



City of Reedsport Natural Hazard Mitigation Plan

Plan for:
City of Reedsport
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Reedsport, OR 97467

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CHAPTER 1

Overview

The Federal Emergency Management Agency (FEMA) defines mitigation as “...the effort to reduce loss of life and property by lessening the impact of disasters...through risk analysis, which results in information that provides a foundation for mitigation activities that reduce risk.” Said another way, natural hazard mitigation is a method of permanently reducing or alleviating the losses of life, property, and injuries resulting from natural hazards through long and short-term strategies. In recent years these strategies have morphed from hazard mitigation to resiliency.

Resiliency takes mitigation a step further requiring communities to not only consider how they can mitigate disasters, but what steps should be assessed to decrease recovery time or eliminate the risk entirely. Resiliency also requires a comprehensive approach to community planning; resilience encourages agencies to address multiple hazards and consider multi-objective mitigation strategies that result in economic, social and environmental benefits. For example a water project designed to address the potential impacts from draught may also be capable of addressing some community shocks from a seismic event or wildfire. It is this comprehensive approach that the City hopes to capture, document and implement through this plan update.

History

In 2009 the City of Reedsport developed an addendum to the Douglas County multi-jurisdictional Natural Hazards Mitigation Plan (NHMP) in an effort to increase the community’s resilience to natural hazards. The Plan was approved and adopted by FEMA in 2010. This addendum focused on the natural hazards that could affect Reedsport, Oregon. The hazards list was recently reviewed and updated to include: coastal erosion, drought, earthquake, flood, landslide, sea level rise, tsunami, wildfire, windstorm, and winter storm.

It is impossible to predict exactly when disasters may occur, or the extent to which they will affect the City. However, with careful planning and collaboration among public agencies, private sector organizations, and citizens within the community, it is possible to minimize the losses that can result from natural hazards.

This NHMP provides a set of actions that aim to reduce the risks posed by natural hazards through education and outreach programs, the development of partnerships, and the implementation of preventative activities such as land use programs. The actions described in the Reedsport NHMP are intended to be implemented through existing plans and programs within the City when possible.

Plan Development Process

Initial Plan Development

In the fall of 2007, the Oregon Partnership for Disaster Resilience (The partnership/OPDR) at the University of Oregon’s Community Service Center partnered with Oregon Emergency Management (OEM) and Resource Assistance for Rural Environments (RARE) to develop a PreDisaster Mitigation planning grant proposal to create and/or update natural hazard mitigation

plans for Oregon's southern coastal cities, which include the City of Reedsport. RARE provided a staff person ('RARE Participant') to facilitate and document the cities' planning processes.

To develop the addendum, the RARE participant facilitated the planning process with a local steering committee. Representatives from the following organizations served as members of the steering committee:

- Reedsport Public Works Superintendent
- Reedsport City Manager
- Reedsport Police Chief
- Douglas County Emergency Manager
- Reedsport Fire Chief
- Oregon Coast Community Action Representative

The steering committee was involved in developing the addendum by providing local hazard and vulnerability information. The planning process was developed by the Oregon Partnership for Disaster Resilience, and was designed to: (1) result in an addendum that is DMA 2000 compliant; (2) coordinate with the state's plan and activities of the Partnership; and (3) build a network of local organizations that can play an active role in plan implementation.

The following is a summary of major planning activities:

Phase 1: Getting Started. From October 2007 to January 2008, the RARE Participant established contacts with Reedsport staff, and assisted the city in identifying members to serve on the plan's steering committee. With assistance from OPDR, the RARE Participant developed and facilitated a 'Kick-off' meeting on November 2nd, 2007, and introduced the steering committee to the planning process. Additionally, the RARE Participant conducted interviews with important stakeholders in the Reedsport community, and began work on the city's addendum.

As part of the regional Pre-Disaster Mitigation grant, *The Partnership* implemented a region-wide household preparedness survey. The survey gauged household knowledge of mitigation tools and techniques and assessed household disaster preparedness. The survey results improve public/private coordination of mitigation and preparedness for natural hazards by obtaining more accurate information on household understanding and needs.

Phase II: Risk Assessment. Phase II of the planning process focused on identifying and understanding the relationship between natural hazards, vulnerable systems within the community, and existing capabilities. To begin the risk assessment process, the RARE Participant reviewed existing research concerning the causes and characteristics of potential natural hazards, as well as their probabilities of occurrence and potential impacts. Resources included Oregon's Technical Resource Guide, and reports produced by the Department of Geology and Mineral Industries (DOGAMI) among others. Please see the Risk Assessment section below for hazard-specific resources and information.

On January 7th and March 11th, 2008, the RARE participant met with the Reedsport steering committee to identify community assets and vulnerabilities. These meetings identified areas in the community that were potentially vulnerable to natural hazards, and the location and extent of those hazards. This information was used to develop a comprehensive risk assessment for each of the natural hazards addressed in this plan which will enable the city to identify and prioritize

mitigation actions to reduce losses from identified hazards. The RARE participant developed and facilitated both meetings, which took place at the Reedsport City Hall.

Phase III: Developing a Mitigation Strategy/Plan Implementation and Maintenance. From April 2008 to June 2008, the RARE participant developed action items based on the community risk assessments and contact with Reedsport city staff. On May 20, 2008, the RARE participant facilitated an action item development meeting with the Reedsport steering committee to review the mitigation action items. The steering committee, in partnership with the RARE participant and Oregon Partnership for Disaster Resilience, reviewed the natural hazards facing Reedsport and developed new action items as necessary.

In addition to discussing the mitigation strategy, the steering committee discussed plan implementation and maintenance strategies.

The City of Reedsport adopted its addendum to the Douglas County Natural Hazards Mitigation Plan via resolution on March 1, 2010.

Plan Update

In accordance with 44 CFR 201.6, this Plan shall be updated every five (5) years in order to stay modern and meet the requirements of the Federal Emergency Management Agency's (FEMA's) Disaster Mitigation Act of 2000. In 2015, the Douglas County Planning Department initiated an effort to update the County NHMP and begin incorporating hazard assessments and action items of each city within the county. Each community was responsible for developing a steering committee to guide and influence the updates. Because the Douglas County NHMP has expired and the update process is expected to continue through the summer of 2016, Reedsport elected to expedite the local plan update process and develop this stand-alone plan to ensure eligibility to apply for the currently available FEMA Hazard Mitigation Grant Program funds. The Reedsport Natural Hazard Mitigation Plan update Project Advisory Committee (NHMP PAC) met and updated the Plan on November 24, 2015 and February 24, 2016. The committee was comprised of members of the public, community stakeholders, and agencies, as follows:

- Jonathan Wright, Reedsport City Manager
- John Stokes, Reedsport Public Works Director
- Duane Wisheart, Reedsport Police Chief
- Jessica Terra, Reedsport Community Development Specialist
- Tom Anderson & Harold Rose, Reedsport Volunteer Fire Department
- Linda McCollum, Mayor of the City of Reedsport
- Diane Essig & Leslee Collier, Reedsport City Councilors
- Kevin Hague, Lower Umpqua Hospital Maintenance Lead
- Stuart Jarmain & Greg Carter Central Lincoln PUD
- Allen Teitzel, Reedsport Planning Commission Chairman
-

On November 24, 2015 the Reedsport NHMP PAC, met in the Conference Room at Reedsport City Hall. The NHMP PAC identified a list of essential services and facilities in the community, which may be impacted in the event of a natural hazard. These services and facilities are:

- Highways 101 & 38
- Oregon Pacific Railroad
- Scholfield bridge, Burdick underpass, and the Umpqua River bridge

- Fire Departments (3), Fire Halls (4)
- Police Department
- City Hall
- Lower Umpqua Hospital and Aiden Living Center
- Highland Elementary and Reedsport Community Charter School
- Water treatment and wastewater treatment facilities
- Various health clinics, primary care physicians, surgeons, dentists, pharmacies, eye clinics, and veterinary clinics
- EMT services
- William M. Tugman State Park
- Umpqua Discovery Center
- Bolon Island State Park
- Oregon Dunes National Recreation Area
- American Red Cross Oregon Pacific Chapter
- Reedsport/Winchester Bay Chamber of Commerce
- Coastal Arts and Business Alliance
- Eagles Hall
- Lower Umpqua Senior Center
- Port of Umpqua
- Reedsport's Family Resource Center
- Timber Ridge Retirement Center
- Great Afternoons
- LUMA
- ODOT, City, County maintenance yards
- Project Blessing and AARP food pantry
- CERT
- Hospital Emergency Trailer
- United States Coast guard
- Rotary
- LIONS
- Douglas County Sheriff's Office
- Bonneville

The Committee then considered natural hazards, which could potentially affect Reedsport. The committee agreed the same hazards identified in 2010 were still applicable: coastal erosion, drought, earthquake, flood, landslide, tsunami, wildfire, windstorm, and winter storm. The NHMP PAC also determined that consideration should be given to the effects of sea level rise.

At the February 24, 2016 Reedsport NHMP PAC meeting. The steering committee reviewed previous action items identified in the 2010 addendum. Items which had been completed were removed, others were updated, and new action items were added to the document. These items can be found in Chapter 4.

Updates were also made to the Community Profile and Hazard Assessment chapters, based on discussions and recommendations from the February 24, 2016 NHMP PAC meeting. Supplemental information was added to the Plan in the appendices.

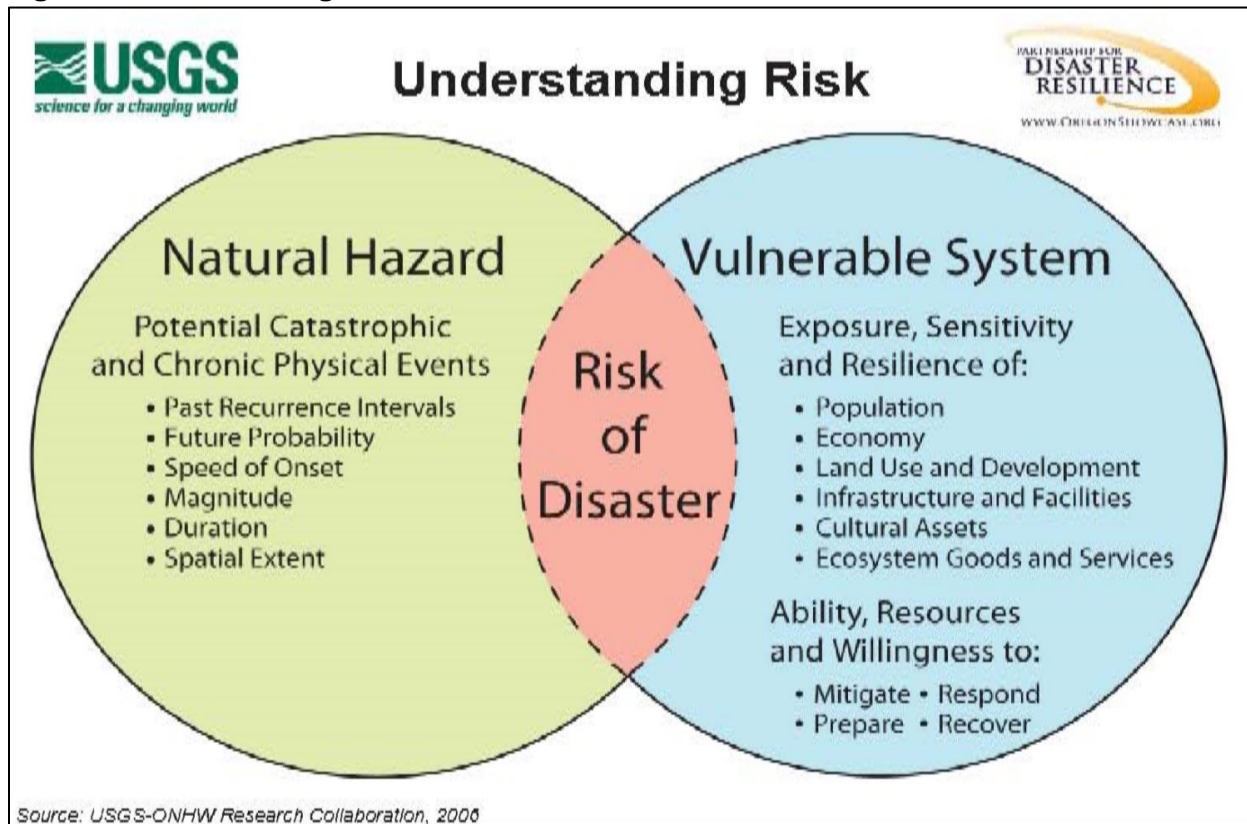
Once approval of the revised document has been granted by OPDR, and FEMA, the Reedsport City Council will be responsible for adopting Reedsport's 2016 Natural Hazards Mitigation Plan.

CHAPTER 2

Community Profile

The following section describes the City of Reedsport from a number of perspectives in order to help define and understand the City's sensitivity and resilience to natural hazards. Sensitivity factors can be defined as those community assets and characteristics that may be impacted by natural hazards, (e.g., special populations, economic factors, and historic and cultural resources). Community resilience factors can be defined as the community's ability to manage risk and adapt to hazard event impacts (e.g., governmental structure, agency missions and directives, and plans, policies, and programs). The information in this section represents a snapshot in time of the current sensitivity and resilience factors in the city when the plan was developed. The information documented below, along with information from the risk assessment, should be used as the local level rationale for the city's risk reduction actions. The identification of actions that reduce the city's sensitivity and increase its resilience assist in reducing overall risk, or the area of overlap in Figure 1 below.

Figure 1 Understanding Risk



Geography & Climate

Reedsport is located in coastal Douglas County, approximately nine (9) river miles from the mouth of the Umpqua River. Reedsport is located at the convergence of US Highway 101 and OR

Highway 38 scenic bi-way and at the confluence of the Smith River, Umpqua River and Scofield Creek. The community is approximately 194 miles south of Portland, Oregon, and 530 miles north of San Francisco, California. According to the 2010 U.S. Census, the community encompasses a total area of 2.30 square miles, including 0.25 square miles of water and 2.05 square miles of land.

Average temperatures range from a monthly low of 37°F and an average monthly high of 69°F. The City of Reedsport receives an average annual precipitation of 76.010".

Population & Demographics

Reedsport was established on the estuary of the Umpqua River on January 7, 1852. The building of Southern Pacific Railroad lines extending south to Coos Bay led to the development of Reedsport. Before the post office was established in 1912, Reedsport was a camp for railroad construction workers. The City itself did not incorporate until 1919.

The population of Reedsport according to the 2010 US Census estimate is 4,154 with an average household income of \$31,576. Of this population 50.4% are female, and 49.6% are male.

The 2010 U.S. Census indicates that 76.2% of Reedsport's population live in family households. The racial composition in 2010 was 93.0% White, 1.1% American Indian and Alaska native, and 1.1% Asian. A total of 3.1% of the population identified with two or more races. Less than five percent (4.9%) of the population identified themselves as Hispanic or Latino.

The impact in terms of loss and the ability to recover vary among population groups following a disaster. Historically, 80% of the disaster burden falls on the public. Of this number, a disproportionate burden is place upon special needs groups, including children, the elderly, the disabled, minorities, and low income persons. Portions of the City of Reedsport's residents fall into these special needs populations, as shown in Tables 1 and 2 below.

Table 1: Disabled Populations by Age Group, City of Reedsport, 2010

Age	Percentage Disabled
5-15 years	9.1%
16-64 years	24.4%
65 years and older	40.5%

Source: US Census, 2000

Table 2: Population by Age, City of Reedsport, 2010

Age	Number	Percentage
Under 5	206	5%
5-19 years	630	15.1%
20-44 years	947	22.8%
45-64 years	1,241	29.9%
65+ years	1,130	27.2%

Source: US Census, 2010

Employment and Economics

Historically, the economy of Reedsport has been largely based on fishing and timber. Both commercial fishing and timber have declined in the last few decades. The economy has transitioned to more tourism, services, and retail. Table 3 below describes the industries and number of employees found in Reedsport. A majority of Reedsport's employment is in the service industry which includes tourism, recreation, and government services. Reedsport is located in the Umpqua Port district and is included in tourism and sport fishing activities.

Median income can be used as an indicator of the strength of the region's economic stability. In 2013, the median household income in Reedsport was \$33,145. This is \$17,000 below the 2013 median household income for Oregon at \$50,251. Although it can be used to compare areas as a whole, this number does not reflect how income is divided among area residents.

Table 3: Employment by Industry, City of Reedsport

Employment Industry	Number	Percentage
Educational, health and social services	283	19.3
Arts, entertainment, recreation, accommodation and food services	250	17.1
Retail trade	215	14.7
Construction	164	11.2
Professional, scientific, management, administrative, and waste management services	114	7.8
Transportation and warehousing, and utilities	96	6.6
Manufacturing	71	4.8
Agriculture, forestry, fishing and hunting, and mining	65	4.4
Public administration	64	4.4
Other services (except public administration)	54	3.7
Information	46	3.1
Finance, insurance, real estate, and rental and leasing	28	1.9
Wholesale trade	14	1

Source: US Census, 2000

Housing

Housing type and year-built dates are important factors in mitigation planning. Certain housing types tend to be less disaster resistant and warrant special attention: mobile homes, for example, are generally more prone to wind and water damage than standard stick-built homes. Reedsport

has five mobile home or manufactured home parks, three of which are located in the downtown area within the levee walls. These parks provide affordable housing to nearly 300 residents of Reedsport.

Generally older homes are also at greater risk of damage from natural disasters. This is because stricter building codes have been developed following improved scientific understanding of plate tectonics and earthquake risk. For example, structures built after the late 1960's in the Northwest and California use earthquake resistant designs and construction techniques. In addition, FEMA began assisting communities with floodplain mapping during the 1970's, and communities developed ordinances that required homes in the floodplain to be elevated to one foot above Base Flood Elevation. Approximately 442 residential structures are located downtown behind the levee and those homes are not currently required to be elevated, due to their levee protection status. However, without recertification of the levee, those homes would be mapped into the floodplain and become subject to National Flood Insurance Program (NFIP) regulations. These regulations would have severe economic consequences for this community, requiring property owners to pay high flood insurance costs and forcing new structures to be constructed/elevated to NFIP standards. Furthermore, without proper maintenance and repair, failure of the levee could result in significant damage to those residences inside the levee walls, in the event of a flood.

In 2010, the City of Reedsport had 2,077 housing units. Of those, 63.5% (1,237) were owner occupied, 36.5% (711) were renter occupied, and about 11.7% (259 units) were vacant. Nearly 80% of the city's housing stock was built before 1980, the year when more advanced seismic building codes were implemented.

Table 4: Housing Type, City of Reedsport

<u>Housing Type</u>	<u>Number</u>	<u>Percentage</u>
1- Unit, Detached	1,335	59.7
1- Unit, Attached	52	2.3
Multifamily	484	21.6
Mobile Home	355	15.9
Boat, RV, Van, etc.	11	0.5

Source: US Census, 2000 and City of Reedsport

Table 5: Housing Structure Age, City of Reedsport

<u>Age Built</u>	<u>Number</u>	<u>Percentage</u>
1999 to March 2016	31	1.4
1995 to 1998	73	3.3
1990 to 1994	100	4.5
1980 to 2000	283	12.8
1970 to 1979	670	30.4
1960 to 1969	356	16.2
1940 to 1959	489	22.2
1939 or earlier	202	9.2

Source: US Census, 2000 and City of Reedsport

Land Use & Development

Development in the City of Reedsport spreads mostly along Highways 101 and 38; however, the city is divided southwest and northeast by Scholfield Creek. A large portion of the residential development in Reedsport is located southwest of the Scholfield Bridge, with newer subdivisions and development located along Ranch Road. Since 2010, a total of 9 new homes have been constructed, largely thanks to a moratorium on the City's System Development Charges (SDCs). A majority of the city services, such as grocery stores, gas stations, small businesses, government and public agencies, and other offices are located in what are identified as the mid-town and downtown areas (northeast of the Scholfield Bridge).

To encourage economic development, the City developed an Urban Renewal District and Plan. A majority of the District lies along Hwy 38 in what is seen as the historic Old Town area. Funds of the District have been used in recent years to provide support to the City's recently developed Main Street Program's façade improvement grant project. This is a matching grant, in which businesses along the main streets can match funding to improve their business facades, in turn, attracting tourists and business to the main streets.

Transportation & Commuting Patterns

As previously mentioned, two major transportation routes run through the City of Reedsport: Highway 101 and Oregon State Highway 38. Highway 101 runs north to south over the Umpqua River and Scholfield Creek, and includes three bridges over the river. Oregon State Highway 38 runs west to east along the Umpqua River. Transportation routes can be seen on page 14.

