</b>	<b>26,596</b>	<b>19</b>	<b>23,911</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>3,551</b>	<b>7</b>	<b>49,986</b>	<b>29</b>	<b>104,044</b>
Bandon	1	7,414	3	38,553	2	3,813	0	0	0	0	2	1,024	8	50,804
CTCLUCI	0	0	0	0	0	0	0	0	0	0	1	3,164	1	3,164
Coos Bay	1	32,309	8	104,239	5	16,535	0	0	2	4,846	6	23,977	22	181,906
Coquille	1	7,858	3	44,644	2	3,300	1	2,647	0	0	1	6,424	8	64,872
Coquille Indian Tribe	0	0	0	0	0	0	0	0	0	0	1	3,315	1	3,315
Lakeside	0	0	0	0	1	1,628	0	0	0	0	2	2,476	3	4,103
Myrtle Point	0	0	2	29,743	1	1,882	0	0	0	0	3	3,650	6	35,275
North Bend	0	0	4	75,399	5	9,657	0	0	1	8,782	2	28,906	12	122,745
Powers	0	0	2	9,355	2	1,782	0	0	0	0	0	0	4	11,136
<b>Total Coos County</b>	<b>3</b>	<b>47,581</b>	<b>24</b>	<b>328,529</b>	<b>37</b>	<b>62,508</b>	<b>1</b>	<b>2,647</b>	<b>4</b>	<b>17,179</b>	<b>25</b>	<b>122,921</b>	<b>94</b>	<b>581,365</b>

Note: Facilities with multiple buildings were consolidated into one building.

\*Category includes buildings that are not traditional (emergency response) critical facilities but considered critical during an emergency based on input from local stakeholders (e.g., water treatment facilities or airports).

Source: Williams et al, 2021

There are three general hospitals in the county with 216 beds total.

Southern Coos Hospital located in Bandon

Bay Area Hospital located in Coos Bay

Coquille Valley Hospital in Coquille

## Coos County Critical Facility Inventory

2023 Coos County Natural Hazard Mitigation Plan Jurisdictions

**Table I-13. Critical Facility Inventory, 2023 Plan Jurisdictions**

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
Admin	Bandon City Hall	City of Bandon	541-347-2437	555 Highway 101 Bandon, OR 97411	<a href="https://www.cityofbandon.org/">https://www.cityofbandon.org/</a>
Police Station	Bandon Police Department	City of Bandon	541-347-7922	555 Highway 101 Bandon, OR 97411	<a href="https://www.cityofbandon.org/">https://www.cityofbandon.org/</a>
Utility	Bandon Water/ Waste Water Plants	City of Bandon	541-347-7922	80 Filmore Ave Bandon, OR 97411	<a href="https://www.cityofbandon.org/">https://www.cityofbandon.org/</a>
Public Works	Bandon City Shops	City of Bandon	541-347-7922	455 13 <sup>th</sup> Street SE Bandon, OR 97411	<a href="https://www.cityofbandon.org/">https://www.cityofbandon.org/</a>
Hospital or Clinic	Bay Area Hospital	Bay Area Hospital &/or Bay Area Health District	541-266-7983	1775 Thompson Rd Coos Bay, Oregon 97420	<a href="https://bayareahospital.org/">https://bayareahospital.org/</a>
Hospital or Clinic	Bay Area Hospital - Community Health & Education Center	Bay Area Hospital &/or Bay Area Health District	541-266-7983	3950 Sherman Ave Coos Bay, Oregon 97420	<a href="https://bayareahospital.org/">https://bayareahospital.org/</a>
Hospital or Clinic	Bay Area Hospital – Women’s Imaging Center	Bay Area Hospital &/or Bay Area Health District	541-266-7983	2650 N 17th St Coos Bay, OR 97420	<a href="https://bayareahospital.org/">https://bayareahospital.org/</a>

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
Admin	Coos Bay City Hall	City of Coos Bay	541-269-1191	500 Central Ave Coos Bay, OR 97420	<a href="http://coosbay.org/">http://coosbay.org/</a>
Police Station	Coos Bay Police Department	City of Coos Bay	541-269-8911	500 Central Ave Coos Bay, OR 97420	<a href="http://coosbay.org/departments/police">http://coosbay.org/departments/police</a>
Fire Station	Coos Bay Fire Department - Station 1	City of Coos Bay	541-269-1191	450 Elrod Ave Coos Bay, OR 97420	<a href="http://coosbay.org/departments/fire-department">http://coosbay.org/departments/fire-department</a>
Fire Station	Coos Bay Fire Department - Station 2 Empire	City of Coos Bay	541-269-1191	189 S Wall St Coos Bay, OR 97420	<a href="http://coosbay.org/departments/fire-department">http://coosbay.org/departments/fire-department</a>
Fire Station	Coos Bay Fire Department - Station 3 Eastside	City of Coos Bay	541-269-1191	365 D St Coos Bay, OR 97420	<a href="http://coosbay.org/departments/fire-department">http://coosbay.org/departments/fire-department</a>
Utility	Coos Bay Wastewater Department	City of Coos Bay	541-267-3966	680 Ivy St, Coos Bay, OR 97420	
Utility	Coos Bay Wastewater Plant II - Empire	City of Coos Bay	541-267-3966	Fulton Ave, Coos Bay, OR 97420	
Sheriff's Office	Coos County Circuit Court	Coos County	541- 396-8372	250 N Baxter St Coquille, OR 97423	<a href="https://www.courts.oregon.gov/courts/coos/Pages/default.aspx">https://www.courts.oregon.gov/courts/coos/Pages/default.aspx</a>
Sheriff's Office	Coos County Community Corrections	Coos County	541-396-7700 commcorr@co.coos.or.us	155 N Adams St Ste B, Coquille, OR 97423	<a href="https://www.co.coos.or.us/Community-corrections">https://www.co.coos.or.us/Community-corrections</a>

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
Sheriff's Office	Coos County Juvenile Detention	Coos County	541-396-7880	240 N. Collier Street Coquille, OR 97423	<a href="https://www.co.coos.or.us/juv">https://www.co.coos.or.us/juv</a>
Sheriff's Office	Coos County Sheriff's Office	Coos County	<a href="mailto:emergencymanagement@co.coos.or.us">emergencymanagement@co.coos.or.us</a>	250 N Baxter St Coquille, OR 97423	<a href="https://www.co.coos.or.us/sheriff">https://www.co.coos.or.us/sheriff</a>
EOC	Coos County Emergency Operations Center	Coos County	<a href="mailto:emergencymanagement@co.coos.or.us">emergencymanagement@co.coos.or.us</a>	250 N Baxter St Coquille, OR 97423	<a href="https://www.co.coos.or.us/sheriff/page/emergency-management">https://www.co.coos.or.us/sheriff/page/emergency-management</a>
Hospital or Clinic	Coos Health & Wellness	Coos County	541-266-6774	281 LaClair Street Coos Bay, OR 97420	<a href="https://cooshealthandwellness.org/">https://cooshealthandwellness.org/</a>
Admin	Coquille City Hall	City of Coquille	541-396-2114	851 N. Central Blvd. Coquille, Oregon	<a href="http://www.cityofcoquille.org/">http://www.cityofcoquille.org/</a>
Public Works	Coquille City Shop	City of Coquille	541-396-2114	300 W Main St Coquille, OR 97423	<a href="http://www.cityofcoquille.org/">http://www.cityofcoquille.org/</a>
Police Station	Coquille Police Department	City of Coquille	541-396-2114	851 N Central Blvd Coquille, OR 97423	<a href="http://www.cityofcoquille.org/public_safety/police.php">http://www.cityofcoquille.org/public_safety/police.php</a>
Fire Station	Coquille Fire and Rescue – Station 1	City of Coquille	541-396-2232	89 W Third St Coquille, OR 97423	<a href="http://www.cityofcoquille.org/public_safety/fire.php">http://www.cityofcoquille.org/public_safety/fire.php</a>
Fire Station	Coquille Fire and Rescue – Station 2	City of Coquille	541-396-2232	Arago-Fishtrap Rd Myrtle Point, OR 97458	<a href="http://www.cityofcoquille.org/public_safety/fire.php">http://www.cityofcoquille.org/public_safety/fire.php</a>

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
Fire Station	Coquille Fire and Rescue – Station 3	City of Coquille	541-396-2232	Riverton Rd Coquille, OR 97423	<a href="http://www.cityofcoquille.org/public_safety/fire.php">http://www.cityofcoquille.org/public_safety/fire.php</a>
Fire Station	Coquille Fire and Rescue – Station 4	City of Coquille	541-396-2232	Hwy 42 Coquille, OR 97423	<a href="http://www.cityofcoquille.org/public_safety/fire.php">http://www.cityofcoquille.org/public_safety/fire.php</a>
Utility	Coquille Sewage Treatment Plant	City of Coquille	541-396-4336	300 OR-42 Coquille, OR 97423	<a href="http://www.cityofcoquille.org/">http://www.cityofcoquille.org/</a>
Utility	Coquille Water Plant	City of Coquille	541-396-4336	94186 Crystol Creek Ln Coquille, OR 97423	<a href="http://www.cityofcoquille.org/">http://www.cityofcoquille.org/</a>
Port	Oregon International Port of Coos Bay	Port of Coos Bay	541-267-7678	125 W. Central Ave Ste 300 Coos Bay, OR 97420	<a href="https://www.portofcoosbay.com/">https://www.portofcoosbay.com/</a>
Admin	Port and Coos Bay Rail Line Admin Office	Port of Coos Bay	541-267-7678	125 W. Central Ave Ste 300 Coos Bay, OR 97420	<a href="https://www.portofcoosbay.com/">https://www.portofcoosbay.com/</a>
Port	Charleston Marina	Port of Coos Bay	541-267-7678	63534 Kingfisher Road - P.O. Box 5409 Charleston, OR 97420	<a href="https://www.portofcoosbay.com/">https://www.portofcoosbay.com/</a>
Admin	Lakeside City Hall	City of Lakeside	541-759-3011	915 N. Lake Rd Lakeside, OR 97449	<a href="https://www.cityoflakeside.org/">https://www.cityoflakeside.org/</a>  City Hall includes the library, senior center, and food bank.

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
Airport	Lakeside City Airport	City of Lakeside	541-759-3011	915 N Lake Rd Lakeside, OR 97449	<a href="https://www.cityoflakeside.org/airport">https://www.cityoflakeside.org/airport</a>
Utility	Lakeside Waste Water Treatment Plant	City of Lakeside	541-759-3011	105 Park Ave Lakeside, OR 97449	New location on Airport Drive, scheduled for 5 years.
Fire Station	Lakeside Fire Department	Lakeside Fire Department	541-759-3931	115 N. 9 <sup>th</sup> St Lakeside, OR 97449	<a href="https://www.facebook.com/groups/1606978255986342/">https://www.facebook.com/groups/1606978255986342/</a>
Utility	Lakeside Water Plant	Lakeside Water District	541-759-3602	1000 N. Lake Road Lakeside, OR 97449	
School	Myrtle Crest School	Myrtle Point School District	541-572-1230	903 Myrtle Crest Ln. Myrtle Point, OR 97458	
Utility	Myrtle Point Sewer Treatment Plant	City of Myrtle Point	541-572-2860	220 River Rd Myrtle Point, OR 97458	
Fire Station	Myrtle Point Fire Department – Station 1	City of Myrtle Point	541- 572-5422	424 5th St Myrtle Point, OR 97458	<a href="https://www.ci.myrtlepoint.or.us/general/page/myrtle-point-fire-department">https://www.ci.myrtlepoint.or.us/general/page/myrtle-point-fire-department</a>
Admin	Myrtle Point City Hall	City of Myrtle Point	541-572-2626	424 5th St Myrtle Point, OR 97458	<a href="https://www.ci.myrtlepoint.or.us/">https://www.ci.myrtlepoint.or.us/</a>
Police Station	Myrtle Point Police Department	City of Myrtle Point	541-572-2124	424 5th St Myrtle Point, OR 97458	<a href="https://www.ci.myrtlepoint.or.us/general/page/myrtle-point-police-department">https://www.ci.myrtlepoint.or.us/general/page/myrtle-point-police-department</a>

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
Other	Myrtle Point Ambulance Department	City of Myrtle Point	541-572-2993	320 5th St Myrtle Point, OR 97458	<a href="https://www.ci.myrtlepoint.or.us/general/page/myrtle-point-ambulance-department">https://www.ci.myrtlepoint.or.us/general/page/myrtle-point-ambulance-department</a>
Utility	Myrtle Point Water Treatment Plant	City of Myrtle Point	541-572-2589	2585 Maple Street Myrtle Point, OR 97458	
Admin	North Bend City Hall	City of North Bend	541-756-8586	1255 E Airport Way, North Bend, OR 97459	<a href="https://www.northbendoregon.us/">https://www.northbendoregon.us/</a>
Fire Station	North Bend Fire & Rescue – Station 1	City of North Bend	541-756-8500	1880 McPherson North Bend, OR 97459	<a href="https://www.northbendoregon.us/fire">https://www.northbendoregon.us/fire</a> Seismic retrofits.
Fire Station	North Bend Fire Department – Station 2	City of North Bend	541-756-8500	2222 Newmark North Bend, OR 97459	<a href="https://www.northbendoregon.us/fire">https://www.northbendoregon.us/fire</a>
Police Station	North Bend Police Department	City of North Bend	541-756-3161	835 California Ave #2, North Bend, OR 97459	<a href="https://www.northbendoregon.us/police">https://www.northbendoregon.us/police</a>
Utility	North Bend Wastewater Treatment Plant	City of North Bend	541-756-8586	1255 Airport Ln. North Bend, OR 97459	
Port	Port of Bandon	Port of Bandon	541-366-0115	390 1 <sup>st</sup> St SW Bandon, OR 97411	<a href="https://www.portofbandon.com/">https://www.portofbandon.com/</a> Historic Coast Guard building, boardwalk, marina.
Admin	Powers City Hall	City of Powers	541-439-3331	275 Fir St Powers, OR 97466	

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
Fire Station	Powers Fire & Ambulance Department	City of Powers	541-439-3331	275 Fir St Powers, OR 97466	
Police Station	Powers Police Department	City of Powers	541-439-2411	273 Fir St Powers, OR 97466	
Utility	Powers Sewer Plant	City of Powers	541-439-3331	241 E Cedar St Powers, OR 97466	
Utility	Powers Water Plant	City of Powers	541-439-3331	41903 S Powers Rd Powers, OR 97466	
Utility	Powers Water Intake	City of Powers	541-439-3331	31S-12W-13D-01500 Across from Water Plant Powers, OR 97466	
Utility	Powers Water Reservoir	City of Powers	541-439-3331	31S-12W-13D-00300 Adjacent to PHS Powers, OR 97466	
Hospital or Clinic	Southern Coos Hospital and Health Center	Southern Coos Hospital and Health Center	541-347-2426	900 11 <sup>th</sup> Street, SE Bandon, OR 97411	<a href="https://southerncoos.org/">https://southerncoos.org/</a>



**Table I-14. Critical Facility Inventory, Other Coos County Jurisdiction**

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
School	Alternative Youth Activities, Inc.	Alternative Youth Activities, Inc.	541- 888-2432	575 S Main St, Coos Bay, OR 97420	<a href="http://www.aya-or.org/">http://www.aya-or.org/</a>
School	Bandon Pacific Christian School	Bandon Pacific Christian School	541-347-2256	48967 Hwy 101 Bandon, OR 97411	<a href="https://pacificcommunitychurch.org/sample/index.html">https://pacificcommunitychurch.org/sample/index.html</a>
Fire Station	Bandon Rural Fire Protection District – Union St.	Bandon RFPD	541- 347-3430	555 Oregon Ave Bandon, OR 97411	<a href="https://www.firedepartment.net/directory/oregon/coos-county/bandon/bandon-rural-fire-protection-district">https://www.firedepartment.net/directory/oregon/coos-county/bandon/bandon-rural-fire-protection-district</a>
Fire Station	Bandon RFPD 8 – Kehl Station	Bandon RFPD	541- 347-3430	In Bandon State Airport Batson Ln Bandon, OR 97411	<a href="https://www.firedepartment.net/directory/oregon/coos-county/bandon/bandon-rural-fire-protection-district">https://www.firedepartment.net/directory/oregon/coos-county/bandon/bandon-rural-fire-protection-district</a>
Fire Station	Bandon Rural Fire Protection District 8 - Randolph Station	Bandon RFPD	541- 347-3430	Randolph Rd Bandon, OR 97411	<a href="https://www.firedepartment.net/directory/oregon/coos-county/bandon/bandon-rural-fire-protection-district">https://www.firedepartment.net/directory/oregon/coos-county/bandon/bandon-rural-fire-protection-district</a>
Admin	Bandon Schools District Office	Bandon School District #54	541- 347-4411	401, 599 9th St SW, Bandon, OR 97411	<a href="https://www.bandon.k12.or.us/">https://www.bandon.k12.or.us/</a>
School	Bandon High School	Bandon School District #54	541- 347-4411	550 9th St. SW Bandon, OR 97411	<a href="https://www.bandon.k12.or.us/bandon-high-school/">https://www.bandon.k12.or.us/bandon-high-school/</a>
School	Harbor Lights Middle School	Bandon School District #54	541- 347-4415	390 9 <sup>th</sup> St. SW Bandon, OR 97411	<a href="http://www.bandon.k12.or.us/harbor-lights-middle-school/">http://www.bandon.k12.or.us/harbor-lights-middle-school/</a>
Hospital or Clinic	Bay Clinic	Bay Clinic, LLC	541-269-0333	1750 Thompson Rd, Coos Bay, OR 97420	<a href="https://bayclinic.net/">https://bayclinic.net/</a>
Fire Station	Bridge Rural Fire Protection District	Bridge RFPD		98183 Bridge Ln Myrtle Point, OR	
Utility	Bunkerhill Sanitary District	Bunkerhill Sanitary District	541-396-2888	590 Commercial St Coos Bay, OR 97420	

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
Fire Station	Charleston RFPD - Station 1 Barview	Charleston RFPD	541- 888-3268	92342 Cape Arago Hwy Coos Bay, OR 97420	<a href="https://charlestonorfd.samariteam.com/default.aspx">https://charlestonorfd.samariteam.com/default.aspx</a>
Fire Station	Charleston RFPD - Station 2	Charleston RFPD	541- 888-3268	63081 Crown Point Road Coos Bay, OR 97420	<a href="https://charlestonorfd.samariteam.com/default.aspx">https://charlestonorfd.samariteam.com/default.aspx</a>
Fire Station	Charleston RFPD - Station 3	Charleston RFPD	541- 888-3268	90414 Metcalf Lane Coos Bay, OR 97420	<a href="https://charlestonorfd.samariteam.com/default.aspx">https://charlestonorfd.samariteam.com/default.aspx</a>
School	Christ Lutheran School	Christ Lutheran Church & School	541-267-3851	1835 N 15th St, Coos Bay, OR 97420	<a href="http://lcmschurch.org/">http://lcmschurch.org/</a>
Admin	Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians	Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians	541-888-9577	1245 Fulton Ave, Coos Bay, OR 97420	<a href="https://ctclusi.org/">https://ctclusi.org/</a>
Other	CTCLUSI Tribal Hall	Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians	541-888-9577	338 Wallace St, Coos Bay, OR 97420	<a href="https://ctclusi.org/">https://ctclusi.org/</a>
Admin	CTCLUSI Housing Authority	Confederated Tribes of the Coos, Lower Umpqua and Siuslaw Indians	541-888-9577	336 Wallace St, Coos Bay, OR 97420	<a href="https://ctclusi.org/">https://ctclusi.org/</a>
Utility	Pony Creek Treatment Plant	Coos Bay – North Bend Water Board	541 267-3128	2315 Ocean Blvd SE, Coos Bay, OR 97420-0108	<a href="http://cbnbh2o.com/">http://cbnbh2o.com/</a>
Utility	Coos Curry Electric Cooperative	Coos Curry Electric Cooperative	541-332-8184	220 Mill St Coquille, OR 97423	<a href="https://www.ccec.coop/">https://www.ccec.coop/</a>
Fire Station	Coos Forest Protective Association – Headquarters Coos Bay Station	Coos Forest Protective Association	541-267-3161	63612 Fifth Road Coos Bay, OR 97420	<a href="https://www.coosfpa.net/contact">https://www.coosfpa.net/contact</a>
Fire Station	Coos Forest Protective Association – CFPB Bridge Unit	Coos Forest Protective Association	541-572-2796	98247 Bridge Lane Myrtle Point, OR 97458	<a href="https://www.coosfpa.net/contact">https://www.coosfpa.net/contact</a>
Fire Station	Coos Forest Protective Association – CFPB Fourmile Station	Coos Forest Protective Association	541-347-3400	46946 Hwy 101 Bandon, OR 97411	<a href="https://www.coosfpa.net/contact">https://www.coosfpa.net/contact</a>

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
Admin	Coquille Indian Tribe – Administration	Coquille Indian Tribe	541- 756-0904	3050 Tremont St. North Bend, OR 97459	<a href="https://www.coquilletribe.org/">https://www.coquilletribe.org/</a>
Other	Coquille Indian Tribe - Community Plank House	Coquille Indian Tribe	541- 756-0904	1050 Plankhouse Road, Coos Bay, OR 97420	
School	Coquille Indian Tribal Learning Center	Coquille Indian Tribe		600 Miluk Dr, Coos Bay, OR 97420	
School	Coquille Jr/Sr. High School	Coquille School District #8	541-396-2181	499 W Central Blvd, Coquille, OR 97423	<a href="https://www.coquille.k12.or.us/coquille-jr-sr-high-school/">https://www.coquille.k12.or.us/coquille-jr-sr-high-school/</a>
Admin	Coquille School District Office	Coquille School District #8	541-396-2181	180 N. Baxter Coquille, OR 97423	<a href="https://www.coquille.k12.or.us/">https://www.coquille.k12.or.us/</a>
School	Coquille Valley Elementary School	Coquille School District #8	541-396-2181	180 N. Baxter Coquille, OR 97423	<a href="https://www.coquille.k12.or.us/coquille-valley-elementary/">https://www.coquille.k12.or.us/coquille-valley-elementary/</a>
School	Winter Lakes Elementary School	Coquille School District #8	541-396-2181	1742 N. Fir St., Coquille, OR 97423	<a href="https://www.coquille.k12.or.us/winter-lakes-elementary-school/">https://www.coquille.k12.or.us/winter-lakes-elementary-school/</a>
School	Winter Lakes High School	Coquille School District #8	541-396-2181	1501 W. Central Blvd, Coquille, OR 97423	<a href="https://www.coquille.k12.or.us/winter-lakes-high-school/">https://www.coquille.k12.or.us/winter-lakes-high-school/</a>
Hospital or Clinic	Coquille Valley Hospital	Coquille Valley Hospital	541-396-3101	940 E 5th St Coquille, OR 97423	<a href="https://www.cvhospital.org/">https://www.cvhospital.org/</a>
Fire Station	Dora-Sitkum Rural Fire Protection District	Dora-Sitkum RFPD	541- 572-5944	56129 Gold Brick Rd, Myrtle Point, OR 97458	<a href="http://dorasitkumfire.com/">http://dorasitkumfire.com/</a>
School	Eastside School	Coos Bay School District #9	541-267-1340	370 2nd Ave Coos Bay, OR 97420	<a href="https://eastside.cbd9.net/">https://eastside.cbd9.net/</a>
School	Emmanuel Episcopal Preschool	Emmanuel Episcopal Church	541-269-5829	400 Highland Ave Coos Bay, OR 97420	<a href="https://www.episcopalcoosbay.org/">https://www.episcopalcoosbay.org/</a>
Fire Station	Fairview Rural Fire Protection District	Fairview RFPD	541-396-3473	96775 Sumner-Fairview Rd, Coquille, OR 97423	
School	Gold Coast Christian School	Gold Coast Christian School	541-756-7413	2175 Newmark Ave Coos Bay, OR 97420	
Fire Station	Greenacres Rural Fire Protection District	Greenacres RFPD	541-269-2441	93449 Upper Loop Ln, Coos Bay, OR 97420	
Fire Station	Hauser Rural Fire Protection District	Hauser RFPD	541-756-7222	93622 Viking Ln, North Bend, OR 97459	

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
School	Hillcrest Elementary School	North Bend School District	541-756-8348	1100 Maine St. North Bend, OR 97459	<a href="https://hillcrest.nbend.k12.or.us/o/hillcrest">https://hillcrest.nbend.k12.or.us/o/hillcrest</a>
School	Kingsview Christian School	Bay Area Church of the Nazarene	541-756-1411	1850 Clark St North Bend, OR 97459	<a href="https://www.kingsviewchristian.com/contact-us">https://www.kingsviewchristian.com/contact-us</a>
Fire Station	Lakeside Fire Department	Lakeside Fire Department	541-759-3931	115 N. 9 <sup>th</sup> St Lakeside, OR 97449	<a href="https://www.facebook.com/groups/1606978255986342/">https://www.facebook.com/groups/1606978255986342/</a>
Utility	Lakeside Water Plant	Lakeside Water District	541-759-3602	1000 N. Lake Road Lakeside, OR 97449	
School	Lincoln School of Early Learning	Coquille School District #8	541-396-2181	1366 N. Gould Coquille, OR 97423	<a href="https://www.coquille.k12.or.us/lincoln-school-of-early-learning/">https://www.coquille.k12.or.us/lincoln-school-of-early-learning/</a>
Admin	Coos Bay School District Office	Coos Bay School District #9	541-267-3104	1255 Hemlock Coos Bay, OR 97420	<a href="https://www.cbd9.net/">https://www.cbd9.net/</a>
School	Destinations Academy	Coos Bay School District #9	541- 267-1485	1255 Hemlock Coos Bay, OR 97420	<a href="https://destinations.cbd9.net/">https://destinations.cbd9.net/</a>
School	Madison (Elementary) School	Coos Bay School District #9	541-888-1218	400 Madison Street Coos Bay, OR 97420	<a href="https://madison.cbd9.net/">https://madison.cbd9.net/</a>
School	Marshfield High School	Coos Bay School District #9	541- 267-1405	S 10th & Ingersoll St., Coos Bay, OR 97420	<a href="https://marshfield.cbd9.net/">https://marshfield.cbd9.net/</a>
School	Marshfield Junior High School	Coos Bay School District #9	541-267-1487	755 S. 7th Coos Bay, OR 97420	<a href="https://marshfieldjhs.cbd9.net/">https://marshfieldjhs.cbd9.net/</a>
School	Millicoma School	Coos Bay School District #9	541- 267-1468	260 2nd Avenue Coos Bay, OR 97420	<a href="https://millicoma.cbd9.net/">https://millicoma.cbd9.net/</a>
Fire Station	Millington Rural Fire Protection District 5 – Station 1	Millington RFPD	541- 267-3151	62866 Millington Frontage Rd, Coos Bay, OR 97420	
Fire Station	Millington Rural Fire Protection District 5 – Station 2	Millington RFPD	541- 267-3151	62274 Olive Barber Rd, Coos Bay, OR 97420	
School	Myrtle Crest School	Myrtle Point School District	541-572-1230	903 Myrtle Crest Ln. Myrtle Point, OR 97458	

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
School	Myrtle Point High School	Myrtle Point School District	541-572-1270	717 4th St Myrtle Point, OR 97458	<a href="https://www.mpsd.k12.or.us/domain/51">https://www.mpsd.k12.or.us/domain/51</a>
Admin	Myrtle Point School District Office	Myrtle Point School District	541-572-2811	413 C Street Myrtle Point, OR 97458	<a href="https://www.mpsd.k12.or.us/">https://www.mpsd.k12.or.us/</a>
School	North Bay Elementary School	North Bend School District	541-756-8351	93670 Viking Lane North Bend, OR 97459	<a href="https://northbay.nbend.k12.or.us/o/north-bay">https://northbay.nbend.k12.or.us/o/north-bay</a>
Fire Station	North Bay Rural Fire Protection District	North Bay RFPD	541- 756-3501	67577 E Bay Rd, North Bend, OR 97459	<a href="https://www.firedepartment.net/directory/oregon/coos-county/north-bend/north-bay-fire-district">https://www.firedepartment.net/directory/oregon/coos-county/north-bend/north-bay-fire-district</a>
Hospital or Clinic	North Bend Medical Center – Coos Bay	North Bend Medical Center	541-267-5151	1900 Woodland Dr Coos Bay, OR 97420	<a href="https://www.nbmchealth.com/">https://www.nbmchealth.com/</a>
Hospital or Clinic	North Bend Medical Center – Bandon	North Bend Medical Center	541-347-5191	110 10 <sup>th</sup> Street SE Bandon, OR 97411	<a href="https://www.nbmchealth.com/locations/bandon/">https://www.nbmchealth.com/locations/bandon/</a>
Hospital or Clinic	North Bend Medical Center – Coquille	North Bend Medical Center	541-396-7295	790 E 5 <sup>th</sup> Street Coquille, OR 97423	<a href="https://www.nbmchealth.com/locations/coquille/">https://www.nbmchealth.com/locations/coquille/</a>
Hospital or Clinic	North Bend Medical Center – Myrtle Point	North Bend Medical Center	541-572-2111	324 4 <sup>th</sup> Street Myrtle Point, OR 97458	<a href="https://www.nbmchealth.com/locations/myrtle-point/">https://www.nbmchealth.com/locations/myrtle-point/</a>
School	North Bend Middle School	North Bend School District	541-756-8341	1500 N 16 <sup>th</sup> Street North Bend, OR 97459	<a href="http://www.nbms.nbend.k12.or.us/">http://www.nbms.nbend.k12.or.us/</a>
School	North Bend Senior High School	North Bend School District	541-756-8328	2323 Pacific Ave North Bend, OR 97459	<a href="https://nbhs.nbend.k12.or.us/o/nbhs">https://nbhs.nbend.k12.or.us/o/nbhs</a>
School	Oregon Coast Technology School	North Bend School District	CLOSED IN 2018	North Bend, OR	<a href="https://www.publicschoolreview.com/oregon-coast-technology-school-profile">https://www.publicschoolreview.com/oregon-coast-technology-school-profile</a>
School	Oregon Virtual Academy	North Bend School District	866-529-0160	400 Virginia Ave., Ste 210 North Bend, OR 97459	<a href="https://orva.k12.com/">https://orva.k12.com/</a>
Airport	Bandon State Airport	OR Dept of Aviation	State Airports Manager 503-378-4880	2 miles SE of Bandon, OR	<a href="https://www.airnav.com/airport/S05">https://www.airnav.com/airport/S05</a>

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
Airport	Powers Airport	Port of Coquille River	541- 572-2737	1 mile SE of POWERS, OR	<a href="https://www.airnav.com/airport/6S6">https://www.airnav.com/airport/6S6</a>
School	Powers Elementary School	Powers School District 31	541-439-2291	Corner of 4 <sup>th</sup> and Poplar Powers, OR 97466	<a href="https://www.powersschools.com/">https://www.powersschools.com/</a>
School	Powers High School	Powers School District 31	541-439-2291	1 High School Hill Rd Powers, OR 97466	<a href="https://www.powersschools.com/">https://www.powersschools.com/</a>
School	Powers Elementary School	Powers School District 31	541-439-2291	430 4 <sup>th</sup> Avenue Powers, OR 97466	<a href="#">School</a>
School	Powers Pre-K School	Powers School District 31	541-439-2291	400 Fir Street (on same lot as elementary) Powers, OR 97466	<a href="#">School</a>
Utility	Ziplay Phone & Fiber Building	Ziplay c/o Gen. Telephone Co of the NW		101 Poplar Street Powers, OR 97466	<a href="#">Utility</a>
Other	US Forest Service Ranger Station	USDA Forest Service	541-439-6200	42861 Hwy 242 Powers, OR 97466	<a href="#">Other</a>
School	Resource Link Charter School	Resource Link Charter School and/or Coos Bay School District	541- 267-1485	1255 Hemlock Ave Coos Bay, OR, 97420	<a href="https://www.resourcelinkcharter.org/">https://www.resourcelinkcharter.org/</a>
School	Oregon Coast Community Action – Child and Family Resource Center	Oregon Coast Community Action	541- 435-7080	1855 Thomas Ave Coos Bay, OR 97420	<a href="https://www.orcca.us/">https://www.orcca.us/</a> <a href="#">Includes South Coast Head Start</a>
Fire Station	Sumner Rural Fire Protection District	Sumner RFPD	541-404-1826	60817 Selander Rd Coos Bay, OR 97420	<a href="https://www.facebook.com/sumnerrfpd/">https://www.facebook.com/sumnerrfpd/</a>
Airport	Sunnyhill Airport	Private: Gary Femling and John Carr	541-756-3777	4 miles NE of NORTH BEND, OR	<a href="https://www.airnav.com/airport/1OR0">https://www.airnav.com/airport/1OR0</a>
School	Sunset Middle School	Coos Bay School District #9	541- 888-1242	245 S Cammann St Coos Bay, OR 97420	<a href="https://sunset.cbd9.net/">https://sunset.cbd9.net/</a>

Type	Critical Facility Name	Infrastructure Owner	Point of Contact for NHMP	Location/Address	Website/Notes
School	The Lighthouse School	The Lighthouse School	541-751-1649	62858 Highway 101 Coos Bay, Oregon 97420	<a href="https://www.thelighthouseschool.org/">https://www.thelighthouseschool.org/</a>  <a href="https://www.thelighthouseschool.org/notices.php#rsp">https://www.thelighthouseschool.org/notices.php#rsp</a>
Military	US Coast Guard – Sector North Bend	US Coast Guard	541- 756-9220	2000 Connecticut Ave North Bend, OR 97459	<a href="https://www.pacificarea.uscg.mil/Our-Organization/District-13/Units/Sector-North-Bend/">https://www.pacificarea.uscg.mil/Our-Organization/District-13/Units/Sector-North-Bend/</a>
Military	US Coast Guard – USCGC Orcas (WPB 1327)	US Coast Guard	541- 267-6981	P.O. Box 1497 Coos Bay, OR 97420	<a href="https://www.pacificarea.uscg.mil/Portals/8/District_13/lib/doc/factsheet/uscg_orcas.pdf?ver=2017-06-15-151557-953">https://www.pacificarea.uscg.mil/Portals/8/District_13/lib/doc/factsheet/uscg_orcas.pdf?ver=2017-06-15-151557-953</a>
Military	US Coast Guard – Station Coos Bay	US Coast Guard	541-888-3267	P.O. Box 5659 Charleston, OR 97420	<a href="https://www.pacificarea.uscg.mil/Our-Organization/District-13/Units/Sector-North-Bend/">https://www.pacificarea.uscg.mil/Our-Organization/District-13/Units/Sector-North-Bend/</a>
Hospital or Clinic	Coos Bay Clinic – School Based Health Center	Waterfall Community Health Center	541-756-6232	826 S. 11th St. Coos Bay, OR 97420	<a href="https://www.wfall.org/">https://www.wfall.org/</a>
Hospital or Clinic	North Bend Clinic - Mental Health Center	Waterfall Community Health Center	541-756-6232	1950 Waite St. North Bend, OR 97459	<a href="https://www.wfall.org/">https://www.wfall.org/</a>
Hospital or Clinic	North Bay Clinic – School Based Health Center	Waterfall Community Health Center	541-756-6232	93670 Viking Ln. North Bend, OR 97459	<a href="https://www.wfall.org/">https://www.wfall.org/</a>
Hospital or Clinic	North Bend Clinic - Primary Care Center	Waterfall Community Health Center	541-756-6232	1890 Waite St. North Bend, OR 97459	<a href="https://www.wfall.org/">https://www.wfall.org/</a>
Hospital or Clinic	Starfish Youth Therapy Center – Pediatric Occupational Therapy and Autism Support	Waterfall Community Health Center	541-756-6232	465 Elrod Ave., Suite 101 Coos Bay, OR 97420	<a href="https://www.wfall.org/">https://www.wfall.org/</a>



# C. Natural Hazards

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# 1. Coastal Erosion

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## Causes and Characteristics

Coastal erosion occurs through a complex interaction of many geologic, atmospheric, and oceanic factors. Two important natural variables for coastal change are the beach sand budget (balance of sand entering and leaving the system) and processes (waves, currents, tides, and wind) that drive the changes. Erosion becomes a hazard when development, human life, or community safety are threatened.

Coastal erosion occurs throughout the year in Coos County, but is accelerated during the winter months, November through February, resulting in episodic and recurrent erosion of beaches, sand spits, dunes, and bluffs. Shoreline retreat may be gradual over a season or many years, or it can be drastic, with the loss of substantial upland area during the course of a single storm event. Twice a year, high tides in Oregon are higher than usual. These extreme high tides, commonly called "King Tides," occur when the moon is closest to the Earth, and the Earth is closest to the sun. These events are associated with localized flooding and erosion, and they are used to measure and understand the potential impacts of sea level rise and changing wave dynamics.

Human activities also influence, and in some cases, intensify the effects of erosion and other coastal hazards. Major actions such as jetty construction and maintenance dredging can have long-term effects. Residential and commercial development can affect shoreline stability over shorter periods of time and in smaller geographic areas. Activities such as grading and excavation, surface and subsurface drainage alterations, vegetation removal, and vegetative as well as structural shoreline stabilization can all reduce shoreline stability (DLCD, 2020).

Although the Pacific Coast in Coos County is vulnerable to the coastal erosion hazard, some areas experience more erosion than others.

- *Beaches and dune-backed shorelines* extend across the majority of the Pacific coast in Coos County. Sand and other sediments circulate within littoral cells defined by ocean currents and nearshore features causing some areas to aggrade or add sand while others accrete or lose sand. Wave attack, such as that occurring during storms and king tides, is the primary risk to dune-backed shorelines, resulting in undercutting and wave overtopping.
- *Cliffs and bluff-backed beaches* dominate the southern coast of Coos County at Cape Arago near Charleston and near Seven Devils State Park at Bandon. Bluff-backed shorelines, while less susceptible to rapid shoreline retreat from wave attack, can be associated with deep currents of fast moving water. A rip current embayment is an erosion "hot spot" seen in the shoreline and formed by a rip current system. Rip embayments are crescent shaped features and have steeper slopes at the maximum point of erosion. The size, spacing, and location are dependent upon the magnitude of the rip current system. Relative to the adjacent section of beach, wave energy can propagate further towards the shoreline through the center of the embayment due to an increased nearshore water depth and reduced beach width. This wave energy can induce erosion and attack the coastal dunes, cliffs, bluffs, and coastal infrastructure (OSU, 2021).

- *The Coos Bay and Coquille River estuaries* begin where the rivers meet the ocean. Tidal influences continue for miles upstream, but storm surges and waves are largely attenuated by the narrow and long river channel. Nonetheless, tidal and stormwater flooding is an increasing nuisance and contributor to local erosion in low-lying areas.

## Hazard History

The following table provides information on the previous occurrences of coastal erosion. No new coastal erosion events have been identified and two historic events have been added for the 2021 update.

**Table I-15. Historic Coastal Erosion Events**

Date	Location	Description	Notes
2003	Sunset Bay State Park	High Waves, Coastal Erosion	Sunset Bay State Park lost a parking lot due to coastal erosion.
1997-1998*	S. Oregon Coast	High Wind, High Surf	El Niño events. Severe beach erosion; trees toppled (Nov. 1997).
Jan.-Feb. 1960, Apr. 1958*	Sunset Bay State Park	Flooding	Large waves and storm surge caused localized flooding in the low-lying beach and nearshore area with recreation infrastructure.
1939	Sunset Bay	Wind, Waves, Coastal Erosion	The Sunset Beach Resort was destroyed.

Note: \* indicates newly listed event for the 2021 NHMP update. Source: 2016 Coos NHMP; NOAA Storm Events Database, <https://www.ncdc.noaa.gov/stormevents/>; 2020 OR NHMP.

## Future Climate Conditions: Coastal Erosion

Sea level rise and changing wave dynamics are key climate change impacts expected to increase the risk of coastal erosion and flooding hazards on the Oregon Coast. “The projected increase in local sea levels along the Oregon coast raises the starting point for storm surges and high tides making coastal hazards more severe and more frequent in the future (Climate Central, 2019).”

Local sea level rise in Coos County is projected to rise by 1.2 to 5.3 feet by 2100. This projection is based on the intermediate-low to intermediate-high global sea level scenarios used in the 2018 U.S. National Climate Assessment. Because these local sea level projections account for estimated trends in vertical land movement, they are relative to the future land position.

Given these levels of sea level rise, the multiple-year likelihood of a flood reaching four feet above mean high tide is 4–34% by the 2030s, 25–100% by the 2050s, and 100% by 2100. At risk within the four-foot inundation zone in Coos County as of the 2010 census are 1062 people, \$72 million in property value, 10.9 miles of highways and roads, 9.4 miles of railways, 3 critical facilities, 2 municipal drinking water facilities, 3 potential contaminant sources, and 715 buildings.

The structure, composition, and function of coastal wetland ecosystems will also be affected by rising sea levels and saltwater intrusion, coastal erosion and flooding, changes in temperature and precipitation, and ocean acidification. Wetland area in the Coos Bay and Coquille River estuaries is projected to decrease with increasing sea levels. Under 4.7 feet of sea level rise, tidal wetland area in these estuaries is projected to decrease by about 50%. Tidal wetland area in the New River Area is projected to increase by more than 2000%, but whether future tides will push into this area is uncertain.

In October 2022, the **Sea Level Rise Adaptation Planning Toolkit** was released by the Oregon Department of Land Conservation and Development’s Coastal Management Program.

Oregon’s coastlines are vulnerable to the impacts of sea level rise. DLCD developed tools to assist local communities in planning for the impacts of sea level rise, which are listed below.

The sea level rise adaptation planning toolkit is a set of three resources for local governments and communities to assess and address the impacts of sea level rise:

1. Sea Level Rise Impact Explorer is a combination of multiple data sources and is meant to serve as a planning tool. There are three main geographies covered by the sea level rise planning area: outer coast, estuaries, and Columbia River. A mix of datasets are displayed for these three geographies and are meant to approximate the areas that will be impacted by sea level rise, using the current best available data. Inclusion of an area in the SLR planning area could mean permanent inundation or that the area will be impacted periodically by high tide flooding, storm surge, or erosion events.
2. Sea Level Rise Impact Assessment Tool is a set of spreadsheets designed to help users inventory what activities take place within affected areas, assess vulnerability to harm, and prioritize further investigation into remedial and adaptative actions. This process can serve as the jurisdiction’s vulnerability assessment. Specific instructions for how to use the worksheets is included in the file.
3. Sea Level Rise Planning Guide for Coastal Oregon is a document that provides a suggested approach to evaluate the assets at risk from the impacts of sea level rise and offer potential adaptation strategies to adapt to those impacts within Oregon’s regulatory framework. The guide also provides authoritative information about sea level rise projections and impacts. This document is intended to guide local planning, capital improvement, and development decisions on the Oregon Coast to support community resilience and ensure effective coastal management actions.

All three resources can be found on the Oregon Coastal Atlas website:

[www.coastalatlantlas.net/sealevelrise](http://www.coastalatlantlas.net/sealevelrise). This is an active area of continued research, and DLCD will continue to update these resources as more data and information become available.

## Vulnerability Assessment

No local or state-owned critical facilities are exposed to the coastal erosion hazard in Coos County according to the 2020 Oregon NHMP. Available data also indicates that Coos County-area historic and archaeological resources are not at risk of coastal erosion. Overall, Coos County is ranked fifth of seven coastal counties for its vulnerability to coastal erosion in the State Plan (DLCD, 2020).

The following assets and locations are generally the most vulnerable to coastal erosion:

- Coquille River Lighthouse, Bullard’s Beach State Park
- Coquille River, south jetty in Bandon (erosion, flooding)
- East Bay Road (erosion, flooding?)
- Pony Creek Slough, North Bend (erosion, flooding)
- Sunset Bay, Sunset Bay State Park (beach erosion)
- Lighthouse Beach, Charleston (bluff erosion)
- North Coos Spit (erosion)

**Table I-16. Coastal Erosion Hazard Vulnerability Analysis Summary**

Jurisdiction	Total	Risk Level	Jurisdiction	Total	Risk Level
Unincorporated Coos County	135	M	City of Powers	-	-
City of Bandon	117	M	Bay Area Hospital District	-	-
City of Coquille	-	-	Haynes Drainage District	192	H
City of Coos Bay	70	L	International Port of Coos Bay	137	M
City of Lakeside	-	-	Port of Bandon	117	M
City of Myrtle Point	-	-	Southern Coos Hospital District	-	-
City of North Bend	70	L			

Source: Coos MJ-NHMP Risk Assessment, March-May 2021.

## Risk Reduction Recommendations

The science of risk reduction is an emerging field. These potential coastal erosion mitigation actions are listed along with the hazard description so that readers understand the type of mitigation actions being considered or that might be considered current best practices. Source: various.

- Maintain existing erosion control structures.
- Consider limiting development in coastal erosion zones.
- Identify and relocate infrastructure near coastal erosion areas.
- Monitor the effects and drivers of coastal change such as high tide, large wave, and storm events in erosion-prone and low-lying areas.
- Consider land value losses due to coastal erosion in future risk assessments.
- Support citizen science: Local citizens can observe and help document the impacts of climate change. A citizen science photo documentation project can be viewed or participated in online at <https://www.oregonkingtides.net/>.

**Figure I-6. Dune-Backed Beach Erosion near Devil's Kitchen, Bandon (Beach Loop)**



Source: D. Mueller, 2021.

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## 2. Drought

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### Causes and Characteristics

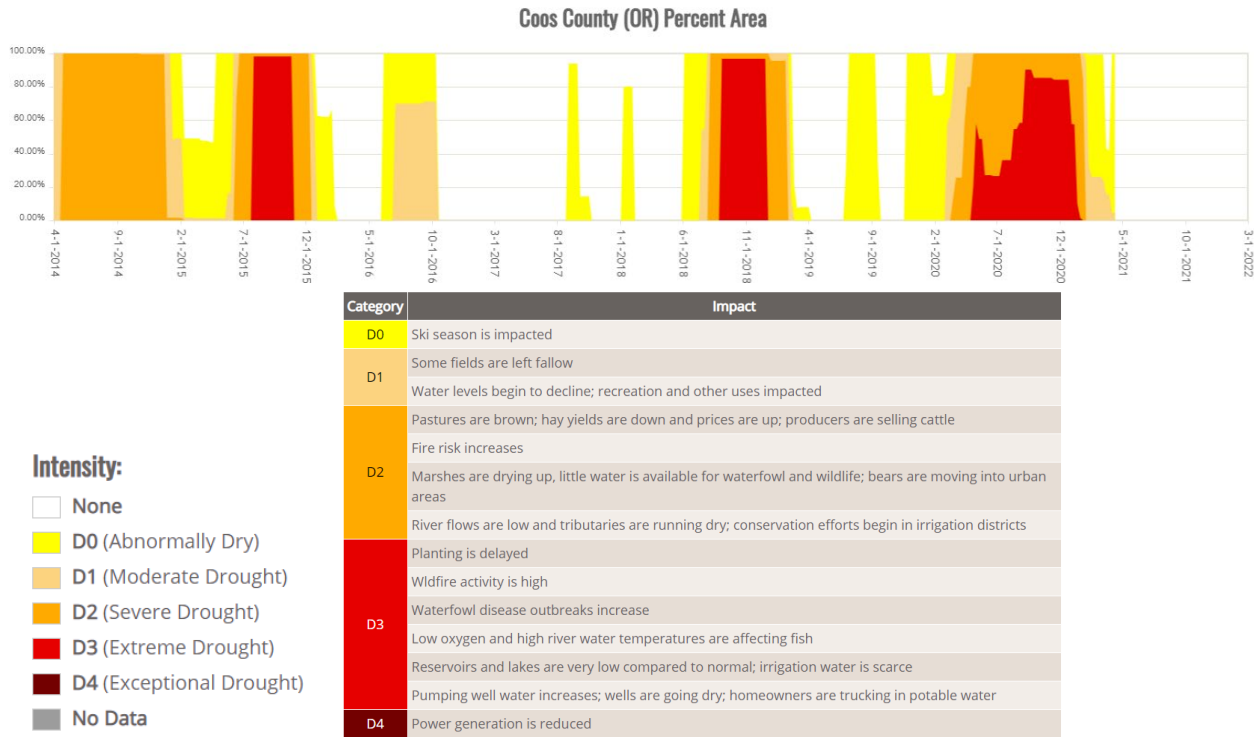
Drought is commonly defined as a deficiency of precipitation over an extended period of time (usually a season or more), resulting in a water shortage (NDMC, 2020). The extent of drought events depends upon the degree of moisture deficiency, and the duration and size of the affected area. Typically, droughts occur as regional events and often affect more than one city and county. Drought is frequently an "incremental" hazard; the onset and end are often difficult to determine. Also, its effects may accumulate slowly over a considerable period of time and may linger for years after the termination of the event.

The National Drought Mitigation Center defines drought five ways:

- **Meteorological drought** is a measure of change in precipitation from normal. Associated conditions include reduced precipitation, high temperatures, high winds, low relative humidity, increased evaporation and transpiration, and reduced runoff, infiltration, and groundwater recharge. Due to climatic differences, what might be considered drought in one location of the state may not be the same elsewhere.
- **Agricultural drought** is a situation where the amount of moisture in the soil no longer meets the needs of a particular crop. Associated conditions include soil water deficiency, reduced water availability for crops, and reduced biomass/yield.
- **Hydrological drought** occurs when surface and sub-surface water supplies are below normal. Associated conditions include reduced streamflow and inflow to lakes, ponds, and wetlands.
- **Socioeconomic drought** occurs when a physical water shortage begins to affect people—individually and collectively, as reflected in the area’s economy.
- **Ecological drought** is a prolonged and widespread deficit in naturally available water supplies that create multiple stresses across ecosystems.

# Hazard History

**Table I-17. Drought Occurrences Last 5 Years**



Source: USDM, 2021.

The following table provides information on the previous occurrences of droughts. Three new drought events have occurred since 2016 and five historic events have been added for the 2021 update.

**Table I-18. Historic Drought Events**

Date	Location	Description
2020* (5/14/2020-12/31/2020)	Coos County	Drought declaration (EO 20-26), based on a Coos County request on 4/24/2020, due to unusually low stream flows, below normal rainfall for the water year (Oct. 1, 2019-Sept. 20, 2020), and one-third of normal rainfall for the month of March 2020.
2018*	Coos County	No drought requested or declared but fall and winter of 2018-2019 saw low water levels and high fire danger.
2015* (6/12/2015-12/31/2015)	Coos County	Drought declaration (EO 15-06) due to drought, low snow pack levels, and low water conditions for 25 counties in Oregon.
2002-2003 (12/1/2002-6/26/2003)	Coos County; Statewide, except Portland metro area and Willamette Valley	The second most intense drought in Oregon’s history; 18 counties with state drought declaration (2001); 23 counties state-declared drought (2002); some of the 2001 and 2002 drought declarations were in effect through June or December 2003; Coos and Curry Counties in Region 1 were not under a drought declaration until December of 2002.
1985-1997	Oregon	Generally, a dry period, capped by statewide droughts in 1992 and 1994.



Date	Location	Description
1992	Coos County; Statewide	The winter of 1991-1992 was a moderate El Niño event, which can manifest itself in warmer and drier winters in Oregon; Governor declared a drought for all 36 counties in September 1992.
1988*	Coos County	Extreme drought during general dry period throughout the state spanning 1985-1997.
1976-1981	Western Oregon	1976-1977 was the single driest water year of the century; during a 5-year period of intense drought.
1961	Coos and Curry counties	Abnormally high temperatures in the two counties.
1939-1941*	Oregon	A three-year intense drought; Water Year 1939 was one of the more significant drought years on the Oregon Coast during that period.
1917-1931*	Oregon	A very dry period, punctuated by brief wet spells in 1920-21 and 1927. The 1920s and 1930s, known more commonly as the Dust Bowl, were a period of prolonged mostly drier than normal conditions across much of the state and country; moderate to severe drought affected much of the state except southeastern Oregon.
1924*	Oregon	A prolonged statewide drought that caused major problems for agriculture
1904-1905*	Oregon	A drought period of about 18 months.

Note: \* indicates newly listed event for the 2021 NHMP update. Source: OWRD, 2021; Taylor and Hatton, 1999.

## Future Climate Conditions: Drought

Because watersheds in Coos County are largely rain-dominated, the drivers of drought and water scarcity are different than across much of the western United States, where mountain snowpack contributes to streamflow (Dalton et al., 2017; Mote et al., 2019). In Coos County, like much of the Pacific Northwest, winters are wet, and summers are dry. Severe drought is rare during the rainy winters on the Oregon coast, but the region is prone to periods of summertime water scarcity, especially when precipitation is lower than average in spring and fall. This scarcity is exacerbated by the lack of natural storage in the snowpack) and built storage in reservoirs. Changes in landcover due to forest management practices that affect shading and water demand, climate-driven shifts in vegetation, and wildfires will likely exacerbate the effects of drought.

Drought, as represented by low summer soil moisture, low summer runoff, and low summer precipitation, is projected to become more frequent in Coos County by the 2050s (Dalton et al, 2022).

## Vulnerability Assessment

Drought conditions are not uncommon in Coos County. Drought poses a risk of reduced water availability for communities and agricultural producers during peak demand in late summer. This limits the growth of community development and of overall production of products that have a late summer water demand.

The environmental and economic consequences can be significant, particularly those employed in water-dependent activities (e.g., agriculture, hydroelectric generation, recreation, etc.) Domestic water-users may be subject to stringent conservation measures (e.g., rationing) and could be faced with significant increases in electricity rates. A prolonged drought in forests promotes an increase of insect pests, which in turn, damage trees already weakened by a lack of water. Drought also increases the

probability of wildfires in Coos County. In addition, drought and water scarcity add another dimension of stress to species listed pursuant to the Endangered Species Act (ESA) of 1973.

The hazard impact and community vulnerability for drought was assessed and ranked by each jurisdiction via the Hazard Vulnerability Analysis (HVA) process. In ranking the drought hazard, the scenario considered most likely to be a threat was summer low-water conditions that necessitated water conservation efforts be implemented by drinking water providers. See the appendix for a description of the HVA process and the HVA matrix for each jurisdiction.

**Table I-19. Drought Hazard Vulnerability Analysis Summary**

Jurisdiction	Total	Risk Level	Jurisdiction	Total	Risk Level
Unincorporated Coos County	122	M	City of Powers	162	M
City of Bandon	171	H	Bay Area Hospital District	142	M
City of Coquille	132	M	Haynes Drainage District	120	M
City of Coos Bay	142	M	International Port of Coos Bay	-	-
City of Lakeside	162	H	Port of Bandon	72	M
City of Myrtle Point	189	H	Southern Coos Hospital District	154	M
City of North Bend	98	M			

Source: Coos MJ-NHMP Risk Assessment, March-May 2021.

## Risk Reduction Recommendations

The science of risk reduction is an emerging field. These potential drought mitigation actions are listed along with the hazard description so that readers understand the type of mitigation actions being considered or that might be considered current best practices. Source: DLCD.

- Coordinate with local watershed organizations and soil and water conservation districts to implement best practices for water management.
- Develop and implement water conservation plans.
- Support the use of water conservation practices by agricultural, industrial, and municipal water users.

### 3. Earthquake

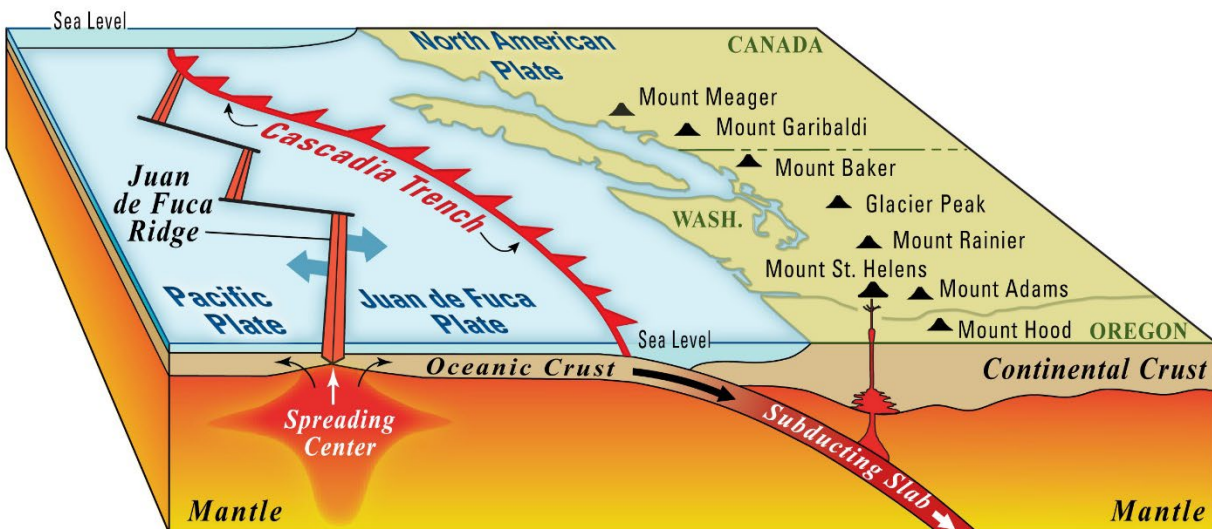
#### Causes and Characteristics

Oregon and the Pacific Northwest in general are susceptible to earthquakes from four sources: 1) the off-shore Cascadian Fault Zone; 2) deep intra-plate events within the subducting Juan de Fuca Plate; 3) shallow crustal events within the North American Plate; and 4) earthquakes associated with volcanic activity.

Coos County has not experienced any major earthquake events in recent history. Seismic events do, however, pose a significant threat. In particular, a Cascadia Subduction Zone (CSZ) event could produce catastrophic damage and loss of life in Coos County. The geographical position of Coos County makes it also susceptible to deep intraplate events within the subducting Juan de Fuca Plate, and shallow crustal events within the North American Plate.

According to the Oregon NHMP, the return period for the largest of the CSZ earthquakes (Magnitude 9.0+) is 530 years with the last CSZ event occurring 314 years ago in January of 1700. The probability of a 9.0+ CSZ event occurring in the next 50 years ranges from 7 - 12%. Notably, 10 - 20 "smaller" Magnitude 8.3 - 8.5 earthquakes identified over the past 10,000 years affect only the southern half of Oregon and northern California. The average return period for these events is roughly 240 years. The combined probability of any CSZ earthquake occurring in the next 50 years is 37 - 43%.

**Figure I-7. Cascadia Subduction Zone**



Source: USGS, 2013.

## Hazard History

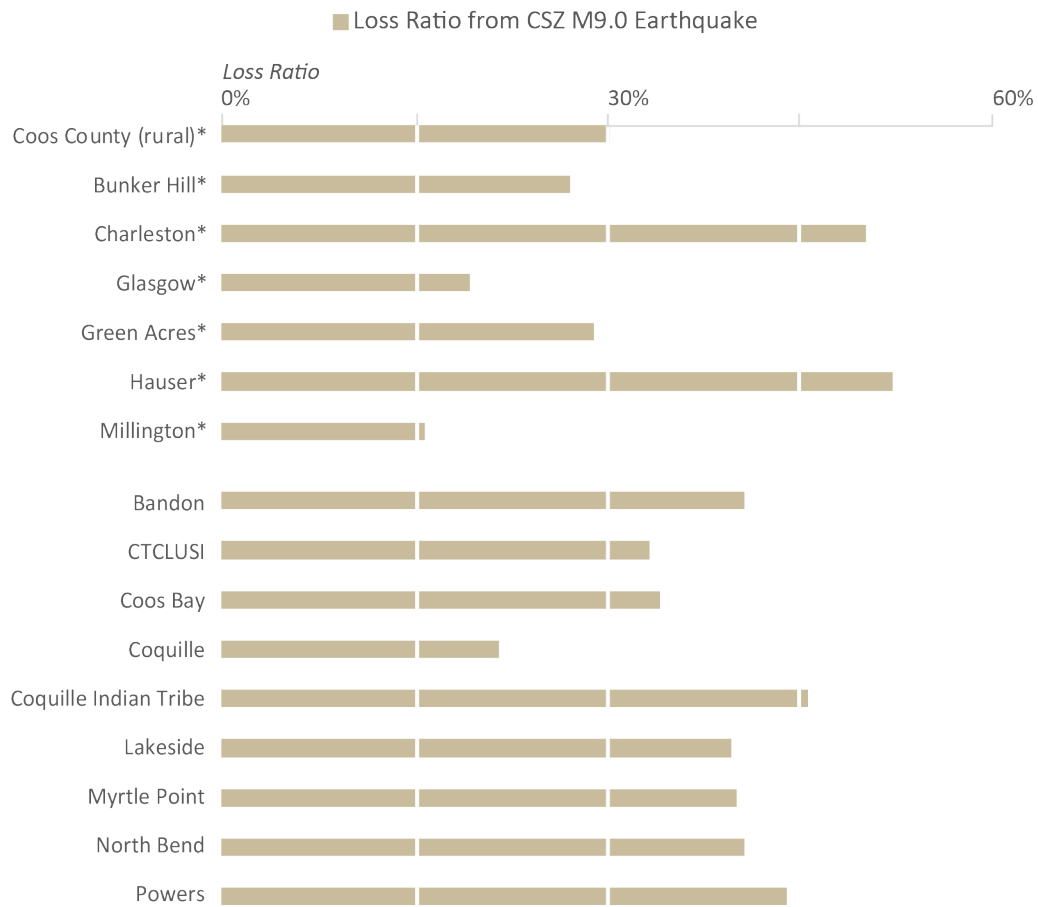
The following table provides information on the previous occurrences of earthquakes. One new earthquake event has occurred since 2016 and six historic events have been added for the 2021 update.

**Table I-20. Historic Earthquake Events**

Date	Magnitude	Location	Details
Feb. 2021* (02/20/2021)	5.1	180 miles west of Bandon, OR	6.2 mi depth
Aug. 2018* (08/22/2018)	6.2	170 miles west of Coos Bay, OR	6.2 mi depth
Apr. 2012	5.9	168 miles west of Coos Bay, OR	There were no reported damages.
Feb. 2012	6.0	160 miles west of Coos Bay, OR	There were no reported damages.
Oct. 2011	5.3	144 miles west of Coos Bay, OR	
Aug. 2010* (08/28/2010)	5.2	80 miles offshore from Reedsport, OR.	
Feb. 2001* (02/28/2001)	6.8	Nisqually, WA	400 injured; \$2 billion in damage; 'Deep' earthquake.
Sept. 1993 (09/21/1993)	5.9 and 6.0	Klamath Falls, OR	Two deaths; \$7.5 million in damage to homes, commercial, and government buildings. Two crustal earthquakes; 8.5 and 8.6 km depth respectively. (FEMA-1004-DR-OR).
Mar. 1993 (03/25/1993)	5.6	Scotts Mills, OR (east of Woodburn)	\$27 million in damage to homes, schools, businesses, state buildings (Salem). Crustal earthquake; (FEMA-985-DR-OR).
May 1980* (05/18/1980)	5.1	Mt. St. Helens, WA	Associated with eruption.
Jun. 1973* (06/16/1973)	5.6	80 miles offshore from Lincoln City, OR.	
Mar. 1964* (03/28/1964)	9.2	Prince William Sound, AK	140 dead; \$311 million in damage. Largest recorded earthquake in the U.S.
Nov. 1962 (11/06/1962)	5.2-5.5	Portland, OR	Damage to many homes (chimneys, windows, etc.) Crustal event 16.0 km depth
Dec. 1941* (12/19/1941)	5.6	Portland, OR	
Nov. 1873	7.3	Offshore from Brookings, OR	Chimneys fell at Port Orford, Grants Pass, and Jacksonville. Intraplate event, Gorda block off the Juan de Fuca plate. No aftershocks.
Jan. 1700 (01/26/1700)	9.0	off Pacific NW coast	Approximately 9.0 earthquake generated a tsunami that struck Oregon, Washington, and Japan; destroyed Native American villages along the coast.

Note: \* indicates newly listed event for the 2021 NHMP update. Source: USGS, <https://earthquake.usgs.gov/earthquakes/>; Sullivan, W.L., 2018.

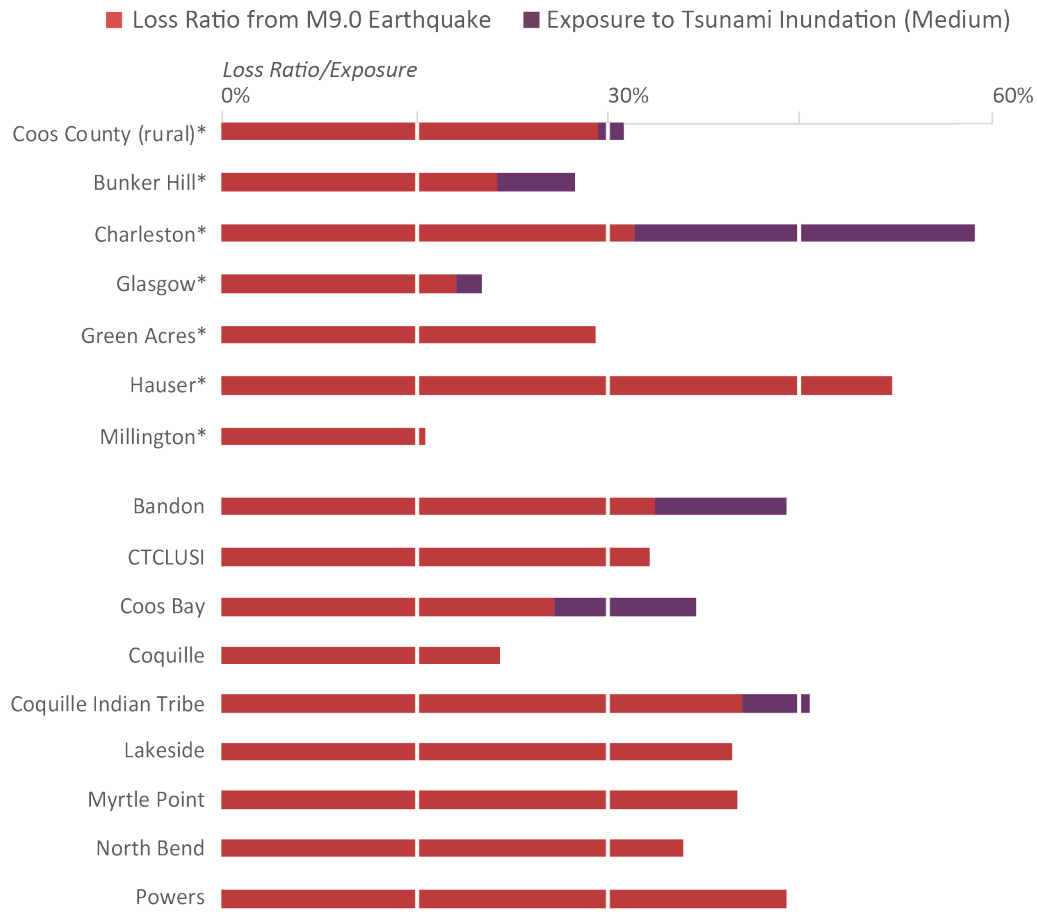
**Figure I-8. Earthquake Loss Ratio by Coos County Community**  
 Total Building Value Loss Ratio from M 9.0 Earthquake



\*Unincorporated

Source: Williams et al, 2021.

**Figure I-9. CSZ M9.0 Event Loss Ratio in Coos County, Earthquake and Tsunami**  
 Earthquake and Tsunami Building Damage



\*Unincorporated

Source: Williams et al, 2021. Note: Due to the nearly simultaneous timing of a Cascadia subduction zone earthquake and tsunami, loss estimate results have been parsed to avoid double counting. That is, buildings within the (Medium-sized) tsunami zone are reported on the basis of exposure only, while buildings outside the tsunami zone are reported on the basis of Hazus-MH earthquake loss estimates. Tsunami losses to buildings are assumed to be complete within the inundation area.

## Vulnerability Assessment

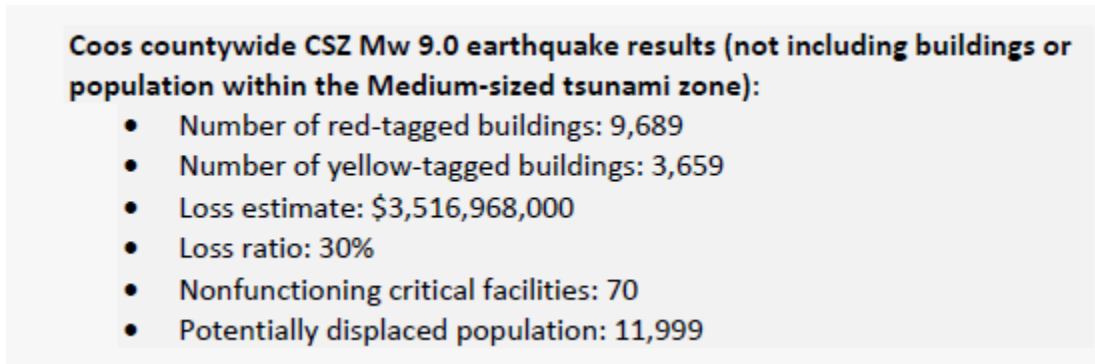
DOGAMI identified locations within the study area that are comparatively more vulnerable or at greater risk to CSZ Mw 9.0 earthquake hazard (Williams et al, 2021):

- Very high liquefaction soils are found throughout most of the populated estuarine portions of Coos County, which include the communities of Bandon, Bunker Hill, Charleston, Coos Bay, Millington, and North Bend.
- Building inventory for the cities of Coquille and Myrtle Point are relatively older than other communities in Coos County, which implies lower seismic building design codes and are more vulnerable to damage during an earthquake. Myrtle Point’s estimated loss ratio from a CSZ earthquake alone is 40%. Building code upgrade simulations show that Myrtle Point would

benefit the most from seismic retrofits, loss estimates go from 40% to 22% when pre- and low-code buildings are upgraded to moderate code.

- Because of the liquefaction and landslides, communities will likely be “islands” disconnected from other communities by severed transportation routes. With losses up to 52%, it is very important for a community to be able to respond to emergencies with its own resources.
- Nearly all of the critical facilities (87%) in the communities of Coos County could be nonfunctioning due to a CSZ earthquake.

**Figure I-10. Coos Countywide CSZ Mw Earthquake Results**



The Natural Hazard Risk Report for Coos County, Oregon has four major findings about earthquakes (Williams et al, 2021):

1. A Cascadia M9 earthquake and tsunami will cause extensive overall damage and losses.

Due to its proximity to the Cascadia subduction zone (CSZ), every community in Coos County will experience significant impact and disruption from a CSZ magnitude 9.0 earthquake event. Event impacts that were examined are limited to earthquake (including ground deformation) and tsunami. Results show that a CSZ M9.0 event will cause approximately 35% to 50% in building losses for most communities. The unincorporated community of Charleston can expect a very high percentage of losses due to tsunami hazard. Other communities like Lakeside, Myrtle Point, North Bend, Powers, and Hauser have little to no tsunami exposure, but still will have high losses from earthquake alone. The high vulnerability of the building inventory (primarily because of the age of construction), high levels of exposure to liquefiable soils, the proximity to the CSZ event, and the amount of development within tsunami zones all contribute the estimated levels of losses expected in the study area.