The Coos Bay Rail Link has tracks that run through Reedsport, but there is no commuter rail available to residents. Although, Amtrak and Greyhound do run bus lines to Eugene.

Transportation is an important consideration when planning for emergency service provisions. Currently, there is minimal population growth in Reedsport. Possible growth within the city will put pressure on both major and minor roads, especially since the main mode of travel is by single occupancy vehicles (see Table 6 below).

Table 6: Means of Transportation, City of Reedsport

Means of Transportation	Number	Percent
Workers 16 and over	1,448	100
Car, truck, or van	1,229	84.9
Drove alone	1,093	75.5
Carpooled	136	9.4
Walked	135	9.3
Worked at home	52	3.6
Other means	32	2.2
Public transportation	0	0
Bicycle	0	0

Source: US Census, 2000



Critical Facilities and Infrastructure

Critical facilities are those that support government and first responders' ability to take action in an emergency. They are a top priority in any comprehensive hazard mitigation plan. The city of Reedsport has two fire stations, one hospital, one elementary school, one junior/senior high school, a police department and jail, a water treatment facility, a waste water treatment facility, City Hall, Chamber of Commerce, Port of Umpqua, Oregon Department of Transportation, County, and City maintenance yards, Douglas County Sherriff's Office, US Forest Service and community buildings. Surrounding areas, Gardiner and Winchester Bay each have their own fire department, as well as, the US Coast Guard is stationed in Winchester Bay. The local hospital, Lower Umpqua Hospital, provides 24-hour ambulance service. The hospital is designed with a helicopter pad for life flight services. The City also has various health clinics, primary care physicians, surgeons, dentists, pharmacies, eye clinics, and veterinary clinics. Other hospitals nearby include Peace Harbor in Florence (22 miles) and Bay Area Hospital in Coos Bay (25 miles).

Historic & Cultural Resources

Historic and cultural resources such as historic structures and landmarks can help to define a community's identity and may also be sources of tourism dollars. Because of their role in defining and supporting the community, protecting these resources from the impact of disasters is important. The following structures and recreation areas are considered to be significant cultural and historic resources near the city of Reedsport:

- Umpqua River Light House built in 1856
- William M. Tugman State Park
- Umpqua Discovery Center
- Bolon Island State Park
- Oregon Dunes National Recreation Area
- Dean Creek Elk Viewing Area
- Reedsport (Umpqua River) Bridge
- Many of the homes located in Gardiner

Government Structure

The City Council is the policy making body for the City of Reedsport. The Mayor and Councilors appoint the City Manager, City Attorney, and Municipal Judge.

The City of Reedsport has the following departments.

- *City Manager*: Directs and coordinates administration of the city government in accordance with policies and directives of the City Council.
- *Public Works*: Develops and maintains City infrastructure.
- *City Attorney*: Provides representation and legal advice to the City Council and staff.
- *Municipal Court Judge*: Reviews violations of city ordinances occurring within the city limits or on city owned property.
- *Umpqua Discovery Center Director*: Directs educational outreach for the Discovery Center, including tsunami and earthquake educational opportunities.
- *Fire Department*: As a part of the Emergency Response Team, the Department is informed and prepared to handle hazardous waste emergency. The Department protects

the safety and welfare of persons and property. This Department also houses the Coastal Douglas County Citizen Emergency Response Team (CERT).

- *Police Department:* Responsible for the Emergency Response Team, in the event of a natural disaster. The Department strives to protect, train, and enhance the lives of the citizens.
- *Finance Department:* Dispatches information to utility crews.
- *Planning Department:* Enforces zoning ordinances, works with general public to plan and monitor development activities.

Existing Plans & Policies

Communities often have existing plans and policies that guide and influence land use, land development, and population growth. Such existing plans and policies can include comprehensive plans, zoning ordinances, and technical reports or studies. Plans and policies already in existence have support from local residents, businesses and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.

The City of Reedsport's Natural Hazards Mitigation Plan includes action items that, when implemented, will reduce the City's vulnerability to natural hazards. Many of these recommendations are consistent with the goals and objectives of the City's existing plans and policies. Implementing the Plan's action items through existing plans and policies increases their likelihood of being supported and getting updated, and maximizes the City's resources.

Reedsport's existing plans and policies include:

Comprehensive Plan – Reedsport's Comprehensive Plan is a coordinated land use map and policy statement for the community that guides future planning decisions. The plan was created 1984 and revised 1990. The plan was periodically reviewed in 2007, with minor updates occurring in 2010, 2015, and 2016. The Reedsport Comprehensive Plan addresses Natural Hazards under the Natural Features Element:

- *Chapter III – Natural Features Element – Areas subject to natural hazards:* Reedsport is located within a region that has two hazard potentials. The first is flooding and the second is steep slopes. The downtown area is prone to flooding from the Schofield Creek. Due to being flood prone, this area is under the National Flood Insurance Program, as administered by FEMA. Some portions of the community are in areas with steep slopes in excess of 20%. These areas are intended for low density residential development.

Reedsport Zoning Ordinance. The Zoning Ordinance contains regulations for the zoning of land within the city that have been adopted to promote and protect the public health, safety, and general welfare. The following sections address natural hazards in Reedsport:

- *Section 4.010 Flood Hazard Area Purpose:* To promote the public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed.

- *Section 4.140 Steep Slope Hazards* The purpose of this Steep Slope Hazard Section is to protect the public health, safety and welfare by ensuring that development in hazardous or potentially hazardous areas is appropriately planned to minimize the threat to life and property.

Notably, there are no zoning regulations related to the tsunami, wildfire, earthquake or sea level rise hazards.

Urban Renewal Plan – July, 2007: The Urban Renewal Plan identifies improvements to the streetscape and utilities, and redevelopment of under-utilized properties and new businesses. The adequate provision of utilities to the entire district will assure that the quality of ground water is preserved, sanitary waste is properly treated and storm water is managed in a manner that enhances downstream water quality.

Transportation System Plan – February, 2006: The Reedsport Transportation System Plan (TSP) identifies projects and programs needed to support the city's goals and policies and to serve planned growth over the next 20 years, and will be incorporated (by reference) into the Reedsport Comprehensive Plan. This document presents the investments and priorities for the pedestrian, bicycle, and motor vehicle systems along with new transportation programs to correct existing shortfalls and enhance critical services.

Levee Loop Trail Plan – November, 2015: The Reedsport Levee Loop Trail Plan identifies improvements to the levee system, including ramps and a paved surface atop the levee. These improvements support easier access to parts of the levee for maintenance, offer an alternate evacuation route for residents assuming the levee is properly elevated in areas, and the permeable surface provides additional stability by reducing settling currently caused by water saturation.

Stormwater Master Plan – The Reedsport Stormwater Master Plan examines the City of Reedsport's existing stormwater system, recommends capital projects, and identifies operational and maintenance concerns. The plan identifies existing system deficiencies, recommends infrastructure sizing to meet future flow conditions, identifies water quality and habitat regulations to affect Reedsport, and finds potential actions to improve water quality of run off,

Building Administrative Code – The City has adopted the Building Administrative Code in order to enforce the Oregon Specialty Codes upon site preparation, construction, alteration, moving, demolition, repair, use and occupancy of buildings, structures and building service equipment within the jurisdiction. Enforcement of the Oregon Specialty Codes ensures that construction is done to a minimum standard which considers the effects of seismic activity in the region, so as to reduce the risk of loss of life and/or structures, in the case of such an event.

Social Systems

Social systems can be defined as community organizations and programs that provide social and community-based services, such as health care or housing assistance, to the public. In planning for natural hazard mitigation, it is important to know what social systems exist within the community because of their existing connections to the public. Often, actions identified by the

plan involve communication with the public or specific subgroups within the population (e.g. elderly, children, low income). Reedsport can use existing social systems as resources for implementing such communication-related activities because these service providers already work directly with the public on a number of issues, one of which could be natural hazard preparedness and mitigation.

The following organizations are active within Douglas County and may be potential partners for implementing mitigation actions in the City of Reedsport.

- American Red Cross Oregon Pacific Chapter
- Reedsport/Winchester Bay Chamber of Commerce
- Coastal Arts & Business Alliance
- Douglas County Extension Service
- Douglas County Health and Social Services
- Eagle's Hall
- Local Churches
- Reedsport School District
- Lower Umpqua Senior Center
- Port of Umpqua
- Reedsport's Family Resource Center
- Siuslaw Outreach Services
- Timber Ridge Retirement Center
- Great Afternoons
- Lower Umpqua Ministerial Association
- United States Coast Guard
- CERT
- LIONS
- Rotary
- Great Afternoon & Great Beginnings
- Project Blessing and AARP Food Pantries
- Reedsport City Hall

Existing Mitigation Activities

Existing mitigation activities include current mitigation programs and activities that are being implemented by the community in an effort to reduce the community's overall risk to natural hazards. Documenting these efforts can assist participating jurisdictions in better understanding risk and can assist in documenting successes. The following mitigation projects have been implemented within the city of Reedsport:

Earthquakes:

- New buildings are built in accordance with the state of Oregon's Seismic Zone 4 requirements. The seismic capacity of Reedsport's building stock will improve over time as the existing stock is gradually replaced and/or upgraded.
- Education and outreach at Discovery Center regarding magnitude 8+ earthquakes.
- The City actively presents to other municipalities its list of seismic mitigation projects to help inspire and inform.

Flooding:

- Adopted FEMA Flood Insurance Rate Maps (FIRMS) in 1984. The most recent maps were adopted in 2010.
- In conjunction with the FIRMs, the City has adopted a Special Flood Hazard Area that regulates development within the floodplain.
- A \$10.3 million project was funded by a revolving loan from the Oregon Department of Environmental Quality to improve the City's wastewater treatment plant and wastewater

collection system. The project will improve wastewater flows and decrease sewer overflow during heavy rain or flooding events.

- Annual levee inspections are conducted by the Army Corps of Engineers to ensure that Reedsport's levee system, which protects the downtown area from floods, is structurally sound.
- Ongoing, constant maintenance of the City's pumps and pump stations, occurs regularly to ensure that the facilities are reducing the impacts of flooding to the community.
- The City is working on plans to replace the City's pump stations with ones that are designed to handle the effects of climate change and long term power outages caused by other natural disasters.

Landslides:

- The Reedsport Land Usage Ordinance (RLOU) requires geotechnical reports for development that occurs within steep slope areas.

Tsunami:

- In recent years, various education and outreach efforts have been done to inform the community about Tsunami effects and Tsunami preparedness:
 - Updated Tsunami Evacuation Route maps supported by NOAA, DOGAMI, and Oregon Emergency Management. These maps identify the potential effects of both a local and distant tsunami, evacuation routes, and assembly areas for those in an inundation zone. The map is intended for emergency response and should not be used for site-specific planning.
 - The City of Reedsport promotes an annual evacuation drill to prepare residents for evacuation. This is a voluntary practice.
 - The City of Reedsport has clearly marked evacuation routes, designated assembly areas and installed blue lines on the streets around town visually depicting the line between the inundation zone and out.
 - The Douglas County Annex building has installed a Tsunami siren and will inform residents of a tsunami event.
 - The City is looking at ways to elevate the City's levee system to become more than a flood control structure but also a tsunami barrier.
 - The City is participating in a social and economic resiliency and recovery project in collaboration with the University Of Oregon.
 - The City is active with the State hazard resiliency office and participates in State exercises.

Wildfire:

- Fire Department conducts education and outreach during fire season (fall).

Winter storms:

- The Public Works Department provides education and outreach via the City's quarterly newsletter regarding ways to protect yourself and your home during the winter months, when heavy rains and winds are common.

CHAPTER 3

Hazard Assessment

The 2009 Douglas County Natural Hazards Mitigation Plan addresses the following natural hazards within its plan: earthquakes, floods, landslides, tsunamis, wildfires, windstorms, severe winter storms. The City of Reedsport's risks, however, vary from the risks facing the entire county.

The probability and vulnerability assessments included in the following risk assessments are derived from the 2009 Douglas County Coastal Hazard Analysis and more recent data collect by the City Planning Staff from the Department of Geology and Mineral Industries (DOGAMI), the 2010 Census, and various other sources.

Probability is the likelihood of future occurrence within a specified period of time. The City of Reedsport evaluated the best available probability data to develop the probability scores presented below. For the purposes of this plan, the city utilized the Oregon Military Department, Office of Emergency Management (OEM) Hazard Analysis methodology probability definitions to determine hazard probability. The definitions are:

LOW = one incident likely within 75 to 100 years

MODERATE = one incident likely within 35 to 75 years

HIGH = one incident likely within 10 to 35 years

Vulnerability is the percentage of population and property likely to be affected under an average occurrence of the hazard. For the purposes of this plan, the City utilize the Oregon Military Department, Office of Emergency Management (OEM) Hazard Analysis methodology probability definitions to determine hazard probability. The definitions are:

LOW = <1% affected, scores between 1 and 3 points

MODERATE = 1-10% affected, scores between 4 and 7 points

HIGH = >10% affected, scores between 8 and 10 points

Drought

Probability: Low

Vulnerability: Low

Location: Reedsport, Gardiner, Winchester Bay

Extent: An extreme drought, according to the Palmer Index could result in community-wide water shortage.

Drought can be defined in several ways. The American Heritage Dictionary defines drought as "a long period with no rain, especially during a planting season." Another definition of drought is a deficiency in surface and sub-surface water supplies. In socioeconomic terms, drought occurs when a physical water shortage begins to affect people, individually and collectively, and the area's economy.

In the 1970's there was a potential for a drought in Reedsport, but none occurred. Drought is typically averted as a result of the coast's high rainfall from moist air masses moving onto land from the Pacific Ocean, especially during winter months. Reedsport's average annual rainfall total since 2012 is 64.75", according to the Umpqua Discovery Center's rain gauge reports from the weather center. Drought is frequently an "incremental" hazard, meaning 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. Potential impacts vary among communities. The extent and location of drought can occur region-wide, and can affect all segments of a jurisdiction's population, particularly those dependent on rainfall (e.g. agriculture, hydroelectric generation, recreation, etc.). Within Reedsport, potential impacts may include water rationing and decreases in tourism-related activities. The NHMP PAC finds that the City has adequate storage capabilities that would prevent a shortage from occurring and/or affecting its residents. When there was a potential for a drought to occur in the 1970's, the resulting action was to move the water reservoir intake in Clear Lake from an 8ft to 26ft level.

Drought is typically measured in terms of water availability in a defined geographical area. It is common to express drought with a numerical index that ranks severity. The National Oceanic and Atmospheric Association (NOAA) uses the Palmer Drought Severity Index to measure drought in the state's regions. The Palmer Drought Severity Index incorporates both local conditions and mountain snow pack, categorizing droughts as mild, moderate, severe, and extreme. The Oregon coastal region experienced months of moderate drought in 2013 and 2014, with severe to extreme drought levels reached and spanning from June-November of 2015. This resulted in a Federal Drought Declaration on March 22, 2015 and a formal drought declaration for Douglas County by the Governor in June of 2015. While this was a regional categorization, the City of Reedsport realized no significant effects of the drought and did not experience a shortage of water supply during these periods. Based on this, the NHMP PAC found that drought is of little concern to Reedsport and believes that the City's probability of experiencing a drought is low. However, should a drought occur that affects Clear Lake, the entire community would be vulnerable to the hazard. For this reason, the PAC found Reedsport to be highly vulnerable to drought because more than 10% of the population would be affected.

Earthquake

Probability: Medium

Vulnerability: High

Location: The entire community

Extent: A magnitude 9 or greater earthquake could shake for 3-5 minutes and cause subsidence, liquefaction, and amplification.

The effects of an earthquake could be catastrophic for Reedsport, since a large portion of housing and other buildings were constructed prior to the 1960's, before the implementation of the Oregon Specialty Code, which today requires buildings and homes to be constructed to a minimum standard that resists the effects of seismic activity. Reedsport's proximity to the Oregon Coast makes it susceptible to Cascadia Subduction Zone (CSZ) earthquakes which are caused by the abrupt release of slowly accumulated stress between the North American Plate and the Juan de Fuca plate. The subduction zone stretches from British Columbia to Northern California and is located approximately 40 miles from the Oregon coast. A CSZ earthquake has the potential to

produce a magnitude 8 - 9 earthquake. An earthquake of this magnitude could cause shaking for 3-5 minutes, resulting in subsidence, liquefaction, amplification, landslides, and fires:

- An earthquake hazard can cause settling issues, otherwise known as subsidence. This means roads, buildings, homes, and other structures could be affected by settling.
- Earthquakes can also cause buildings and structures to sink into the ground. This effect is called Liquefaction, the mixing of sand or soil and groundwater during the shaking of moderate to strong earthquakes. This process causes the soil to become soft, causing buildings to sink, lean, or even tip over.
- Amplification increases the magnitude of the seismic waves generated by the earthquake. The amount of amplification is influenced by the thickness of geologic materials and their physical properties. Buildings and structures built on soft and unconsolidated soils can face greater risk. Amplification can also occur in areas with deep sediment filled basins and on ridge tops.
- If a structure is built across a fault line, ground displacement (ground movement) could cause serious damage, including splitting a structure apart.
- Floods are also common results of earthquakes due to failures in dams, levees, and municipal water storage tanks.
- Fires can break out after the impact of an earthquake from downed electrical lines, gas line leaks, or from fuel storage spills being ignited.
- Heavy rains that saturate steep slopes, combined with an earthquake, can cause rapid moving landslides.

The following earthquake hazard maps (Figures 2, 3, and 4) were developed by the Oregon Department of Geology and Mineral Industries (DOGAMI). The figures identify locations and hazard extent within the city that are at risk to amplification, liquefaction, and shaking. As shown in the figures, Reedsport is at great risk to all of these hazards. Liquefaction, in particular, is a great concern to Reedsport because the downtown area is built mostly on infill.

Figure 2: Relative Amplification Hazard Map (2010)

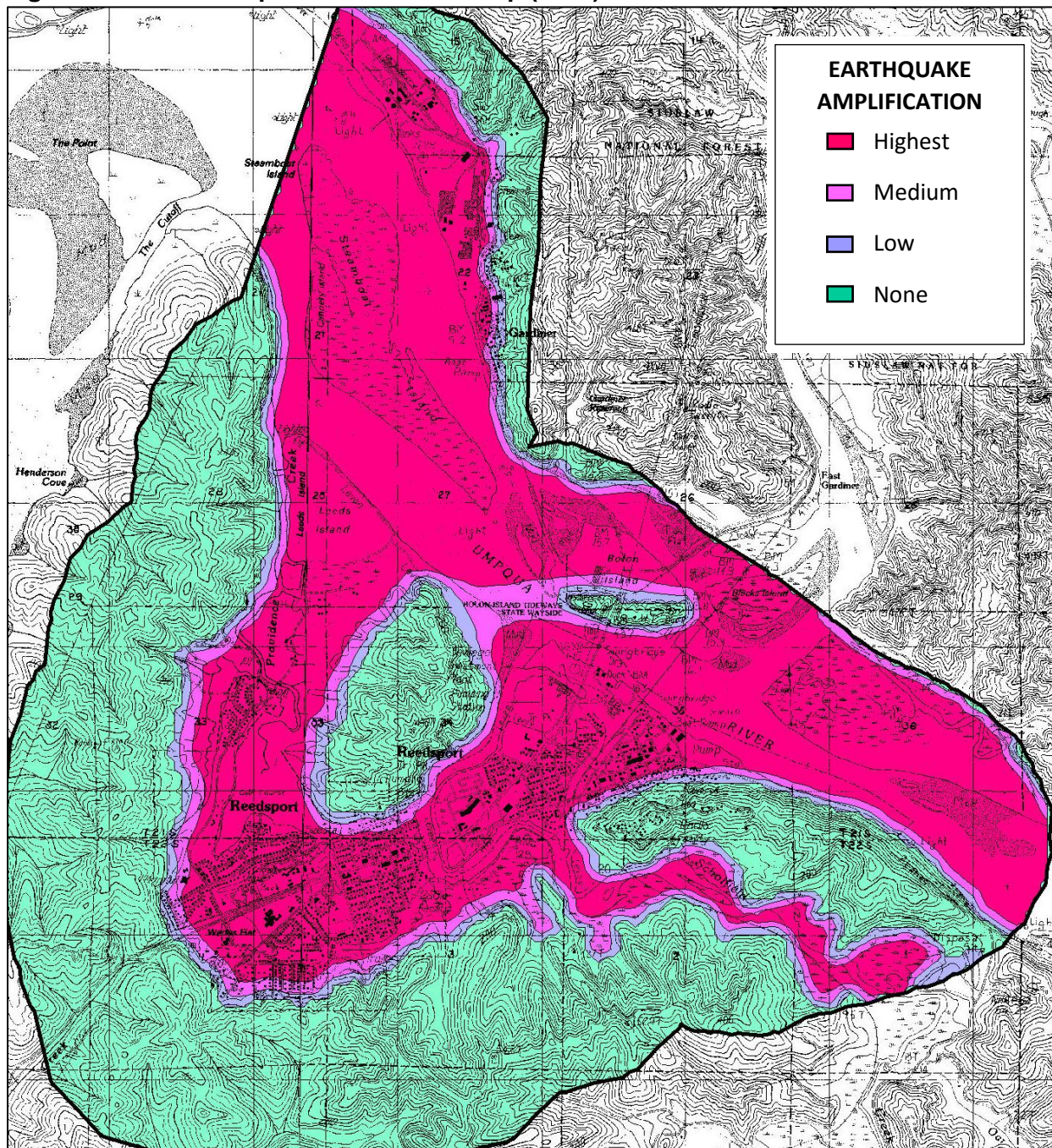


Figure 3: Earthquake Liquefaction (soft soils) Hazard Map

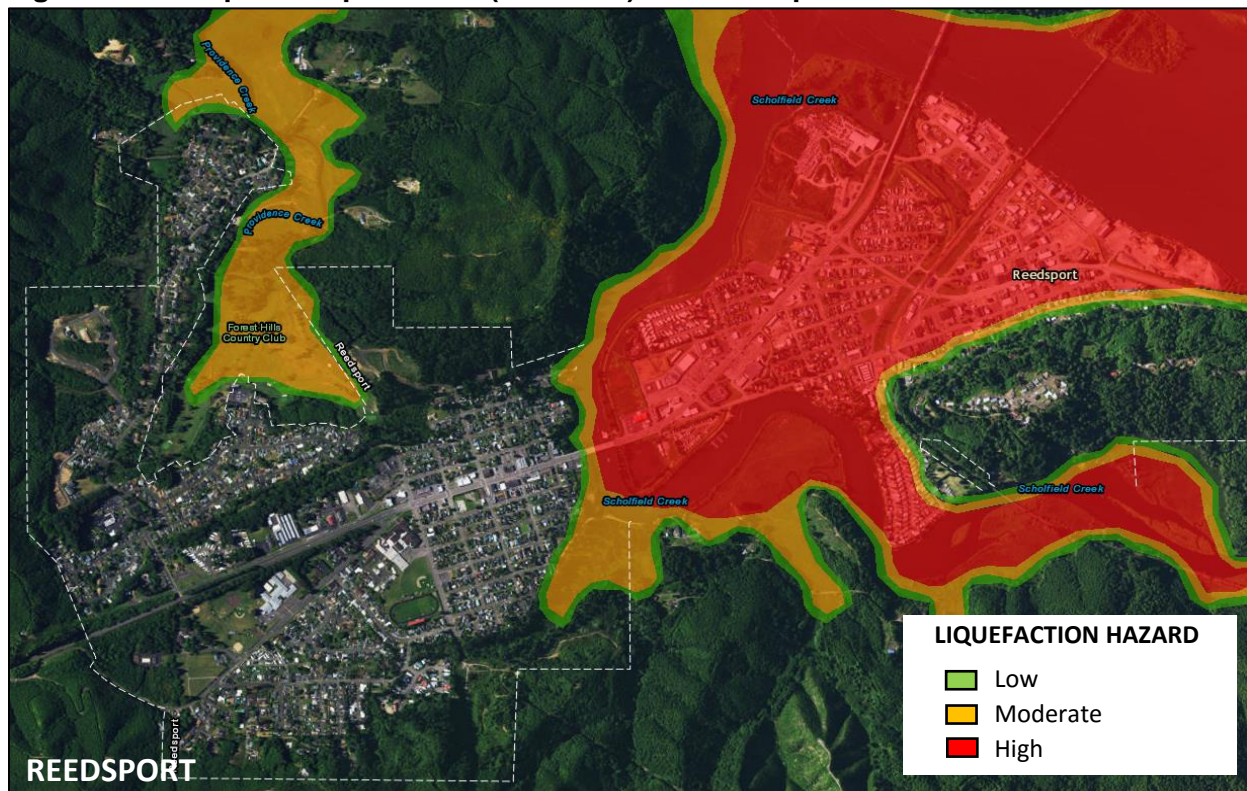
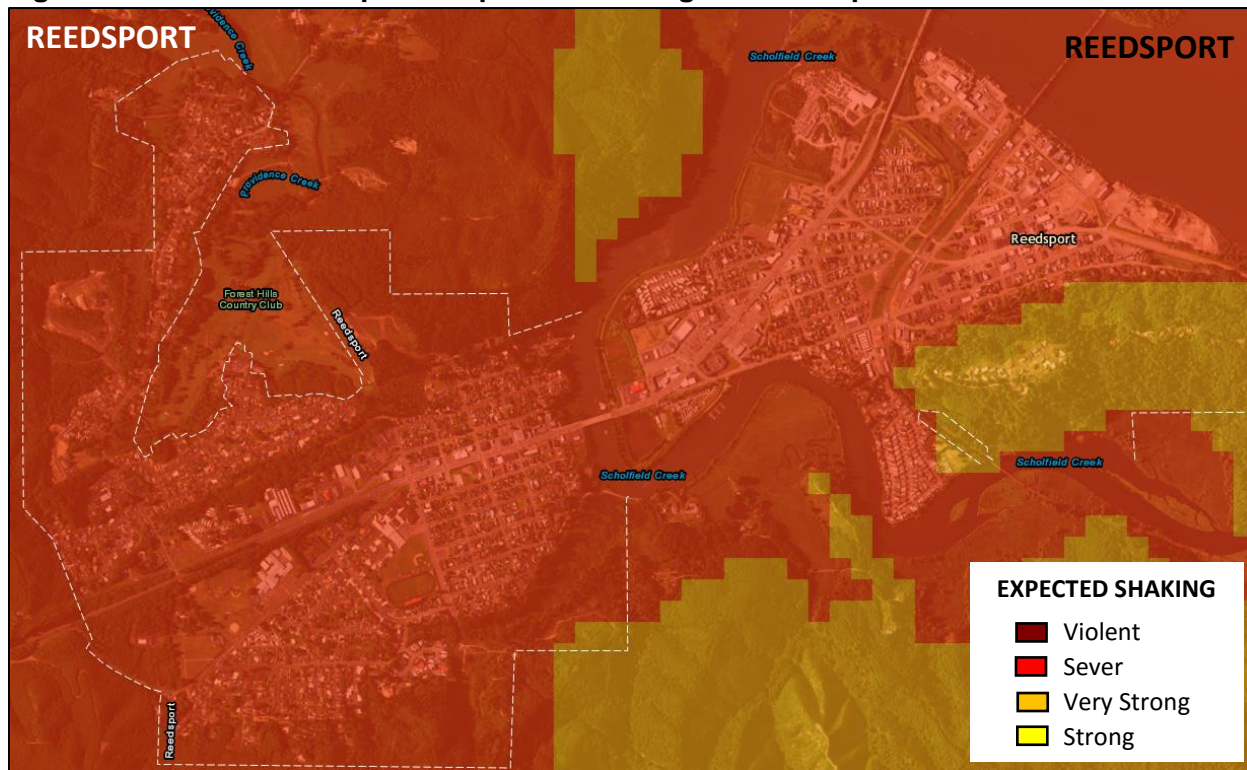


Figure 4: Cascadia Earthquake Expected Shaking Hazard Map



Paleoseismic studies along the Oregon coast indicate that the state has experienced seven Cascadia Subduction Zone (CSZ) events possibly as large as magnitude 9 in the last 3,500 years. According to city-data.com, six (6) earthquakes have been recorded in Reedsport, ranging from a magnitude 6.9-7.6. Of these incidents, damage was only reported once in 1991. The main waterline feeding Gardiner was cracked. The repair required City crews to dredge the line, submerged in the Umpqua River, in order to make the repair. The work took approximately 3 days and left residents without water during the day, while repairs were made. The break also resulted in a loss of water to the Crestview water reservoir and reduced flows to the downtown area. As no major upgrades to this waterline have occurred and considering the two (2) miles of waterline that extend from the Clearlake Reservoir, a future earthquake of similar or greater magnitude could also cause significant damages and outages for days or even weeks.

According to scientists, earthquakes occur at an average of 234 years along the fault section that spans the Oregon Coast and since the last major earthquake occurred approximately 315 years ago, the NHMP PAC finds the probability of an earthquake occurring to be high. Furthermore, the Reedsport NHMP PAC ranked Reedsport's vulnerability to earthquakes as high, meaning more than 10% of the population would be affected by a major event. Potential community-specific impacts were identified by the committee on February 24, 2016 and include the following:

- Water pumps and the levee along the north side of the Scholfield Creek prevent flooding in Reedsport's downtown area. A magnitude 8-9 Cascadia event will damage pumps, pump stations, and the levee system.
- Critical facilities including the Police Station, City Hall, and other social services are all located in the downtown area. Because the downtown is built on fill, the entire area is subject to subsidence, liquefaction, amplification, and severe damages in the event of a high magnitude earthquake.
- From 2005-2007, under the direction of Oregon Senate Bill 2, DOGAMI completed a statewide seismic needs assessment that surveyed K-12 public school buildings, hospital buildings with acute inpatient care facilities, fire stations, police stations, sheriff's offices and other law enforcement agency buildings. The needs assessment consisted of rapid visual screenings (RVS). RVS results were grouped into categories by risk of probable damage in a high magnitude earthquake. The following buildings within the City of Reedsport were at "high" risk of probable damage in a high magnitude event and have yet to be seismically retrofitted:
 - Highland Elementary School
 - Reedsport Junior/High School
 - Lower Umpqua Hospital
 - Fire Station 1
 - Reedsport Police Department
 - Douglas County Sheriff's Office (Reedsport)
- Bridges in the area are susceptible to earthquake induced damages. The Scholfield Bridge is a vital line between the north and south sides of Reedsport. Damage to this bridge could divide the two halves of the community. There are no other accessible roads.
- The City's main water line is also suspended from the Schofield Bridge and at risk for damage or destruction during an earthquake event. This line serves the community of Gardiner, as well.

- It is likely, in a major earthquake event, that Reedsport's water supply from Clear Lake would be cut-off, as pipes are not likely to withstand the seismic activity. In this case, the residents above the Scholfield Bridge, the hospital, and other medical facilities in the uptown would be isolated and have no potable water storage. The Crestview water reservoir would supply downtown.
- The levee system north of Scholfield Creek may be vulnerable to earthquakes. Subsidence caused by the movement could make the city vulnerable to floods and to tsunamis in an earthquake/tsunami event.
- Also during an earthquake/tsunami event, it would be impossible to install the manual levee gate closures in time to protect the downtown from flooding.
- The Highway 101 Bridge over the Umpqua River crosses the estuary to the north side of the Smith River. This provides Gardiner residents with access to Reedsport's medical facilities; however, the bridge will not likely withstand an earthquake event, cutting off medical service to those residents.
- The wastewater treatment plant is located downtown and in the 100-year floodplain. Although the wastewater treatment plant has been built to current seismic standards, an earthquake would rupture the City's 50 year old collection system pipes.

Flood

Probability: High

Vulnerability: High

Location: The Special Flood Hazard Area and Reedsport, south of the Scholfield Bridge

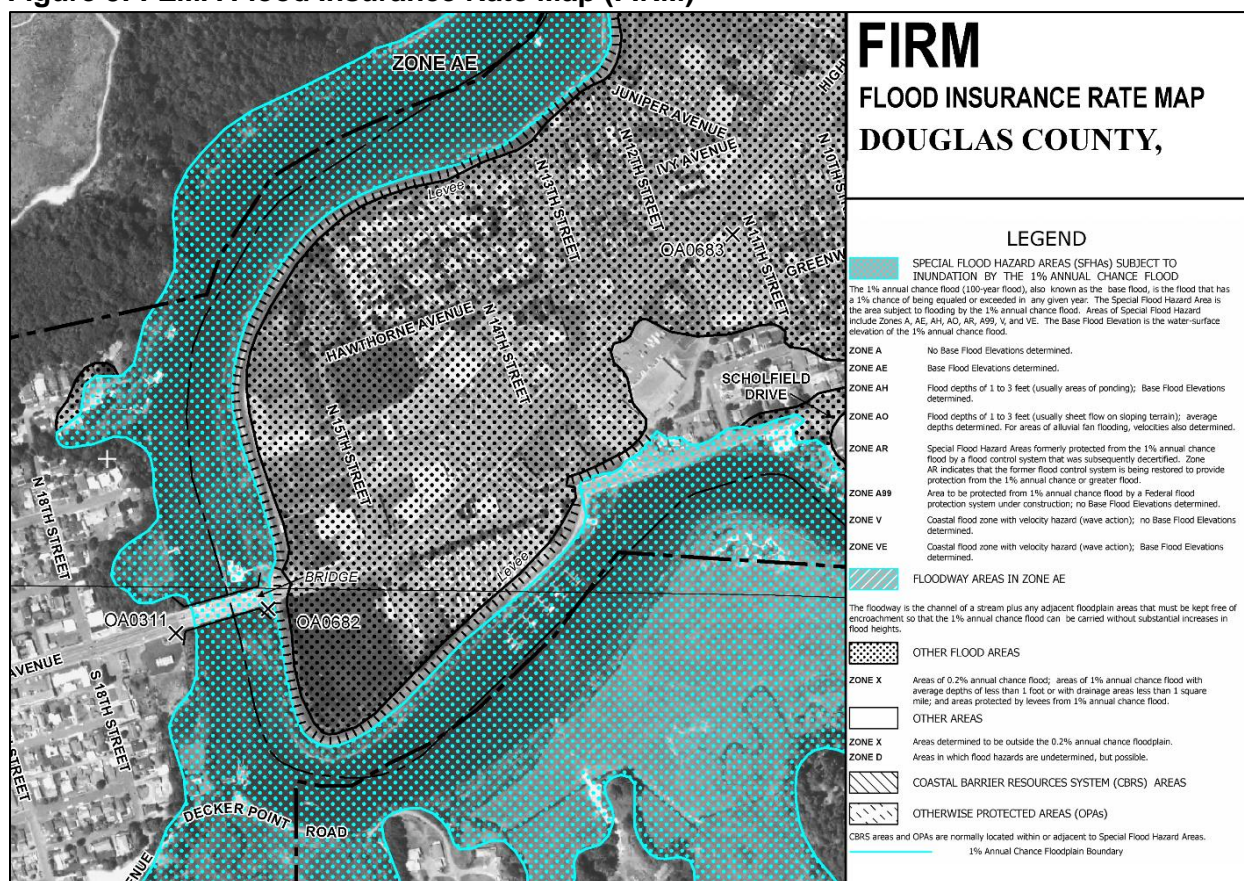
Extent: Sever flooding at 100 and 500 year levels could result in significant water damage or loss of structures.

The 2009 Douglas County Coastal Hazard Analysis ranked the county's vulnerability to floods as moderate, meaning 1-10% of the population or region assets would be affected by a major emergency or event. Additionally, the Douglas County Coastal Hazard Analysis estimates that the County's probability of experiencing hazardous flood events along the coast is high, meaning at least one incident is likely within a 10 year period. The NHMP PAC believes that Reedsport is highly vulnerable to minor flooding, which the community experiences every year and the probability is high due to failing infrastructure, which cannot keep up with excess water. .

A major flood occurred in Reedsport in December 1964 that was equal to a 100 year flood event. This flood inundated a major portion of the downtown area. Water was 4 feet deep in most areas and led to the construction of the levee system around Reedsport's downtown area. Since the construction of the levee system, Reedsport has been relatively free from major flooding events. However, state-wide there were significant impacts due to sever winter storms causing landslides, river debris and blockage, and heavy amounts of precipitation resulting in major flooding in 1996. Reedsport comprised approximately 24% of Douglas County's residential losses, as a result of that flood event. Since the 1964 and 1996 events, annual minor flood events have occurred due to stormwater accumulation associated with culverts and tide gates in the levee that are failing and are in need of repair or replacement. The annual precipitation amount of 93.21" in 2012 is substantially higher than the average and is indicative of increased stormwater flooding that occurred and caused damage to residents, mobile home parks and businesses that year, some of which has yet to be repaired.

The impacts of a flood event are primarily felt in the downtown area, with some low lying areas at the end of Ranch Road also experiencing impact. These flood zones are identified on the FEMA Flood Insurance Rate Map (FIRM), last updated in 2010. The FIRMS identify the severity or type of flooding that typically occurs in the given flood zone. Figure 5 below is a snapshot of a Reedsport FIRM. Most of the downtown area is located in Zone X. Reedsport's downtown area is located in Zone X because levees protect the area from regular flooding. No Base Flood Elevations or depths are shown within this zone and insurance purchase is not required. However, due to the development of Digital Flood Insurance Rate Maps (DFIRMS), the City of Reedsport is required by FEMA to have the levee system certified. The City has been working towards recertification, but costly improvements are proving the task to be a challenge for the community. The State of Oregon partnered with the City of Reedsport to apply for the HUD Disaster Resiliency grant in 2015, but was unsuccessful in securing funds to help repair the levee, as well as, other infrastructure in need of upgrade and replacement. It will be necessary to secure grants and/or other funding methods in order to complete recertification.

Figure 5: FEMA Flood Insurance Rate Map (FIRM)



The City of Reedsport has been a participating member in the National Flood Insurance Program (NFIP) since 1974. There are currently 66 FEMA National Flood Insurance Policies in Reedsport. There have been 3 total claims since 1978 reimbursing \$151,400. The total coverage of these policies is \$14,690,500. There are 6 policies in Zones A01-A30 & AE, which means they are in areas with a 1% annual chance of flooding and a 26% chance of flooding over the life of a 30-year mortgage. The remaining policy holders are held in Zones B, C & X. Premiums for these

66 policies amount to \$32,276. According to FEMA, there are no repetitive loss properties in Reedsport.

City staff identified the following potential community impacts or concerns about the flood hazard:

- The area known as River Bend Manufacture Home Park area is at risk from water system backup and Scholfield Creek high water level rise. The residential area consists of mostly seniors, a vulnerable population during floods. The Park is privately owned.
- Fir Avenue in the downtown and the City Hall parking lot are inundated with inches of standing water every year, occasionally flooding local businesses. City Hall itself has not been flooded.
- The intersection of 9th and Hawthorne floods due to catch basins that can be easily blocked by debris from winter storms (e.g., leaves, branches, etc.).
- The intersection of Highway 101 and Winchester Avenue floods due to a malfunctioning gate valve.
- Reedsport staff identified the Winchester Avenue storm drain and Elm Street storm water pump station as areas with an increased risk. The Elm Street pump station is particularly vulnerable due to lack of backup power supply.
- The potential failure of the levee system along the Scholfield Creek and Umpqua River could result in flooding beyond the FEMA FIRM levels. Continued maintenance of the City's levee system is required, including but not limited to, repair and replacement of the gravity drains with tide gates and stop valves. As such, the City of Reedsport intends to partner with and seek funding from organizations, such as, the U.S. Army Corps of Engineers.

Landslide

Probability: High

Vulnerability: Moderate

Location: Mostly the outer-lying areas of Reedsport

Extent: Landslides can reach speeds in excess of 35 mph, carrying many tons of earth and debris that could destroy structures, reform land, and cause loss of life.

The Douglas County Multi-Jurisdictional Natural Hazard Mitigation Plan adequately describes the causes, characteristics, and extent of landslides in the region. There are no records that identify the history of landslides for the City of Reedsport.

The 2009 Douglas County Coastal Hazard Analysis ranked the area's vulnerability to landslide events as moderate, meaning 1-10% of the population or region assets would be affected by a major emergency or event. The Hazard Analysis also indicates that the area's probability of experiencing landslides is high, meaning at least one incident is likely within a 10 year period. The NHMP PAC believes these scores are still representative of Reedsport in 2016.

DOGAMI has identified the following locations (Figure 6 on the next page) as prone to landslides.