2. Retrofitting buildings to modern seismic building codes can reduce damages and losses from earthquake

Seismic building codes have a major influence on earthquake shaking damage estimated by Hazus-MH, a software tool developed by the Federal Emergency Management Agency (FEMA) for calculating loss from natural hazards. We examined potential loss reduction from seismic retrofits (modifications that improve building’s seismic resilience) in simulations by using Hazus-MH building code “design level” attributes of pre, low, moderate, and high codes (FEMA, 2012b) in CSZ earthquake scenarios. The simulations were accomplished by upgrading every pre (non-existent)

and low seismic code building to moderate seismic code levels in one scenario, and then further by upgrading all buildings to high (current) code in another scenario. We found that retrofitting to at least moderate code was the most cost-effective mitigation strategy because the additional benefit from retrofitting to high code was minimal. In our simulation of upgrading buildings to at least moderate code, the estimated loss for the entire study area went from 30% to 19%. We found further reduction in estimated loss in our simulation to 16% only by upgrading all buildings to high code. Some communities would see greater loss reduction than the study area as a whole due to older building stock constructed at pre or low code seismic building code standards. Some examples are the Cities of Myrtle Point and North Bend, which would see a significant loss reduction (from 40% to 22% and 36% to 21%, respectively) by retrofitting all buildings to at least moderate code. While seismic retrofits are an effective strategy for reducing earthquake shaking damage, it should be noted that earthquake-induced tsunami, landslide, and liquefaction hazards will also be present in some areas, and these hazards require different geotechnical mitigation strategies.

3. Most of the study area’s critical facilities are at high risk to a CSZ earthquake and tsunami

Critical facilities were identified and were specifically examined within this report. We have estimated that 88% (83) of Coos County’s 94 critical facilities will be non-functioning after a CSZ event, with 13 of those located with the medium tsunami zone. For comparative purposes, 17% (16) of critical facilities are at risk to landslide, 14% (13) are exposed to flood hazard, and 1% (1) are exposed to wildfire.

4. The two biggest causes of displacement to population are a CSZ event (earthquake and tsunami) and landslide

The Coos County Risk Report estimated that 20% of the population in the county would be displaced due to the combination of earthquake and tsunami.

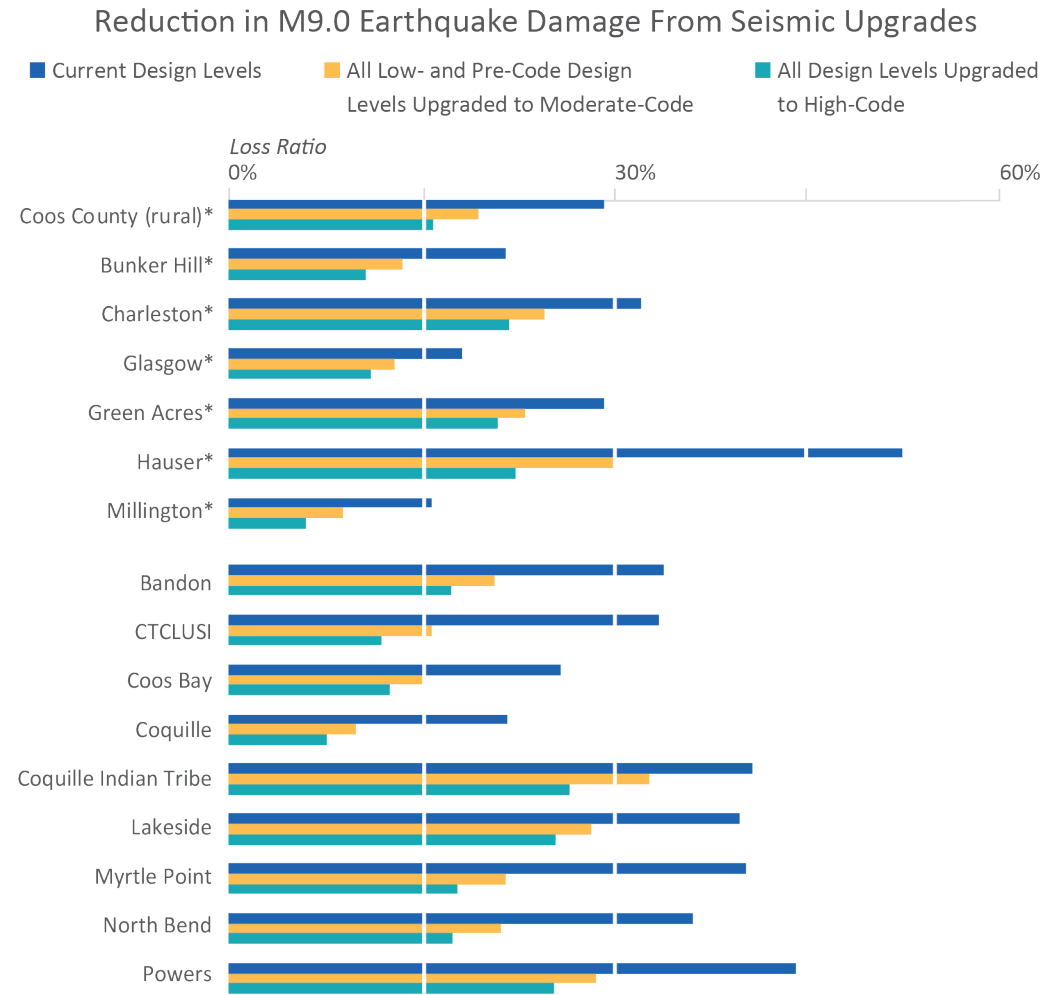
**Table I-21. CSZ Earthquake Hazard Vulnerability Analysis Summary**

Jurisdiction	Total	Risk Level	Jurisdiction	Total	Risk Level
Unincorporated Coos County	196	H	City of Powers	205	H
City of Bandon	205	H	Bay Area Hospital District	202	H
City of Coquille	205	H	Haynes Drainage District	177	H
City of Coos Bay	202	H	International Port of Coos Bay	196	H
City of Lakeside	205	H	Port of Bandon	205	H
City of Myrtle Point	179	H	Southern Coos Hospital District	205	H
City of North Bend	205	H			

Source: Coos MJ-NHMP Risk Assessment, March-May 2021.



**Figure I-11. CSZ M9.0 Reduction in Earthquake Damage from Seismic Upgrades**



\*Unincorporated

Source: Williams et al, 2021. Note: Loss estimates shown are for buildings outside the tsunami zone only and are reported on the basis of Hazus-MH earthquake loss estimates. Tsunami losses to buildings are assumed to be complete within the inundation area.

**Table I-22. Cascadia Subduction Zone Earthquake Loss Estimates**

*(all dollar amounts in thousands)*

Community	Total Number of Buildings	Total Estimated Building Value (\$)	Total Earthquake Damage*		Earthquake Damage outside of Medium Tsunami Zone							
			Buildings Damaged		Buildings Damaged				Building Design Level Upgraded to at Least Moderate Code			
			Sum of Economic Loss	Loss Ratio	Yellow-Tagged Buildings	Red-Tagged Buildings	Sum of Economic Loss	Loss Ratio	Yellow-Tagged Buildings	Red-Tagged Buildings	Sum of Economic Loss	Loss Ratio
Unincorp. County (rural)	18,957	4,476,885	1,354,946	30%	1,606	4,256	1,310,768	29%	1,273	2,752	873,272	20%
Bunker Hill	740	173,872	47,261	27%	86	61	37,528	22%	29	35	23,631	14%
Charleston	1,549	310,927	155,594	50%	124	561	99,432	32%	140	417	76,008	24%
Glasgow	578	125,629	24,408	19%	71	94	22,865	18%	21	71	16,247	13%
Green Acres	367	79,090	23,040	29%	25	87	23,040	29%	11	76	18,263	23%
Hauser	1,022	286,877	149,929	52%	91	429	149,929	52%	177	217	85,514	30%
Millington	506	100,571	15,917	16%	73	34	15,917	16%	18	19	8,930	9%
<b>Total Unincorp. County</b>	<b>23,719</b>	<b>5,553,851</b>	<b>1,771,096</b>	<b>32%</b>	<b>2,077</b>	<b>5,522</b>	<b>1,659,480</b>	<b>30%</b>	<b>1,668</b>	<b>3,588</b>	<b>1,101,864</b>	<b>20%</b>
Bandon	1,962	629,445	257,067	41%	142	551	213,771	34%	171	347	131,333	21%
CTCLUCI	33	12,470	4,271	34%	5	10	4,271	34%	3	5	2,026	16%
Coos Bay	7,220	2,420,579	836,100	35%	604	1,423	632,247	26%	464	886	375,844	16%
Coquille	1,977	606,670	131,036	22%	162	195	131,036	22%	62	113	59,419	10%
Coquille Indian Tribe	100	80,721	36,787	46%	10	21	32,707	41%	4	16	26,245	33%
Lakeside	1,421	242,768	96,156	40%	155	511	96,156	40%	186	327	68,136	28%
Myrtle Point	1,329	383,743	154,830	40%	129	339	154,830	40%	105	209	83,263	22%
North Bend	4,233	1,494,790	614,201	41%	328	898	542,929	36%	193	609	319,391	21%
Powers	556	111,516	49,542	44%	48	219	49,542	44%	68	140	32,084	29%
<b>Total Coos County</b>	<b>42,550</b>	<b>11,536,552</b>	<b>3,951,084</b>	<b>34%</b>	<b>3,659</b>	<b>9,689</b>	<b>3,516,968</b>	<b>30%</b>	<b>2,924</b>	<b>6,240</b>	<b>2,199,607</b>	<b>19%</b>

Source: Williams et al, 2021. Note: \*All losses calculated from earthquake inside or outside of Medium tsunami zone.

## Risk Reduction Recommendations

The science of risk reduction is an emerging field. These potential actions to address earthquakes are placeholders following the hazard description, so the community and other readers understand the some of the mitigation best practices under consideration. Source: Williams et al, 2021.

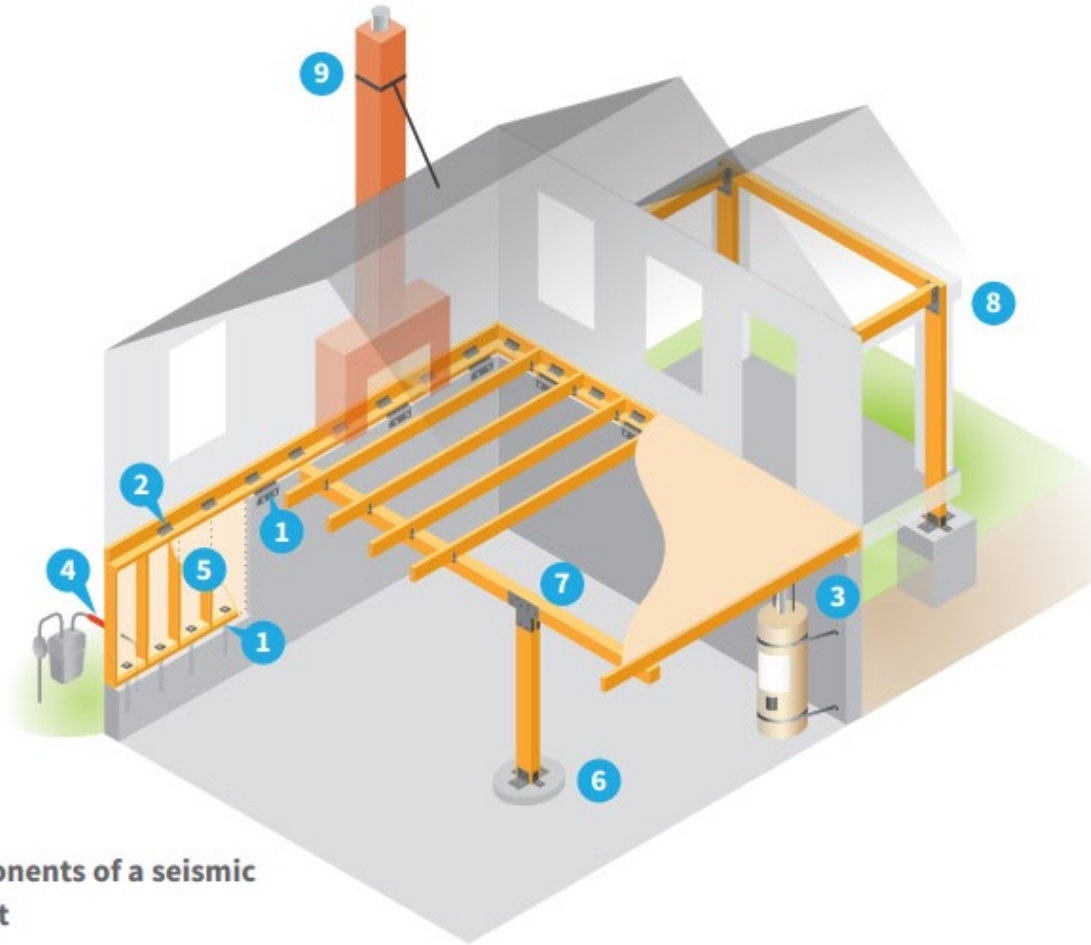
- Evaluate critical facilities for seismic preparedness by identifying structural deficiencies and vulnerabilities to dependent systems (e.g., water, fuel, power).
- Address vulnerabilities of critical facilities. We estimate that 88% of critical facilities (Appendix A: Community Risk Profiles) will be damaged by the CSZ event (includes tsunami), which will have many direct and indirect negative effects on first response and recovery efforts.
- Conduct awareness campaigns to encourage home and business owners to perform seismic retrofits. Our findings indicate that seismic upgrades can significantly reduce losses to buildings.
- Ensure seismic building codes are strictly enforced, especially for manufactured homes.
- Consider implementing regulations in highly liquefiable soil zone areas or using planning to reduce risk.

### Seismic Resilience

Building owners and facility managers should consider earthquake preparedness and mitigation efforts, like seismic retrofits of structures and pipe connections. Here are some structural seismic retrofit guides:

- Earthquake Preparedness in the Northwest—Homeowner Guide
- <https://www.klamathcounty.org/DocumentCenter/View/5633/Earthquake-Preparedness-in-the-Northwest--Homeowner-Guide>
- Seismic Retrofit information from Oregon Construction Contractors Board
- <https://www.oregon.gov/ccb/homeowner/Pages/earthquake-retrofit.aspx>
- Seismic Retrofit information from Oregon Emergency Management: <https://www.oregon.gov/OEM/hazardsprep/Pages/Earthquakes.aspx>

Figure I-12. Components of a Seismic Retrofit



**Components of a seismic retrofit**



**1. Foundation anchors**  
Connect the wall to the foundation; keep house in place. **Vertical bolts** are used where space allows



**Foundation plates with horizontal bolts** are used where space does not permit vertical bolts (see p. 12)



**2. Framing anchors**  
Attach rim joist to mud sills and floor joist to mud sills (see p. 12)



**3. Water heater**  
Strapping prevents heater falling and causing water damage; can be emergency drinking water source



**4. Gas valve**  
Automatic emergency shutoff valve reduces risk of fires



**5. Shear wall**  
New plywood added to basement wood frame "cripple wall" protects against side-to-side movement



**6. Masonry**  
Footers and basement walls made of concrete, brick or stone may need evaluation and reinforcement or replacement



**7. Post and beam**  
Reinforcement brackets add resistance to side-to-side motion



**8. Porch**  
Strengthening adds new posts and beams inside historic box beams and hollow columns



**9. Chimney**  
Bracing or removal reduces risk of chimney collapse, injury to occupants and damage to structure

Source: Enhabit, Inc. Earthquake Preparedness in the Northwest Homeowner Guide.

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## 4. Flood

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### Causes and Characteristics

Flooding results when precipitation, weather events, water levels in lakes, diked areas, estuaries and the ocean, and in Coos County, very occasionally snowmelt, creates water flow that exceeds the carrying capacity of rivers, streams, channels, ditches, and other watercourses. There are three sources of flooding risk addressed in this plan: riverine, coastal, and dam failure.

Riverine floods are likely to occur in Coos County from October through April when storms from the Pacific Ocean bring intense rainfall. Major riverine flood sources in Coos County include the Coos, South Fork Coos, Coquille, East Fork Coquille, Middle Fork Coquille, North Fork Coquille, South Fork Coquille, and Willicoma rivers, as well as Ten Mile Creek, Palouse Creek, Larson Creek, Pony Creek, Kentuck Slough, Coalbank Slough, and the Willanch Slough. All the listed rivers are subject to flooding and can cause damage to buildings within the floodplain. In addition to riverine flooding, there are lakes within the coastal margin that are subject to flooding, including North Tenmile Lake, Saunders Lake, and Tenmile Lake.

**Figure I-13. Mouth of Coos Bay**



Source: Photo by Alex Derr. <https://oregonshores.org/>

Coastal flooding from the Pacific Ocean and the Coos River and Coquille River estuaries poses a risk to low-lying coastal developments. These risks are dynamic and increasing in variable ways. King Tides provide some insight to how and when winds, tides, riverine flooding, may flood roads and buildings. But sea level rise and ocean wave dynamics can also contribute to flooding and the science is quite clear on the likelihood of significant flood impacts with each small amount of sea level rise. The OCCRI Future Conditions Report for Coos County is appended to this report in full text and should be referenced for guidance on the risks of sea level rise and other sources of coastal flooding.

There is also a risk of flooding by dam failure in Coos County—see the High Hazard Potential Dam Failure chapter.

## Hazard History

The following table provides information on the previous occurrences of flooding. Eleven new flood events have occurred since the last plan update and eight historic events have been added for the 2023 update.

**Table I-23. Historic Flood Events**

Date	Location	Event Type	Magnitude	Details
Apr. 2019*	Myrtle Point; S. Oregon Coast	Flood	33'	Two days of very heavy rainfall combined with snowmelt led to area flooding in southwest Oregon. DR-4452 declared 7/9/19 in Douglas and Curry counties.
Feb. 2019*	S. Oregon Coast	Flood	n/a	Very heavy rain along with the melting of recent snowfall caused flooding at several locations in southern Oregon in late February. South Fork of the Coquille at Myrtle Point, North Fork of the Coquille at Myrtle Point, and the Coquille River at Coquille, and all exceeded flood stage.
Jan. 2019*	Coos and Curry counties	Flood	n/a	A weekend of very heavy rain led to river rises across southern Oregon. The Coquille River at Coquille flooded as well.
Feb. 2017*	Coos and Curry counties	Flood	n/a	High river flows combined with high tide to flood some areas near the southern Oregon coast. Heavy rain combined with snow melt caused flooding along the Coquille River in southwest Oregon.
Jan. 2017*	Coos and Curry counties	Flood	n/a	An extended period of heavy rain combined with snowmelt to cause flooding of the Coquille River and the South Fork of the Coquille River.
Dec. 2016*	Coos and Curry counties	Flood	n/a	Heavy rain brought some areal flooding to parts of southwest Oregon.
Mar. 2016*	Coos County	Flood	n/a	Heavy rains brought flooding to the Coquille River at Coquille on these dates.
Jan. 2016*	Coos County	Flood	n/a	Heavy rain brought flooding to some areas of southwest Oregon, including moderate flooding on the Coquille River at Coquille.

Date	Location	Event Type	Magnitude	Details
Dec. 2015*	Coos and Curry counties	Flood	n/a	A moist pacific front produced heavy rainfall across Northwest Oregon which resulted in river flooding, urban flooding, small stream flooding, landslides, and a few sink holes. After a wet week (December 5 through Dec 11), several rivers were near bank full ahead of another front on December 12th.
Jan. 2014*	Coos County	Flood	n/a	A slow moving front produced heavy rain over Northwest Oregon which resulted in the flooding of eight rivers. Another impact from the rain were a couple of land/rock slides that both blocked two highways. Heavy rain brought flooding to several rivers in southwest Oregon.
Feb. 2014*	Coos County	Flood	n/a	A series of fronts resulted in a prolonged period of rain. Heavy rains caused the Coquille River at Coquille to flood. The flood was categorized as a moderate flood.
Dec. 2012	Oregon Coast	Heavy Rain, Flooding, Landslides		In Coos County, the Coquille River flooded a park and farmland.
Mar. 2012	Coos and Curry Counties	Heavy Rain, Flooding, Mudslides, Landslides		Winds and heavy rains caused flooding, mudslides, and landslides in twelve counties. There was an estimated \$5,856,881 in damage to state highways.
Jan. 2012	Coos and Curry Counties	Heavy Rain, Flooding, Landslides		A severe winter storm caused flooding along with landslides and mudslides in Southern Oregon.
Dec. 2008	Coos County	Heavy Rain, Flooding	Flood stage	Brummit Creek and the west fork of Brummit Creek flooded after heavy rains, inundating several homes in Sitkum and closing Sitkum Lane at Milepost 24. The Coquille River rose above flood stage, but did not do any damage.
Dec. 2006	Coos County	Heavy Rain, Flooding	n/a	Two separate floods on the Coquille River inundated several roads, including Highways 42 and 42S.
Dec. 2005	Southwest Oregon	Heavy Rain, dike failure	10 homes damaged	Coalbank Slough south of Coos Bay flooded the Libby and Englewood Diking Districts damaging 10 homes. Damaged properties were the focus of flood mitigation efforts between 2006 and 2008.
Dec. 2004 (12/08/2004-12/09/2004)	W. Oregon	High surf; Heavy rain; Mudslides	25 ft. Surf	A large powerful Pacific storm brought a wide variety of weather to Western Oregon. Heavy rain accompanied this storm resulting in mud slides. Buoys 20 miles off the Oregon Coast reported maximum seas of 25 to 26 feet.
Feb. 2000*	Myrtle Point; Coos County	Flood	n/a	A flood warning was issued for the South Fork of the Coquille River at Myrtle Point.
Dec. 2001	City of Powers	Sanitary sewer overflow	n/a	Bypass of raw sewage into local waterway on 12/14/2001.
Nov. 2001	City of Myrtle Point	Sanitary sewer overflow	n/a	Bypass of raw sewage into local waterway on 11/21/2001.
July 2001	City of North Bend	Sanitary sewer overflow	n/a	Bypass of raw sewage into local waterway on 7/24/2001.



Date	Location	Event Type	Magnitude	Details
May 2001	City of Coos Bay	Sanitary sewer overflow	n/a	Bypass of raw sewage into local waterway on 12/7/2001.
May 2001	City of Myrtle Point	Sanitary sewer overflow	n/a	Bypass of raw sewage into local waterway on 5/15/2001.
May 2001	City of Coos Bay	Sanitary sewer overflow	n/a	Bypass of raw sewage into local waterway on 5/7/2001.
Jan. 2000	City of Powers	Sanitary sewer overflow	n/a	Bypass of raw sewage into local waterway on 1/11/2000.
Jan. 2000	City of Myrtle Point	Sanitary sewer overflow	n/a	Bypass of raw sewage into local waterway on 1/11/2000.
Dec. 1999	City of Myrtle Point	Sanitary sewer overflow	n/a	Bypass of raw sewage into local waterway on 12/7/1999.
Nov. 1999	City of Coquille	Sanitary sewer overflow	n/a	Bypass of raw sewage into local waterway on 11/6/1999.
Feb. 1999	Coos County	Flooding	\$5 million in crop damage	\$5 million in crop damage resulted from flooding along the Coquille River.
Nov. 1998 (11/30/1998)	Coos and Curry Counties	Flooding	n/a	The Coquille River flooded, including the North Fork at Myrtle Point.
Nov. 1998 (11/23/1998)	Coos County	High Wind, Heavy Rain	n/a	Stormy conditions, with strong winds and heavy rain. Flash flood warnings and small steam advisories issued for the two counties. Coquille River at flood stage.
Mar. 1998	City of Powers	Sanitary sewer overflow	n/a	Bypass of raw sewage into local waterway on 3/23/1998.
Nov. 1996 - Dec. 1996	Five Western States	Heavy Rain, Freezing Rain/Heavy Wet Snow	6-18 in. rain west of the Cascades; 8 in. in 24 hrs. in Coast Range	During the period from mid-November to mid-December 1996, many areas received above-normal precipitation, greatly increasing the snowpack over mid and high elevations. Three sequential storms brought moderate to heavy rain, with the last creating a rain-on-snow event which resulted in incredible amounts of runoff. Presidential Disaster Declaration for continued flooding, landslides, and mudslides from November 17th to December 11th. Oregon State of Emergency declared. Record-breaking precipitation throughout much of Oregon caused local flooding, landslides, and power outages over much of the state from November 18th-20th. All-time one-day precipitation records were set at many locations. North Bend was one of the locations, with a recorded 6.67" of rain in 24 hours.



Date	Location	Event Type	Magnitude	Details
Nov. 1996	Coos County, Oregon Coast	Heavy Rain, Floods	North Bend recorded 6.67" of rain in 24 hours	Road damage from landslides; high velocity flows, damage from erosion and undermining of structures. Record-breaking precipitation throughout much of Oregon caused local flooding, landslides, and power outages over much of the state from November 18th-20th. All-time one-day precipitation records were set at many locations. North Bend was one of the locations, with a recorded 6.67" of rain in 24 hours.
Feb. 1996 (2/4/1996; 2/21/1996)	Oregon Coast	Floods, Debris Flow	7 deaths; 100s of homes destroyed; \$1 billion in damage.	A river of subtropical atmospheric moisture flowed above northern Oregon producing very heavy rainfall. Five Oregon residents died, thousands of people were sheltered and hundreds of homes were destroyed. Four days of heavy rain produced a disaster declaration in Coos County (Oregon Executive Order 96-18). Federal disaster aid to Coos County included individual assistance, public assistance (for repair and reconstruction of public facilities) damaged in the February floods in the wake of storms on February 4th and 21st.
Jan. 1995	Coos County	Heavy Rain, Flooding	\$3 million in damage	Heavy rain caused \$2.5- \$3 million worth of damage to roads, highways residences, and parks in Coos County. Coquille River flooded.
Nov. 1991*	Oregon Coast	High Wind, High Surf	25 ft. waves	This slow-moving storm generated 25-foot waves and resulted in damage to buildings, boats, and transmission lines.
Nov.-Dec. 1977*	Western Oregon	Heavy Rain, Floods	n/a	Rain on snow event; \$16.5 million in damages.
Jan. 1972*	Western Oregon	Heavy Rain, Floods	n/a	Record flows on coastal rivers.
Dec. 1964 * (12/24/1964)	Oregon	Floods, Heavy Rain, Winter Storm	100-year flood event; Benchmark	The Christmas flood of 1964 was driven by a series of storms, known as atmospheric rivers or "pineapple expresses," that battered the region producing as much as 15 inches of rain in 24 hours at some locations. The combination of heavy rain, melting snow, and frozen ground caused extreme runoff, erosion and flooding.
Dec. 1964 - Jan. 1965*	Oregon	Floods, Heavy Rain, Winter Storm		Rain on snow event; record flood on many rivers.
Mar. 1964*	Oregon Coast	Flood	n/a	n/a
Jan. 1956*	Western Oregon	High Wind, Heavy Rain, Mudslides		Heavy rains, high winds, mud slides resulted in estimated damages of \$95,000.
Dec. 1945*	Coquille River	Flood		
Nov. 1909*	Coquille River	Flood		

Note: \* indicates newly listed event for the 2021 NHMP update. Source: NOAA Storm Events Database, <https://www.ncdc.noaa.gov/stormevents/>, accessed 12/2/2019; Oregon NHMP, 2020.

## Future Climate Conditions: Flood

The OCCRI report, Future Climate Projections Coos County, Oregon appears in full text in the Appendix. The key messages about flooding from that report are:

- The intensity of extreme precipitation is expected to increase as the atmosphere warms and holds more water vapor.
- In Coos County, the number of days per year with at least 0.75 inches of precipitation is not projected to change substantially. However, by the 2050s, the amount of precipitation on the wettest day and wettest consecutive five days per year is projected to increase by an average of 12% (range -2–25%) and 9% (range -5–23%), respectively, relative to the 1971–2000 historical baselines, under the higher emissions scenario.
- In Coos County, the number of days The risk of coastal erosion and flooding on the Oregon coast is expected to increase as climate changes due to sea level rise and changing wave dynamics.
- In Coos County, local sea level is projected to rise by 1.2 to 5.3 feet by 2100. This projection is based on the intermediate-low to intermediate-high global sea level scenarios used in the 2018 U.S. National Climate Assessment. Because these local sea level projections account for estimated trends in vertical land movement, they are relative to the future land position.
- Given these levels of sea level rise, the multiple-year likelihood of a flood reaching four feet above mean high tide is 4–34% by the 2030s, 25–100% by the 2050s, and 100% by 2100.
- At risk within the four-foot inundation zone in Coos County as of the 2010 census are 1062 people, \$72 million in property value, 10.9 miles of highways and roads, 9.4 miles of railways, 3 critical facilities, 2 municipal drinking water facilities, 3 potential contaminant sources, and 715 buildings.

## Vulnerability Assessment

The 2021 DOGAMI Risk Report (Williams et al, 2021) identified locations within the study area that are comparatively more vulnerable or at greater risk to flood hazard:

- A large portion of the downtown area of the City of Coos Bay is prone to flooding. A large amount of damage (\$42 million) could result from 100-year flooding in the City of Coos Bay.
- 100-year flooding from Tenmile Creek and Tenmile Lake would damage many buildings in the City of Lakeside. This community has the highest loss ratios from flooding than any other community in the study area.
- The commercial area by the marina in the City of Bandon is predicted to experience damages from flooding along the Coquille River.
- Flooding along the Coquille River is predicted to damage several buildings in the communities of Coquille and Myrtle Point.

### **Coos countywide 100-year flood loss:**

- Number of buildings damaged: 1,870
- Loss estimate: \$125,349,000
- Loss ratio: 1.1%
- Damaged critical facilities: 13
- Potentially displaced population: 2,116

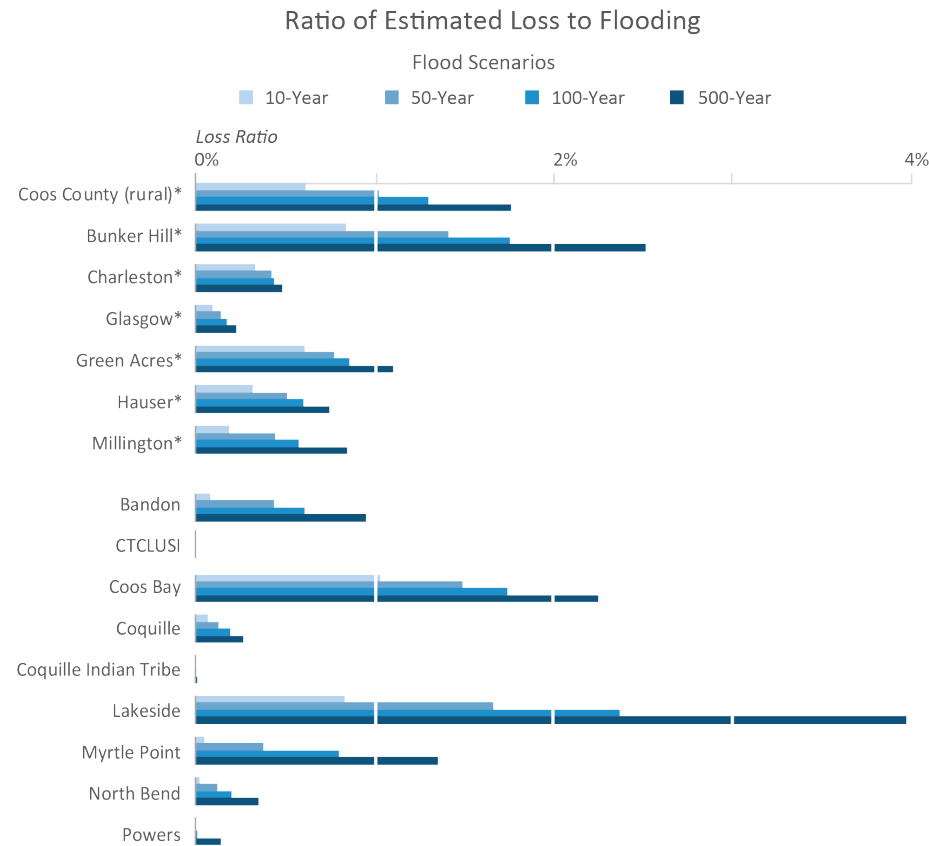
Source: Williams et al, 2021.

**Table I-24. Flood Hazard Vulnerability Analysis Summary**

Jurisdiction	Total	Risk Level	Jurisdiction	Total	Risk Level
Unincorporated Coos County	161	M	City of Powers	106	M
City of Bandon	159	M	Bay Area Hospital District	157	M**
City of Coquille	169	H	Haynes Drainage District	128	M
City of Coos Bay	171	H*	International Port of Coos Bay	171	H*
City of Lakeside	162	M	Port of Bandon	144	M
City of Myrtle Point	131	M	Southern Coos Hospital District	130	M
City of North Bend	169	H			

Source: Coos MJ-NHMP Risk Assessment, March-May 2021. Rankings are for riverine flooding unless noted: \* tidal flooding; \*\*dam failure, \*\*\*lake flooding.

**Figure I-14. Flood loss Estimates by Coos County Community.**



\*Unincorporated

Source: Williams et al, 2021.

**Table I-25. Flood Exposure**

*(all dollar amounts in thousands)*

Community	Total Number of Buildings	Small (Low Severity)			Medium (Moderate Severity)			Large (High Severity)			X Large (Very High Severity)			XX Large (Extreme Severity)			
		Total Estimated Building Value (\$)	Number of Buildings	Percent of Building Value Exposed	Number of Buildings	Percent of Building Value Exposed	Number of Buildings	Percent of Building Value Exposed	Number of Buildings	Percent of Building Value Exposed	Number of Buildings	Percent of Building Value Exposed	Number of Buildings	Percent of Building Value Exposed			
Unincorp. County (rural)	18,957	4,476,885	234	46,762	1.0%	418	94,049	2.1%	918	200,079	4.5%	2,015	464,241	10%	2,337	544,997	12%
Bunker Hill	740	173,872	1	418	0.2%	6	10,370	6.0%	71	40,907	24%	96	45,748	26%	107	48,463	28%
Charleston	1,549	310,927	247	78,239	25%	267	82,989	27%	465	123,141	40%	1,122	235,075	76%	1,238	254,901	82%
Glasgow	578	125,629	5	407	0.3%	13	2,537	2.0%	24	4,838	3.9%	37	8,339	7%	42	9,270	7.4%
Green Acres	367	79,090	0	0	0%	0	0	0%	0	0	0%	32	5,177	6.5%	45	8,693	11%
Hauser	1,022	286,877	0	0	0%	0	0	0%	1	11	0%	19	16,933	5.9%	52	38,178	13%
Millington	506	100,571	0	0	0%	0	0	0%	3	506	0.5%	44	13,191	13%	54	14,961	15%
<b>Total Unincorp. County</b>	<b>23,719</b>	<b>5,553,851</b>	<b>487</b>	<b>125,826</b>	<b>2.3%</b>	<b>704</b>	<b>189,945</b>	<b>3.4%</b>	<b>1,482</b>	<b>369,483</b>	<b>6.7%</b>	<b>3,365</b>	<b>788,704</b>	<b>14%</b>	<b>3,875</b>	<b>919,463</b>	<b>17%</b>
Bandon	1,962	629,445	145	49,200	7.8%	185	64,742	10%	276	91,553	15%	925	285,412	45%	1,374	431,860	69%
CTCLUCL	33	12,470	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%
Coos Bay	7,220	2,420,579	79	43,133	1.8%	319	267,595	11%	624	455,071	19%	1,018	578,485	24%	1,238	634,178	26%
Coquille	1,977	606,670	0	0	0%	0	0	0%	0	0	0%	0	0	0%	1	447	0.1%
Coquille Indian Tribe	100	80,721	0	0	0%	3	4,147	5.1%	6	44,153	55%	37	56,737	70%	44	58,670	73%
Lakeside	1,421	242,768	0	0	0%	0	0	0%	7	4,044	1.7%	43	10,543	4.3%	76	16,944	7.0%
Myrtle Point	1,329	383,743	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%
North Bend	4,233	1,494,790	23	6,110	0.4%	75	85,107	5.7%	263	168,526	11%	558	304,613	20%	608	316,952	21%
Powers	556	111,516	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%
<b>Total Coos County</b>	<b>42,550</b>	<b>11,536,552</b>	<b>734</b>	<b>224,270</b>	<b>1.9%</b>	<b>1,286</b>	<b>611,536</b>	<b>5.3%</b>	<b>2,658</b>	<b>1,132,830</b>	<b>9.8%</b>	<b>5,946</b>	<b>2,024,494</b>	<b>18%</b>	<b>7,216</b>	<b>2,378,514</b>	<b>21%</b>

Source: Williams et al, 2021.

## National Flood Insurance Program (NFIP) in Coos County

**Table I-26. National Flood Insurance Program (NFIP) Dates**

Jurisdiction	Effective FIRM and FIS	Initial FIRM Date	Last Community Assistance Visit
Coos County	12/7/2018	11/15/1984	8/13/2018
City of Bandon	12/7/2018	8/15/1984	9/20/2001
City of Coos Bay	12/7/2018	8/1/1984	4/1/1992
City of Coquille	12/7/2018	9/28/1984	8/15/2018
City of Lakeside	12/7/2018	8/1/1984	2/22/2019
City of Myrtle Point	12/7/2018	7/16/1984	10/1/1989
City of North Bend	12/7/2018	8/1/1984	8/13/2018
City of Powers	12/7/2018	6/30/1976	N/A

Source: FEMA Community Information System, 04/06/2021, Mitch Paine, FEMA Region 10

**Table I-27. National Flood Insurance Program (NFIP) Insurance Information**

Jurisdiction	Insurance in Force	Total Paid Claims	Pre-FIRM Claims Paid	Substantial Damage Claims	Total Paid Amount
Coos County	\$43,660,300	89	58	12	\$1,091,145
City of Bandon	\$19,030,400	16	10	0	\$129,152
City of Coos Bay	\$545,900	0	0	0	\$0
City of Coquille	\$32,666,800	58	37	7	\$1,356,522
City of Lakeside	\$5,776,500	8	3	1	\$16,527
City of Myrtle Point	\$0	10	1	1	\$24,497
City of North Bend	\$10,264,000	6	3	0	\$30,286
City of Powers	\$140,000	1	1	0	\$964

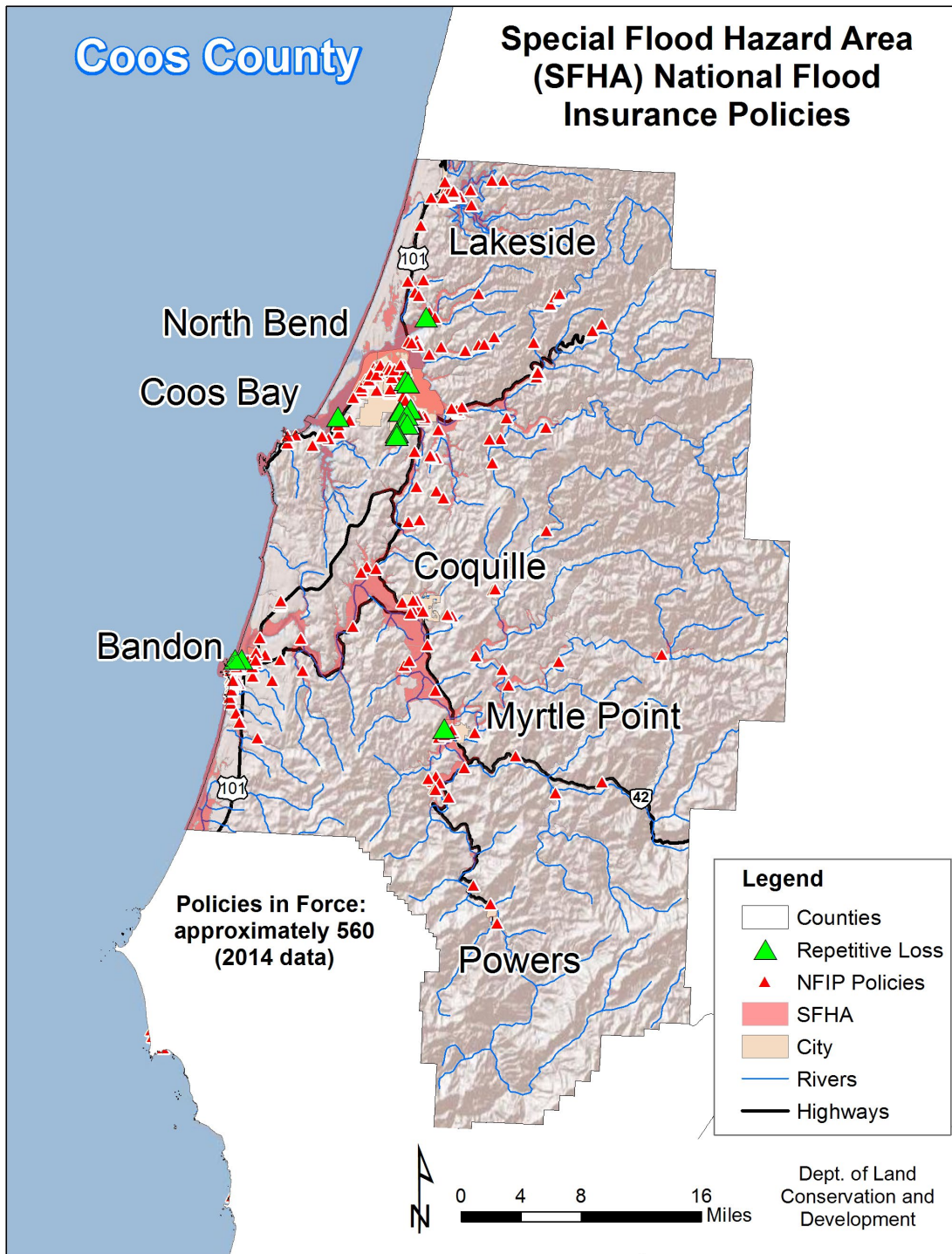
Source: FEMA Community Information System, 04/06/2021, Mitch Paine, FEMA Region 10

**Table I-28. NFIP Repetitive Loss & Severe Repetitive Loss Properties and CRS**

Jurisdiction	Repetitive Loss Structures	Severe Repetitive Loss Structures	CRS Class Rating
Coos County	10	0	10
City of Bandon	1	0	10
City of Coos Bay	0	0	10
City of Coquille	7	0	10
City of Lakeside	0	0	10
City of Myrtle Point	0	0	10
City of North Bend	0	0	10
City of Powers	0	0	10

Source: FEMA Community Information System, 04/06/2021, Mitch Paine, FEMA Region 10

Figure I-15. Repetitive & Severe Repetitive Loss Properties



Source: Department of Land Conservation and Development, August 2015

**Table I-29. Flood Loss Estimates**

*(all dollar amounts in thousands)*

Community	Total Number of Buildings	Total Estimated Building Value (\$)	10% (10-yr)			2% (50-yr)			1% (100-yr)*			0.2% (500-yr)		
			Number of Buildings	Loss Estimate	Loss Ratio	Number of Buildings	Loss Estimate	Loss Ratio	Number of Buildings	Loss Estimate	Loss Ratio	Number of Buildings	Loss Estimate	Loss Ratio
Unincorp. County (rural)	18,957	4,476,885	602	27,673	0.6%	825	45,993	1.0%	890	58,390	1.3%	948	79,270	1.8%
Bunker Hill	740	173,872	33	1,463	0.8%	41	2,465	1.4%	50	3,061	1.8%	52	4,379	2.5%
Charleston	1,549	310,927	14	1,050	0.3%	17	1,324	0.4%	18	1,381	0.4%	20	1,517	0.5%
Glasgow	578	125,629	7	120	0.1%	9	183	0.1%	9	227	0.2%	10	292	0.2%
Green Acres	367	79,090	12	485	0.6%	15	613	0.8%	16	681	0.9%	22	877	1.1%
Hauser	1,022	286,877	6	931	0.3%	7	1,475	0.5%	8	1,738	0.6%	8	2,148	0.7%
Millington	506	100,571	6	191	0.2%	11	449	0.4%	13	586	0.6%	18	853	0.8%
<b>Total Unincorp. County</b>	<b>23,719</b>	<b>5,553,851</b>	<b>680</b>	<b>31,913</b>	<b>0.6%</b>	<b>925</b>	<b>52,501</b>	<b>0.9%</b>	<b>1,004</b>	<b>66,064</b>	<b>1.2%</b>	<b>1,078</b>	<b>89,336</b>	<b>1.6%</b>
Bandon	1,962	629,445	21	544	0.1%	74	2,774	0.4%	94	3,855	0.6%	110	6,028	1.0%
CTCLUCI	33	12,470	0	0	0%	0	0	0%	0	0	0%	0	0	0%
Coos Bay	7,220	2,420,579	344	25,021	1.0%	436	36,201	1.5%	468	42,299	1.7%	490	54,591	2.3%
Coquille	1,977	606,670	8	415	0.1%	19	799	0.1%	23	1,207	0.2%	23	1,619	0.3%
Coquille Indian Tribe	100	80,721	0	0	0%	0	0	0%	1	2	0%	1	9	0%
Lakeside	1,421	242,768	49	2,033	0.8%	119	4,044	1.7%	171	5,768	2.4%	248	9,661	4.0%
Myrtle Point	1,329	383,743	17	197	0.1%	60	1,474	0.4%	80	3,081	0.8%	88	5,224	1.4%
North Bend	4,233	1,494,790	12	385	0%	24	1,852	0.1%	27	3,063	0.2%	32	5,360	0.4%
Powers	556	111,516	0	0	0%	0	0	0%	2	11	0%	4	157	0.1%
<b>Total Coos County</b>	<b>42,550</b>	<b>11,536,552</b>	<b>1,131</b>	<b>60,508</b>	<b>0.5%</b>	<b>1,657</b>	<b>99,644</b>	<b>0.9%</b>	<b>1,870</b>	<b>125,349</b>	<b>1.1%</b>	<b>2,074</b>	<b>171,986</b>	<b>1.5%</b>

Source: Williams et al, 2021.



**Table I-30. Flood Exposure**

Community	Total Number of Buildings	Total Population	1% (100-yr)*				
			Potentially Displaced Residents from Flood Exposure	% Potentially Displaced Residents from Flood Exposure	Number of Flood Exposed Buildings	% of Flood Exposed Buildings	Number of Flood Exposed Buildings Without Damage
Unincorp. County (rural)	18,957	18,664	763	4.1%	938	4.9%	48
Bunker Hill	740	1,376	22	1.6%	53	7.2%	3
Charleston	1,549	2,228	37	1.7%	20	1.3%	2
Glasgow	578	757	6	0.7%	10	1.7%	1
Green Acres	367	406	15	3.6%	21	5.7%	5
Hauser	1,022	1,145	11	1.0%	8	0.8%	0
Millington	506	666	13	1.9%	14	2.8%	1
<b>Total Unincorp. County</b>	<b>23,719</b>	<b>25,242</b>	<b>866</b>	<b>3.4%</b>	<b>1,064</b>	<b>4.5%</b>	<b>60</b>
Bandon	1,962	3,066	60	2.0%	123	6.3%	29
CTCLUCL	33	47	0	0%	0	0%	0
Coos Bay	7,220	15,966	773	4.8%	493	6.8%	25
Coquille	1,977	3,866	24	0.6%	23	1.2%	0
Coquille Indian Tribe	100	313	0	0.0%	1	1.0%	0
Lakeside	1,421	1,699	253	15%	233	16%	62
Myrtle Point	1,329	2,514	119	4.7%	85	6.4%	5
North Bend	4,233	9,651	18	0.2%	29	0.7%	2
Powers	556	687	4	0.6%	4	0.7%	2
<b>Total Coos County</b>	<b>42,550</b>	<b>63,052</b>	<b>2,116</b>	<b>3.4%</b>	<b>2,055</b>	<b>4.8%</b>	<b>185</b>

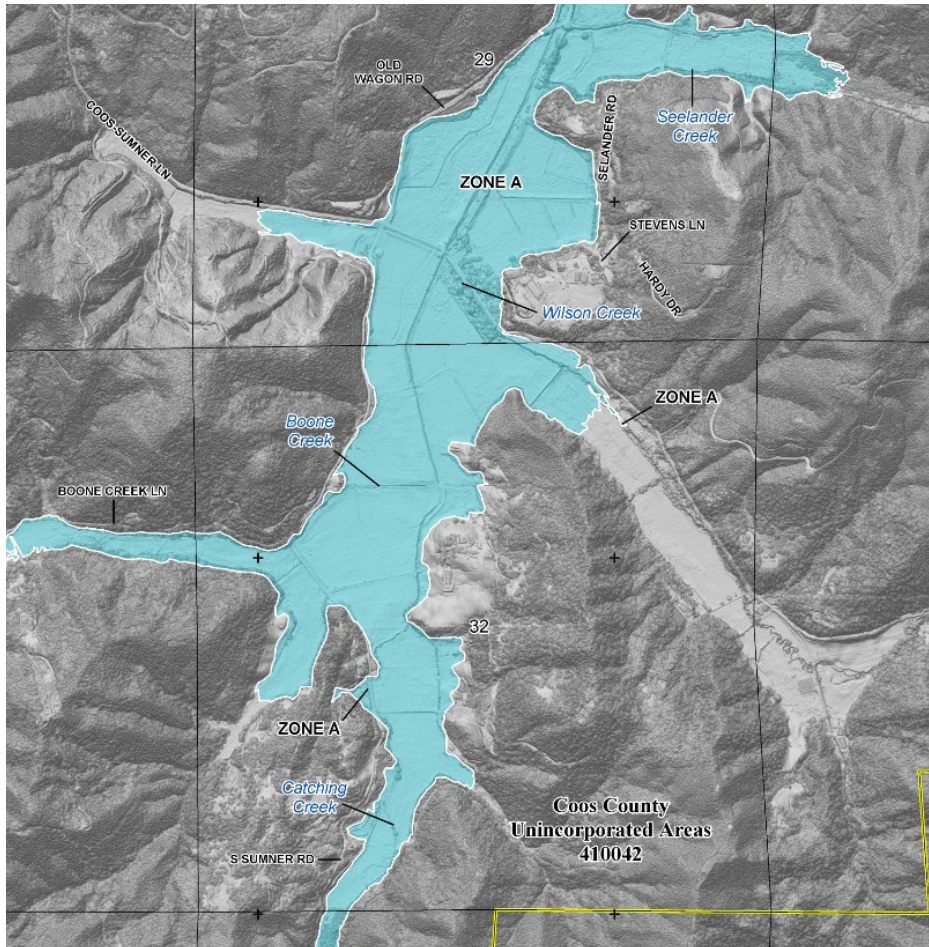
\*1% results include coastal flooding source. Source: Williams et al, 2021.

## Areas at Risk: Sumner

The Sumner Rural Fire Protection District participated in the 2021-2022 Coos County MJ-NHMP update process by attending numerous meetings and providing specific input (Rob Aton on 5/3/2021) about the flood risk of this unincorporated community served by Sumner Fire. Coos County has many waterways, wetlands, and two estuaries. The settlement areas and roads all follow the course of water as it heads towards the ocean. All this moisture, and low elevation topography, creates great growing conditions for trees. And the forest and waterways are what drive the hazard risk for the community of Sumner.

Flooding in Sumner is caused by Catching Slough, Wilson, and Boone Creeks. Flood waters frequently come over the dikes, South Sumner Road, and Old Wagon Road. Sumner Fire station is on a hill, and in flood conditions there is only water to the west which blocks access to the fire station. Unfortunately, west is the direction of services and the employment centers, and the roads follow the waterways. The local transportation route in Sumner sometimes has 36" of water on it during flood events and results in locals being unable to safely commute to work. People with four-wheel drive vehicles will shuttle residents through the floodwaters, which is a dangerous result of inadequate transportation infrastructure in this unincorporated community.

**Figure I-16. Sumner Flood Risk, Zone A**



Source: FEMA Map Service Center Note: FIRM 41011C0335F, effective 12/07/2018



Figure I-17. Community of Sumner



Source: DLCD via personal communication with Rob Aton, Sumner RFPD, 5/3/2021

Figure I-18. Sumner Flooding Location



Source: DLCD via personal communication with Rob Aton, Sumner RFPD, 5/3/2021

## Risk Reduction Recommendations

The science of risk reduction is an emerging field. These potential flood mitigation actions are listed along with the hazard description so that readers understand the type of mitigation actions being considered or that might be considered current best practices. Source: DOGAMI, DLCD.

- For jurisdictions that participate in the NFIP:
  - Enforce minimum NFIP requirements by implementing the flood ordinance and permitting requirements
  - Consider adopting higher standards such as adding freeboard to base flood elevation requirements (e.g. +1' or +2' BFE)
  - Regulate to the 500-year floodplain rather than the 100-year
  - Explore enhanced measures to achieve standing in CRS
  - Encourage the purchase of flood insurance by sending a flood awareness message out in early fall.
- Find opportunities to increase flood water storage areas.
- Relocate or elevate vulnerable structures to above the estimated base flood elevation. In some cases, communities can use FEMA's property acquisition or "buyout" program to remove structures that have repeatedly flooded in the past.
- Develop incentive programs to encourage flood mitigation retrofits such as: add flood vents, elevate HVAC and electrical equipment, or add flood-resistant materials to buildings built before modern flood code was adopted.
- Address repetitive loss and severe repetitive loss structures using FEMA's property acquisition or "buyout" program (Flood Management Assistance or FMA) to remove structures that have repeatedly flooded in the past.
- Create more permeable surfaces within urban areas to improve drainage and reduce flood peaks. Large parking lots are great candidates for improved permeability.

## 5. High Hazard Potential Dam Failure

Effective April 2023, FEMA has new plan update requirements that include additional considerations for high hazard potential dams (HHPDs). The Oregon Water Resources Department’s (OWRD) Dam Safety Program is actively working to ensure that Oregonians do not face “unacceptable” risk from HHPDs, by developing action plans for dams that do not meet sufficient safety standards. Dams that pose a high risk to life safety in the event of a failure event are called high-hazard potential dams (HHPDs). In June 2020, FEMA released new grant program guidance for Rehabilitation of High Hazard Potential Dams (FEMA, 2020) and new guidance for inclusion of HHPDs in Local Mitigation Planning Policy that becomes effective April 19, 2023 (FEMA, 2022). The legal definition of high hazard in Oregon is ORS 540.443(5); “high hazard rating” means that the department expects loss of human life to occur if a dam fails. Technical information from reports, analyses, inspections and enforcement actions by the OWRD dam safety program were used to develop this annex to the Coos County MJ-NHMP.

### Coos County Dams

The National Inventory of Dams lists fourteen dams in Coos County. According to the National Inventory of Dams, there are a total of two dams with high hazard potential in Coos County—both are owned by the Coos Bay-North Bend Water Board. There are six dams classified with significant hazard potential and six with low hazard potential.

**Table I-31. Dams in Coos County (NID)**

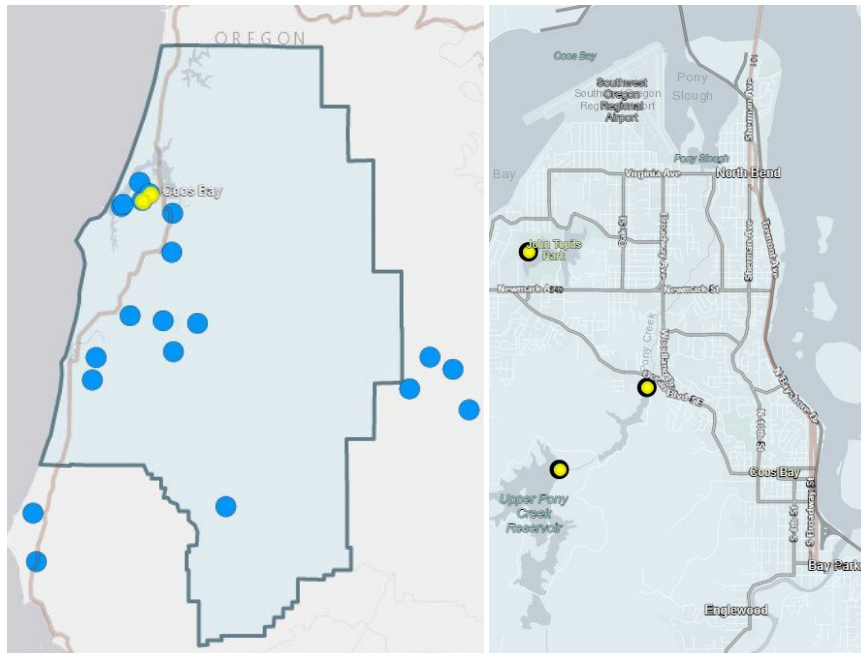
Name	Hazard Potential Classification	NID Height (Ft)	Max Storage (Acre-Ft)	Owner	Purpose/Notes
Pony Creek – Upper	High	77	6,245	Coos Bay – North Bend Water Board	Water Supply/ Earthen Dam in Satisfactory Condition; Assessment 11/06/2020.
Pony Creek – Lower	High	38	400	Coos Bay – North Bend Water Board	Water Supply/ Earthen Dam in Poor Condition; Assessment 09/23/2021.
Jackson Farms Dam	Significant	60	90	James W. Jackson	Irrigation/ Earthen dam
Ring Creek Reservoir	Significant	55	246	City of Coquille	Water Supply/ Earthen dam
Windhurst	Significant	43	470	Windhurst Road Watering Corp.	Irrigation/ Earthen dam
Powers Log Pond	Significant	15	108	Snellstrom Lumber Company	Other/ Earthen dam
Tarheel	Significant	16	100	DOI Bureau of Indian Affairs	Earthen dam
Fourth Creek Reservoir	Significant	12	21	DOI Bureau of Indian Affairs	Water Supply/ Earthen dam
Smith, C.A. Reservoir	Low	10	99	Weyerhaeuser	Other/ Earthen dam
Coquille Plywood Mill	Low	11	180	Roseburg Forest Products	Other/ Earthen dam

Empire Lake, Lower	Low	11.5	192	City of Coos Bay	Water supply/ Gravity dam
Johnson Log Sorting Pond	Low	12.5	491	Coos County Parks Department	Other/ Earthen dam
Clausen Dam	Low	15	64	Douglas Crane	Recreation/ Earthen dam
15ht Hole Dam	Low	25	27.4	Coos Country Club	Recreation/ Water Supply/ NA

Source: USACE (2020). Note: Hazard classifications: High: Failure would present a strong risk for loss of life, annual inspection, Emergency Action Plan (EAP) required. Significant: Failure would present a strong risk for loss of major infrastructure, inspection every 3 years, EAP not required.

There are 2 high hazard potential dams, Pony Creek Upper and Pony Creek Lower dams. As part of the 2023 plan update, the OWRD State Engineer for Water Resources/ Dam Safety Program Manager confirmed that only the Lower Pony Creek Dam is in poor or unsatisfactory condition, as of 9-15-2022. Thus, Coos County has just one dam that meets the criteria for the “high-hazard potential dam” FEMA grant program.

**Figure I-19. Coos County High Hazard Dams**



Source: NID, 2022. Note: high hazard potential dams (HHPDs) are in yellow. Lower Pony Creek dam is in the center of the map above; Upper Pony Creek dam is below it and to the southwest. Portions of North Bend neighborhoods and major roadways are below the dam.

There are 6 Coos County dams rated to present a significant hazard. Failure of a significant hazard dam would cause damage to others property and or infrastructure, but loss of life not probable. These significant hazard dams are Jackson Farms, Windhurst, Rink Creek, and Powers log pond, dams that are regulated by OWRD. There are two additional significant hazard dams in the County, Fourth Creek and Tarheel, that are regulated by the Bureau of Indian Affairs. Hazard rating on many dams has not been



screened in detail, and it is possible some of these dams currently rated significant hazard would be high hazard after dam breach inundation analysis. There are 6 low hazard dams in the National Inventory of Dams (NID) for Coos County, plus three low additional hazard dams that meet state but not federal criteria. There are also numerous small ponds that are permitted to store water but do not meet statutory size thresholds. These dams that do not qualify for HHPD funding may need repairs potentially fundable under other programs or may later found to qualify for HHPD if additional studies or changes in development reveal a risk to life safety.

The Oregon Water Resources Department regulates non-Federal dams in Oregon, and these non-Federal dams are inspected on a frequency based on the hazard rating of the dam. Again, Lower Pony Creek dam is the only high hazard potential dam in Coos County. The Lower Pony Creek dam is owned by the Coos Bay North Bend Water Board, a public non-profit entity. The following sections address the FEMA review tool requirements for this natural hazard mitigation plan in order for the Coos Bay North Bend Water Board to receive federal funds for dam removal or rehabilitation.

### Risk Assessment

Lower Pony Creek Dam is classified as a high hazard potential dam and has always been rated as a high hazard potential dam. Dams are assigned a hazard rating based on downstream hazard to people and property, not on the condition of the dam. There are many homes, the Water Treatment Plant for all local water supplies, roads and commercial structures below the dam and within the Pony Creek drainage.

A recent seismic engineering investigation of the dam completed by a geotechnical consulting engineering firm identified a loose sand layer below the dam. It is likely this material may liquefy in a Cascadia Subduction Zone Earthquake. OWRD is currently doing a all-risks assessment to compare this dam to other HHPD eligible dams in the state. Based on this the preliminary investigation there is a reasonable likelihood that the dam could fail in a Cascadia Earthquake. The Water Board has been formally notified of the potential unsafe condition on the dam as per ORS 540.458. The dam is currently under formal approximately quantitative risk screening along with all dams eligible for the HHPD funds. OWRD dam safety is aware of no other serious deficiencies on this dam (no significant risk due to storm and extreme flooding, wildfire related issues, or any landslide that could cause overtopping).

Of extreme importance, the dam and its reservoir are an essential part of the water supply for about 25,000 people. As such, it must be made safe to supply water to the residents, especially when access is limited by the earthquake. The dam is directly above the water treatment plant, with some parts of the plant within 100 feet of the dam.

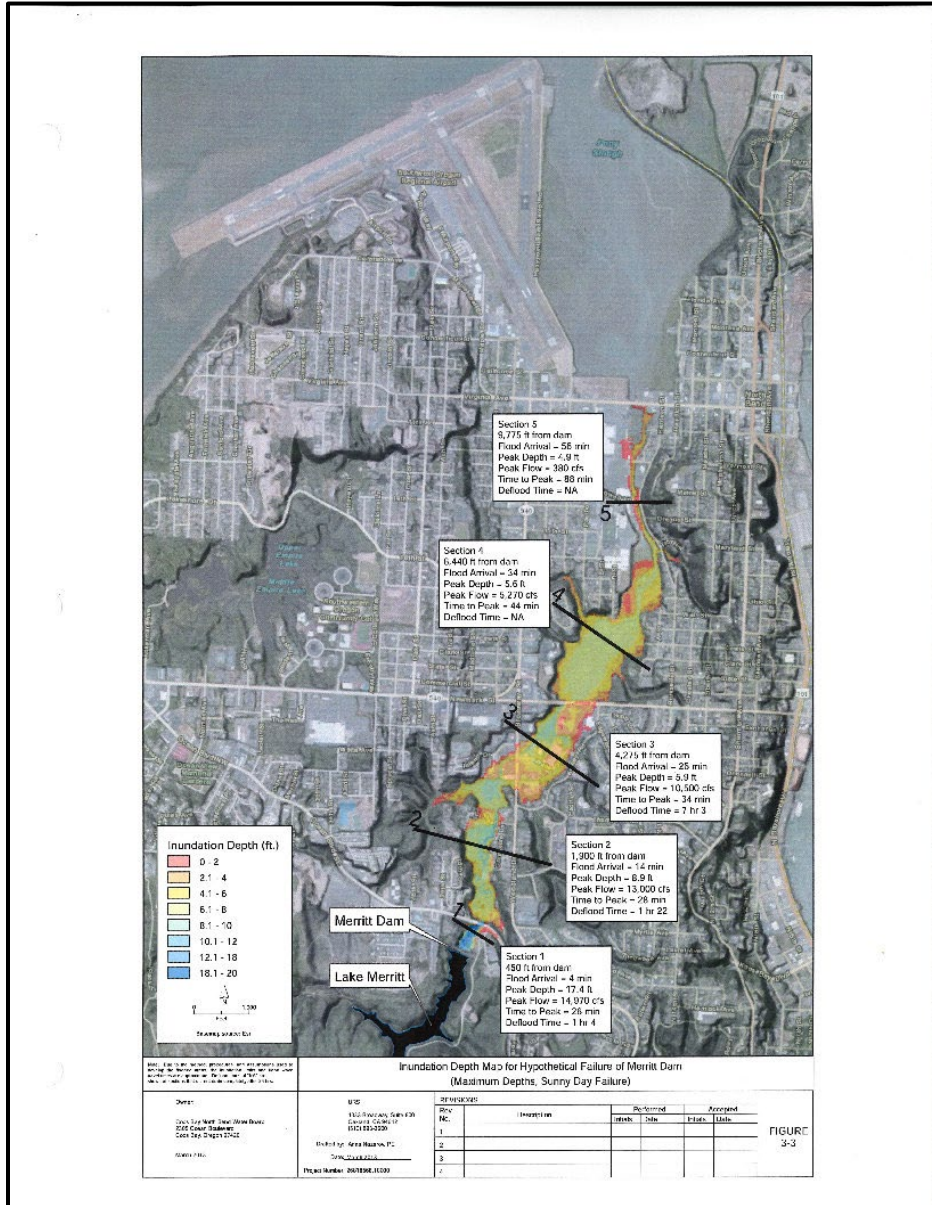
### Lower Pony Creek Dam

High hazard potential dams have Emergency Action Plans that features inundation mapping that allows the development of scenarios of risk and calculation of impacts to the downstream buildings, infrastructure, and populations downstream of the structure. HEC-RAS modeling allows for engineers to understand where the volume of water could be discharged in the event of a dam breach. An initial screening using the DSS Wise Program was conducted for Lower Pony Creek Dam NID OR00070. This inundation model determined that of the 25,000 users of the water system, 408 persons were at risk of dam failure at night and 687 persons during the day. The statistics are based on occupancy and use of the area below the dam, such as residential housing and commercial units.

**Population at Risk (PAR):**

- Daytime PAR: 687
- Night-time PAR: 408
- Users of the Water System: 25,000

**Figure I-20. Lower Pony Creek Dam Inundation Map**



Note: This is the HCOM probable maximum flood, dam failure inundation map



### Specific Deficiencies

The Coos Bay North Bend Water Board is the owner of two dams for their water supply—Lower and Upper Pony Creek dams. These dams are very close to the Cascadia Subduction Zone. The upper dam has design features that may prepare it for the Cascadia event. The lower dam was not designed for a large earthquake, and recent investigations indicate it could be highly prone to seismic liquefaction damage. For this reason, the Department recommended the Water Board complete a seismic safety analysis of the dam. The Water Board paid \$98,563 for a Phase 1 geotechnical investigation and preliminary analysis.

This initial investigation analysis identified loose sand under the dam, with high potential for liquefaction which would cause catastrophic failure. Phase 1 did not include sufficient subsurface exploration for full determination of specific risk or mitigation alternatives. This is a very high-risk scenario, as there is a high population living in the inundation zone, as well as a water treatment plant right below the dam. Dam failure would cause catastrophic loss of life because there would be no significant warning. Dam failure would also destroy the water supply for both Cities.

The full scope of seismic analysis work (Phase 2) is as follows:

- Project Management/Meetings
- Subsurface Investigation
- Laboratory Testing (index testing and cyclic testing)
- Liquefaction Analyses & Residual Strength Analyses
- Finite-Element Deformation Analyses

The dam safety program needs evaluation of soil improvement methods that may also be needed by other dams in Oregon. This project will also include evaluation of soil improvement and other methods for stabilizing this dam, with advice on how these methods could apply to other Oregon dams near the Cascadia Subduction Zone.

### OWRD Seismic Analysis

A complete seismic analysis funded by the Oregon Water Resources Department, and not through HHPD grant funding. A reimbursement of engineering analysis costs will be made to the public dam owner. The owner currently has an agreement with a geotechnical engineering firm. OWRD is in coordination on the project with the lead engineer for the Water Board, see planning process description below. Coos Bay-North Bend Water Board is capable of implementation and amenable to acting on OWRD and contract recommendations to improve seismic resilience. The initial seismic analysis will have three deliverables:

1. Determination of specific expected deformation and likelihood of failure of Lower Pony Creek dam in a Cascadia earthquake.
2. Analysis of alternatives for making the Lower Pony Creek dam safe, with emphasis of improvement of soils in place or other means to reduce crest deformation.
3. A Geotechnical Report summarizing all findings and conclusions about Lower Pony Creek dam.

### Project Budget

- Estimated cost of design \$250,000-300,000

- Estimated costs of rehabilitation \$5,000,000 could be \$0 to \$12,000,000

### Mitigation Goals

A water supply reservoir that does not pose a risk of failure in a Cascadia subduction zone earthquake. Under current conditions, failure appears to be likely in such an event, and would result in catastrophic loss of life, and also loss of all water supplies for 25,000 people.

### Mitigation Actions

- Fully exercise the Emergency Action Plans for both dams, including a scenario with failure of the lower dam in a CSZ earthquake. Work with OWRD on a failure scenario that occurs with full effects of the earthquake throughout Coos County.
- Complete the final seismic evaluation of the dam.
- Determine the quantitative risk in terms of the likelihood of failure and the loss of life on an annualized basis.
- Determine the most efficient and effective means to prevent failure in a CSZ earthquake.
- Rehabilitate the Lower Pony Creek dam within the next 5 years, in part using funds from the FEMA HHPD program, so that it no longer poses an elevated risk of failure in a CSZ event.

### Planning Process

A Formal Notice was sent to the dam owner on April 6, 2021 of a Potentially Unsafe Dam determination for Lower Pony Creek Dam.

Dam Safety has been in close coordination with the Water Board on completion of the seismic analysis. OWRD has funding for this analysis, it is not FEMA HHPD funding. Water Board Staff made a January 20, 2022 a presentation on funding for the geotechnical analysis, and we provided support at this meeting.

OWRD is still working through procedures with the Department of Administrative Services for engineer selection to conduct the final seismic analysis.

OWRD dam safety engineers inspect the dam every year, meeting on site with the chief engineer for the Water Board. Most recently, the dam was inspected on February 11, 2022.

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## 6. *Landslide*

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### Causes and Characteristics

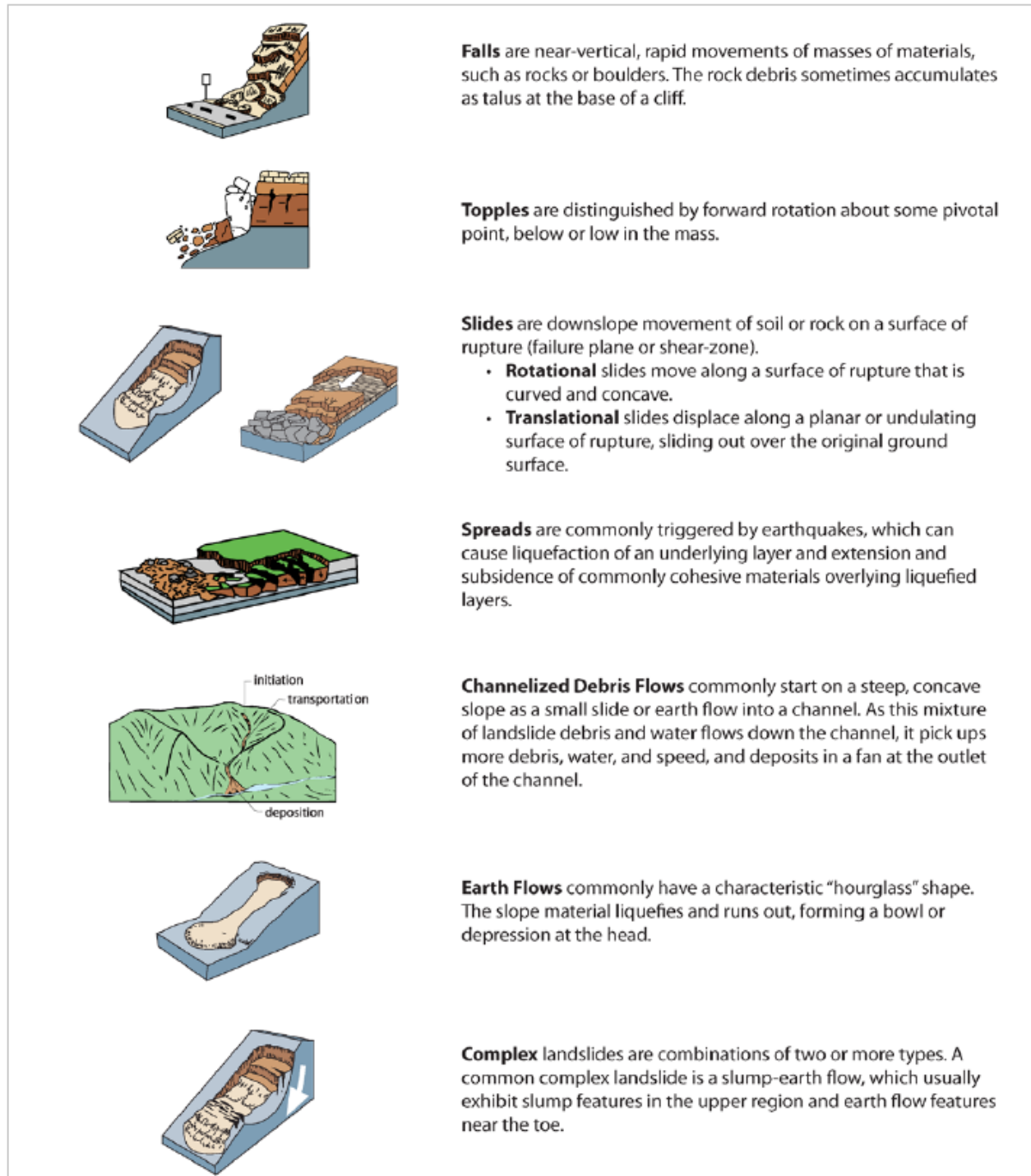
Coos County is subject to landslide events. Landslides are downhill movements of rock, debris, or soil. The severity or extent of landslides is typically a function of geology and the landslide triggering mechanism. Rainfall initiated landslides tend to be smaller, and earthquake induced landslides may be very large. Even small slides can cause property damage, result in injuries, or take lives.