Figure 6: Landslide Hazard - Landslide Susceptibility Map



The City is located in mostly low to moderate risk areas for landslides; however, the outer areas and highways entering Reedsport are located in areas of high risk. These areas pose potential impacts to the City by potentially blocking highway access in and out of the city. Landslides can be created by natural conditions and processes including the geology of the site, rainfall, wave and water action, seismic tremors and earthquakes. **Landslides can reach speeds in excess of 35 mph, carrying many tons of earth and debris that could destroy structures, reform land, and cause loss of life.**

Highway 38, which connects Reedsport to the Willamette Valley, is highly vulnerable to landslides/erosion due to its steep slopes. If Highway 38 were to be closed due to a landslide, access to Interstate 5 would be limited, potentially disrupting transportation of commercial goods and other services. Closure of Highway 38 could further disrupt medical services and prevent evacuation out of Reedsport.

Highway 101 provides connection to medical facilities in Coos Bay and Florence. Closure of the Highway could disrupt those services also. For example, in January of 2000, a major landslide occurred north of our neighboring community, Florence. The slide blocked Highway 101 for three months, resulting in major social and economic disruption to nearby communities.

Tsunami

Probability: High

Vulnerability: High

Location: The entire community

Extent: The wave height of a CSZ produced tsunami could be as much as 100 feet in height (when it first reaches the Oregon Coast) and could impact the community within 15-20 minutes after the earthquake.

The 2009 Douglas County Multi-Jurisdictional Natural Hazard Mitigation Plan – Coastal Hazard Analysis adequately identifies the history of tsunamis for the City of Reedsport (see Section 6: Tsunami, Douglas County Natural Hazard Mitigation Plan). The NHMP PAC identifies Reedsport as being highly vulnerable to tsunamis, meaning more than 10% of the population would be affected by a major emergency event. Given that the vulnerability to a Cascadia event is ranked as high under the Earthquake hazard assessment for Reedsport, a Tsunami would also subsequently occur. Therefore, the PAC finds the probability of a Tsunami to be high, as well.

The 2009 Douglas County Multi-Jurisdictional Natural Hazard Mitigation Plan adequately describes the causes, characteristics, and extent of tsunamis in the region. Tsunamis have been responsible for at least 470 fatalities and several hundred million dollars in property damage in the United States and its territories. A tsunami is a series of sea waves usually caused by a rapid vertical movement along a break in the Earth's crust (i.e., their origin is tectonic). A tsunami is generated when a large mass of earth on the bottom of the ocean drops or rises, thereby displacing the column of water directly above it.

Tsunamis along the Oregon coast can potentially occur from a displacement along eastward-moving Juan de Fuca tectonic plate as it drives under the westward-moving North American Plate. This area is called the Cascadia Subduction Zone and is found just off the Oregon coast. Powerful earthquakes of up to magnitude 7 or greater can take place on either the North American or Juan de Fuca Plates. The Cascadia Subduction Zone, however, is capable of generating much larger earthquakes – up to and above a magnitude 9, thousands of times stronger than a magnitude 7. In the past century, several damaging tsunamis have struck the Pacific Northwest coast from northern California to Washington. These distant tsunamis were generated from earthquakes located far across the Pacific basin and are distinguished from tsunamis generated by earthquakes near the coast – termed local tsunamis.

The most recent event which impacted the state was the 2011 Japan Tsunami. This magnitude 9 earthquake generated a tsunami that reached the coast of Oregon in a matter of hours. Damage to boats, docks, and harbors were reported all along the coast as a result of this distant tsunami. While Reedsport saw no major effects of the Tsunami, a local tsunami would have greater impact to the community. Reedsport's location upriver from the Oregon coast makes it susceptible to tsunamis. However, because the City is located several miles inland and not directly on the coast, a tsunami would have a similar impact as a severe localized flood. Localized flooding is mitigated by pumps and the levee system maintained by the Public Works department. As the earthquake section indicated, however, these systems may be compromised following a Cascadia Subduction event.

It is difficult to predict the probability of when the next tsunami will occur, but it is estimated that all CSZ generated tsunamis would cause extensive damage, and the last Cascadia Subduction Zone event occurred about 300 years ago. Geologists predict a 10-14% chance that a Cascadia tsunami will be triggered by a shallow, undersea earthquake offshore Oregon in the next 50 years. The forecast comes from evidence of large but infrequent earthquakes and tsunamis that have occurred at the Oregon coast every 500 years, on average.

Prior to the 2009 Natural Hazards Mitigation Plan, the United States Department of Geological Survey (USGS) produced a tsunami map for the City of Reedsport, which predicted that due to the City's inland location, the City would not experience tsunami inundation. Due to better technology and recent tsunami events, it is now believed that Reedsport would see the effects of a local tsunami and possibly a distant tsunami, as well. The Department of Geology and Mineral Industries released a Tsunami Inundation Map in 2013, which is believed to be a better representation of the tsunami impacts on the community. To better prepare the residents of Reedsport a Tsunami evacuation brochure was also released in 2013 (see Figures 7 & 8 below). This map indicates that based on geological evidence, wave heights in the past may have reached 100'. The evacuation map lets residents know they may only have 15-20 minutes to evacuate after an earthquake, in the case of a local tsunami event.

Figure 7. 2013 Tsunami Evacuation Brochure Map for Reedsport

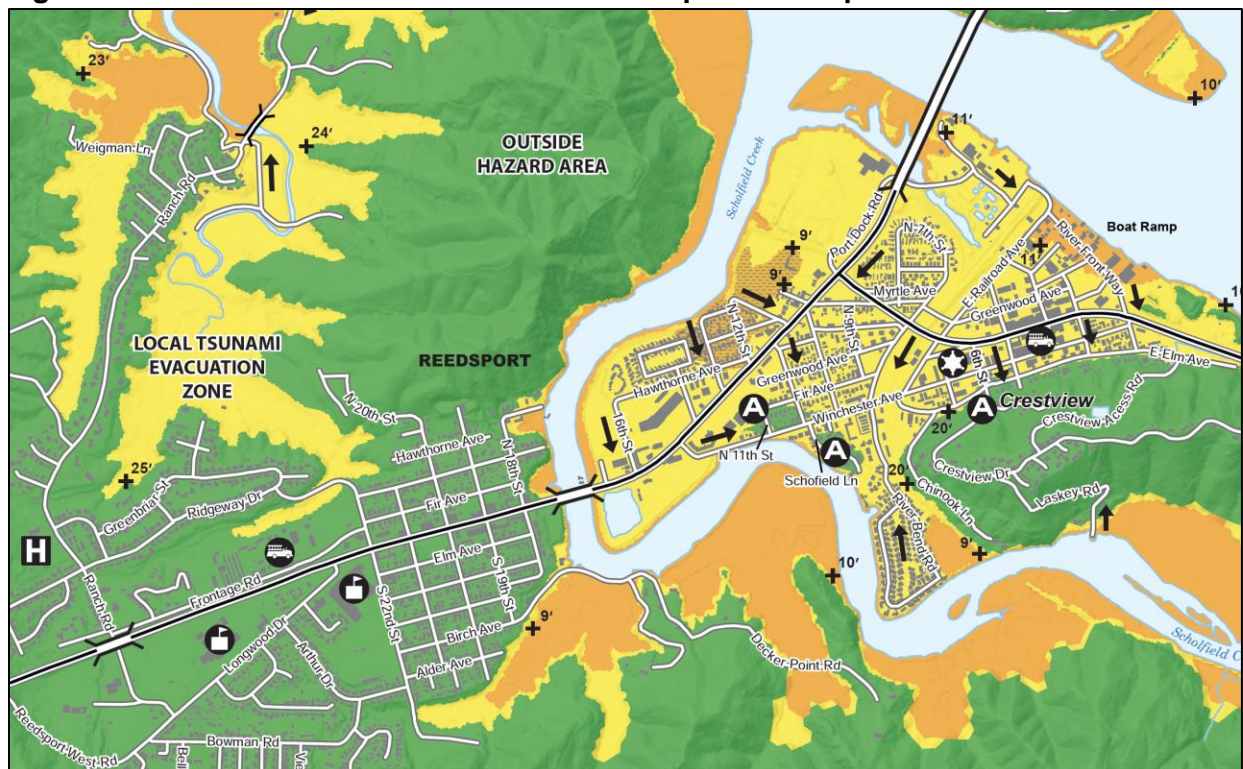
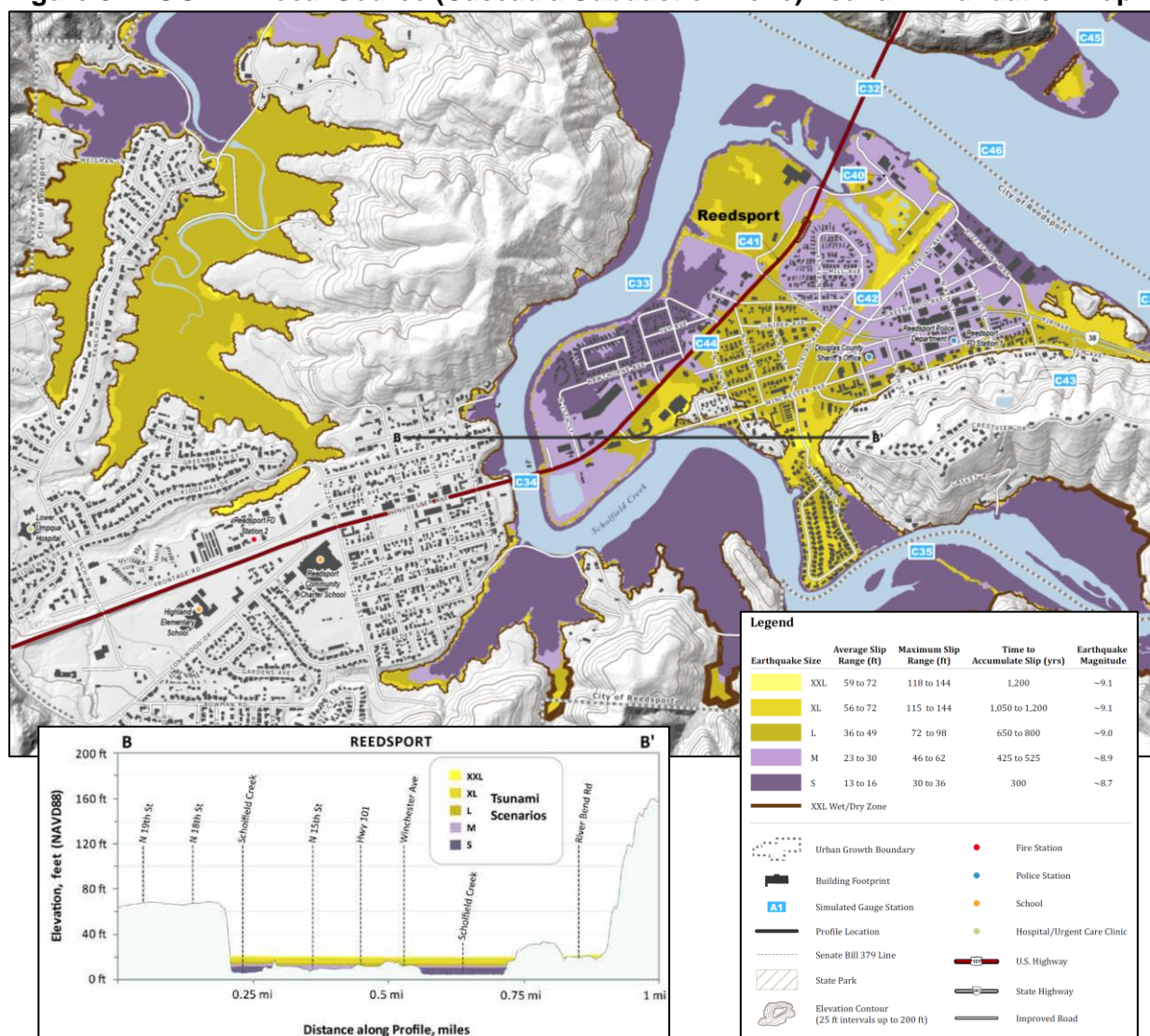


Figure 8. DOGAMI Local Source (Cascadia Subduction Zone) Tsunami Inundation Map



In light of this recent map change, Reedsport may need to consider land use planning applications that will incorporate tsunami resilience measures in order to reduce the impacts on structures and improve life safety in the event of a Tsunami.

Wildfire

Probability: High

Vulnerability: High

Location: The entire community

Extent: Air quality levels could be degraded to a “poor” standard due to the smoke and ash of a wildfire, affecting the health of the population.

The Douglas County Multi-Jurisdictional Natural Hazard Mitigation Plan describes the causes and characteristics of a wildfire event, as well as the history of wildfire within the region (see Section 8: Wildfire, in the 2009 Douglas County Natural Hazard Mitigation Plan). Additionally, the county's plan generally describes the location and extent of potential wildfire events. In

Reedsport, extensive tracts of forested areas border the city to the south and east, but Reedsport has no history of any previous wildfire events. Indirect impacts may include ash fall and smoke that can affect the levels of air quality in the City, subject to the wind conditions. There is potential every year for a fire depending on the weather conditions such as hot and dry summers with high winds. In 2015, much of the state experienced (at some point) poor air quality levels, due to the frequency and size of wildfires that occurred. Given the unusually dry summers in recent years the PAC believes the probability of a wildfire is still high, meaning at least one incident is likely within a 10 year period.

The Douglas County Coastal Hazard Analysis ranked the vulnerability of wildfires as high, meaning greater than 10% of the population or regional assets would be affected by a major emergency or event. Reedsport agrees with this ranking. Due to the lack of previous wildfire events within Reedsport, however, the steering committee estimates a 'low' probability that wildfires will occur in the future.

Windstorms

Probability: High

Vulnerability: Moderate

Location: The entire community

Extent: Wind speeds from 40-60 mph are common in the winter months, causing damage and power outages.

The 2009 Douglas County Multi-Jurisdictional Natural Hazard Mitigation Plan describes the causes and characteristics of windstorms, as well as, the history of windstorms in the area (see Section 7: Windstorm, 2009 Douglas County Natural Hazard Mitigation Plan). The Douglas County Coastal Hazard Analysis ranked the vulnerability of windstorms as moderate, meaning 1-10% of the population or regional assets would be affected by a major emergency or event. The county also estimates that its probability of experiencing windstorms is high, meaning at least one incident is likely within a 10 year period. These rankings are representative of Reedsport as well.

Windstorms are a recurring hazard to the City every year with average strengths reaching 40-60 mph, commonly knocking down trees and causing property damage. The most notable event in recent history occurred during the winter of 2002. Downed trees in the Crestview neighborhood caused significant property damage and closed the street, leaving residents stranded atop the Crestview hill. Coupled with power outages, residents were stranded until crews could clear trees and restore power. The same storm affected the power supply to most of the community, including businesses, City Hall, the Hospital and Dunes Family Health Clinic. While, the hospital continued operations via their backup generators, the Clinic and other critical facilities were down until crews could repair damaged power lines. The additional debris in the road and the power outages created hardships for emergency responders. This instance reflects the importance and need for having a good communication system.

Additionally impacts of these windstorms include downed pumps and pump stations due to power loss and/or debris in the infrastructure.. The combination of these impacts is twofold and results in above normal stormwater backup.

Windstorms are most common from October to March, which is why they are often associated with winter storms.

Winter Storms

Probability: HIGH

Vulnerability: LOW

Location: The entire community

Extent: Snow accumulation levels can reach up to several feet and ice storms can last for days or even weeks, causing damage and dangerous conditions.

Due to Reedsport's location at sea level and the close proximity to the Pacific Ocean, significant snow accumulation is much less than on the eastside of the Cascades. However, Reedsport had 5.0 inches of snow during the 1950 snow storm. NHMP PAC members also reported that in February of 1969, 30 inches of snow accumulated in Reedsport and collapsed US Plywood. Today, buildings are constructed to different standards in order to account for wind and snow loading requirements for the region. However, a number of older residential, commercial, and industrial structures have not been upgraded and could be at risk in such an event.

Ice storms are also a frequent occurrence each year and can last for days or even weeks. They are comprised of cold temperatures and moisture, but subtle changes can result in varying types of ice formation which may include freezing rain, sleet and hail. Of these, freezing rain can be the most damaging of ice formations. The committee indicated that Highways 101 and 38 are affected by ice and can disrupt transportation in and out of the city. The affects are typically short-lived, as the Oregon Department of Transportation Maintenance works to keep the roads open or reopen them, as soon as possible.

The committee finds that while this type of hazard, while common to Reedsport, poses a low risk to the community.

Sea Level Rise & Coastal Erosion

Probability: High

Vulnerability: High

Location: Downtown Reedsport and all properties adjacent to water bodies. (Figures 9-11)

Extent: Water levels are rising at a rate of 0.14 inches per year and cause land to erode.

Sea level rise, which is caused by the effects of global warming, is becoming an increasing risk to coastal communities. While the impacts of sea level rise and the effects of coastal erosion may have more impact on those communities directly on the coast of the Pacific Ocean, Reedsport may still realize the effects at 9 riverine miles from the mouth of the Umpqua River. Sea level rise is a result of warmer waters. When water heats up it expands. According to the National Geographic, this is the main contributing factor to the sea level rise of approximately 0.14 inches per year, world-wide. Another main contributor is the melting of glaciers and polar ice caps due to the increased temperatures of global warming. The National Oceanic and Atmospheric Administration reported that 2015 was the warmest year on record since the beginning of recording in 1880.

As it relates to sea level rise and coastal erosion, the following concerns were identified:

- While Reedsport does not sit directly adjacent to the Pacific Ocean, higher sea levels will in turn raise the water levels of the Scholfield Creek and the Umpqua River, thus, increasing the risk of flood hazard.
- Also, as the sea level rises the contribution from seepage into the levee system will increase.
- As the sea level rises, this means the levee which was constructed to withstand the 100-year flood is no longer constructed to such a level. Consideration to construct the levee at a 500-year standard may be necessary.

Because erosion is a gradual transformation, reported changes are not necessarily tied to specific hazard events. However, erosion is noticeably occurring every year along the City's levee system due to higher water levels. When coupled with winter storms and heavy rains, the levee will begin to erode at a faster rate jeopardizing the integrity of the levee. Specific areas in which settling of the levee has been reported include: the southwest reach around the Coho RV Park and extending north through to the area of the 16th Street pump station; the east side of the Scholfield bridge and the sheet pile wall near Champion Park. Higher water tables are also blamed for flooding roads during high tides, specifically Winchester Avenue and Port Dock Rd, and has even overtopped private levees in the area. The levee reach along Scholfield Creek has seen the land between the toe of the levee and the waterbody start to disappear due to scour caused by the higher water levels. This is especially apparent around the River Bend Mobile Home Park where trees have fallen into the creek as a result.

The NHMP PAC finds that Reedsport is highly vulnerable to the effects of sea level rise and coastal erosion, and the likeliness of the event is high, as the majority of the City's levee system abuts the Scholfield Creek and Umpqua River.

Figures 9-11 below depict the effects of Sea Level Rise on Reedsport.

Figure 9. No Sea Level Rise effect – Mean High Water level



Figure 10. The effect of a 3ft Sea Level Rise



Figure 11. The effect of a 6ft Sea Level Rise



CHAPTER 4

Mitigation Plan Goals & Action Items

Mitigation Goals

The plan goals help guide the direction of future activities aimed at reducing risk and preventing loss from natural hazards. The goals serve as checkpoints as agencies and organizations begin implementing mitigation action items. Reedsport will adopt the following Douglas County Natural Hazard Mitigation Plan goals:

Flood Mitigation Goals (FL)

Goal A: Protect structures in the floodplain from flooding.

Goal B: If a structure becomes a repetitive loss structure, inform owner of possible mitigation funding options.

Goal C: If a structure becomes a repetitive loss structure, and a cost benefit analysis reveals the repetitive loss has a substantial cost, encourage owner to use mitigation funding options.

Winter Storm Mitigation Goals (WS)

Goal A: Protect structures from winter storm damage.

Goal B: Maintain road system circulation capacity.

Goal C: Prevent utility damage from falling trees.

Goal D: Prevent falling trees from becoming a fire hazard.

Earthquake Mitigation Goals (EQ)

Goal A: Prevent loss of life from earthquakes.

Goal B: Reduce property damages.

Goal C: Enhance education and public awareness of earthquake danger.

Goal D: Increase preparedness of communities and agencies to deal with earthquakes.

Tsunami Mitigation Goals (TS)

Goal A: Protect lives of residents and visitors in tsunami prone areas.

Goal B: Reduce property damages and loss in tsunami prone areas.

Goal C: Enhance education and public awareness of tsunami dangers.

Goal D: Increase preparedness of communities and agencies to deal with tsunami threat.

Wildfire Mitigation Goals (WF)

Goal A: Protect lives of residents and firefighters in wildfire hazard areas.

Goal B: Increase fire prevention/reduction activities and firefighting response abilities.

Goal C: Reduce property damages and loss in wildfire hazard areas.

Goal D: Enhance education of wildland/urban interface area property owners and public awareness of wildfire dangers and prevention.

Goal E: Increase preparedness of communities and agencies to deal with wildfire threat.

Windstorm Mitigation Goals (WST)

Goal A: Protect lives during windstorms.

- Goal B:* Reduce property damage resulting from windstorms.
- Goal C:* Enhance survivability of infrastructure and utilities during windstorms.
- Goal D:* Enhance education and public awareness of windstorm dangers.
- Goal E:* Increase preparedness of communities and agencies.

Landslide Mitigation Goals (LS)

- Goal A:* Prevent loss of life from landslides.
- Goal B:* Reduce property damages.
- Goal C:* Enhance education and public awareness of landslide danger.
- Goal D:* Increase preparedness of communities and agencies to deal with landslides.

Multi-Hazard Mitigation Goals (MH)

- Goal A:* Protect life and property.
- Goal B:* Develop partnerships and implementation strategies.
- Goal C:* Public Awareness.
- Goal D:* Improve Emergency Services.

Action Items

The following action items are detailed recommendations for activities that local departments, citizens, and others could engage in to reduce risk. Each action identifies which of the county's goals are addressed. Goals are identified within the actions as a means for monitoring and evaluating how well the mitigation plan is achieving its goals, following implementation. Please see full action item forms below for more information.

1. Upgrade and expand the interior storm water collection system to accommodate the yearly amounts of water and potential flooding and to resist seismic activity.
2. Replace stormwater pumps and pump stations and add backup systems to prevent future flooding caused severe winter events generated by climate change and with the capability to withstand severe seismic events.
3. Ensure continued compliance with the National Flood Insurance Program (NFIP) through enforcement of local floodplain management ordinances.
4. Seek certification for the city's levee system to ensure safety and functionality.
5. Assess critical and educational facilities rated medium and high potential of collapse by DOGAMI's rapid visual assessment.
6. Install Master Heights water storage tank and associated seismically resistive water lines to hospital and fire station for water resilience during emergency situation.
7. Develop a pathway atop the levee system to provide an evacuation route, emergency vehicle access, and maintenance access.
8. Consider relocating critical and essential facilities out of the floodplain and tsunami inundation zone.
9. Develop and regulate a Tsunami overlay zone, which aims to restrict development of critical and essential facilities within a Tsunami Inundation zone.
10. Identify potential evacuation/supply routes in the event of a highway or bridge closure.
11. Elevate the levee to the FEMA 500 year standard to protect the community against more severe floods and tsunami.
12. Replace the Scholfield Bridge and assess the adjoining water pipe for consideration as a potential retrofit.
13. Identify locations suitable for setting up temporary housing or shelters, should a major hazard event occur and displace a large portion of the community.
14. Provide an area for long-term food storage for community consumption and another for consumption by emergency responders.

15. Install unmanned rapid deployment levee gates.
16. Expand the Turner Fire Station in order to house a multi-jurisdictional operations center.
17. Expand the existing communications systems between local and county agencies.
18. Identify a fuel storage location south of the Scholfield Bridge to aid in emergency response services.

Note: the above actions are not listed in order of priority.

Action Item (Flood)

Proposed Action Item:	Alignment with Goals:
Upgrade and expand the interior storm water collection system to accommodate the yearly amounts of water and potential flooding and to resist seismic activity.	GOAL A: Protect structures in the floodplain from flood damage
Rationale for Proposed Action Item:	
<p>Reedsport is geographically broken up into two areas, an upper southerly area and a lower downtown area. The downtown area of Reedsport is frequently affected by heavy rains and subsequent river flooding and runoff due to yearly and regular winter storms. Reedsport's storm water infrastructure is limited by the location, undersized/sometimes faulty piping and outdated infrastructure. Subsequently, the current system has difficulty managing the seasonal amount of water, causing backups and the potential for flooding every year.</p> <p>There are several areas in Reedsport that are affected by a lack of storm water drainage:</p> <ul style="list-style-type: none"> • River Bend Manufactured Home Park is at risk from water system backup and Scholfield Slough high water level rise. The residential area consists of mostly seniors, a vulnerable population during floods. The Park is privately owned as well as its internal utility infrastructure. • Fir Avenue (HWY 38) in the downtown and the City Hall parking lot are inundated with inches of water every year. • The intersection of 9th and Hawthorne floods due to infrastructure issues. • Reedsport staff identified the Winchester storm drain and Elm Avenue storm water station as areas with an increased risk. The Elm avenue pump station is particularly vulnerable due to lack of backup power supply as well as structural deficiencies. • The remaining three stormwater pump stations (7th street, 12th street and 16th street) are all undersized and contain electrical, backflow and backup power issues that contribute to stormwater accumulation during rain or high water events. <p>The Reedsport NHMP PAC ranks the City's vulnerability to floods as moderate, meaning 1-10% of the population or region assets would be affected by a major emergency or event. Additionally, the City of Reedsport notes that its probability of experiencing hazardous flood events is high, meaning one incident is likely within a 10-35 year period. Upgrading the storm water infrastructure on multiple levels will greatly help to reduce future incidences of flooding in Reedsport.</p> <p>The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on both new and existing buildings and infrastructure [201.6(c)(3)(ii)]. Upgrading and expanding the storm water infrastructure system to handle large amounts of water will help reduce the risk of flooding and prevent damage to buildings and infrastructure in low-lying areas.</p> <p>Coordinating Organization: City of Reedsport Public Works Department</p> <p>Internal Partners: City of Reedsport Planning & Finance Departments</p>	

External Partners: FEMA, USACE, Oregon Emergency Management, Douglas County Emergency Management

Timeline: 1-2 years

Estimated Cost: \$1,000,000

Ideas for Implementation:

- Implement actions identified in the City's Stormwater Master Plan (2002).
- Implement the 2009 Downtown Stormwater Reroute Analysis Plan.
- Implement necessary improvements identified in the levee certification process.
- Upgrade Elm St. stormwater pump station, which needs a backup power supply, increased pipe size, increased pump motors.

Action Item (Flood)

Proposed Action Item:	Alignment with Goals:
Replace stormwater pumps and pump stations, including backup systems to prevent future flooding.	GOAL A: Protect structures in the floodplain from flood damage.
Rationale for Proposed Action Item:	
Currently the community is at risk of flooding from severe winter storms, riverine flooding, and coastal flooding. Specifically, low income housing, food distribution hubs, freight transit facilities, and government offices face a high risk of flooding.	
The four out of date pump stations for Elm Avenue, 7 th Street, 12 th Street and 16 th Street would be replaced. Also a recent stormwater model indicates an additional pump station is required for the Elm Avenue drainage basin located near the concrete floodwall along East Railroad Avenue to lift stormwater over the levee. The new pump stations would have the following components: earthquake resistant concrete structures, larger redundant pumps and piping, pumps set at elevation above flood levels, modern electrical systems with offsite notification and backup power by diesel generators.	
The new pump stations would be set on pile and concrete foundations rated for seismic activity of the southern Oregon coast.	
<ul style="list-style-type: none"> • Pumps and generators would be housed in split face concrete masonry unit buildings constructed to modern fire and seismic building codes. • Pump sizing would be increased to handle the stormwater of the 100 year rainfall event. • The pump stations would be set at an elevation equivalent to the top of the levee (the 500 year flood event with 3 feet of freeboard) and use the levee as the access roadway. With these improvements should the landside area become inundated by tsunamis or other large event the pump stations would still be able to remove the water from the downtown area. • Electrical for the pump stations would be all new equipment and wiring to include service and meter base, main breaker, automatic transfer switch and duplex pump control panel. In addition, Supervisory Control and Data Acquisition (SCADA), would be provided to allow for remote access and monitoring of the pump station water levels, pump operation, and alarm conditions. • Backup power by diesel generators would be provided at each pump station. The generators would provide for a minimum of 24 hours of backup power in an outage. Each of the pump stations would be provided access routes which would allow the generator to be filled even if the landside area is completely flooded. 	
Coordinating Organization: City of Reedsport Public Works Department	
Internal Partners: City of Reedsport Planning & Finance Departments	
External Partners: Oregon Emergency Management, Douglas County Emergency Management	
Timeline: 2-4 years	
Estimated Cost: \$3,500,000	

Ideas for Implementation:
<ul style="list-style-type: none">• Because of the resiliency value we hope to apply for FEMA or other similar types of grants for pre-hazard and resiliency grant dollars.• The City does not currently have the economic means to fund these improvements.

Action Item (Flood)

Proposed Action Item:	Alignment with FL Plan Goals:
Ensure continued compliance with the National Flood Insurance Program (NFIP) through enforcement of local floodplain management ordinances.	GOAL A: Protect structures in the floodplain from flooding.
Rationale for Proposed Action Item:	
<p>The National Flood Insurance Program (NFIP) provides communities with federally backed flood insurance, provided that communities develop and enforce adequate floodplain management measures. According to the NFIP, buildings constructed in compliance with NFIP building standards suffer approximately 80 percent less damage annually than those not built in compliance.</p> <p>Reedsport has been a participant in the National Flood Insurance Program since 1974, with the last map update occurring in 2010. As a participating community of the National Flood Insurance Program (NFIP), anyone can buy flood insurance and currently there are 66 policies in effect.</p> <p>Given that recent status of the levee certification, if the City is unable to bring the levee into compliance those structures inside the levee, which are currently considered to be “levee protected” on the FIRMS, would be mapped into the floodplain and required to obtain flood insurance, if there is a mortgage on the property. The fiscal impacts of having to obtain flood insurance for residents in the downtown area (because rates are based on elevation above/below the 100 year flood level) would be significant and could potentially lead to vacancy and abandonment. This would, in turn, affect property tax collection which helps support the City’s general fund. The ripple effect from such an impact would be ongoing for years. The need to recertify the levee and remain in the NFIP is necessary to prevent such devastation to the community.</p> <p>The Disaster Mitigation Act of 2000 requires that communities identify actions and projects that reduce the impact of a natural hazard on the community, particularly to new and existing buildings and infrastructure [201.6(c)(3)(ii)]. Continued participation in the NFIP will diminish flood damage to new and existing buildings in communities while providing homeowners, renters, and business owners additional flood insurance protection.</p> <p>Coordinating Organization: City of Reedsport Planning Department</p> <p>Internal Partners: City of Reedsport Finance & Public Works Departments</p> <p>External Partners: Oregon Department of Land Conservation & Development, FEMA, Oregon Emergency Management, Douglas County Emergency Management</p> <p>Timeline: On-going</p> <p>Estimated Cost: Unavailable</p>	
Ideas for Implementation:	
<ul style="list-style-type: none"> Actively participate with DLCD and FEMA during Community Assistance Visits. The Community Assisted Visit (CAV) is a scheduled visit to a community participating in the NFIP for the purpose of: 1) conducting a comprehensive assessment of the community’s 	

floodplain management program; 2) assisting the community and its staff in understanding the NFIP and its requirements; and 3) assisting the community in implementing effective flood loss reduction measures when program deficiencies or violations are discovered.

- Conduct an assessment of Reedsport floodplain ordinances to ensure they reflect current flood hazards.
- Complete levee certification and accreditation to maintain eligibility in the NFIP.
- Continue to participate in the National Flood Insurance Program (NFIP).
- Educate residents in Reedsport about flood insurance regulations, flood issues, and actions they can implement to mitigate the flood risk.

Action Item (Flood)

Proposed Action Item:	Alignment with Goals:
Seek certification of the city's levee system.	Goal A. Protect structures in the floodplain from flooding.
Rationale for Proposed Action Item:	
<p>A major flood event occurred in Reedsport in December 1964 that was equal to a 100 year flood event. This flood inundated a major portion of the downtown area. Water was 4 feet deep in most areas and led to the construction of the levee system around the downtown Reedsport. Since the construction of the levees, Reedsport has experienced severe winter storm events and high water, but has been protected from major flooding events from riverward flooding sources. However, due to the age of the levee and subsequent storm drain systems installed in the late 1960's there are essential systems (i.e., culverts, tide gates, gravity drains, stop valves, etc.) constructed as a part of and within the levee which are failing and in need of repair or replacement. It is not unusual during yearly high water events, that the discharge lines, culverts and tide gates are all below the water level and do not function correctly.</p>	
<p>The potential failure of the levee system along the Scholfield Creek and Umpqua rivers would result in flooding beyond the FEMA FIRM levels.</p>	
<p>Section 65.10 of the NFIP regulations describes the types of information FEMA needs to recognize, on NFIP maps, that a levee system provides protection from the flood that has a 1-percent chance of being equaled or exceeded in any given year (base flood). This information must be supplied to FEMA by the community or other party seeking recognition of a levee system at the time a study or restudy is conducted, when a map revision under the provisions of Part 65 of the NFIP regulations is sought based on a levee system, and upon request by the Administrator during review of previously recognized structures.</p>	
<p>Coordinating Organization: City of Reedsport Planning Department</p>	
<p>Internal Partners: City of Reedsport Public Works Department</p>	
<p>External Partners: (Including, but not limited to) U.S. Forest Service, Department of Land Conservation & Development, FEMA, Oregon Emergency Management, Douglas County Emergency Management</p>	
<p>Timeline: On-going</p>	
<p>Estimated Cost: \$1,200,000</p>	
Ideas for Implementation:	
<ul style="list-style-type: none"> Partner with multiple Federal and State agencies to satisfy requirements of NFIP 65.10 in order to secure levee certification services from FEMA and possibly the U.S. Army Corps of Engineers. 	

Action Item (Earthquake)

Proposed Action Item:	Alignment with Goals:
Assess critical and educational facilities rated medium and high potential of collapse by DOGAMI's rapid visual assessment.	<p>GOAL A: Prevent Loss of Life from Earthquakes.</p> <p>GOAL B: Reduce Property Damages.</p>
Rationale for Proposed Action Item:	
<p>Under the direction of Oregon Senate Bill 2, DOGAMI completed a statewide seismic needs assessment that surveyed K-12 public school buildings, hospital buildings with acute inpatient care facilities, fire stations, police stations, sheriff's offices and other law enforcement agency buildings. The needs assessment consisted of rapid visual screenings (RVS). RVS is a process for visually inspecting a building for 15 to 30 minutes to assess its level of vulnerability, but it does not include an in-depth structural assessment. Results of the survey were grouped into categories by risk of probable damage in a high magnitude earthquake. The following buildings within the City of Reedsport were at "high" risk of probable damage in a high magnitude event:</p> <ul style="list-style-type: none"> • Highland Elementary School & Reedsport Junior/High School • Lower Umpqua Hospital • Fire Station 1 (Downtown Fire Hall) • Reedsport Police Department • Douglas County Sheriff's Office <p>The Reedsport NHMP ranked the vulnerability of earthquakes as high, meaning more than 10% of the population or region assets would be affected by a major event. The county's Emergency Management hazard analysis scores estimate that the probability of earthquakes is high, meaning one event is likely within a 10-35 year period, and this hazard analysis applies to Reedsport, as well. Furthermore, Reedsport is particularly susceptible because many of the City's buildings are built on sandy soils, which in an earthquake are vulnerable to liquefaction.</p> <p>Assessing critical and educational facilities will reduce Reedsport's vulnerability to a major earthquake disaster. Based on the assessment outcomes, these facilities should be earthquake retrofitted to protect against a major earthquake hazard.</p> <p>Coordinating Organization: City of Reedsport Planning Department</p> <p>Internal Partners: City of Reedsport Public Works Department</p> <p>External Partners: Reedsport School District, Oregon Emergency Management, Douglas County Emergency Management, FEMA, DOGAMI</p> <p>Timeline: 2-4 years</p> <p>Estimated Cost: Unavailable</p>	
Ideas for Implementation:	

- If an assessment has not already been conducted, conduct seismic structural studies for critical facility buildings.
- Research and seek funding for seismic retrofitting of these listed critical facilities that do not meet the current seismic standards.
- Retrofit critical and educational facilities, applying current retrofitting technology to reduce the vulnerability of an earthquake hazard.
- Some of the listed critical facilities are located within a tsunami inundation zone, so relocation of the facilities, rather than retrofitting, may be more appropriate.

Action Item (Earthquake)

Proposed Action Item:	Alignment with Plan Goals:
Install Master Heights water storage tank and associated seismically resistive water lines to hospital and fire station for water resilience during emergency situations.	<p>GOAL A: Prevent loss of life from earthquakes.</p> <p>GOAL D: Increase preparedness of communities and agencies to deal with earthquakes.</p>
Rationale for Proposed Action Item:	
<p>The existing water infrastructure in Reedsport is 50+ years of age and is subject to multiple line breaks and integrity compromise. Further, and more specifically, the three reservoir tanks within the City limits are not seismically designed, restrained nor do they have seismic shut off valves.</p> <p>With the yearly occurrences of flooding as well as the looming Cascadia event and the long term loss of services that would occur as a result, this will leave the hospital and uptown fire hall, as well as, a large area of Reedsport without essential water to provide basic services.</p> <p>To greatly reduce this risk and preserve essential life preserving services to the community and citizens it is imperative that a seismically sustainable and operable system be installed in the Master Heights subdivision to provide water to these essential facilities and a majority of Reedsport's residence, in the case of a major earthquake event.</p> <p>The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on both new and existing buildings and infrastructure [201.6(c)(3)(ii)]. Upgrading the water system and installation of a seismically resistive storage and distribution system will reduce the vulnerability of loss of life and prevent damage to buildings and infrastructure in the Reedsport area should a natural disaster occur.</p> <p>The failure of the existing Reedsport water system would result in a majority of the population, persons interned at the hospital and emergency services to be without water which would be disastrous to the community with regard to loss of life and possible property damage.</p> <p>Coordinating Organization: City of Reedsport Public Works Department</p> <p>Internal Partners: City of Reedsport Planning, Finance, & Fire Departments</p> <p>External Partners: FEMA, Oregon Emergency Management, Douglas County Emergency Management</p> <p>Timeline: 2-4 years</p> <p>Estimated Cost: \$7,900,000</p>	
Ideas for Implementation:	
<ul style="list-style-type: none"> • This project is identified in the City of Reedsport's 2016/2020 Capital Improvement Program. • Acquire the property, in which the Master Heights water tower will be constructed on. • Work with Oregon Emergency Management to seek funding for upgrading the water system. • Develop and or revise the Reedsport water system plan to further refine the need for upgrading the existing water system as described. 	

Action Item (Multi-hazard)

Proposed Action Item:	Alignment with Goals:
Elevate levee to the 500 year standard.	B. Develop partnerships and implementation strategies. D. Improve Emergency Services.
Rationale for Proposed Action Item:	
<p>The City's levee protects the community from both flood and varying degrees of tsunami. By increasing the height of the levee it will provide a higher level of protection from these events and account for potential subsidence during an earthquake. Even if the levee is eventually overtopped by a tsunami, the added height will provide additional time to evacuate as tsunamis usually take time to build and the first wave is usually considerably smaller than the second or third. This will allow residents and first responders' additional time to secure food fuel sources, evacuate the injured and get to high ground.</p> <p>This project includes the replacement of the sheet pile wall at Champion Park with a larger more secure structure that can withstand higher hydraulic loading and seismic activity.</p> <p>Coordinating Organization: City of Reedsport Public Works Department</p> <p>Internal Partners: City of Reedsport Police & Fire Departments</p> <p>External Partners: FEMA, USACE, State of Oregon</p> <p>Timeline: 2-4 years</p> <p>Estimated Cost: \$4,000,000</p>	
Ideas for Implementation:	
<ul style="list-style-type: none">• Seek grant funding.	