Landslides are classified according to the type and rate of movement and the type of materials that are transported. In a landslide, two forces are at work: 1) the driving forces that cause the material to move down slope, and 2) the friction forces and strength of materials that act to retard the movement and stabilize the slope. When the driving forces exceed the resisting forces, a landslide occurs. The severity or extent of landslides is typically a function of geology and the landslide triggering mechanism. Rainfall initiated landslides tend to be smaller, and earthquake induced landslides may be very large. Even small slides can cause property damage, result in injuries, or take lives.

**Figure I-21. Allegany One Lane Access Road**



Figure I-22. Landslide Types and Processes



Source: USGS, 2004.

## Hazard History

The following table provides information on the previous occurrences of landslides. Three new landslide events have occurred since 2016.

**Table I-32. Historic Landslide Events**

Date	Location	Description
2022*	Lakeside	N. Lake Road just south of Sun Lake Rd
Jan. 2022*	Allegany	100+ homes are cut off regularly by a persistent problem area that has been causing problems since 2019.
Ongoing*	Glasgow	East Bay Road, an important route and lifeline, is at risk of being permanently cut off by a slope failure.
Apr. 2012	Coos Bay	Heavy rains caused landfill on Johnson Rock property to slide into Coos Bay’s Coalbank Slough.
Mar. 2012	Coos County	Winds and heavy rains caused flooding, mudslides, and landslides in twelve counties. Damages to state highways were estimated at \$5,856,881.
Feb. 2004	Coos County	Landslide covered the only paved road leading to the city of Powers, Blocked access to and from the city.
Nov. 1996 -Jan. 1997	Coos County	Severe rains caused multiple landslides in the county. Five homes in Myrtle Creek fell off their foundations when a clear-cut gave way. Bill’s Creek Road southeast of Bandon washed out, contributing to flooding in Ferry Creek.
Mar. 1972	Coos County	Landslide due to heavy rains caused \$28,000 in damages.
Feb. 1926	Coos County	Landslide closed Roosevelt Highway between Coos Bay and Coquille, causing at least \$25,000 in damages.

Note: \* indicates newly listed event for the 2021 NHMP update—more detailed information on these events is available in the vulnerability assessment section below. Source: 2016 Coos NHMP; 2021 Coos NHMP Steering Committee, 2022 Coos Emergency Management.

## Future Climate Conditions: Landslide

The OCCRI report, Future Climate Projections Coos County, Oregon appears in full text in the Appendix.

In Coos County, the number of days per year on which a threshold for landslide risk, which is based on prior 18-day precipitation accumulation, is exceeded is not projected to change substantially. However, landslide risk depends on multiple factors, and this metric does not reflect all aspects of the hazard.

## Vulnerability Assessment

The 2021 DOGAMI Risk Report (Williams et al, 2021) identified locations within the study area that are comparatively more vulnerable or at greater risk to landslide hazard:

- Several inhabited areas in the community of Glasgow are exposed to very high landslide susceptibility.
- The community of Green Acres has a significant amount of exposure (83%) to high and very high landslide susceptibility.

- Exposure to landslide hazard is present for buildings throughout the unincorporated county.
- Additionally, a large portion of undeveloped land in the unincorporated county is deemed high or very high landslide susceptibility, which can be a factor when determining future developments.

**Coos countywide landslide exposure (High and Very High susceptibility):**

- Number of buildings: 7,123
- Exposure value: \$1,583,583,000
- Percentage of exposure value: 14%
- Critical facilities exposed: 16
- Potentially displaced population: 9,550

Source: Williams et al, 2021.

**Table I-33. Landslide Hazard Vulnerability Analysis Summary**

Jurisdiction	Total	Risk Level	Jurisdiction	Total	Risk Level
Unincorporated Coos County	156	M	City of Powers	156	M
City of Bandon	112	M	Bay Area Hospital District	162	M
City of Coquille	112	M	Haynes Drainage District	96	M
City of Coos Bay	99	M	International Port of Coos Bay	182	H
City of Lakeside	97	M	Port of Bandon	112	M
City of Myrtle Point	109	M	Southern Coos Hospital District	92	M
City of North Bend	97	M			

Source: Coos MJ-NHMP Risk Assessment, March-May 2021.

## Risk to Lifelines

Many types of lifeline infrastructure are at some degree of risk from landslides such as railroads, power lines, and highways. In the course of this NHMP update, DOGAMI assessed the relative landslide risk of the county using a lens of structure location and building development. Their risk assessment provides plan holder jurisdictions with the first locally specific loss estimations for a variety of hazards. Because of the detail of the information available, risk mitigation should begin there, with structures. However, Coos Emergency Management is currently coordinating with local partners to improve evacuation infrastructure and in that effort, provided the following specific areas that are vulnerable to landslide.

### Evacuation Routes

Coos Emergency Management actively inventories and works to protect access routes that are high priority for evacuation for communities countywide. These efforts include understanding and coordinating to address landslides on access roads, development of evacuation plans in order to



understand and map priority evacuation routes, as well as coordination on meeting the criteria for potential funding sources such as conducting this plan update. The following landslide risk areas are evacuation route priorities.

W. Fork Millicoma Rd, Coos Bay (Allegany)

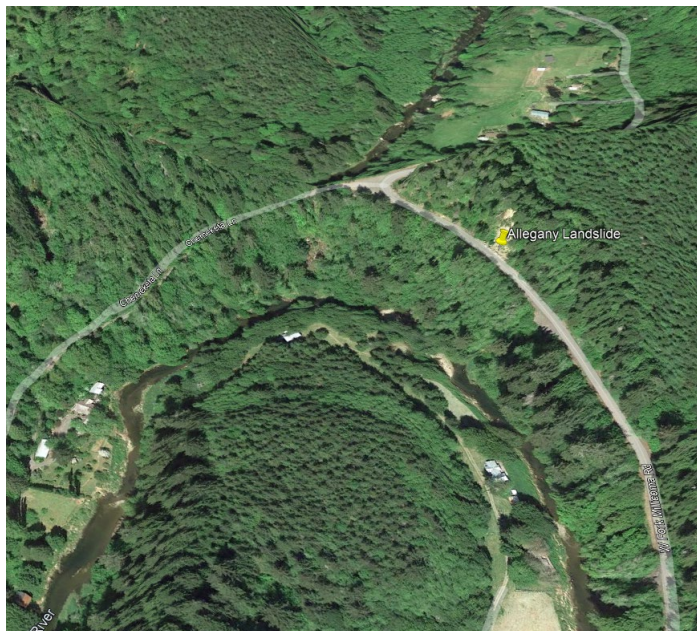
Located on W. Fork Millicoma Road near the intersection with Chemeketa Lane at (43°26'27.97"N, 124°3'1.22"W), the upper side of the road is subject to landslide due to slope failure. W. Fork Millicoma Road is an important route and lifeline at risk of closure.

**Figure I-23. Allegany Landslide Location**



Source: Google Earth, Coos Emergency Management, DLCD

**Figure I-24. Allegany Landslide at Intersection with Chemeketa Lane**



Source: Google Earth, Coos Emergency Management, DLCD



### E. Bay Road, North Bend (Glasgow)

Located between the intersections with Hawk Ln and Rose Mountain Ln at (43°25'53.5"N, 124°12'21.7"W) or (43.431539, -124.206019). East Bay Road is an important route and lifeline at risk from a landslide due to slope failure.

**Figure I-25. E. Bay Road Landslide Location**



Source: Google Earth, Coos Emergency Management, DLCD

**Figure I-26. E. Bay Road Landslide Intersection**



Source: Google Earth, Coos Emergency Management, DLCD



North Lake Road, Lakeside

Located on a sharp switchback on the outside tip of a ridge, a landslide on the upper side of N. Lake Road just south of Sun Lake Road at (43°35'26.1"N 124°06'02.0"W) or (43.590589, -124.100542) in Lakeside threatens the only access route for the community residing on Sun Lake Road and the surrounding area.

**Figure I-27. N. Lake Rd Landslide Location**



Source: Google Earth, Coos Emergency Management, DLCD

Risk to Structures

In the landslide exposure table below, Table I-27, very high susceptibility to risk of landslide in the unincorporated county is 7.0% overall (1,206 buildings) and Myrtle Point is 3.7% (64 buildings). These areas and Coos Bay also have significant buildings in the high and moderate susceptibility categories.

**Table I-34. Landslide Exposure**

*(all dollar amounts in thousands)*

Community	Total Number of Buildings	Total Estimated Building Value (\$)	Very High Susceptibility			High Susceptibility			Moderate Susceptibility		
			Number of Buildings	Building Value (\$)	Percent of Building Value Exposed	Number of Buildings	Building Value (\$)	Percent of Building Value Exposed	Number of Buildings	Building Value (\$)	Percent of Building Value Exposed
Unincorp. County (rural)	18,957	4,476,885	1,406	314,141	7.0%	2,343	468,534	11%	6,435	1,372,990	31%
Bunker Hill	740	173,872	0	0	0%	42	7,681	4.4%	255	44,854	26%
Charleston	1,549	310,927	0	0	0%	85	16,793	5.4%	304	61,103	20%
Glasgow	578	125,629	131	26,504	21%	63	10,971	8.7%	198	39,009	31%
Green Acres	367	79,090	100	21,050	27%	206	44,330	56%	24	4,008	5.1%
Hauser	1,022	286,877	3	415	0%	99	20,502	7.1%	452	96,894	34%
Millington	506	100,571	4	942	0.9%	63	12,892	13%	110	19,876	20%
<b>Total Unincorp. County</b>	<b>23,719</b>	<b>5,553,851</b>	<b>1,644</b>	<b>363,053</b>	<b>6.5%</b>	<b>2,901</b>	<b>581,703</b>	<b>11%</b>	<b>7,778</b>	<b>1,638,734</b>	<b>30%</b>
Bandon	1,962	629,445	4	672	0.1%	47	12,707	2.0%	285	84,494	13%
CTCLUCL	33	12,470	0	0	0%	0	0	0%	20	5,935	48%
Coos Bay	7,220	2,420,579	15	4,255	0.2%	1,875	473,037	20%	1,701	484,382	20%
Coquille	1,977	606,670	4	1,179	0.2%	198	42,747	7.0%	982	263,510	43%
Coquille Indian Tribe	100	80,721	0	0	0%	1	291	0.4%	32	8,147	10%
Lakeside	1,421	242,768	0	0	0%	105	20,042	8.3%	192	34,725	14%
Myrtle Point	1,329	383,743	64	14,091	3.7%	67	16,518	4.3%	622	158,591	41%
North Bend	4,233	1,494,790	0	0	0%	179	49,187	3.3%	1,401	422,578	28%
Powers	556	111,516	0	0	0%	19	4,102	3.7%	85	16,701	15%
<b>Total Coos County</b>	<b>42,550</b>	<b>11,536,552</b>	<b>1,731</b>	<b>383,249</b>	<b>3.3%</b>	<b>5,392</b>	<b>1,200,334</b>	<b>10%</b>	<b>13,098</b>	<b>3,117,797</b>	<b>27%</b>

Source: Williams et al, 2021.

## Risk Reduction Recommendations

The science of risk reduction is an emerging field. These potential landslide mitigation actions are listed along with the hazard description so that readers understand the type of mitigation actions being considered or that might be considered current best practices. They are listed in two categories, risk to lifelines (such as evacuation routes) and risk to structures.

### From the Natural Hazard Risk Report (Williams et al, 2021):

- Create modern landslide inventory and susceptibility maps and use in planning and regulations for future development.
- Control storm water in landslide-prone areas.
- Monitor ground movement in high susceptibility areas.
- Implement grading codes, especially in high susceptibility areas.

### For Mitigating Risk to Evacuation Routes (Coos EM and DLCDD):

- Identify community areas with only one access route
- Define and map rural and urban lifelines, including single-access roads that serve isolated communities.
- Harden or protect access routes that serve as lifelines for rural unincorporated communities.

### For Land Use Planning

The following recommendations about zoning and comprehensive plan changes from the Landslide Guide may be useful when regulating hazards. The following examples relate to permitting development in landslide prone areas

Features of strong comprehensive plans:

- Make use of technical information and assistance provided by local, regional, state, and federal agencies regarding natural hazards.
- Clearly link to the implementing provisions (zoning code, building code, etc.)
- Include specific references (e.g., title and date of information) to supporting documents and maps.
- Include or refer to documents, maps, or technical assistance needed to understand impacts of natural hazards.
- Create opportunities to guide growth and development away from natural hazard areas and/or provide for appropriate review of the growth and development when it is in or near a hazard area.
- Consider climate change and the impacts of climate change on natural hazards, and the subsequent vulnerabilities and risks to the community.

Features of strong zoning codes:

- Are supported by and incorporate the best available science-based landslide hazard maps and analysis.
- Employ factors in addition to slope to determine when a geotechnical report is required.

- Define and establish the qualified geoprofessional(s) for the required report in accordance with state licensing regulations.
- Require geotechnical reports to determine whether a proposed development is within the community's risk tolerance level and to properly condition development.
- Link requirements to degree of risk and geotechnical report recommendations.
- Address soil stabilization through grading, erosion control, vegetation management, and water management.
- Are enforced.
- Have information located on the community's website so that the code is clear and accessible.
- Have replaced outdated Unified Building Code or UBC references with current International Building Code or IBC references in the code

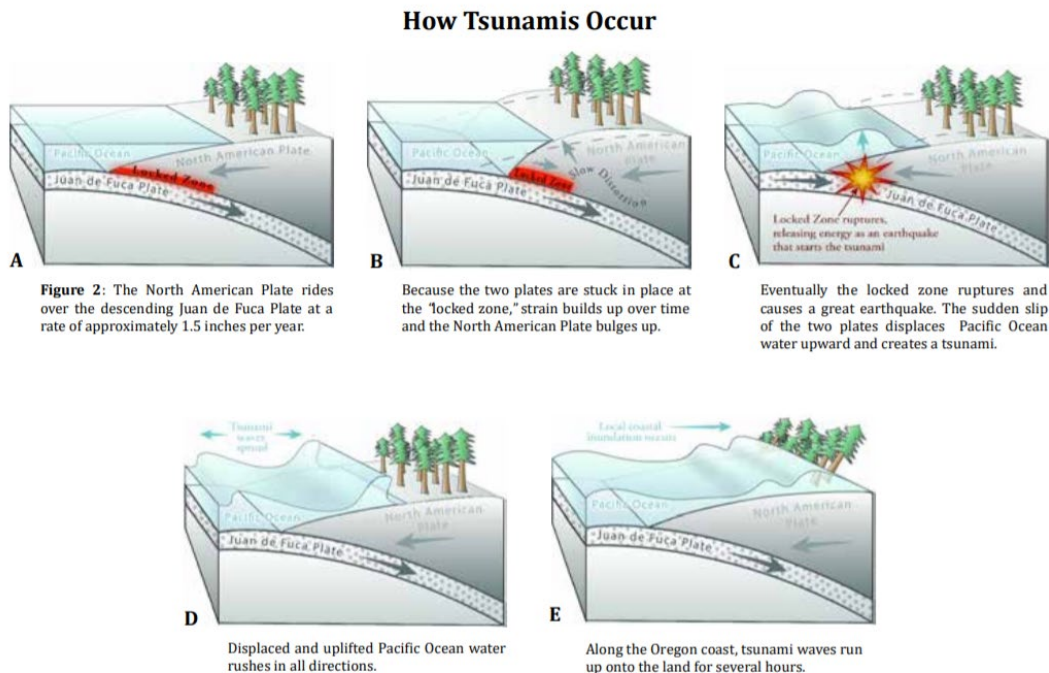
## 7. Tsunami

### Causes and Characteristics

A tsunami generally begins as a single wave but quickly evolves into a series of ocean waves, generated by disturbances from earthquakes, underwater volcanic eruptions, or landslides (includes landslides that start below the water surface and landslides that enter a deep body of water from above the water surface). In these cases, the initial tsunami wave mimics the shape and size of the sea floor deformation that causes it. A tsunami from a local source will likely be stronger, higher and travel farther inland (overland and up river) than a distant tsunami (generated from a distant earthquake event such as in Alaska or Japan). The local tsunami wave may be traveling at 30 mph when it hits the coastline and have heights of 20 to 60 feet, potentially higher depending on the coastal bathymetry (water depths) and geometry (shoreline features). Significant portions of Bandon, Coos Bay, North Bend and Charleston are susceptible to tsunamis, particularly those generated by CSZ events.

DOGAMI Tsunami Inundation Maps publications incorporate all the best tsunami science available today, including recent publications by colleagues studying the Cascadia Subduction Zone, updated computer simulation models using high-resolution lidar topographic data, and knowledge gained from the 2004 Sumatra, 2010 Chile, and 2011 Tōhoku earthquakes and tsunamis.

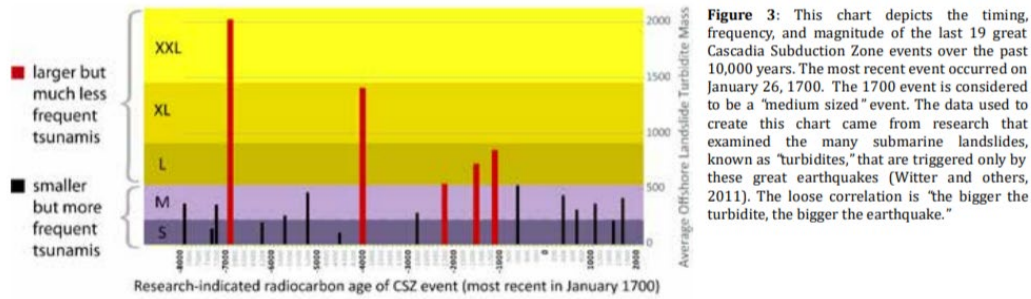
**Figure I-28. Tsunami Generation**



Source: DOGAMI, 2013.

Figure I-29. Frequency of CSZ Events in the Geologic Record

**Occurrence and Relative Size of Cascadia Subduction Zone Megathrust Earthquakes**



Source: DOGAMI, 2013.

## Hazard History

The following table provides information on the previous occurrences of tsunamis. one new tsunami event occurred since 2016.

**Table I-35. Historic Tsunami Events**

Date	Type	Location/ Source	Details
Jan. 2022 (01/15/2022)	Distant	Oregon Coast	A volcanic eruption in Tonga caused King Tide level waves, extensive warnings for 1-3 feet of impacts, but minimal damages along the Oregon coast. The event occurred at 8:30am on a Saturday morning.
Mar. 2011	Distant	Oregon Coast/ Japan	A 9.0 magnitude earthquake originating from Japan caused \$6.7 million worth of damages along the Oregon coast. Particularly, there was extensive damage to the Port of Brookings, as well as the Port of Depoe Bay, and Charleston Harbor.
Mar. 1964	Distant	Oregon Coast/ Alaska	A tsunami struck southeastern Alaska following an earthquake beneath Prince William Sound. The tsunami arrived along the Alaskan coastline between 20 and 30 minutes after the quake, devastating coastal villages. The tsunami spread across the Pacific Ocean and caused damage and fatalities in other coastal areas, including Oregon. Coos Bay suffered \$20,000 in damages. Along the entire Oregon Coast, damage was estimated to be between \$750,000 and \$1 million.
Nov. 1952 (11/04/1952)	Distant	Bandon/ Alaska	An earthquake in Kamchatka, Russia caused a four-foot tsunami in Bandon where log decks broke loose from their foundation piers.
Apr. 1946 (04/01/1946)	Distant	Oregon Coast/ Alaska	A tsunami generated by a magnitude 7.8 earthquake in the Aleutian Islands of Alaska killed 165 people and cost over \$26 million. The highest inundation waves occurred in Hawaii, where a 12-meter run-up was recorded. The tsunami arrived at the island of Hilo 4.9 hours after the earthquake originated, and 96 people lost their lives. A 10-foot wave was recorded at Coos Bay and Bandon, but no damages were recorded.

Date	Type	Location/ Source	Details
Jan. 1700 (01/26/1700)	CSZ/ Local	Pacific NW coast	Approximately 9.0 earthquake generated a tsunami that struck Oregon, Washington, and Japan; destroyed Native American villages along the coast.

Note: \* indicates newly listed event for the 2021 NHMP update. Sources: USGS, <https://earthquake.usgs.gov/earthquakes/events/alaska1964/>; Sullivan, W.L., 2018.

## Vulnerability Assessment

The 2021 DOGAMI Risk Report (Williams et al, 2021) identified locations within the study area that are comparatively more vulnerable or at greater risk to CSZ Mw 9.0 tsunami hazard:

- The City of Bandon is expected to be impacted by a tsunami originating from a CSZ event. Exposure percentage is as high as 10% for the Medium tsunami scenario.
- Developments all along Coos Bay are exposed to tsunami hazard, with Charleston being the most exposed to this hazard.
- The developed area around the Highway 101 bridge near Lakeside is expected to be inundated by a tsunami.

**Coos countywide CSZ M9.0 tsunami exposure (Medium tsunami scenario):**

- Number of buildings exposed: 1,286
- Exposure value: \$611,536,000
- Percentage of exposure value: 5.3%
- Critical facilities exposed: 13
- Potentially displaced population: 1,274

Source: Williams et al, 2021.

The Coos County Risk Report has three major findings about the tsunami hazard.

1. A Cascadia M9 earthquake and tsunami will cause extensive overall damage and losses.

Due to its proximity to the Cascadia subduction zone (CSZ), every community in Coos County will experience significant impact and disruption from a CSZ magnitude 9.0 earthquake event. Event impacts that were examined are limited to earthquake (including ground deformation) and tsunami. Results show that a CSZ M9.0 event will cause approximately 35% to 50% in building losses for most communities. The unincorporated community of Charleston can expect a very high percentage of losses due to tsunami hazard. Other communities like Lakeside, Myrtle Point, North Bend, Powers, and Hauser have little to no tsunami exposure, but still will have high losses from earthquake alone. The high vulnerability of the building inventory (primarily because of the age of construction), high levels of exposure to liquefiable soils, the proximity to the CSZ event, and the amount of development within tsunami zones all contribute the estimated levels of losses expected in the study area.

2. Most of the study area’s critical facilities are at high risk to a CSZ earthquake and tsunami

Critical facilities were identified and were specifically examined within this report. We have estimated that 88% (83) of Coos County’s 94 critical facilities will be non-functioning after a CSZ event, with 13 of those located with the medium tsunami zone. For comparative purposes, 17% (16) of critical facilities are at risk to landslide, 14% (13) are exposed to flood hazard, and 1% (1) are exposed to wildfire.

3. The two biggest causes of displacement to population are a CSZ event (earthquake and tsunami) and landslide

The Coos County Risk Report estimated that 20% of the population in the county would be displaced due to the combination of earthquake and tsunami.

The hazard impact and community vulnerability for tsunami was assessed and ranked by each jurisdiction via the Hazard Vulnerability Analysis process.

**Table I-36. Tsunami Hazard Vulnerability Analysis Summary**

Jurisdiction	Total	Risk Level	Jurisdiction	Total	Risk Level
Unincorporated Coos County	180	H	City of Powers	-	-
City of Bandon	205	H	Bay Area Hospital District	172	H
City of Coquille	170	H	Haynes Drainage District	186	H
City of Coos Bay	172	H	International Port of Coos Bay	196	H
City of Lakeside	145	M	Port of Bandon	205	H
City of Myrtle Point	-	-	Southern Coos Hospital District	-	-
City of North Bend	209	H			

Source: Coos MJ-NHMP Risk Assessment, March-May 2021.



**Table I-37. Tsunami Exposure**

*(all dollar amounts in thousands)*

Community	Total Number of Buildings	Total Estimated Building Value (\$)	Small (Low Severity)			Medium (Moderate Severity)			Large (High Severity)			X Large (Very High Severity)			XX Large (Extreme Severity)		
			Number of Buildings	Building Value (\$)	Percent of Building Value Exposed	Number of Buildings	Building Value (\$)	Percent of Building Value Exposed	Number of Buildings	Building Value (\$)	Percent of Building Value Exposed	Number of Buildings	Building Value (\$)	Percent of Building Value Exposed	Number of Buildings	Building Value (\$)	Percent of Building Value Exposed
Unincorp. County (rural)	18,957	4,476,885	234	46,762	1.0%	418	94,049	2.1%	918	200,079	4.5%	2,015	464,241	10%	2,337	544,997	12%
Bunker Hill	740	173,872	1	418	0.2%	6	10,370	6.0%	71	40,907	24%	96	45,748	26%	107	48,463	28%
Charleston	1,549	310,927	247	78,239	25%	267	82,989	27%	465	123,141	40%	1,122	235,075	76%	1,238	254,901	82%
Glasgow	578	125,629	5	407	0.3%	13	2,537	2.0%	24	4,838	3.9%	37	8,339	7%	42	9,270	7.4%
Green Acres	367	79,090	0	0	0%	0	0	0%	0	0	0%	32	5,177	6.5%	45	8,693	11%
Hauser	1,022	286,877	0	0	0%	0	0	0%	1	11	0%	19	16,933	5.9%	52	38,178	13%
Millington	506	100,571	0	0	0%	0	0	0%	3	506	0.5%	44	13,191	13%	54	14,961	15%
<b>Total Unincorp. County</b>	<b>23,719</b>	<b>5,553,851</b>	<b>487</b>	<b>125,826</b>	<b>2.3%</b>	<b>704</b>	<b>189,945</b>	<b>3.4%</b>	<b>1,482</b>	<b>369,483</b>	<b>6.7%</b>	<b>3,365</b>	<b>788,704</b>	<b>14%</b>	<b>3,875</b>	<b>919,463</b>	<b>17%</b>
Bandon	1,962	629,445	145	49,200	7.8%	185	64,742	10%	276	91,553	15%	925	285,412	45%	1,374	431,860	69%
CTCLUCL	33	12,470	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%
Coos Bay	7,220	2,420,579	79	43,133	1.8%	319	267,595	11%	624	455,071	19%	1,018	578,485	24%	1,238	634,178	26%
Coquille	1,977	606,670	0	0	0%	0	0	0%	0	0	0%	0	0	0%	1	447	0.1%
Coquille Indian Tribe	100	80,721	0	0	0%	3	4,147	5.1%	6	44,153	55%	37	56,737	70%	44	58,670	73%
Lakeside	1,421	242,768	0	0	0%	0	0	0%	7	4,044	1.7%	43	10,543	4.3%	76	16,944	7.0%
Myrtle Point	1,329	383,743	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%
North Bend	4,233	1,494,790	23	6,110	0.4%	75	85,107	5.7%	263	168,526	11%	558	304,613	20%	608	316,952	21%
Powers	556	111,516	0	0	0%	0	0	0%	0	0	0%	0	0	0%	0	0	0%
<b>Total Coos County</b>	<b>42,550</b>	<b>11,536,552</b>	<b>734</b>	<b>224,270</b>	<b>1.9%</b>	<b>1,286</b>	<b>611,536</b>	<b>5.3%</b>	<b>2,658</b>	<b>1,132,830</b>	<b>9.8%</b>	<b>5,946</b>	<b>2,024,494</b>	<b>18%</b>	<b>7,216</b>	<b>2,378,514</b>	<b>21%</b>

Source: Williams et al, 2021.

## Risk Reduction Recommendations

The science of risk reduction is an emerging field. These potential tsunami mitigation actions are listed along with the hazard description so that readers understand the type of mitigation actions being considered or that might be considered current best practices. Source: Williams et al, 2021 and DLCDC.

- Consider local regulations in the high tsunami hazard zone, such as some restrictions to future development.
- Consider relocating fire, police, and emergency response facilities that are vulnerable to tsunami hazard.
- Use the DLCDC guide: *Preparing for a Cascadia Subduction Zone Tsunami: A Land Use Guide for Oregon Coastal Communities*
- Consider relocating or retrofitting structures with vulnerable populations (e.g., schools, hospitals, and nursing homes) that are within high tsunami hazard zones.
- Evaluate the community evacuation plan, including consideration for viable vertical evacuation options.
- Build “tsunami evacuation towers” in developed coastal areas that have insufficient evacuation times due to distance from elevated areas or inability of a population to walk or run to safety (modeled in the “Beat the Wave” mapping).
- Expand tsunami evacuation infrastructure.

## 8. Wildfire

### Causes and Characteristics

Wildfires occur in areas with large amounts of flammable vegetation that require a suppression response due to uncontrolled burning. Fire is an essential part of Oregon’s ecosystem but can also pose a serious threat to life and property particularly in the state’s growing rural communities. Wildfire can be divided into three categories: interface, wildland, and firestorms. The increase in residential development in interface areas has resulted in greater wildfire risk. Fire has historically been a natural wildland element and can sweep through vegetation that is adjacent to a combustible home. New residents in remote locations are often surprised to learn that in moving away from built-up urban areas, they have also left behind readily available fire services providing structural protection.

### Wildland-Urban Interface

The lands where community development spreads into forested areas is considered the Wildfire-Urban Interface zone. This area is at high risk of fire and often difficult to protect.

### Gorse

Gorse is highly invasive plant with dense growth, waxy foliage, and sharp, long thorns. A non-native from the British Isles, it grows very well on the Oregon Coast and is undaunted by steep cliffs. Thus, it is both extremely difficult to control and due high amounts of oil that occur naturally in the plant, it is also extremely flammable. Gorse ignites easily and burns hot, so gorse-driven fires have very rapid fire movement and are difficult to control.

**Figure I-30. Gorse has Threatened the City of Bandon for Nearly a Century**



Source: Gorse Action Group, 2021. <https://gorseactiongroup.org/gorse-fire-risk/>

Gorse: Catastrophic Wildfire Risk for Bandon

Gorse has fueled catastrophic fire, one of which burned the entire city of Bandon in 1936 and notable subsequent fires in 1980, 1999, 2007, and 2015. While patches of gorse occur along the Oregon Coast, it is notable that dense gorse thickets currently cover approximately 60% of a 250-acre area of largely undeveloped land surrounded by urban development inside the City of Bandon’s Urban Growth Boundary, posing a significant fire threat to residents and the City of Bandon.

Hazard History

The following table provides information on the previous occurrences of wildfire. Two new wildfire events have occurred since 2016 and no historic events have been added for the 2022 update.

**Table I-38. Historic Wildfire Events**

Date	Name	Location	Size/Type	Description
Sept. 2020*	North Bank Road Fire	Bandon	350 acres	A fire began across the river from Hwy 42S and destroyed a house and farm.
2018	Wildfire Smoke; Klondike Fire	Coos County	200ppm+	Coos County was impacted with heavy smoke that affected the health of residents in the county.
2017*	Wildfire Smoke; Chetco Bar Fire	Coos County	350ppm+	Smoke inundated Coos County for approximately 3 weeks during summer 2017.
2015	n/a	Bandon-area	Gorse-caused fire	Gorse is a highly invasive plant. Its foliage is waxy and holds high amounts of oil that easily ignite and burn hot, making fire movement very rapid and difficult to control.
2014	Bone Mountain Fire	Coos County	30 acres	Began as a prescribed fire, but due to extremely dry and windy weather, it became out of control and burned 300 acres of land.
2014	Camas Creek Fire	Coos County	40 acres	The Camas Creek Fire burned 40 acres in the same year.
2007	n/a	Bandon-area	Gorse-caused fire	Gorse is a highly invasive plant. Its foliage is waxy and holds high amounts of oil that easily ignite and burn hot, making fire movement very rapid and difficult to control.
2005	n/a	Coos County	178 acres	Camas Creek wildfire burned 178 acres.
1999	n/a	Bandon-area	Gorse-caused fire	Gorse is a highly invasive plant. Its foliage is waxy and holds high amounts of oil that easily ignite and burn hot, making fire movement very rapid and difficult to control.
1980	n/a	Coos County	Gorse-caused fire	Gorse is a highly invasive plant. Its foliage is waxy and holds high amounts of oil that easily ignite and burn hot, making fire movement very rapid and difficult to control.
1966	n/a	Coos County	1,636 acres	Wildfire burns 1,636 acres of state forest.
1965	n/a	Coos County	1,860 acres	1,860 acres of state forest.
1952	Williams River Fire	Coos County	2,679 acres	Williams River fire burns 2,679 acres.
June 1945	Waterfront Fire	Coos Bay	689 acres; Urban Fire	Waterfront fire burns 689 acres.

Sept. 1936	n/a	Bandon	Urban fire	Bandon nearly destroyed; \$1,000,000 in damages. The wildfire was fueled primarily by the large amount of gorse that surrounded the community.
Sept. 1936	n/a	Coos and Curry Counties	146,000 ac. Wildfire	Burns 146,000 acres. Temperatures reached 90 degrees and humidity dropped to 6% sparking wildfires throughout the two counties.
1921	n/a	Marshfield	Urban fire	12 businesses and four residences destroyed in front street fire.
1918	n/a	Coquille	Urban fire	City destroyed by fire.
1914	n/a	Bandon	Urban fire	3-block area burned; Damage estimated at close to half a million dollars.
1882	n/a	Coquille	Urban fire	Front Street business district destroyed by fire.
Sept. 1872	n/a	South Slough to Coos Bay	Wildfire Urban Interface (WUI) fire	Coalbank Slough and Coos Bay- fire rages from South Slough, burning as far west as Coalbank Slough, and north to Coos Bay.
1868	n/a	Coos Bay	Wildfire	90% of Elliott State Forest burns. Fire is stopped when it reaches the ocean after burning through 296,000 acres.

Note: \* indicates newly listed event for the 2021 NHMP update. Source: 2016 Coos NHMP; Coos County Emergency Management, 2021.

## Future Climate Conditions: Wildfire

- Wildfire risk, expressed as the average number of days per year on which fire danger is very high, is projected to increase in Coos County by 11 days (range -6– 30) by the 2050s, relative to the historical baseline, under the higher emissions scenario.
- In Coos County, the average number of days per year on which vapor pressure deficit is extreme is projected to increase by 30 days (range 9–56) by the 2050s, compared to the historical baseline, under the higher emissions scenario.
- The risk of wildfire smoke in Coos County is projected to increase.
- In Coos County, the number of days per year on which the concentration of wildfire-derived fine particulate matter results in poor air quality is projected to decrease by 15%, and the concentration of fine particulate matter is projected to increase by 69%, from 2004–2009 to 2046–2051 under a medium emissions scenario.

## Vulnerability Assessment

According to the DOGAMI Risk Report, the locations within the study area that are comparatively more vulnerable or at greater risk to wildfire hazard:

- Wildfire risk is high for hundreds of homes in the low-laying forested areas of the floodplains south of the City of Coos Bay. This area includes Unincorporated Coos County (rural), Bunker Hill, Green Acres, and Millington.
- Many residential buildings in the dune areas within the community of Hauser is at risk to high wildfire hazard.

The high hazard category was chosen as the primary scenario for this report because that category represents areas that have the highest potential for losses. However, a large amount of loss would occur if the moderate hazard areas were to burn, as almost every community has ~30–50% of exposure to moderate wildfire hazard. Still, the focus of this section is on high hazard areas within Coos County to emphasize the areas where lives and property are most threatened.

**Coos countywide wildfire exposure (High hazard):**

- Number of buildings: 1,050
- Exposure value: \$216,525,000
- Percentage of exposure value: 1.9%
- Critical facilities exposed: 1
- Potentially displaced population: 1,375

Source: Williams et al, 2021.

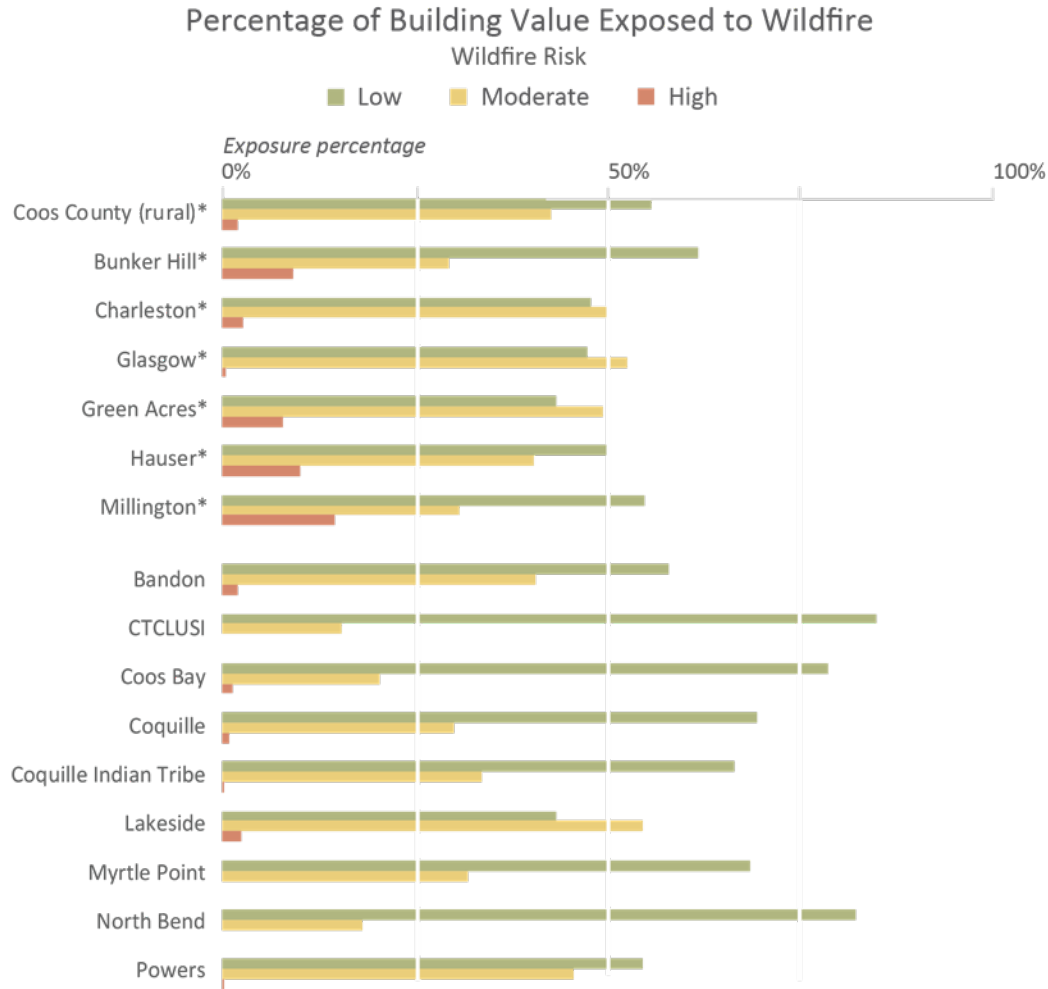
Powers: Powers is very high risk from wildfire. It is only accessible by one paved road. The community is surrounded by forest. There are Forest Service roads that provide secondary egress, but in a wildfire or wind storm event, they may become impassable (CWPP; Coos EM, 5/4/21).

**Table I-39. Wildfire Hazard Vulnerability Analysis Summary**

Jurisdiction	Total	Risk Level	Jurisdiction	Total	Risk Level
Unincorporated Coos County	145	M	City of Powers	209	H
City of Bandon	191	H	Bay Area Hospital District	170	H*
City of Coquille	163	M	Haynes Drainage District	141	M
City of Coos Bay	170	H	International Port of Coos Bay	229	H*
City of Lakeside	138	M	Port of Bandon	189	H
City of Myrtle Point	172	H**	Southern Coos Hospital District	187	H
City of North Bend	171	H*			

Source: Coos MJ-NHMP Risk Assessment, March-May 2021. Rankings are for wildfire urban interface fire unless noted: \*Notes: \*Wildfire Smoke: ranked by Port of Coos Bay due to transportation visibility risk; ranked by others for health concerns; \*\* Conflagration ranked.

**Figure I-31. Wildfire Hazard Exposure by Coos County Community**



\*Unincorporated

Source: Williams et al, 2021.

### Defensible Space

One measure of vulnerability is defensible space. Defensible Space is creating a green landscape, with minimal fuels, creating a low fire danger circumference around your home and other outbuildings for the prevention of wildfire and the slowing of the spread of wildfire.

With Firewise landscaping, you can create survivable space around your home that reduces your wildfire threat. Within the survivable space, remove flammable plants like gorse that contain resins, oils and waxes that burn readily. Knowing how to identify gorse and exercising awareness of fire safety around gorse, particularly in dry seasons, can help to mitigate fire danger.

### Risk Reduction Recommendations

The science of risk reduction is an emerging field. These potential wildfire mitigation actions are listed along with the hazard description so that readers understand the type of mitigation actions being

considered or that might be considered current best practices. Source: DLCD, DOGAMI, Gorse Action Group.

- Make sure residential buildings are surrounded by at least 30 feet of space. For more information and helpful tools, check out the Gorse Action Group’s Control and Management webpage.
- Reduce fuel loads near buildings in the fire-prone wildland-urban interface areas (WUI).
- Conduct regular fuel management on your property and near your home:
  - Maintain buffer areas around buildings from trees, brush, and other flammable objects (fences, mulch, etc.)
  - Annually clear roofs and gutters of vegetative debris in buffer areas;
  - Create and maintain fire breaks such as clearing along roads and other areas that can act as firebreaks in a wildfire event.
  - Restore oak and prairie habitats to their natural state of minimal fuels and regular disturbance—many techniques achieve the same goal, but have times and places when they are best ecologically: fire, mowing, grazing, brush cutting, and herbicide. The lowest cost and most efficient approach to fuels management is to achieve and maintain healthy, low-fuel habitats where appropriate (shallow soils, drier areas).
- Use flame-resistant building materials for new projects and construction (decks, e.g.).
- Consider regulating development in wildfire urban interface areas to require flame-resistant materials, sufficient egress for fire equipment, evacuation plans, sufficient on-site water storage for firefighting, etc.
- Establish code provisions that allow the community to quickly respond to a wildfire disaster, such as those that address temporary housing, rebuilding, and readiness for infrastructure upgrade opportunities; as well as considering post-wildfire geologic hazards such as flood, debris flows, and landslides.

Remember, fire risk can change unexpectedly based on weather conditions. Check the Coos Forest Protective Association’s website at <http://www.coosfpa.net/> or download their mobile app for up-to-date information about fire risk. If you are concerned or have questions, the fire professionals at Coos Forest Protective Association can help. You can reach them at (541) 267-3161.



Figure I-32. Firewise Home Strategies

**SURVIVABLE SPACE**

Do you have at least 30 ft of space surrounding your home that is **Lean, Clean and Green**?

The objective of Survivable Space is to reduce the wildfire threat to your home by changing the characteristics of the flammable vegetation.

**Lean** – Prune shrubs and cut back tree branches, especially within 15 feet of your chimney.

**Clean** – Remove all dead plant material from around your home; this includes dead leaves, dry vegetation and even stacked firewood

**Green** – Plant fire-resistant vegetation that is healthy and green throughout the year.

**Firewise** Survivable space provides a safety zone around your home.

**FIRE-RESISTANT ATTACHMENTS**

Attachments include any structure connected to your home, such as decks, porches or fences. If an attachment to a home is *not* fire-resistant, then the home as a whole is *not* firewise.

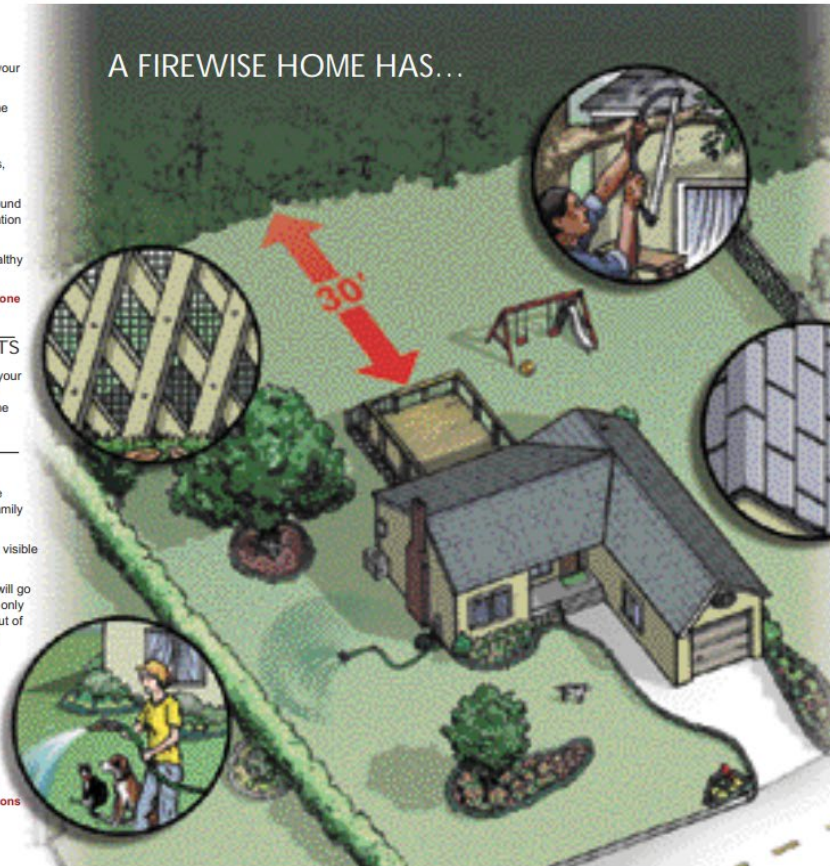
**A DISASTER PLAN**

The time to plan for any emergency is prior to the event. Take a few minutes to discuss with your family what actions you will take.

- Post local emergency telephone numbers in a visible place.
- Leave before it's too late. Decide where you will go and how you will get there. With fire, you may only have a moments notice. Two escape routes out of your home and out of your neighborhood are preferable.
- Have tools available: shovel, rake, axe, handsaw or chainsaw
- Maintain an emergency water source
- Have a plan for your pets
- Practice family fire drills

**Firewise** Evacuations for a wildfire can occur without notice; When wildfire conditions exist, be ready to take action..

**A FIREWISE HOME HAS...**



**LEAN, CLEAN AND GREEN LANDSCAPING**

With firewise landscaping, you can create survivable space around your home that reduces your wildfire threat. Large trees should be pruned so that the lowest branches are at least 6 to 10 ft high to prevent a fire on the ground from spreading to the tree tops. Within the survivable space, remove flammable plants that contain resins, oils and waxes that burn readily: ornamental junipers, yaupon holly, red cedar, and young pine. A list of *less-flammable* plants can be obtained from your local state forester, forestry office, county extension office or landscape specialist.

**Firewise** Although mulch helps retain soil moisture, when dry, it can become flammable. Mulch as well as all landscaping should be kept well watered to prevent it from becoming fire fuel.

**FIRE-RESISTANT ROOF CONSTRUCTION**

Firewise construction materials include Class-A asphalt shingles, metal, tile and concrete products. Additionally, the inclusion of a fire-resistant sub-roof adds protection.

**Firewise** Something as simple as making sure that your gutters, eaves and roof are clear of debris will reduce your fire threat.

**FIRE-RESISTANT EXTERIOR CONSTRUCTION**

Wall materials that resist heat and flames include brick, cement, plaster, stucco and concrete masonry. Tempered and double pane glass windows can make a home more resistant to wildfire heat and flames.

**Firewise** Although some vinyl will not burn, some vinyl soffits can melt, allowing embers into the attic space.

**EMERGENCY ACCESS**

Identify your home and neighborhood with legible and clearly marked street names and numbers so response vehicles can rapidly find the location of the emergency. Include a driveway that is at least 12 feet wide with a vertical clearance of 15 feet – to provide access to emergency apparatus.

Source: Lane County Firewise

Figure I-33. Fire Resistant Plants



**GORSE**  
ACTION GROUP

# Fire Resistant Plants & Garden

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**What are “fire-resistant” plants?**

The *Fire-resistant Plants for Home Landscapes* guide created by OSU Extension (2006) defines fire-resistant plants as “plants that do not readily ignite from a flame or other ignition source”. Fire-resistant plant landscaping and removal of flammable material (gorse, dead plants, maintenance of landscaping) is a means of creating “defensible space” around a home. Defensible space is “the area between your home or other structures, where potential fuel (materials or vegetation) have been modified, reduced, or cleared to create a barrier and slow the spread of wildfire toward your home”. These protective measures could significantly increase the chance of your home surviving a fire.

The Gorse Action Group has installed a fire-resistant plant demonstration garden at the Bandon Community Youth Center, available for self-guided tours. Please see the back of this handout for more information.



**Gorse & fire**

Gorse (*Ulex europaeus*), an invasive species found on the south coast of Oregon, is not only detrimental to land managers and native habitats, but is also extremely flammable. Gorse plants contain a high amount of natural oil which makes it extremely flammable. Gorse was the main cause of the town of Bandon burning down in 1936 and caused fires as recently as 2007 and 2015. The seeds are resistant to fire, leaving a source for plants to recolonize after fire. In Coos and Curry Counties, this flammable weed poses a serious risk to over 80,000 residents and 30,000 structures so large-scale control efforts are essential to maintaining public safety.





Gorse regrowth after 2015 fire at Bandon Dunes Golf Resort

## 9. Wind Storm

### Causes and Characteristics

A wind storm is generally a short duration event involving straight-line winds and/or gusts in excess of 50 mph. Although windstorms can affect the entirety of Coos County, they are especially dangerous along the beaches, headlands and coastal bluffs as well as in developed areas with large trees or tree stands. A wind storm will frequently knock down trees and power lines, damage homes, businesses, public facilities, and create tons of storm related debris. Wind storms are a common, chronic hazard in Coos County.

### Hazard History

The following table provides information on the previous occurrences of wind storms. X new wind storm events have occurred since 2016 and X historic events have been added for the 2023 update.

**Table I-40. Historic Wind Storm Events**

Date	Location	Event Type	Magnitude	Details
Nov. 2020 (11/14/2020)	S. Oregon Coast	High Wind	69 mph	One of a series of fronts brought high winds to the southern Oregon coast and south central Oregon.
Jan. 2020 (01/15/2020)	S. Oregon Coast	High Wind	74 mph	An incoming front brought high winds to the southern Oregon coast and the Siskiyou Mountains. Cape Blanco also recorded very strong winds, the peak gust there was 95 mph at 15/1300 PST.
Apr. 2017 (04/06/2017)	S. Oregon Coast	High Wind	70 mph	A strong developing low off the coast brought high winds to a number of locations across southwest and south central Oregon. At the peak of the storm, more than 60,000 people in many cities were without power, mostly in Josephine County. Pacific Power reported the loss of one high voltage line, one major substation and five satellite substations. Many trees were down, including a number onto power lines. Schools were closed across Coos and Curry counties.
Mar. 2016* (03/05/2016)	S. Oregon Coast	High Wind	74 mph	The NOS/NWLON sensor at Port Orford recorded numerous gusts exceeding 57 mph between 15/0719 PST and 15/1054 PST. The peak gust was 78 mph at 15/0942 PST. The Long Prairie RAWS recorded gusts to 61 mph at 15/0813 PST and 15/0913 PST.
Dec. 2015* (12/06/2015)	S. Oregon Coast	High Wind	69 mph	Another in a series of storms brought high winds to portions of southwest and south central Oregon. The NOS-NWLON at Port Orford reported a gust to 69 mph at 06/0212 PST.



Date	Location	Event Type	Magnitude	Details
Feb. 2015* (02/09/2015)	S. Oregon Coast	High Wind	66 mph	The third in a series of fronts brought strong winds to many areas in Southern Oregon. The ODOT sensor at Port Orford recorded several gusts exceeding 57 mph during this interval. The peak gust was 66 mph recorded at 09/0630 PST.
Dec. 2012 (12/19/2012-12/20/2012)	S. Oregon Coast	High Wind	74 mph	The stormy pattern continued as another cold front brought high winds to portions of southern Oregon. The NOS/NWLON unit at Port Orford recorded numerous gusts exceeding 57 mph during this interval. The peak gust was 74 mph at 20/0100 PST. A spotter 2NNE Langlois recorded a gust to 59 mph overnight.
Mar. 2012	Coos County	High Wind, Heavy Rain, Flooding, Mudslides, Landslides	66 mph at Bandon	Damaging winds, heavy rains, flooding, mudslides, landslides, and erosion in Coos and 11 other counties cost nearly \$6 million in damages. A strong cold front brought strong winds to many areas in Southern Oregon and Northern California. The Port Orford station reported numerous gusts in excess of 57 mph between 12/0400 PST and 12/2042 PST. The peak gust was 75 mph recorded at 12/2036 PST. A spotter at Bandon reported a gust to 66 mph at 12/1509 PST.
Apr. 2010* (04/04/2010)	S. Oregon Coast	High Wind	75 mph	Strong south winds occurred ahead of a strong cold front which brought severe winds to the south Oregon coast.
Jan. 2010* (01/24/2010)	S. Oregon Coast	High Wind	84 mph	A cold front brought strong winds to the Oregon coast.
Dec. 2007 (12/01/2007-12/03/2007)	S. Oregon Coast	High Wind, Heavy Rain, Mudslides	3 days	Event brought the strongest winds the area has seen since the Columbus Day storm. A series of powerful Pacific storms Dec. 1-3, 2007 brought straight-line winds, rain, and mudslides resulting in Presidential Disaster Declaration; \$180 million in damage in the state, power outages and communication isolation for several days, and five deaths attributed to the storm.
Nov. 2007* (11/12/2007)	S. Oregon Coast	High Wind	57 mph	A strong cold front moved onshore this day, bringing high winds to the coast and Coast Range. A High Wind Warning was issued. Wind speeds and gusts at Cape Blanco met High Wind Warning criteria nearly continuously for 10 hours. Cape Arago recorded at gust to 51 KT at 12/1101 PST, and the Long Prairie RAWs recorded a gust to 51 KT at 12/0913 PST.
Dec. 2006	S. Oregon Coast	High Wind	90 mph	Windstorms with winds over 90 mph caused \$225,000 for Coos, Coos, and Douglas counties.
Nov. 2006	Coos County	High Wind	70 mph	Storms with winds measured at 70 mph created a total of \$10,000 in damages.
Nov. 2002	Curry County	Tornado	n/a	Tornado touched down in Brookings causing \$500,000 in damage.

Date	Location	Event Type	Magnitude	Details
Feb. 2002	Coos County	Wind Storm	88 mph	Windstorm with 88 mph winds recorded in Bandon. Severe damage to utilities and roads caused by falling trees. State of Emergency declared for Coos, Curry, Douglas, Lane and Linn Counties.
Dec. 1999 (12/08/1999)	S. Oregon Coast	High Wind	80 mph	Strong winds at Cape Blanco; high wind warning issued.
Dec. 1995	Statewide	High Wind	Over 100 mph	Wind gusts of over 100 mph; e.g. Sea Lion Caves gusts to 119 mph. The storm followed the path of Columbus Day Storm (Dec. 1962) and resulted in four fatalities, many injuries, and widespread damage (FEMA-1107-DR-Oregon).
Feb. 1990	Oregon Coast	High Wind	53 mph	Wind gusts resulted in damage to docks, piers, and boats.
Jan. 1990 (01/24/1990)	Statewide	Wind Storm	100 mph wind gusts	One fatality; damaged buildings; falling trees resulted in a disaster declaration in Oregon (FEMA-853-DR-Oregon).
Mar. 1983	Curry County	Tornado	n/a	Tornado touched down in Brookings, causing \$25,000 in damage.
Oct. 1967	Western Oregon	Wind Storm	100–110 mph	Severe wind damage along the coast, winds 100 to 110 mph.
Dec. 1964 (12/24/1964)	Oregon	Floods, Heavy Rain, Winter Storm	100-year flood event; 15" rain in 1 day	The Christmas flood of 1964 was an atmospheric river or "pineapple express" event that battered the region producing as much as 15 inches of rain in 24 hours at some locations. The combination of heavy rain, melting snow, and frozen ground caused extreme runoff, erosion and flooding.
Oct. 1962 (10/12/1962)	Coos County; Statewide	Wind Storm	131 mph	Oregon's most destructive storm, the Columbus Day Windstorm Event, produced a barometric pressure low of 960 mb and resulted in wind speeds of 131 mph on the Oregon coast resulting in 23 fatalities and \$170 million in damages.
Feb. 1961	Coos County	Wind Storm	n/a	Heavy gusts and significant rain caused widespread damage in Coos County.
Nov. 1958	Coos County	Wind Storm	80-100 mph	Over a billion board feet of timber was blown down; roads in Coos County largely blocked.
Jan. 1956	Western Oregon	High Wind, Heavy Rain, Mudslides	n/a	Heavy rains, high winds, mud slides resulted in estimated damages of \$95,000.
Dec. 1955 (12/29/1955)	Western Oregon	High Wind	up to 90 mph	Wind gusts at North Bend up to 90 mph resulted in significant damage to buildings and farms.

Date	Location	Event Type	Magnitude	Details
Dec. 1951	Statewide	High Wind	60–100 mph	Large windstorm with coastal winds between 60 and 100 mph. Damage across the state.
Nov. 1951	Statewide	High Wind	40–60 mph with 75–80 mph gusts	Winds 40–60 mph with 75–80 mph gusts resulted in widespread damage, especially to transmission lines.
Apr. 1931	Western Oregon	High Wind	78 mph	Wind speeds up to 78 mph resulted in widespread damage.
Jan. 1921	Oregon Coast	High Wind	n/a	Hurricane-force winds along the entire coast.

Note: \* indicates newly listed event for the 2021 NHMP update. Sources: NOAA Storm Events Database, 2021. Taylor and Hatton, 1999, Oregon Weather Book.

## Future Climate Conditions: Wind Storm

Limited research suggests little if any change in the frequency and intensity of windstorms in the Northwest as a result of climate change.

## Vulnerability Assessment

The hazard impact and community vulnerability for wind storm was assessed and ranked by each jurisdiction via the Hazard Vulnerability Analysis process.

**Table I-41. Wind Storm Hazard Vulnerability Analysis Summary**

Jurisdiction	Total	Risk Level	Jurisdiction	Total	Risk Level
Unincorporated Coos County	213	H	City of Powers	156	M
City of Bandon	196	H	Bay Area Hospital District	204	H
City of Coquille	196	H	Haynes Drainage District	192	H
City of Coos Bay	204	H	International Port of Coos Bay	194	H
City of Lakeside	196	H	Port of Bandon	196	H
City of Myrtle Point	213	H	Southern Coos Hospital District	210	H
City of North Bend	196	H			

- Source: Coos MJ-NHMP Risk Assessment, March-May 2021.

## Risk Reduction Recommendations

The science of risk reduction is an emerging field. These potential storm mitigation actions are listed along with the hazard description so that readers understand the type of mitigation actions being considered or that might be considered current best practices.

- Develop and implement hazard tree and vegetation management best practices/programs.
- Promote tree planting projects on private and public properties using 'right tree, right place' methods.
- Educate homeowners about methods to tie down metal roofs and metal sheds.
- Identify major transportation routes at risk during a major winter storm event.
- Implement Oregon Building Code sets standards for structures to withstand 80 mph winds, with additional requirements addressing high exposure areas.
- Assess high exposure areas near developable lands or existing structures to determine the wind load standards necessary for resilient buildings and infrastructure.

## 10. Winter Storm

### Causes and Characteristics

Severe winter storms can consist of rain, freezing rain, ice, snow, cold temperatures, and wind. They originate from troughs of low pressure offshore that ride along the jet stream during fall, winter, and early spring months. Severe winter storms, while possible, do not normally affect Coos County.

### Hazard History

The following table provides information on the previous occurrences of winter storms. Two new winter storms events have occurred since 2016 and one historic event has been added for the 2023 update.

**Table I-42. Historic Winter Storm Events**

Date	Location	Event Type	Magnitude	Details
2019 (02/22/2019-02/26/2019)	Coos County	Heavy Rain, Flooding, Landslides?		DR-4432 Public Assistance categories A, B, C, D, E, F, G
Jan. 2017 (01/01/2017)	S. Oregon Coast	Winter Storm	5.3" snow Lakeside	Two fronts combined with an usually cold air mass already in place to bring heavy snow to many portions of southwest and south central Oregon. This storm had an unusually severe impact due to the low snow levels, all the way down the coastal beaches. Some areas that usually only get a few inches of snow in a season got as much as two feet over several days. There were numerous reports of power outages and tree damage. Traffic along major highways, including Interstate 5, was shut down at times, and there were numerous traffic accidents. Many people were stranded on the roads or in their homes. There were widespread school closures, many closed for the entire week. There was one fatality due to a traffic accident.
2015 (12/06/2015-12/23/2015)	Coos County	Heavy Rain, Flooding, Landslides?		Reported at 3/4/2019 Mtg by J. Rowe.
Mar. 2012	Coos County;	High Wind, Heavy Rain, Flooding, Mudslides, Landslides	66 mph at Bandon	Damaging winds, heavy rains, flooding, mudslides, landslides, and erosion in Coos and 11 other counties cost nearly \$6 million in damages. A strong cold front brought strong winds to many areas in Southern Oregon and Northern California. The Port Orford station reported numerous gusts in excess of 57 mph between 12/0400 PST and 12/2042 PST. The peak gust was 75 mph recorded at 12/2036 PST. A spotter at Bandon reported a gust to 66 mph at 12/1509 PST.



Date	Location	Event Type	Magnitude	Details
Mar. 1998* (03/21/1998)	Coos County	Heavy Rain	3.55"	3.55 inches rainfall in 24 hrs. recorded at Coos Bay.
Nov. 1996 - Dec. 1996	Five Western States	Heavy Rain, Freezing Rain/Heavy Wet Snow	6-18" West of the Cascades; 8" in 24 hrs in Coast Range	During the period from mid-November to mid-December 1996, many areas received above-normal precipitation, greatly increasing the snowpack over mid and high elevations. Three sequential storms brought moderate to heavy rain, with the last creating a rain-on-snow event which resulted in incredible amounts of runoff.
Dec. 1964 (12/24/1964)	Oregon	Floods, Heavy Rain, Winter Storm	100-year flood event; Benchmark; 15 inches of rain in 24 hours	The Christmas flood of 1964 was driven by a series of storms, known as atmospheric rivers or "pineapple expresses," that battered the region producing as much as 15 inches of rain in 24 hours at some locations. The combination of heavy rain, melting snow, and frozen ground caused extreme runoff, erosion and flooding. <a href="https://www.usgs.gov/news/christmas-flood-1964">https://www.usgs.gov/news/christmas-flood-1964</a>
Jan. 1950	Coos County	Severe winter weather	18" snow in Powers; 6" snow in Bandon	Heaviest snow statewide since record keeping started; two-and-a-half-inches in Coos Bay/North Bend, six-inches in Bandon and 18-inches in Powers. Snow, sleet, and freezing rain closed down highways and power lines.

Note: \* indicates newly listed event for the 2021 NHMP update. Sources: NOAA Storm Events Database, <https://www.ncdc.noaa.gov/stormevents/>, accessed 04/20/21, Coos NHMP 2016.

## Future Climate Conditions: Winter Storm

- Cold extremes will become less frequent and intense as the climate warms.
- In Coos County, the temperature on the coldest night of the year is projected to increase by an average of 4.5°F (range 2–8°F) by the 2050s, relative to the 1971–2000 historical baselines, under the higher emissions scenario.

## Vulnerability Assessment

The hazard impact and community vulnerability for windstorm and winter storms was assessed and ranked by each jurisdiction via the Hazard Vulnerability Analysis process.

**Table I-43. Winter Storm Hazard Vulnerability Analysis Summary**

Jurisdiction	Total	Risk Level	Jurisdiction	Total	Risk Level
Unincorporated Coos County	213	H	City of Powers	216	H
City of Bandon	129	M	Bay Area Hospital District	188	H
City of Coquille	157	M	Haynes Drainage District	185	H

Jurisdiction	Total	Risk Level	Jurisdiction	Total	Risk Level
City of Coos Bay	188	H	International Port of Coos Bay	192	H
City of Lakeside	144	M	Port of Bandon	157	M
City of Myrtle Point	218	H	Southern Coos Hospital District	187	H
City of North Bend	144	M			

- Source: Coos MJ-NHMP Risk Assessment, March-May 2021.

## Risk Reduction Recommendations

The science of risk reduction is an emerging field. These potential storm mitigation actions are listed along with the hazard description so that readers understand the type of mitigation actions being considered or that might be considered current best practices.

- Develop and implement hazard tree and vegetation management best practices/programs.
- Promote tree planting projects on private and public properties using ‘right tree, right place’ methods.
- Educate homeowners about methods to tie down metal roofs and metal sheds.
- Identify major transportation routes at risk during a major winter storm event

## D. Community Risk Profiles

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The risk summaries for each plan holder jurisdiction can be found in this section. Each summary includes the local risk assessment based upon the hazard analysis process described below, a hazard profile (if applicable) from Open-File Report O-21-04, Natural Hazard Risk Report for Coos County (described on page 15), and details of risk analysis specific to that jurisdiction.

### Hazard Analysis Process

Coos County Emergency Management and the participating jurisdictions conducted a local risk assessment as a part of the 2023 Coos County MJ-NHMP update using the Oregon Department of Emergency Management's Hazard Vulnerability Analysis (HVA) methodology. The table of hazard risk ratings and the priorities that resulted from the conversations with each jurisdiction helped to inform the mitigation strategy and actions.

#### Methodology

A short description of the Oregon Department of Emergency Management (OEM) Hazard Analysis Methodology used is below, but the full description can be found at:

[https://www.oregon.gov/lcd/NH/Documents/Apx\\_9.1.19\\_OEM\\_Hazard\\_Analysis\\_Methodology\\_OPT.pdf](https://www.oregon.gov/lcd/NH/Documents/Apx_9.1.19_OEM_Hazard_Analysis_Methodology_OPT.pdf)

In this analysis, severity ratings are applied to the four categories of:

- History
- Vulnerability
- Maximum threat (worst-case scenario)
- Probability

These numbers are aggregated from a severity rating for each of the four categories above that is each pre-assigned a specific weight factor. The assessment identifies three levels of risk: High, Moderate and Low based on total score.

- Low: 1-3 points
- Medium: 4-7 points
- High: 8-10 points

#### **High** – 168 to 240 points

High probability of occurrence; at least 50 percent or more of population at risk from hazard; significant to catastrophic physical impacts to buildings and infrastructure; major loss or potential loss of functionality to all essential facilities (hospital, police, fire, EOC and shelters).

#### **Moderate** – 96-167 points

Less than 50 percent of population at risk from hazard; moderate physical impacts to buildings and infrastructure; moderate potential for loss of functionality to essential facilities.

#### **Low** – 24 to 95 points

Low probability of occurrence or low threat to population; minor physical impacts

Process

Each community ranked hazards as a part of this process. This effort was led and coordinated by the Coos County Emergency Management staff. To complete the HVA (hazard vulnerability analysis) or local risk assessment, jurisdiction representatives first discussed recent events and reviewed updated hazard information to ensure they hold a common understanding of the description, type, location, and extent of each hazard. Next, they identified hazards by choosing a pre-populated template to use and in some cases modified the template, so it fit the best set of hazards for their community or service territory. As ranking hazards often involves thinking through a specific scenario of how a specific hazard might unfold, if a hazard can happen in more than one manner, a jurisdiction may choose to either rank the hazard for each of the likely scenarios or provide one aggregated score. An example would be the question of how to rank both a Cascadia Subduction Zone earthquake event (likely magnitude 7-9) and a crustal fault earthquake event (likely magnitude 5-7). The methodology allows for either a lump (one score) or split approach (two scores).

Next the Hazard Vulnerability Analysis was updated by systematically ranking each hazard through a series of discussions, usually in a meeting with the DLCDC Project Manager. As a result, each participating jurisdiction considered each hazard and its potential impact on their community. A short summary of the rationale used is also captured in an effort to explain the logic of the ranking and to make future rankings simpler by having a baseline. Two templates were offered representing two approaches to Natural Hazard Identification. One template ranked nine hazards: coastal erosion, drought, earthquake, flood, landslide, tsunami, wildfire, wind storm, and winter storm. The second, longer set ranked fifteen hazards: coastal erosion, drought, earthquake (crustal), earthquake (Cascadia subduction zone event), flood (riverine), flood (dam failure), flood (tidal), landslide, tsunami (distant), tsunami (Cascadia subduction zone event), wildfire smoke, wildfire urban interface, wildfire (conflagration), wind storm, and winter storm. Jurisdictions were given the discretion to rank the hazards that they perceived affect their community.

**Table I-44. HVA Template #1**

Hazard Vulnerability Analysis Score Sheet: TEMPLATE															
Hazard	History			Probability			Vulnerability			Maximum Threat			Total	H-M-L	Rank
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Coastal Erosion		2	0		7	0		5	0		10	0	0		
Drought		2	0		7	0		5	0		10	0	0		
Earthquake		2	0		7	0		5	0		10	0	0		
Flood		2	0		7	0		5	0		10	0	0		
Landslide		2	0		7	0		5	0		10	0	0		
Tsunami		2	0		7	0		5	0		10	0	0		
Wildfire		2	0		7	0		5	0		10	0	0		
Wind Storm		2	0		7	0		5	0		10	0	0		
Winter Storm		2	0		7	0		5	0		10	0	0		

# Unincorporated Coos County

## Local Risk Assessment—THIRA

On April 27, 2021 Coos County Emergency Management staff reviewed and ranked the plan hazards in an internal meeting with support of DLCDC. On June 13, 2022, Coos County provided additional information to DLCDC that ranked the “non-natural” hazards in the county such as those events caused solely by humans or human activity.

**Table I-45. Unincorporated Coos County HVA Notes**

Hazard	Ranking Logic
Wind Storm	Coos County has severe winds that can reach an excess of 100 mph, causing major damage to property, closing roadways, as well as drying vegetation and creating fire hazards.
Winter Storm	Winter storms bring heavy rainfall which cause yearly flooding, landslides, as well as snow and ice.
Earthquake	Although we have not suffered any recent earthquakes, the potential loss could be 11,999 lives and property damage in excess of \$3 Billion.
Tsunami	A Tsunami would displace approximately 20% of the County Population, with complete loss in the inundation zone.
Flood	Floods occur annually when rivers exceed 21 ft. This causes road washout, large amounts of debris, and contamination of the rivers.
Landslide	Landslides occur annually on both rural and main roads, important lifelines for Coos County. Roadways are routes for supplies and life sustaining assistance and landslides major delays annually.
Coastal Erosion	With approximately 50 miles of coastline scattered with homes and industry, as well as wildlife refuges, Coastal Erosion is an ongoing concern with king tides increasing.
Wildfire	A 350-acre fire in 2020 reminds us of how quickly private property and industry can be destroyed. Enhanced dryness from wind and drought and many acres of uncontrolled Gorse keep wildfire as a growing concern.
Drought	Coos County continues to be in abnormally dry conditions due to lack of adequate rainfall. Emergency drought declarations for 2019 and 2020 necessitate drought planning.

**Table I-46. Unincorporated Coos County HVA Notes – Other Hazards**

Hazard	Ranking Logic
Domestic Terrorism	There have been several incidents of pipe bombs as recently as 2021. In 2021, a device exploded at a cross in a park in Coos Bay. Includes school shootings, ecoterrorism, etc.
Pandemics/ Biological Emergencies	Another event similar to the SARS-COVID-19 event
Hazardous Materials: Transportation & Fixed Sites	County has two major routes for the transport of hazardous materials (Hwy 101 and 42); an airport and port in North Bend have fuel and cargo stored.
Radiological (Non-WMD)	Local hospitals have low-level radioactive materials on site that could be accidentally released. These materials are shipped via commercial servicers like FedEx and are labeled. Sinking boats and vehicles on sand.

**Table I-47. Unincorporated Coos County Hazard Vulnerability Analysis – Natural Hazards**

Hazard Vulnerability Analysis Score Sheet: Coos County															
Hazard	History			Probability			Vulnerability			Maximum Threat			Total	H-M-L	Rank
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Wind Storm	10	2	20	9	7	63	8	5	40	9	10	90	213	H	1
Winter Storm	10	2	20	9	7	63	8	5	40	9	10	90	213	H	2
Earthquake	7	2	14	6	7	42	10	5	50	9	10	90	196	H	3
Tsunami	7	2	14	8	7	56	8	5	40	7	10	70	180	H	4
Flood	9	2	18	9	7	63	8	5	40	4	10	40	161	M	5
Landslide	10	2	20	8	7	56	10	5	50	3	10	30	156	M	6
Wildfire	8	2	16	7	7	49	6	5	30	5	10	50	145	M	7
Coastal Erosion	5	2	10	10	7	70	1	5	5	5	10	50	135	M	8
Drought	8	2	16	8	7	56	4	5	20	3	10	30	122	M	9

**Table I-48. Unincorporated Coos County Hazard Vulnerability Analysis – Other Hazards**

Hazard Vulnerability Analysis Score Sheet: Coos County - Other Hazards															
Hazard	History			Probability			Vulnerability			Maximum Threat			Total		
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Domestic Terrorism	10	2	20	10	7	70	10	5	50	10	10	100	240	H	
Pandemics/ Biological Emerg.	1	2	2	7	7	49	10	5	50	7	10	70	171	H	
Hazardous Materials: Transportation & Fixed Sites	1	2	2	7	7	49	1	5	5	1	10	10	66	L	
Radiological (Non- WMD)	1	2	2	1	7	7	1	5	5	1	10	10	24	L	

## Hazard Profile

**Table I-49. Unincorporated Coos County Hazard Profile**

Community Overview							
Community Name	Population	Number of Buildings	Critical Facilities <sup>1</sup>	Total Building Value (\$)			
Unincorporated Coos County	18,664	18,957	21	4,476,885,000			
Hazus-MH Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Damaged Buildings	Damaged Critical Facilities	Loss Estimate (\$)	Loss Ratio
Flood <sup>2</sup>	1% Annual Chance	763	4.1%	890	0	58,390,000	1.3%
<i>Earthquake*</i>	<i>CSZ M9.0 Deterministic</i>	3,149	17%	5,862	16	1,310,768,000	29%
Earthquake (within Tsunami Zone)		136	0.7%	196	3	44,178,000	1.0%
Exposure Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Exposed Buildings	Exposed Critical Facilities	Building Value (\$)	Percent of Exposure
<i>Tsunami</i>	<i>CSZ M9.0 – Medium</i>	365	2.0%	418	3	94,049,000	2.1%
Tsunami	Senate Bill 379 Regulatory Line	230	1.2%	264	3	62,355,000	1.4%
Landslide	High and Very High Susceptibility	3,411	18%	3,749	3	782,675,000	18%
Wildfire	High Hazard	457	2.4%	402	1	86,157,000	1.9%

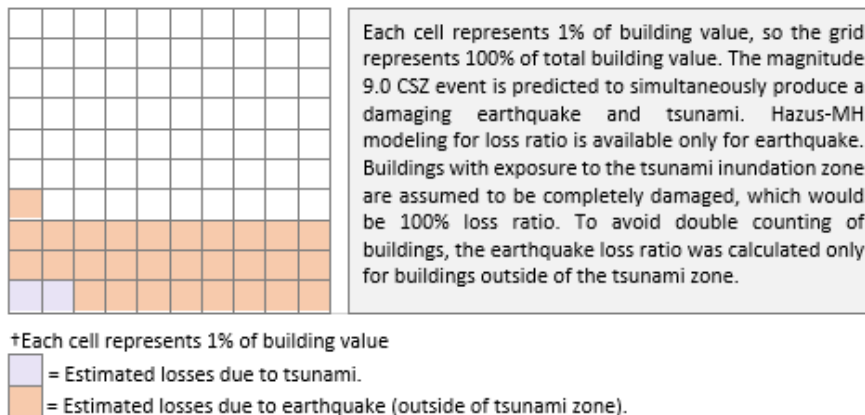
\*Earthquake losses were calculated for buildings outside of Medium tsunami zone.

Rows with italicized text and shaded background indicate results should be considered in tandem as they are expected to occur within minutes of one another. Colors correspond to colors in Figure A-1.

<sup>1</sup>Facilities with multiple buildings were consolidated into one building complex.

<sup>2</sup>No damage is estimated for exposed structures with “First floor height” above the level of flooding (base flood elevation).

**Figure A-1. Unincorporated Coos County loss ratio from Cascadia subduction zone event.**



Source: Williams et al, 2021.



## City of Bandon

In Bandon, the city and the port share the same local risk assessment to improve coordination. On May 25, 2021, DLCD and Megan Lawrence of Bandon Planning met to rank hazards following input from the Port of Bandon staff on March 4, 2021.

**Table I-50. Bandon HVA Notes**

<b>Hazard</b>	<b>Ranking Logic</b>
Earthquake: Cascadia	Severe risk to the community due to impact to bridges and other lifelines resulting in isolation.
Tsunami Cascadia	Severe risk to the community due to tsunami inundation following a large earthquake.
Wind Storm	Bandon is quite exposed to coastal wind storm events.
Earthquake	A crustal earthquake would impact the older building stock and displace senior residents.
Wildfire	The community has a history of wildfire connected to gorse infestations which persist as threat.
Tsunami	A distant tsunami could cause impacts to the Port of Bandon which is the community's economic engine.
Drought	A severe drought could impact drinking water supplies.
Flood	Coastal and riverine flooding pose some degree of risk, but lower than most hazards.
Winter Storm	Snow and ice is very unlikely but cause large impacts when they occur due to their infrequency.
Coastal Erosion	A few structures have very high risk, but the majority do not, and it is likely not a life safety issue.
Landslide	Landslide risk is primarily associated with coastal erosion and earthquake risk.

**Table I-51. Bandon Hazard Vulnerability Analysis**

Hazard Vulnerability Analysis Score Sheet: City of Bandon															
Hazard	History			Probability			Vulnerability			Maximum Threat			Total	H-M-L	Rank
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Earthquake: CSZ	3	2	6	7	7	49	10	5	50	10	10	100	205	H	1
Tsunami: Local CSZ	3	2	6	7	7	49	10	5	50	10	10	100	205	H	2
Wind Storm	10	2	20	8	7	56	8	5	40	8	10	80	196	H	3
Earthquake: Crustal	4	2	8	7	7	49	7	5	35	10	10	100	192	H	4
Wildfire	9	2	18	9	7	63	4	5	20	9	10	90	191	H	5
Tsunami: Distant	7	2	14	8	7	56	7	5	35	7	10	70	175	H	6
Drought	9	2	18	9	7	63	4	5	20	7	10	70	171	H	7
Flood	9	2	18	8	7	56	5	5	25	6	10	60	159	M	8
Winter Storm	4	2	8	8	7	56	7	5	35	3	10	30	129	M	9
Coastal Erosion	8	2	16	8	7	56	3	5	15	3	10	30	117	M	10
Landslide	8	2	16	8	7	56	2	5	10	3	10	30	112	M	11

## Hazard Profile

**Table I-52. City of Bandon Hazard Profile**

Community Overview							
Community Name	Population	Number of Buildings	Critical Facilities <sup>4</sup>	Total Building Value (\$)			
Bandon	3,066	1,962	8	629,445,000			
Hazus-MH Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Damaged Buildings	Damaged Critical Facilities	Loss Estimate (\$)	Loss Ratio
Flood <sup>2</sup>	1% Annual Chance	60	2.0%	94	1	3,855,000	0.6%
<i>Earthquake*</i>	<i>CSZ Mw 9.0 Deterministic</i>	837	27%	693	5	213,771,000	34%
<i>Earthquake (within Tsunami Zone)</i>		27	0.9%	116	2	43,296,000	6.9%
Exposure Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Exposed Buildings	Exposed Critical Facilities	Building Value (\$)	Percent of Exposure
<i>Tsunami</i>	<i>CSZ Mw 9.0 – Medium</i>	102	3.3%	185	2	64,742,000	10%
Tsunami	Senate Bill 379 Regulatory Line	82	2.7%	158	2	54,088,000	8.6%
Landslide	High and Very High Susceptibility	57	1.9%	51	0	13,379,000	2.1%
Wildfire	High Hazard	51	1.7%	45	0	11,825,000	1.9%

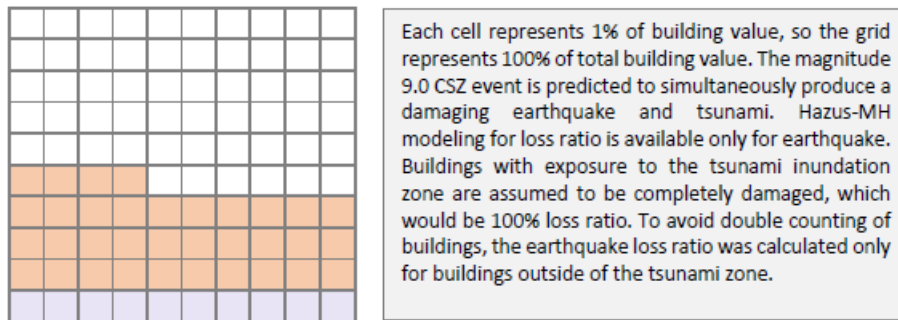
\*Earthquake losses were calculated for buildings outside of Medium tsunami zone.

Rows with italicized text and shaded background indicate results should be considered in tandem as they are expected to occur within minutes of one another. Colors correspond to colors in Figure A-8.

<sup>4</sup>Facilities with multiple buildings were consolidated into one building complex.

<sup>2</sup>No damage is estimated for exposed structures with "First floor height" above the level of flooding (base flood elevation).

**Figure A-8. City of Bandon loss ratio from Cascadia subduction zone event.**



†Each cell represents 1% of building value.

☐ = Estimated losses due to tsunami.

☐ = Estimated losses due to earthquake (outside of tsunami zone).

Source: Williams et al, 2021.

## City of Coquille

### Local Risk Assessment

Each community ranked hazards as a part of this process. City of Coquille staff reviewed and ranked the plan hazards in an internal meeting with support of DLCD in May 2021. Justin Ferren, Scott Sanders, Jolene Delossantos, Hailey Sheldon, and Mark Denning were in attendance.

**Table I-53. Coquille HVA Notes**

Hazard	Ranking Logic
Drought	No conservation orders or shortages. Multiple sources Rink Cr. reservoir and Coquille R.
Earthquake: Crustal	Understand the data, few reports of noticing these events in the community.
Earthquake: Large CSZ	Every city building and critical facilities need seismic upgrades. Hospital has done seismic and water supply upgrades. Large elderly population located in mobile homes, some across bridges and difficult to reach. Road access is a major source of risk.
Flood: Riverine	High flows from precipitation overload the system; lift station failure (wastewater). Studevant Park floods, GP lot (could), boat dock lost previously.
Landslide	Most are on near surrounding areas 42S, 42 towards Roseburg; occur approx. each decade.
Tsunami: Distant	Risk is low but the floodplain could be affected, and the high school is located there.
Tsunami: Local CSZ	CSZ tsunami would be high impact to floodplain areas.
Wildfire Smoke	Fires from 2020 affected Coquille significantly as did a local fire; ambulance calls in response to wildfire smoke were not numerous, so overall vulnerability is considered low.
Wildfire	0–5-acre fire is average; 15-20 per summer; >5 annual or every other year. 2020 374 ac. Fire on North Bank Road caused by powerlines. WUI: Shelley Ln, Crystal Cr. Rd. where forestland abuts the City.

**Table I-54. Coquille Hazard Vulnerability Analysis**

Hazard Vulnerability Analysis Score Sheet: City of Coquille															
Hazard	History			Probability			Vulnerability			Maximum Threat			Total	H-M-L	Rank
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Earthquake: CSZ	3	2	6	7	7	49	10	5	50	10	10	100	205	H	1
Wind Storm	10	2	20	8	7	56	8	5	40	8	10	80	196	H	2
Tsunami: Local CSZ	3	2	6	7	7	49	7	5	35	8	10	80	170	H	3
Flood: Riverine	9	2	18	8	7	56	5	5	25	7	10	70	169	H	4
Wildfire	4	2	8	5	7	35	4	5	20	10	10	100	163	M	5
Earthquake: Crustal	4	2	8	7	7	49	5	5	25	8	10	80	162	M	6
Winter Storm	4	2	8	7	7	49	6	5	30	7	10	70	157	M	7
Drought	8	2	16	8	7	56	4	5	20	4	10	40	132	M	8
Tsunami: Distant	7	2	14	8	7	56	3	5	15	3	10	30	115	M	9
Landslide	8	2	16	8	7	56	2	5	10	3	10	30	112	M	10
Wildfire Smoke	8	2	16	8	7	56	1	5	5	1	10	10	87	L	11

## Hazard Profile

**Table I-55. City of Coquille Hazard Profile**

Community Overview							
Community Name	Population	Number of Buildings	Critical Facilities <sup>1</sup>	Total Building Value (\$)			
Coquille	3,866	1,977	8	606,670,000			
Hazus-MH Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Damaged Buildings	Damaged Critical Facilities	Loss Estimate (\$)	Loss Ratio
Flood <sup>2</sup>	1% Annual Chance	24	0.6%	23	1	1,207,000	0.2%
Earthquake*	<i>CSZ M9.0 Deterministic</i>	259	6.7%	357	6	131,036,000	22%
Earthquake (within Tsunami Zone)		0	0.0%	0	0	0	0.0%
Exposure Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Exposed Buildings	Exposed Critical Facilities	Building Value (\$)	Percent of Exposure
Tsunami	<i>CSZ M9.0 – Medium</i>	0	0%	0	0	0	0%
Tsunami	Senate Bill 379 Regulatory Line	0	0%	0	0	0	0%
Landslide	High and Very High Susceptibility	323	8.4%	202	0	43,926,000	7.2%
Wildfire	High Hazard	51	1.3%	22	0	5,181,000	0.9%

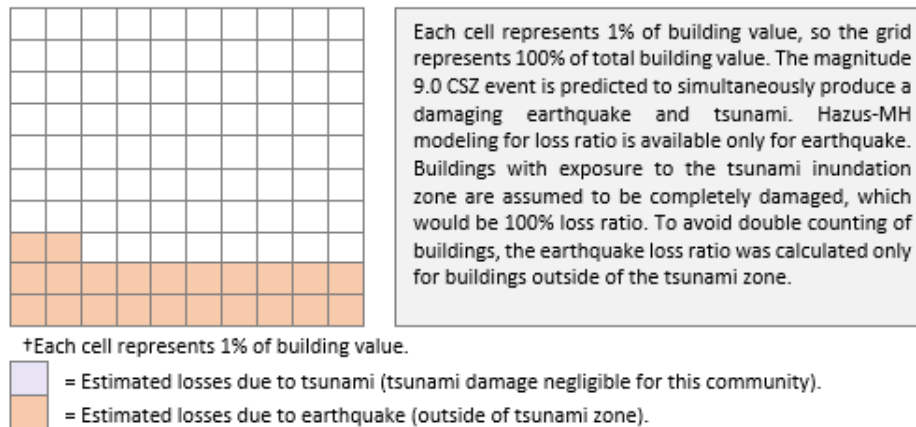
\*Earthquake losses were calculated for buildings outside of Medium tsunami zone.

Rows with italicized text and shaded background indicate results should be considered in tandem as they are expected to occur within minutes of one another. Colors correspond to colors in Figure A-10.

<sup>1</sup>Facilities with multiple buildings were consolidated into one building complex.

<sup>2</sup>No damage is estimated for exposed structures with “First floor height” above the level of flooding (base flood elevation).

**Figure A-10. City of Coquille loss ratio from Cascadia subduction zone event.**



Source: Williams et al, 2021.

## City of Coos Bay

### Local Risk Assessment

On April 21, 2021, the City of Coos Bay ranked the hazards affecting the city using the OEM hazard analysis methodology.

**Table I-56. Coos Bay HVA Notes**

Hazard	Ranking Logic
Wind Storm	Wind storms pose a risk of power outage and road closures.
Earthquake: CSZ Cascadia event	A significant Cascadia Subduction Zone (CSZ) event could paralyze the region for months to years. Bridge failures pose the risk of the isolation.
Earthquake: Crustal	A crustal event poses a risk of impact to the many structures built before seismic building codes were in place.
Winter Storm	The unusual nature of winter conditions in the region poses a risk of power outage and road closures.
Tsunami: Local CSZ	A Cascadia Subduction Zone (CSZ) driven tsunami event could paralyze the region for months to years. Bridge failures pose the risk of the isolation.
Wildfire Smoke	Reduced air quality from regional wildfire smoke poses an additional risk to young, old, and medically sensitive populations.
Flood: Dam failure	The Lower Pony Creek dam is a "high hazard potential" structure that is rated to be in poor condition. Dam failure poses a risk to 400-600 persons depending on the time of day an event occurred. Water supplied by the structure serves 25,000 people.
Tsunami: Distant	A distant tsunami event poses a flood risk that would be difficult to predict, and thus difficult to evacuate.
Wildfire: Urban Interface	Forestlands adjacent to the WUI are closed to the public to protect the city's water supply.
Flood: Tidal	Coastal and riverine flooding pose some degree of risk, but lower than most hazards
Wildfire: Conflagration	While this type of event is unlikely in Coos County, it is not impossible with severe drought and wind conditions.
Flood: Riverine	Coastal and riverine flooding pose some degree of risk, but lower than most hazards
Drought	Conservation plans may be needed to respond to an extended drought.
Landslide	Landslide poses a risk to lifelines (roads, rail, utilities) that serve the region.
Coastal Erosion	Coastal erosion poses some degree of risk, but lower than most hazards.

Table I-57. Coos Bay Hazard Vulnerability Analysis

Hazard Vulnerability Analysis Score Sheet: City of Coos Bay															
Hazard	History			Probability			Vulnerability			Maximum Threat			Total	H-M-L	Rank
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Wind Storm	8	2	16	9	7	63	9	5	45	8	10	80	204	H	1
Earthquake: CSZ	2	2	4	9	7	63	9	5	45	9	10	90	202	H	2
Earthquake: Crustal	2	2	4	9	7	63	9	5	45	8	10	80	192	H	3
Winter Storm	7	2	14	7	7	49	9	5	45	8	10	80	188	H	4
Tsunami: Local CSZ	2	2	4	9	7	63	7	5	35	7	10	70	172	H	5
Wildfire Smoke	7	2	14	8	7	56	6	5	30	7	10	70	170	H	6
Flood: Dam failure	3	2	6	8	7	56	5	5	25	7	10	70	157	M	7
Tsunami: Distant	4	2	8	9	7	63	7	5	35	5	10	50	156	M	8
Wildfire: WUI	4	2	8	7	7	49	5	5	25	7	10	70	152	M	9
Flood: Tidal	4	2	8	8	7	56	5	5	25	6	10	60	149	M	10
Wildfire: Conflagration	2	2	4	7	7	49	5	5	25	7	10	70	148	M	11
Flood: Riverine	3	2	6	8	7	56	5	5	25	6	10	60	147	M	12
Drought	1	2	2	5	7	35	7	5	35	7	10	70	142	M	13
Landslide	1	2	2	6	7	42	3	5	15	4	10	40	99	M	14
Coastal Erosion	1	2	2	4	7	28	2	5	10	3	10	30	70	L	15



## Hazard Profile

**Table I-58. City of Coos Bay Hazard Profile**

Community Overview							
Community Name	Population	Number of Buildings	Critical Facilities <sup>1</sup>	Total Building Value (\$)			
Coos Bay	15,966	7,220	22	2,420,579,000			
Hazus-MH Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Damaged Buildings	Damaged Critical Facilities	Loss Estimate (\$)	Loss Ratio
Flood <sup>2</sup>	1% Annual Chance	773	4.8%	468	7	42,299,000	1.7%
<i>Earthquake*</i>	<i>CSZ M9.0 Deterministic</i>	2,732	17%	2,027	16	632,247,000	26%
Earthquake (within Tsunami Zone)		181	1.1%	226	3	203,853,000	8.4%
Exposure Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Exposed Buildings	Exposed Critical Facilities	Building Value (\$)	Percent of Exposure
<i>Tsunami</i>	<i>CSZ M9.0 – Medium</i>	421	2.6%	319	3	267,595,000	11%
Tsunami	Senate Bill 379 Regulatory Line	53	0.3%	84	2	41,966,000	1.7%
Landslide	High and Very High Susceptibility	3,978	25%	1,890	6	477,292,000	20%
Wildfire	High Hazard	294	1.8%	163	0	32,642,000	1.3%

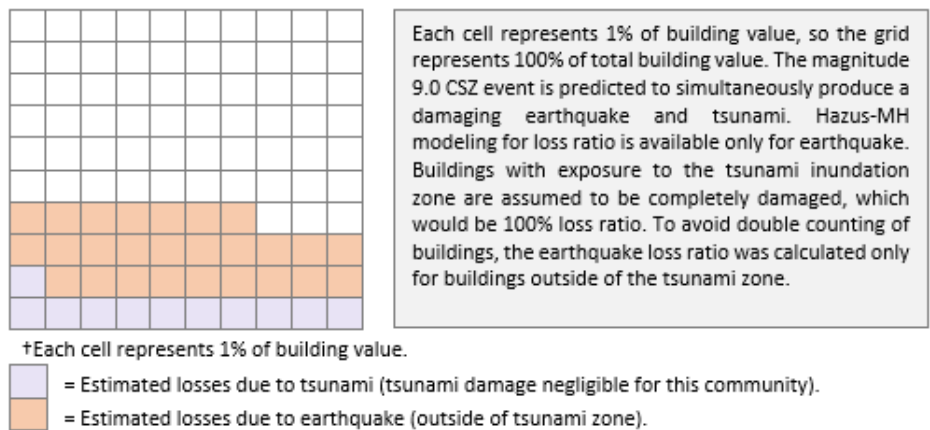
\*Earthquake losses were calculated for buildings outside of Medium tsunami zone.

Rows with italicized text and shaded background indicate results should be considered in tandem as they are expected to occur within minutes of one another. Colors correspond to colors in Figure A-10.

<sup>1</sup>Facilities with multiple buildings were consolidated into one building complex.

<sup>2</sup>No damage is estimated for exposed structures with “First floor height” above the level of flooding (base flood elevation).

**Figure A-10. City of Coos Bay loss ratio from Cascadia subduction zone event.**



Source: Williams et al, 2021.

# City of Lakeside

## Local Risk Assessment

Each community ranked hazards as a part of this process. The City of Lakeside staff reviewed and ranked the plan hazards in an internal meeting with support of DLCD in May 2021.

**Table I-59. Lakeside HVA Notes**

Hazard	Ranking Logic
Earthquake: CSZ	A significant Cascadia Subduction Zone (CSZ) event could paralyze the region for months to years. Bridge failures pose the risk of the isolation.
Wind Storm	Wind storms pose a risk of power outage and road closures.
Earthquake: Crustal	A crustal event poses a risk of impact to the many structures built before seismic building codes were in place.
Drought	A severe drought poses a threat to the drinking water supply of the city.
Flood	A flood poses a threat to the sanitary sewer system of the city.
Tsunami: Local	While the city is outside of the tsunami zone, regional impacts could last months to years.
Winter Storm	The unusual nature of winter conditions in the region poses a risk of power outage and road closures.
Wildfire	While a large wildfire event is unlikely in Coos County, it is not impossible with severe drought and wind conditions.
Landslide	Landslide poses a risk to lifelines (roads, rail, utilities) that serve the region.
Tsunami: Distant	Risk is low but the floodplain could be affected.

**Table I-60. Lakeside Hazard Vulnerability Analysis**

Hazard Vulnerability Analysis Score Sheet: City of Lakeside															
Hazard	History			Probability			Vulnerability			Maximum Threat			Total	H-M-L	Rank
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Earthquake: CSZ	3	2	6	7	7	49	10	5	50	10	10	100	205	H	1
Wind Storm	10	2	20	8	7	56	8	5	40	8	10	80	196	H	2
Earthquake: Crustal	4	2	8	7	7	49	7	5	35	10	10	100	192	H	3
Drought	8	2	16	8	7	56	4	5	20	7	10	70	162	H	4
Flood	8	2	16	8	7	56	4	5	20	7	10	70	162	M	5
Tsunami: Local	3	2	6	7	7	49	4	5	20	7	10	70	145	M	6
Winter Storm	4	2	8	3	7	21	7	5	35	8	10	80	144	M	7
Wildfire	4	2	8	5	7	35	5	5	25	7	10	70	138	M	8
Landslide	4	2	8	7	7	49	2	5	10	3	10	30	97	M	9
Tsunami: Distant	2	2	4	8	7	56	1	5	5	3	10	30	95	L	10

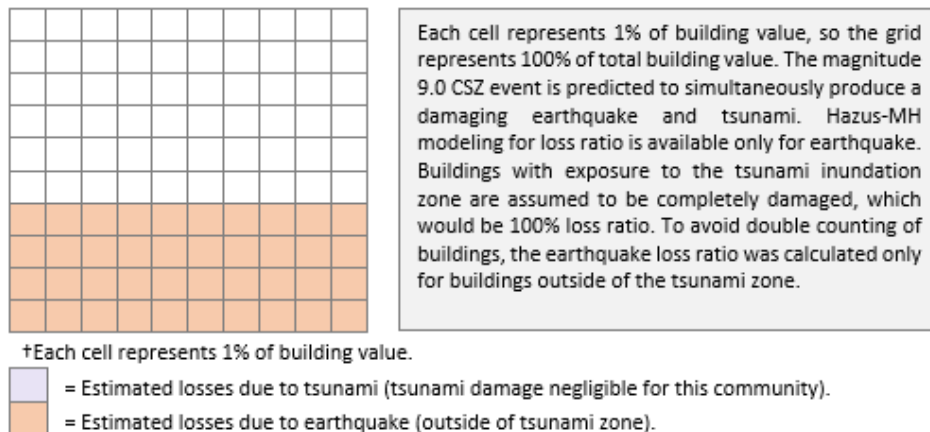
## Hazard Profile

**Table I-61. City of Lakeside Hazard Profile**

Community Overview							
Community Name	Population	Number of Buildings	Critical Facilities <sup>1</sup>	Total Building Value (\$)			
Lakeside	1,699	1,421	3	242,768,000			
Hazus-MH Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Damaged Buildings	Damaged Critical Facilities	Loss Estimate (\$)	Loss Ratio
Flood <sup>2</sup>	1% Annual Chance	253	15%	171	1	5,768,000	2.4%
<i>Earthquake*</i>	<i>CSZ M9.0 Deterministic</i>	572	34%	666	3	96,156,000	40%
Earthquake (within Tsunami Zone)		0	0%	0	0	0	0%
Exposure Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Exposed Buildings	Exposed Critical Facilities	Building Value (\$)	Percent of Exposure
<i>Tsunami</i>	<i>CSZ M9.0 – Medium</i>	0	0%	0	0	0	0%
Tsunami	Senate Bill 379 Regulatory Line	12	0.7%	18	1	4,912,000	2.0%
Landslide	High and Very High Susceptibility	113	6.6%	105	0	20,042,000	8.3%
Wildfire	High Hazard	50	2.9%	43	0	6,144,000	2.5%

\*Earthquake losses were calculated for buildings outside of Medium tsunami zone.  
 Rows with italicized text and shaded background indicate results should be considered in tandem as they are expected to occur within minutes of one another. Colors correspond to colors in Figure A-10.  
<sup>1</sup>Facilities with multiple buildings were consolidated into one building complex.  
<sup>2</sup>No damage is estimated for exposed structures with “First floor height” above the level of flooding (base flood elevation).

**Figure A-10. City of Lakeside loss ratio from Cascadia subduction zone event.**



Source: Williams et al, 2021.

## City of Myrtle Point

### Local Risk Assessment

Each community ranked hazards as a part of this process. On April 21, 2021, the City of Myrtle Point ranked the hazards affecting the city using the OEM hazard analysis methodology.

**Table I-62. Myrtle Point HVA Notes**

<b>Hazard</b>	<b>Ranking Logic</b>
Winter Storm	Power outages and travel interruptions, including access to individuals at risk.
Wind Storm	Power outages and travel interruptions, including access to individuals at risk.
Earthquake: Crustal	Aged infrastructure and buildings built prior to the 1990s pose a risk.
Drought	Water supply vulnerabilities.
Earthquake: Large CSZ	Aged infrastructure and buildings built prior to the 1990s pose a risk.
Wildfire: Conflagration	Myrtle Point has significant natural fire breaks but is situated rurally and proximate to forests.
Wildfire: Urban Interface	Myrtle Point has significant natural fire breaks but is situated rurally and proximate to forests.
Flood: Riverine	Riverine flooding poses some degree of risk, but lower than most hazards
Wildfire Smoke	Smoke inundated the community for a week or more on multiple occasions since the last plan update.
Landslide	Landslide poses a risk to lifelines (roads, rail, utilities) that serve the region.

Table I-63. Myrtle Point Hazard Vulnerability Analysis

Hazard Vulnerability Analysis Score Sheet: City of Myrtle Point															
Hazard	History			Probability			Vulnerability			Maximum Threat			Total	Rank	Rank
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Winter Storm	10	2	20	9	7	63	9	5	45	9	10	90	218	H	1
Wind Storm	10	2	20	9	7	63	8	5	40	9	10	90	213	H	2
Earthquake: Crustal	7	2	14	7	7	49	10	5	50	8	10	80	193	H	3
Drought	8	2	16	9	7	63	8	5	40	7	10	70	189	H	4
Earthquake: CSZ	4	2	8	3	7	21	10	5	50	10	10	100	179	H	5
Wildfire: Conflagration	4	2	8	7	7	49	9	5	45	7	10	70	172	H	6
Wildfire Urban Interface	4	2	8	7	7	49	8	5	40	6	10	60	157	M	7
Flood: Riverine	9	2	18	9	7	63	4	5	20	3	10	30	131	M	8
Wildfire Smoke	7	2	14	8	7	56	9	5	45	1	10	10	125	M	9
Landslide	5	2	10	7	7	49	4	5	20	3	10	30	109	M	10

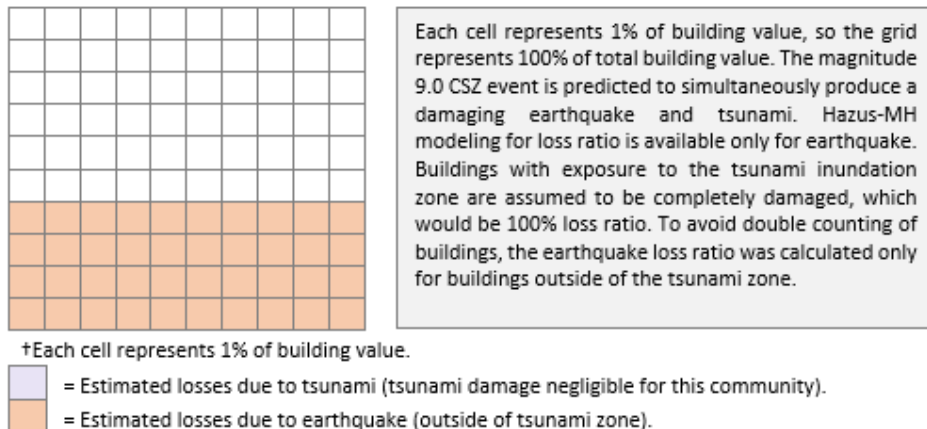
## Hazard Profile

**Table I-64. City of Myrtle Point Hazard Profile**

Community Overview							
Community Name	Population	Number of Buildings	Critical Facilities <sup>1</sup>	Total Building Value (\$)			
Myrtle Point	2,514	1,329	6	383,743,000			
Hazus-MH Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Damaged Buildings	Damaged Critical Facilities	Loss Estimate (\$)	Loss Ratio
Flood <sup>2</sup>	1% Annual Chance	119	4.7%	80	1	3,081,000	0.8%
Earthquake*	<i>CSZ M9.0 Deterministic</i>	455	18%	468	6	154,830,000	40%
Earthquake (within Tsunami Zone)		0	0%	0	0	0	0%
Exposure Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Exposed Buildings	Exposed Critical Facilities	Building Value (\$)	Percent of Exposure
Tsunami	<i>CSZ M9.0 – Medium</i>	0	0%	0	0	0	0%
Tsunami	Senate Bill 379 Regulatory Line	0	0%	0	0	0	0%
Landslide	High and Very High Susceptibility	239	9.5%	131	2	30,609,000	8.0%
Wildfire	High Hazard	0	0%	0	0	0	0%

\*Earthquake losses were calculated for buildings outside of Medium tsunami zone.  
 Rows with italicized text and shaded background indicate results should be considered in tandem as they are expected to occur within minutes of one another. Colors correspond to colors in Figure A-10.  
<sup>1</sup>Facilities with multiple buildings were consolidated into one building complex.  
<sup>2</sup>No damage is estimated for exposed structures with “First floor height” above the level of flooding (base flood elevation).

**Figure A-10. City of Myrtle Point loss ratio from Cascadia subduction zone event.**



Source: Williams et al, 2021.

## City of North Bend

### Local Risk Assessment

Each community ranked hazards as a part of this process. North Bend staff reviewed and ranked the plan hazards with support of DLCD in April 2021. The rankings are being shared and affirmed internally in May 2021.

**Table I-65. North Bend HVA Notes**

<b>Hazard</b>	<b>Ranking Logic</b>
Coastal Erosion	Low degree of erosion impact on the City of North Bend at this time; in the future the airport may be affected.
Drought	North Bend has not had any conservation orders or heavy water users that could be regulated in a drought event. The risk in this ranking is lower than in 2016/2008 despite the regional trend towards dryness.
Earthquake	Forty-one percent of North Bend building stock is at risk from a Cascadia earthquake and tsunami event. Earthquake types are combined and while there is one more crustal event in the history, the overall impact is anticipated to be lower.
Flood	Much of North Bend is tidally influenced and has some risk of dam failure but riverine impacts are only moderate, so this hazard is being ranked as flood in general to capture this range of potential impacts.
Landslide	There is a slide area along Tremont Ave./Highway 101.
Tsunami	Twenty percent of the community (558 buildings) is at risk from an XL tsunami (very high severity).
Wildfire Smoke	Smoke inundated the community for a week or more on multiple occasions since the last plan update.
Wind Storm	Downed trees and powerlines down cause power outages and damages to buildings.
Winter Storm	Heavy rain and winds are the primary threat. Limited or no ice and snow occurs in North Bend during winter storm events.
Coastal Erosion	Low degree of erosion impact on the City of North Bend at this time; in the future the airport may be affected.



Table I-66. North Bend Hazard Vulnerability Analysis

Hazard Vulnerability Analysis Score Sheet: City of North Bend															
Hazard	History			Probability			Vulnerability			Maximum Threat			Total	H-M-L	Rank
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Tsunami	5	2	10	7	7	49	10	5	50	10	10	100	209	H	1
Earthquake	3	2	6	7	7	49	10	5	50	10	10	100	205	H	2
Wind Storm	10	2	20	8	7	56	8	5	40	8	10	80	196	H	3
Wildfire Smoke	5	2	10	8	7	56	5	5	25	8	10	80	171	H	4
Flood	9	2	18	8	7	56	5	5	25	7	10	70	169	H	5
Winter Storm	4	2	8	3	7	21	7	5	35	8	10	80	144	M	6
Wildfire	4	2	8	5	7	35	4	5	20	7	10	70	133	M	7
Drought	8	2	16	6	7	42	4	5	20	2	10	20	98	M	8
Landslide	4	2	8	7	7	49	2	5	10	3	10	30	97	M	9
Coastal Erosion	3	2	6	7	7	49	1	5	5	1	10	10	70	L	10

## Hazard Profile

**Table I-67. City of North Bend Hazard Profile**

Community Overview							
Community Name	Population	Number of Buildings	Critical Facilities <sup>1</sup>	Total Building Value (\$)			
North Bend	9,651	4,233	12	1,494,790,000			
Hazus-MH Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Damaged Buildings	Damaged Critical Facilities	Loss Estimate (\$)	Loss Ratio
Flood <sup>2</sup>	1% Annual Chance	18	0.2%	27	0	3,063,000	0.2%
<i>Earthquake*</i>	<i>CSZ M9.0 Deterministic</i>	1,576	16%	1,225	9	542,929,000	36%
Earthquake (within Tsunami Zone)		25	0.3%	55	2	71,271,000	4.8%
Exposure Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Exposed Buildings	Exposed Critical Facilities	Building Value (\$)	Percent of Exposure
<i>Tsunami</i>	<i>CSZ M9.0 – Medium</i>	55	0.6%	75	2	85,107,000	5.7%
Tsunami	Senate Bill 379 Regulatory Line	29	0.3%	51	2	72,394,000	4.8%
Landslide	High and Very High Susceptibility	408	4.2%	179	3	49,187,000	3.3%
Wildfire	High Hazard	0	0%	0	0	0	0%

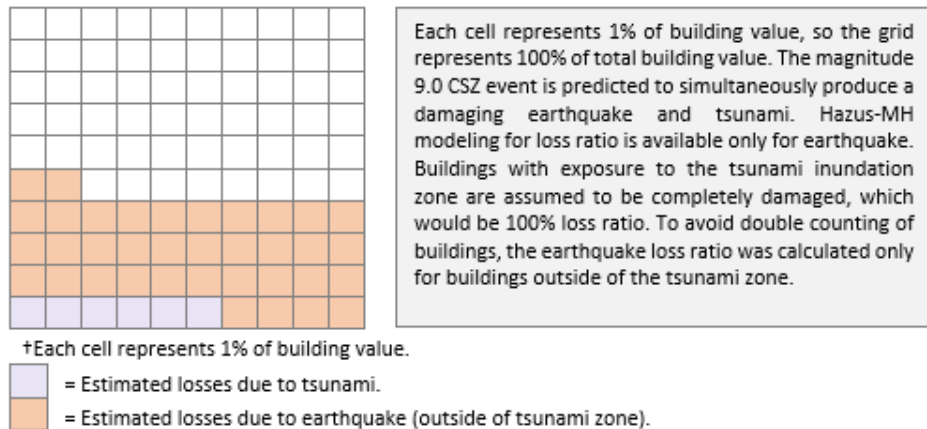
\*Earthquake losses were calculated for buildings outside of Medium tsunami zone.

Rows with italicized text and shaded background indicate results should be considered in tandem as they are expected to occur within minutes of one another. Colors correspond to colors in Figure A-11.

<sup>1</sup>Facilities with multiple buildings were consolidated into one building complex.

<sup>2</sup>No damage is estimated for exposed structures with “First floor height” above the level of flooding (base flood elevation).

**Figure A-11. City of North Bend loss ratio from Cascadia subduction zone event.**



Source: Williams et al, 2021.

## City of Powers

### Local Risk Assessment

Each community ranked hazards as a part of this process. City of Powers staff reviewed and ranked the plan hazards in an internal meeting with support of DLCD in May 2021; coordination with the Mayor by staff is ongoing.

**Table I-68. Powers HVA Notes**

<b>Hazard</b>	<b>Ranking Logic</b>
Drought	Water supply is drawn from the S. Fork Coquille R. River water levels were low a few years ago but intake/supply was managed, and supply issues avoided. Conservation orders occurred in 1970s, but not lately.
Earthquake: CSZ Cascadia event	Powers would be cut off in a CSZ event. Alternative routes exist for emergency access but require a 4x4 vehicle.
Earthquake: Crustal	Seismic upgrades are ongoing or being considered for water treatment plant, sanitary sewer, and City Hall. Bridge upgrades are a high priority for Powers.
Flood	Riverine flooding for Powers is low risk. A Log Pond above residences with overflow piping and a berm that could overflow could affect < 12 homes (~3% of homes). River runs through town but in a lower terrace; only a couple of houses exposed. Floods do not cause problems unless there is a landslide upstream. An event occurred 20 miles outside of town in which a clay bank gave way that caused a turbidity issue for the water treatment plant. Local flooding from standing water and a lack of drainage are being addressed by a Stormwater Master Plan that is underway.
Landslide	Rain inundation results in slides on main access roads; high priority for Powers.
Wildfire	Entire community in the wildfire urban interface.
Wildfire Smoke	Local senior population at risk.
Wind Storm	Power outages anytime there is a light wind; this is a ubiquitous hazard, so common a threat it is almost low priority.
Winter Storm	Occur multiple times per year. Severe effects with power outage b/c of absence of backup power. Most notable outage in 2020 was for 3 days.

Table I-69. Powers Hazard Vulnerability Analysis

Hazard Vulnerability Analysis Score Sheet: City of Powers															
Hazard	History			Probability			Vulnerability			Maximum Threat			Total	H-M-L	Rank
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Winter Storm	9	2	18	9	7	63	9	5	45	9	10	90	216	H	1
Wildfire	5	2	10	7	7	49	10	5	50	10	10	100	209	H	2
Earthquake: CSZ	3	2	6	7	7	49	10	5	50	10	10	100	205	H	3
Earthquake: Crustal	4	2	8	7	7	49	8	5	40	10	10	100	197	H	4
Drought	8	2	16	8	7	56	4	5	20	7	10	70	162	M	5
Landslide	4	2	8	4	7	28	8	5	40	8	10	80	156	M	6
Wind Storm	4	2	8	4	7	28	8	5	40	8	10	80	156	M	7
Wildfire Smoke	5	2	10	5	7	35	5	5	25	7	10	70	140	M	8
Flood	3	2	6	5	7	35	7	5	35	3	10	30	106	M	9

## Hazard Profile

**Table I-70. City of Powers Hazard Profile**

Community Overview							
Community Name	Population	Number of Buildings	Critical Facilities <sup>1</sup>	Total Building Value (\$)			
Powers	687	556	4	111,516,000			
Hazus-MH Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Damaged Buildings	Damaged Critical Facilities	Loss Estimate (\$)	Loss Ratio
Flood <sup>2</sup>	1% Annual Chance	4	0.6%	2	0	11,000	0%
<i>Earthquake*</i>	<i>CSZ M9.0 Deterministic</i>	252	37%	267	4	49,542,000	44%
Earthquake (within Tsunami Zone)		0	0%	0	0	0	0%
Exposure Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Exposed Buildings	Exposed Critical Facilities	Building Value (\$)	Percent of Exposure
<i>Tsunami</i>	<i>CSZ M9.0 – Medium</i>	0	0%	0	0	0	0%
Tsunami	Senate Bill 379 Regulatory Line	0	0%	0	0	0	0%
Landslide	High and Very High Susceptibility	26	3.7%	19	1	4,102,000	3.7%
Wildfire	High Hazard	0	0%	1	0	135,000	0.1%

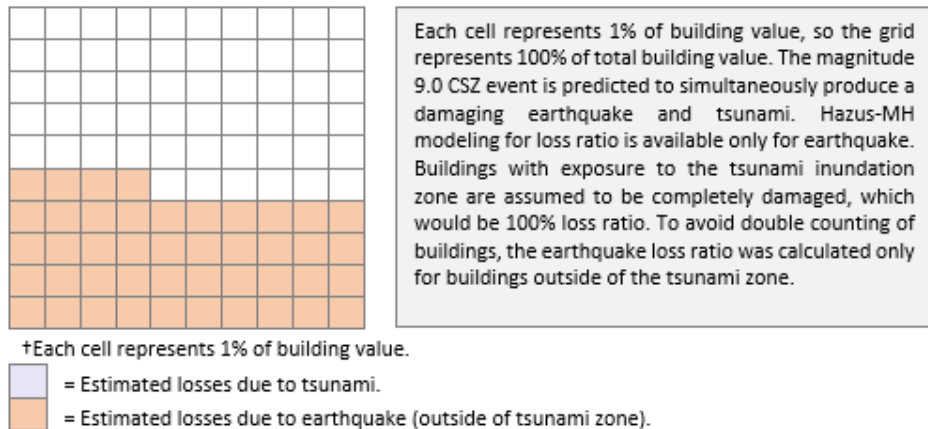
\*Earthquake losses were calculated for buildings outside of Medium tsunami zone.

Rows with italicized text and shaded background indicate results should be considered in tandem as they are expected to occur within minutes of one another. Colors correspond to colors in Figure A-11.

<sup>1</sup>Facilities with multiple buildings were consolidated into one building complex.

<sup>2</sup>No damage is estimated for exposed structures with “First floor height” above the level of flooding (base flood elevation).

**Figure A-11. City of Powers loss ratio from Cascadia subduction zone event.**



Source: Williams et al, 2021.

## Port of Coos Bay

As Oregon's Gateway and through its designation as a state port, the Port of Coos Bay is uniquely positioned to influence the local economy. The Port's involvement in regional economic development allows it to implement dynamic programs to help generate new industrial operations in the bay area. This role allows the Port to support continued growth and development of Oregon's south coast.

In 2015, the Port of Coos Bay completed the Strategic Business Plan. This business plan was developed to articulate the planning, facility and capital improvement needs of the Oregon International Port of Coos Bay over a 20-year planning horizon. The plan complies with the strategic business plan requirements of Business Oregon and is designed to be a flexible document that guides the Port Commission in setting priorities and policies.

### Local Risk Assessment

Each community ranked hazards as a part of this process. On April 21, 2021, DLCD and Port of Coos Bay staff met to rank hazards. Please refer to the hazard profiles for the cities of North Bend and Coos Bay, as well as Unincorporated Coos Bay for

**Table I-71. Port of Coos Bay HVA Notes**

<b>Hazard</b>	<b>Ranking Logic</b>
Wildfire Smoke	Wildfire smoke interferes with the navigation of ships into port. Smoke inundated the community for a week or more on multiple occasions since the last plan update.
Earthquake: Large CSZ	A large earthquake would catastrophically damage port infrastructure.
Tsunami: Local CSZ	A large earthquake and resulting tsunami would catastrophically damage port infrastructure.
Wind Storm	Wind storms pose a risk of power outage and road closures.
Winter Storm	Winter storms pose a risk of power outage and road closures.
Landslide	Landslides are an issue for the rail line managed by the Port.
Flood: Tidal	Coastal flooding poses some degree of risk, but lower than most hazards
Tsunami: Distant	Risk is low but the floodplain could be affected, including businesses.
Earthquake: Crustal	A crustal earthquake would impact the older building stock and port infrastructure.
Coastal Erosion	Coastal erosion poses some degree of risk, but lower than most hazards.
Flood: Riverine	Riverine flooding poses some degree of risk, but lower than most hazards.
Wildfire	While a large wildfire event is unlikely in Coos County, it is not impossible with severe drought and wind conditions.
Drought	The Port does not manage water supply.

**Table I-72. Port of Coos Bay Vulnerability Analysis**

<b>Hazard Vulnerability Analysis Score Sheet: Port of Coos Bay</b>															
<b>Hazard</b>	<b>History</b>			<b>Probability</b>			<b>Vulnerability</b>			<b>Maximum Threat</b>			<b>Total</b>	<b>H-M-L</b>	<b>Rank</b>
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Wildfire Smoke	8	2	16	9	7	63	10	5	50	10	10	100	229	H	1
Earthquake: Large CSZ	2	2	4	6	7	42	10	5	50	10	10	100	196	H	2
Tsunami: Local CSZ	2	2	4	6	7	42	10	5	50	10	10	100	196	H	3
Wind Storm	8	2	16	9	7	63	9	5	45	7	10	70	194	H	4
Winter Storm	8	2	16	8	7	56	8	5	40	8	10	80	192	H	5
Landslide	8	2	16	8	7	56	6	5	30	8	10	80	182	H	6
Flood: Tidal	9	2	18	9	7	63	6	5	30	6	10	60	171	H	7
Tsunami: Distant	4	2	8	9	7	63	7	5	35	5	10	50	156	M	8
Earthquake: Crustal	8	2	16	9	7	63	3	5	15	6	10	60	154	M	9
Coastal Erosion	8	2	16	8	7	56	7	5	35	3	10	30	137	M	10
Flood: Riverine	8	2	16	8	7	56	4	5	20	3	10	30	122	M	11
Wildfire	1	2	2	5	7	35	3	5	15	4	10	40	92	L	12
Drought	0	2	0	0	7	0	0	5	0	0	10	0	0	n/a	13

## Port of Bandon

### Local Risk Assessment

Each community ranked hazards as a part of this process. On April 21, 2021, DLCD and the Port of Bandon staff met to rank hazards. The notes and rankings were revised in a January 4, 2023 meeting with DLCD and Jeff Griffin. Please refer to the DOGAMI Hazard Profile for the City of Bandon.

**Table I-73. Port of Bandon HVA Notes**

Hazard	Ranking Logic
Earthquake: Large CSZ	A significant Cascadia Subduction Zone (CSZ) event could paralyze the region for months to years. Bridge failures pose the risk of the isolation.
Tsunami: Local CSZ	A significant Cascadia Subduction Zone (CSZ) earthquake and resulting tsunami event could paralyze the region for months to years. Bridge failures pose the risk of the isolation.
Wind Storm	Wind storms pose a risk of power outage and road closures.
Earthquake: Crustal	A crustal earthquake would impact the older building stock and port infrastructure.
Wildfire	While a large wildfire event is unlikely in Coos County, it is not impossible with severe drought and wind conditions.
Tsunami: Distant	Risk is low but the floodplain could be affected, including businesses.
Winter Storm	Winter storms pose a risk of power outage and road closures.
Wildfire Smoke	Smoke inundated the community for a week or more on multiple occasions since the last plan update. The health impacts are the primary concern for the community.
Flood	Coastal and riverine flooding poses a high risk to port infrastructure, businesses, residential areas and a critical care facility.
Coastal Erosion	Coastal erosion poses a moderate threat to near-beach development, but at the mouth of the river there is high risk to impacts from coastal erosion.
Landslide	Landslide poses a risk to lifelines (roads, rail, utilities) that serve the region.
Drought	Drought may have severe effects to the Coquille River salmon fishery which is a major economic driver in the Port District.



**Table I-74. Port of Bandon Hazard Vulnerability Analysis**

<b>Hazard Vulnerability Analysis Score Sheet: Port of Bandon</b>															
<b>Hazard</b>	<b>History</b>			<b>Probability</b>			<b>Vulnerability</b>			<b>Maximum Threat</b>			<b>Total</b>	<b>H-M-L</b>	<b>Rank</b>
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Flood	4	2	8	8	7	56	8	5	40	10	10	100	204	H	1
Earthquake: Large CSZ	3	2	6	4	7	28	10	5	50	10	10	100	184	H	2
Tsunami: Local CSZ	3	2	6	4	7	28	10	5	50	10	10	100	205	H	3
Wind Storm	10	2	20	8	7	56	7	5	35	7	10	70	181	H	4
Wildfire	5	2	10	8	7	56	7	5	35	8	10	80	181	H	5
Tsunami: Distant	7	2	14	8	7	56	7	5	35	7	10	70	175	H	6
Coastal Erosion	8	2	16	8	7	56	3	5	15	8	10	80	167	M	7
Earthquake: Crustal	4	2	8	7	7	49	7	5	35	7	10	70	162	M	8
Winter Storm	8	2	16	8	7	56	7	5	35	5	10	50	157	M	9
Wildfire Smoke	8	2	16	8	7	56	5	5	25	5	10	50	147	M	10
Landslide	4	2	8	7	7	49	3	5	15	4	10	40	112	M	11
Drought	3	2	6	3	7	21	3	5	15	3	10	30	72	M	12

## Bay Area Hospital

As the Medical Center for Oregon’s South Coast, Bay Area Hospital offers a comprehensive range of diagnostic and therapeutic services. The hospital’s inpatient and outpatient services include medical, surgical, pediatric, critical care, home health, outpatient and acute inpatient psychiatric, oncology, obstetrical, and other specialties. Located at 1775 Thompson Rd, Coos Bay, OR 97420

### Local Risk Assessment

Each community ranked hazards as a part of this process. On April 29, 2021, DLCD and Bay Area Hospital staff member Jeremy Pittz met to rank hazards.

**Table I-75. Bay Area Hospital HVA Notes**

<b>Hazard</b>	<b>Ranking Logic</b>
Wind Storm	Wind storms pose a risk of power outage and road closures.
Earthquake: Large CSZ	A significant Cascadia Subduction Zone (CSZ) event could paralyze the region for months to years. Bridge failures pose the risk of the isolation.
Earthquake: Crustal	A crustal earthquake could impact the older building stock and community infrastructure.
Winter Storm	Winter storms pose a risk of power outage and road closures.
Tsunami: Local CSZ	A significant Cascadia Subduction Zone (CSZ) earthquake and resulting tsunami event could paralyze the region for months to years. Bridge failures pose the risk of the isolation.
Wildfire Smoke	During 2020 wildfires, hospital facility staff had concerns about HVAC system handling high levels of smoke.
Landslide	Significant risk to supply chain and patient transport by landslides on major highways, on a near-annual basis.
Flood: Dam failure	The Lower Pony Creek dam is a “high hazard potential” structure that is rated to be in poor condition. Dam failure poses a risk to 400-600 persons depending on the time of day an event occurred. Water supplied by the structure serves 25,000 people.
Tsunami: Distant	Risk is low but the floodplain could be affected, including businesses.
Wildfire: Urban Interface	Forestlands adjacent to the WUI are closed to the public to protect the city's water supply.
Flood: Tidal	Coastal and riverine flooding pose some degree of risk, but lower than most hazards
Wildfire: Conflagration	While a large wildfire event is unlikely in Coos County, it is not impossible with severe drought and wind conditions.
Flood: Riverine	Coastal and riverine flooding pose some degree of risk, but lower than most hazards
Drought	The Hospital does not manage water supply.
Coastal Erosion	n/a Does not affect the jurisdiction and outside of the scope of authority.

**Table I-76. Bay Area Hospital Vulnerability Analysis**

Hazard Vulnerability Analysis Score Sheet: Bay Area Hospital															
Hazard	History			Probability			Vulnerability			Maximum Threat			Total	H-M-L	Rank
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Wind Storm	8	2	16	9	7	63	9	5	45	8	10	80	204	H	1
Earthquake: Large CSZ	2	2	4	9	7	63	9	5	45	9	10	90	202	H	2
Earthquake: Crustal	2	2	4	9	7	63	9	5	45	8	10	80	192	H	3
Winter Storm	7	2	14	7	7	49	9	5	45	8	10	80	188	H	4
Tsunami: Local CSZ	2	2	4	9	7	63	7	5	35	7	10	70	172	H	5
Wildfire Smoke	7	2	14	8	7	56	6	5	30	7	10	70	170	H	6
Landslide	8	2	16	8	7	56	8	5	40	5	10	50	162	M	7
Flood: Dam failure	3	2	6	8	7	56	5	5	25	7	10	70	157	M	8
Tsunami: Distant	4	2	8	9	7	63	7	5	35	5	10	50	156	M	9
Wildfire: Urban Interface	4	2	8	7	7	49	5	5	25	7	10	70	152	M	10
Flood: Tidal	4	2	8	8	7	56	5	5	25	6	10	60	149	M	11
Wildfire: Conflagration	2	2	4	7	7	49	5	5	25	7	10	70	148	M	12
Flood: Riverine	3	2	6	8	7	56	5	5	25	6	10	60	147	M	13
Drought	1	2	2	5	7	35	7	5	35	7	10	70	142	M	14

## Hazard Profile

**Table I-77. City of Coos Bay Hazard Profile**

Community Overview							
Community Name	Population	Number of Buildings	Critical Facilities <sup>1</sup>	Total Building Value (\$)			
Coos Bay	15,966	7,220	22	2,420,579,000			
Hazus-MH Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Damaged Buildings	Damaged Critical Facilities	Loss Estimate (\$)	Loss Ratio
Flood <sup>2</sup>	1% Annual Chance	773	4.8%	468	7	42,299,000	1.7%
<i>Earthquake*</i>	<i>CSZ M9.0 Deterministic</i>	2,732	17%	2,027	16	632,247,000	26%
Earthquake (within Tsunami Zone)		181	1.1%	226	3	203,853,000	8.4%
Exposure Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Exposed Buildings	Exposed Critical Facilities	Building Value (\$)	Percent of Exposure
<i>Tsunami</i>	<i>CSZ M9.0 – Medium</i>	421	2.6%	319	3	267,595,000	11%
Tsunami	Senate Bill 379 Regulatory Line	53	0.3%	84	2	41,966,000	1.7%
Landslide	High and Very High Susceptibility	3,978	25%	1,890	6	477,292,000	20%
Wildfire	High Hazard	294	1.8%	163	0	32,642,000	1.3%

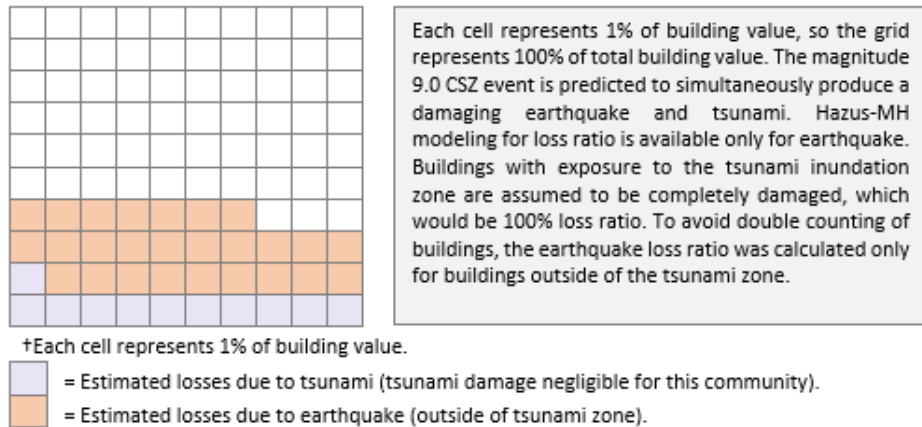
\*Earthquake losses were calculated for buildings outside of Medium tsunami zone.

Rows with italicized text and shaded background indicate results should be considered in tandem as they are expected to occur within minutes of one another. Colors correspond to colors in Figure A-10.

<sup>1</sup>Facilities with multiple buildings were consolidated into one building complex.

<sup>2</sup>No damage is estimated for exposed structures with “First floor height” above the level of flooding (base flood elevation).

**Figure A-10. City of Coos Bay loss ratio from Cascadia subduction zone event.**



Source: Williams et al, 2021.

## Southern Coos Hospital

### Local Risk Assessment

Each community ranked hazards as a part of this process. On April 21, 2021, DLCD and Southern Coos Hospital staff met to rank hazards. Please refer to the DOGAMI Hazard Profile for the City of Bandon.

**Table I-78. Southern Coos HVA Notes**

<b>Hazard</b>	<b>Ranking Logic</b>
Earthquake	A significant Cascadia Subduction Zone (CSZ) earthquake and resulting tsunami event could paralyze the region for months to years. Bridge failures pose the risk of the isolation.
Wind Storm	Wind storms pose a risk of power outage and road closures.
Winter Storm	Winter storms pose a risk of power outage and road closures.
Wildfire	While a large wildfire event is unlikely in Coos County, it is not impossible with severe drought and wind conditions.
Flood	Coastal and riverine flooding pose some degree of risk to lifelines, but lower than most hazards
Tsunami	A significant Cascadia Subduction Zone (CSZ) earthquake and resulting tsunami event could paralyze the region for months to years. Bridge failures pose the risk of the isolation.
Drought	The Hospital does not manage water supply.
Landslide	Landslide poses a risk to lifelines (roads, rail, utilities) that serve the region.
Coastal Erosion	This is an issue that affects the community, but not the hospital directly.

Table I-79. Southern Coos Vulnerability Analysis

Hazard Vulnerability Analysis Score Sheet: Southern Coos Hospital															
Hazard	History			Probability			Vulnerability			Maximum Threat			Total	H-M-L	Rank
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Earthquake	3	2	6	7	7	49	10	5	50	10	10	100	205	H	1
Wind Storm	10	2	20	10	7	70	8	5	40	8	10	80	210	H	2
Winter Storm	8	2	16	8	7	56	7	5	35	8	10	80	187	H	3
Wildfire	8	2	16	8	7	56	5	5	25	9	10	90	187	H	4
Flood	5	2	10	5	7	35	5	5	25	6	10	60	130	H	5
Tsunami	3	2	6	7	7	49	7	5	35	7	10	70	160	M	6
Drought	4	2	8	8	7	56	4	5	20	7	10	70	154	M	7
Landslide	4	2	8	7	7	49	3	5	15	2	10	20	92	M	8
Coastal Erosion	0	2	0	0	7	0	0	5	0	0	10	0	0	n/a	0

## Haynes Drainage District

### Local Risk Assessment

The Haynes Drainage District joined the Coos County MH-NHMP as a new plan holder during this update. Each community ranked hazards as a part of this process. On April 21, 2021, DLCD and Haynes Drainage District board member met to rank hazards.

**Table I-80. Haynes Drainage District HVA Notes**

<b>Hazard</b>	<b>Ranking Logic</b>
Coastal Erosion	A few structures have very high risk, but the majority do not, and it is likely not a life safety issue.
Wind Storm	Wind storms pose a risk of power outage and road closures.
Tsunami	A significant Cascadia Subduction Zone (CSZ) earthquake and resulting tsunami event could paralyze the region for months to years. Bridge failures pose the risk of the isolation.
Winter Storm	Winter storms pose a risk of power outage and road closures.
Earthquake	A significant Cascadia Subduction Zone (CSZ) event could paralyze the region for months to years. Bridge failures pose the risk of the isolation.
Wildfire	While a large wildfire event is unlikely in Coos County, it is not impossible with severe drought and wind conditions.
Flood	Coastal and riverine flooding pose some degree of risk, but lower than most hazards
Drought	The District does not manage water supply.
Landslide	Landslide poses a risk to lifelines (roads, rail, utilities) that serve the region.

**Table I-81. Haynes Drainage District Vulnerability Analysis**

<b>Hazard Vulnerability Analysis Score Sheet: Southern Coos Hospital</b>															
<b>Hazard</b>	<b>History</b>			<b>Probability</b>			<b>Vulnerability</b>			<b>Maximum Threat</b>			<b>Total</b>	<b>H-M-L</b>	<b>Rank</b>
	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal	Severity	Weight	Subtotal			
Coastal Erosion	8	2	16	8	7	56	8	5	40	8	10	80	192	H	1
Wind Storm	8	2	16	8	7	56	8	5	40	8	10	80	192	H	2
Tsunami	4	2	8	4	7	28	10	5	50	10	10	100	186	H	3
Winter Storm	8	2	16	7	7	49	8	5	40	8	10	80	185	H	4
Earthquake	3	2	6	3	7	21	10	5	50	10	10	100	177	H	5
Wildfire	5	2	10	3	7	21	8	5	40	7	10	70	141	M	6
Flood	1	2	2	3	7	21	5	5	25	8	10	80	128	M	7
Drought	2	2	4	8	7	56	4	5	20	4	10	40	120	M	8
Landslide	4	2	8	4	7	28	4	5	20	4	10	40	96	M	9



## Hazard Profile

**Table I-82. Unincorporated Community of Glasgow Hazard Profile**

**Table A-6. Unincorporated community of Glasgow hazard profile.**

Community Overview							
Community Name	Population	Number of Buildings	Critical Facilities <sup>1</sup>	Total Building Value (\$)			
Glasgow	757	578	1	125,629,000			
Hazus-MH Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Damaged Buildings	Damaged Critical Facilities	Loss Estimate (\$)	Loss Ratio
Flood <sup>2</sup>	1% Annual Chance	6	0.7%	9	0	227,000	0.2%
<i>Earthquake*</i>	<i>CSZ M9.0 Deterministic</i>	92	12%	165	0	22,865,000	18%
Earthquake (within Tsunami Zone)		2	0.3%	9	0	1,542,000	1.2%
Exposure Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Exposed Buildings	Exposed Critical Facilities	Building Value (\$)	Percent of Exposure
<i>Tsunami</i>	<i>CSZ M9.0 – Medium</i>	7	1.0%	13	0	2,537,000	2.0%
Tsunami	Senate Bill 379 Regulatory Line	3	0.4%	6	0	2,878,000	2.3%
Landslide	High and Very High Susceptibility	227	30%	194	0	37,475,000	30%
Wildfire	High Hazard	3	0.4%	2	0	550,000	0.4%

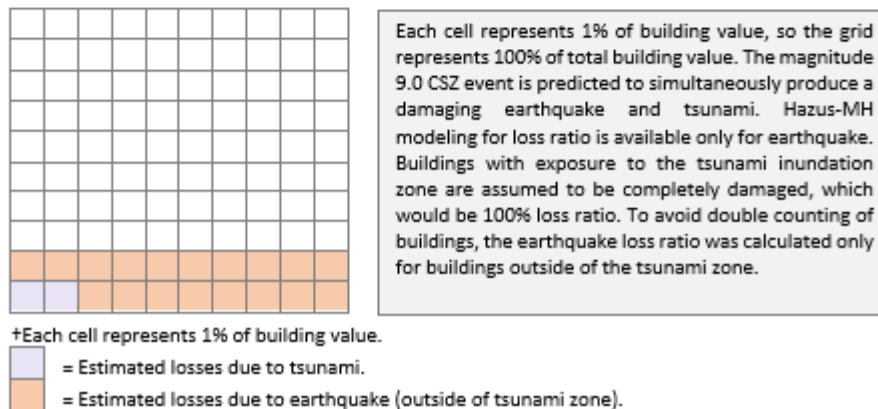
\*Earthquake losses were calculated for buildings outside of Medium tsunami zone.

Rows with italicized text and shaded background indicate results should be considered in tandem as they are expected to occur within minutes of one another. Colors correspond to colors in Figure A-4.

<sup>1</sup>Facilities with multiple buildings were consolidated into one building complex.

<sup>2</sup>No damage is estimated for exposed structures with “First floor height” the level of flooding (base flood elevation).

**Figure A-4. Unincorporated community of Glasgow loss ratio from Cascadia subduction zone event.**



Source: Williams et al, 2021.

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## II. MITIGATION STRATEGY

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The Mitigation Strategy outlines Coos County’s strategy to reduce or avoid vulnerabilities to the identified hazards. Specifically, this strategy presents a mission and specific goals and actions thereby addressing the mitigation strategy requirements contained in 44 CFS 201.6(c). The Coos County Multi-Jurisdictional Natural Hazard Mitigation Plan (Coos County NHMP) Update Steering Committee reviewed and updated the mission, goals, and action items documents in this plan.

## A. Mission & Goals

The Plan mission states the purpose and defines the primary functions of Coos County’s NHMP. It is intended to be adaptable to any future changes made to the Plan and need not change unless the community’s environment or priorities change. During the 2023 NHMP update process, the Steering Committee decided the mission accurately describes the purpose of the plan. The Steering Committee believes the concise nature of the mission statement allows for a comprehensive approach to mitigation planning.

*The mission of the Coos County NHMP is to create a disaster-resilient Coos County.*

This mission can be achieved by increasing public awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide the county towards building a safer, more disaster resilient community.

### 2023 Coos County Mitigation Goals

Mitigation plan goals are statements of direction that the Coos County citizens, and public and private partners can take while working to reduce the county’s risk from natural hazards. These statements of direction form a bridge between the broad mission statement and particular action items. The goals listed here serve as checkpoints as agencies and organizations begin implementing mitigation action items. Plan goals are listed below; this is not a prioritized list.

Goal 1: Save lives and reduce injuries.

Goal 2: Minimize and prevent damage to public and private buildings and infrastructure.

Goal 3: Reduce economic losses.

Goal 4: Protect natural and cultural resources.

Goal 5: Increase cooperation and coordination among private entities, and local, state, and federal agencies.

Goal 6: Update natural hazard sections of the comprehensive plan and integrate local NHMPs with comprehensive plans, other local plans, and implementing measures.

Goal 7: Increase education, outreach, awareness, and collaboration.

During the 2023 NHMP update process, Coos County Emergency Management reviewed the plan goals and decided to refine the existing goals by deleting two and retaining seven of the 2016 goals. This change deleted “Goal 4: Provide more opportunities for development outside of mapped hazardous areas” because this is more of an outcome rather than a goal from an emergency management perspective. In addition, “Goal 9: Incorporate current data (by reference) into local NHMPs, comprehensive plans, and implementing measures” was nearly identical in meaning to Goal 7.



## B. Completed & Ongoing Mitigation Actions

This section documents the long-term mitigation efforts and groundwork for the 2023 plan update mitigation actions by describing ongoing, complete, and past mitigation actions in order to present the mitigation history and practice implemented in Coos County. Sources for this section include the 2016 Coos County NHMP, the 2020 State NHMP, and others.

### Multi-Hazard Mitigation Activities

- In 2021, the Coos County Emergency Communications Plan update is a \$4.5 million-dollar multi-jurisdictional effort underway funded by a county tax levy and other sources. This plan will replace all twenty-two communication towers and includes backup power.
- Coos County Emergency Management distributes preparedness materials such as the brochure *Are you Ready? Preparing for Disasters and Terrorism in Coos County*, available online: <https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet>
- Coos County Emergency Management coordination of Community Emergency Response Team (CERT) volunteers to support community preparedness and response.
- Updated CERT, MRC, ARES, RACES, Posse volunteer lists in Everbridge.
- Developed specific evacuation plans and training/exercises for mobile home parks.

### Coastal Erosion Mitigation Activities

- Coos County Comprehensive Plan (Section 5.10) was updated in 2016 to outline policies for “Dunes, Ocean, and Coastal Lake Shorelands.” Coastal shorelands are categorized by whether or not they are suitable for development. Development in areas considered “Not Suitable” is prohibited. Development in “Suitable” and “Limited Suitability” areas contain development restrictions that are designed to limit exposure to coastal erosion and prevent damage to natural features. Policy # 10 states that Coos County shall: [P]refer non-structural solutions to problems of erosion and flooding to structural solutions in ocean, coastal lake or minor estuary shorelands. Where shown to be necessary, water and erosion control -structures, such as jetties, bulkheads, seawalls, and similar protective structures and fill shall be designed to minimize adverse impacts on water currents, erosion, and accretion patterns. This policy is based “on the recognition that non-structural solutions are often more cost effective as corrective measures but that carefully designed structural solutions are occasionally necessary.”
- Buildings in residential, commercial, and industrial zones areas subject to coastal erosion may be protected by riprap if they were built prior to October 1977 or if they are public facilities. Due to the detrimental impacts of riprap, buildings built after October 1977 cannot use riprap.