Action Item (Multi-Hazard)

Proposed Action Item:	Alignment with Goals:
Develop a pathway atop the levee system to provide an evacuation route, emergency vehicle access, and maintenance access.	GOAL A: Protect structures in the floodplain from flooding. GOAL D: Improve Emergency Services.
Rationale for Proposed Action Item:	
<p>Enclosing Reedsport's downtown area is an earthen levee system that protects the City's downtown from flooding on the Umpqua River and Scholfield Creek. The levee is vital to protect the downtown area of Reedsport from flood and tsunami hazards. The levee is currently used as an undeveloped walking trail by Reedsport residents. Development of the trail to include a hard surface, allows emergency vehicles to access various areas of the downtown during catastrophic flood events, as well as, it provides easier maintenance of the levee throughout the year. The developed pathway with asphalt or concrete also maintains the integrity of the levee, by avoiding the creation of divots and ruts from the maintenance and emergency vehicles, thus, keeping the downtown area safer from flooding events.</p> <p>The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on both new and existing buildings and infrastructure [201.6(c)(3)(ii)]. In conjunction with developing a hard surface pathway atop the levee system, it will be necessary to elevate the height of the levee in many areas. Such improvements will help protect development inside of the levee from breaching during flood events, as well as, provide faster emergency access to areas of the downtown, via the levee.</p> <p>The potential failure of the levee system along the Scholfield Creek and Umpqua rivers could result in flooding beyond the FEMA Flood Insurance Rate Map levels.</p> <p>Coordinating Organization: City of Reedsport Public Works Department</p> <p>Internal Partners: City of Reedsport Planning, Finance, Parks, & Fire Departments</p> <p>External Partners: FEMA, Oregon Emergency Management, US Army Corps of Engineers</p> <p>Timeline: 0-2 years</p> <p>Estimated Cost: \$6,300,000</p>	
Ideas for Implementation:	
<ul style="list-style-type: none"> • Implement the Reedsport Levee Loop Trail Plan design. • Complete structural engineering studies to establish options for upgrades. • Build an asphalt pathway atop the levee to provide access to support services. • Seek funding from FEMA and/or the US Army Corps of Engineers to build a pathway atop the system. • Seek funding from other agencies, such as the Oregon Parks & Recreation Department grant program, etc. 	

Action Item (Multi-hazard)

Proposed Action Item:	Alignment with Goals:
Consider relocating critical and essential facilities out of the floodplain and tsunami inundation zone.	A. Protect life and property. B. Develop partnerships and implementation strategies. C. Improve Emergency Services.
Rationale for Proposed Action Item:	
<p>A number of critical facilities are located in Reedsport's floodplain and tsunami inundation zone. These facilities include the Reedsport Police Department & Jail, Fire Station No. 1, City Hall, Public Works Departments, Douglas County Sherriff's Office, Central Lincoln PUD, Douglas County Library, Reedsport Senior Center, etc. Elevating these structures above the base flood elevation would be a significant cost to those agencies, which are already dealing with fiscal challenges. An alternative may be to relocate these agencies and facilities out of reach of floodwaters, potentially to vacant properties in the uptown area, in order to reduce Reedsport's vulnerability to flood and tsunami hazards.</p> <p>The waste water treatment plant is another critical facility located downtown and in the 100-year floodplain. Although the wastewater treatment plant has been built to current seismic standards, an earthquake could potentially crack pipes. It is unlikely that this structure would be located, given that it was recently constructed in 2010. The City should seek alternatives to relocating this facility, such alternatives may include, improving or repairing infrastructure that is not constructed to withstand seismic activity.</p> <p>The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on both new and existing buildings and infrastructure [201.6(c)(3)(ii)]. Relocating these facilities and storing essential documents out of reach of floodwaters will reduce Reedsport's vulnerability to flood and tsunami hazards, and will significantly reduce the impact of a flooding event in Reedsport.</p> <p>Coordinating Organization: City of Reedsport Planning Department</p> <p>Internal Partners: City of Reedsport Public Works, Finance, Police & Fire Departments</p> <p>External Partners: FEMA, Oregon Emergency Management, Douglas County Emergency Management</p> <p>Timeline: On-going</p> <p>Estimated Cost: Unavailable</p>	
Ideas for Implementation:	
<ul style="list-style-type: none"> • Seek grant opportunities and funding in order to upgrade the wastewater treatment plant pipes. • Identify these projects in the City's Capital Improvement Plan in order to begin saving for the future costs of relocating or upgrading facilities. 	

Action Item (Multi-hazard)

Proposed Action Item:	Alignment with Goals:
Develop code language and regulate a Tsunami overlay zone, which aims to restrict development of critical and essential facilities within a Tsunami Inundation zone.	A. Protect life and property. B. Improve Emergency Services. C. Public Awareness.
Rationale for Proposed Action Item:	
<p>A number of critical facilities are located in Reedsport's floodplain and tsunami inundation zone. These facilities include the Reedsport Police Department & Jail, Fire Station No. 1, City Hall, Public Works Departments, Douglas County Sherriff's Office, and Central Lincoln PUD. This poses many concerns in the event of a major hazard, such as an earthquake, tsunami, or severe flood. The Police Department, the hub of communications during a major event, may lose power, phone, internet, etc.</p>	
<p>The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on both new and existing buildings and infrastructure [201.6(c)(3)(ii)]. In order to reduce the effects of hazards on newly constructed critical facilities and infrastructure, the City of Reedsport should consider developing a Tsunami Inundation Zone Overlay that identifies types of buildings and facilities that can be permitted within a Tsunami Inundation zone, using the Tsunami Evacuation Route map as a guide for determining that zone. This type of land use regulation should also encourage building techniques that would reduce building failure in a Cascadia earthquake and tsunami event. These techniques could apply not only to new structures, but any new type of new construction (additions, expansions, etc.) or changes in use. In 2015, the Department of Land Conservation and Development created a document to guide jurisdictions in implementing code language for this type of overlay. The reference document is called "Preparing for a Cascadia Subduction Zone Tsunami: A Land Use Guide for Oregon Coastal Communities".</p>	
Coordinating Organization: City of Reedsport Planning Department	
Internal Partners: City of Reedsport Planning, Public Works & Fire Departments	
External Partners: Oregon Department of Land Conservation & Development, FEMA	
Timeline: 1-3 years	
Estimated Cost: Minimal	
Ideas for Implementation:	
<ul style="list-style-type: none"> Utilize the "Preparing for a Cascadia Subduction Zone Tsunami: A Land Use Guide for Oregon Coastal Communities" document provided by DLCD. Develop a steering committee to create language to be adopted into the Reedsport Land Usage Ordinance (RLUO) by the Planning Commission and City Council. 	

Action Item (Multi-hazard)

Proposed Action Item:	Alignment with Goals:
Identify potential, alternative evacuation and supply routes in the event of a highway or bridge closure.	A. Protect life and Property B. Develop Partnerships and Implementation Strategies C. Improve Emergency Services
Rationale for Proposed Action Item:	
<p>Access to Reedsport is limited to Highways 101 and 38. These highways are susceptible to landslides and potential washouts due to an earthquake, tsunami, or flooding. Alternative routes are vital to evacuations and providing essential services to the city during a catastrophic event. Identifying potential evacuation and supply routes will reduce the city's vulnerability to a future disaster.</p> <p>Bridges in the area are potentially susceptible to earthquake-induced damages. The Scholfield Bridge is a vital link between the west and east sides of Reedsport. The Umpqua River Bridge provides an essential crossing over the Umpqua River. Damage to these bridges could divide the two halves of the community, with no other accessible, connecting roads.</p> <p>The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community [201.6(c)(3)(ii)]. While identifying evacuation routes will not necessarily reduce the effects of a hazard, they will improve the safety of the community's residents should a natural disaster occur.</p> <p>Coordinating Organization: City of Reedsport Police & Fire Departments</p> <p>Internal Partners: City of Reedsport Planning Department</p> <p>External Partners: Private Logging Companies, US Forest Service, Douglas County</p> <p>Timeline: 1-2 years</p> <p>Estimated Cost: Unavailable</p>	
Ideas for Implementation:	
<ul style="list-style-type: none"> • Coordinate with the Forest Service and Douglas County Emergency services to use satellite/GIS imagery to identify possible routes and create an evacuation map. • Coordinate maintenance of access routes to ensure access remains available year round. • Partner with logging companies to compare road and trail maps. • Share information with emergency response agencies and medical responders. 	

Action Item (Multi-hazard)

Proposed Action Item:	Alignment with Goals:
Replace the Scholfield Bridge and assess the adjoining water pipe for consideration as a potential retrofit.	A. Protect Life and Property D. Improve Emergency Services
Rationale for Proposed Action Item:	
<p>The Scholfield bridge is a critical transportation link between downtown Reedsport and the southwest side of the city. The bridge was constructed in 1928 and received some upgrades in 1952. These upgrades, however, did not include the original pilings, which have begun to deteriorate making the bridge vulnerable to flood, tsunami and/or earthquake. Failure or collapse of the bridge would eliminate the major evacuation route for downtown and mid-town residents, as well as, isolate residents from the only Hospital in the city.</p> <p>In addition, connected to the bridge is a critical water pipe that connects the southwest side of the city to the northeast side. If the bridge and water pipe are disabled due to earthquake, flood, or tsunami, then areas of Reedsport would be isolated and residents would be at risk of contaminated water.</p> <p>The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on both new and existing buildings and infrastructure [201.6(c)(3)(¹)]. Replacing the Scholfield Bridge and water pipe will reduce the risk of damage to two critical pieces of infrastructure and prevent contamination of the local water resources.</p> <p>Coordinating Organization: City of Reedsport Public Works Department</p> <p>Internal Partners: City of Reedsport Planning & Finance Departments</p> <p>External Partners: ODOT, FEMA, Douglas County Emergency Management</p> <p>Timeline: 2-4 years</p> <p>Estimated Cost: \$28,000,000</p>	
Ideas for Implementation:	
<ul style="list-style-type: none"> • Partner with ODOT to seek funding for bridge replacement. • Consider alternatives for relocating the Scholfield Bridge water pipe and upgrade the facility to ensure that water in the pipe is not contaminated. 	

Action Item (Multi-hazard)

Proposed Action Item:	Alignment with Goals:
Identify locations suitable for setting up temporary housing or shelters, should a major hazard event occur and displace a large portion of the community.	A. Protect life and property. B. Develop partnerships and implementation strategies. D. Improve Emergency Services
Rationale for Proposed Action Item:	
<p>Levee failure, floods, earthquake, and/or tsunami events, could result in a major loss (demolition) of buildings in mid-town and downtown Reedsport based on flood depths, velocities, durations and on FEMA's depth-damage functions. The likelihood of demolition is further increased because more than 50% of the buildings have un-repaired flood damage from past flood events. Given the potential for this type of outcome, temporary housing and other displacement costs will be necessary for years, if not decades.</p> <p>Given that time would be restricted in an emergency situation, seeking to utilize existing structures for short and long term housing options will be ideal, rather than constructing new housing. Immediate housing solutions could mean tent camps or partnering with property owners south of the Scholfield Bridge whose homes are undamaged and large enough to take in community members. Local churches may have additional space for sleeping bags and the school each have showers, restrooms, and gymnasiums large enough to provide temporary sleeping quarters.</p> <p>Coordinating Organization: City of Reedsport Public Works Department</p> <p>Internal Partners: City of Reedsport Police & Fire Departments</p> <p>External Partners: Local churches, Reedsport School District</p> <p>Timeline: 1-2 years</p> <p>Estimated Cost: Low</p>	
Ideas for Implementation:	
<ul style="list-style-type: none"> • Partner with the Reedsport School District to develop a schematic of where tents could be setup, for temporary housing, in the case of such an event, since the school district has large areas of land (e.g., football and baseball fields) available for setup. • Identify how many tents will be needed and how large the tents should be in order to house families. • Research tent prices and purchase surplus tents. • Identify a storage facility. • Partner with the local churches, in the uptown area, to see if temporary house space is available at the church sites, parsonages, or if church members are willing to take in displaced individuals and families. • Develop a community signup sheet for those interested in taking in individuals or families who are displaced. 	

Action Item (Multi-hazard)

Proposed Action Item:	Alignment with Goals:
Provide a supply of non-perishable food and an area for long-term food storage for community consumption and another for consumption by emergency responders.	A. Protect life and property. B. Develop partnerships and implementation strategies. D. Public Awareness.
Rationale for Proposed Action Item:	
<p>In the event of a major hazard, such as earthquake, tsunami, or severe flooding, many residents of the downtown and/or those living in older homes that are unable to withstand an earthquake event, would likely be displaced. This would mean those individuals and families would be without, not only shelter, but food, as well.</p> <p>Compounding the effects of those individuals and families having little if any food available to them, both of Reedsport's grocery stores were constructed prior to the 1960's and located in the downtown area. This means the existing food stock could become contaminated or may no longer be accessible in an earthquake, flood, or tsunami. Even if access were possible, the supply on hand would likely be limited to not more than one week. With road access cut off, it is unknown how quickly, if at all, food could be delivered to the community by vehicles. Consideration should be given to a mutual agreement with an agency from Roseburg or another region that may be unaffected by the natural hazard, in order to have food flown in.</p> <p>Furthermore, education on the storage of non-perishable foods, such as canned goods, vacuum sealed foods, and water for individual preparation is highly important. Groups such as CERT could lead trainings and mock scenarios to help individuals and families understand how to store food and bottled water that will help them survive a few days to a week until they are reached by emergency responders, in the case of a major natural disaster.</p> <p>If the downtown is unavailable, then it will be necessary to identify an area or areas uptown for food storage and temporary "grocery stores" uses, where food is rationed rather than purchased. The Project Blessing Food Pantry is located in the uptown area and is designed as a mini grocery store. The local food supply storage could be rationed and distributed through the pantry. The pantry may not be large enough to store food, so another location for storage may need to be identified.</p> <p>Coordinating Organization: City of Reedsport Public Works Department</p> <p>Internal Partners: City of Reedsport Police & Fire Departments</p> <p>External Partners: Local churches, Reedsport School District, Project Blessing and AARP Food Pantries, Oregon Emergency Management, Douglas County Emergency Management, CERT</p> <p>Timeline: 1-2 years</p> <p>Estimated Cost: Unavailable</p>	
Ideas for Implementation:	
<ul style="list-style-type: none"> Identify a location or multiple locations where large amounts of canned food, vacuum sealed food, and water can be stored. Coordinate with CERT to provide trainings and mock scenarios. 	

- Coordinate with the Great Garden to provide additional fruits and vegetables that may be available for distribution to the community.
- Coordinate with the AARP & Project Blessing Food Pantries to arrange distribution of food storage.
- Coordinate with an agency in Roseburg or other community that could provide supplies and food via helicopter if access roads are destroyed.
- Seek grants to purchase preserved meals with long-term expiration dates.

Action Item (Multi-Hazard)

Proposed Action Item:	Alignment with Goals:
Install unmanned rapid deployment levee gates.	A. Protect life and property B. Develop partnerships and implementation strategies D. Improve emergency services
Rationale for Proposed Action Item:	
<p>The City of Reedsport's levee system was constructed in the 1960's in order to prevent flooding the downtown; however, the levee system has many openings to allow for vehicular and pedestrian traffic. These existing openings through the levee allow for traffic and pedestrian to travel from protected to unprotected areas during normal and non-flooding conditions. Currently, the openings can be closed using drop boards that require manual assembly. This can be time and labor consuming. The labor time necessary to erect the gates in case of a tsunami or severe flood would be too slow and dangerous for our emergency staff. It takes approximately 20 minutes and five people to manually close one gate. In order to protect the life and property of Reedsport's downtown core, new traffic rated automatic flood gates should be installed to act as levee closure devices. These automated gates will activate during flood conditions thus reducing the labor and response time for gate closure.</p> <p>Currently, the City of Reedsport levee system has 7 closure structures. The gate at Winchester Avenue will need to be raised with the installation of a new sheet pile wall structure. Additionally, an 8th closure structure is needed to avoid potential flooding conditions along Winchester Avenue at 11th street. These two specific modifications and addition are to correct settlement that has occurred over the past 45 years and achieve the necessary vertical levee height to meet the 500 year standard.</p> <p>Coordinating Organization: City of Reedsport Public Works Departments</p> <p>Internal Partners: City of Reedsport Finance, Police, & Fire Departments</p> <p>External Partners: Oregon Emergency Management, Douglas County Emergency Management</p> <p>Timeline: 1-4 years</p> <p>Estimated Cost: \$3,000,000</p>	
Ideas for Implementation:	
<ul style="list-style-type: none"> • Seek funding through grant opportunities. 	

Action Item (Multi-hazard)

Proposed Action Item:	Alignment with Goals:
Expand the Turner Fire Station in order to house a multi-jurisdictional operations center.	B. Develop partnerships and implementation strategies. D. Improve Emergency Services.
Rationale for Proposed Action Item:	
<p>In the case of a major hazard event, such as an earthquake, tsunami, or major flood, more room is needed for an emergency operations center at Turner Fire Station. The facility would need to expand in order to incorporate:</p> <ul style="list-style-type: none"> • Showers for decontamination, • A kitchen for preparing meals for emergency shifts and mutual aid calls, • A classroom for training, • Two additional bays for tender or ladder trucks; • Additional space to set up the Douglas County Emergency operation center, • A radio room for the ham radio, dispatch, and other communications. <p>Onsite potable water storage is desirable in case the City's water infrastructure is damaged and not able to provide uncontaminated water to the Department. The water could then be used by the emergency responders and/or rationed to the public, depending on the severity of the event.</p> <p>Coordinating Organization: City of Reedsport Public Works Department</p> <p>Internal Partners: City of Reedsport Police & Fire Departments</p> <p>External Partners: Red Cross, Oregon Emergency Management, Douglas County Emergency Management</p> <p>Timeline: 2-4 years</p> <p>Estimated Cost: \$400,000</p>	
Ideas for Implementation:	
<ul style="list-style-type: none"> • Seek funding. • This project is identified in the City's 2016/2020 Capital Improvement Program. • Coordinate with Douglas County to share the cost of this upgrade. 	

Action Item (Multi-hazard)

Proposed Action Item:	Alignment with Goals:
Expand the existing communications systems.	B. Develop partnerships and implementation strategies. D. Improve Emergency Services.
Rationale for Proposed Action Item:	
<p>In order to minimize the effects of a natural disaster, such as earthquake, major flood, or tsunami, it is imperative for emergency responders and maintenance crews to have reliable means of communication. Given that cell phones and landlines rely on infrastructure (e.g., towers, power lines) to operate, these methods of communication will likely not withstand a major disaster event.</p> <p>Because it does not rely on towers, cables or phone lines to work, satellite phone service can be used when other services have failed. Currently, the only agency with a satellite phone is the Lower Umpqua Hospital. In order to ensure reliable medical services, quick response to fires, maintenance of roadways, etc. additional satellite phones should be made available. At least one phone should be utilized in the emergency operations center at Turner Fire Station and multiple phones to be used among the Police & Fire Department, Douglas County Sherriff's Office, Public Works Department, and other agencies that may arrive to help mitigate the disaster.</p> <p>Coordinating Organization: City of Reedsport Police Department</p> <p>Internal Partners: City of Reedsport Police, Fire, Public Works, & Finance Departments</p> <p>External Partners: Red Cross, Oregon Emergency Management, Douglas County Emergency Management & Sherriff's Office, Lower Umpqua Hospital</p> <p>Timeline: 1-2 years</p> <p>Estimated Cost: \$30,000</p>	
Ideas for Implementation:	
<ul style="list-style-type: none"> • Seek grant funding opportunities. • Coordinate with other agencies to share the cost of this upgrade. 	

Action Item (Multi-Hazard)

Proposed Action Item:	Alignment with Goals:
Identify a fuel storage location south of the Scholfield Bridge to aid in emergency response services.	A. Protect life and property B. Develop partnerships and implementation strategies D. Improve emergency services
Rationale for Proposed Action Item:	
<p>Presently, there are no fuel storage facilities or service stations located south of the Scholfield Bridge. All of the operating gas stations are located north of the Scholfield Bridge, in the mid-town and downtown areas. This is of concern to the Police & Fire Departments, as well as, the Lower Umpqua Hospital. In the event of an earthquake, significant enough to damage the bridge, an adequate supply of fuel will need to be available in the uptown area to serve emergency responders and so that the Hospital and other critical facilities can operate generators in the likelihood that the power lines are damaged.</p> <p>Should a major flooding event occur, while the bridge may be unaffected, the fuel supply in the downtown area would be unattainable and could be contaminated by the time flood waters recede.</p> <p>In order to address this concern, it will be necessary to identify safe locations in the uptown area for the proper storage of fuel tanks. While the hospital and fire departments currently each have limited supplies of fuel available, it is not enough to operate for more than a couple of days. A major event could leave these facilities and agencies stranded for weeks. An adequate supply shall be determined, as well as, locations with enough room to properly store and secure the tanks.</p> <p>Coordinating Organization: City of Reedsport Police & Fire Departments</p> <p>Internal Partners: City of Reedsport Finance & Public Works Departments</p> <p>External Partners: Lower Umpqua Hospital</p> <p>Timeline: 1-2 years</p> <p>Estimated Cost: \$10,000</p>	
Ideas for Implementation:	
<ul style="list-style-type: none"> • Seek other grant opportunities to purchase storage tanks, pay for installation, designing, filling, and safety elements (e.g., proper strapping, bollards, etc.). • Identify this project in the City's Capital Improvement Plan, in order to start saving for these costs. • Partner with the Lower Umpqua Hospital to discuss sharing the costs associated. 	