### Drought Mitigation Activities

- Coos County addresses the drought hazard through water conservation measures and water monitoring during the dry summer months.
- USDA Farm Service works with local farmers to develop continuity of operations plans in the event of drought conditions in the county.
- Many rural residents in Coos County rely on groundwater wells for their water needs. In some years these rural wells have run dry in the late summer. To address this need, local water districts sell water to rural residents.

### Earthquake Mitigation Activities

- Coos County implements the International Building Code which includes regulations that address the strength of buildings to withstand certain seismic hazards.
- Coos County Comprehensive Plan (Section 5.11) “Natural Hazards” includes policies that support the State Building Code Division’s building code enforcement program to provide maximum structural protection to safeguard against seismic hazards.
- Recent Public Works shop renovation in Coquille included seismic upgrades.
- The Coos County Dispatch Center renovation was completed in June 2020 and included seismic upgrades (~\$600,000).
- Included information on fire prevention in earthquake education via the website, events, CERT, etc.

### Flood Mitigation Activities

- Coos County and the cities maintain ditches along public roadways and culverts to ensure good road system drainage.
- Coos County and the seven participating municipal governments are participants in the National Flood Insurance Program (NFIP). These jurisdictions have adopted a floodplain overlay zone or similar ordinance as required to comply with FEMA floodplain regulations, including adoption of the FEMA Flood Insurance Rate Map (FIRM)
  - Coos County Comprehensive Plan (Section 5.11) supports participation in the NFIP and adopts the FIRM. Coos County Land Use and Development Ordinance (Article 4.6.2) provides development guidelines for land in the floodplain.
- Coos County conducts dredging in the Coquille River to reduce the impacts of flooding.
- In 2006, FEMA elevated five properties and acquired five properties in the Libby Drainage District and Englewood Diking District that were flooded during severe storms in 2005/2006. Funding was provided through the Hazard Mitigation Grant Program (DR-1632 HMGP). Only one property had not been elevated (as of 2016) and is still vulnerable to flooding.

### Landslide Mitigation Activities

- The Coos County Road Department regularly monitors known landslide areas.
- Coos County Development Code contains regulations for development on steep slopes, including:
  - Fire Safety Standard (Section 4.4.700): Dwellings cannot be located on a slope steeper than 40%.
  - Subdivisions and Partitions (Section 6.5): Regulations for lot size and placement of dwellings and roadways based on slope. Roadways require a geologic report to be completed.

### Tsunami Mitigation Activities

- Coos County participates in the Oregon Coast Tsunami Hazard program which has published tsunami evacuation maps for all major incorporated and unincorporated communities located in the tsunami inundation zone. Coos County also posts this and other information about the tsunami hazard on its website.

- Coos County Development Code (Section 4.6.281) has regulations for “Coastal High Hazard Areas” subject to high velocity waters, including but not limited to, storm surge or tsunamis. These areas are designated on the FIRM as Zone V1-V30, VE or V.
- Install/improve tsunami evacuation signage and infrastructure; developed evacuation plans and educated the community about evacuation routes and practices; tsunami areas are clearly identified so you know you are in a tsunami area. During the period 2016-2022, this work occurred primarily in the Coos Bay, North Bend, and Charleston areas.
- North Bend Fire Department built a new station outside of the tsunami zone.

### Wildfire Mitigation Activities

- Coos County Development Code (Section 4.4.400) contains regulations for setbacks for rural developments for a fire break around new development. Section 4.8.700 contains fire safety regulations for any new development in the forest zone.
- Coos County completed a Community Wildfire Protection plan in 2011 to better address the risk of wildfire and to develop appropriate mitigation action items.
- Coos Forest Protection Association (CFPA) actively promotes wildfire mitigation in Coos County, with a focus on encouraging the creation of defensible space around structures.
- CFPA conducts wildfire mitigation outreach programs in local schools, state parks, county fairs, and home shows.
- CFPA actively promotes the Firewise program—the primary federal program addressing interface fire. Firewise is a program developed within the National Wildland-Urban Interface Fire Protection Program and offers online wildfire protection information and checklists, as well as listings of other publications, videos, and conferences.
- CFPA has been working with 33 property owners identified as having a moderate risk to wildfires as defined by Oregon Senate bill 360.

### Wind Storm Mitigation Activities

- Coos County and Municipal Road/Public Works Departments conduct regular maintenance on vegetation along roadways, including the removal of hazard trees where they pose a risk to public rights-of-way in the event of a wind storm.
- Coos County and Municipal Road/Public Works Departments have mutual aid agreements and other collaboration with local utilities for response to storm debris, impacted power lines, and slide events.

### Winter Storm Mitigation Activities

- Coos County and Municipal Road/Public Works Departments conduct regular maintenance on vegetation along roadways, including the removal of hazard trees where they pose a risk to public rights-of-way in the event of a wind storm.
- Coos County and Municipal Road/Public Works Departments have mutual aid agreements and other collaboration with local utilities for response to storm debris, impacted power lines, and slide events.

### C. Mitigation Actions 2023

Action items identified through the planning process are an important part of the mitigation plan. Action items are detailed recommendations for activities that local departments, citizens, and others could engage in to reduce risk. Due to resource constraints, Coos County is listing a set of high priority actions in an effort to focus attention on an achievable set of high leverage activities over the next five-years.

Table II-1. 2023 Mitigation Actions

Action Item #	Lead	Mitigation Action	Status/ Description	Hazards addressed	Priority	Timeline /Cost	Goals met by Action	Coos County	City of Bandon	City of Coos Bay	City of Coquille	City of Lakeside	City of Myrtle Point	City of North Bend	City of Powers	Port of Coos Bay	Port of Bandon	Bay Area Hospital	S. Coos Hospital	Haynes D. District
23-MH-01	Coos County Emergency Management (CCEM)	Upgrade Communication Tower Backup Power and batteries.	<p><b>New CCEM action for 2023.</b></p> <p>Communication towers need budget for batteries, replacement equipment, damage, etc. There are 22 communication towers.</p> <p>Towers have batteries for backup power, these need to be replaced.</p>	Multi-Hazard	H	6-18 months/ \$1.1 million	1, 2, 3, 4, 5, 7	X		X				X				X	X	
23-MH-02	Coos County Emergency Management	Fund Communication Tower Operations and Maintenance.	<p><b>New CCEM action for 2023.</b></p> <p>Problem Statement: Current Tower project is managed by a Sheriff Dept. captain with many other responsibilities. Funding is needed for staff time to conduct O&amp;M on the current project (operations and maintenance) into the future. Tower infrastructure needs are technical and need a dedicated staff position.</p> <p>Port of Coos Bay: Rail Line towers and infrastructure are critical infrastructure.</p>	Multi-Hazard	H	6-18 months/ \$25k annually	1, 2, 3, 4, 5, 7	X		X				X		X		X	X	
23-MH-03	Coos County Emergency Management	Establish mutual aid agreements between government agencies and commercial businesses in the event of an emergency (e.g., fuel, heavy equipment, food, etc.); Expand MOUs to include the reciprocity of medical professionals between isolated communities.	<p>Ongoing CCEM action 16-MH-05: Access database developed; questionnaires about available supplies held by local businesses were sent out by CCEM in 2018.</p> <p>Have MOUs for shelters from 1990s-2000s that need to be revisited.</p> <p>Medical reciprocity was identified as a priority at the October 2021 Steering Committee meeting.</p>	Multi-Hazard	H	1-3 years/ low cost	1, 2, 3, 4, 5, 7	X	X	X	X	X	X	X	X	X	X	X	X	

Action Item #	Lead	Mitigation Action	Status/ Description	Hazards addressed	Priority	Timeline /Cost	Goals met by Action	Coos County	City of Bandon	City of Coos Bay	City of Coquille	City of Lakeside	City of Myrtle Point	City of North Bend	City of Powers	Port of Coos Bay	Port of Bandon	Bay Area Hospital	S. Coos Hospital	Haynes D. District
23-MH-04	Coos County Emergency Management Individual Jurisdictions: All	Develop and disseminate information regarding current evacuation routes; conduct regular tsunami evacuation drills; develop a plan to identify and improve alternate evacuation routes to I-5 for wildfire and tsunami, meaning county road routes that are yet to be identified.	<p>Combined: 16-MH-04 and 16-TS-01</p> <p>CCEM is receiving increasing requests for fire evacuation routes. Implementation needs include printing evacuation route maps, funding for staff time coordination, further planning, data collection.</p> <p>Ongoing: Coquille 10-EQ-01 &amp; 10-MH-04: Fire Dept. is working with Public Works and the City of Coos Bay for mapping assistance. Coos Bay 16-MH-03/Lakeside 16-MH-07/ Myrtle Point 10-MH-04. Powers 16-MH-04: Identify and map all roads, private drives, logging trails to increase the ability of firefighters to locate and gain access to provide services and/or evacuations.</p>	Multi-Hazard	H	1-3 years/ low cost	1, 5, 7	X	X	X	X	X	X	X	X	X	X	X	X	
23-MH-05	Coos County Public Works and Cities, especially Bandon on behalf of Gorse Action Group	Through multi-agency coordination, implement abatement efforts to control noxious weeds, specifically Gorse, Scotch Broom, and Butterfly Bush.	<p>Ongoing: 16-MH-06 The Gorse Action Group is lead on fire-prone weed abatement. A wide array of control, monitoring, and coordination strategies are underway.</p> <p>Ongoing Bandon 16-WF-01: A multi-district gorse abatement plan was created by the Gorse Action Group in 2019. The city hired a part time Vegetation Management Coordinator and Code Compliance Officer who are responsible for the plans ongoing implementation and enforcement. The City has obtained services from a gorse removal contractor and purchased equipment to abate noxious vegetation within public rights-of-ways and City owned property.</p> <p>Coquille 10-WF-01: Work is currently underway along the Coquille River Walk. Lakeside 16-WF-01/ North Bend 16-WF-01/Powers 16-WF-01</p>	Multi-Hazard	H	1-10 years/ varies	2, 3, 4, 5, 7	X	X	X	X	X	X	X	X	X	X	X	X	X

Action Item #	Lead	Mitigation Action	Status/ Description	Hazards addressed	Priority	Timeline /Cost	Goals met by Action	Coos County	City of Bandon	City of Coos Bay	City of Coquille	City of Lakeside	City of Myrtle Point	City of North Bend	City of Powers	Port of Coos Bay	Port of Bandon	Bay Area Hospital	S. Coos Hospital	Haynes D. District
23-MH-06	Coos County Emergency Management	Coordinate with state and federal partners on conducting regular disaster exercises.	Ongoing/ Revised 16-EQ-02: Conduct regular earthquake safety drills. Coos County participated in the 2017 Cascadia Rising Triton Exercise. Myrtle Point City staff conduct annual earthquake drill; need to add post-earthquake operational scenario.	Multi-Hazard	H	1-3 years/ low cost	1, 5, 7	X	X	X	X	X	X	X	X	X	X	X	X	X
23-MH-07	Individual jurisdictions: All	Ensure all critical facilities have backup power in place to continue operations during power outages.	Revised: 16-WS-02 High priority for Lakeside	Multi-Hazard	H	2-5 years	1, 2, 3, 4, 5	X	X	X	X	X	X	X	X	X	X	X	X	X
23-MH-08	Individual jurisdictions: All	Ensure all critical facilities have emergency operations plans in place to deal with power outages.	Revised: 16-WS-02 Lakeside Wastewater Treatment and FD have these. FD has mobile medical.  Southern Coos Hospital has an Emergency Preparedness Plan updated March 2022.	Multi-Hazard	H	2-5 years	1, 2, 3, 4, 5	X	X	X	X	X	X	X	X	X	X	X	X	X
23-MH-09	Individual jurisdictions: All	Continue to implement and enhance public education programs.	CCEM: Update the preparedness brochure <i>Are you Ready? Preparing for Disasters and Terrorism in Coos County</i> , available online: <a href="https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet">https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet</a>  Increased Tsunami evacuation signage, participation in annual Shake Out day.  <b>Ongoing</b> Bandon 16-MH-04/ Coquille 10-MH-03/  Coos Bay 16-MH-04/ Myrtle Point 10-MH-04/ Lakeside 16-MH-04/ North Bend: 16-MH-04/ Powers 16-MH-03	Multi-Hazard	H	Ongoing/ low cost	1, 2, 3, 4, 5, 7	X	X	X	X	X	X	X	X	X	X	X	X	X
23-MH-10	Coos County Emergency Management	Educate and encourage major businesses, service providers, schools, and governmental organizations to develop continuity of operations plans.	Ongoing CCEM 16-MH-07/ Coquille 10-MH-05/ Myrtle Point 10-MH-06	Multi-Hazard	M	1-3 years/ low cost	1, 2, 3, 5, 7	X	X	X	X	X	X	X	X	X	X	X	X	X

Action Item #	Lead	Mitigation Action	Status/ Description	Hazards addressed	Priority	Timeline /Cost	Goals met by Action	Coos County	City of Bandon	City of Coos Bay	City of Coquille	City of Lakeside	City of Myrtle Point	City of North Bend	City of Powers	Port of Coos Bay	Port of Bandon	Bay Area Hospital	S. Coos Hospital	Haynes D. District
23-MH-11	Coos County Emergency Management	Have local emergency responders take post-disaster building and structure safety assessment training.	Started/ Revised: Now multi-hazard instead of just Earthquake (16-EQ-03). CCEM coordinating the trainer for a class entitled "post-earthquake safety evaluation" with funding from local fire departments for their staff.	Multi-Hazard	M	1-3 years/ low cost	1, 2, 5	X	X	X	X	X	X	X	X					
23-MH-12	Coos County Emergency Management	Educate the public about the dangers of downed power lines after a windstorm.	Ongoing: 2010 action item by Coos Curry Electric Coop.	Multi-Hazard	M	1-3 years/ low cost	1, 2, 3, 7	X	X	X	X	X	X	X	X					
23-MH-13	Individual jurisdictions: Planning Depts Cities	Utilize the most current available hazard data to update the Goal 7 section of the City's Comprehensive Plan.	Bandon 16-MH-02 This action item is ongoing but was partially completed in the 2020 adoption of the Hazards Overlay Zone.  Coos Bay 16-MH-02 Not Started.  Coos County completed 16-MH-01, 16-MH-02, 16-MH-03 in last update.  Ongoing Coquille 10-MH-02; Lakeside 16-MH-02; Myrtle Point 10-MH-02; North Bend 16-MH-03; Powers 16-MH-02	Multi-Hazard	M	1-3 years/ low cost	1, 2, 3, 4, 6		X	X	X	X	X	X	X					



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23-MH-14	Individual jurisdictions: All	Establish a cache of a disaster relief resources for displaced residents; stock containers in public locations with emergency response supplies.	<p>All jurisdictions are considering disaster caches. Bandon: 16-MH-03 revised to include plans to complete container repair, inventory, and local coordination for on-going maintenance and future improvements.</p> <p>Coos Bay: As of 7/1/2021, the city has resources in four locations to provide shelter, water, and food for 1600 people for two weeks</p> <p>North Bend: has begun developing their cache.</p> <p>Port of Coos Bay: There is potential for cooperation at the Port's Charleston Marina.</p> <p>Southern Coos: Have disaster trailer, 70-80 days of supplies.</p>	Multi-Hazard	M	1-3 years/ low cost	1, 3, 5, 7	X	X	X	X	X	X	X	X	X	X	X	X	X
23-MH-15	Individual jurisdictions: All	Develop a disaster recovery plan.	<p>Bandon: 16-MH-05 Revised/Ongoing</p> <p>Southern Coos: EPP has all components of disaster cycle.</p>	Multi-Hazard	M	3-5 years/ low cost	1, 2, 3, 4, 5, 7	X	X	X	X	X	X	X	X	X	X	X	X	X
23-MH-16	Individual jurisdictions: All	Develop a mass care plan and coordinate related activities such as disaster caches.	<p>Cities of Bandon and Coos Bay and unincorporated Eastside have caches. Conversations ongoing with faith-based groups.</p> <p>Southern Coos: Regular coordination with Coos EM</p>	Multi-Hazard	M	1-3 years/ low cost	1, 2, 3, 4, 5, 7	X	X	X	X	X	X	X	X	X	X	X	X	X

Action Item #	Lead	Mitigation Action	Status/ Description	Hazards addressed	Priority	Timeline /Cost	Goals met by Action	Coos County	City of Bandon	City of Coos Bay	City of Coquille	City of Lakeside	City of Myrtle Point	City of North Bend	City of Powers	Port of Coos Bay	Port of Bandon	Bay Area Hospital	S. Coos Hospital	Haynes D. District
23-MH-17	Individual jurisdictions: CCEM, Cities	Ensure the ability to provide clean water in the case of emergencies: drinking water for people, domestic animals; water for hand washing, showers, hygiene, and medical uses; water for dish washing, shelter/congregate facility maintenance (to prevent outbreaks of insects, disease, etc.)	<b>New CCEM action for 2023.</b> Water is integral for all recovery scenarios and a number of hazards can potentially impact natural sources.  Southern Coos: Has two seismically resilient 1,500 gal. holding tanks of stored water; have a reverse osmosis filtration system.	Multi-Hazard	M	1-3 years/ \$50-150k	1, 2, 3, 4	X	X	X	X	X	X	X	X	X	X	X	X	X
23-MH-18	Individual jurisdictions: All	Secure equipment and structure repair supplies for disaster recovery including how to address equipment impacted by salt water, fire, etc.	<b>New CCEM action for 2023.</b> Isolated/coastal communities should plan to address recovery needs for the first 3-6 weeks following a Cascadia Subduction Zone event.	Multi-Hazard	M	1-3 years/ \$50-150k	1, 2, 3, 4	X	X	X	X	X	X	X	X	X	X	X	X	X
23-MH-19	Individual jurisdictions: All	Build and maintain a community/ evacuation center that can serve as a command center and kitchen.	All cities and unincorporated communities could benefit from this due to their potential isolation.  Bandon: Sprague Theater at City Park.  Lakeside 16-MH-05  North Bend has a community center (large auditorium with kitchen facilities) that needs enhancement.  Southern Coos: MOUs with local churches to augment capacity for the hospital.	Multi-Hazard	M	1-3 years/ \$50-150k	1, 2, 3, 4	X	X	X	X	X	X	X	X	X	X	X	X	X

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23-MH-20	Port of Coos Bay/ Port of Bandon	Establish a resiliency plan and then develop the infrastructure necessary to move equipment and supplies into the county via the ports and rail following a disaster.	<p>In the event of a Cascadia earthquake and tsunami event, widespread damage to bridges and road systems would prevent delivery of supplies and equipment. Smaller flood or other events could close bridges, resulting in long alternate routes. Ports could support an ocean-based resupply effort, or a more resilient transportation system, if the port districts owned their own equipment (e.g., cranes), docks designed for this purpose, and/or sufficient warehouse space (possibly outfitted with refrigeration, other capabilities). Currently, private businesses lease port space and are the owners of the equipment &amp; space that would be necessary in the event of a disaster.</p> <p>Port of Coos Bay: The new container ship facility being constructed on the North Spit is a privately funded project on Port land. The Port will be doing improvements to the rail line to move the containers but needs plans and designs to do so.</p> <p>Partners: OEM, FEMA</p>	Multi-Hazard	M	2 - 5 years/ \$50-150k for a plan	1, 2, 3, 4	X	X	X				X	X	X				
23-MH-21	Individual jurisdictions: Cities; Coos County	Enhance strategies for debris management.	<p>Lakeside 16-MH-08; Powers 16-MH-05; North Bend 16-MH-06</p> <p>Revised 23-WS-01 to remove storm hazard specificity because this action applies to tsunami, other hazards.</p> <p>Port of Coos Bay: Charleston Marina has heavy equipment that can clean things up.</p>	Wind Storm	M	6-18 mo./ staff time	1, 2, 3, 4, 5	X	X	X	X	X	X	X	X	X	X	X		

Action Item #	Lead	Mitigation Action	Status/ Description	Hazards addressed	Priority	Timeline /Cost	Goals met by Action	Coos County	City of Bandon	City of Coos Bay	City of Coquille	City of Lakeside	City of Myrtle Point	City of North Bend	City of Powers	Port of Coos Bay	Port of Bandon	Bay Area Hospital	S. Coos Hospital	Haynes D. District
North Bend 23-MH-01	City of North Bend	Develop a risk assessment for sea level rise and tsunami risk for the airport and industrial lands. Consider a feasibility study for relocating industrial lands and/or the Southwest Regional Airport.	The industrial lands in North Bend are subject to sea level rise and risk of tsunami. Additional information is needed about the severity and timing of these impacts on the core of the economy in North Bend. This assessment may include a feasibility study for expanding the UGB to include North Spit lands for annexation to replace existing industrial zoned lands.  New action for 2023.	Multi-Hazard	M	5 - 10 years/ \$250k	2, 3, 4, 6	X						X		X				
23-CE-01	Coos County Planning; Cities	Reduce risk of coastal erosion through hazard mapping and regulation; seek updates to beach, dune, and other coastal data. Update code as data is improved.	Current/ Revised: Adoption of Coos County Beaches and Dunes Goal 18 Development code and suitability maps.  <a href="https://www.coostalatlant.net/coos-all-hazards/">https://www.coostalatlant.net/coos-all-hazards/</a> .	Coastal Erosion	H	1-3 years/ staff time	2, 3, 4	X	X	X			X			X	X			
23-EQ-01	Individual jurisdictions or departments: All	Retrofit schools, fire departments, hospitals, and other critical facilities to withstand seismic activity.	Ongoing: Coquille 10-EQ-01 seeking seismic firehall upgrades. Lakeside 16-EQ-01  Seismic Retrofit Grant Program used to improve: Bandon City Hall, Bandon Police Department, Myrtle Point Fire & Ambulance Station.  Southern Coos: Built in 1999. Outside of tsunami zone; anticipate minimal seismic impacts.	Earthquake	H	5-10 years/ high cost	1, 2, 3, 4	X	X	X	X	X	X	X	X	X	X	X	X	X

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23-EQ-02	Individual jurisdictions or departments: All	Retrofit bridges and other community lifelines, including rail infrastructure, to withstand seismic activity.	North Bend: Seismic retrofits of bridges is a priority, incl. Vermont (\$700k), Virginia, Broadway, Crowell and Newmark Street bridges over Pony Creek.  Port of Coos Bay: Coos Bay Rail Line is a lifeline priority and needs funding for rail bridge retrofits. There are 121 rail line water crossings with bridges that could benefit from seismic retrofit, but FEMA or other funds could be needed to do this infrastructure upgrade.	Earthquake	H	2-5 years/ high cost	1, 2, 3, 4	X	X	X	X	X	X	X	X	X	X	X	X	X
Coquille 23-EQ-01	City of Coquille	Seismic Upgrade Fire Station #1	Fire Station #1 not capable of withstanding earthquake forces. Strategy: Obtain grant funding for seismic upgrades, then go out for bond a to upgrade or build a new station.  New for 2023; continuation of Coquille Action # 10-EQ-01.	Earthquake	H	2-5 years/ \$2.5M – \$10M	1, 2, 3, 4				X									
23-EQ-03	Coos County Emergency Management	Educate the community about the benefits of earthquake preparedness, including CERT and earthquake insurance.	Ongoing/Revised: 16-EQ-01 insurance education is being added to preparedness outreach.	Earthquake	M	1-3 years/ low cost	2, 3, 4, 7	X	X	X	X	X	X	X	X	X	X	X	X	X
23-FL-01	Individual jurisdictions: Cities; Coos County Planning	Address Repetitive Loss Properties, including buy outs.  <i>Coos County:</i> Consult with property owners and explore mitigation actions for repetitive flood loss properties in Coos County.  <i>Bandon:</i> Identify the single listed Repetitive Loss building and periodically explore opportunities to complete a property buy-out in collaboration with state and federal partners.	Continued/ Ongoing: Coos County, Bandon, and Coos Bay (Ongoing 16-FL-01) are the sole jurisdictions that have repetitive loss properties.  Continued as repetitive loss qualifies the jurisdiction for Flood Mitigation Assistance (FMA) funding.  The Oregon NFIP coordinator is available to answer questions from jurisdictions.	Flood	M	1-3 years/ staff time	1, 2, 3, 4, 5	X	X	X										

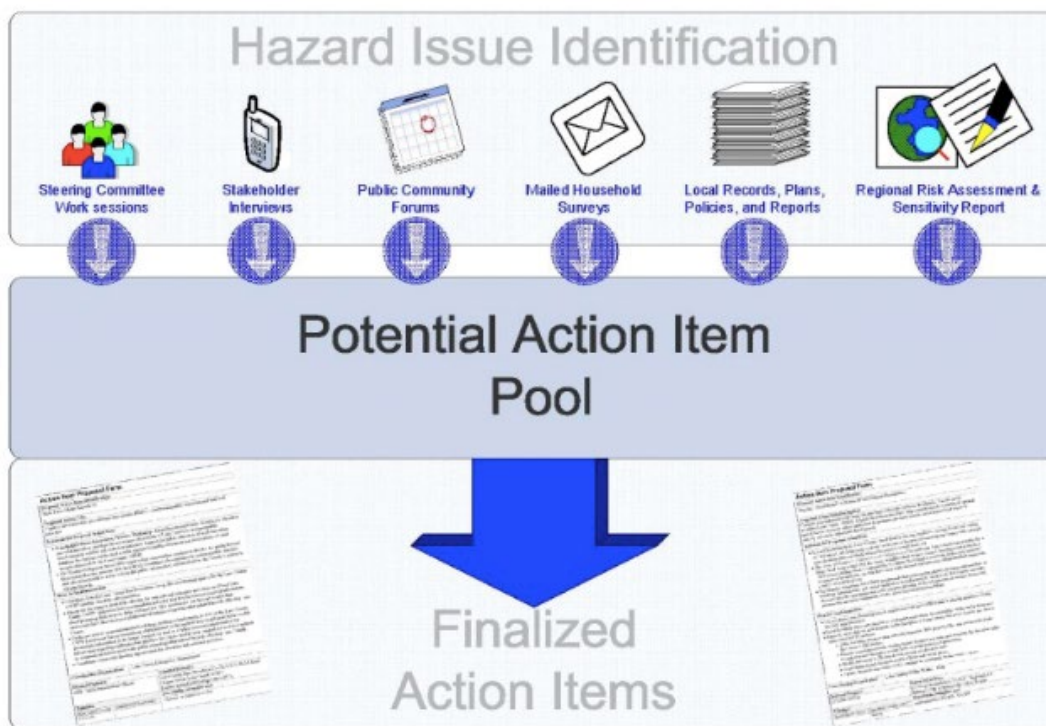
Action Item #	Lead	Mitigation Action	Status/ Description	Hazards addressed	Priority	Timeline /Cost	Goals met by Action	Coos County	City of Bandon	City of Coos Bay	City of Coquille	City of Lakeside	City of Myrtle Point	City of North Bend	City of Powers	Port of Coos Bay	Port of Bandon	Bay Area Hospital	S. Coos Hospital	Haynes D. District
23-FL-02	Individual jurisdictions: Cities; Coos County Planning	Ensure continued compliance with the National Flood Insurance Program (NFIP) through enforcement of local floodplain ordinance.	Floodplain development permits required for construction within floodplain.  Ongoing: Coquille 10-FL-01/ Lakeside 16-MH-06/ Myrtle Point: 10-FL-01/ North Bend: 16-FL-01	Flood	M	1-3 years/ staff time	1, 2, 3, 4	X	X	X	X	X	X	X	X					
23-FL-03	Individual jurisdictions: Cities; Coos County	Develop a plan that includes a review of current stormwater capabilities and determines the necessity for new or additional mitigation actions.	North Bend: 16-FL-02 Master plan identified.  Powers: Storm water master plan in progress to evaluate the storm drainage system and draft a report/plan for mitigation activities to ease flooding from storm water	Flood	M	2-5 years/ \$50-200k	2, 3, 4, 5, 6	X	X	X	X	X	X	X	X	X	X			X
23-LS-01	Individual jurisdictions: Cities; Coos County Road Dept.	Continue to track and mitigate landslide events by developing data, designs, funding requests, and appropriate mitigation measures for implementation.	Current/ Revised: Coquille 10-LS-01 &10-LS-02/ Lakeside 16-LS-01 / Myrtle Point 10-LS-01 & 10-LS-02; North Bend 16-LS-01 & 16-LS-02; Powers 16-LS-01. Written to expand opportunities for funding requests. Based on two prior actions:  1) Work with DOGAMI to identify and map high risk slide areas to create an accurate logistical assessment. 2) Evaluate current and high hazard slide areas for mitigation prioritization and explore mitigation possibilities.	Landslide	H	Ongoing/ various	1, 2, 3, 4, 5	X	X	X	X	X	X	X	X	X	X	X		X
23-WF-01	Coos County Planning Dept.	Ensure new development in the wildfire urban interface (WUI) uses wildfire mitigation measures such as fire-resistant building materials, firebreaks, and access for fire trucks.	Ongoing/ Revised: Coos County advises best practices at the planning desk.	Wildfire	M	1-3 years/ staff time	1, 2, 3, 4	X	X	X	X	X	X	X	X					

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23-WF-02	Individual jurisdictions: Cities; Coos County	Implement wildfire actions identified in the Coos County Community Wildfire Protection Plan; Update the CWPP with community input.	<p>CCEM is developing a plan to update the CWPP. CCEM works closely with CFPA on evacuation and rural fire mitigation.</p> <p>Powers Ongoing 16-WF-02</p> <p>Southern Coos: Fire team has worked to create a significant fire break around facility.</p>	Wildfire	M	1-3 years/ staff time	1, 2, 3, 4	X	X	X	X	X	X	X	X	X	X	X	X	X

### Action Item Development

Mitigation actions can be developed at any time during the planning process and can come from a variety of sources, including participants in the planning process, noted deficiencies in local capability, or issues identified through the risk assessment. The rationale for proposed mitigation actions is based on the information documented in the Risk Assessment. Development of action items was a multi-step process that involved consideration of Coos County Emergency Management recommendations; Coos County Community Survey Results; review of maps, the DOGAMI Risk Report, and OCCRI Future Conditions Report, followed by brainstorming, discussion, review, and revisions in collaboration with the implementing jurisdictions. The figure below illustrates the general process.

**Figure II-1. Development of Action Item Pool**



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Source: Oregon Partnership for Disaster Resilience, 2008.

### Project Prioritization Process

Jurisdictions are required to identify a process for prioritizing potential actions. Prioritization includes strategic planning such as that which results from leadership by the County emergency management office or from coordination with the plan holder steering committee to determine which mitigation actions can be completed using staff time, which ones can be supported by decision makers, and which ones will need collaboration for implementation.



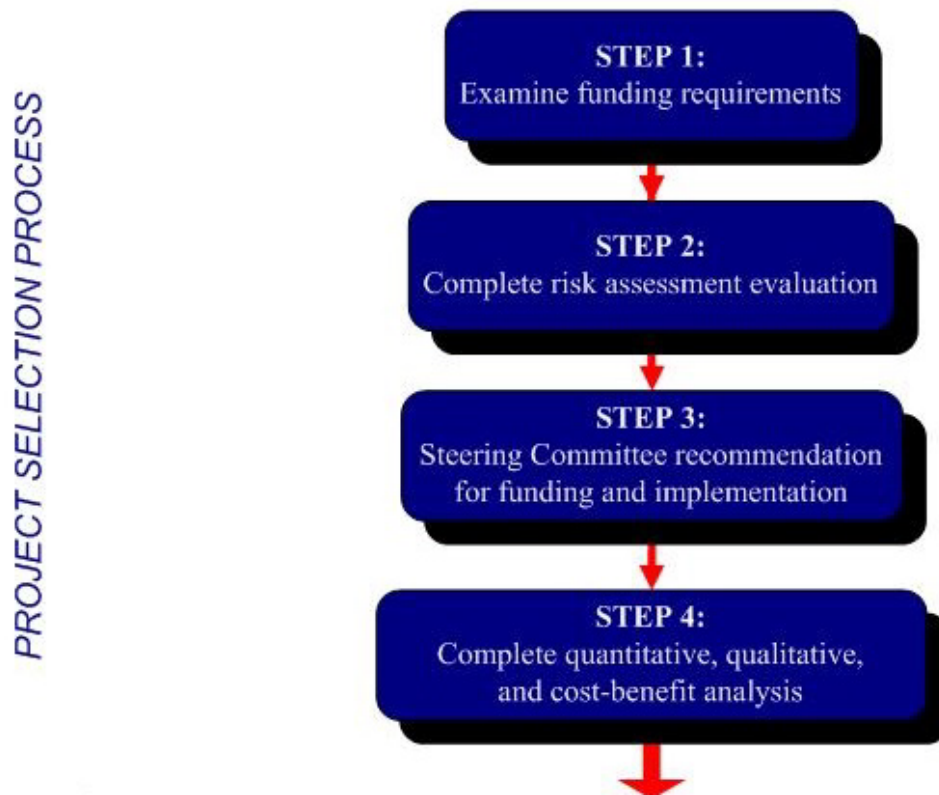
For the 2023 Coos County MJ-NHMP, the overall prioritization strategy includes:

The Lead entity supporting the mitigation action defines the first priority ranking—listing low, medium, or high for each proposed action. A low ranking may be a project that does not need funding, needs less than \$5,000 in funding, or is unlikely to receive funding. A medium ranking may be applied to ongoing projects, projects that can be funded by capital improvement budgets, or new projects that need to undergo a period of outreach and awareness building with constituents. High ranked projects are those projects that must be done before other efforts can occur, such as resilience development in lifelines. Lifeline system work is often high priority—communication lifelines such as towers, broadband, etc. needs to be resilient so that critical facilities and other systems can function.

Once the actions all have an initial ranking, they are sorted. This provided the groundwork for a key step in the prioritization process--sorting the mitigation actions by low, medium, and high. Actions are next prioritized within the high-medium-low categories.

Potential mitigation activities often come from a variety of sources; therefore, the project prioritization process needs to be flexible. Committee members, local government staff, other planning documents, or the risk assessment may be the source to identify projects. Figure II-2 illustrates the project development and prioritization process.

**Figure II-2. Action Item and Project Review Process**



Source: Oregon Partnership for Disaster Resilience.

### Step 1: Examine funding requirements (and capacity)

The first step in prioritizing the Plan's action items is to determine which mitigation actions can be completed using staff time, which ones can be supported by decision makers, and which ones will need collaboration for implementation. As the purpose of the NHMP is to qualify plan holders for funding, looking at the FEMA funding sources that are open for application is a good place to begin. Examples of mitigation funding sources include but are not limited to: FEMA's Building Resilient Infrastructure and Communities (BRIC), Flood Mitigation Assistance (FMA) program, Hazard Mitigation Grant Program (HMGP), Community Development Block Grants (CDBG), local general funds, and private foundations, among others. Please see Appendix B Funding: Recovery Resource Guide, for a more comprehensive list of potential grant programs.

Because grant programs open and close on differing schedules, the Steering Committee will examine upcoming funding streams' requirements to determine which mitigation activities would be eligible. The Steering Committee may consult with the funding entity, Oregon Department of Emergency Management (OEM), or other appropriate state or regional organizations about eligibility requirements. This examination of funding sources and requirements will happen during the Steering Committee's plan maintenance meetings.

### Step 2: Complete risk assessment evaluation

The second step in prioritizing the Plan's action items is to examine which hazards the selected actions are associated with and where these hazards rank in terms of community risk. The Steering Committee will determine whether or not the Plan's risk assessment supports the implementation of eligible mitigation activities. This determination will be based on the location of the potential activities, their proximity to known hazard areas, and whether community assets are at risk. The Steering Committee will additionally consider whether the selected actions mitigate hazards that are likely to occur in the future, or are likely to result in severe/ catastrophic damages.

### Step 3: Steering Committee Recommendation

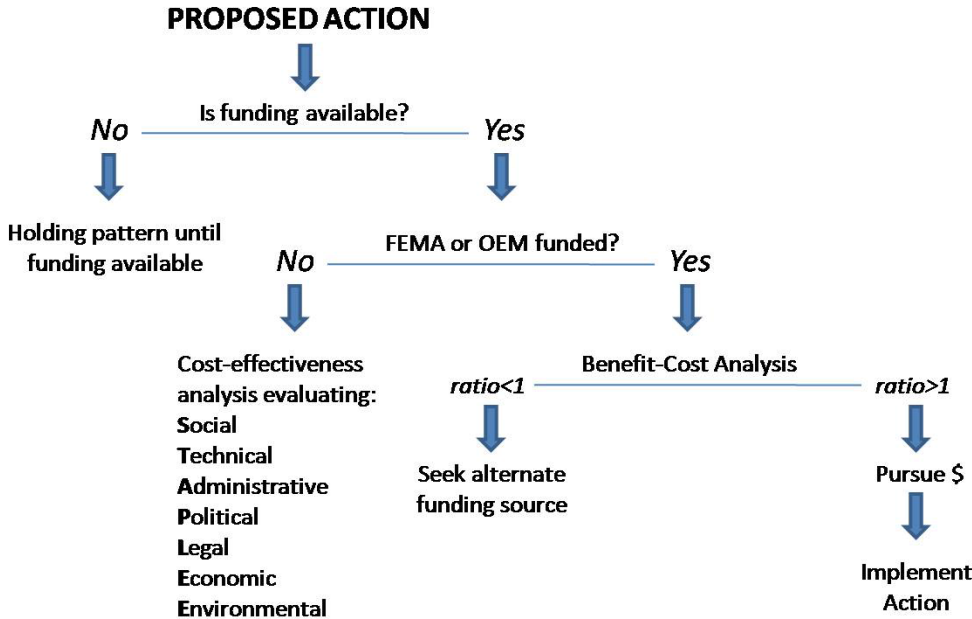
Based on the steps above, the Steering Committee will recommend which mitigation activities should be moved forward. If the Steering Committee decides to move forward with an action, the coordinating organization designated on the action item form will be responsible for taking further action and, if applicable, documenting success upon project completion. The Steering Committee will convene a meeting to review the issues surrounding grant applications and to share knowledge and/or resources. This process will afford greater coordination and less competition for limited funds.

### Step 4: Complete quantitative and qualitative assessment, and economic analysis

The fourth step is to identify the costs and benefits associated with the selected natural hazard mitigation strategies, measures, or projects. Two categories of analysis that are used in this step are: (1) benefit/cost analysis, and (2) cost-effectiveness analysis. Conducting benefit/cost analysis for a mitigation activity assists in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later. Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating natural hazards provides decision makers with an understanding of the potential benefits and costs of an activity, as well

as a basis upon which to compare alternative projects. Figure 4-2 shows decision criteria for selecting the appropriate method of analysis.

**Figure II-3. Action Item and Project Review Process**



Source: Oregon Partnership for Disaster Resilience.

If the activity requires federal funding for a structural project, the Steering Committee will use a FEMA-approved cost-benefit analysis tool to evaluate the appropriateness of the activity. A project must have a benefit/cost ratio of greater than one in order to be eligible for FEMA grant funding.

For non-federally funded or nonstructural projects, a qualitative assessment will be completed to determine the project’s cost effectiveness. The Steering Committee will use a multivariable assessment technique called STAPLE/E to prioritize these actions. STAPLE/E stands for Social, Technical, Administrative, Political, Legal, Economic, and Environmental. Assessing projects based upon these seven variables can help define a project’s qualitative cost effectiveness. OPDR at the University of Oregon’s Community Service Center has tailored STAPLE/E technique for use in natural hazard action item prioritization.

Mitigation Action Table

The Mitigation Actions 2023 table uses the following components:

Action Item #: The action item number is the result of the mitigation action prioritization process. It should be finalized once the action item table is fully populated. The assigned number is used to reference the 2016 (or previous) action item status as seen in Section D Mitigation Action 2016 Status.

Lead: The lead organization is the public agency with the regulatory responsibility to address natural hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity

implementation, monitoring and evaluation. The lead organization and main contact for the Coos County MJ-NHMP is Coos County Emergency Management.

As each action item must be reported on during each 5-year plan update cycle, it is important that the Lead entity be the owner or primary implementing entity.

Mitigation Action: Each mitigation action item includes a title and a brief description of the proposed action.

Status/ Description: This column indicates the previous action item number if relevant. Next, a problem statement is made, along with any relevant description or partners. Then, specific status updates by jurisdiction are listed. Finally, a potential funding source should be listed. Mitigation actions should be fact-based and tied directly to issues or needs identified throughout the planning process. In order to focus these mitigation actions for FEMA programs, it is important to develop a problem statement that focuses the mitigation action on a specific hazard that will be mitigated and the vulnerable population or asset at risk which will be at lower risk after the project is completed. Where possible, identify potential funding sources for the mitigation action. Example funding sources can include: the federal Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC) and Flood Mitigation Assistance (FMA) Programs; state funding sources such as the Oregon Seismic Rehabilitation Grant Program; or local funding sources such as capital improvement or general funds. A mitigation action may have multiple funding sources. The funding sources are identified general as short- or long-term (see below) and includes an element of funding capacity of the jurisdiction for that action. See Appendix B1 Funding: Recovery Resource Guide for additional information on funding opportunities.

Hazards Addressed: While many mitigation actions in the 2023 Coos County MJ-NHMP are multi-hazard in nature, jurisdictions were advised to focus on articulating specific hazard risks when developing a problem statement in order to best align with FEMA funding.

Priority: The Lead entity supporting the mitigation action defined the first priority ranking—listing low, medium, or high for each proposed action. This provided the groundwork for a key step in the prioritization process--sorting the mitigation actions by low, medium, and high.

Timeline/ Cost: The potential timeline and a cost estimate gives form to a mitigation action by moving it out of the realm of “idea” and into “action”. Even if an action is well defined, a specific timeline makes it very clear how much fundraising time there is, and the cost sets a target for that fundraising. It is nearly impossible to begin even a cursory cost-benefit analysis without this information. Bids, estimates, or similar projects are all evidence-based sources of cost information. However, simply choosing a number of zeros goes a long way. Example: a \$5,000 outreach effort is different from a \$50,000 one.

Goals met by Action: The plan goals addressed by each mitigation action are identified as a means for monitoring and evaluating how well the mitigation plan is achieving its goals, following implementation.

Plan holder check boxes: However, many of the mitigation actions within this plan apply to either some or all of the participating plan holders. As such, the affected jurisdictions have a check mark on the right side of the matrix. These checkmarks have two meanings—that of a supporting role or a potential future lead role. Circumstances and jurisdiction needs often change during the five-year period that the plan is effective.

### Authorities and Capabilities

To achieve risk reduction, it is necessary to consider natural hazards mitigation in jurisdictional planning processes, from land use to infrastructure to emergency response.

The 2023 Coos County MJ-NHMP includes a range of mitigation actions that, when implemented, will reduce loss from hazard events in the County. Coos County and the participating cities currently address statewide planning goals and legislative requirements through their comprehensive land use plans, capital improvements plans, mandated standards, and building codes. Plans and policies already in existence have support from local residents, businesses, and policy makers. Many land use, comprehensive, and strategic plans are updated regularly, and can adapt easily to changing conditions and needs. Implementing the MJ-NHMP's action items through such plans and policies increases their likelihood of being supported and implemented. The jurisdictions will work to incorporate the mitigation actions into existing programs and procedures.

Each jurisdiction engages in comprehensive planning and other processes within which mitigation can be considered and accomplished. However, it is not yet generally embedded in the context of these conversations. For most jurisdictions this will constitute a type of awareness campaign and require a change in organizational culture or political opinion in order to secure approval from the boards, councils, and commissions that guide them. Steering Committee members will be responsible for communicating the importance and necessity of integrating mitigation goals, objectives, and actions into the everyday business of the jurisdiction to those within their individual organizational structures responsible for developing and implementing the various planning and operations documents and processes. Steering Committee members will also engage in those planning and operations processes to the extent necessary and appropriate to ensure that mitigation goals, objectives, and actions are duly considered and incorporated as applicable and feasible.

Jurisdictions have a wide array of authorities that can be effective in reducing risk from hazards. In order to put these to work, it is necessary to articulate how the authority can, should, and will be used to address natural hazards. Considering natural hazards mitigation in jurisdictional planning processes, from land use to infrastructure to emergency response are all effective practices for reducing risk. Every advance in mitigation reduces impact, decreasing the need for response and recovery and increasing resilience.

Table II-2. Authorities and Capabilities identifies by jurisdiction the types of authorities and capabilities available to the plan holder jurisdictions with which they may implement natural hazard mitigation goals, objectives, and actions.

**Table II-2. Authorities and Capabilities**

	Coos County	Bandon	Coos Bay	Coquille	Lakeside	Myrtle Point	North Bend	Powers	Port of Coos Bay	Port of Bandon	Bay Area Hospital	Southern Coos Hospital	Haynes Drainage District	Comments
Public notification, warning systems	X	X	X	X	X	X	X	X	X	X	X	X	X	Plan holder communication networks
Education and outreach	X	X	X	X	X	X	X	X	X	X	X	X	X	Internal/external information sharing
Public/ private coordination	X	X	X	X	X	X	X	X	X	X	X	X	X	For funding, staffing, etc.
Mutual aid agreements	X	X	X	X	X	X	X	X	X	X	X	X	X	For response and recovery
Comprehensive planning	X	X	X	X	X	X	X	X						Oregon land use process requirement
Development standards	X	X	X	X	X	X	X	X						Locally driven code based on comp plan
Building codes	X	X	X	X	X	X	X	X						Building codes of Oregon adopt the International Building Code 2021 (IBC 2021), IRC 2018, IEBC 2021, etc.
Equipment: debris mgmt., recovery	X	X	X	X	X	X	X	X	X	X	X	X	X	
Funding authority: Taxes	X	X	X	X	X	X	X	X	X	X	X	X	X	All plan holders have taxation authority.
Capital improvement funding	X	X	X	X	X	X	X	X	X	X	X	X	X	All plan holders have funding authority.
Transportation planning	X	X	X	X	X	X	X	X	X	X				Maritime, estuarine, and surface roads.
Zoning code	X	X	X	X	X	X	X	X						NFIP Flood code; floodplain mgmt.
Provision of services:														
Bridge, dock, levee maintenance	X	X	X	X	X	X	X	X	X	X			X	Includes dredging waterways
Debris & garbage management	X	X	X	X	X	X	X	X						
Drinking water		X	X	X	X	X	X	X						
Emergency response services	X	X	X	X	X	X	X	X						
Healthcare services	X										X	X		
Mooring, shipping, storage									X	X				
Permits & fees for development	X	X	X	X	X	X	X	X						
Wastewater		X	X	X	X	X	X	X						

### D. Mitigation Action 2016 Status

The status of mitigation actions in the 2016 Coos County Multi-Jurisdictional Natural Hazard Mitigation Plan were reported on alongside their number from the last plan as seen in column two. Actions that were carried over into the 2023 Coos County MJ-NHMP are referenced in column three.

**Table II-3. 2016 Mitigation Action Status Table**

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards address ed</b>
Coos County	16-MH-01/ Complete	n/a	Participate in the FEMA Risk Map discovery, hazard study, and resilience meeting processes.	Coos County staff worked with state and federal partners to update their flood ordinance and maps in advance of the FEMA flood maps becoming effective in 2018.	Coos County Planning	Coos County Emergency Management, Public Works	Multi-Hazard
Coos County	16-MH-02/ Complete	n/a	Utilize the final multi-hazard risk report and assessment currently being developed through FEMA's RiskMap program to update the Coos County Hazard Analysis.	The 2018 DOGAMI Natural Hazard Risk Report for Coos County was used to update the hazard analysis.	Coos County Emergency Management	Coos County Planning	Multi-Hazard

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
Coos County	16-MH-03/ Complete	n/a	Utilize the final multi-hazard risk report and assessment currently being developed through FEMA's RiskMap program to update local risk assessment maps to show areas at risk for all hazards.	DOGAMI completed the Natural Hazard Risk Report for Coos County in 2018. This serves as the risk assessment for the 2023 Coos County NHMP update.	Coos County Planning	Planning Commission; Board of County Commissioners; Economic Development; Coos Emergency Management	Multi-Hazard
Coos County	16-MH-04/ Started	22-MH-01/ Ongoing	Identify and disseminate information regarding alternate transportation routes.	22-MH-01: Revise to change word transportation to evacuation	Coos County Emergency Management		Multi-Hazard
Coos County	16-MH-05/ Started	22-MH-02/ Ongoing	Establish mutual aid agreements between government agencies and commercial businesses in the event of an emergency (e.g. fuel, heavy equipment, food, etc.)	22-MH-02: Access database developed; questionnaires about available supplies held by local businesses were sent out by CCEM in 2018.  Have MOUs for shelters from 1990s-2000s that need to be revisited.	Coos County Emergency Management		Multi-Hazard



	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
Coos County	16-MH-06/ Started	22-MH-03/ Ongoing	Educate and encourage major businesses, service providers, schools, and governmental organizations to develop continuity of operations plans.	County, Cities, hospitals, and some schools have COOPs.	Coos County Emergency Management	Southwest Oregon Workforce Investment Board, Coos Curry Douglas Business Development Corp.  OEM, Business Oregon,	Multi-Hazard
Coos County	16-FL-01/ Complete	n/a	Complete a risk analysis for the flood hazard using newly acquired Light Detection and Ranging (LIDAR) data.	Completed as a part of the FEMA flood map update.	Coos County Planning	Coos County Emergency Management	Flood
Coos County	16-CE-01/ Updated	22-CE-01/ Ongoing	Reduce risk of coastal erosion through hazard mapping and regulation.	Use of Coos County Beaches and Dunes Goal 18 Development suitability maps is ongoing. <a href="https://www.coastalatlas.net/coos-all-hazards/">https://www.coastalatlas.net/coos-all-hazards/</a> Updates occur as data is improved.	Coos County Planning	Planning Commission; Board of County Commissioners; Coos Emergency Management	Coastal Erosion

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
Coos County	10-WF-03/ 16-MH-06  Underway	22-MH-01/ Ongoing	Through multi-agency coordination, implement abatement efforts to control noxious weeds, specifically Gorse, Scotch Broom, and Butterfly Bush.	The Gorse Action Group is lead on fire-prone weed abatement. A wide array of control, monitoring, and coordination strategies are underway.	Gorse Action Group	Cities of Bandon, Lakeside and Powers; County Weed Board, CFPA.	Wildfire
Coos County	16-CE-02/  Updated	22-CE-01/ Ongoing	Monitor rates of coastal erosion in areas zoned for development and reassess development standards to prevent damage to future buildings and infrastructure.	This action item was written for external partners, it is being combined with Action 22-CE-01 for this plan update.	Coos County	DLCD, DOGAMI	Coastal Erosion
Coos County	16-EQ-01/ Not started	22-EQ-03/ Revised	Encourage residents and businesses to consider the purchase of earthquake insurance.	Revised into 22-EQ-03 for this plan update “Educate the community about the benefits of earthquake preparedness, including CERT and earthquake insurance.”	Coos County	OEM	Earthquake
Coos County	16-EQ-02/ Not started	22-EQ-03/ Revised	Conduct regular earthquake safety drills.	Revised as 22-EQ-02 for this plan update.	Coos County	OEM	Earthquake

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
Coos County	16-EQ-03/ Started	22-MH-11	Have local emergency responders continue to take bridge assessment classes.	Revised as 22-MH-11 for this plan update to include other types of post-disaster damage assessment.	Coos County	ODOT, local EMS agencies	Earthquake
Coos County	16-EQ-04/ Started	22-EQ-01/ Ongoing	Retrofit schools, fire departments, and other critical facilities to withstand seismic activity.		Building/ Infrastructure owners	Local school districts, fire departments, and other agencies with critical facilities.	Earthquake
Coos County	16-FL-01/ Complete	n/a	Complete a risk analysis for the flood hazard using newly acquired Light Detection and Ranging (LIDAR) data.	This work was done as a part of the FEMA Flood Insurance Rate Map (FIRM) update that concluded in 2018 when flood maps became effective.	FEMA/ DOGAMI, Coos County Planning	FEMA/ DOGAMI	Flood
Coos County	16-FL-02/ Not started	n/a	Take steps for the county to qualify for participation in the National Flood Insurance Program's (NFIP) Community Rating System.	The Community Rating System requires a high level of staff capacity.	Coos County	DLCD, FEMA	Flood

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
Coos County	16-FL-03/ Not started	n/a	Conduct an analysis of flooding issues in the Libby Drainage District and Englewood Drainage District and develop mitigation strategies to prevent future floods from damaging property in the area.		Coos County	Coos Watershed Association is a potential partner or lead for this project.	Flood
Coos County	16-FL-04/ Started	22-FL-01/ Ongoing	Consult with property owners and explore mitigation actions for repetitive flood loss properties in Coos County.		Coos County Planning	FMA, NFIP program, DLCDC, FEMA	Flood
Coos County	16-LS-01/ Complete	n/a	Assess LIDAR maps to evaluate development in hazardous areas.	See Coos County Natural Hazard Risk Report, All Hazards Viewer <a href="https://www.coastalatlasc.net/">https://www.coastalatlasc.net/</a> , and SLIDO <a href="https://www.oregongeology.org/slido/">https://www.oregongeology.org/slido/</a>	Coos County	DOGAMI, DLCDC	Landslide
Coos County	16-LS-02/ Underway	22-LS-01	Continue to track landslide events along major roadways and develop appropriate mitigation measures.	22-LS-01: Adds mitigation implementation to action item	Coos County Road Dept.	ODOT, DOGAMI	Landslide

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
Coos County	16-TS-01/	22-MH-04	Conduct regular tsunami evacuation drills.	Revised: Incorporated into 22-MH-04	Coos County		Tsunami
Coos County	16-WF-01/ Started	22-WF-02	Encourage new and existing developments in the WUI to incorporate wildfire mitigation measures and ensure adequate emergency access.	Revised:	Coos County Planning Dept.		
Coos County	16-WS-01/ Not started	22-MH-06	Educate the public about the dangers of downed power lines after a windstorm.	2010 action item by Coos Curry Electric Coop.	Coos County	Coos County Emergency Management, Coos County Planning, Sheriff, Cities, Rural Fire Departments	Windstorm
Coos County	16-WS-01/ Ongoing	22-WS-01/ Ongoing	Encourage all critical facilities to have backup power and/or emergency operations plans in place to deal with power outages.	Revised: two mitigation actions both moved into Multi-Hazard.	CCEM/ Infrastructure owner		

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
Coos County	16-WS-02/ Reassign	n/a	Upgrade lines and poles to improve wind loading and underground critical power lines.	This is not a mitigation action that CC can implement.	Coos-Curry Electric Coop, others		Windstorm
City of Bandon	16-MH-01/ Complete	n/a	Participate in the FEMA Risk Map discovery, hazard study, and resilience meeting processes.	High priority action #1 from 2016. This FEMA process was completed when the new preliminary FIRM maps were released. City staff worked with state and federal partners to update their flood ordinance and maps in advance of the FEMA flood maps becoming effective in 2018.	City of Bandon Planning	DLCD, FEMA	Multi-Hazard
City of Bandon	16-MH-02/ Ongoing	22-MH-13	Utilize the final multi-hazard risk report and assessment developed by DOGAMI through FEMA's RiskMap program to update the Goal 7 section of the Bandon Comprehensive Plan.	This action item is ongoing but was partially completed in the 2020 adoption of the Hazards Overlay Zone.	City of Bandon	Coos County Planning	Multi-Hazard

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City of Bandon	16-MH-03/ Ongoing	22-MH-14/ Ongoing	Stock contains in city park with emergency response supplies.	The City plans to complete container repair, inventory, and local coordination for on-going maintenance and future improvements.	City of Bandon	Coos County Emergency Management	Multi-Hazard
City of Bandon	16-MH-04/ Ongoing	22-MH-09/ Ongoing	Continue to implement and enhance public education programs regarding earthquakes and tsunamis.	Increased Tsunami evacuation signage, participation in annual Shake Out day.	City of Bandon	Cities of Bandon, Lakeside and Powers; County Weed Board, CFPA.	Multi-Hazard
City of Bandon	16-MH-05/ Revised	22-MH-15/ Continued	Complete a disaster recovery plan for Bandon.	Continue as a countywide action item in 2023 plan.	City of Bandon	OEM, FEMA, Coos County Emergency Management	Multi-Hazard
City of Bandon	16-EQ-01/ Ongoing	n/a	Seek funding to study the seismic vulnerability of buildings and infrastructure in the City of Bandon and retrofit those that are vulnerable to seismic hazards.	GO Bond for seismic valve replacement Study @ water plant The City has obtained funding through bond sales and is completing seismic upgrades on the City's water supply tanks.	City of Bandon	Coos County Emergency Management	Earthquake

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City of Bandon	16-FL-01/ Ongoing	22-FL-01/ Continued	Identify the single listed Repetitive Loss building and periodically explore opportunities to complete a property buy-out in collaboration with state and federal partners.	Continued as repetitive loss qualifies the City for Flood Mitigation Assistance (FMA) funding.	City of Bandon	OEM, FEMA, Coos County  Emergency Management	Flood
City of Bandon	16-LS-01/ Complete	n/a	Obtain lidar collection data from DOGAMI.	This process was completed with the 2020 adoption of a Hazards Overlay Zone, specific to landslide and liquefaction susceptibility.	City of Bandon	DLCD	Landslide
City of Bandon	16-TS-01/ Discontinued	n/a	Adopt a Tsunami Land Use Overlay Zone.	Old Town Bandon is in the floodplain already and tsunami regulations would be difficult to implement at this time.	City of Bandon	Coos County Planning	Tsunami



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City of Bandon	16-WF-01/ Ongoing	22-MH-05/ Ongoing	Through multi-agency coordination, implement abatement efforts to control noxious weeds, specifically Gorse, Scotch Broom, and Butterfly Bush, and reduce wildfire fuels.	A multi-district gorse abatement plan was created by the Gorse Action Group in 2019. The city hired a part time Vegetation Management Coordinator and Code Compliance Officer who are responsible for the plans ongoing implementation and enforcement. The City has obtained services from a gorse removal contactor and purchased equipment to abate noxious vegetation within public rights-of-ways and City owned property.	City of Bandon	Gorse Action Group	Wildfire

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City of Coquille	10-MH-01/ Complete	n/a	Participate in the FEMA Risk Map discovery, hazard study, and resilience meeting processes.	This FEMA process was completed when the new preliminary FIRM maps were released. City staff worked with state and federal partners to update their flood ordinance and maps in advance of the FEMA flood maps becoming effective in 2018.	City of Coquille	DLCD, FEMA	Multi-Hazard
City of Coquille	10-EQ-01/ Ongoing	22-MH-04/ Ongoing	Conduct regular earthquake safety drills.		City of Coquille		Earthquake
City of Coquille	10-WF-01/ Ongoing	22-MH-05/ Ongoing	Through multi-agency coordination, implement plan for control of Noxious Weeds, specifically Gorse, Scotch Broom, and Butterfly Brush.	Work is currently underway along the Coquille River Walk.	City of Coquille		Wildfire

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards address ed</b>
City of Coquille	10-MH-02/ Started	22-MH-13/ Started	Utilize the final multi-hazard risk report and assessment developed by DOGAMI and FEMA's RiskMap program to update the Goal 7 section of the Powers Comprehensive Plan.	Chief Ferren will meet with partners.	City of Coquille	DOGAMI, Coos County Emergency Management & Planning	Multi-Hazard
City of Coquille	10-MH-03/ Complete	n/a	Continue to review city comprehensive plan and zoning ordinance for the need to update hazard specific section to reflect the latest information on natural hazards.		City of Coquille		Multi-Hazard
City of Coquille	10-MH-03/ Ongoing	22-MH-09/ Ongoing	Continue to implement public education programs regarding natural hazards.		City of Coquille		Multi-Hazard
City of Coquille	10-EQ-01/ Started	22-EQ-01/ Started	Seek funding to retrofit buildings and/or infrastructure at risk of damage in a high magnitude earthquake.	Seeking funding for firehall seismic upgrades.	City of Coquille		Earthquake

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of Coquille	10-FL-01/ Ongoing	22-FL-02/ Ongoing	Ensure continued compliance with the National Flood Insurance Program (NFIP) through enforcement of local floodplain ordinance.		City of Coquille	DLCD, FEMA	Flood
City of Coquille	10-LS-01/ Started	22-LS-01/ Started	Work with DOGAMI to identify and map high risk slide areas to create an accurate logistical assessment.	Chief Ferren will work with DOGAMI	City of Coquille	DOGAMI, ODOT	Landslide
City of Coquille	10-LS-02/ Started	22-LS-01/ Started	Evaluate current and high hazard slide areas for mitigation prioritization and explore mitigation possibilities.		City of Coquille	DOGAMI, ODOT	Landslide
City of Coquille	10-MH-04/ Ongoing	22-MH-04/ Ongoing	Identify and map all roads, private drives, logging trails to increase the ability of firefighters to locate and gain access to provide services and/or evacuations.	Fire Dept. is working with Public Works and the City of Coos Bay for mapping assistance.	City of Coquille	Coos County Emergency Management	Multi-Hazard

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of Coquille	10-MH-05/ Ongoing	22-MH-10/ Ongoing	Educate and encourage major businesses, service providers, schools, and governmental organizations to develop continuity of operations plans.		City of Coquille	Coos County Emergency Management	Multi-Hazard
City of Coos Bay	16-MH-01/ Complete	n/a	Participate in the FEMA Risk Map discovery, hazard study, and resilience meeting processes.	High priority action #1 from 2016. This FEMA process was completed when the new preliminary FIRM maps were released. City staff worked with state and federal partners to update their flood ordinance and maps in advance of the FEMA flood maps becoming effective in 2018.	City of Coos Bay Planning Division	DLCD, FEMA	Multi-Hazard

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of Coos Bay	16-MH-02/ Not started	22-MH-13/ Not started	Utilize the final multi-hazard risk report and assessment developed by DOGAMI and FEMA's RiskMap program to update the Goal 7 section of the Coos Bay Comprehensive Plan.	High priority action #2 from 2016.	City of Coos Bay Planning Division	DLCD, Coos County Planning	Multi-Hazard
City of Coos Bay	16-TS-01/ Discontinued	n/a	Adopt a Tsunami Land Use Overlay Zone.	High priority action #3 from 2016.	City of Coos Bay Planning Division	Coos County Planning	Tsunami
City of Coos Bay	16-FL-01/ Complete	22-FL-01/ Ongoing	Ensure continued compliance with the National Flood Insurance Program (NFIP) through enforcement of local floodplain ordinance.		City of Coos Bay Planning Division	DLCD, FEMA	Flood
City of Coos Bay	16-MH-03/ Started	22-MH-04/ Ongoing	Identify and map all roads, private drives, logging trails to increase the ability of firefighters to locate and gain access to provide services and/or evacuations.		City of Coos Bay	Coos County Emergency Management	Multi-Hazard

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of Coos Bay	16-FL-02/ Completed	Discontinued	Explore alternative actions to mitigate flooding in Libby Drainage and Englewood Diking Districts.		City of Coos Bay		Flood
City of Coos Bay	16-MH-04/ Ongoing	22-MH-11/ Ongoing	Continue public education for earthquake and tsunami preparedness.		City of Coos Bay	Cities of Coos Bay, Lakeside and Powers; County Weed Board, CFPA.	Multi-Hazard
City of Coos Bay	16-EQ-01/ Started	22-EQ-02/ Ongoing	Promote CERT or other preparedness education.		City of Coos Bay		Multi-Hazard
City of Coos Bay	16-MH-05/ Started	22-MH-14/ Ongoing	Establish a cache of a disaster relief resources for displaced residents.	As of 7/1/2021, the city has resources in four locations to provide shelter, water, and food for 1600 people for two weeks.	City of Coos Bay	OEM, FEMA, Coos County  Emergency Management	Multi-Hazard
City of Lakeside	n/a	New / 16-MH-05 added	Move wastewater facility out of the floodplain and build a resilient facility with emergency operations center capabilities.	Consider seismic upgrades-discuss with project engineer.	City of Lakeside	DEQ, FEMA	Multi-Hazard

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of Lakeside	n/a	New	Improve coordination on local emergency management to ensure resilience after a CSZ event.	The topography of the Lakeside area poses an elevated risk for residents in the event of a catastrophic event.	City of Lakeside	Lakeside Fire Department, Coos County Emergency Management, Oregon Emergency Management.	Multi-Hazard
City of Lakeside	n/a	New	Develop a stormwater master plan.	It is a best practice to create foundational documents like Transportation Master Plans, system plans, and stormwater master and management plans so that evacuation and flood planning and construction work can be done using current information.	City of Lakeside		Multi-Hazard



	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of Lakeside	16-MH-01/ Complete	n/a	Participate in the FEMA Risk Map discovery, hazard study, and resilience meeting processes.	High priority action #1 from 2016. This FEMA process was completed when the new preliminary FIRM maps were released. City staff worked with state and federal partners to update their flood ordinance and maps in advance of the FEMA flood maps becoming effective in 2018.	City of Lakeside	DLCD, FEMA	Multi-Hazard

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of Lakeside	16-MH-02/ Started	Ongoing	Utilize the final multi-hazard risk report and assessment developed by DOGAMI and FEMA's RiskMap program to update the Goal 7 section of the Lakeside Comprehensive Plan.	<p>High priority action #2 from 2016.</p> <p>No hazard work done in the last period. Mayor Edwards just signed a letter for Ryn Lamb, FEMA for DOGAMI landslide mapping.</p> <p>Continue to review city comprehensive plan and zoning ordinance for the need to update hazard specific section to reflect the latest information on natural hazards</p>	City of Lakeside	DLCD, Coos County Planning	Multi-Hazard
City of Lakeside	16-LS-01/ Started	Started	Evaluate current and high hazard slide areas for mitigation prioritization and explore mitigation possibilities.	<p>High priority action #3 from 2016.</p> <p>Countywide evacuation planning with timber</p>	City of Lakeside		Landslide

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of Lakeside	16-WF-01/ Complete	Ongoing	Through multi-agency coordination, implement abatement efforts to control noxious weeds, specifically Gorse, Scotch Broom, and Butterfly Bush.	<p>The Gorse Action Group helps coordinate weed abatement. A wide array of control, monitoring, and coordination strategies are underway.</p> <p>Unplanted logged hillside has resulted in a scotch broom overgrowth. City has an ordinance (April - Sept) residents are required to cut down weeds. City does outreach on this.</p>	City of Lakeside	<p>ODF/State Forestry, Lakeside Watershed Coordinator Mike Mader.</p> <p>Tenmile Creek is at the base of the scotch broom issue.</p>	Wildfire
City of Lakeside	16-MH-03/ Complete	Revised, combined with 16-MH-02	Continue to review city comprehensive plan and zoning ordinance for the need to update hazard specific section to reflect the latest information on natural hazards.		City of Lakeside		Multi-Hazard

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City of Lakeside	16-MH-04/ Ongoing	Ongoing	Promote public education and outreach on hazards. Continue to implement public education programs regarding natural hazards.	<b>High Priority</b>  Preparedness and homeowner actions for mitigation.  Educate the public about how to prevent wildfire and evacuate in a wildfire event.	City of Lakeside		Multi-Hazard
City of Lakeside	16-MH-05/ Not Started	Revised, added to wastewater plant project	Build a community center/evacuation center that can serve as a command center and kitchen.	Proposed in 2016 update, but without a tax base and having separate districts (water, fire, etc.)	City of Lakeside		Multi-Hazard
City of Lakeside	16-EQ-01/ Started	Not started	Seek funding to retrofit buildings and/or infrastructure at risk of damage in a high magnitude earthquake.		City of Lakeside		Earthquake
City of Lakeside	16-MH-06/ Ongoing	Ongoing	Ensure continued compliance in the National Flood Insurance Program (NFIP) through enforcement of local floodplain management ordinances.		City of Lakeside		Multi-Hazard

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City of Lakeside	16-MH-07/ Ongoing	Ongoing	Identify and map all roads, private drives, logging trails to increase the ability of firefighters to locate and gain access to provide services and/or evacuations.	Fire Department is lead.	City of Lakeside		Multi-Hazard
City of Lakeside	16-MH-08/ Started	Ongoing	Enhance strategies for debris management relating to severe wind and winter storm events.	Central Lincoln PUD does the bulk of this; in coordination with Fire Dept. and PW.	City of Lakeside		Multi-Hazard
City of Myrtle Point	10-MH-01/ Complete	n/a	Participate in the FEMA Risk Map discovery, hazard study, and resilience meeting processes.	This FEMA process was completed when the new preliminary FIRM maps were released. City staff worked with state and federal partners to update their flood ordinance and maps in advance of the FEMA flood maps becoming effective in 2018.	City of Myrtle Point	DLCD, FEMA	Multi-Hazard

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of Myrtle Point	10-MH-02/ Started	22-MH-13/ Started	Utilize the final multi-hazard risk report and assessment developed by DOGAMI and FEMA's RiskMap program to update the Goal 7 section of the Myrtle Point Comprehensive Plan.		City of Myrtle Point	DLCD, Coos County Planning	Multi-Hazard
City of Myrtle Point	10-MH-03/ Complete	Complete	Continue to review city comprehensive plan and zoning ordinance for the need to update hazard specific section to reflect the latest information on natural hazards.		City of Myrtle Point		Multi-Hazard
City of Myrtle Point	10-MH-04/ Ongoing	22-MH-09/ Ongoing	Continue to implement public education programs regarding natural hazards.	Development within Hazards Overlay Zone subject to specific development requirements.	City of Myrtle Point		Multi-Hazard
City of Myrtle Point	10-MH-05/ Ongoing	22-MH-04/ Ongoing	Identify and map all roads, private drives, logging trails to increase the ability of firefighters to locate and gain access to provide services and/or evacuations.		City of Myrtle Point	Coos County Emergency Management	Multi-Hazard

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of Myrtle Point	10-MH-06/ Ongoing	22-MH-10/ Ongoing	Educate and encourage major businesses, service providers, schools, and governmental organizations to develop continuity of operations plans.		City of Myrtle Point	Coos County Emergency Management	Multi-Hazard
City of Myrtle Point	10-EQ-01/ Ongoing	22-MH-06/ Ongoing	Conduct regular earthquake safety drills.	City staff conducts annual earthquake drill. Need to add post-earthquake operational scenario.	City of Myrtle Point		Earthquake
City of Myrtle Point	10-EQ-02/ Ongoing	22-EQ-01/ Ongoing	Seek funding to retrofit buildings and/or infrastructure at risk of damage in a high magnitude earthquake.	City received \$1.1 Million Seismic Rehab grant for Fire & Ambulance Station. Design in progress.	City of Myrtle Point		Earthquake
City of Myrtle Point	10-FL-01/ Ongoing	22-FL-02/ Ongoing	Ensure continued compliance with the National Flood Insurance Program (NFIP) through enforcement of local floodplain ordinance.	Floodplain development permits required for construction within floodplain.	City of Myrtle Point	DLCD, FEMA	Flood

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of Myrtle Point	10-LS-01/ Not Started	22-LS-01/ Not Started	Work with DOGAMI to identify and map high risk slide areas to create an accurate logistical assessment.		City of Myrtle Point	DOGAMI, ODOT	Landslide
City of Myrtle Point	10-LS-02/ Not Started	22-LS-01/ Not Started	Evaluate current and high hazard slide areas for mitigation prioritization and explore mitigation possibilities.		City of Myrtle Point		Landslide
City of Myrtle Point	10-WF-01/ Ongoing	22-MH-05/ Ongoing	Through multi-agency coordination, implement plan for control of Noxious Weeds, specifically Scotch Broom.	Noxious vegetation is regularly addressed through code enforcement.	City of Myrtle Point		Wildfire
City of North Bend	16-MH-01/ Complete	n/a	Participate in the FEMA Risk Map discovery, hazard study, and resilience meeting processes.	High priority action #1 from 2016. This FEMA process was completed when the new preliminary FIRM maps were released. City staff worked with state and federal partners to update their flood ordinance and maps in advance of the FEMA flood maps becoming effective in 2018.	City of North Bend Planning Department	DLCD, FEMA	Multi-Hazard



	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards address ed</b>
City of North Bend	16-MH-02/ Complete	n/a	Utilize the final multi-hazard risk report and assessment developed by DOGAMI and FEMA's RiskMap program to update the Goal 7 section of the North Bend Comprehensive Plan.	High priority action #2 from 2016.	City of North Bend Planning Department	DLCD, Coos County Planning	Multi-Hazard
City of North Bend	16-MH-03/ Ongoing	22-MH-13/ Ongoing	Continue to review city comprehensive plan and zoning ordinance for the need to update hazard specific section to reflect the latest information on natural hazards.		City of North Bend Planning Department		Multi-Hazard
City of North Bend	16-MH-04/ Ongoing	22-MH-09/ Ongoing	Continue to implement public education programs regarding natural hazards.		City of North Bend		Multi-Hazard
City of North Bend	16-MH-05/ Complete	n/a	Identify and map all roads, private drives, logging trails to increase the ability of firefighters to locate and gain access to provide services and/or evacuations.		City of North Bend	Coos County Emergency Management	Multi-Hazard

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of North Bend	16-MH-06/ Not Started	22-WS-01/ Not Started	Enhance strategies for debris management relating to severe wind and winter storm events.		City of North Bend		Multi-Hazard
City of North Bend	n/a	North Bend 22-MH-01	Develop a risk assessment for sea level rise and tsunami risk for industrial lands. Consider a feasibility study for expanding the UGB to include North Spit lands for annexation to replace existing industrial zoned lands.		City of North Bend	Port of Coos Bay, Coos County / DLCD, FEMA, NOAA	Multi-Hazard
City of North Bend	16-EQ-01/ Ongoing	22-EQ-01/ Ongoing	Seek funding to retrofit buildings and/or infrastructure at risk of damage in a high magnitude earthquake.	The city is exploring funding for seismic retrofits via Business Oregon.	City of North Bend		Earthquake
City of North Bend	16-FL-01/ Ongoing	22-FL-02/ Ongoing	Ensure continued compliance with the National Flood Insurance Program (NFIP) through enforcement of local floodplain ordinance.		City of North Bend Planning Department	DLCD, FEMA	Flood
City of North Bend	16-FL-02/ Not Started	22-FL-03/ Ongoing	Review current stormwater capabilities to determine necessity for new or additional mitigation actions.		City of North Bend Public Works		Flood

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of North Bend	16-LS-01/ Not Started	22-LS-01/ Not started	Work with DOGAMI to identify and map high risk slide areas to create an accurate logistical assessment.	22-LS-01: Continue to track and mitigate landslide events along major roadways by developing data, designs, funding requests, and appropriate mitigation measures for implementation.	City of North Bend Public Works	DOGAMI, ODOT	Landslide
City of North Bend	16-LS-02/ Not Started	22-LS-01/ Not started	Evaluate current and high hazard slide areas for mitigation prioritization and explore mitigation possibilities.		City of North Bend Public Works		Landslide
City of North Bend	16-TS-01/ Complete	n/a	Adopt a Tsunami Land Use Overlay Zone.	North Bend code references ASCE-7-16 as the tsunami design standard.	City of North Bend Planning Department	DLCD, DOGAMI, Coos County Planning	Tsunami
City of North Bend	16-WF-01/ Ongoing	22-MH-05/ Ongoing	Through multi-agency coordination, implement plan for control of Noxious Weeds, specifically Gorse, Scotch Broom, and Butterfly Brush.		City of North Bend		Wildfire

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards address ed</b>
City of Powers	16-MH-01/ Complete	n/a	Participate in the FEMA Risk Map discovery, hazard study, and resilience meeting processes.	High priority action #1 from 2016. This FEMA process was completed when the new preliminary FIRM maps were released. City staff worked with state and federal partners to update their flood ordinance and maps in advance of the FEMA flood maps becoming effective in 2018.	City of Powers	DLCD, FEMA	Multi-Hazard
City of Powers	16-MH-02/ Started	22-MH-13/ Not started	Utilize the final multi-hazard risk report and assessment developed by DOGAMI and FEMA's RiskMap program to update the Goal 7 section of the Powers Comprehensive Plan.	High priority action #3 from 2016.  City applied for grant funding from DLCD in 2021 to update the comp plan. This item may be included in that update if funding is awarded.	City of Powers	DLCD, Coos County Planning	Multi-Hazard

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of Powers	16-MH-03/ Complete	n/a	Continue to review city comprehensive plan and zoning ordinance for the need to update hazard specific section to reflect the latest information on natural hazards.	PC and staff review completed approximately 2018. No significant updates noted.	City of Powers		Multi-Hazard
City of Powers	16-MH-04/ Ongoing	22-MH-09/ Ongoing	Continue to implement public education programs regarding natural hazards.	<b>22-WF-01</b> City regularly posts FEMA educational flyers and posters in high-traffic public areas.	City of Powers		Multi-Hazard
City of Powers	16-MH-05/ Ongoing	22-MH-04/ Not started	Identify and map all roads, private drives, logging trails to increase the ability of firefighters to locate and gain access to provide services and/or evacuations.	Areas to be mapped are outside of city’s jurisdiction. Local group, VFW, volunteered to take on the project and coordinate with County/USFS.	City of Powers	Coos County Emergency Management	Multi-Hazard
City of Powers	16-MH-06/ Started	22-WS-01/ Ongoing	Enhance strategies for debris management relating to severe wind and winter storm events.	Public works crew coordinates with fire dept. to ensure debris is cleared from city streets year round.	City of Powers		Multi-Hazard

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards address ed</b>
City of Powers	16-EQ-01/ Started	22-EQ-01/ Started	Seek funding to retrofit buildings and/or infrastructure at risk of damage in a high magnitude earthquake.	In 2022 the City initiated design of a new civic center to replace the city admin, police, fire, ambulance, and library building. Final construction pending funding.	City of Powers		Earthquake
City of Powers	16-FL-01/ Complete	n/a	Ensure continued compliance with the National Flood Insurance Program (NFIP) through enforcement of local floodplain ordinance.	Permit forms drafted.	City of Powers	DLCD, FEMA	Flood
City of Powers	16-LS-01/ Ongoing	22-LS-01/ Not started	Work with DOGAMI to identify and map high risk slide areas to create an accurate logistical assessment.	No contact with DOGAMI/ODOT on this project. Slide areas appear to be primarily outside city jurisdiction.	City of Powers	DOGAMI, ODOT	Landslide
City of Powers	16-LS-02/ Complete	n/a	Evaluate current and high hazard slide areas for mitigation prioritization and explore mitigation possibilities.	Evaluation of slide areas appear to be primarily outside of city's jurisdiction.	City of Powers		Landslide
City of Powers							

	<b>2016 Action Item #/ Status</b>	<b>2023 Action Item #/ Status</b>	<b>Mitigation Action</b>	<b>Notes</b>	<b>Project Lead(s)</b>	<b>Partners/ Funding</b>	<b>Hazards addressed</b>
City of Powers	16-WF-01/ Ongoing	22-MH-05/ Ongoing	Through multi-agency coordination, implement plan for control of Noxious Weeds, specifically Gorse, Scotch Broom, and Butterfly Brush.	City currently enforces noxious weeds ordinance within city limits during summer months (June 30-Sept 1).	City of Powers		Wildfire
City of Powers	16-WF-02/ Ongoing	22-WF-02/ Not started	Implement wildfire actions identified in the Coos County Community Wildfire Protection Plan.	High priority action #2 from 2016.			Wildfire

# III. PLANNING PROCESS

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## A. Plan Maintenance

The Plan Maintenance section details the formal process that will ensure that the Natural Hazard Mitigation Plan (NHMP) remains an active and relevant document. The plan maintenance program includes the responsibilities of the convener and steering committee, a meeting schedule and plan review checklist, a table for tracking changes, guidance for resuming the five-year update process, and best practices for public participation.

The Steering Committee and local staff are responsible for implementing this process, which includes maintaining and updating the Plan through a series of meetings outlined in the maintenance schedule below.

### Convener

The Coos County Emergency Manager takes responsibility for county plan maintenance as Convener. In this role, the Coos County Emergency Manager will facilitate the Coos County Hazard Mitigation Steering Committee meetings and foster communication with the rest of the members of the Steering Committee. Each of the participating cities will also identify local conveners to oversee city specific mitigation activities. Participating cities will coordinate with the county where appropriate. Plan implementation and evaluation will be a shared responsibility among all the assigned Hazard Mitigation Steering Committee members.

Convener responsibilities include:

- Scheduling meetings of the Coos County Hazard Mitigation Steering Committee and inviting key stakeholders to regular NHMP implementation meetings.
- Organizing Steering Committee meeting dates, times, locations, agendas, and member notification.
- Documenting the discussions and outcomes of committee meetings.
- Coordinating with elected officials on necessary risk-reduction policies.
- Coordinating with fellow department heads (e.g., planning, economic development, public works, etc.) on necessary risk-reduction implementation activities.
- Serving as a communication conduit between the Steering Committee and the public/stakeholders.
- Identifying emergency management-related funding sources for natural hazard mitigation projects; and,
- Utilizing the Risk Assessment as a tool for prioritizing proposed natural hazard risk reduction projects.

### Steering Committee

The Coos County Convener will engage the Coos County Hazard Mitigation Steering Committee to maintain, implement and update the NHMP. The Steering Committee responsibilities include:

- Attending NHMP maintenance, update and implementation meetings (or designating a representative to serve in place of the designated person).
- Serving as the local evaluation committee for FEMA funding programs such as the Hazard Mitigation Grant Program funds, Flood Mitigation Assistance, or Building Resilient Infrastructure and Communities (BRIC) program funds;

- Prioritizing and recommending funding for natural hazard risk reduction projects.
- Evaluating and updating the NHMP in accordance with the prescribed maintenance schedule.
- Developing and coordinating ad hoc and/or standing subcommittees as needed; and,
- Coordinating public involvement activities.

### Meeting Schedule

The Steering Committee will meet on a **semi-annual basis** (twice per year) to complete the following tasks. During the first meeting, prior to the wildfire/irrigation season, the Steering Committee will:

- Review existing action items to determine appropriateness for funding.
- Educate and train new members on the Plan and in general.
- Identify issues that may not have been identified when the plan was developed; and,
- Prioritize potential mitigation projects using the methodology described below.

The second meeting of the year will take place in early fall, following the wildfire/irrigation season. During the second meeting the Steering Committee will:

- Review existing and new risk assessment data.
- Discuss methods for continued public involvement; and,
- Document successes and lessons learned during the year.

These meetings are an opportunity for the cities to report back to the county on progress that has been made towards their components of the NHMP. The Steering Committee may revise the above schedule as resources and events shift.

The Convener will be responsible for documenting the outcome of the semi-annual meetings. The process the Steering Committee will use to prioritize mitigation projects is detailed in the section below. The Plan's format allows the County and participating jurisdictions to review and update sections when new data becomes available. New data can be easily incorporated, resulting in a NHMP that remains current and relevant to the participating jurisdictions.

### Five-Year Review of Plan

This plan will be updated every five years in accordance with the update schedule outlined in the Disaster Mitigation Act of 2000. **The Coos County NHMP is due to be updated by March 15, 2028.** The convener will be responsible for organizing the committee to address plan update needs. The steering committee will be responsible for updating any deficiencies found in the plan, and for ultimately meeting the plan update requirements.

The following checklist can assist the convener in determining which plan update activities can be discussed during regularly scheduled plan maintenance meetings, which activities require additional meeting time and/or the formation of sub-committees, and which should be part of the five-year plan update review.

## Update Checklist

**Table III-1. Natural Hazards Mitigation Plan Maintenance Checklist**

Question	Yes	No	Plan Update Action
Is the planning process description still relevant?			Modify this section to include a description of the plan update process. Document how the planning team reviewed and analyzed each section of the plan, and whether each section was revised as part of the update process. (This toolkit will help you do that).
Do you have a public involvement strategy for the plan update process?			Decide how the public will be involved in the plan update process. Allow the public an opportunity to comment on the plan process and prior to plan approval.
Have public involvement activities taken place since the plan was adopted?			Document activities in the "planning process" section of the plan update
Are there new hazards that should be addressed?			Add new hazards to the risk assessment section
Have there been hazard events in the community since the plan was adopted?			Document hazard history in the risk assessment section
Have new studies or previous events identified changes in any hazard's location or extent?			Document changes in location and extent in the risk assessment section
Has vulnerability to any hazard changed?			Document changes in vulnerability in the risk assessment section
Have development patterns changed? Is there more development in hazard prone areas?			Document changes in vulnerability in the risk assessment section
Do future annexations include hazard prone areas?			Document changes in vulnerability in the risk assessment section
Are there new high risk populations?			Document changes in vulnerability in the risk assessment section
Are there completed mitigation actions that have decreased overall vulnerability?			Document changes in vulnerability in the risk assessment section
Did the plan document and/or address National Flood Insurance Program repetitive flood loss properties?			Document any changes to flood loss property status
Did the plan identify the number and type of existing and future buildings, infrastructure, and critical facilities in hazards areas?			1) Update existing data in risk assessment section, or 2) determine whether adequate data exists. If so, add information to plan. If not, describe why this could not be done at the time of the plan update
Did the plan identify data limitations?			If yes, the plan update must address them: either state how deficiencies were overcome or why they couldn't be addressed
Did the plan identify potential dollar losses for vulnerable structures?			1) Update existing data in risk assessment section, or 2) determine whether adequate data exists. If so, add information to plan. If not, describe why this could not be done at the time of the plan update
Are the plan goals still relevant?			Document any updates in the plan goal section
What is the status of each mitigation action?			Document whether each action is completed or pending. For those that remain pending explain why. For completed actions, provide a 'success' story.
Are there new actions that should be added?			Add new actions to the plan. Make sure that the mitigation plan includes actions that reduce the effects of hazards on both new and existing buildings.
Is there an action dealing with continued compliance with the National Flood Insurance Program?			If not, add this action to meet minimum NFIP planning requirements
Are changes to the action item prioritization, implementation, and/or administration processes needed?			Document these changes in the plan implementation and maintenance section
Do you need to make any changes to the plan maintenance schedule?			Document these changes in the plan implementation and maintenance section
Is mitigation being implemented through existing planning mechanisms (such as comprehensive plans, or capital improvement plans)?			If the community has not made progress on process of implementing mitigation into existing mechanisms, further refine the process and document in the plan.

Source: Oregon Partnership for Disaster Resilience.

Plan Adoption

The Coos County NHMP is developed and implemented through a collaborative process. After the Plan is locally reviewed and deemed complete, the Coos County Emergency Manager submits it to the State Hazard Mitigation Officer (SHMO) at the Oregon Department of Emergency Management (OEM). OEM submits the plan to FEMA- Region X for review. This review addresses the federal criteria outlined in the FEMA Interim Final Rule 44 CFR Part 201. Upon acceptance by FEMA, the County and participating cities will adopt the plan via resolution. Once the plan is formally adopted at the local level and formally approved by FEMA, the County and participating cities will retain eligibility for the Building Resilient Infrastructure & Communities (BRIC) Grant Program, the Hazard Mitigation Grant Program (HMGP) funds, and Flood Mitigation Assistance (FMA) program funds.

Plan Maintenance: Record of Revisions Form

During semi-annual Steering Committee meetings, document plan progress by adding information to this table. This could include Mitigation Action progress or success, disaster event updates to the relevant hazard chapter, or ideas for new Special Districts to join the next update.

**Table III-2. Record of Revisions**

Date	Jurisdiction(s)	Revision
Example:	Coos County	Impacts from xx/xx/20xx flood event in X, Y, Z areas submitted for disaster declaration request.
XX/XX/2023		
XX/XX/2023		
XX/XX/2023		
XX/XX/2023		
XX/XX/2024		
XX/XX/2024		
XX/XX/2025		
XX/XX/2025		

Steering Committee Operating Protocol

## Coos County Multi-Jurisdictional Natural Hazard Mitigation Plan Steering Committee Operating Protocol

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**Basic Requirements:**

- One representative from each jurisdiction will attend each full Steering Committee meeting. This representative will sign in and provide cost share documentation for their meeting attendance and preparation.
- Each jurisdiction will facilitate an internal planning process and engage the public/ their constituents. All meetings and public engagement efforts will be documented to the best of the ability of the participants.
- Each jurisdiction agrees to adopt the final plan.
- Completing the basic FEMA requirements is the responsibility of each jurisdiction.

**Overall Process:**

- Plan on meeting approximately quarterly.
- Ask questions or ask for help if needed.
- Participate and share, helping to formulate a joint vision. Engage this opportunity for collaboration.

**Decision-making Process: *Proposal—Discussion—Decision***

- Decisions will be associated primarily with written proposals, shared in advance, or with enough substantive presentation at the meeting that the proposal is clear, and the group can adequately discuss it prior to a decision. Many concepts and ideas will be discussed that will not require formal decisions, however, there will be specific proposals for how the plan is outlined, etc.
- We will strive for consensus but use a voting process to make decisions. **Each jurisdiction formally participating in the plan will receive one vote (yes or no).** The primary representative or the person in attendance will be the voting representative for the jurisdiction and is expected to wield voting authority. However, if the person wants to register their vote either as a ‘stand-aside’ due to a moral quandary or an ‘abstention’ due a lack of understanding of the question being called, that is acceptable.

## Plan Update History

### 2010 Coos County Natural Hazard Mitigation Plan

The first Coos County Multi-Jurisdictional NHMP was approved by FEMA in 2010. In 2008, the Oregon Partnership for Disaster Resilience (OPDR/The Partnership) at the University of Oregon's Community Service Center partnered with the Oregon Department of Emergency Management (OEM) and Coos County to develop a Pre-Disaster Mitigation Planning Grant proposal. Once the Partnership, OEM, and the participating communities were awarded the grant, local planning efforts in this region began in 2009.

The following jurisdictions, agencies, and/or organizations were represented and served on the Steering Committee during the development of the 2010 Coos County NHMP:

- Coos County Planning Department
- Coos County Emergency Management
- City of Bandon
- City of Coos Bay
- City of Lakeside
- City of North Bend
- City of Powers
- Coos County Road Department
- Coos Health and Wellness
- Oregon Parks and Recreation Department
- Coquille Indian Tribe
- Coos-Curry Electric Cooperative
- Southwestern Oregon Public Safety Association

### 2016 Coos County Natural Hazard Mitigation Plan

The following jurisdictions, agencies, and/or organizations were represented and served on the Steering Committee during the development of the 2016 Coos County NHMP:

- Coos County Planning Department
- Coos County Emergency Management
- City of Bandon
- City of Coos Bay
- City of Lakeside
- City of North Bend
- City of Powers
- Coos County Road Department
- Coos Health and Wellness
- Oregon Dept. of Land Conservation & Development
- Oregon Parks and Recreation Department
- Coquille Indian Tribe
- Coos-Curry Electric Cooperative
- Southwestern Oregon Public Safety Association

## B. 2023 Plan Update

### Pre-Award

Coos County sent a letter of interest for a Pre-Disaster Mitigation (PDM) grant application the Oregon Department of Land Conservation and Development (DLCD) made to FEMA in 2018 to update the Coos County Multi-Jurisdictional Natural Hazards Mitigation Plan (Coos MJ-NHMP). Pre-award coordination between DLCD and Coos County Emergency Management began in January 2019 with a review of the proposed Intergovernmental Agreement (IGA) and the associated Scope of Work for the Coos County multi-jurisdictional process. A robust Steering Committee recruitment process was also conducted that included updating the contact information for local partners.

Pre-award meetings provided two overview presentations of the technical parts of the NHMP update process, a joint Steering Committee invitation/ DLCD consultation letter to three Tribes, and an introduction to cost share tracking. An array of interested parties joined the process, including Sumner Fire District, Coos Bay School District, and CERT volunteers. In addition, the Steering Committee outlined a solid public engagement plan. The plan update process saw an Emergency Manager transition, the COVID-19 pandemic, and a delay in FEMA funding by approximately a year. During the long delays, DLCD began project planning. A Memorandum of Agreement with a Scope of Work was developed and signed by the County, seven cities, and three special districts. Two special districts joined the planning process after pre-award was complete—a second hospital and a drainage district.

The following jurisdictions, agencies, and/or organizations were represented and served on the Steering Committee during the development of the 2023 Coos County NHMP (for a list of individuals, see the Acknowledgements section of this NHMP):

- Coos County
- City of Bandon
- City of Coos Bay
- City of Coquille
- City of Lakeside
- City of Myrtle Point
- City of North Bend
- City of Powers
- International Port of Coos Bay
- Port of Bandon
- Southern Coos Hospital District & Health Center
- Bay Area Hospital
- Haynes Drainage District
- Coquille Indian Tribe
- Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians
- Coos County CERT
- Coos Curry Douglas Business Development Corporation
- Coos Curry Electric
- Cow Creek Band of Umpqua Tribe of Indians
- Coos Bay School District
- Sumner Rural Fire Protection District
- Oregon Business Development Dept.
- Oregon Dept. of Land Conservation & Development
- Oregon Health Authority
- Oregon Parks & Recreation Dept.

### Plan Update Priorities

At the March 4, 2021, Steering Committee meeting, the following plan update priorities were proposed and affirmed:

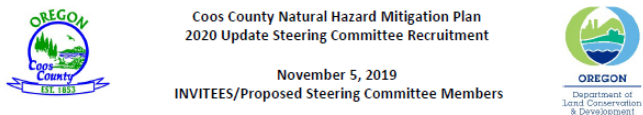
- Retain an integrated, succinct approach to the plan organization; improve plan logic and continuity.
- Update existing plan with risk assessment data from DOGAMI Risk Report, OCCRI report, other new data.
- Add new plan content for the new jurisdictions.
- Improve the capability assessment.
- Update/ expand mitigation actions.



### Pre-Award: Steering Committee Recruitment

For the 2023 Plan Update, extensive outreach and engagement of special districts was conducted by Coos County Emergency Management as plan convener which expanded the multi-jurisdictional partnership from six to thirteen jurisdictions.

**Figure III-1. Pre-Award Steering Committee Roster**



1. Mike Murphy, Coos County Emergency Manager, [Coos County Sheriff's Office](#)
2. Jill Rolfe, Director, [Coos County Planning](#)
3. John Rowe, Director Coos County Public Works/ [Roadmaster](#)
4. John Sweet, Coos County Commissioner
5. Melissa Cribbins, Coos County Commissioner
6. Bob Main, Coos County Commissioner
7. City Manager, [City of Bandon](#)
8. Charli Davis, City Planner, [City of Bandon](#)
9. Rodger Craddock, City Manager, [City of Coos Bay](#)
10. Jim Hossley, Director, [Coos Bay Public Works](#)
11. Roberta Vanderwall, Interim City Manager, [City of Coquille](#)
12. Julie Rowe, Finance Director, [City of Coquille](#)
13. Andrew Carlstrom, City Manager, [City of Lakeside](#)
14. Bill Schaefer, Mayor, [City of Myrtle Point](#)
15. Darin Nicholson, City Manager, [City of Myrtle Point](#)
16. Terrence E. O'Connor, City Administrator, [City of North Bend](#)
17. Robert Kohn, Mayor, [City of Powers](#)
18. Stephanie Patterson, City Recorder, [City of Powers](#)
19. Lanny Boston, Coos Fire Defense Board/Bandon Fire District
20. Mike Gibbs, Bridge Fire District
21. Mick Sneddon, Fire Chief, Charleston Fire Department
22. Mark Anderson, Fire Chief, [Coos Bay Fire Department](#)
23. Dave Waddington, Coquille Fire Department
24. Bill Nelson, Fairview Fire District
25. Sam Mason, Millington Fire
26. Jerry Wharton, Fire Chief, Hauser Fire District
27. Jim Aldrich, Fire Chief, North Bay Fire District
28. Brian Waddington, North Bend Fire Department
29. Caley Sowers, District Manager, [Coos Soil & Water Conservation District](#)
30. Tenneal Wetherell, South Coast Education Service District
31. Doug Ardiana, Bandon School District
32. Bob Yester, North Bend School District
33. Bryan Trendell, Coos Bay School District
34. Candace McGowne, Coos Bay School District
35. Rick Roberts, Coos Bay School District
36. Tim Sweeney, Coquille School District
37. Dan Hinrichs, Bunker Hill School District
38. M. Shorb, Powers School District

39. Patrick Kerr, [International Port of Coos Bay](#)
40. Jeff Griffin, Port Manager, Port of Bandon
41. Joshua Adamson, Project Manager, Port of Bandon
42. Bob Cook, Coos County Airport District/ [Southwest Oregon Regional Airport](#)
43. Coquille Indian Tribe representative(s)
44. Confederated Tribes of the Coos, Umpqua, and Siuslaw Indians representative(s)
45. Coos-Curry Electric Cooperative, Inc. representative(s)
46. Todd Sherwood, Douglas Electric Coop
47. Oregon Parks and Recreation Department representative(s)
48. Dave Hudson, Southwestern Oregon Public Safety Association
49. Mike Robison, Oregon Department of Forestry/ Coos Forest Patrol
50. Carey Palm, Tribal Liaison & GIS Analyst, Oregon Health Authority, Health Security, Preparedness and Response
51. Edwin Flick, Healthcare Preparedness Program (HPP) Regional Liaison/Coordinator, Oregon Health Authority
52. Hui Rodomsky, South Coast Regional Representative, Oregon Dept. of Land Conservation & Development (DLCD)
53. Meg Reed, Coastal Shores Specialist, Oregon Dept. of Land Conservation & Development (DLCD)
54. Althea Rizzo, Geological Hazards Program Coordinator, Oregon Emergency Management (OEM)
55. Nick Schoeppner, Park Manager, Bullards Beach Management Unit, Oregon Parks and Recreation Department
56. Larry Becker, South Coast District Manager, Oregon Parks and Recreation Department

### Project Schedule

The pre-award time period for the 2023 Coos MJ-NHMP extended nearly a year longer than originally anticipated by DLCD. The original start date anticipated for post-award work was October 2019 and the actual post-award date was October 2020.

**Table III-3. Project Schedule**

COOS COUNTY MJNHMP Project Timeline *Update 3/4/21*														Plan Expires													
	Sep '20	Oct '20	Nov '20	Dec '20	Jan '21	Feb '21	Mar '21	Apr '21	May '21	Jun '21	Jul '21	Aug '21	Sep '21	Oct '21	Nov '21	Dec '21	Jan '22	Feb '22	Mar '22								
<i>Months to FOP end</i>	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1								
<b>PHASE I: PRE-AWARD ORGANIZATION</b>																											
6.0	Develop Scope of Work Execute IGA and Scope of Work																										
<b>PHASE 2: PLAN UPDATE</b>																											
7.0	Review and Update the Risk Assessment																										
8.0	Public Review of the Risk Assessment																										
9.0	Review and Update the Mitigation Strategy																										
10.0	Review and Update the Plan Maintenance Process																										
11.0	Public Review of the Mitigation Strategy and Plan Maintenance Process																										
12.0	Document the Planning Process																										
13.0	Review and Update Remaining Chapters																										
14.0	Finalize Draft MJNHMP for State and Federal Review																										
<b>PHASE 3: REVIEW AND APPROVAL PROCESS</b>																											
15.0	Submit Draft MJNHMP for State and Federal Review																										
16.0	Adopt Final Draft MJNHMP																										
	Receive Final FEMA Approval																										
	Receive Finalized FEMA-Approved Plan																										
<b>Key to Plan Tasks:</b>		<i>Proposed SC Meetings</i>		<b>X</b>	<i>Proposed Public Meetings:</i>		<b>X</b>																				

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## C. Public Participation

The Steering Committee guides the plan updates, so their activities, since they are all public, provide the core of the public participation activities. The Steering Committee meetings held during the plan update were open to the public, advertised via public notice, and usually had good participation from an array of community organizations with interest or capabilities associated with hazard mitigation. Notice of these meetings, other public outreach, other public meetings, the plan update survey with comment sections, and specific plan input solicited from community organizations are the other primary components of outreach. Generally, the following best practices encourage public input.

- Post copies of the plan on corresponding websites.
- Place articles in the local newspaper directing the public where to view and provide feedback.
- Use existing avenues such as school newsletters and utility bills to inform the public where to view and provide feedback.
- Present new and relevant information at community events such as the Preparedness Fair.
- Announce upcoming meetings through press releases in the newspaper and on the local radio station.

In addition to the involvement activities listed above, Coos County will ensure continued public involvement by posting the Coos County NHMP on the County's website (<http://www.co.Coos.or.us/>). The Plan will also be archived and posted on the University of Oregon Libraries' Scholar's Bank Digital Archive (<http://scholarsbank.uoregon.edu>).

Meetings: Steering CommitteeNovember 5, 2019

The November 5, 2019 meeting started the plan update process with the first of two in-person meetings. Twenty-seven attendees representing seven plan holder jurisdictions, four interested parties and four state agencies attended. Meeting #1 occurred in person at 201 N. Adams, Coquille, OR 47423 from 1:00 PM to 3:00 PM. Emergency Manager Mike Murphy, co-convener with DLCD, invited the interested parties and potential Steering Committee members who were in attendance. The group reviewed the IGA and scope of work, shared their mitigation priorities, and discussed potential outreach and community engagement strategies. In addition, Ed Flick, the Oregon Health Authority Regional Liaison, gave a presentation entitled, Coastal Hospital Resilience.

**Attendees:**

Melissa Cribbins, Coos County Commissioner  
 Bob Main, Coos County Commissioner  
 Mike Murphy, Coos County Emergency Manager  
 Kathleen Olson-Gray, Coos County Emergency Project Coordinator  
 Jill Rolfe, Coos County Planning Director  
 John Rowe, Coos County Public Works Director  
 Sonny Meyers, Coos County CERT/Eastside  
 Beverly Meyers, Coos County CERT/Eastside  
 Kathi Simonetti, City of Coquille Mayor  
 Ann Parker, City of Coquille City Councilor  
 Scott Sanders, City of Coquille Police Chief  
 Justin Ferren, City of Coquille Fire Chief  
 Mark Anderson, City of Coos Bay Fire Chief/Emergency Manager  
 Darin Nicholson, City of Myrtle Point City Manager  
 Jeff Griffin, Port of Bandon Port Manager  
 Thomas Durand, Port of Coos Bay/Coos Bay Rail Line Maritime Operations Manager  
 Rick Roberts, Coos Bay School District Facilities Manager (via phone)  
 Edie Jurgenson, RN, Southern Coos Hospital & Health Center Emergency Preparedness (Bandon)  
 Dennis Jurgenson, Southern Coos Hospital & Health Center Emergency Preparedness Manager (Bandon)  
 Armando Martinez, Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians Community Health Aide  
 Brian Cassoday, Coos Curry Electric Controller  
 Nick Schoeppner, Oregon Parks and Recreation Department, Bullards Beach Mgmt. Unit Park Manager  
 Tracy Loomis, Coos Curry Douglas Business Development Corporation Community Development Director  
 Sean Stevens, Business Oregon Regional Development Officer  
 Edwin Flick, Oregon Health Authority Healthcare Preparedness Program Regional Liaison  
 Hui Rodomsky, DLCD South Coast Regional Representative (via phone)  
 Pamela Reber, DLCD Natural Hazard Planner/ Coos County NHMP Update Project Manager

March 3, 2020

Twenty people, representing nine plan holder jurisdictions and three interested parties, attended the second Steering Committee meeting/second pre-award meeting. Meeting #2 occurred in person at 201 N. Adams, Coquille, OR 47423 from 1:00 PM to 3:00 PM. As Mike Murphy recently retired, the Coos County Sheriff's Office (Gabriel Fabrizio and Kathleen Olson-Gray) shared their current staffing and plans to recruit a new Emergency Manager. DLCD project manager Pam Reber presented the elements of the overall planning project and led the group to develop a decision-

making process and a public-engagement plan; to affirm the IGA and participation of eleven jurisdictions; and to approve the meeting notes from Nov. 5<sup>th</sup>, 2019.

**Attendees:**

Bob Main, Coos County Commissioner  
 John Sweet, Coos County Commissioner  
 Gabriel Fabrizio, Coos County Sheriff's Dept. Captain/Administrator  
 Kathleen Olson-Gray, Coos County Emergency Project Coordinator  
 Jill Rolfe, Coos County Planning Director  
 John Rowe, Coos County Public Works Director  
 Sonny Meyers, Coos County CERT/Eastside  
 Beverly Meyers, Coos County CERT/Eastside  
 Dennis Lewis, City of Bandon City Manager  
 Sam Baugh, City of Coquille City Manager  
 Mark Anderson, City of Coos Bay Fire Chief/Emergency Manager  
 Andrew Carlstrom, City of Lakeside City Manager  
 Darin Nicholson, City of Myrtle Point City Manager  
 Chelsea Schnabel, City of North Bend Planner  
 Josh Adamson, Port of Bandon Project Manager  
 Edie Jurgenson, RN, Southern Coos Hospital & Health Center Emergency Preparedness (Bandon)  
 Dennis Jurgenson, Southern Coos Hospital & Health Center Emergency Preparedness Manager (Bandon)  
 Tracy Loomis, Coos Curry Douglas Business Development Corporation Community Development Director  
 Rob Aton, Sumner Rural Fire Protection District Fire Chief  
 Aaron Reisenbigler, Sumner Rural Fire Protection District Training Officer  
 Hui Rodomsky, DLCDC South Coast Regional Representative  
 Pamela Reber, DLCDC Natural Hazard Planner/ Coos County NHMP Update Project Manager

May 5, 2020

The May 5, 2020, online meeting was attended by 16 people representing eight plan holder jurisdictions, one interested party, and two state agencies. Meeting #3 occurred online via Zoom from 1:00 PM to 3:30 PM. The Steering Committee reviewed and approved the March 3<sup>rd</sup>, 2020, minutes and a joint DLCDC/Steering Committee consultation letter to the three Tribal Nations with interest in Coos County. The group discussed technology access and logistics of conducting business remotely during the COVID-19 pandemic. The group also provided updates on the status of IGA adoption and discussed how to view hazard data via map viewers for the risk assessment. The project continued to be restricted to pre-award business and was impacted by the resignation of the long-time emergency manager.

**Attendees:**

Gabriel Fabrizio, Coos County Sheriff's Dept. Captain/Emergency Manager  
 Kathleen Olson-Gray, Coos County Emergency Project Coordinator  
 Jill Rolfe, Coos County Planning Director  
 Armando Martinez, Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians  
 Megan Lawrence, City of Bandon City Planner  
 Mark Anderson, City of Coos Bay Fire Chief  
 Sam Baugh, City of Coquille City Manager  
 Mark Anderson, City of Coos Bay Fire Chief/Emergency Manager  
 Darin Nicholson, City of Myrtle Point City Manager  
 Chelsea Schnabel, City of North Bend Planner  
 Jeff Griffin, Port of Bandon Port Manager  
 Edie Jurgenson, RN, Southern Coos Hospital & Health Center Emergency Preparedness (Bandon)  
 Dennis Jurgenson, Southern Coos Hospital & Health Center Emergency Preparedness Manager (Bandon)  
 Jevra Brown, Department of State Lands, Aquatic Resource Planner  
 Hui Rodomsky, DLCDC South Coast Regional Representative  
 Pamela Reber, DLCDC Natural Hazard Planner/ Coos County NHMP Update Project Manager

March 4, 2021

The March 4, 2021 online meeting was attended by 23 people representing nine plan holder jurisdictions, three local interested parties, and four state agencies. Meeting #4 occurred online via Zoom Webinar from 2:00 PM to 4:00 PM. The meeting featured introductions, a new plan update website announcement, and the beginning of the risk assessment after nearly a one-year funding delay of the project start. The Steering Committee reviewed and approved the May 5th, 2020 notes and the use of a memo format for tracking the plan update. The group discussed technical aspects of the risk assessment, including loss exposure, loss estimation, and the OEM Hazard Vulnerability Analysis methodology. The group also reviewed the plan hazards, hazard events, and whether to include infectious disease as a hazard. The group affirmed the proposed plan update priorities and signaled interest in securing plan comments via a community survey.

**Attendees:**

Gabriel Fabrizio, Coos County Co-convener  
 Jill Rolfe, Coos County  
 John Rowe, Coos County  
 Philip Nel, Coos Health and Wellness  
 Kathleen Olson-Gray, Coos County  
 Debbie Mueller, Coos County volunteer  
 Megan Lawrence, City of Bandon  
 Scott Sanders, City of Coquille  
 Mark Anderson, City of Coos Bay  
 Darin Nicholson, City of Myrtle Point  
 Chelsea Schnabel, City of North Bend  
 Jeff Griffin, Port of Bandon

Mike Dunning, Port of Coos Bay  
 Victoria McNeely, Southern Coos Hospital  
 Jason Cook, Southern Coos Hospital  
 Jeff Stump, Confederated Tribes  
 Tracy Loomis, CCD Business Dev. Corp.  
 Jessica McCormick, Oregon Health Authority  
 Ericka Mason, Oregon Health Authority  
 Sean Stevens, Business Oregon  
 Jevra Brown, Department of State Lands  
 Pamela Reber, DLCD Project Manager  
 Ingrid Caudel, DLCD Staff

April 22, 2021

The April 22, 2021, online meeting was attended by 16 people representing 9 plan holder jurisdictions and 2 state agencies. Meeting #5 occurred online via Zoom Webinar from 10:00 AM to 12:00 PM. The meeting featured a review of the draft Hazard and Planning Process chapters, an introduction to conducting the Hazard Vulnerability Assessment (HVA), and a review of the proposed Coos County Community Hazard Survey. The committee welcomed the Haynes Drainage District to the plan update. Participants gave input about where and how hazards affect their community and how their jurisdictions address them. The Steering Committee reviewed and approved the March 4th, 2021, meeting notes and the issuance of the community hazard survey with edits.

**Attendees:**

Kathleen Olson-Gray, Coos County  
 Debbie Mueller, Coos County volunteer  
 Jeff Griffin, Port of Bandon  
 Mark Anderson, City of Coos Bay  
 Jason Cook, Southern Coos Hospital  
 Victoria McNeely, Southern Coos Hospital  
 Darin Nicholson, City of Myrtle Point  
 Chelsea Schnabel, City of North Bend

Hui Rodomsky, DLCD S. Coast Regional Rep.  
 Hailey Sheldon, City of Coquille  
 Megan Lawrence, City of Bandon  
 Scott Sanders, City of Coquille  
 Greg Stone, Haynes Drainage District  
 Ericka Mason, Oregon Health Authority  
 Jessica McCormick, Oregon Health Authority  
 Pamela Reber, DLCD Project Manager

October 21, 2021

The October 21, 2021 online meeting was attended by fifteen people representing eight plan holder jurisdictions, one interested party, and two state agencies. Meeting #6 occurred online via Zoom Webinar from 1:00 PM to 2:30 PM. The meeting featured a presentation on developing problem statements, mitigation action development, and a review of windstorm and wildfire hazards. The group affirmed the accuracy of the April 22, 2021 meeting notes.

**Attendees:**

**Chip Delyria, Coos County Emergency Services Manager**  
**Debbie Mueller, Coos County Emergency Management**  
**Jeff Griffin, Port of Bandon**  
**Mark Anderson, City of Coos Bay**  
**Rob Aton, Sumner Fire**  
**Jill Rolfe, Coos County Planning**  
**Mike Dunning, Port of Coos Bay**

**Brandon Collura, Port of Coos Bay**  
**Jason Cook, Southern Coos Hospital**  
**Chelsea Schnabel, City of North Bend**  
**Jeremy Pitts, Bay Area Hospital**  
**Hui Rodomsky, DLCD South Coast Regional Rep.**  
**Scott Sanders, City of Coquille**  
**Ericka Mason, Oregon Health Authority**  
**Pamela Reber, DLCD Project Manager**

November 3, 2022

The November 3, 2022 online meeting was attended by eleven people representing five plan holder jurisdictions, one interested party, and one state agencies. Meeting #7 occurred online via Zoom meeting from 3:30 PM to 5:30 PM. The meeting featured a presentation on the Oregon Climate Change Research Institute’s Future Projections Report for Coos County.

Attendees: Chip Delyria, Debbie Mueller, Jill Rolfe, Chris MacWhorter, Mike Dunning, Jeremy Pittz, Mark Anderson, Melissa Cribbins, Erica Fleishman, Dominique Bachelet, Pam Reber.

January 18, 2023

The January 18, 2023 online meeting was attended by thirteen people representing eight plan holder jurisdictions, and one state agency. Meeting #8 occurred online via Zoom meeting from 9:00 AM to 10:30 AM. The meeting featured a review of the final plan components. The group affirmed the draft plan for submission to OEM and FEMA for review.

Attendees: Chip Delyria, Debbie Mueller, Jill Rolfe, Margaret Barber, Mike Dunning, Jeremy Pittz, Mark Anderson, Jason Cook, Jeff Griffin, Joshua Adamson, Stephanie Patterson, Melissa Bethel, Pam Reber.

Meetings: Regional

Regions 3 & 5 Healthcare Coalition Meeting

The May 5, 2021, online meeting of the Oregon Health Authority Hospital Preparedness Healthcare Coalition for Regions 3 & 5 featured a presentation about the Coos County 2021 MJNHMP update by Pam Reber, DLCD Project Manager and Gabe Fabrizio, Coos County Emergency Manager & Plan Convener. The presentation featured a review of the plan update process, participating jurisdictions, and hazards facing Coos County. Soon after the meeting, the Bay Area Hospital in Coos Bay joined the multi-jurisdictional process.



## D. Community Hazard Survey

Coos County and plan holder jurisdictions conducted robust outreach during the plan update process despite being impacted by the first year of the COVID-19 pandemic. See the full survey report for the extensive comments and feedback provided by over 300 community members.

### Introduction

The Coos County Community Hazard Survey was conducted as a part of the 2023 Coos County Multi-Jurisdictional Natural Hazard Mitigation Plan (MJNHMP) update. The thirteen jurisdictions participating in the plan update distributed the survey starting May 12<sup>th</sup> and made it available electronically through June 2021, securing 390 responses from across the county.

The Coos County Community Hazard Survey asked the public's opinion about the natural hazards most likely to impact the area, personal concerns about those hazard impacts, desired government response to the threat of natural hazards, and personal preparedness. The results of the survey are useful in providing public input and local knowledge necessary to update both the risk assessment and the mitigation strategy components of the plan update.

### Methodology

The survey was comprised of twenty-nine questions of which twenty-one had yes-no-unsure responses including nine about the plan hazards in general. Two questions asked respondents to rank mitigation activities (1-10). Five of the nine general plan hazard questions had follow-on questions triggered by a yes or unsure response about hazard concern. Four multiple-choice follow-on questions asked about government response to earthquake, flood, tsunami, and wildfire—and these also had an open-ended “other” response. The final three questions were: an open-ended general comment, an opportunity for the commenter's name to appear with their comment, and an opportunity to provide an email address to receive additional information. The survey questions were developed in a collaboration between the DLCDC Project Manager and the Coos County MJNHMP Steering Committee, in particular Coos County Emergency Management. The final questions were entered into Survey Monkey electronic survey tool by DLCDC administrative staff and after review by the Coos County MJNHMP Steering Committee, the electronic survey link was distributed publicly via press releases and local websites. All survey responses were garnered using this electronic format during the period May 12 to June 30, 2021.

### Results

For documentation purposes, the twenty-nine questions asked are shown in these survey results. In addition, all public comments are shown in full text except those that used inappropriate language had those words removed. These comments and the overall findings were summarized into sections for use by local jurisdictions in their assessment of risk and development of mitigation actions.

#### Ranked Government Disaster Priorities

1. Ensure that lifeline infrastructures such as bridges, roads, water supply, communications, electricity, and fuel supply are built to endure most hazard events with minimal damage, interruptions, or secondary disasters.
2. Retrofit and improve critical facilities such as police, fire, emergency medical services, hospitals, schools, etc. to ensure they endure most hazard events with minimal damage.



3. Ensure that hospitals have uninterrupted power and water in all disaster scenarios.

### Ranked Infrastructure Protection/ Resilience Priorities

1. Communications
2. Domestic water supply
3. Fire/ Police/ EMS
4. Emergency Operations Center/ Government operations
5. Bridges
6. Hospital/Other inpatient facility

### Key Takeaways: Earthquake, Flood, Tsunami, and Wildfire

- Earthquake mitigation findings:
  - More than 75% of respondents support strengthening of critical facilities and utilities to withstand earthquake shaking.
  - Funding for home seismic retrofits was the most popular unsolicited need identified as ten respondents stated this unsolicited response in the comments.
- Flood mitigation findings:
  - 49% of respondents support improving flood response capabilities for public works.
  - 44% support limiting the types of land uses allowed in the floodplain.
  - 31% support a buyout program for homes subject to flooding
  - 25% of open-ended comments support flood improvements that secure infrastructure and critical facilities.
- Tsunami mitigation findings:
  - 86% of respondents support the improvement of streets, bridges, and trails that will serve as evacuation routes.
  - 65% support limiting the types of land uses allowed in the tsunami inundation areas (e.g., prohibit high density accommodations, schools, hospitals, etc.)
  - 35% of open-ended comments support the installation/ improvement of tsunami evacuation signage and infrastructure (and includes two mentions of tsunami evacuation towers).
- Wildfire mitigation findings:
  - Mitigating fire risk by greatly reducing Gorse infestations is the highest priority wildfire mitigation action in the county.
  - Beyond gorse, a high level of wildfire resilience was indicated which could be read as clear public support for closing the following gaps as mitigation actions:
    - 17% of respondents said their home address is NOT well-signed and clearly visible from the street (reflective numbers visible at night, without vegetation impeding visibility, etc.)
    - 27% said they did NOT have a wildfire evacuation plan in place.
    - 26% have retrofit their home to withstand natural hazards; 55% have created firebreaks around their homes; 45% have prepared an alternate water and/or power supply for use in a disaster.

## Public Comment Summaries

The following sections are summaries drawn directly from public comments designed to support use of the public sentiment in hazard mitigation planning.

### Personal Mitigation Actions Being Taken by Community Members

The survey found that Coos County residents/respondents had a high level of awareness of preparedness overall, but open-ended comments identified a need to support home retrofits for earthquake and wildfire mitigation. In fact, 72% of respondents have homes built before seismic standards were in place and 22% have considered seismic retrofits for their homes. One respondent had even installed a hydrant supplied by 5000 gal. tank, firehose and pump, indicating a high level of concern likely resulting from education and outreach efforts by mitigation partners but possibly a lack of infrastructure or government services in some parts of the county. Other Home/Business Renovations that mitigate hazards that respondents noted having done included:

- Adding a metal roof (wildfire)
- Gorse removal & creation of fire breaks (wildfire)
- Smoke detectors & fire extinguishers available and functioning (wildfire)
- Developing a tsunami evacuation plan (tsunami)
- Adding shear walls to some rooms in the house (earthquake).
- Adding seismic straps to the water heater (earthquake).
- Installing a French drain under the house to provide better drainage (flood).

### Suggested Mitigation Actions

The comment sections of the survey garnered a wide array of suggestions for mitigation actions. They are captured here for use in mitigation planning by the participating jurisdictions.

- Partner with OSU Extension to provide trainings on preparedness and hazard mitigation measures for homeowners.
- Strengthen critical facilities and utilities to withstand earthquake shaking.
- Consider incentives, grant funding, or tax breaks to encourage seismic retrofits by local homeowners, property managers, senior housing, and mobile home parks.
- Provide workshops for homeowners about seismic risks to residential structures and recommend retrofits for common structure types or how to select a qualified contractor.
- Protect highways and other lifelines in the event of a major disaster.
- Develop informational materials that explain the importance of hazard-specific insurance, the availability of flood insurance to cover tsunami losses, and the need to seismically retrofit buildings for them to be insurable for earthquake.
- Eradicate gorse from open space as well as private property, especially on properties in the Rosa Road vicinity of Bandon.
- Include information on fire prevention earthquake education.
- Prevent critical infrastructure, hazardous facilities, public buildings from being built in the tsunami inundation zones.
- Make sure tsunami areas are clearly identified so you know you are in a tsunami area
- Build or require tsunami vertical evacuation towers in areas with high population density and where it is impossible to evacuate on foot out of the tsunami inundation zone in a timely manner.

- Require new or renovated high-density housing and schools in tsunami inundation zone to have vertical evacuation towers.
- Install tsunami signs and evacuation routes for Front Street in Coos Bay.
- Look into tsunami reduction modifications in the bay.
- Install/improve tsunami evacuation signage and infrastructure: Develop evacuation plans and educate the community about evacuation routes and practices.
- Develop specific evacuation plans and training/exercises for mobile home parks.
- Ensure that community drinking water storage tanks have an auto shut off valve that can function in case of an earthquake, so this potable water is available for disaster recovery instead of draining out through broken water lines; Replace or retrofit concrete water cistern with a seismically sound option.
- Rebuild Myrtle Point High School.
- Retrofit Myrtle Crest Elementary School.
- Retrofit the Myrtle Point Community Center (old middle school).
- Consider re-establishing rail transportation links to serve the community and local industry if the highway is closed for an extended period of time.
- Form a Rural Fire Protection District for the Allegany area so renters can secure fire insurance; require the formation of fire districts where there are homes.
- Project future risks in planning given rising sea level and increased storms.
- Restore marsh lands and remove dikes that limit the flood plain.
- Make sure homes downstream from the dam know about their risk of flood in the event of a dam failure; allow first responders with heavy equipment access to Water Board land to shut things down quickly in the event of an earthquake or flood.
- Address flooding on county roads in Allegany and on East Bay Drive.
- Mitigate future flooding by using dikes, reservoirs, retention ponds. See how the Dutch deal with their water problems - hydraulic dikes, etc.
- Regulate or prohibit RVs in the floodplain. Regulation of hazard areas and enforcement of existing regulations.
- Subsidize flood insurance for those that can't afford it.
- Repair dated or failed flood gates to address flooding—specifically the Haynes Inlet.
- Address the island created by the loss of the Crown Point bridge in a disaster scenario.

#### Populations with Additional Risk

- Veterans and low-income people will be unable to improve their homes and properties without financial assistance.
- Mobile homes and mobile home parks have structures at greater risk of hazard impact and likely fewer resources with which to prepare.
- People who are delinquent on property taxes probably do not carry home insurance.
- Backup power for medical equipment that requires electricity like nebulizers for COPD, etc.
- People who live rurally, are isolated, or don't reach out are likely unaware of their hazard risks.

### Suggested Preparedness Actions

The comment sections of the survey garnered a wide array of suggestions for preparedness actions.

- Focus tsunami education in low areas near water throughout the county.
- Educate about shelter in place, preparations to help neighbors, alternate means of communications and other self-reliance tools need to become standard in the disaster education curriculum.
- Preposition more supplies on high ground in all communities: stockpile water and basics at high ground locations; plan for toilet facilities at points where people will gather; Stage satellite phones and solar panels to charge them at these locations.
- Coordinate with school districts on communication to the public about disaster plans.
- Map where necessities can be replenished such as water, basic medical needs etc.
- Communicate with the community about the risk associated with bridges and other lifeline interruption in an earthquake (power, water, communications, etc.), response plans, and how to prepare.
- Educate the community about the Emergency Operations Plan.
- Make sure tsunami areas are clearly identified so you know you are in a tsunami area.
- Have a call feature practice drill to survey and coach—real practice drills, not just maps and brochures.
- Create an informational calendar with preparedness activities.
- Secure emergency desalination equipment.

### Completed Mitigation Actions

- Recent Public Works shop renovation in Coquille included seismic upgrades.
- Communication structure and policies between county, cities and emergency services such as mutual aid agreements.

Survey Questions

Hazard Concerns

- Earthquake, Drought, and Wildfire, followed by Tsunami, Wind Storm, and Winter Storm are the hazards of greatest community concern for impacts to home, family, or livelihood.

Results in Ranked Order

Hazard	Concern of hazard affecting home, family, or livelihood?			Total Rank
	Yes	No	Unsure	
Earthquake	292	69	29	1
Drought	219	140	31	2
Wildfire	210	121	23	3
Tsunami	192	130	33	4
Wind Storm	169	198	34	5
Winter Storm	142	137	22	6
Coastal Erosion	117	215	58	7
Landslide	101	232	22	8
Flood	98	254	24	9

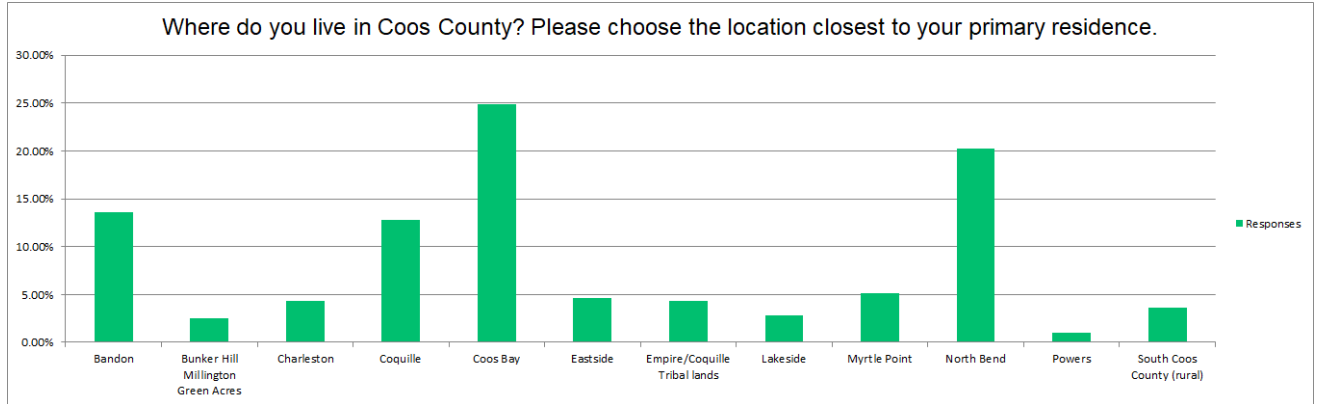
Results in Order Presented

Hazard	Concern of hazard affecting home, family, or livelihood?			Total Responses
	Yes	No	Unsure	
Coastal Erosion	30.00%	55.13%	14.87%	390
Drought	56.15%	35.90%	7.95%	390
Earthquake	74.87%	17.69%	7.44%	390
Flood	26.06%	67.55%	6.83%	376
Landslide	28.45%	65.35%	6.20%	355
Tsunami	54.08%	36.62%	9.30%	355
Wildfire	59.32%	34.18%	6.59%	354
Wind Storm	56.15%	32.56%	11.30%	301
Winter Storm	47.18%	45.51%	7.31%	301

### Respondent Characteristics

Nearly half (45%) of survey respondents live in the Coos Bay-North Bend urban area (176). Bandon and Coquille responses comprised 26% (103) of the total whereas nearly 9% (35) respondents were from Lakeside, Myrtle Point, and Powers. The unincorporated communities of Charleston, Eastside, Bunker Hill/ Millington/ Green Acres, or Empire/Coquille Tribal lands provided the balance of the survey responses—nearly 16% (62).

**Question 1: Where do you live in Coos County? Please choose the location closest to your primary residence.**



#### Question 1: Location

Answer Choices	Responses	
<b>Bandon</b>	13.59%	53
<b>Bunker Hill/Millington/Green Acres</b>	2.56%	10
<b>Charleston</b>	4.36%	17
<b>Coquille</b>	12.82%	50
<b>Coos Bay</b>	24.87%	97
<b>Eastside</b>	4.62%	18
<b>Empire/Coquille Tribal lands</b>	4.36%	17
<b>Lakeside</b>	2.82%	11
<b>Myrtle Point</b>	5.13%	20
<b>North Bend</b>	20.26%	79
<b>Powers</b>	1.03%	4
<b>South Coos County (rural)</b>	3.59%	14

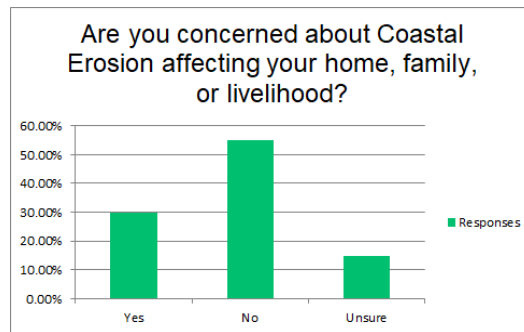
**Question 1: Location**

<i>Answer Choices</i>	<i>Responses</i>	
	Answered	390
	Skipped	0

**Question 2: Are you concerned about Coastal Erosion affecting your home, family, or livelihood?**

**Question 2: Coastal Erosion Concerns**

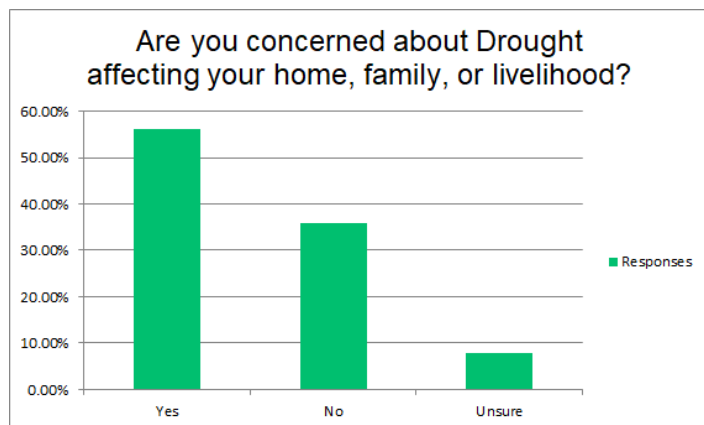
<i>Answer Choices</i>	<i>Responses</i>	
<b>Yes</b>	30.00%	117
<b>No</b>	55.13%	215
<b>Unsure</b>	14.87%	58
	Answered	390
	Skipped	0



**Question 3: Are you concerned about Drought affecting your home, family, or livelihood?**

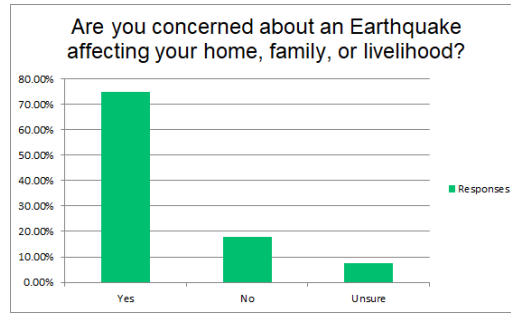
**Question 3: Drought Concerns**

<i>Answer Choices</i>	<i>Responses</i>	
<b>Yes</b>	56.15%	219
<b>No</b>	35.90%	140
<b>Unsure</b>	7.95%	31
	Answered	390
	Skipped	0



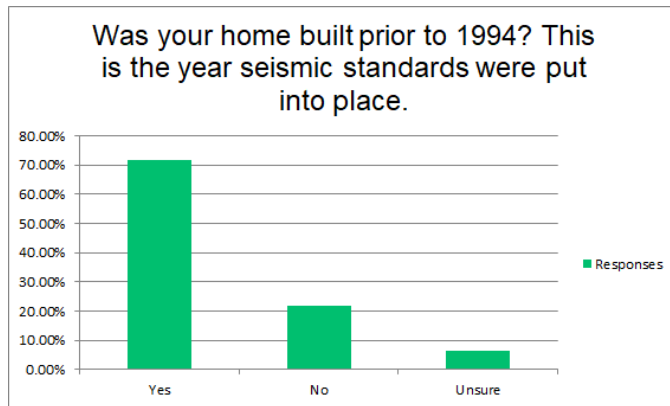
**Question 4: Are you concerned about an Earthquake affecting your home, family, or livelihood?**

Question 4: Earthquake Concerns		
Answer Choices	Responses	
<b>Yes</b>	74.87%	292
<b>No</b>	17.69%	69
<b>Unsure</b>	7.44%	29
	Answered	390
	Skipped	0



**Earthquake: Follow-on Questions**

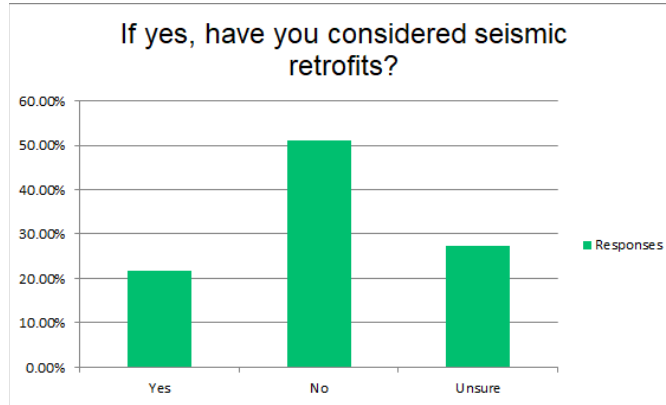
**Question 5: Was your home built prior to 1994? This is the year seismic standards were put into place.**



Question 5: Earthquake Year Built Pre-1994		
Answer Choices	Responses	
<b>Yes</b>	71.70%	228
<b>No</b>	22.01%	70
<b>Unsure</b>	6.29%	20
	Answered	318
	Skipped	72



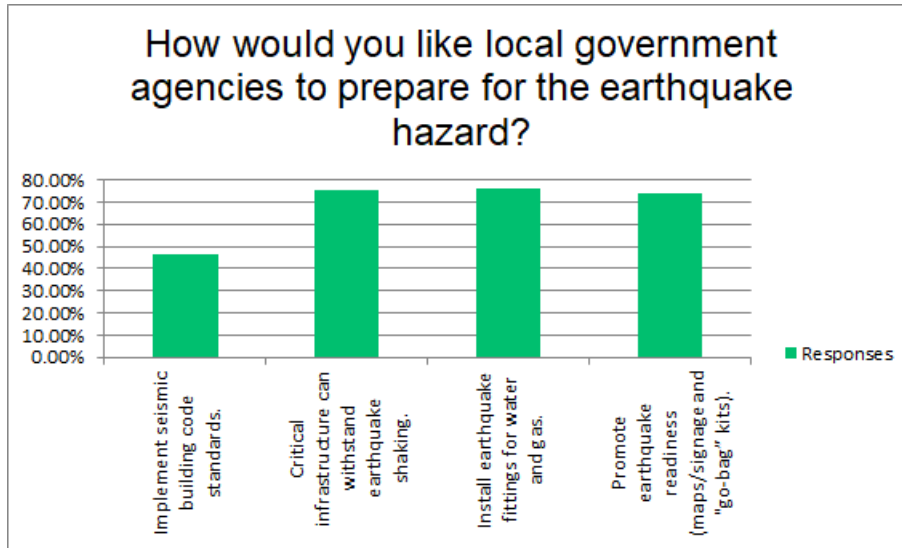
**Question 6: Have you considered seismic retrofits?**



Question 6: Earthquake Retrofits		
Answer Choices	Responses	
Yes	21.76%	52
No	51.05%	122
Unsure	27.20%	65
	Answered	239
	Skipped	151

**Earthquake: Follow-on Questions**

**Question 7: How would you like local government agencies to prepare for the earthquake hazard?**



**Question 7: Government Preparations for Earthquake**

<i>Answer Choices</i>	<i>Responses</i>	
Implement seismic building code standards.	46.60%	137
Strengthen and/or rebuild critical infrastructure to withstand earthquake shaking.	75.17%	221
Install earthquake fittings for water and gas (sensors, flexible connectors, shut off valves).	76.19%	224
Promote readiness through education, evacuation maps, signage and street markers, and guidance for how to make "go-bag" kits.	74.15%	218
Other	-	45
		Answered 294
		Skipped 96

**Other/ Comments: 44 comments were received reflecting the following priorities.**

- Funding for home retrofits: 10
- Secure infrastructure and retrofit critical facilities: 7
- Education: 6
- Preparedness: 7
- Regulate development in hazard zones: 4
- Community resilience: 4
- All of the above: 2
- Mitigate fire after earthquake (fuel/gas storage/lines/tanks): 2
- Train first responders: 1
- Evacuation routes, signage, infrastructure needed: 1

## Earthquake Open-Ended Responses

Earthquake Open-Ended Response Comments			
How would you like local government agencies to prepare for the earthquake hazard?			
#	Commenter	Comment	Response
1	Avery Horton, Bandon	Let citizens know not to expect help from the government and they will be on their own for a long time and to have months' worth of supplies. For those who live near the water, make sure they understand they will most likely lose everything.	Thank you for sharing your perspective—personal preparedness is very important. See this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>
2	Anonymous, Bandon	All of the above and help veterans and low income with their homes.	Thank you for sharing your perspective.
3	Anonymous, Bandon	Make Earthquake retrofit, for homes before 1994, affordable by grants or some kind of financial assistance! Keep us safe!	Thank you. This suggestion is being considered as a mitigation action.
4	Anonymous, Bandon	Funding for retro fitting	Thank you. This suggestion is being considered as a mitigation action.
5	Anonymous, Bandon	Help older home owners in older dwellings to access resources for retrofitting earthquake hazards	Thank you. This suggestion is being considered as a mitigation action.
6	Anonymous, Bandon	Earthquakes often trigger fires due to downed power lines, ruptured gas lines, etc. part of earthquake education should focus on fire prevention.	Thank you. Please see the Coos County Emergency Management webpage for a PDF with considerations:  <a href="https://www.co.coos.or.us/sites/default/files/fileattachments/sheriff039s_office/page/13791/home_fire_preparedness_and_considerations.pdf">https://www.co.coos.or.us/sites/default/files/fileattachments/sheriff039s_office/page/13791/home_fire_preparedness_and_considerations.pdf</a>
7	Anonymous, Bandon	Advice on upgrading my residence to better withstand an earthquake.	Thank you. Here are two seismic retrofit guides: Earthquake Preparedness in the Northwest: a Homeowner Guide <a href="https://enhabit.org/documents/Enhabit-Seismic-Homeowner-Guide_4-1-16.pdf">https://enhabit.org/documents/Enhabit-Seismic-Homeowner-Guide_4-1-16.pdf</a> Earthquake Retrofitting: House Bolting, Foundation Bolting & Cripple Wall Bracing <a href="https://www.earthquakesafety.com/earthquake-retrofitting.html">https://www.earthquakesafety.com/earthquake-retrofitting.html</a>
8	Anonymous, Bandon	Find money to help homeowners do seismic retro fitting	Thank you. This suggestion is being considered as a mitigation action.
9	Anonymous, Bunker Hill/ Millington/ Green Acres	First responders train more for event.	Thank you. The preparedness and response training of first responders does include all potential emergencies.

Earthquake Open-Ended Response Comments			
How would you like local government agencies to prepare for the earthquake hazard?			
#	Commenter	Comment	Response
10	Kathleen Hornstuen, Charleston	go-bag booklet on what to do in case of a disaster event of any kind. Including pandemic and computer hacking of critical services.	Thank you. This suggestion is an ongoing preparedness action—Coos County Emergency Management distributes a booklet entitled “Are you Ready? Preparing for Disasters and Terrorism in Coos County.”: <a href="https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet">https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet</a>
11	Jan Hodder, Charleston	Prevent critical infrastructure, hazardous facilities, public buildings being built in the tsunami inundation zones.	Thank you. This suggestion is being considered as a mitigation action.
12	Anonymous, Charleston	Promote building away from dangerous zones	Thank you. This suggestion is being considered as a mitigation action.
13	Kathleen Hornstuen, Charleston	Include tsunami education in low areas near water throughout the county	Thank you. This suggestion is being considered as a preparedness action.
14	Anonymous, Charleston	One of the biggest problems is that people in general think that they can just leave the area. Education about shelter in place, prepare to help neighbors, alternate means of communications and other self-reliance tools need to become standard in the disaster education curriculum.	Thank you for sharing your perspective—personal preparedness is very important. See this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>
15	James M Behrends, Coos Bay	more prepositioned supplies in all communities	Thank you. This suggestion is underway as a mitigation action.
16	Barb Shamet, Allegany, Or	Make all homes decentralized energy, each one producing its own power, rooftop wind turbines and solar cells	Thank you. This is an individual preparedness action dependent upon municipal ordinance.
17	Anonymous, Coos Bay	Making parents of students in Schools in Eastside comfortable in case of natural disasters.	Thank you. Your concern will be shared with Coos Bay School District.
18	Anonymous, Coos Bay	Set moratorium on siting hazardous facilities in tsunami zones or close to urban areas.	Thank you. This suggestion is being considered as a mitigation action.
19	Anonymous, Coos Bay	Obtain seismic upgrade grants for existing infrastructure and trickle that down to homeowners. Most cannot afford upgrades of their current living conditions.	Thank you. This suggestion is being considered as a mitigation action.
20	Anonymous, Coos Bay	Map where necessities can be replenished such as water, basic medical needs etc.	Thank you. This suggestion is being considered as a mitigation action.  More information is available on DOGAMI evacuation maps (subject to change) or <a href="http://nvs.nanoos.org/TsunamiEvac">http://nvs.nanoos.org/TsunamiEvac</a>

Earthquake Open-Ended Response Comments			
How would you like local government agencies to prepare for the earthquake hazard?			
#	Commenter	Comment	Response
21	Anonymous, Coos Bay	Education specifically for how homeowners can upgrade their older homes in an economical way.	Thank you. This suggestion is being considered as a mitigation action.
22	Anonymous, Coos Bay	Subsidize retrofits for homeowners, they are too expensive for my family to obtain	Thank you. This suggestion is being considered as a mitigation action.
23	Anonymous, Coos Bay	A Plan on how getting supplies to our community quickly when bridges and roads are out. Especially water, fuel, and food within 48 hours	Thank you for sharing your perspective—personal preparedness is very important because it may take more like 2 weeks or more to be able to reach everyone. See this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a> This is an ongoing concern with planning and considerations.
24	Anonymous, Coos Bay	Secure one armored route to I-5	Thank you for your input.
25	Harper Thompson, Coos Bay	All the above	Thank you for your input.
26	James Fox, Coquille	I only know one way from the highway to my home and I don't know how to escape if fire or earthquake prevents using that route. How can I get attention to this problem for me and my many neighbors in the Shelley Lane area?	Thank you. Please visit this link or the Coos County Emergency Management website to sign up for the Coos County Emergency Mass Notification System (Everbridge): <a href="https://member.everbridge.net/892807736724057/login">https://member.everbridge.net/892807736724057/login</a> to receive text alerts about evacuation. Coos Emergency Management will also send out press releases, Facebook notices, and specific evacuations (wildfire), will include door-to-door evacuation notices. However, evacuation routes are important research for residents to conduct on their own.

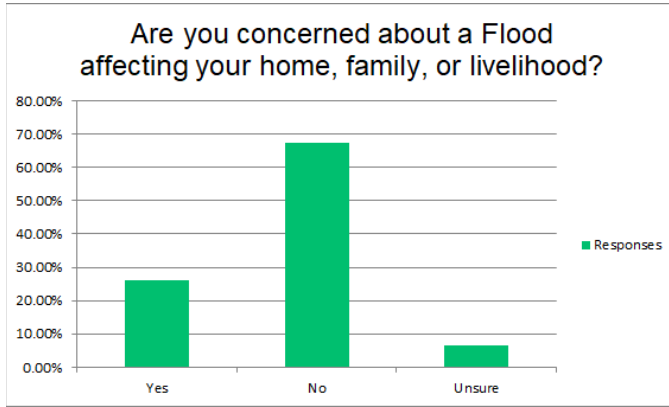
Earthquake Open-Ended Response Comments			
How would you like local government agencies to prepare for the earthquake hazard?			
#	Commenter	Comment	Response
27	Anonymous, Coquille	1. Provide workshops for homeowners that (1) illustrate examples of seismic risks to be aware of and maybe (2) examples of how to fix or the (3) type of contractor to trust to fix correctly or (4) how to evaluate if the cost of fixing is logical based on the value of the home. MAYBE the county should partner with OSU-extension to provide such service. 2. In the event of a quake many city water lines will break and quickly drain water in storage. The big tanks that hold community drinking water should have an auto shut off so there is a safe option to collect potable water at least for a few days. 3. Readiness education as described above.	Thank you. This suggestion is being considered as a mitigation action. For more information Earthquake Preparedness in the Northwest: A Homeowner Guide <a href="https://enhabit.org/documents/Enhabit-Seismic-Homeowner-Guide_4-1-16.pdf">https://enhabit.org/documents/Enhabit-Seismic-Homeowner-Guide_4-1-16.pdf</a>
28	Anonymous, Coquille	A new fire hall in Coquille financed via Urban Renewal funds	Thank you for your input. Planning is underway for future expansion.
29	Anonymous, Coquille	Recent shop that was built is retrofitted and there are already building code standards in place so there does not need to be more. They exist for all new building in Coos County already.	Thank you, this will be documented as a completed mitigation action. And you are correct, these standards do exist.
30	Anonymous, Eastside	Why bother... you let people burn trash. I can't open my windows 8 month out of the year. because of coos bay allowing TRASH BURNING!	These issues are beyond the scope of this plan and is a concern for the EPA.
31	Anonymous, Eastside	Do not approve any more Jordan Cove LNG permits! That's a danger to our safety especially if an earthquake was to happen!	Thank you for your input.
32	Anonymous, Empire/Coquille Tribal lands	Don't forget about those of us living in mobile homes and the specific dangers we face.	Thank you for sharing your perspective.
33	Anonymous, Empire/Coquille Tribal lands	County Board of Supervisors to take this a heck of a lot more seriously than they did COVID, and not cripple the people trying to help.	Thank you for your input.