CHAPTER 5

Plan Implementation & Maintenance

Convener & Coordinating Body

The City of Reedsport's City Manager will serve as the convener for the Reedsport Natural Hazards Mitigation Plan. The City Manager will be responsible for convening the plan's steering committee on a regular basis to identify new risk assessment data, review status of mitigation actions, identify new actions, and seek funding to implement mitigation actions. Additionally, the City's steering committee will continue to serve as the Plan's coordinating body. Roles and responsibilities of the steering committee will include:

- Serving as the local evaluation committee for funding programs such as the Pre-Disaster Mitigation Grant Program, the Hazard Mitigation Grant Program, and the Flood Mitigation Assistance program;
- Prioritizing and recommending funding for natural hazard risk reduction projects;
- Documenting successes and lessons learned;
- Evaluating and updating the Natural Hazards Mitigation Plan following a disaster;
- Evaluating and updating the Natural Hazards Mitigation Plan in accordance with the prescribed maintenance schedule; and
- Developing and coordinating ad hoc and/or standing subcommittees as needed.

To make the coordination and review of Reedsport's Plan as broad and useful as possible, the steering committee will engage additional stakeholders and other relevant hazard mitigation organizations and agencies to implement the identified action items.

Plan Maintenance Schedule

Plan maintenance is a critical component of the natural hazard mitigation plan. Proper maintenance of the plan ensures that this plan will maximize the City's efforts to reduce the risks posed by natural hazards. The Plan's convener and steering committee are responsible for implementing this process, in addition to maintaining and updating the plan through a series of meetings outlined in the maintenance schedule below.

The committee will meet on a semi-annual basis to complete the following tasks. During the first meeting of each year, the committee will:

- Review existing action items to determine appropriateness for funding;
- Educate and train new members on the plan and mitigation 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.

During the second meeting of each year the committee will:

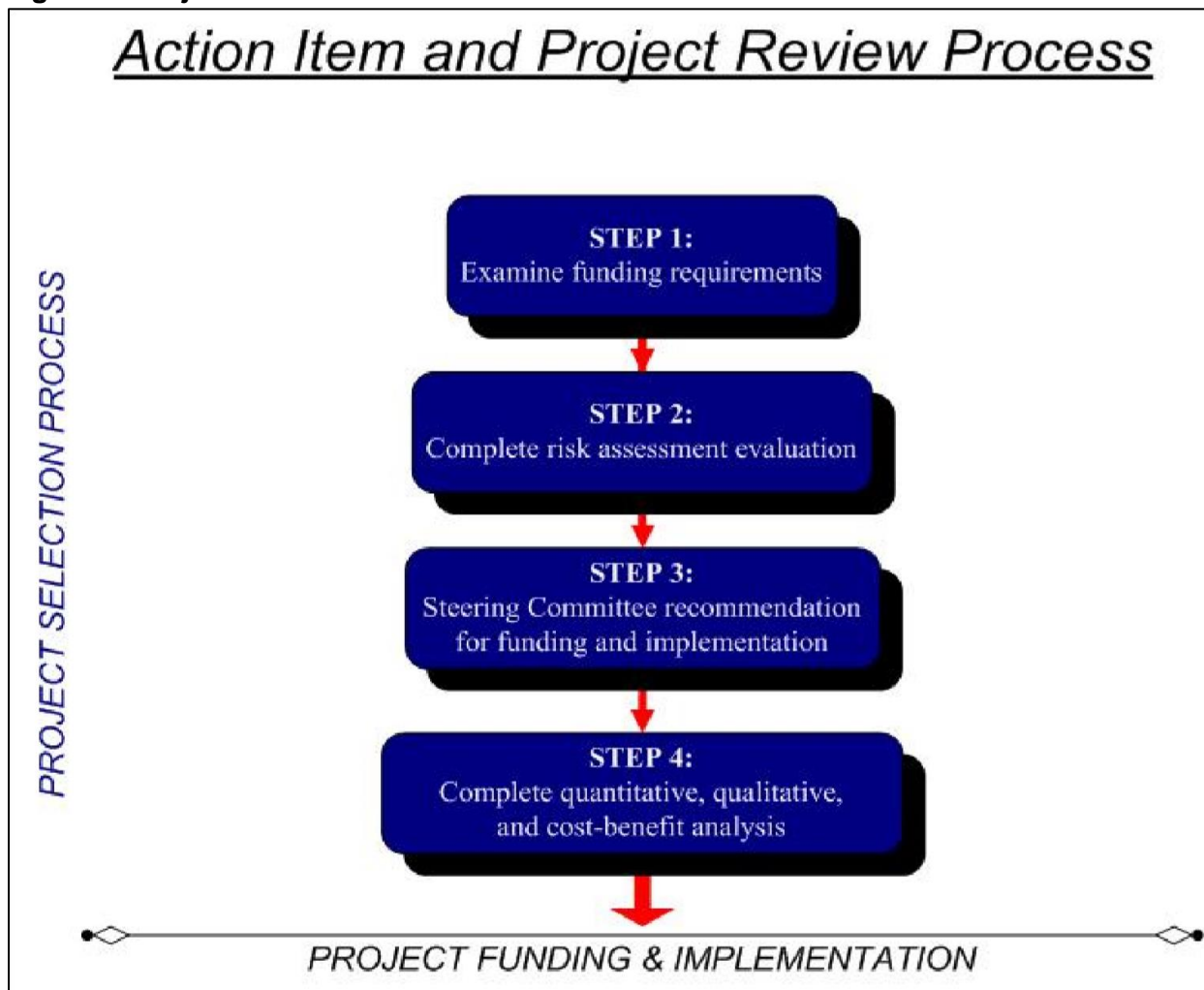
- Review existing and new risk assessment data;
- Discuss methods for continued public involvement; and
- Document successes and lessons learned during the year.

The convener will be responsible for documenting the outcome of the semiannual meetings. The process the committee will use to prioritize mitigation projects is detailed in the section below. The plan's format allows the city to review and update sections when new data becomes available. New data can be easily incorporated, resulting in a natural hazards mitigation plan that remains current and relevant to the City of Reedsport.

Project Prioritization Process

The Disaster Mitigation Act of 2000 (via the Pre-Disaster Mitigation Program) requires that jurisdictions identify a process for prioritizing potential actions. Potential mitigation activities often come from a variety of sources; therefore the project prioritization process needs to be flexible. Projects may be identified by committee members, local government staff, other planning documents, or the risk assessment. Figure 8 illustrates the project development and prioritization process.

Figure 8: Project Prioritization Process



Source: Community Service Center's Partnership for Disaster Resilience at the University of Oregon, 2008

Step 1: Examine funding requirements

The steering committee will identify how best to implement individual actions within the appropriate existing plans, policies, or programs. The committee will examine the selected funding stream's requirements to ensure that the mitigation activity would be eligible through the funding source. The committee may consult with the funding entity, Oregon Emergency Management, or other appropriate state or regional organizations about the project's eligibility. Depending on the potential project's intent and implementation methods, several funding sources may be appropriate. Examples of mitigation funding sources include, but are not limited to: FEMA's Pre-Disaster Mitigation competitive grant program (PDM), Flood Mitigation Assistance program (FMA), National Fire Plan (NFP), Community Development Block Grants (CDBG), local general funds, and private foundations.

Step 2: Complete risk assessment evaluation

The second step in prioritizing the plan's action items is to examine which hazards they are associated with and where these hazards rank in terms of community risk. The committee will determine whether or not the plan's risk assessment supports the implementation of the mitigation activity. This determination will be based on the location of the potential activity and the proximity to known hazard areas, historic hazard occurrence, vulnerable community assets at risk, and the probability of future occurrence documented in the plan.

Step 3: Committee recommendation

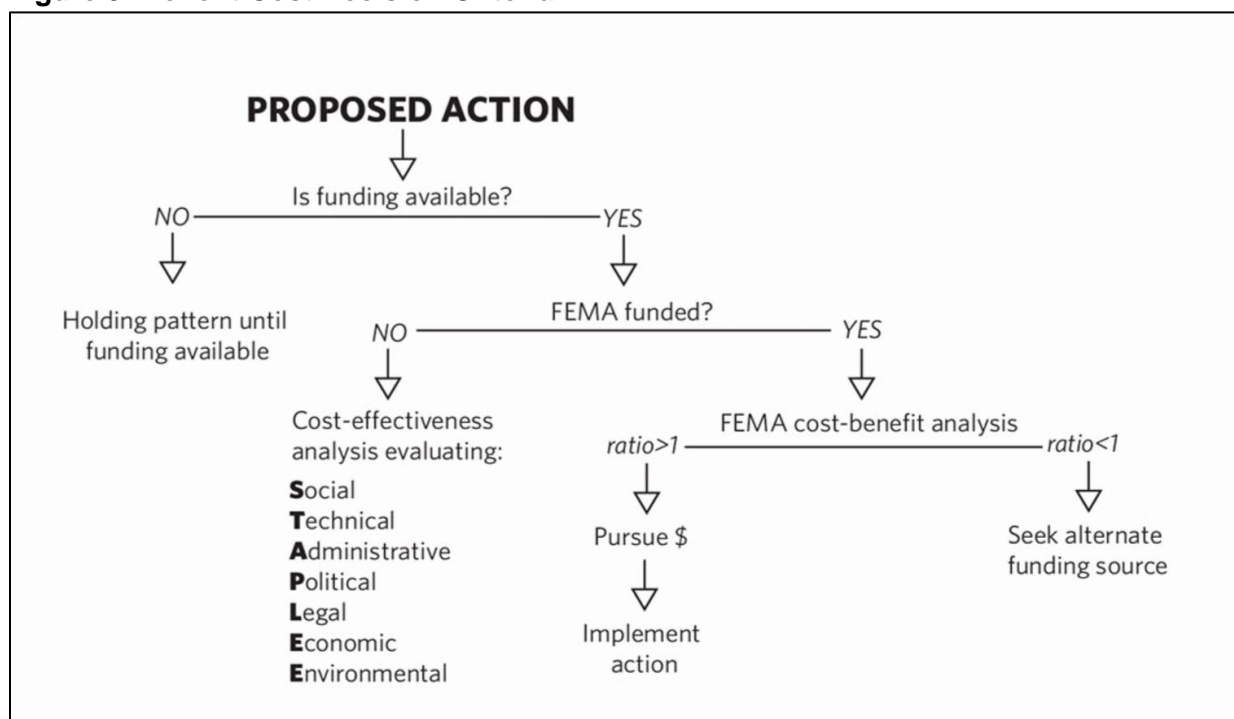
Based on the steps above, the committee will recommend whether or not the mitigation activity should be moved forward. If the committee decides to move forward with the action, the coordinating organization designated on the action item form will be responsible for taking further action and, if applicable, documenting success upon project completion. The 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.

The committee and the community's leadership have the option to implement any of the action items at any time, (regardless of the prioritized order). This allows the committee to consider mitigation strategies as new opportunities arise, such as funding for action items that may not be of the highest priority. This methodology is used by the committee to prioritize the plan's action items during the annual review and update process.

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

The fourth step is to identify the costs and benefits associated with 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 9 shows decision criteria for selecting the appropriate method of analysis.

Figure 9: Benefit Cost Decision Criteria



Source: Community Service Center's Partnership for Disaster Resilience at the University of Oregon, 2006.

If the activity requires federal funding for a structural project, the committee will use a Federal Emergency Management Agency-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 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. The STAPLE/E technique has been tailored for use in natural hazard action item prioritization by the Oregon Partnership for Disaster Resilience at the University of Oregon's Community Service Center.

Continued Public Involvement & Participation

The City of Reedsport is dedicated to involving the public directly in the continual reshaping and updating of the Reedsport Natural Hazards Mitigation Plan. In 2015, the City of Reedsport partnered with the State of Oregon, in order to apply for the HUD National Disaster Resilience Competition. This application process involved community outreach to local stakeholders, agencies, and the public at large. Open Houses and Town Hall meetings were held, in which testimony was presented to support the City's efforts to become more resilience and prepare for potential natural disasters. Participants included, but were not limited to homeowners in the identified hazard area, business owners, the USACE, DOGAMI, ODOT, FEMA, local civic groups,

and the City Council. Throughout the process property owners vetted their concerns and issues with stormwater flooding issues, in turn helping the City to identify proactive mitigation and resilience strategies that were incorporated into the grant application. While the City was unsuccessful in securing the HUD grant, the efforts were not lost. All of that information and data collected was used to help shape this Plan update. (See Appendix E for more information on the HUD grant process and outreach.)

A more formal process of was conducted in late 2015 through the spring of 2016, in order to update Reedsport's Natural Hazard Mitigation Plan. Members of the community, public agencies, City staff, and members of various boards/committees were invited to participate. These individuals comprised the Natural Hazard Mitigation Plan Update Project Advisory Committee (NHMP PAC). On average approximately ten (10) members attended the PAC meetings. In addition to the findings of the HUD grant data that was collected, other hazards than flooding were addressed, such as wildfire, windstorm related hazards, drought, etc. An overview of the meetings is identified in Appendix D.

At any time, the public has the opportunity to provide feedback about the plan. To ensure that these opportunities will continue, the City's plan will be archived and posted on the University of Oregon Libraries' Scholar's Bank Digital Archive. The City's website will include a link to the Digital Archive and/or the Plan itself. Additionally, the City's steering committee will hold public meetings following natural disasters or whenever deemed necessary. Likewise, additional stakeholders will be invited to semi-annual plan meetings as needed.

Douglas County's Natural Hazards Mitigation Plan relies on regular input from regional Planning Advisory Committees, including a coastal Planning Advisory Committee (PAC). The coastal PAC is comprised of a diverse cross section of residents who assist in updating coastal portions of the county's mitigation plan. Reedsport's steering committee will participate in the coastal PAC's annual meetings. The general public is invited to attend all PAC meetings.

Five-Year Review of Plan

This plan will be updated every five years in accordance with Douglas County's plan update schedule. During plan updates, the following questions will be asked to determine what actions are necessary to update the plan. The convener will be responsible for convening the committee to address the questions outlined below.

- Are the plan's goals still applicable?
- Have new issues or problems related to hazards been identified in the community?
- Are there new partners that should be brought to the table?
- Are there new local, regional, state or federal policies influencing natural hazards that should be addressed?
- Has the community successfully implemented any mitigation activities since the plan was last updated?
- Do existing actions need to be reprioritized for implementation?
- Are the actions still appropriate, given current resources?
- Have there been any changes in development patterns that could influence the effects of hazards?
- Are there new studies or data available that would enhance the risk assessment?

- Has the community been affected by any disasters? Did the plan accurately address the impacts of this event?

The questions above will help the committee determine what components of the mitigation plan need updating. The committee will be responsible for updating any deficiencies found in the plan based on the questions above.

Appendix A – Benefit-Cost Analysis of stormwater upgrades

Appendix B – Benefit-Cost Analysis of flood resiliency improvements

Appendix C – Benefit-Cost Analysis of Schofield Bridge replacement

Appendix D – Public Outreach and Plan Amendment Process

**Reedsport Natural Hazard Mitigation Plan Update
Meeting of the
Natural Hazard Mitigation Plan Project Advisory Committee (NHMP PAC)**

**November 24, 2015 at 3:00 pm
In the Reedsport City Hall Conference Room**

1. Call to order by Jonathan Wright, Planning Director
2. Review of the 2010 Natural Hazard Mitigation Plan
3. Overview of the Plan update process, the project timeline, and the PAC's role
4. New Business:
 - a. Develop a list of Essential Services and Facilities
 - b. Review the existing, identified hazards to Reedsport in the 2010 NHMP and determine if these threats are still applicable or if new ones exist.
5. Future Meetings:
 - a. Next meeting will be held on February 24, 2016
 - b. Next meeting the PAC will update the Hazard Assessments chapter and the Action Items chapter.
6. Adjourn

Members:	Title or affiliation	Present	Absent
Jonathan Wright	Reedsport City Manager	X	
Duane Wisehart	Reedsport Police Chief	X	
John Stokes	Reedsport Public Works Director	X	
Jessica Terra	Reedsport Community Development Specialist	X	
Tom Anderson	Reedsport Fire Chief	X	
Harold Rose	Reedsport Assistant Fire Chief		X
Linda McCollum	Reedsport Mayor	X	
Diane Essig	Reedsport City Councilor	X	
Leslee Collier	Reedsport City Councilor	X	
Kevin Hague	Lower Umpqua Hospital	X	
Stuart Jarmain	Central Lincoln PUD	X	
Greg Carter	Central Lincoln PUD		X
Allen Teitzel	Reedsport Planning Commission	X	

Minutes of the November 24, 2015 Natural Hazard Mitigation Plan Project Advisory Committee meeting

Call to Order:

The meeting was called to order by Jonathan Wright, Planning Director.

Review of the 2010 Natural Hazards Mitigation Plan:

Wright ran the committee through a quick overview of the existing plan contents and the upcoming process that the committee would be involved in.

Overview of the Plan update process, the project timeline, and the PAC's role:

The committee would likely be involved in 1-2 more meetings during the update process. Future, meetings to maintain the Plan may require the committee's attention, as well. Wright advised that the Plan must be formally updated every 5 years to incorporate any changes made by the committee. Part of the update process requires review by Douglas County (for the portion of the plan incorporated into their larger County-wide plan) and by FEMA for approval and in order to be able to apply for certain hazard mitigation grants. Wright expects this update round should be completed by the summer of 2016.

New Business:

Wright informed the committee that the first task was to identify a list of Essential and Critical Facilities for the community. Most of these were already called out in the 2010 Plan, but the list developed is as follows:

- Highways 101 & 38
- Oregon Pacific Railroad
- Scholfield bridge, Burdick underpass, and the Umpqua River bridge
- Fire Departments (3), Fire Halls (4)
- Police Department
- City Hall
- Lower Umpqua Hospital and Aiden Living Center
- Highland Elementary and Reedsport Community Charter School
- Water treatment and wastewater treatment facilities
- EMT services
- Various health clinics, primary care physicians, surgeons, dentists, pharmacies, eye clinics, and veterinary clinics
- William M. Tugman State Park
- Umpqua Discovery Center
- Bolon Island State Park
- Oregon Dunes National Recreation Area
- American Red Cross Oregon Pacific Chapter
- Reedsport/Winchester Bay Chamber of Commerce
- Coastal Arts and Business Alliance
- Eagles Hall
- Lower Umpqua Senior Center
- Port of Umpqua
- Reedsport's Family Resource Center
- Timber Ridge Retirement Center
- Great Afternoons
- LUMA
- ODOT, City, County maintenance yards
- Project Blessing and AARP food pantry
- CERT
- Hospital Emergency Trailer

- United States Coast guard
- Rotary
- LIONS
- Douglas County Sheriff's Office
- Bonneville

The committee also determined that all of the existing identified hazards remain, but one new hazard should be added: Sea Level Rise and Coastal Erosion. The complete list was identified as: coastal erosion, drought, earthquake, flood, landslide, sea level rise, tsunami, wildfire, windstorm, and winter storm.

Wright wrapped up the discussion with a preview of what will be discussed in the next steering meeting. He highlighted potential risks to the community, based on the various hazards. For instance, a severe earthquake could destroy the Scholfield Bridge which connects the uptown and downtown areas, leaving many residents stranded with no connection to medical services. Wright asked the representatives from Central Lincoln PUD, the Reedsport Volunteer Fire Department, and the Lower Umpqua Hospital if they could identify other potential risks that could be included into the new plan as action items. The group agree to consider what these action items would look like and be ready to discuss them at the next meeting.

Future Meetings:

Wright announced that the next meeting would be held on February 24, 2016 and the committee would be updating the Hazard Assessments and Action Items chapters.

Adjourn:

The meeting was adjourned at 4:00pm.