Earthquake Open-Ended Response Comments			
How would you like local government agencies to prepare for the earthquake hazard?			
#	Commenter	Comment	Response
34	Anonymous, Empire/Coquille Tribal lands	Earthquakes may not damage much but can cause fires and explosions from existing fuel/gas storage/lines/tanks. Old coal mines can also catch fire like the one on the hillside by the old school building on Sherman in North Bend.	Thank you. This suggestion is being considered as a mitigation action. There are pre-planned emergency support functions or capabilities for each of these concerns.
35	Anonymous, Lakeside	all of the above	Thank you for your input.
36	Anonymous, Myrtle Point	We can't afford seismic retrofitting on our home. Please help with a grant program for older homes.	Thank you. This suggestion is being considered as a mitigation action.
37	Anonymous, Myrtle Point	Rebuild the high school, which has partially collapsed. Retrofit the elementary school. Retrofit the community center (old middle school). Consider re-establishing rail transportation links to serve the community and local industry in the event that the highway is closed for an extended period of time. Retrofit the water treatment facility. Replace the concrete water cistern with a seismically sound option. Inspect the bridges leading into town.	Thank you. These suggestions are being considered as mitigation actions. Infrastructure planning is ongoing and a concern of the current operations.
38	Anonymous, North Bend	Repair old tidegates.	Thank you. This suggestion is being considered as a mitigation action. Infrastructure planning is ongoing and a concern of the current operations.
39	Anonymous, North Bend	Stockpile water and basics at high ground locations. Plan for toilet facilities at points where people will gather. Satellite phones and solar panels to charge them are a must.	Thank you. This suggestion is being considered as a preparedness action.
40	Anonymous, North Bend	Certify local contractors to do needed strengthen and rebuild work.	Thank you. This suggestion is being considered as a mitigation action in coordination with state agencies.
41	Anonymous, North Bend	Very concerned about our bridge.	Thank you. Coordination with Oregon Department of Transportation is underway to address the seismic resilience of Coos County bridges.
42	Anonymous, North Bend	Education of citizens	Thank you for sharing your perspective—personal preparedness is very important because it may take more like 2 weeks or more to be able to reach each individual. See this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>

Earthquake Open-Ended Response Comments			
How would you like local government agencies to prepare for the earthquake hazard?			
#	Commenter	Comment	Response
43	Anna Banana, North Bend	I'm no expert so I'd like them to confer with experts and do whatever is the right thing.	Thank you.
44	Anonymous, North Bend	When the bridge goes, what's the game plan for all of us that are north of it.	Thank you for highlighting the continued need for long-term preparedness. Additional mitigation actions are being considered such as coordination with Fire Districts, emergency communication systems in place, and supply caches in geographically displaced communities. See this link for more information for personal preparedness: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>
45	Julie, South Coos County (rural)	For those struggling need to secure home insurance and delinquency issues if delinquent on property tax they probably have no home insurance protection against any hazardous situations only thinking about the current problem.	Thank you for sharing your perspective.



**Question 8: Are you concerned about a Flood affecting your home, family, or livelihood?**

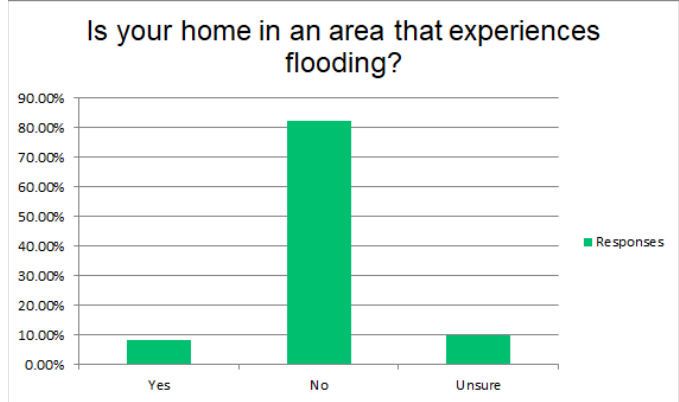


Question 8: Flood Concerns		
Answer Choices	Responses	
<b>Yes</b>	26.06%	98
<b>No</b>	67.55%	254
<b>Unsure</b>	6.83%	24
	Answered	376
	Skipped	14

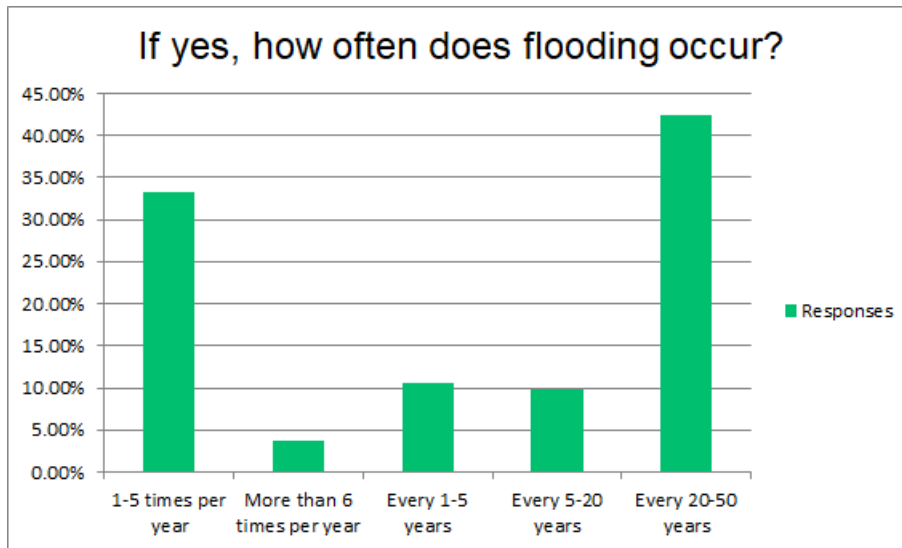
**Flood: Follow-on Questions**

**Question 9: Is your home in an area that experiences flooding?**

Question 9: Flooding Near Home		
Answer Choices	Responses	
<b>Yes</b>	8.27%	31
<b>No</b>	82.13%	308
<b>Unsure</b>	9.60%	36
	Answered	375
	Skipped	15



**Question 10: How often does flooding occur?**

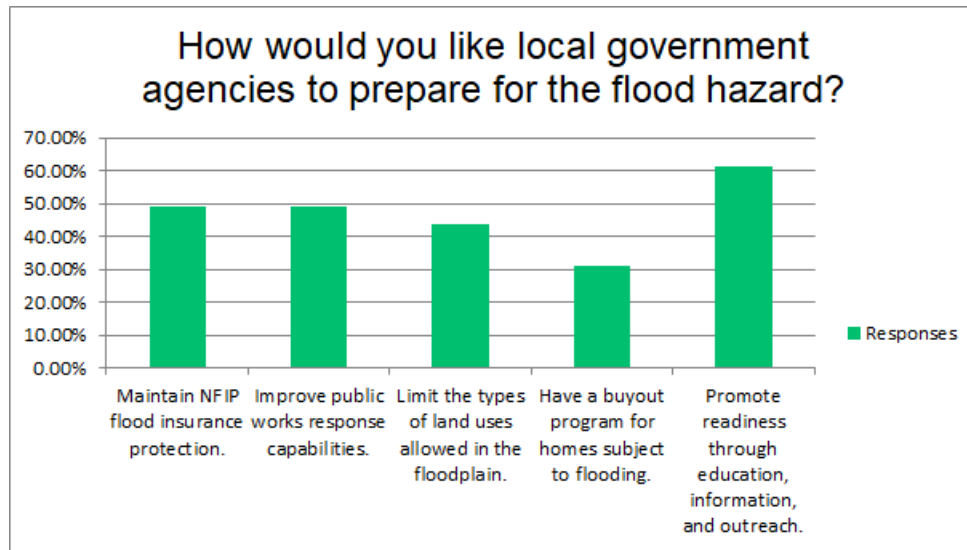


Question 10: Flood Frequency		
Answer Choices	Responses	
<b>1-5 times per year</b>	33.33%	44
<b>More than 6 times per year</b>	3.79%	5
<b>Every 1-5 years</b>	10.61%	14

Question 10: Flood Frequency		
Answer Choices	Responses	
Every 5-20 years	9.85%	13
Every 20-50 years	42.42%	56
	Answered	132
	Skipped	258

**Flood: Follow-on Questions**

**Question 11: How would you like local government agencies to prepare for the flood hazard?**



Question 11: Government Preparations for Flood		
Answer Choices	Responses	
<b>Follow FEMA National Flood Insurance Program requirements to ensure the community maintains flood insurance protection.</b>	49.30%	175
<b>Improve public works response capabilities.</b>	49.01%	174
<b>Limit the types of land uses allowed in the floodplain.</b>	43.66%	155
<b>Have a buyout program for homes subject to flooding.</b>	31.27%	111
<b>Promote readiness through education, information, and outreach.</b>	61.13%	217

**Question 11: Government Preparations for Flood**

<i>Answer Choices</i>	<i>Responses</i>
<b>Other</b>	32
	Answered 355
	Skipped 35

**Other/ Comments: 30 comments were received reflecting the following priorities:**

- Secure infrastructure and retrofit critical facilities: 7
- Protect natural infrastructure: 5
- Plan for evacuation: 4
- Regulate development in hazard zones: 3
- Prefer no government preparations: 2
- Address climate change: 1
- All of the above: 1
- Community resilience: 1
- Funding for homeowners (flood insurance): 1
- Preparedness: 1
- Protect private property rights: 1
- Train first responders: 1
- Other: 2

## Flood Open-Ended Responses

Flood Open-Ended Response Comments			
How would you like local government agencies to prepare for the flood hazard?			
#	Commenter	Comment	Response
1	Anonymous, Bandon	Also Stop hotels and all other businesses from building in them.	Thank you for your input.
2	Anonymous, Bandon	During a Tsunami, our house may be flooded, but it is not flooded by river or seasonal rain.	Thank you for sharing your perspective.
3	Anonymous, Bandon	Climate change, king tides, coastal erosion and rising ocean levels - how are these factors predicted to impact homes along smaller waterways like local creeks and lakes with tidal influence? I can find information for people living right on the beach but what about those of us a little further inland, should we be concerned?	The information you are interested in will likely be in the full final NHMP update. But you may be interested in these websites: the National Oceanic and Atmospheric Administration (NOAA). Sea Level Rise Viewer: <a href="https://www.coastalatlant.net/sealevelrise/">https://www.coastalatlant.net/sealevelrise/</a> or the DLCDC Oregon Coastal Management Program at <a href="https://www.oregon.gov/lcd/OCMP/Pages/index.aspx">https://www.oregon.gov/lcd/OCMP/Pages/index.aspx</a>
4	Kathleen Hornstuen, Charleston	include information in a go-kit booklet on what to do for mitigation before and after a flood event to lessen impact.	Thank you. Please see <a href="http://www.ready.gov/kit">www.ready.gov/kit</a> for preparedness ideas. See the Coos County Emergency Management booklet entitled "Are you Ready? Preparing for Disasters and Terrorism in Coos County" available at: <a href="https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet">https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet</a>
5	Anonymous, Coos Bay	project future risks in planning given rising sea level and also increased storms	Thank you. This suggestion is being considered as a mitigation action.
6	Anonymous, Coos Bay	evaluate possible water evacuation systems and flow patterns in cases of flooding.	Thank you. This suggestion is being considered as a preparedness action.
7	James M Behrends, Coos Bay	restore marsh lands, remove dikes that limit the flood plain	Thank you. This suggestion is being considered as a mitigation action.
8	Barb Shamet, Allegany, Or	If the timber industry keeps clear cutting, devastating washouts from climate catastrophe will be irreparable, they need to thin only trees under age 65 years, the older trees are storing water and carbon, and they must be left intact to prevent disaster	Thank you for sharing your perspective. A climate report will inform this plan update.

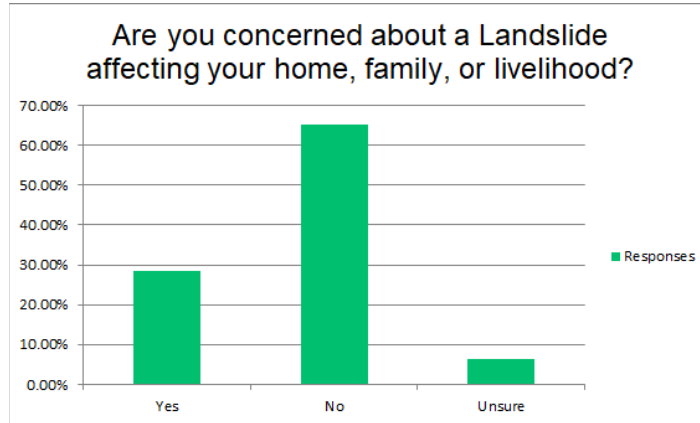
Flood Open-Ended Response Comments			
How would you like local government agencies to prepare for the flood hazard?			
#	Commenter	Comment	Response
9	Anonymous, Coos Bay	Allow fire departments/first responders with heavy response equipment access to waterboard land to shut things down QUICKLY in the event of an earthquake/flood. Make sure homes downstream from the dam know the danger they are in so they can do what ever can be done to homes to prepare for instant catastrophic flood. Stop letting people build in that flood zone in the first place - the flood path is right through neighborhoods with families and the dam isn't getting any younger, but every day we're one day closer to the "big one" that at 9.8 could easily knock it down!	<p>The waterboard has contingency plans in place and works with emergency responders for access to their lands.</p> <p>Floodplain regulations are in place and enforced by local planning departments in order to maintain compliance with the National Flood Insurance Program.</p> <p>The community is welcomed to and encouraged to have higher standards than minimum standards set for building.</p>
10	Anonymous, Coos Bay	Protect major highways to escape hazards	Thank you. This suggestion is being considered as a mitigation action
11	Anonymous, Coos Bay	Stop breaking down the _ bay! Starbucks is going to be fun under water _!	Thank you for sharing your perspective.
12	Anonymous, Coquille	Maybe the government has a responsibility to identify areas subject to flooding and notify each property owner, but please minimize taking away the rights of the property owner to use the property as the owner sees fit. Instead let the insurance company charge the appropriate fees based on the flood risk.	Floodplain regulations are enforced by local planning departments in order to maintain compliance with the National Flood Insurance Program. The county has not modified or set new codes.
13	Anonymous, Eastside	No concern	
14	Anonymous, Eastside	The fire and police departments need NEW management and training. There responses to emergencies for me has been terrible!	Thank you for sharing your perspective.
15	Anonymous, Eastside	Work with restoration groups to see how we can utilize pur estuary and riverways to help elevate flooding	Thank you. This suggestion is being considered as a mitigation action
16	Anonymous, Eastside	Ensure county highways/roads are secure from lowland flooding, especially East Bay Drive.	Thank you. Infrastructure planning is ongoing and a concern of the current operations.
17	Anonymous, Empire/Coquille Tribal lands	Get rid of the "garbage" infesting our area and Discontinue the Endless violations of our Natural Rights.	Thank you for sharing your perspective.

Flood Open-Ended Response Comments			
How would you like local government agencies to prepare for the flood hazard?			
#	Commenter	Comment	Response
18	Anonymous, Empire/Coquille Tribal lands	Mitigate any possible problems like creating dikes, reservoirs, retention ponds. See how the Dutch deal with their water problems - hydraulic dikes, etc.	Infrastructure planning is ongoing and a concern of the current operations.
19	Anonymous, Lakeside	all of the above	Thank you for sharing your perspective.
20	Karen L Crouch, Lakeside	Our city allows RVS in the flood plain-- violations like this risk lives	Thank you. This suggestion is being considered as a mitigation action.
21	Anonymous, Myrtle Point	Subsidized flood insurance for those that can't afford it	Floodplain regulations are enforced by local planning departments to maintain compliance with the National Flood Insurance Program.  The community is welcomed to and encouraged to have higher standards than minimum standards set for building.  Currently, the county can't afford to subsidize personal insurance.
22	Anonymous, North Bend	Repair dated / failed flood gates. Specifically the Haynes Inlet. We above the tide gate are experiencing terrible flooding.	Infrastructure planning is ongoing and a concern of the current operations.  This project is planned to be part of the mitigation actions.
23	Liz, North Bend	The less the government is involved in our business the better	Thank you for sharing your perspective.
24	Anonymous, North Bend	These are land use issues that need a County - wide / long term community development / population location non-political / highly technical academic approach to political zoning / earthquake / flood issues and challenges. The money now wasted in building the now abandoned "new" CB library is an example of the consequences to the public of past "market" and poorly regulated community expansion decisions.	Thank you for sharing your perspective.
25	Anonymous, North Bend	our flooding is due to a decrepit tide gate. The bridge that the tide gate is near is being compromised.	Thank you. Infrastructure planning is ongoing and a concern of the current operations.
26	Anonymous, North Bend	My home doesn't flood, per se, but we're close enough to the Bay that in event of a tsunami we're probably hoarked.	Thank you for sharing your perspective.

Flood Open-Ended Response Comments			
How would you like local government agencies to prepare for the flood hazard?			
#	Commenter	Comment	Response
27	Anonymous, North Bend	Help us to higher ground	<p>Thank you. This suggestion could be considered as a mitigation action. Please contact please contact the City of North Bend at (541) 756-8535 or the DLCDC Oregon Coastal Management Program at <a href="https://www.oregon.gov/lcd/OCMP/Pages/index.aspx">https://www.oregon.gov/lcd/OCMP/Pages/index.aspx</a></p> <p>Tsunami information is available on DOGAMI evacuation maps (subject to change) or <a href="http://nvs.nanoos.org/TsunamiEvac">http://nvs.nanoos.org/TsunamiEvac</a></p>
28	Anonymous, South Coos County (rural)	I live in Allegany and our roads frequently flood nothing can be done to change a river	Thank you for sharing your perspective.
29	Anonymous, South Coos County (rural)	Maintaining ditches along roadways and culverts would help a lot to ensure we have a good road system.	<p>Thank you. This suggestion is being considered as an ongoing mitigation action.</p> <p>Infrastructure planning is ongoing and a concern of the current operations.</p>
30	Anonymous, South Coos County (rural)	Keep cotton picking government hands off my stuff and out of my life.	Thank you for sharing your perspective.

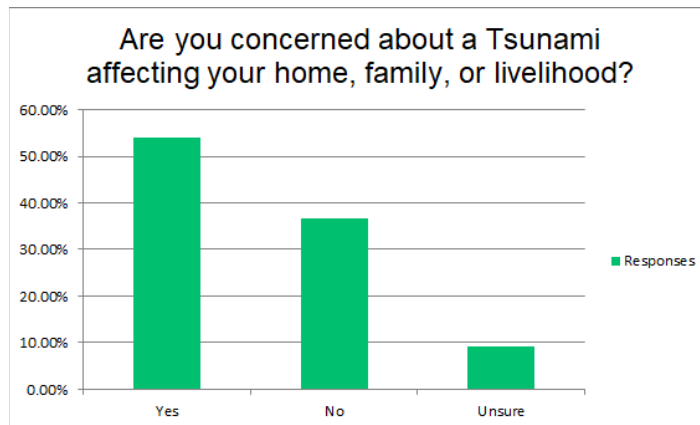


**Question 12: Are you concerned about a Landslide affecting your home, family, or livelihood?**



Question 12: Landslide Concerns		
Answer Choices	Responses	
Yes	28.45%	101
No	65.35%	232
Unsure	6.20%	22
	Answered	355
	Skipped	35

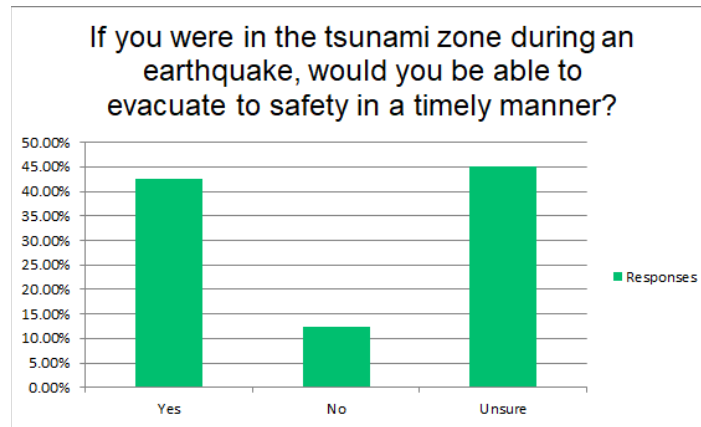
**Question 13: Are you concerned about a Tsunami affecting your home, family, or livelihood?**



Question 13: Tsunami Concerns		
Answer Choices	Responses	
Yes	54.08%	192
No	36.62%	130
Unsure	9.30%	33
	Answered	355
	Skipped	35

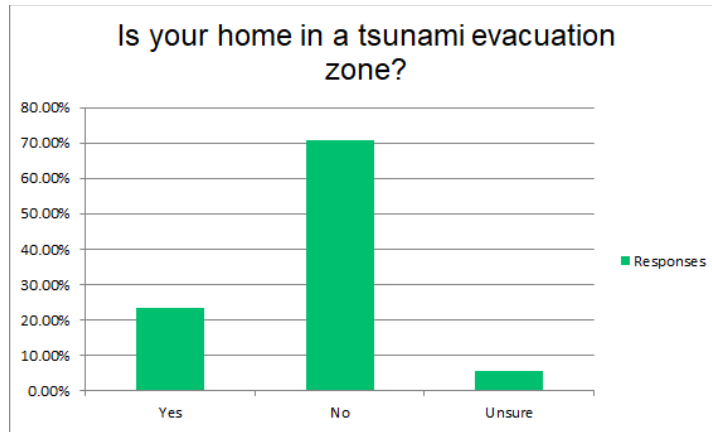
**Tsunami: Follow-on Questions**

**Question 14: If you were in the tsunami zone during an earthquake, would you be able to evacuate to safety in a timely manner?**



Question 14: Timely tsunami evacuation		
Answer Choices	Responses	
Yes	42.62%	52
No	12.30%	15
Unsure	45.08%	55
	Answered	122
	Skipped	268

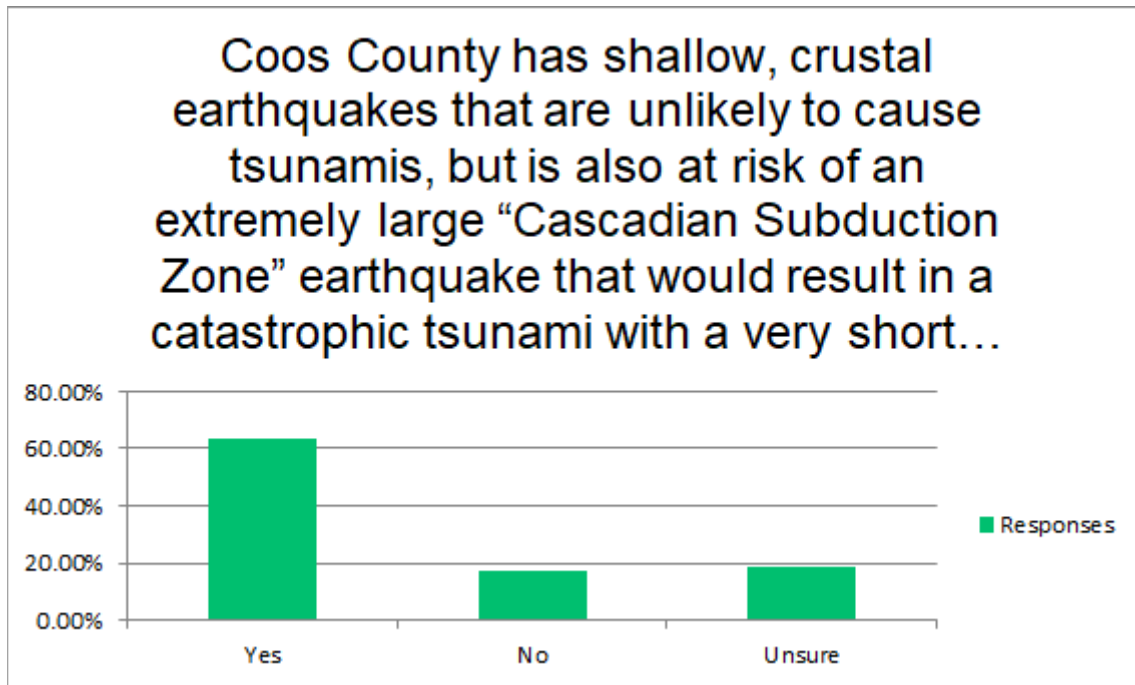
**Question 15: Is your home in a tsunami evacuation zone?**



Question 15: Home in tsunami zone		
Answer Choices	Responses	
Yes	23.58%	29
No	70.73%	87
Unsure	5.69%	7
	Answered	123
	Skipped	267

**Tsunami: Follow-on Questions**

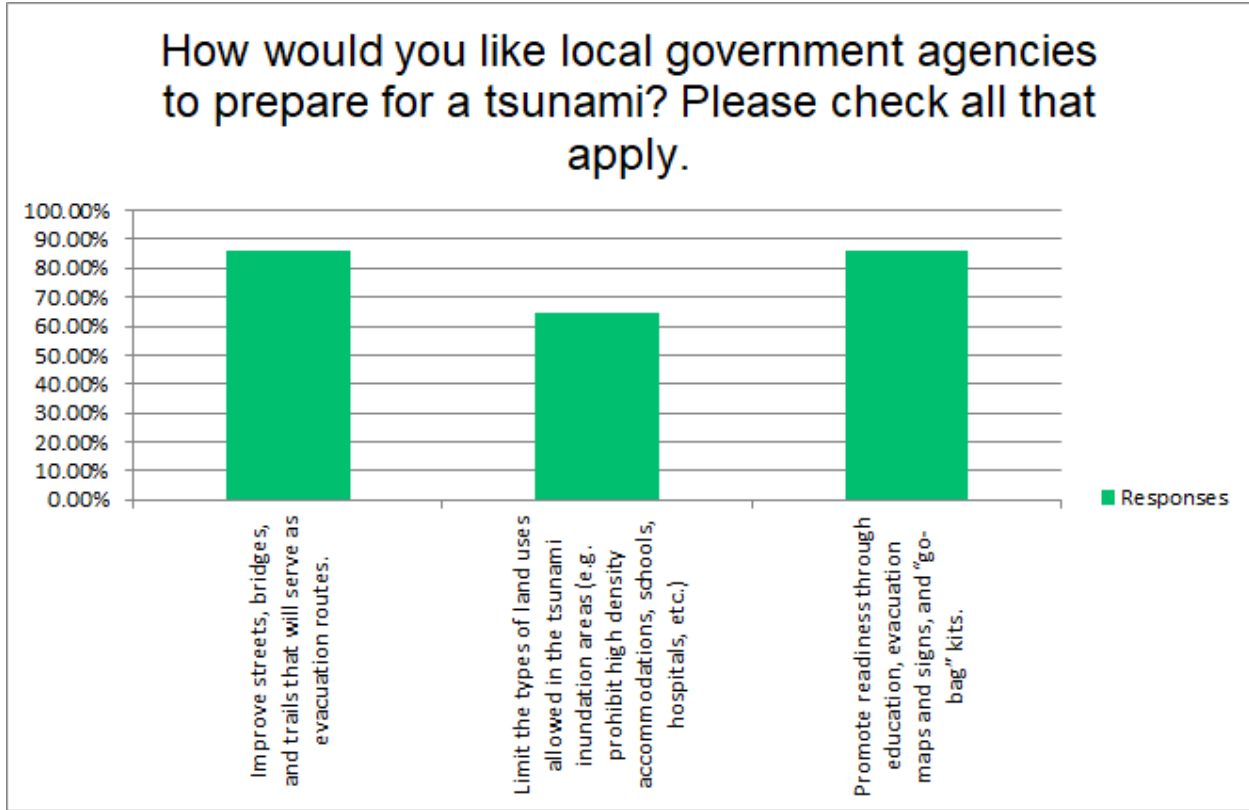
**Question 16: Coos County has shallow, crustal earthquakes that are unlikely to cause tsunamis, but is also at risk of an extremely large “Cascadian Subduction Zone” earthquake that would result in a catastrophic tsunami with a very short evacuation timeline. If an earthquake occurred, would you know when and how to evacuate for a tsunami?**



Question 16: Tsunami Evacuation: when/how?		
Answer Choices	Responses	
Yes	63.64%	77
No	17.36%	21
Unsure	19.01%	23
	Answered	121
	Skipped	269

**Tsunami: Follow-on Questions**

**Question 17: How would you like local government agencies to prepare for a tsunami? Please check all that apply.**



Question 17: Government Preparations for Tsunami	
Answer Choices	Responses
Improve streets, bridges, and trails that will serve as evacuation routes.	86.07% 105
Limit the types of land uses allowed in the tsunami inundation areas (e.g. prohibit high density accommodations, schools, hospitals, etc.)	64.75% 79
Promote readiness through education, evacuation maps and signs, and “go-bag” kits.	86.07% 105
Other	18
	Answered 122
	Skipped 268

**Other/ Comments: 17 comments were received reflecting the following priorities:**

- Install/improve tsunami evacuation signage and infrastructure:6
- Hazard regulations: 3
- Education: 2
- Home location/Cascadia event comment: 2
- Secure infrastructure and retrofit critical facilities: 2
- Community resilience: 1
- Preparedness: 1

## Tsunami Open-Ended Responses

Tsunami Open-Ended Response Comments			
How would you like local government agencies to prepare for a tsunami?			
#	Commenter	Comment	Response
1	Anonymous, Bandon	Early warning system	Thank you. This is a mitigation action.
2	Anonymous, Bandon	Make sure tsunami areas are clearly identified so you know you are in a tsunami area	Thank you, tsunami evacuation planning is an ongoing mitigation action. Areas have been posted and include evacuation signage. Signs will be updated as necessary.
3	Anonymous, Bandon	We are not in the evacuation zone, but we are right across the street from the bluff overlooking the ocean. My concern is that such an earthquake as predicted for the Cascadian Subduction Zone would cause land to shift and serious damage to the houses on/in the bluff and possible flooding in Tupper Creek which runs behind our home. We feel fairly safe here, but unsure of what could happen to our specific property given its proximity to the coastal bluffs and the riparian water way that runs behind our home and out to the ocean via a culvert under Beach Loop Drive and through a creek in the bluff on down to the beach.	Please consult a licensed geotechnical engineer to determine your home's specific risk. You may find the Statewide Landslide Information Layer for Oregon to be useful.: <a href="https://www.oregongeology.org/slido/">https://www.oregongeology.org/slido/</a> It appears that regional scale data only is available, but it indicates widespread moderate risk and intermittent high risk to landslides in the Beach Loop Road vicinity. Consider seismic retrofits for your home.
4	Kathleen Hornstuen, Charleston	Include retrofit information in a go-kit booklet and what to put in the kit.	Thank you. This suggestion is being considered as a preparedness action, and you can visit this link for more information for personal preparedness: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>  See the Coos County Emergency Management booklet entitled "Are you Ready? Preparing for Disasters and Terrorism in Coos County" available at: <a href="https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet">https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet</a>
5	James M Behrends, Coos Bay	prepositioned more supplies in more locations on high ground.	Thank you. This suggestion is being considered as a preparedness action.

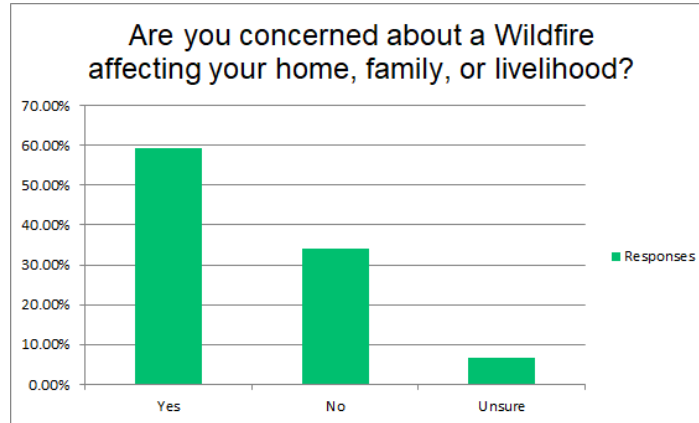
Tsunami Open-Ended Response Comments			
How would you like local government agencies to prepare for a tsunami?			
#	Commenter	Comment	Response
6	Barb Shamet, Allegany, Or	Promote green infrastructure, micro grids for power, so when and if the big one hits, some p,aves will still be up and running, Decentralize the power grid	Thank you. This suggestion is being considered as a mitigation action.
7	Anonymous, Coos Bay	Follow through with punishing people who run straight to the beach to watch it when a possible tsunami is coming in so even if they don't take the danger seriously, it won't be worth the risk of the giant fine that comes from ignoring an evac/stay away order.	Thank you for sharing your perspective.
8	Anonymous, Coos Bay	Build or require vertical evacuation towers in areas where high population density and difficulty getting people out of inundation zone in a timely manner. And/or require any high-density housing and schools in tsunami inundation zone to have said towers.	Thank you. This suggestion is being considered as a mitigation action.
9	Anonymous, Coos Bay	Improve your infrastructure! Nobody can get out of downtown and now Front Street with traffic one way in and out it can't handle! No speed signs! People doing 40 on Front Street. You have way more to worry about!	Evacuation maps (subject to change) can be found on DOGAMI or <a href="http://nvs.nanoos.org/TsunamiEvac">http://nvs.nanoos.org/TsunamiEvac</a>  Infrastructure is an ongoing planning concern and considerations.



Tsunami Open-Ended Response Comments			
How would you like local government agencies to prepare for a tsunami?			
#	Commenter	Comment	Response
10	Anonymous, Eastside	Why make any changes? I have asthma and the trash burning and brush burning negatively impacts me more than half the year! It also affects home sales. My neighbor was trying to sell his house and there were multiple time buyers were annoyed and left because of the smoke that engulfs the area so frequently. But no one will help me. The fire department told me to sue my neighbor. Are you serious? New fire and police management are needed badly.	Thank you for sharing your perspective.
11	Anonymous, Eastside	Do not approve any more Jordan Cove LNG permits that would be a danger to our community if constructed	Thank you for sharing your perspective.
12	Karin Kenney, Empire/Coquille Tribal lands	Have call feature that can be used to have practice drills for tsunami. Employers should have to allow us to answer the call and see how we do getting out of the zone and into a safe area, either on foot or by car. We need real practice, not just maps and brochures.....I need to drive that route to safety from my home.....from my work.....from my moms house if I'm over there.....I need to know where to go and how!!	Evacuation maps (subject to change) can be found on DOGAMI or <a href="http://nvs.nanoos.org/TsunamiEvac">http://nvs.nanoos.org/TsunamiEvac</a>  Please visit this link or the Coos County Emergency Management website to sign up for the Coos County Emergency Mass Notification System (Everbridge): <a href="https://member.everbridge.net/892807736724057/login">https://member.everbridge.net/892807736724057/login</a> to receive text alerts about evacuation. Coos Emergency Management will also send out press releases, Facebook notices, and specific evacuations (wildfire), will include door-to-door evacuation notices. However, evacuation routes are important research for residents to conduct on their own.
13	Kat Burgess, MRC, CERT, Empire/Coquille Tribal lands	Look into tsunami reduction modifications in the bay AND erect some high platforms like they have in Japan.	Thank you. Infrastructure is an ongoing planning concern and considerations.
14	Anonymous, Myrtle Point	Make tsunami evacuation structures if possible	Thank you. This suggestion is being considered as a mitigation action.

Tsunami Open-Ended Response Comments			
How would you like local government agencies to prepare for a tsunami?			
#	Commenter	Comment	Response
15	Anonymous, North Bend	Some of the maps for evacuation and areas presumed to be safe surprise me. I would ask that local emergency folks actually drive and inspect each area; then use their expertise and common sense not the modeling. Make it hands-on and what is logical.	Thank you, tsunami evacuation planning is an ongoing mitigation action. County personnel regularly inspect tsunami signs and travel the routes and will conduct an analysis of route suitability.
16	Anonymous, North Bend	It is crazy to me that people use the McCullough Memorial Bridge into North Bend even though, to the best of my knowledge, it is not seismically sound. I wonder if people know how dangerous it is, or if people don't believe the danger, or if it's just not feasible to avoid the bridge in everyday travel due to a risk that may or may not be imminent.	Thank you for sharing your perspective.  Bridges are identified as an ongoing mitigation action.
17	Anonymous, North Bend	Don't allow a LNG facility that could potentially be devastating to the area.	Thank you for sharing your perspective.
18	Anonymous, North Bend	We've been here 25yrs and I've never seen or heard the evacuation plan for N Bay Schools including school bussing	Thank you. Your concern will be shared with the North Bend School District.
19	Anonymous, South Coos County (rural)	Send poster flyer informational calendars yearly through mail people can put up around house that has all emergency info	Thank you. This suggestion is being considered as a preparedness action.

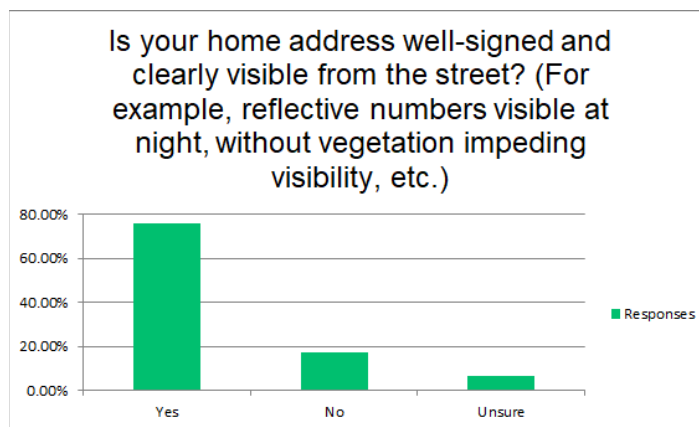
**Question 18: Are you concerned about a Wildfire affecting your home, family, or livelihood?**



Question 18: Wildfire Concerns		
Answer Choices	Responses	
Yes	59.32%	210
No	34.18%	121
Unsure	6.59%	23
	Answered	354
	Skipped	36

**Wildfire: Follow-on Questions**

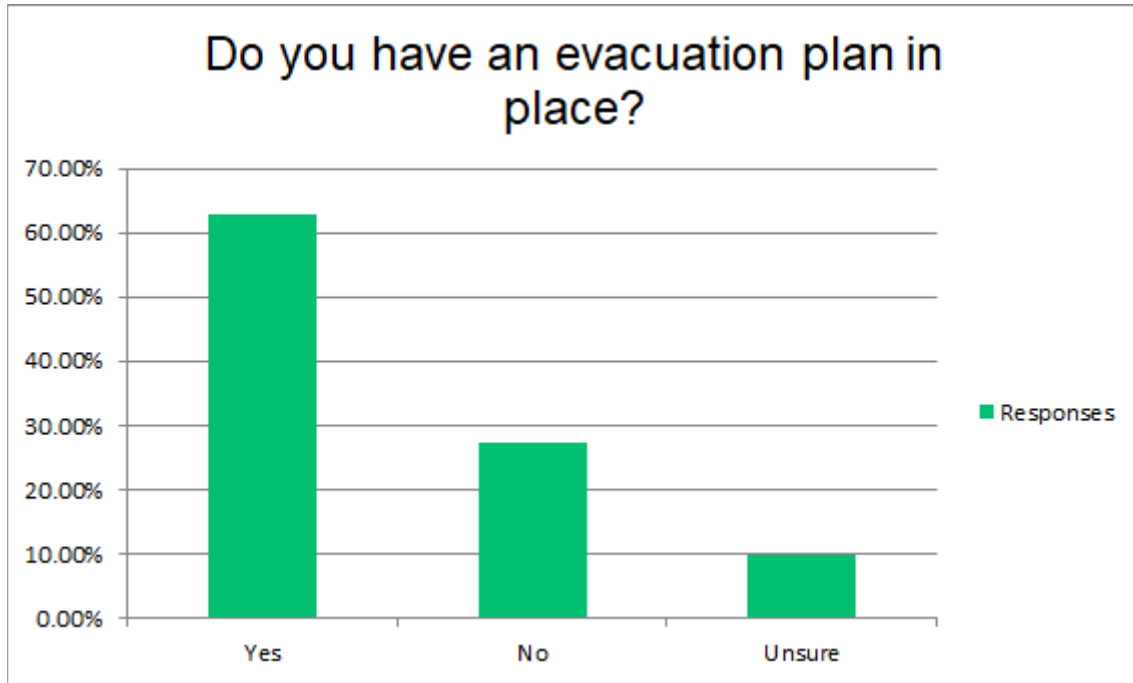
**Question 19: Is your home address well-signed and clearly visible from the street? (For example, reflective numbers visible at night, without vegetation impeding visibility, etc.)**



<b>Question 19: Visible Home Address</b>		
<i>Answer Choices</i>	<i>Responses</i>	
Yes	76.12%	153
No	17.41%	35
Unsure	6.47%	13
	Answered	201
	Skipped	189

**Wildfire: Follow-on Questions**

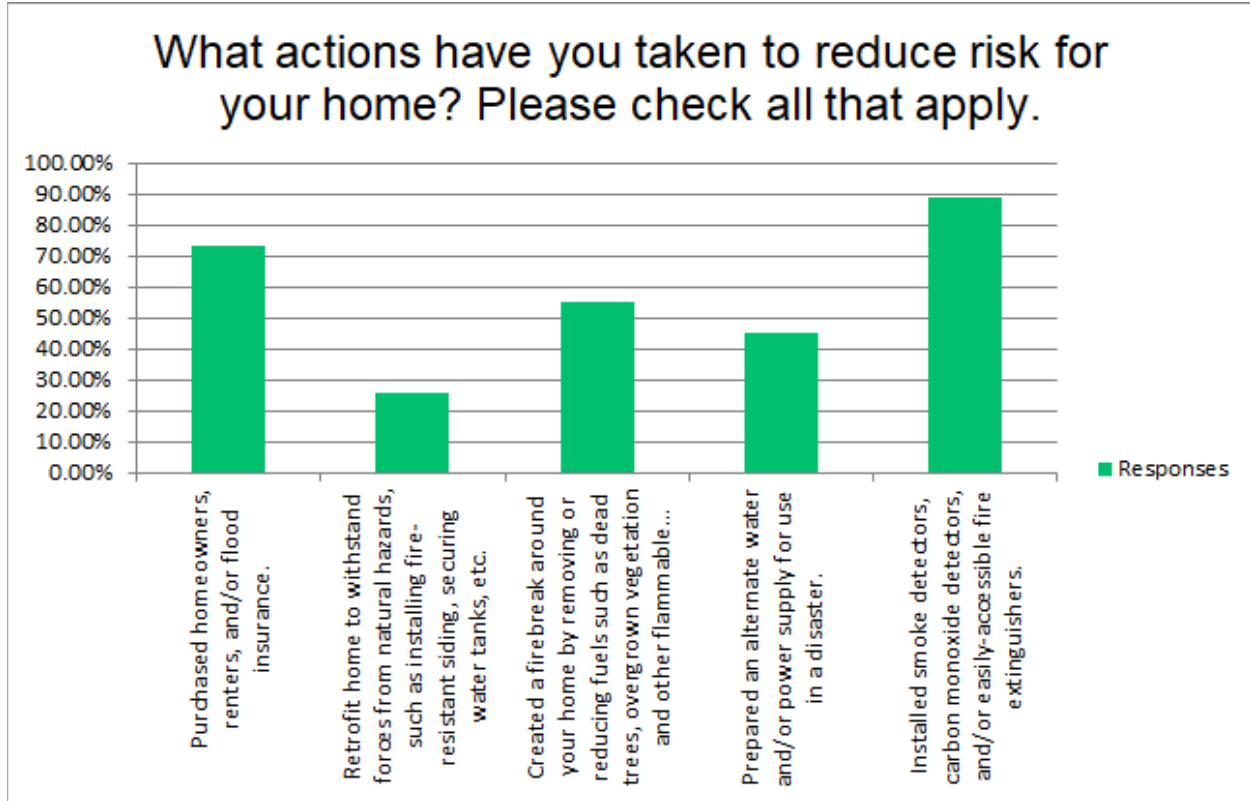
**Question 20: Do you have an evacuation plan in place?**



Question 20: Evacuation plan?		
Answer Choices	Responses	
Yes	62.69%	126
No	27.36%	55
Unsure	9.95%	20
	Answered	201
	Skipped	189

**Wildfire: Follow-on Questions**

**Question 21: What actions have you taken to reduce risk for your home? Please check all that apply.**



Question 21: Risk Reduction Actions?

<i>Answer Choices</i>	<i>Responses</i>	
Purchased homeowners, renters, and/or flood insurance.	73.43%	210
Retrofit home to withstand forces from natural hazards, such as installing fire-resistant siding, securing water tanks, etc.	25.52%	73
Created a firebreak around your home by removing or reducing fuels such as dead trees, overgrown vegetation, and other flammable materials; clean leaf and tree debris from gutters and roof.	55.24%	129
Prepared an alternate water and/or power supply for use in a disaster.	45.10%	254
Installed smoke detectors, carbon monoxide detectors, and/or easily-accessible fire extinguishers.	88.81%	254
Other		26

Question 21: Risk Reduction Actions?

<i>Answer Choices</i>	<i>Responses</i>	
	Answered	286
	Skipped	104

### Wildfire Open-Ended Responses

**Other/ Comments: 34 comments were received reflecting the following priorities:**

- Gorse/fire concern: 3
- Vegetation management for fire prevention: 3
- Firefighting equipment: 1
- Tsunami warning/evacuation: 5
- Barriers to insurance: 2
- Insurance: 2
- Preparedness: 4
- Home/ Business renovations: 5
- No risk reduction conducted: 6
- Other/Unrelated: 3

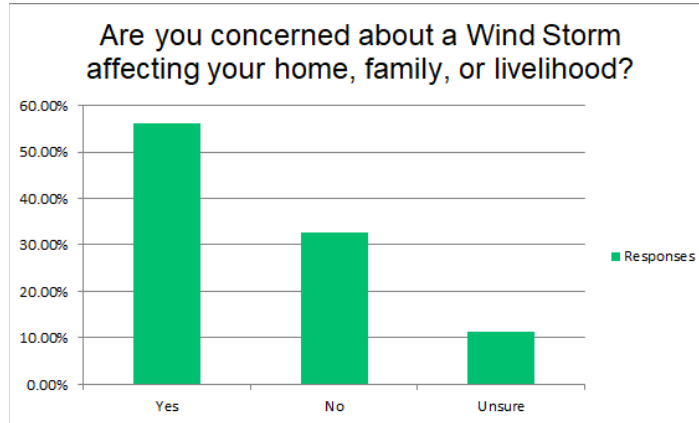
Wildfire Open-Ended Response Comments			
What actions have you taken to reduce risk for your home?			
#	Commenter	Comment	Response
1	Anonymous, Bandon	Can't afford to retrofit my home on a monthly disability income.	Thank you. Your situation has been described as a community need to be addressed as a mitigation action.
2	Anonymous, Bandon	The Bandon area has a serious problem with invasive, highly flammable vegetation. Even if I reduce fuels around my home if neighboring properties can't or won't do the same my property is a risk. How can the county help to build community engagement and assist low-income property owners to minimize fire danger?	Thank you. Gorse eradication and control is ongoing and is considered an invasive species of plant.
3	Anonymous, Bandon	Alternate food supply	Thank you for sharing your wildfire mitigation action.
4	Anonymous, Bunker Hill/ Millington/ Green Acres	Nothing	See this link for preparedness information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>  Please visit this link or the Coos County Emergency Management website to sign up for the Coos County Emergency Mass Notification System (Everbridge): <a href="https://member.everbridge.net/892807736724057/login">https://member.everbridge.net/892807736724057/login</a> to receive text alerts about evacuation. Coos Emergency Management will also send out press releases, Facebook notices, and specific evacuations (wildfire), will include door-to-door evacuation notices. However, evacuation routes are important research for residents to conduct on their own.
5	Kathleen Hornstuen, Charleston	My go kit is ready	Thank you for sharing your wildfire mitigation action.



Wildfire Open-Ended Response Comments			
What actions have you taken to reduce risk for your home?			
#	Commenter	Comment	Response
6	Jan Hodder, Charleston	Developed a tsunami evacuation plan. Added shear walls to some rooms in the house.	Thank you for sharing your tsunami mitigation actions.
7	Kathleen Hornstuen, Charleston	Checked for tsunami elevation	Thank you for sharing your tsunami mitigation action.
8	Anonymous, Coquille	We have metal roofs on our home and shop	Thank you for sharing your wildfire mitigation actions.
9	Anonymous, Eastside	Purchased earthquake insurance	Thank you for sharing your mitigation action.
10	Martin Heldt Eastside	Have emergency supplies	Thank you for sharing your mitigation action.
11	Anonymous, Eastside	I cannot leave my smoke detectors on because my house is regularly inundated with smoke from the neighbors that burn trash in their homes and yard	Thank you for sharing your concerns.
12	Kat Burgess, MRC, CERT, Empire/Coquille Tribal lands	Stocked food and supplies for emergencies.	Thank you for sharing your mitigation action.
13	Anonymous, Empire/Coquille Tribal lands	I live right next to tribal land and it is being unmanaged and somehow last year my neighbors have used bulldozers to move trees and brush into piles and now they are big piles of dry tinder, very near to the apt complex I rent. People frequently access the land via trails and some have built fires in the area, and I think their may be a homeless camp as I have seen smoke from the same area.	Thank you for sharing your concerns. Citizens are urged to contact tribal property with concerns about tribal lands.  Fires built during fire season should be reported to local authorities or the Coos Forest Protective Association (CFPA).
14	Anonymous, Myrtle Point	Seismic straps for the water heater. French drain under the house to provide better drainage. New roof in 2015.	Thank you for sharing your mitigation actions.
15	Anonymous, North Bend	I pay extra for earthquake insurance.	Thank you for sharing your mitigation actions.

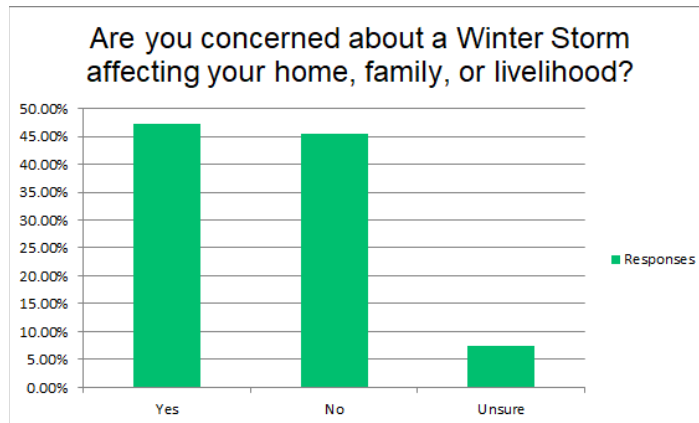
Wildfire Open-Ended Response Comments			
What actions have you taken to reduce risk for your home?			
#	Commenter	Comment	Response
16	Anonymous, North Bend	Still difficult to make a complete fire break around my home. Some retrofit to withstand forces from natural hazards, metal roof, wood stove, try to keep extra supplies on hand.	Thank you for sharing your wildfire mitigation actions and concerns.
17	Anonymous, North Bend	None	
18	Elaine, North Bend	Sorry I have a few smoke detectors but no fire extinguisher and no home owners insurance. I pay attention to harmful weather that might blow my roof off.	Thank you for sharing your wildfire mitigation actions.  Fire preparedness is advised, please see this link for ideas: <a href="https://www.co.coos.or.us/sites/default/files/fileattachments/sheriff039s_office/page/13791/home_fire_preparedness_and_considerations.pdf">https://www.co.coos.or.us/sites/default/files/fileattachments/sheriff039s_office/page/13791/home_fire_preparedness_and_considerations.pdf</a>
19	Anonymous, South Coos County (rural)	I live in Allegany and rent. we can not get renters insurance as we do not have a fire district. the flood and home owners insurance is hard to find and expensive. It would be helpful for the county, state or us government mandate a rural fire department to help us be able to get lower insurance premiums.	Thank you. Your situation has been described as a community need to be addressed as a mitigation action.
20	Julie, South Coos County (rural)	Current delinquent and transfer issues have not been able to get any preparation or protections or insurance try save home from foreclosure	Thank you for sharing your concerns.
21	Anonymous, South Coos County (rural)	Have hydrant supplied by 5000 gal. tank, firehose and pump.	Thank you for sharing your wildfire mitigation actions.
22	Anonymous, South Coos County (rural)	Gorse removal	Gorse eradication and control is ongoing and is considered an invasive species of plant.
23	Anonymous, South Coos County (rural)	Fenced the place securely so livestock are not on the road.	Thank you for sharing your mitigation action.

**Question 22: Are you concerned about a Wind Storm affecting your home, family, or livelihood?**



Question 22: Wind Storm Concerns		
Answer Choices	Responses	
Yes	56.15%	169
No	32.56%	98
Unsure	11.30%	34
	Answered	301
	Skipped	89

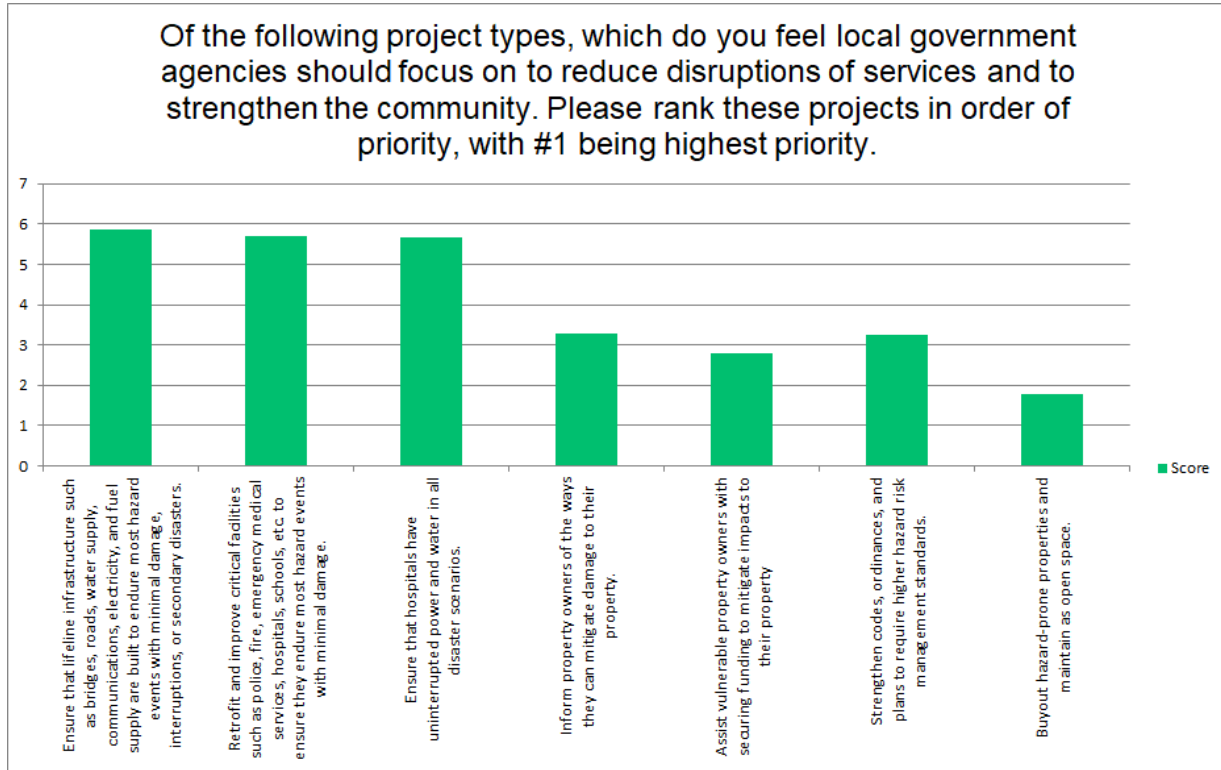
**Question 23: Are you concerned about a Winter Storm affecting your home, family, or livelihood?**



Question 23: Winter Storm Concerns		
Answer Choices	Responses	
Yes	47.18%	142

<b>Question 23: Winter Storm Concerns</b>		
<i>Answer Choices</i>	<i>Responses</i>	
No	45.51%	137
Unsure	7.31%	22
	Answered	301
	Skipped	89

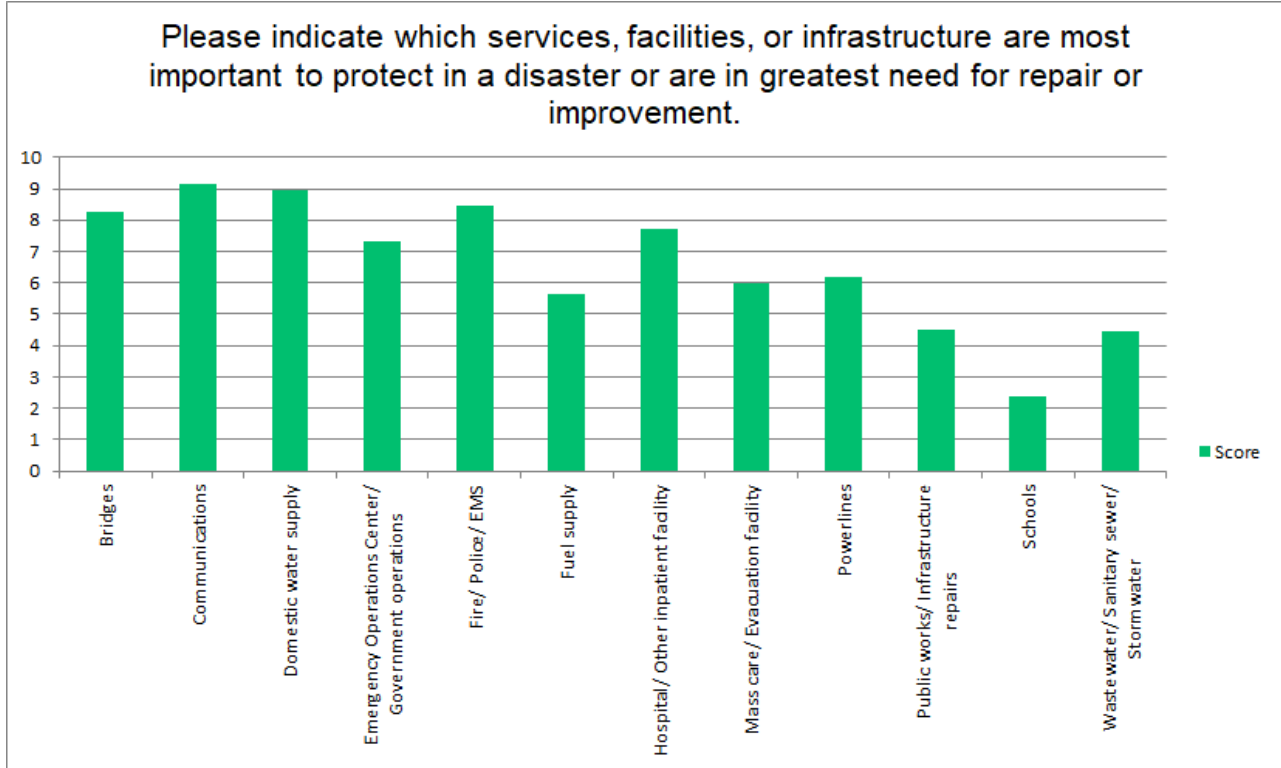
**Question 24: Of the following project types, which do you feel local government agencies should focus on to reduce disruptions of services and to strengthen the community. Please rank these projects in order of priority, with #1 being highest priority.**



**Top Government Priority Projects:**

4. Ensure that lifeline infrastructures such as bridges, roads, water supply, communications, electricity, and fuel supply are built to endure most hazard events with minimal damage, interruptions, or secondary disasters.
5. Retrofit and improve critical facilities such as police, fire, emergency medical services, hospitals, schools, etc. to ensure they endure most hazard events with minimal damage.
6. Ensure that hospitals have uninterrupted power and water in all disaster scenarios.

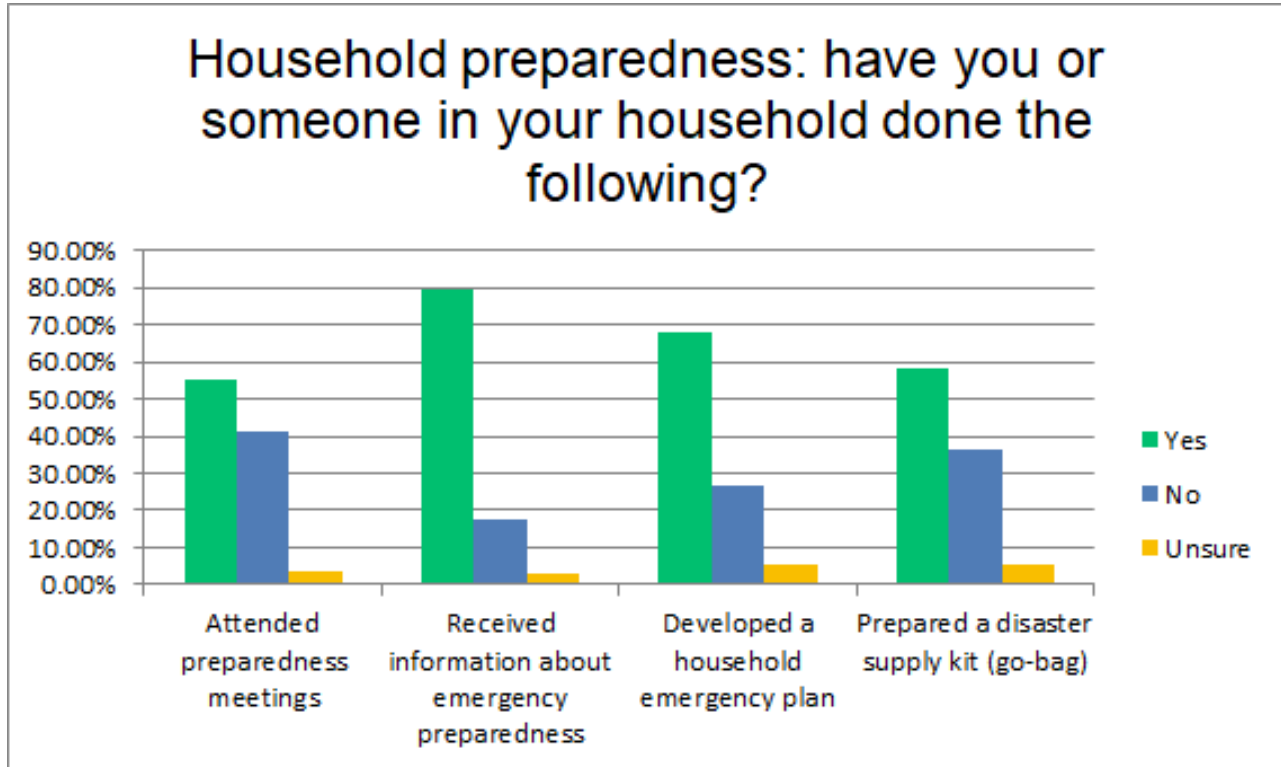
**Question 25: Please indicate which services, facilities, or infrastructure are most important to protect in a disaster or are in greatest need for repair or improvement. The information you provide will help to shape plan priorities. Please rank these projects in order of priority, with #1 being highest priority.**



**Priority Infrastructure Protection/ Disaster Need:**

- 7. Communications
- 8. Domestic water supply
- 9. Fire/ Police/ EMS
- 10. Emergency Operations Center/ Government operations
- 11. Bridges
- 12. Hospital/Other inpatient facility

**Question 26: Household preparedness: have you or someone in your household done the following?**



**Question 26: Household Preparedness**

Answer Choices	Yes		No		Unsure	
<b>Attended preparedness meetings</b>	55.22%	164	41.08%	122	3.70%	11
<b>Received information about emergency preparedness</b>	79.46%	236	17.51%	52	3.03%	9
<b>Developed a household emergency plan</b>	67.80%	200	26.78%	79	5.42%	16
<b>Prepared a disaster supply kit (go-bag)</b>	58.45%	173	36.15%	107	5.41%	16
					Answered	297
					Skipped	93

**Question 27: Do you have any additional concerns or comments about hazards in your community?  
Please share them in the space below.**

### General Open-Ended Responses

General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
1	Avery Horton, Bandon	Local officials are not prioritizing emergency preparedness.	Thank you for sharing your perspective.
2	Anonymous, Bandon	Gorse is highly flammable. It needs to be removed.	Absolutely, gorse is a priority. It is included in the Wildfire Hazard Chapter and the Mitigation Strategy.
3	Anonymous, Bandon	Evacuation issues w bridges out, flooding, isolated small oceanside towns like Bandon	Thank you. Your perspective provides helpful insight on the importance of evacuation planning for this plan update.
4	Anonymous, Bandon	Our outdoor public speakers for emergency are intelligible. The music is fine, the words are gibberish even standing near them.	Thank you. This suggestion is underway as a mitigation action.
5	Anonymous, Bandon	The spread of fires due to the ever increasing gorse growth that appears out of control in Bandon.	Absolutely, gorse is a priority. It is included in the Wildfire Hazard Chapter and the Mitigation Strategy.
6	Anonymous, Bandon	The homeless and drugs that have destroyed neighborhoods and families.	Thank you for sharing your perspective. These issues are beyond the scope of this natural hazard mitigation plan.
7	Anonymous, Bandon	Gorse and the fire danger it causes. Seems to be overtaking many areas around Bandon. A fire would be hotter and faster with so much of it	Absolutely, we agree that gorse is a priority. It is included in the Wildfire Hazard Chapter and the Mitigation Strategy.
8	Anonymous, Bandon	Thank you for this opportunity.	Thank you for sharing your perspective.
9	Anonymous, Bandon	Worried about explosions from propane tanks in the neighborhood. These could level the town and burn the remaining area	Absolutely, we agree that addressing fuel sources in advance of an earthquake is a priority. It is included in the Earthquake Hazard Chapter and the City of Bandon Mitigation Action Items.
10	Anonymous, Bandon	The threat of fire from the huge amount of gorse that is within and surrounding Bandon City and outlying neighborhoods poses a significant threat and is of real concern for us, given the town has burned down twice. More needs to be done to eradicate gorse from open space as well as private property, especially properties out off of Rosa Road and that general vicinity.	<p>Absolutely, we agree that gorse is a priority. It is included in the Wildfire Hazard Chapter and the Mitigation Strategy.</p> <p>Fire preparedness is advised, please see this link for ideas:  <a href="https://www.co.coos.or.us/sites/default/files/fileattachments/sheriff039s_office/page/13791/home_fire_preparedness_and_considerations.pdf">https://www.co.coos.or.us/sites/default/files/fileattachments/sheriff039s_office/page/13791/home_fire_preparedness_and_considerations.pdf</a></p>



General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
11	Anonymous, Bandon	Drought conditions plus unchecked gorse infestation puts fire risk at the top of my list. Elderly, low income and other rural property owners need help to reduce fuel loads on the land, they don't need fines and penalties heaped on them for a problem which has arisen from circumstances beyond reasonable control.	Absolutely, gorse is a priority. It is included in the Wildfire Hazard Chapter and the Mitigation Strategy. Thank you for sharing your perspective on fines and penalties, your input helps us to prioritize supporting local homeowners in their gorse management in this plan update.
13	Anonymous, Bandon	During Cascadian My home may survive as not in Tsunami area. I am concerned how long I could be trapped here. Are we harnessing wind energy for emergencies	See this link for preparedness information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a> See the Coos County Emergency Management booklet entitled "Are you Ready? Preparing for Disasters and Terrorism in Coos County" available at: <a href="https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet">https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet</a>
14	Jacob Rosenberg, Bunker Hill/ Millington/ Green Acres	We need a diversified backup communications system in the County.	Thank you. Your perspective provides insight on emergency communications in this plan update. Coos County Amateur Radio (ARES) is an active component of emergency preparedness and a backup to existing capabilities.
15	Kathleen Hornstuen, Charleston	I like the idea of a full-time emergency coordinator in the sheriff's office who will have meetings with all parties that would be involved in a disaster on a regular basis so our county is prepared if and when it happens here.	Thank you for sharing your perspective.
16	Jan Hodder, Charleston	I am concerned about additional developments on the North Spit. This is an area that will be completely inundated in a Cascadia earthquake/tsunami event. There is only one exit from the spit over a bridge that likely will be impassable. It will be impossible for any workers to evacuate the area. I am also concerned about our lack of planning for sea level rise. One only has to drive Hwy 101 during a storm high tide to see that the level of the bay is already higher than the road and railway.	Thank you for sharing your perspective. Your input helps to prioritize evacuation and sea level rise in this plan update.

General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
17	Mike Graybill, Charleston	I am concerned about government agencies such as the port recruiting businesses and industries that if sited in our communities will only make a disaster/emergency worse. The Japan Earthquake and Tsunami emergency was made even worse because a nuclear power plant was sited in a risk zone. The seismic incident resulted in a meltdown emergency at the power plant releasing radiation and requiring emergency personnel to orchestrate an evacuation of 80,000 people in addition to the search and rescue efforts necessitated by the earthquake and tsunami. In our community the port authority is recruiting and promoting industries like LNG and fuel tank farms that if constructed, will only intensify the risk to our local population posed by a seismic event.	Thank you for sharing your perspective.
18	Tina, Charleston	Escape routes out of Barview	Thank you. Tsunami information is available on DOGAMI evacuation maps or <a href="http://nvs.nanoos.org/TsunamiEvac">http://nvs.nanoos.org/TsunamiEvac</a>
19	Bob Pedro, Charleston	The loss of the Crown Point Bridge will create an "Island" of people without emergency services available. Our fire station is usually staffed with an intern and the ONE and only fire hydrant on Crown Point Rd. is about 100 yards North from the station toward the bridge and perhaps 1/4 mi from the bridge. It's a long way to the end of Crown Point Rd.	Thank you. Your concern is being taken into consideration for its mitigation and preparation recommendations.