**Reedsport Natural Hazard Mitigation Plan Update
Meeting of the
Natural Hazard Mitigation Plan Project Advisory Committee (NHMP PAC)**

**February 24, 2016 at 3:00 pm
In the Reedsport City Council Chambers**

1. Call to order by Jonathan Wright, Planning Director
2. Old Business:
 - a. Overview of progress made since kick-off meeting
3. New Business:
 - a. Review of the 2010 Natural Hazard Mitigation Plan (Risk Assessment & Action Items only)
 - b. Update the Risk Assessment, including
 - i. Rating vulnerability and probability of each hazard
 - i. Identify location and extent of the hazard
 - b. Update existing Action Items
 - c. Add new Action Items
4. Adjourn

Members:	Title or affiliation	Present	Absent
Jonathan Wright	Reedsport City Manager	X	
Duane Wisheart	Reedsport Police Chief	X	
John Stokes	Reedsport Public Works Director	X	
Jessica Terra	Reedsport Community Development Specialist	X	
Tom Anderson	Reedsport Fire Chief		X
Harold Rose	Reedsport Assistant Fire Chief	X	
Linda McCollum	Reedsport Mayor	X	
Diane Essig	Reedsport City Councilor		X
Leslee Collier	Reedsport City Councilor	X	
Kevin Hague	Lower Umpqua Hospital		X
Stuart Jarman	Central Lincoln PUD	X	
Greg Carter	Central Lincoln PUD	X	
Allen Teitzel	Reedsport Planning Commission	X	

Minutes of the February 24, 2016 Natural Hazard Mitigation Plan Project Advisory Committee meeting

Call to Order:

The meeting was called to order by Jonathan Wright, Planning Director.

Old Business:

Jessica Terra, Community Development Specialist updated the committee that she had attended a meeting with Douglas County Planning staff and the staff of other small cities in the county to discuss the update process. The County was currently working on a Community Profile that would highlight each community in the County. This profile will include the list of Critical and Essential Facilities that the group developed in November, as well as, the list of identified hazards that may impact Reedsport. The County will also adopt into its plan, as an addendum, each city's set of Hazard Assessments and Action Items, as identified by the community.

New Business:

Terra gave an overview of the current Natural Hazards Mitigation Plan, specifically the Hazard Assessment and Action Items chapters. Terra pointed out specific elements of the hazard assessments that were outdate, for instance, the Tsunami and Earthquake hazard sections needed updating. The current hazards referenced outdated maps. Terra also referenced Action Items, which had been completed since the last update and ones that needed to be updated in order to be consistent with the City's current planning goals. Terra advised the committee that blank action items were on the table for the group to identify new goals and jot down ideas on how to meet those items and to identify agencies needed for coordination to complete the task.

Wright led the committee through each hazard assessment and the committee hi-lighted elements that needed updated data. Some of the committee members provided historical facts relative to the hazards, such as, a sever snow event that caused damage to Reedsport business back in the 60s.

Next, the group went through the action items one by one, eliminating items that had been completed or updating items that were partially completed or outdated. The committee also brainstormed new action items. With the recent HUD resiliency grant application, the members had many fresh ideas for Action Items, in their minds. For example, a new item was established for the placement of a water reservoir and direct supply lines to the Lower Umpqua Hospital and Turner Fire Station. Other new items included consideration of temporary housing, food storage, and fuel storage.

Staff advised the committee that this information would be incorporated into the 2015/16 Plan and if any further outreach was needed, members may be contacted to help.

Adjourn:

The meeting was adjourned at 4:15pm.

Appendix E – HUD Disaster Resilience Grant Competition Outreach & Process

Community Engagement Summaries from Oregon NDRC Application

Community Engagement and Inclusiveness

In every community OBDD provides project funding, it ensures there is an opportunity for community stakeholders to get involved. This includes conducting outreach and holding community meetings about pending projects to ensure that the community understands why particular projects are undertaken to address future hazards and ensure that the way that each project is going to be undertaken takes into account their concerns and protects vulnerable populations. This past year, the OBDD Director and executive team hosted forums across the state to obtain feedback on OBDD's proposed direction and the priorities of the department. This feedback formed the priorities and themes that drive the department's work. OBDD has also cultivated a close working relationship with Brookings and Reedsport City Managers, both of whom have kept their communities abreast of all CDBG-NDR related developments.

OBDD is involved in numerous Advisory Bodies, Boards, and Commission and also works with various program constituent groups. OBDD is a member agency of Oregon Regional Solutions along with many other state agencies including: Oregon Department of Transportation (ODOT); Department of Land Conservation and Development (DLCD); Department of Environmental Quality (DEQ); Department of State Lands (DSL); Oregon Department of Agriculture (ODA); Oregon Housing and Community Services (OHCS); Oregon Department of Energy (ODOE); Oregon Water Resources Department (OWRD); State Historic Preservation Office (SHPO); and Department of Consumer and Business Services (DCBS). In addition, depending on the need and nature of the project, many other agencies participate such as Oregon Department of Fish and Wildlife (ODFW) and Oregon Department of Forestry (ODF). As part of Regional Solutions, OBDD acts as the fiduciary agent for Regional Solutions funded projects. In that role, OBDD drafts and executes contracts with local project sponsors and monitors construction and project completion.

Initially, Reedsport's goal was to obtain the financial resources necessary to repair the City's flood-related issues. However, after reviewing data, needs and vulnerable populations, and through extensive community engagement, Reedsport developed a multi-faceted program designed to address not just the immediate needs of the community, but also create a long-term approach to area wide resiliency through a comprehensive recovery effort. This program has been so well supported that individuals, service clubs, districts and other governmental agencies have all contributed direct leverage towards the proposed projects and programs. In just a few short months, this program has been vetted by citizens, peers, state, federal government officials and agencies, and education entities. Reedsport now finds itself on the forefront of Oregon coastal resiliency, has received financial support from other communities, and has been asked to participate in legislative resiliency discussions, present the program to Oregon Emergency Managers, the Coastal Geologic Program and the Coastal Caucus, and has been part of a Climate Adaptation for Coastal Communities work group.

Consultation Summary Chart – Reedsport-specific

Agency Name or Stakeholder Group (if applicable)	Agency Type - Target Population (If applicable)	Type of Outreach	- Method of Notification (if applicable)
Umpqua Post Newspaper	Other: Local Newspaper	Article	9.9.15 - Article in a local newspaper that outlines NDRC program.
Parsons Brinkeroff, CH2MHILL	Other: Private contractors	Email	9.14.15 - Jonathan Wright consultation with private contractors over RFQ
FEMA Region X Regional Interagency Steering Committee	Other: FEMA Region X: members from USACE, DHS, HUD, FEMA, OR, WA, AL, EDA, USGC	Email Blast	8.25.15 - Yumei Wang email blast to members of Region X RISC group giving a brief sheet on the OR NCRC project.
Oregon Department of State Lands, Chris Stevenson	State planning agency	Email, phone	10.1.15 - (Reedsport) Contacted DSL administration and discussed HUD grant/NDRC application and all project aspects. DSL will be able to assist and review information as it relates to their oversight venues. Were very willing to assist.
Oregon Department of Transportation (ODOT)	Metropolitan Planning Organizations designated by the U.S. Department of Transportation	Email, phone, meeting	11.14 - 9.15: (Reedsport) Conducted multiple meetings and site visits with ODOT staff. Topics of discussion were based on HUD grant, State of NDRC application, Schofield bridge replacement, and resiliency.

Agency Name or Stakeholder Group (if applicable)	Agency Type - Target Population (If applicable)	Type of Outreach	- Method of Notification (if applicable)
Department of Geology and Mineral Industries (DOGAMI) (Jed Roberts)	State or regional planning department	Email, phone, meeting	11.14 - 9.15: (Reedsport) Multiple phone conferences/meetings and communications with DOGAMI staff. Discussions regarding river mapping/bathymetry, surveying, agency responsibilities and assistance regarding HUD design and overall State of NDRC application.
U.S. Army Corps of Engineers (USACE) (Jason MacBain)	Other: Federal Agency, Regional planning department (Portland)	Email, phone, meeting	4.15 - 9.15: (Reedsport) Multiple phone conferences/meetings and communications with USACE. Discussions regarding insurance program, levee improvement design, coordination and partnering in preparation for HUD design.

Agency Name or Stakeholder Group (if applicable)	Agency Type - Target Population (If applicable)	Type of Outreach	- Method of Notification (if applicable)
Federal Emergency Management Agency (FEMA) (David Ratte)	Other: Federal Agency, regional emergency management	Email, phone, meeting	4.28.15 - (Reedsport) conducted meeting with FEMA staff to discuss HUD and State of NDRC application. Further, discussions were held regarding river mapping and flood standards that are critical to resiliency planning. Multiple emails and phone conversations have also occurred after this initial meeting that ultimately resulted in FEMA funding the required river mapping.
AECOM, Rotschy, Tapani, Knife River, Laskey/Clifton	Other: Multiple Private Contractors, local business/stakeholders	Email, phone, meetings and RFQ	9.17.15 - (Reedsport) called all contractors shown, sent email, met with and forwarded an RFQ to develop a short list of qualified heavy civil contractors and CM firms that could perform services and coordinate/assist with all necessary work in Reedsport. All contractors were interested. As of 10.1.15, still waiting on SOQ submittals

Agency Name or Stakeholder Group (if applicable)	Agency Type - Target Population (If applicable)	Type of Outreach	- Method of Notification (if applicable)
All Legislative members in Senate and House	Other: Legislature	Info Sheet Distribution	9.29.15 - (Reedsport) Jonathan Wright provided Info Sheet to all legislators
Umpqua Post	Other: Newspaper / Media	Interview / Article	7.29.15 - (Reedsport) Umpqua Post interviewed Jonathan Wright and posted article regarding information regarding the HUD NDRC application and status.
Reedsport City Council	Regional councils of government	Meeting	2.17.15 - (Reedsport) Jonathan Wright provided HUD CDBG NDRC background and update to the public and City Council.
Reedsport Port of Umpqua	Regional councils of government	Meeting	2.18.15 - (Reedsport) Port of Umpqua approved a Letter of Intent to Participate with the City of Reedsport for HUD NDRC funding.
Reedsport City Council	Regional councils of government	Meeting	3.2.15 - (Reedsport) City Council adopted resolution in support of the State's application for CDBG HUD grant.

Agency Name or Stakeholder Group (if applicable)	Agency Type - Target Population (If applicable)	Type of Outreach	- Method of Notification (if applicable)
Oregon Department of Land Conservation and Development (DLCD)	State planning agency	Meeting	4.15.15 -Yumei Wang met Chris Shirley, flood manager, to discuss details of Reedsport levee and flooding problems as it related to State of Oregon Phase 2 Application.
Reedsport Rotary	Other: Local and Regional leadership and businesses - Public Forum	Meeting	7.23.15 - (Reedsport) Jonathan Wright addressed Rotary members about State of NDRC application status. Discussed partnerships and further importance to Reedsport.
Reedsport City Council		Meeting	8.3.15 - (Reedsport) City Council heard a report on the resiliency plan for HUD grant funding from Staff, City Council approved and entered a Cooperative Technical Partnership agreement with FEMA which allowed the City to apply for Federal funding.

Agency Name or Stakeholder Group (if applicable)	Agency Type - Target Population (If applicable)	Type of Outreach	- Method of Notification (if applicable)
City of Reedsport, OR - City Council	Regional councils of government	Meeting	8.3.15 Jonathan Wright had a discussion in City Council work session, gave presentation on ROI and Reedsport's involvement in the plan. All Council members and public in attendance, ranked the priority of activities as follows: 1) levee projects, 2) bridge project, 3) water project, and 4) long range planning projects.
United Community Action Network (UCAN), Oregon Housing and Community Services	1. Community and neighborhood groups in potential project areas 2. Public agency that provides assisted housing, social and fair housing services, State housing agency administering public housing	Meeting	8.18.15 - Yumei/ICF meeting to introduce NDRC, LMI housing, economic revitalization, data needs, partnerships. Meeting Notes.
Oregon Coast Community Action (ORCA), Oregon Housing and Community Services	1. Community and neighborhood groups in potential project areas 2. Public agency that provides assisted housing, social and fair housing services, State housing agency administering public housing	Meeting	8.18.15 - Yumei/ICF meeting to introduce NDRC, LMI housing, high-need areas, risk areas, data needs, partnerships. Meeting Notes.

Agency Name or Stakeholder Group (if applicable)	Agency Type - Target Population (If applicable)	Type of Outreach	- Method of Notification (if applicable)
Rural Oregon Continuum of Care (ROCC), Oregon Housing and Community Services	1. Continuum of Care within disaster affected counties 2. Public agency that provides assisted housing, social and fair housing services, State housing agency administering public housing	Meeting	8.18.15 - Yumei/ICF meeting to introduce NDRC, vulnerable populations, LMI housing. Meeting Notes.
Rockefeller Foundation (RF) filmers (from Denver Summit)	Other: Film media	Meeting	8.18.15 - Yumei Wang and Oregon team met with RF filmers to explore filming subjects and locations
Reedsport Port of Umpqua	Regional councils of government	Meeting	8.19.15 - (Reedsport) Port of Umpqua heard a report from Jonathan Wright and approved a request to partner with the City of Reedsport on HUD NDRC grant.
Douglas County Housing Authority	Public agency that provides assisted housing, social and fair housing services, including those focused on services to: children, elderly persons, persons with disabilities, persons with HIV/AIDS and their families, homeless persons	Meeting	8.24.15 - ICF/Yumei meeting with DCHA to discuss NDRC and community issues/needs as it regards to housing. Meeting Notes.
Gardiner Sanitary District	Adjacent States UGLGs and other stakeholders and affected parties in the geographic areas surrounding potential projects to ensure consistency with applicable regional redevelopment plans	Meeting	8.26.15 - (Reedsport) Staff attended Gardiner Sanitary District meeting and presented update and information on HUD NDRC project ROI.

Agency Name or Stakeholder Group (if applicable)	Agency Type - Target Population (If applicable)	Type of Outreach	- Method of Notification (if applicable)
Oregon Regional Solutions: DEQ, DLCD, ODOT, Housing, Business Oregon	State or regional planning department	Meeting	9.2.15 - Yumei meeting with Regional Solutions discussion HUD Natural Disaster Resilience Competition.
Oregon State University	Other: State University	Meeting	9.9.15 - ICF meeting with OSU to discuss partnership/planning activities. Meeting Notes.
Reedsport Rotary	Community and neighborhood groups in potential project areas	Meeting	9.10.15 - (Reedsport) Jonathan Wright provided update for the NDRC process.
Reedsport City Council	Regional councils of government	Meeting	9.14.15 - (Reedsport) City Council approved and entered into a Cooperative Technical Partnership Agreement with OBDD allowing the City to apply for CDBG-NDR funding.
Neighborworks Umpqua	Private agency that provides assisted housing, social and fair housing services, including those focused on services to: children, elderly persons, persons with disabilities, persons with HIV/AIDS and their families, homeless persons	Meeting	9.18.15 - ICF meeting with Neighborworks to discuss housing programs. Meeting Notes.
Public Stakeholders	Other: Public - Reedsport	Meeting	9.21.15 - Reedsport Natural Hazard Risk Assessment Workshop - community

Agency Name or Stakeholder Group (if applicable)	Agency Type - Target Population (If applicable)	Type of Outreach	- Method of Notification (if applicable)
			meeting. Sign in sheets and questionnaire.
Reedsport City Council	Regional councils of government	Meeting	9.25.15 - (Reedsport) City Council approved a measure to pledge funds to be used as direct financial contribution to OBDD contingent upon the award of the HUD NDRC grant.
Oregon Department of Forestry; Kristin Ramstad	Environmental organizations	Meeting	9.30.15 - (Reedsport) Staff met with ODF representative to discuss the status of the State of NDRC application status as well as coordinate design and construction assistance for stormwater and bioswale mitigation scope of work.
Reedsport City Council	Regional councils of government	Meeting - Special Session - live and teleconferenced	3.16.15 - (Reedsport) City Council and staff conducted a public hearing regarding the States NDRC application.
Reedsport Lyons Club	Community and neighborhood groups in potential project areas	Meeting / Presentation	10.1.15 - (Reedsport) Jonathan Wright presented ROI overview of Reedsport projects. Lyon's pledged \$650 towards projects (however this will not be

Agency Name or Stakeholder Group (if applicable)	Agency Type - Target Population (If applicable)	Type of Outreach	- Method of Notification (if applicable)
			counted as leverage)
University of Oregon (Josh Bruce) Community Service/Environmental	Other: University/Research/Academic, environmental organizations	Meeting, email	5.15 - (Reedsport) Meeting to discuss HUD scope, planning assistance and environmental assessment.
State Legislature - House Emergency Mgmt. & Veterans Affairs	Public and private agencies that address housing, health, social services, victim services, employment, or education needs of: low-income individuals and families; homeless individuals and families, including homeless veterans; youth; and/or other persons with special needs	Meeting/ Presentation / Testimony	9.30.15 - (Reedsport) Jonathan Wright provided testimony on rural resiliency progress / ROI; Presented HUD NDRC project list.
Reedsport Chamber of Commerce	Local planning department	Meeting/presentation	9.24.15 - Jonathan Wright presentation in front of Reedsport Chamber of Commerce.
Tsunami Advisory Group - Oregon Emergency Management	State emergency management agency	Meeting/Speaker	8.14.15 Jonathan Wright - Reedsport was a speaker at OEM's Tsunami Advisory Group's meeting. See agenda provided.
Reedsport Natural Hazard Community Risk Assessment Workshop	Other: Public Forum	Meeting/Workshop	9.21.15 - (Reedsport) Jonathan Wright and City staff conducted a hazard assessment workshop to

Agency Name or Stakeholder Group (if applicable)	Agency Type - Target Population (If applicable)	Type of Outreach	- Method of Notification (if applicable)
			discuss issues and needs as part of HUD NDRC project scope.
Oregon Coast Economic Summit (sponsored by the Oregon Coastal Caucus), DLCD, Tillamook County Commissioner, Oregon OEM, State Representative - Dist 32, Mayor of Astoria, Oregon Seismic Safety Policy Advisory Commission	1. Adjacent States UGLGs and other stakeholders and affected parties in the geographic areas surrounding potential projects to ensure consistency with applicable regional redevelopment plans 2. State or regional planning department 3. State emergency management agency	Panel Discussion	8.27.15 Jonathan Wright to speak on panel and discuss legislative updates related to tsunami preparedness and coastal involvement with state and national resilience opportunities, such as the Oregon Resilience Plan, and projects from HUD, NOAA, and NIST. Conference with more than 400 policy decision makers from federal, state, local and tribal governments, as well as the numerous educators and representatives from the private sector.
Port of Umpqua	Adjacent UGLGs and other stakeholders and affected parties in the geographic areas surrounding potential projects	Presentation	9.16.15 - Jonathan Wright presentation in an adjacent stakeholder community. PowerPoint template that Jonathan Wright (Reedsport) uses for his public outreach presentations.

Agency Name or Stakeholder Group (if applicable)	Agency Type - Target Population (If applicable)	Type of Outreach	- Method of Notification (if applicable)
<p>City of Reedsport, OR - City Manager, Main Street program, Urban Renewal District Advisory Committee, Fulhart Insurance, Central Lincoln PUD, Reedsport Police, Mayor, Oregon State Tenants Association, Mobile Home owner, Downtown Building owners</p>	<p>1. Public and private agencies that address housing, health, social services, victim services, employment, or education needs of: low-income individuals and families; homeless individuals and families, including homeless veterans; youth; and/or other persons with special needs 2. Community and neighborhood groups in potential project areas. 3. Regional councils of government 4. Adjacent States UGLGs and other stakeholders and affected parties in the geographic areas surrounding potential projects to ensure consistency with applicable regional redevelopment plans 5. Local police or public safety department</p>	<p>Site Visit/Meeting</p>	<p>8.5.15/8.6.15 Reedsport site visit</p>
<p>Reedsport Site Tour and Public Testimony</p>	<p>Other: Public and Business Owners</p>	<p>Site Visit/Public Testimony</p>	<p>8.4.15 - (Reedsport) Jonathan Wright and staff conducted city/levee meeting with local business owners and public to discuss and vent concerns regarding insurance, PUD electrical issues, Urban renewal district, etc. Site tour was conducted after testimony was given.</p>

Agency Name or Stakeholder Group (if applicable)	Agency Type - Target Population (If applicable)	Type of Outreach	- Method of Notification (if applicable)
Rockefeller Foundation Summit. Oregon Phase 2 project team members, including community leaders	Other: State, local government and consultant	Summit	7.20-22.15 - Oregon Team members attend Rockefeller Summit in Denver. Gary Milliman (Brookings Harbor), Jonathan Wright (Reedsport), Gloria Zacharias (OBDD), Brandy Bones (ICF), and Yumei Wang (Governor/DAS) participated.