General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
20	Kathleen Hornstuen, Charleston	Offer low cost first aid classes to give people confidence in an emergency. A county wide disaster education booklet to keep with a go-kit.	Thank you for sharing your perspective—personal preparedness is very important. See this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>  See the Coos County Emergency Management booklet entitled “Are you Ready? Preparing for Disasters and Terrorism in Coos County” available at: <a href="https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet">https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet</a>
21	Anonymous, Charleston	People should be somewhat prepared for any disaster but not live in fear and not be relying on the government to save them.	Thank you for sharing your perspective—personal preparedness is very important. See this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>
22	Anonymous, Charleston	Open fires on properties without homeowners insurance. Around me.	Thank you for sharing your perspective. During time of a fire ban, fires should be reported to authorities or to the Coos Forest Protective Association (CFPA).
23	Anonymous, Charleston	Lack of lighting in dark and rainy conditions impacting visibility of pedestrians who cross roads at places other than crosswalks creating hazards for drivers	Thank you for sharing your perspective.
24	Anonymous, Coos Bay	Clean water in the case of emergencies.	See this link for preparedness information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>  See the Coos County Emergency Management booklet entitled “Are you Ready? Preparing for Disasters and Terrorism in Coos County” available at: <a href="https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet">https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet</a>
25	Moffitt, Coos Bay	Difficult to prioritize these as they are all related. We need more infrastructure support for sure.	Thank you for sharing your perspective. Infrastructure concerns and planning are ongoing and prioritized.

General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
26	Anonymous, Coos Bay	We waste by looking at worst cases. Our down town has vacant upper floors of buildings, that with deterioration create a serious hazard. If allowed, they could have less of a risk, but are not economical to bring to highest disaster risk standards. Regulation-overly so is adding to evacuation and safety issues. Schools brought to higher level offer disaster centers for emergencies, and they should be looked at for such purposes. A reserve medical corps of retired medical and trained emergency people would be helpful if organized and trained to how to respond in emergencies. this would also be true for command centers.	Thank you for sharing your perspective.  Please see the below link for information regarding the Medical Readiness Corps, which is a function of Coos Health and Wellness. <a href="https://www.phe.gov/mrc/Pages/default.aspx">https://www.phe.gov/mrc/Pages/default.aspx</a>
27	Anonymous, Coos Bay	The greatest hazard to our community is homelessness and crime. Beyond that, the ability to effectively and safely evacuate during an emergency.	Thank you for your response.  Tsunami information is available on DOGAMI evacuation maps or <a href="http://nvs.nanoos.org/TsunamiEvac">http://nvs.nanoos.org/TsunamiEvac</a>
28	James M Behrends, Coos Bay	Police are under staffed both city and county	Thank you for sharing your perspective—personal preparedness is very important. See this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>
29	Joseph Metzler, Coos Bay	Earthquake, tsunami, forest fire.	Thank you for sharing your perspective.  Fire preparedness is advised, please see this link for ideas:  <a href="https://www.co.coos.or.us/sites/default/files/fileattachments/sheriff039s_office/page/13791/home_fire_preparedness_and_considerations.pdf">https://www.co.coos.or.us/sites/default/files/fileattachments/sheriff039s_office/page/13791/home_fire_preparedness_and_considerations.pdf</a>

General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
30	James Fritz, Coos Bay	Subsidence of the land. Seismic uplift has pushed us 6 feet higher than normal. When a subduction zone quake occurs. We will drop 6 feet or more. The new sea level will submerge roads, bridges and downtown Coos Bay at high tide. Daily. They didn't call it Marshfield for nothing.	Thank you for sharing your perspective.
30	Anonymous, Coos Bay	Comment about mutual aid, 911, and budgets.  GOOD JOB! Not letting them take the Coast Guard Stations away along the coast so one unit spread too thin!	Thank you for sharing your perspective.
31	Anonymous, Coos Bay	The roads are a major hazard. Cars swerve into other lane to avoid tire damaging holes. Libby. Wilshire 4th. There are many more.	Thank you for sharing your perspective.
32	Anonymous, Coos Bay	We (Coos County) will not be a priority like the metropolitan areas with in this state.	Thank you for sharing your perspective.
33	Anonymous, Coos Bay	Protection from looting in a natural disaster if home has to be left for an extended time.	Thank you for sharing your perspective.
34	Donna, Coos Bay	Maybe more Community Info needed. I just moved here & was unaware there is a Tsunami danger!	Thank you for sharing your perspective. Tsunami information is available on DOGAMI evacuation maps (subject to change) or <a href="http://nvs.nanoos.org/TsunamiEvac">http://nvs.nanoos.org/TsunamiEvac</a>  Please see the Coos County Emergency Management booklet entitled "Are you Ready? Preparing for Disasters and Terrorism in Coos County" available at: <a href="https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet">https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet</a>
35	Anonymous, Coos Bay	Mainly fire	Thank you for sharing your perspective.  Fire preparedness is advised, please see this link for ideas: <a href="https://www.co.coos.or.us/sites/default/files/fileattachments/sheriff039s_office/page/13791/home_fire_preparedness_and_considerations.pdf">https://www.co.coos.or.us/sites/default/files/fileattachments/sheriff039s_office/page/13791/home_fire_preparedness_and_considerations.pdf</a>

General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
36	Anonymous, Coos Bay	clean water in the case of emergencies.	Thank you. This suggestion is being considered as a preparedness action.
37	James Fox, Coquille	Alternate evacuation routes. Places to assemble to deal with disaster.	Thank you. This suggestion is being considered as a preparedness action. Evacuation information is available on DOGAMI evacuation maps (subject to change) or <a href="http://nvs.nanoos.org/TsunamiEvac">http://nvs.nanoos.org/TsunamiEvac</a>
38	Coos County CERT and SERV OR member, Coquille	People have no clue how bad it will really be in the Coos County area in the event of a mass disaster such as a quake caused by the subduction zone.	Thank you for sharing your perspective and your service.
39	Ken Smith, Coquille	Neighbors help each other as much as possible . . . deny the attitude, "Every man for himself"	Thank you for sharing your perspective.
40	Anonymous, Coquille	Communication and policies between county, cities and emergency services to be structured and more at the top of the list of priorities.	Thank you. This suggestion is underway/ ongoing as a mitigation action.
41	Anonymous, Coquille	Stabilization of emergency response team buildings should be priority as well as road systems to be able to help victims quickly.	Thank you for sharing your perspective.
42	Anonymous, Coquille	Landslides are a concern!	Thank you for sharing your perspective. You may find the Statewide Landslide Information Layer for Oregon to be useful.: <a href="https://www.oregongeology.org/slido/">https://www.oregongeology.org/slido/</a>
43	Anonymous, Coquille	I work in Coos Bay so the bridges are very important in many ways for me, first to get home but for everyone else for food, water, other agencies help like more power workers etc to get in to Coos Bay to help with everything.	Thank you for sharing your perspective. Bridges are an ongoing mitigation effort.
44	Martin Heldt, Eastside	The housing shortage	Thank you for sharing your perspective.

General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
45	Anonymous, Eastside	The trash burning and the terrible response from local law enforcement have been enough to make me consider moving but I am handicap and it is not so easy for me to do so. Regular home owners are suffering everyday because of these stone age allowances. And the local police department... I have no faith in there ability to protect me. After a man drove into my home destroying my property and nearly hitting my son with his vehicle. The local PD did nothing. It took them 6 weeks to look at the vehicle that hit my home. I called the 13 times during that period. When I stepped up to speak to someone in charge the reposene I got was disgusting! I am now afraid to complain further as I am now concerned for my and my family safety.	Thank you for sharing your perspective.
46	Anonymous, Eastside	Landslides & Powerlines	Thank you for sharing your perspective. You may find the Statewide Landslide Information Layer for Oregon to be useful: <a href="https://www.oregongeology.org/slido/">https://www.oregongeology.org/slido/</a>
47	LB, Eastside	The services hierarchy difficult to rank	Thank you for sharing your perspective.
48	Anonymous, Eastside	do not approve any more Jordan Cove LNG permits	Thank you for sharing your perspective.
49	Rebecca Benson, Empire/Coquille Tribal lands	I don't feel that this community takes the Cascadia Subduction zone quake and tsunami seriously enough. It is going to happen and every day that goes by, it gets closer. How we fare as a community will depend on how well we prepare.	Thank you for sharing your perspective—personal preparedness is very important. See this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>
50	Anonymous, Empire/Coquille Tribal lands	The Corrupt city counsel and mayor should Resign immediately in order that Further Infringements on Our Natural Rights do NOT continue.	Thank you for sharing your perspective.
51	Anonymous, Empire/Coquille Tribal lands	All the options in # 18 are equally important.	Thank you for sharing your perspective.

General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
52	Kristen Laird, Empire/Coquille Tribal lands	Need more public knowledge about when and where meetings are and how to become involved ... Implement remote ways to be active and participate in preparation meetings	Thank you for sharing your perspective.  One of the goals of the NHMP is to improve education and outreach. We will incorporate broader outreach to the community including these actions.
53	Karin Kenney, Empire/Coquille Tribal lands	I live in a mobile home park and it is circular. There is only one entrance/exit. I worry about any disaster striking (especially wildfires) and fear we wouldn't be able to get out.	Thank you for sharing your perspective.
54	Kat Burgess, MRC, CERT, Empire/Coquille Tribal lands	Get the evacuation map corrected! You show Wallace to Libby Road for people in my area. WALLACE DOES NOT GO THROUGH TO LIBBY! The road from Travis to Libby is IMPASSABLE! Your mistake will get people KILLED!	Thank you for sharing your perspective.  The map has been updated. Please use the DOGAMI Nanoos website: <a href="http://nvs.nanoos.org/TsunamiEvac">http://nvs.nanoos.org/TsunamiEvac</a>
55	Anonymous, Empire/Coquille Tribal lands	Fire hazards, especially on tribal lands and the coos watershed, and transient camps/activities.	Thank you for sharing your perspective.
56	Anonymous, Lakeside	because we do get a lot of rain, we let down our guard as it relates to "defendable space". There is a lot of old, dry vegetation everywhere.	Thank you for sharing your perspective.
57	Karen L Crouch, Lakeside	Lakeside has no ordinance enforcement allowing dangerous situations to persist.	Thank you for sharing your perspective.
58	Anonymous, Lakeside	Hazard codes in Lakeside are not enforced. This makes me feel unsafe	Thank you for sharing your perspective. Regulations are an area of mitigation action under consideration.
59	Anonymous, Lakeside	There needs to be more attention to this matter	Thank you for sharing your perspective.
60	Anonymous, Myrtle Point	Our biggest hazard is __ druggies who will rob the people who are prepared. Clean them out of our town.	Thank you for sharing your perspective.
61	Anonymous, Myrtle Point	I live in Bridge and we are pretty much on our own out here.	Thank you for sharing your perspective.
62	Jill Rolfe, Myrtle Point	Funding is needed to complete preparedness	Thank you for sharing your perspective.



General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
63	Donna, Myrtle Point	I'm just worried on the off chance of a disaster that I and my community will not be properly prepared.	Thank you for sharing your perspective.  Coos County Emergency Management distributes this booklet: <a href="https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet">https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet</a>  or see this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>
64	Anonymous, Myrtle Point	The big earthquake and tsunامي terrifies me, but the wildfires are even more likely and scary. I'd move if I could, but we really can't afford to. I just get ready to evacuate every fire season and spend weeks in the summer terrified and on edge. What can we do about the drought conditions turning us into a matchbox every summer?	See <a href="http://www.drought.gov">www.drought.gov</a> for more information.  Please see this Coos County Emergency Management booklet: <a href="https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet">https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet</a>  or see this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>
65	Anonymous, North Bend	so many parts of the community are isolated if bridges go down, or there is massive flooding	Thank you for sharing your perspective.
66	Anonymous, North Bend	flooding out Kentuck has been worse and worse over the last few years and other farm owners are adding dirt around the creek without permits or permission making it worse. There needs to be better regulation for what you can do to a creek like Kentuck and Metman and then better implementation of those regulations.	Thank you. Regulations are an area of mitigation action under consideration.
67	Anonymous, North Bend	...with all money going to just live many people cannot afford to maintain homes and property.	Thank you for sharing your perspective.
68	Anonymous, North Bend	The flooding in Haynes Inlet could cause road and driveway and bridge failures - endangering lives.	Thank you. This suggestion is being considered as a mitigation action.
69	Liz , North Bend	Infrastructure of roads	Thank you. This suggestion is being considered as a mitigation action.
70	Anonymous, North Bend	No LNG	Thank you for sharing your perspective.

General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
71	Matthew Hays	Liquefaction is a slight concern in case of a large earthquake, but nothing to be done.	Thank you for sharing your perspective.
72	Anonymous, North Bend	People not taking care of brush on their properties	Thank you for sharing your perspective.
73	Pam, North Bend	Traffic in and out of the city	Thank you for sharing your perspective. Evacuation planning is a mitigation action.
74	Steve Jansen, North Bend	Sadly, with a major (earthquake, flood, Tsunami, etc) when things go, they'll ALL go at once. With the NB bridge out, all the fuel inbound fuel, food supplies, medical care will not arrive. Anything strong enough to take out that single point of failure will certainly cause smaller structures and roadways to slide/wash out/fail. The same chain of failures will easily take out power and water distribution. Does PP&L and other power companies have a public plan for citizen review? Ditto for ODOT?	Thank you for sharing your perspective—personal preparedness is very important. See this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>  Coordination with state and regional agencies on seismic upgrades for roads is an ongoing mitigation action, and to a lesser degree power and water resilience is as well.

General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
75	Anonymous, North Bend	<p>Today my biggest concerns are fire, future pandemics, drought, earthquake- we have done what we can at this point to prepare for earthquake, we did our best during the current pandemic to stay safe but felt our local medical support system (doctors, clinics, public health dept) was woefully ill-prepared and public communication was inadequate. We are most concerned, at this point, about our county and region going up in flames due to the extreme fire danger we are facing this summer, and throughout the West. We have seen little preparation for fire prevention in North Bend and there is throughout the city, overgrown brush, trees, and grasses, in fact, throughout the county. We have three exits out of North Bend, North 101, South 101, and Hwy 42 East. Where do we go and how do we escape a raging fire? These are concerns our state representatives, county commissioners, and local governments need to address quickly and get the information out there to the public, ASAP. Our neighbors escaped the fires in Vida by the skin of their teeth, and their home and belongings burned to the ground. My brother-in-law in Santa Rosa has been evacuated several times from his home in the last four years, and promptly damage around him has been severe. The Paradise Fire scenario is a nightmare event that could easily happen in our county, and citizens in our region need to know what to do, how to prepare, how to prevent (if possible), and how to live with the extreme fire dangers of our region.</p>	<p>Thank you for sharing your perspective—personal preparedness is very important. See this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a></p> <p>Coos County Emergency Management distributes this booklet: <a href="https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet">https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet</a></p>

General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
76	Anonymous, North Bend	Emphasizing personal preparedness is essential, especially encouraging people to be armed. The government or agencies cannot possibly help everyone in a major emergency and should not be expected to. Neighbors should be expected to help each other.	Thank you for sharing your perspective—personal preparedness is very important. See this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a> Coos County Emergency Management distributes this booklet: <a href="https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet">https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet</a>
77	Anonymous, North Bend	I can be pretty self-sufficient if a incident happens when I'm home, it's a whole different scenario if I'm in town. So it's kind of hard to answer some of the questions, I would answer them differently in different location.	Thank you for sharing your perspective.
78	Anonymous, North Bend	need emergency desalination equipment.	Thank you. This suggestion is an ongoing preparedness action.
79	Anonymous, North Bend	Making sure that supplies and relief can come as for the most part we are surrounded by water and bridges that in most events will become at least structurally unsound in most events.	Thank you for sharing your perspective—personal preparedness is very important. See this link for more information: <a href="http://www.ready.gov/kit">www.ready.gov/kit</a>  Coos County Emergency Management distributes this booklet: <a href="https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet">https://www.co.coos.or.us/sheriff/page/are-you-ready-booklet</a>
80	Anonymous, North Bend	Instead of building and beautifying Front street we need better flooding management	Thank you for sharing your perspective.
81	Anna Banana, North Bend	Next time you do one of these polls separate police from other emergency workers!! If my house is on fire, I need a FIREMAN, not a cop.	Thank you for sharing your perspective.
82	Anonymous, North Bend	Spouse has COPD with great breathing difficulty. Need power source for nebulizer.	Thank you for sharing your perspective.
83	Elaine, North Bend	Hazards I worry about most are the speed limits in north bend keep going up and the roads suffer so much for the speeding and heavy trucks that cause my house to rattle and shake at all hours of the day and night,	These issues are beyond the scope of this plan.

General Open-Ended Response Comments			
Do you have any additional concerns or comments about hazards in your community?			
#	Commenter	Comment	Response
84	Anonymous, North Bend	power companies using the new electronic meters that are LESS reliable in an emergency but gets backing from all levels of government.	These concerns are beyond the scope of this plan.
85	Julie, South Coos County (rural)	Communication to those who don't reach out	Thank you for sharing your perspective.
86	Craig, South Coos County (rural)	Getting home safely after an event... flooding, ciaos, trees down, fire.	Thank you for sharing your perspective.
87	Anonymous, South Coos County (rural)	Owners with Gorse fields not doing anything to mitigate them	Thank you for sharing your perspective. Regulations are an area of mitigation action under consideration.

**Question 28: Provide your name if you would like it to appear with your comment.**

Answered	74
Skipped	316

**Question 29: Please provide your email if you would like to learn about future opportunities regarding hazards in Coos County.**

Answered	81
Skipped	309

# E. Plan Outreach

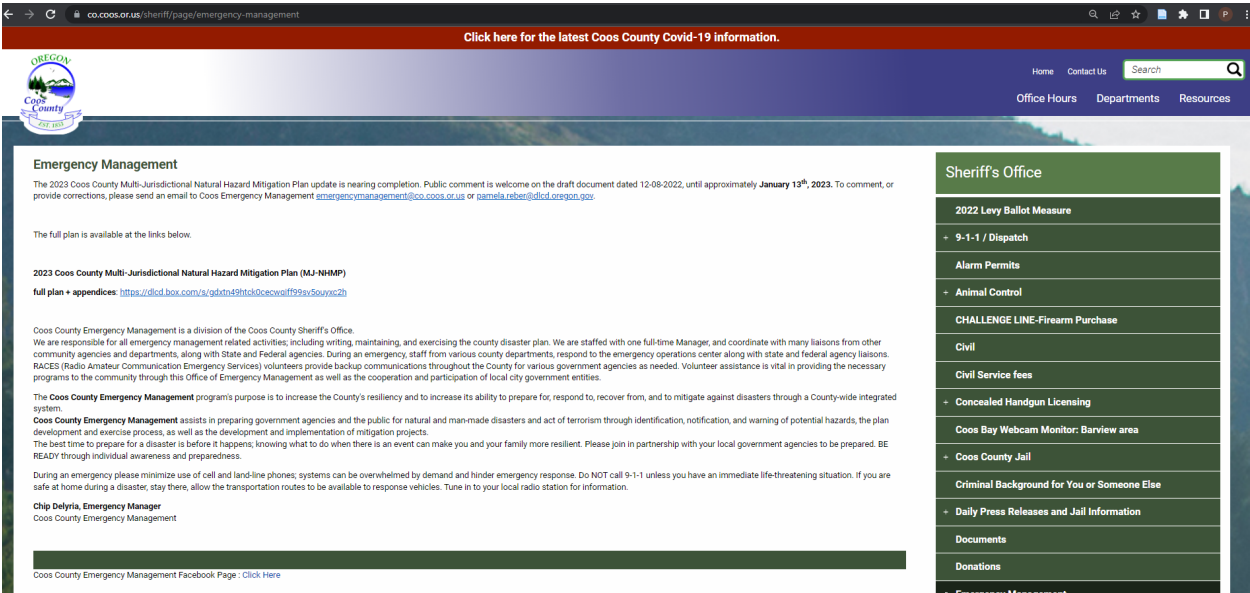
Project webpages, online and social media, public meetings, email lists, and outreach conducted for the Community Hazard Survey were the primary methods of outreach by Coos County, the seven cities, and the five special districts who joined the mitigation planning process. The pages that follow show examples and evidence of this outreach.

## Project Webpage

The 2023 Coos County Multi-Jurisdictional Natural Hazard Mitigation Plan update webpage is available here:

<https://www.co.coos.or.us/sheriff/page/natural-hazards-mitigation-plan>

Figure III-2. Coos County NHMP Project Webpage 2022



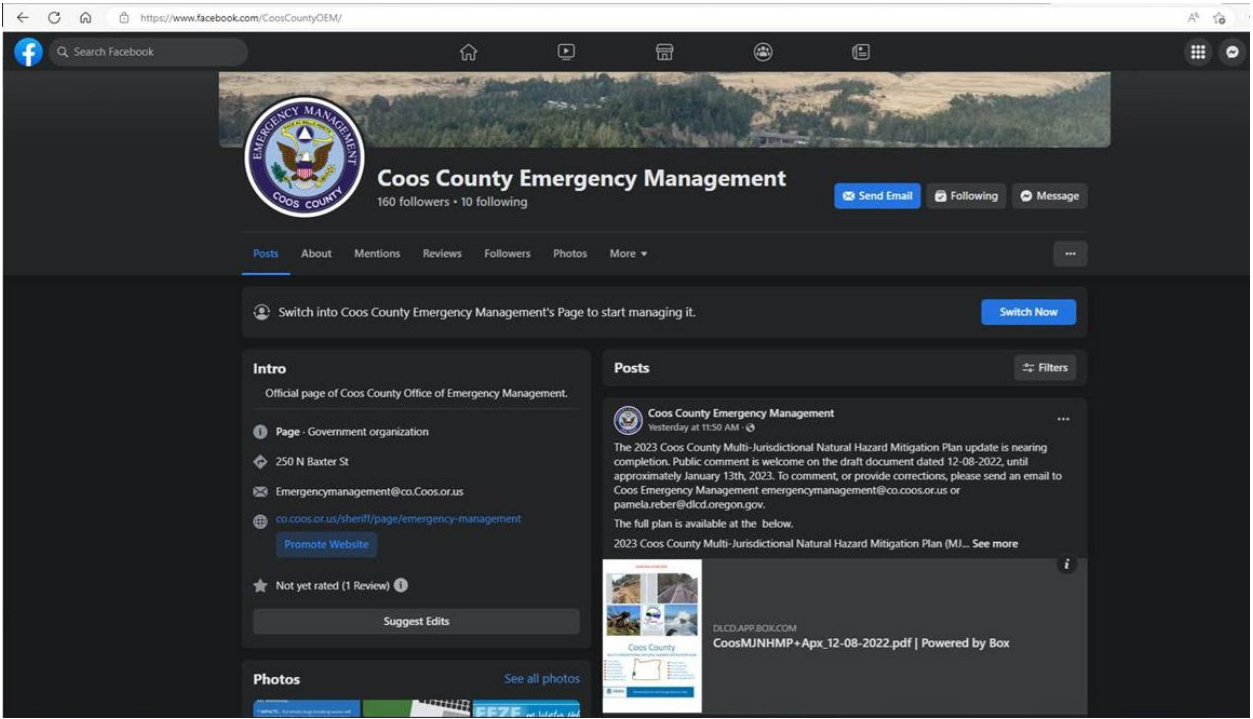
Source: Coos County, 2022. Note: For the 2023 plan update, Coos County Emergency Management created a project webpage. The county has limited web management capacity, but several updates were made over the period of the project.

Figure III-3. Coos County Project Webpage 2021



Online & Social Media

Figure III-4. Coos County Plan Review Outreach



Source: Coos County, 2022.

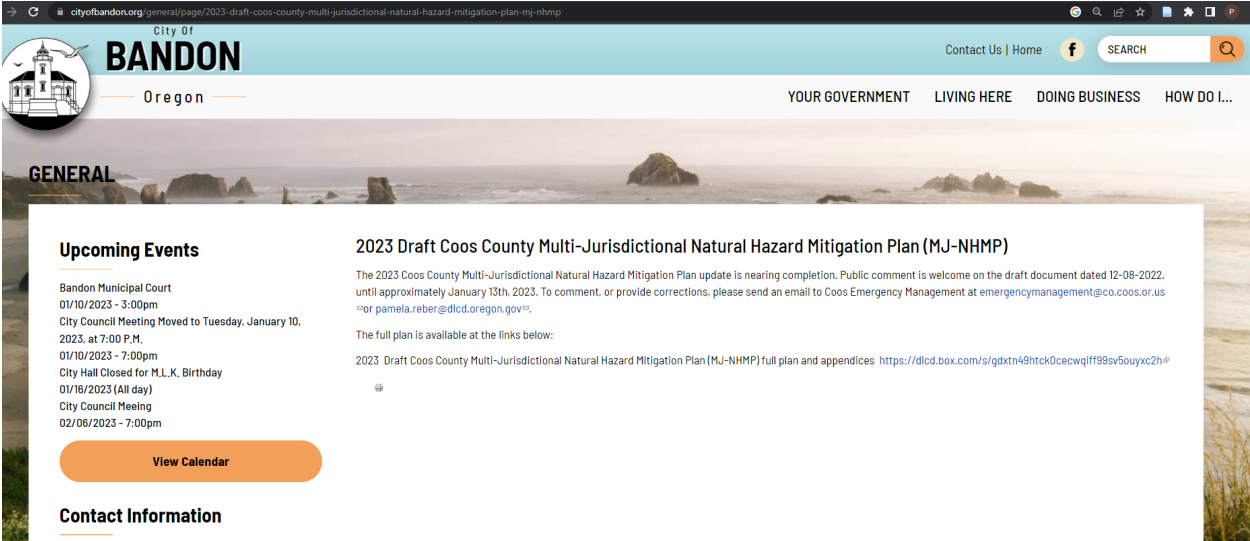


Figure III-5. Port of Bandon Plan Review Outreach



Source: Port of Bandon, 2022.

Figure III-6. Bandon Plan Review Outreach



Source: City of Bandon, 2022.

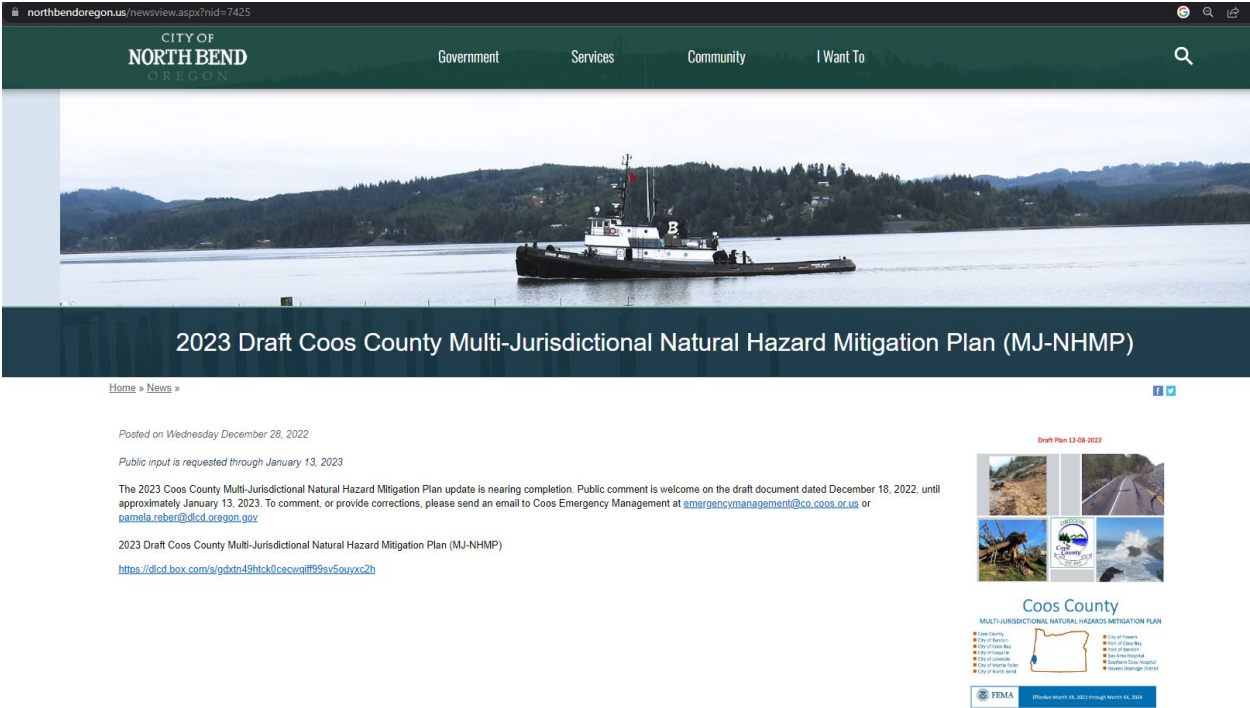


Figure III-7. Coos Bay Plan Outreach

The screenshot shows the City of Coos Bay website. At the top left is the city logo. To the right are links for 'Jobs', 'Xpress Bill Pay', 'Contact Us', and 'Agendas & Minutes'. Below these is a search bar with the text 'I WANT TO...' and a search icon. A dark blue navigation bar contains the following menu items: 'SERVICES', 'COMMUNITY', 'GOVERNMENT', 'BUSINESS', and 'VISIT'. Below the navigation bar is a large image of a beach scene. On the left side, there is a sidebar with links for 'DOCUMENTS & PERMITS', 'FAQS', and 'MAPS'. The main content area features a breadcrumb trail: 'Services » Advanced Components » List & Detail Pages »'. Below this is the heading 'News List'. To the right of the heading are icons for 'Font Size', 'Share & Bookmark', 'Feedback', and 'Print'. The featured article is titled 'Coos County Seeks Feedback' with a post date of '01/03/2023 4:48 PM'. The article includes a thumbnail image of a document titled 'Coos County Multi-Jurisdictional Natural Hazard Mitigation Plan'. The text of the article states: 'The County and its incorporated cities and special districts, along with steering provided by the Oregon Department of Land Conservation and Development, have been working to update the Coos County Multi-Jurisdictional Natural Hazard Mitigation Plan. Before finalizing the document, the committee is seeking public comment on the draft document.' It provides a link to the full plan: <https://dlcd.box.com/s/gdxtn49htck0cecwjff99sv5ouyxc2h>. It also provides contact information for Coos Emergency Management: [emergencymanagement@co.coos.or.us](mailto:emergencymanagement@co.coos.or.us) or [pamela.reber@dlcd.oregon.gov](mailto:pamela.reber@dlcd.oregon.gov). At the bottom right of the article is a link: [Return to full list >>](#)

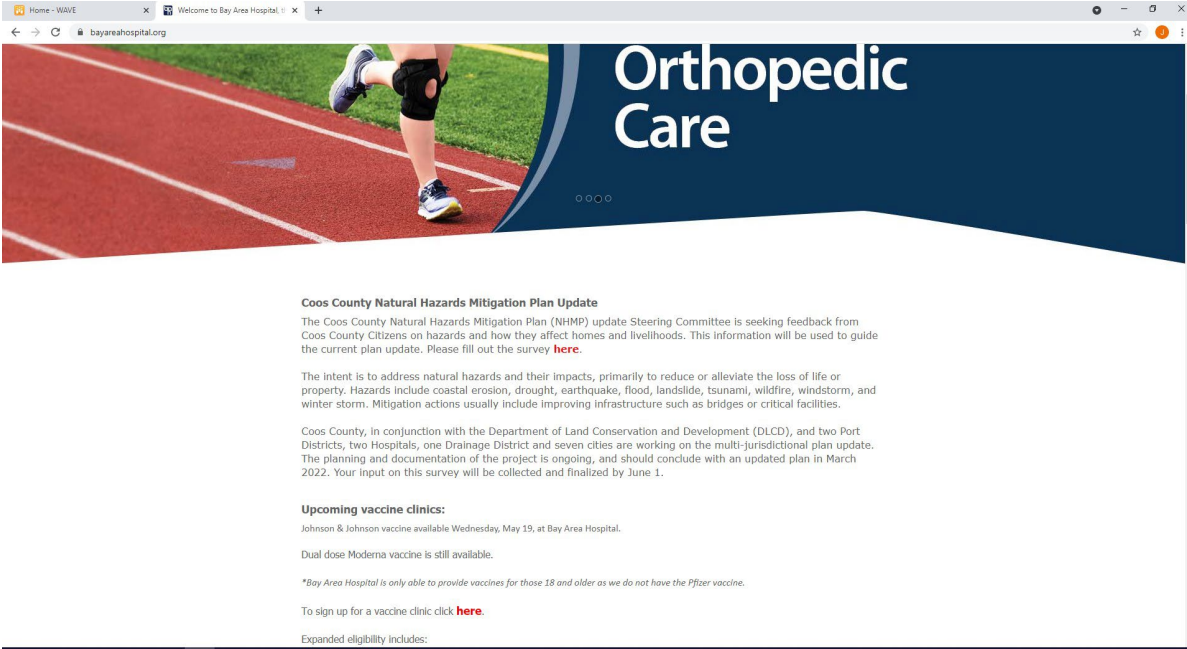
Source: City of Coos Bay, 2022.

Figure III-8. North Bend Plan Review Outreach



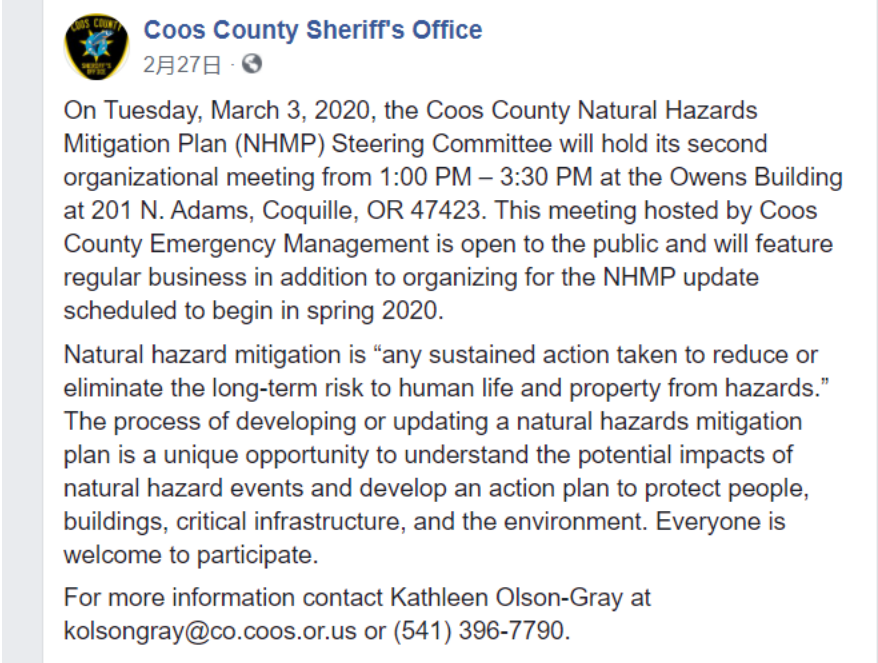
Source: City of North Bend, 2022.

Figure III-9. Bay Area Hospital NHMP webpage



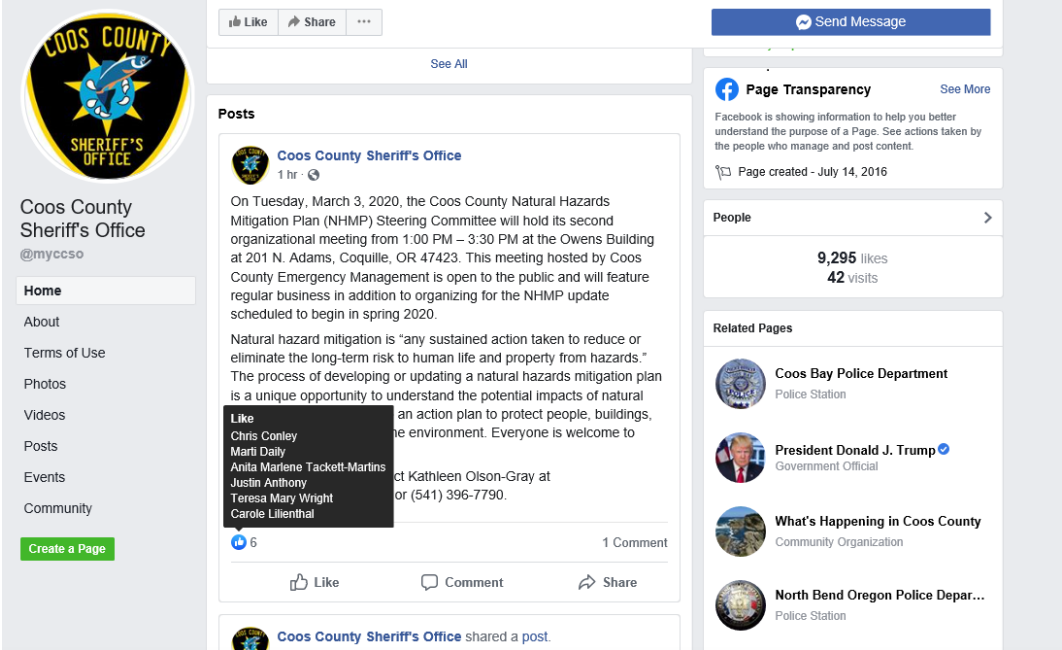
Source: Bay Area Hospital, 2021.

Figure III-10. Public notice by Coos County for Steering Committee Meeting #2



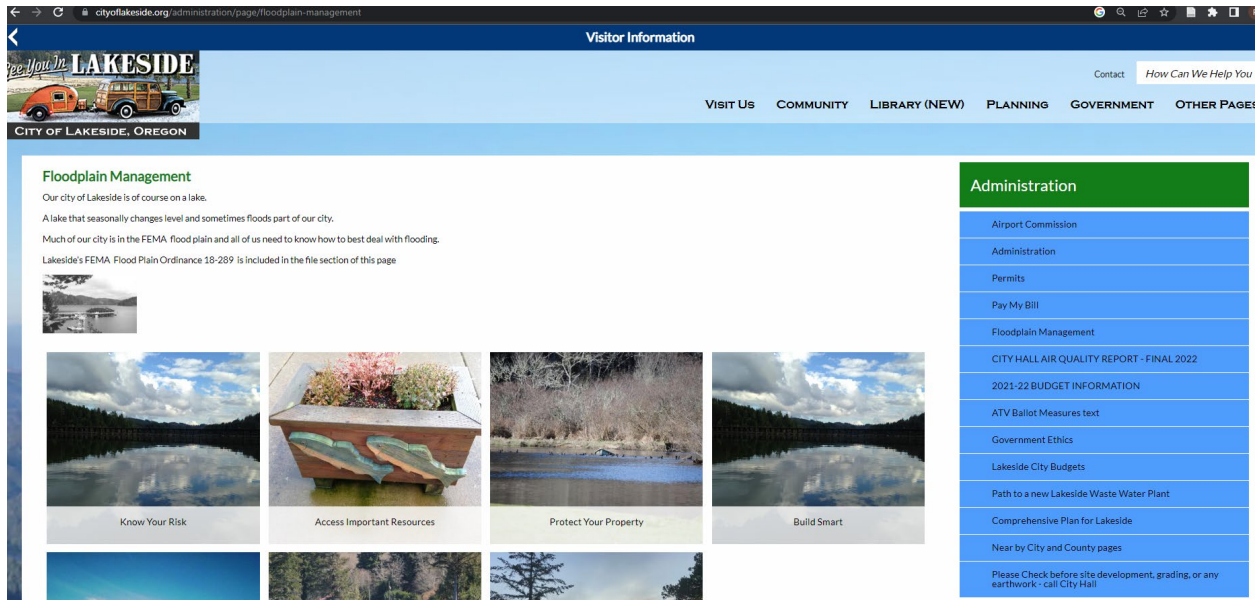
Source: Coos County, 2020.

Figure III-11. Social Media post by Coos County for Steering Committee Meeting #2



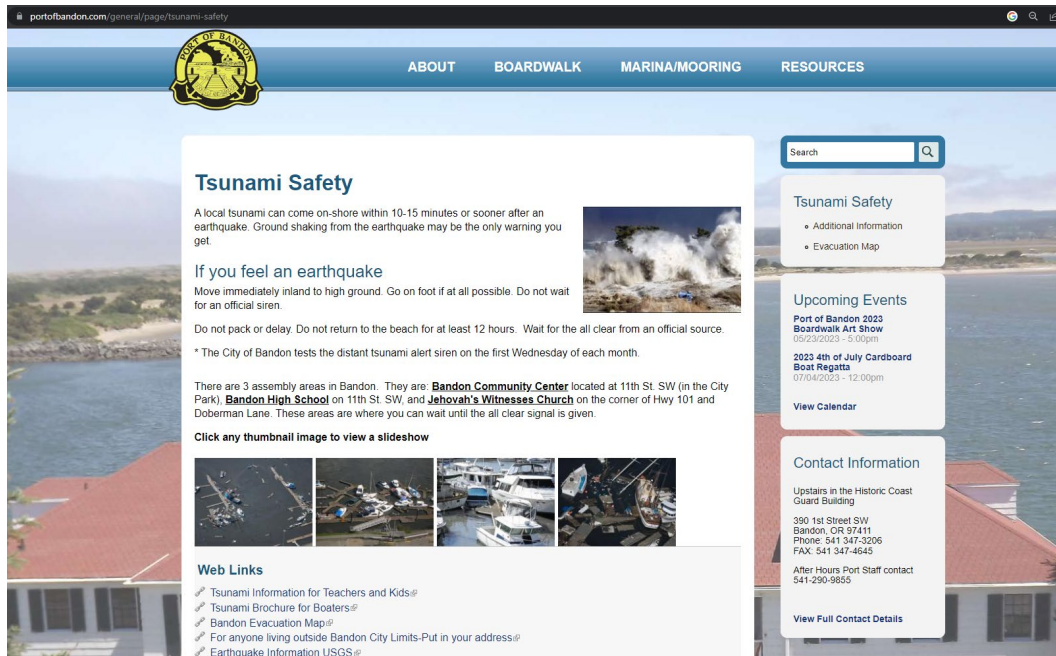
Source: Coos County, 2020

Figure III-12. City of Lakeside Floodplain Management Outreach



Source: City of Lakeside, 2022. <https://www.cityoflakeside.org/administration/page/floodplain-management>

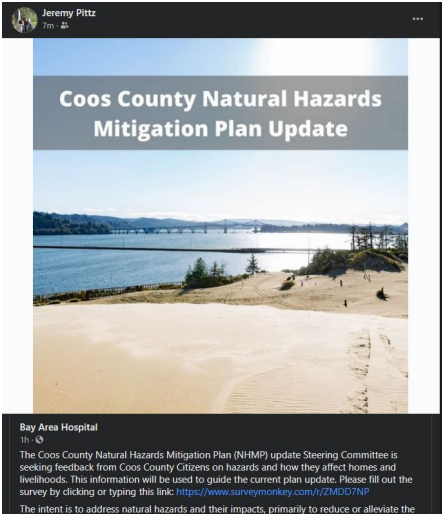
Figure III-13. Port of Bandon Tsunami Information



Source: Port of Bandon, 2022.

# Survey Outreach

Figure III-14. Bay Area Hospital Social Media Post



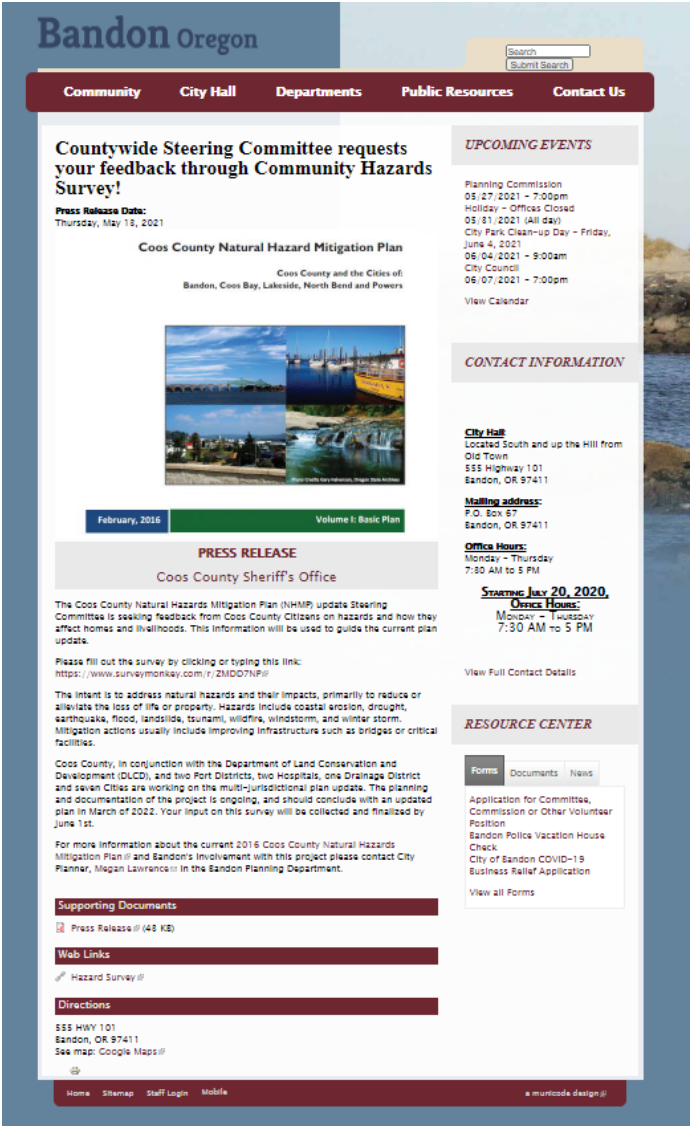
Source: Bay Area Hospital, 2021

Figure III-15. Port of Coos Bay Survey Outreach

Source: Port of Coos Bay, 2021.



Figure III-16. City of Bandon Survey Outreach



Source: City of Bandon, 2021

Figure III-17. Myrtle Point Survey Outreach

**CITY of MYRTLE POINT**  
In the HEART of the MYRTLEWOODS

Search   
Submit Search

Community Visitors City Hall Resource Center Contact Us

**PUBLIC INPUT REQUESTED - NATURAL HAZARDS MITIGATION PLAN**

**YOUR VOICE MATTERS!**

The Coos County Natural Hazards Mitigation Plan (NHMP) update Steering Committee is seeking feedback from Coos County Citizens on hazards and how they affect homes and livelihoods. This information will be used to guide the current plan update. Please fill out the survey by clicking or typing this link:  
<https://www.surveymonkey.com/r/ZMDD7NP>

The intent is to address natural hazards and their impacts, primarily to reduce or alleviate the loss of life or property. Hazards include coastal erosion, drought, earthquake, flood, landslide, tsunami, wildfire, windstorm, and winter storm. Mitigation actions usually include improving infrastructure such as bridges or critical facilities.

Coos County, in conjunction with the Department of Land Conservation and Development (DLCD), and two Port Districts, two Hospitals, one Drainage District and seven Cities are working on the multi-jurisdictional plan update.

The planning and documentation of the project is ongoing, and should conclude with an updated plan in March of 2022. Your input on this survey will be collected and finalized by June 1st, 2021.

Thank you!

Home Sitemap Login Site Design by Aha Consulting

City of Myrtle Point, 2022.

Public Meetings

Figure III-18. City of Coos Bay Webinar & Grant

# City of Coos Bay

**Webinars Regarding Oregon Coast's Rocky Shore Habitats**



The City of Coos Bay has partnered with the [Oregon Shores Conservation Coalition](http://oregonshores.org) to prepare a series of webinars on key resources including eelgrass, saltmarshes, benthic communities, endangered species, and rocky intertidal habitats. These materials can also be adapted for school use at a later date. The first webinar is scheduled for Monday, November 16 at 6 p.m. and will be information about the Oregon coast's rocky shore habitats. Steve Rummell of the Oregon Department of Fish and Wildlife (ODFW) will be the speaker. He will be discussing the basic ecology of tidepools and other rocky intertidal area, and explaining the importance of protecting rocky coastal habitats in light of the decline of species such as kelp, abalone, and sea stars. This event is free and open to all. For more information or to receive a link to the presentation, contact Jesse Jones at [jesse@oregonshores.org](mailto:jesse@oregonshores.org).

**Grant Helps City Plan for Natural Disasters**

Coos Bay Fire Department applied for and was awarded a \$97,840 grant through the Oregon Office of Emergency Management's Homeland Security Grant Program. This competitive grant process is open to any government agency in the State that has a direct involvement in response or recovery from terrorism or natural disasters.

This year's grant award of \$97,840 is being used to continue the City of Coos Bay's goal to provide essential needs for at least 10% of the City's population for two weeks after a natural disaster, such as the anticipated Cascadia Subduction Zone earthquake and tsunami.

The Fire Department has strategically placed shipping containers full of supplies throughout the City that will provide food, water filtration, sleeping supplies, and emergency medical supplies to 400 citizens each. Each container costs just under \$60,000 to purchase, install, and fill with the needed supplies. This grant along with already budgeted City funds will complete two more containers.



Although this grant helps to meet some of the anticipated need, residents of Coos Bay should still work to prepare to be "Two Weeks Ready." For more information on the "Two Weeks Ready" Campaign, visit: <https://www.oregon.gov/OEM/hazardsprep/Pages/2-Weeks-Ready.aspx>



## Email Lists

On March 4, 2021, North Bend sent a notice of the new plan update website to their email subscribers.

### Figure III-19. North Bend Email Notification March 4, 2021

Emailed to subscribers of city's notices.

**From:** City of North Bend Oregon <[northbend-or@municodeweb.com](mailto:northbend-or@municodeweb.com)>

**Sent:** Thursday, March 4, 2021 3:10 PM

**Subject:** [Public Notices] Natural Hazard Mitigation Plan UPDATE



### Natural Hazard Mitigation Plan UPDATE

The City of North Bend in conjunction with Coos County, the Department of Land Conservation and Development (DLCD), two Port Districts, one Hospital, one Drainage District, and six other Cities are working on the multi-jurisdictional plan update.

The intent is to include natural hazards and all possible risks for the county, in an attempt to permanently reduce or alleviate the loss of life or property. Hazards include coastal erosion, drought, earthquake, flood, landslide, tsunami, wildfire, windstorm, winter storm and volcanic ash.

The planning and documentation of the project is ongoing, and should conclude with an updated plan in March of 2022.

Please visit the project's website at: <https://www.co.coos.or.us/sheriff/page/natural-hazards-mitigation-plan> for additional information and to stay informed as the project progresses.

You can email ideas or input to [EmergencyManagement@co.coos.or.us](mailto:EmergencyManagement@co.coos.or.us) or to [cschnabel@northbendcity.org](mailto:cschnabel@northbendcity.org).

# Outreach Matrix

**Table III-4. Public Engagement Plan Matrix page 1**

**Coos County Multi-Jurisdictional Natural Hazards Mitigation Plan Update—Public Engagement Plan Matrix**

Outreach Strategy	Coos County	Bandon	Coos Bay	Coquille	Lakeside	Myrtle Point	North Bend	Powers	Port/Rail of Coos Bay	Port of Bandon	Southern Coos Hospital District
<b>Steering Committee Meetings:</b> • 4-7 over the course of the project	X	X	X	X	X	X	X	X	X	X	X
<b>Public Meeting: Adoption Proceedings</b> The final plan must be formally adopted by all participating jurisdictions.	X	X	X	X	X	X	X	X	X	X	X
<b>Public Meeting: Plan Update Kickoff with public officials/ Draft Risk Assessment March 2021</b>		X	X	X	X	X	X			X	X
<b>Public Meeting: Draft Mitigation Strategy</b>				X	X	X	X	X			
<b>Public Meeting: Board/Council Workshop*</b> <small>*Outreach to a jurisdiction's decision bodies does not usually meet the criteria for outreach.</small>		X	X	X	X	X	X	X		X	X
<b>Public Meeting: Planning Commission*</b> <small>*Outreach to a jurisdiction's decision bodies does not usually meet the criteria for outreach.</small>				X	X		X				
<b>Public Meeting: Resiliency Summit</b> Southern Coos Hospital District can support a large community meeting about hazards and how to mitigate them.											X
<b>Public Meeting: Community presentations</b>	CCSO		X	X	X		?			X	
<b>Other:</b>											

FEMA Definitions: \*PUBLIC\*: Businesses; neighboring communities; local and regional agencies involved in hazard mitigation activities; agencies that have the authority to regulate development; academia; and other private and non-profit interests.  
 \*WHOLE COMMUNITY\* sectors as set forth by FEMA: 1) Emergency management; 2) Economic Development; 3) Land Use and Development; 4) Housing; 5) Health and Social Services; 6) Infrastructure; and 7) Natural and Cultural Resources.

Table III-5. Public Engagement Plan Matrix page 2

Coos County MJNHMP Update—Public Engagement Plan

November 2020

Page 2

Outreach Strategy	Coos County	Bandon	Coos Bay	Coquille	Lakeside	Myrtle Point	North Bend	Powers	Port/Rail of Coos Bay	Port of Bandon	Southern Coos Hospital District
<b>WEBSITE:</b> Establish a website where citizens can review and comment on plan drafts, learn about how to prepare, and otherwise learn about natural hazards and the NHMP.	CC Planning	X	X		X	X	X			X	X
<b>LEGAL NOTICES:</b> Create and publish legal notices for public meetings and other plan engagement opportunities via established media avenues (print, radio, and television).	CC Planning				X	X	X			X	
<b>EMAIL LIST:</b> Jurisdiction will establish an email list where citizens, businesses, and other interested parties can receive news about the plan update.	CC Planning					X	X	X	X	X	
<b>SOCIAL MEDIA:</b> Jurisdiction will establish, or use established social media outlets (Facebook, Instagram, etc.) to convey meeting times, hazard information, and news about the plan update.	CCSO	X	X	X	X		X NBF		X	X	
<b>UTILITY BILLS:</b> Jurisdiction will insert information about upcoming meetings and events into utility bills on a monthly or bimonthly cycle.			?		X		?				X
<b>DISTRIBUTE TSUNAMI &amp; other HAZARD INFORMATION:</b> Provide information at booths or tables during public events; Deliver to local businesses; Display at Community Centers & Offices.	CCSO	X	X				X	X		X	X
<b>SURVEY:</b> Distribute NHMP survey via electronic or print methods; Return the results to Coos County in a timely fashion.	CC Planning	X	X			X	X		X		
<b>OTHER: TOOLKIT:</b> Coordinate with others to offer quarterly hazard information, graphics, links, and other information as an outreach media packet. Check this box if you would like to coordinate on the hazard toolkit.									X		

## F. FEMA Review Tool

### **FEMA REGION 10 LOCAL MITIGATION PLAN REVIEW TOOL**

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The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in [44 CFR §201.6](#) and offers States and FEMA Mitigation Planners an opportunity to provide feedback to participating jurisdictions.

1. The [Multi-Jurisdiction Summary Sheet](#) is used to document how each jurisdiction met the requirements in the Plan.
2. The [Regulation Checklist](#) provides a summary of FEMA’s evaluation of whether the Plan has addressed all requirements.
3. The [Plan Assessment](#) identifies the plan’s strengths as well as documents areas for future improvement.

The FEMA Mitigation Planner must reference the [Local Mitigation Plan Review Guide](#) when completing this *Local Mitigation Plan Review Tool*.

<b>Jurisdiction:</b> Coos County, Oregon	<b>Title of Plan:</b> Coos County Multi-Jurisdictional Natural Hazards Mitigation Plan	<b>Date of Plan:</b> ___ 2023
<b>Local Point of Contact:</b> Chip Delyria		<b>Address:</b> 250 N. Baxter Coquille, Oregon 97423
<b>Title:</b> Emergency Manager		
<b>Agency:</b> Coos County Sheriff’s Office		
<b>Phone Number:</b> 541-396-7790		<b>E-Mail:</b> cdelyria@co.coos.or.us

<b>State Reviewer:</b>	<b>Title:</b>	<b>Date:</b>
------------------------	---------------	--------------

<b>FEMA Reviewer:</b>	<b>Title:</b>	<b>Date:</b>
<b>Date Received in FEMA Region 10</b>		
<b>Plan Not Approved</b>		
<b>Plan Approvable Pending Adoption</b>		
<b>Plan Approved</b>		

**SECTION 1: MULTI-JURISDICTION SUMMARY SHEET (used only for multi-jurisdictional plans)**

**INSTRUCTIONS:** The Multi-Jurisdiction Summary Spreadsheet is completed by listing each participating jurisdiction and which required Elements for each jurisdiction were ‘Met’ or ‘Not Met,’ and when the adoption resolutions were received. This Summary Sheet does not imply that a mini-plan be developed for each jurisdiction; it is used to ensure that each jurisdiction participating in the Plan has been documented and has met the requirements for those Elements (A through E).

<b>MULTI-JURISDICTION SUMMARY SHEET (Add additional pages if necessary)</b>										
#	Jurisdiction Name	Jurisdiction Type (city, district, etc.)	POC	Required Revisions / Comments	Requirements Met (Y/N)					
					A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
1	Coos County	County	Chip Delyria							n/a
2	Bandon	City	Dan Chandler							n/a
3	Coos Bay	City	Mark Anderson							n/a
4	Coquille	City	Scott Sanders							n/a
5	Lakeside	City	Melissa Bethel							n/a
6	Myrtle Point	City	Darin Nicholson							n/a
7	North Bend	City	Ralph Dunham							n/a

<b>MULTI-JURISDICTION SUMMARY SHEET (Add additional pages if necessary)</b>										
#	Jurisdiction Name	Jurisdiction Type (city, district, etc.)	POC	Required Revisions / Comments	Requirements Met (Y/N)					
					A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Requirements
8	Powers	City	Stephanie Patterson							n/a
9	Port of Bandon	District	Jeff Griffin							n/a
10	Port of Coos Bay	District	Mike Dunning							n/a
11	Bay Area Hospital	District	Jeremy Pittz							n/a
12	Southern Coos Hospital	District	Jason Cook							n/a
13	Haynes Drainage	District	Tom Koenig							n/a

**SECTION 2: REGULATION CHECKLIST**

**INSTRUCTIONS:** The Regulation Checklist is completed by FEMA. The purpose of the Checklist is to identify the location of relevant or applicable content in the Plan by Element/sub-element and to determine if each requirement has been ‘Met’ or ‘Not Met.’ The ‘Required Revisions’ summary at the bottom of each Element is completed by FEMA to provide a clear explanation of the revisions that are required for plan approval. Required revisions are explained for each plan sub-element that is ‘Not Met.’ Sub-elements are referenced in each summary by using the appropriate numbers (A1, B3, etc.), where applicable.

<b>1. REGULATION CHECKLIST</b>	<b>Location in Plan</b>	<b>Met</b>	<b>Not Met</b>
<b>Regulation (44 CFR 201.6 Local Mitigation Plans)</b>	<b>(section and/or</b>		
<b>ELEMENT A. PLANNING PROCESS</b>			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Acknowledgements pp 3-4; Sect. I.D. Community Risk Profile Process: 126-164, pp. 128-129, 132, 135, 138, etc. Local RA activities. Sect. II.A. Mission & Goals: pp. 171. Sect. III. Planning Process: 2023 Plan Update p. 233-234, Pre-Award SC Recruitment p. 235, Meetings pp. 237-241. Survey comments pp. 244-246, 253-258, 263-265, 273-276, 282-284, 290-303.		
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Acknowledgements pp 3-4; Sect. III. Planning Process: 2023 Plan Update p. 233-234, Pre-Award SC Recruitment p. 235, Meetings pp. 237-241; Coos Community Hazard Survey pp. 242-303.		
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	Sect. III. Planning Process: 2023 Plan Update p. 233-234, III.C. Public Participation pp. 237-241, Coos Community Hazard Survey Results pp. 242-303, Survey comments pp. 244-246, 253-258, 263-265, 273-276, 282-284, 290-303. III.E. Plan Outreach pp.304-317.		
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	Sect. I. Risk Assessment: I.A. Intro pp. 16-18; I.B. Community Profile pp. 19-51, I.C. Natural Hazards pp. 52-126. Appendices A-C pp.1-357.		
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	Sect. III. Planning Process: III.A. Plan Maint. pp. 227-232		



<b>1. REGULATION CHECKLIST</b>		<b>Location in Plan</b>	<b>Met</b>	<b>Not Met</b>
<b>Regulation (44 CFR 201.6 Local Mitigation Plans)</b>		<b>(section and/or</b>		
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))		Meeting Schedule p. 228 Sect. III. Planning Process: III.A. Plan Maint. pp. 227-232		
<b>ELEMENT A: REQUIRED REVISIONS</b>				
<b>ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT</b>				
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))		Sect. I. Risk Assessment: I.A. Intro pp. 15,17; I.C. Natural Hazards pp. 52-126 I.D. Community Risk Profiles pp. 167-155		
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))		I.A. Disaster Declarations pp. 18, I.C. Hazard History sections, Hazard chapters. pp. 54, 59, 63, 73-76, 97,106, 112, 119, 124. Probability across Hazard chapters, esp. in future climate condition sections pp. 52-126		
B3. Is there a description of each identified hazard’s impact on the community as well as an overall summary of the community’s vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))		See Risk Assessment I.D. Community Risk Profiles pp. 116- 154. Appendices A pp.1-122, Appendices C 167-357.		
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))		I.C. Flood Chapter pp.80-82		
<b>ELEMENT B: REQUIRED REVISIONS</b>				
<b>ELEMENT C. MITIGATION STRATEGY</b>				

<b>1. REGULATION CHECKLIST</b>		<b>Location in Plan</b>	<b>Met</b>	<b>Not Met</b>
<b>Regulation (44 CFR 201.6 Local Mitigation Plans)</b>	<b>(section and/or</b>			
C1. Does the plan document each jurisdiction’s existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	I.B. Community Profile pp.19-51, especially Critical Facilities pp.36-51. Completed & Ongoing Mitigation Actions pp. 172-174 Appendix A.3. Local Tsunami Evac Planning Apx. pp. 5- 15; Appendix B Policy Framework, Apx.pp. 163-166.			
C2. Does the Plan address each jurisdiction’s participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	I.C. Flood Chapter pp.72-87; especially NFIP pp. 81-83.			
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	Sect. II.A. Mission & Goals: pp. 171-172.			
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	II. C. Mitigation Actions 2023 pp. 175-186. II. B. Completed & Ongoing Mitigation Actions pp. 172-174			
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	II. Mitigation Strategy pp. 170-223, C. Mitigation Actions 2023 pp. 175-192 and Action item Development pp. 187-192. Appendix B Funding & Policy Guide Apx. pp. 127-170			
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	Sect. I pp. 14-16 Sect. II A. Mission & Goals pp. 171 Section II.B. Completed & Ongoing Mitigation Actions, pp. 172-174. Sect. III. Planning Process: p. 229 Sect. III.A. Plan Maint. pp. 222-223.			
<b>ELEMENT C: REQUIRED REVISIONS</b>				
<b>ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)</b>				
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	Sect. IB. Community Profile pp. especially pp. 33-34, pp. 22-35.			
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	Section II.B. Completed & Ongoing Mitigation Actions, pp. 172-174. Sect. II.C. Mitigation Actions 2023 pp. 175-190, Sect. II.D. Mitigation Action Status 2016 pp. 193-225			

<b>1. REGULATION CHECKLIST</b>		<b>Location in Plan</b>	<b>Met</b>	<b>Not Met</b>
<b>Regulation (44 CFR 201.6 Local Mitigation Plans)</b>		<b>(section and/or</b>		
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	Sect. II.D. Mitigation Action Status 2016 pp. 193-225, New HHPD chapter added pp.89-94. New risk report and climate data throughout I.C. Natural Hazards pp. 52-126 and appended .in Appendix C Apx. pp. 167-357			
<b><u>ELEMENT D: REQUIRED REVISIONS</u></b>				
<b>ELEMENT E. PLAN ADOPTION</b>				
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	Forthcoming Sect. III. Adoption Resolutions pp.330~359			
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	Forthcoming Sect. III. APA letter p.329,, Approval letter pp. 5-6, 359.			
<b><u>ELEMENT E: REQUIRED REVISIONS</u></b>				
<b>ELEMENT F. ADDITIONAL STATE REQUIREMENTS</b>				
<b>(OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)</b>				
<p>OEM’s current contract (FY 17) with local EMPG jurisdictions (mostly counties) requires that they convene their “Natural Hazards Committee” at least twice per year. Oregon Administrative Rule (OAR) 104, Division 10 requires “Each county, tribal government and city must meet the following requirements to be eligible to participate in (EMPG): ...Have a FEMA approved Natural Hazards Mitigation Plan that is updated every five years.”</p>				

**SECTION 3: PLAN ASSESSMENT**

**A. Plan Strengths and Opportunities for Improvement**

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

**Element A: Planning Process**

*How does the Plan go above and beyond minimum requirements to document the planning process with respect to:*

- *Involvement of stakeholders (elected officials/decision makers, plan implementers, business owners, academic institutions, utility companies, water/sanitation districts, etc.);*
- *Involvement of Planning, Emergency Management, Public Works Departments or other planning agencies (i.e., regional planning councils);*
- *Diverse methods of participation (meetings, surveys, online, etc.); and*
- *Reflective of an open and inclusive public involvement process.*

**Plan Strengths**

- 

**Opportunities for Improvement**

- 

**Element B: Hazard Identification and Risk Assessment**

*In addition to the requirements listed in the Regulation Checklist, 44 CFR 201.6 Local Mitigation Plans identifies additional elements that should be included as part of a plan’s risk assessment. The plan should describe vulnerability in terms of:*

- 1) *A general description of land uses and future development trends within the community so that mitigation options can be considered in future land use decisions;*
- 2) *The types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas; and*
- 3) *A description of potential dollar losses to vulnerable structures, and a description of the methodology used to prepare the estimate.*

*How does the Plan go above and beyond minimum requirements to document the Hazard Identification and Risk Assessment with respect to:*

- *Use of best available data (flood maps, HAZUS, flood studies) to describe significant hazards;*
- *Communication of risk on people, property, and infrastructure to the public (through tables, charts, maps, photos, etc.);*
- *Incorporation of techniques and methodologies to estimate dollar losses to vulnerable structures;*
- *Incorporation of Risk MAP products (i.e., depth grids, Flood Risk Report, Changes Since Last FIRM, Areas of Mitigation Interest, etc.); and*

- *Identification of any data gaps that can be filled as new data became available.*

#### **Plan Strengths**

- 

#### **Opportunities for Improvement**

- 

#### **Element C: Mitigation Strategy**

*How does the Plan go above and beyond minimum requirements to document the Mitigation Strategy with respect to:*

- *Key problems identified in, and linkages to, the vulnerability assessment;*
- *Serving as a blueprint for reducing potential losses identified in the Hazard Identification and Risk Assessment;*
- *Plan content flow from the risk assessment (problem identification) to goal setting to mitigation action development;*
- *An understanding of mitigation principles (diversity of actions that include structural projects, preventative measures, outreach activities, property protection measures, post-disaster actions, etc);*
- *Specific mitigation actions for each participating jurisdictions that reflects their unique risks and capabilities;*
- *Integration of mitigation actions with existing local authorities, policies, programs, and resources; and*
- *Discussion of existing programs (including the NFIP), plans, and policies that could be used to implement mitigation, as well as document past projects.*

#### **Plan Strengths**

- 

#### **Opportunities for Improvement**

- 

#### **Element D: Plan Update, Evaluation, and Implementation (Plan Updates Only)**

*How does the Plan go above and beyond minimum requirements to document the 5-year Evaluation and Implementation measures with respect to:*

- *Status of previously recommended mitigation actions;*
- *Identification of barriers or obstacles to successful implementation or completion of mitigation actions, along with possible solutions for overcoming risk;*
- *Documentation of annual reviews and committee involvement;*
- *Identification of a lead person to take ownership of, and champion the Plan;*
- *Reducing risks from natural hazards and serving as a guide for decisions makers as they commit resources to reducing the effects of natural hazards;*
- *An approach to evaluating future conditions (i.e. socio-economic, environmental, demographic, change in built environment etc.);*
- *Discussion of how changing conditions and opportunities could impact community resilience in the long term; and*

- *Discussion of how the mitigation goals and actions support the long-term community vision for increased resilience.*

#### **Plan Strengths**

- 

#### **Opportunities for Improvement**

- 

### **B. Resources for Implementing Your Approved Plan**

*Ideas may be offered on moving the mitigation plan forward and continuing the relationship with key mitigation stakeholders such as the following:*

- *What FEMA assistance (funding) programs are available (for example, Hazard Mitigation Assistance (HMA)) to the jurisdiction(s) to assist with implementing the mitigation actions?*
- *What other Federal programs (National Flood Insurance Program (NFIP), Community Rating System (CRS), Risk MAP, etc.) may provide assistance for mitigation activities?*
- *What publications, technical guidance or other resources are available to the jurisdiction(s) relevant to the identified mitigation actions?*
- *Are there upcoming trainings/workshops (Benefit-Cost Analysis (BCA), HMA, etc.) to assist the jurisdictions(s)?*
- *What mitigation actions can be funded by other Federal agencies (for example, U.S. Forest Service, National Oceanic and Atmospheric Administration (NOAA), Environmental Protection Agency (EPA) Smart Growth, Housing and Urban Development (HUD) Sustainable Communities, etc.) and/or state and local agencies?*

## G. FEMA APA Letter

## H. Adoption Resolutions



**Example: RESOLUTION NO. [REDACTED]**

**A RESOLUTION ADOPTING THE 2023 COOS COUNTY  
MULTI-JURISDICTIONAL NATURAL HAZARDS MITIGATION PLAN**

**WHEREAS**, natural hazards threaten life, businesses, property, and environmental systems throughout Coos County.

**WHEREAS**, an understanding of the nature, extent, and potential impacts of natural hazards is the foundation for developing strategies to reduce or eliminate those impacts.

**WHEREAS**, natural hazards mitigation planning is the process through which such understanding and strategies are developed and a process for implementation is established.

**WHEREAS**, it is in the interest of Coos County and the cities and special districts located therein to undertake natural hazards mitigation planning and implementation together as coordinated planning strengthens communities and better serves all.

**WHEREAS**, Coos County and the Cities of Bandon, Coos Bay, Coquille, Lakeside, Myrtle Point, North Bend, and Powers previously prepared, implemented, and updated a multi-jurisdictional natural hazards mitigation plan in accordance with the Disaster Mitigation Act of 2000. These plans were each approved by the Federal Emergency Management Agency (FEMA) for a period of five years.

**WHEREAS**, the Port of Coos Bay, the Port of Bandon, the Southern Coos Hospital, Bay Area Hospital, and Haynes Drainage District, each participated updating the 2023 Coos County Multi-Jurisdictional Natural Hazards Mitigation Plan, in accordance with the Disaster Mitigation Act of 2000, thereby developing their first natural hazards mitigation plans.

**WHEREAS**, the 2016 Coos County Multi-Jurisdictional Natural Hazards Mitigation Plan is the most recent and expired on September 12, 2021.

**WHEREAS**, having a natural hazards mitigation plan developed in accordance with the Disaster Mitigation Act of 2000 and approved by FEMA is a prerequisite for local government eligibility for certain federal hazard mitigation funds, particularly Hazard Mitigation Assistance (HMA) programs, such as Building Resilient Infrastructure and Communities (BRIC), Hazard Mitigation Grant Program (HMGP), and Flood Mitigation Assistance (FMA).

**WHEREAS**, adoption of the updated 2023 Coos County Multi-Jurisdictional Natural Hazards Mitigation Plan is required for FEMA approval of the 2023 Coos County Multi-Jurisdictional Natural Hazards Mitigation Plan.

**WHEREAS**, adoption of the updated 2023 Coos County Multi-Jurisdictional Natural Hazards Mitigation Plan demonstrates Coos County's commitment to reducing or eliminating the potential impacts of natural hazards and to achieving the Plan's goals.

**NOW, THEREFORE, BE IT RESOLVED BY COOS COUNTY:**

**Section 1.** The Coos County Board of Commissioners hereby adopts the recitals above in support of this resolution.

**Section 2.** The Coos County Board of Commissioners hereby adopts the Coos County Multi-Jurisdictional Natural Hazards Mitigation Plan.

**DATED** this **Date** day of **Month**, 2023.

\_\_\_\_\_

**Name**, Chair, Coos County Board of Commissioners

ATTEST:

APPROVED AS TO FORM:

\_\_\_\_\_

**Name, Title**

\_\_\_\_\_

**Name, Title**



























































# I. FEMA Approval Letter

