City of Lincoln City Addendum to the Lincoln County Multi-Jurisdictional Hazard Mitigation Plan

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Volume II: Lincoln City Addendum

Prepared for:
City of Lincoln City

FEMA

Effective [Month XX], 2020 through [Month XX], 2025

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University of Oregon
Institute for Policy Research and Engagement
Oregon Partnership for Disaster Resilience

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Purpose

This is the 2020 update of the City of Lincoln City addendum to the Lincoln County Multi-Jurisdictional Natural Hazards Mitigation Plan (NHMP). The City of Lincoln City's original addendum to Lincoln County's NHMP was completed and approved by FEMA in 2009 (updated in 2015). This addendum supplements information contained in Volume I (Basic Plan) which serves as the NHMP foundation, and Volume III (Appendices) which provide additional information. This addendum meets the following requirements:

- Multi-jurisdictional **Plan Adoption** §201.6(c)(5),
- Multi-jurisdictional **Participation** §201.6(a)(3),
- Multi-jurisdictional **Mitigation Strategy** §201.6(c)(3)(iv), and
- Multi-Jurisdictional **Risk Assessment** §201.6(c)(2)(iii).

Updates to Lincoln City's addendum are further discussed throughout the NHMP, and within Volume III, Appendix B, which provides an overview of alterations to the document that took place during the update process.

Lincoln City adopted their addendum to the Lincoln County Multi-jurisdictional NHMP on **[Date, 2020].** FEMA Region X approved the Lincoln County NHMP on **[Date, 2020]** and the City's addendum on **[Date, 2020].** With approval of this NHMP the City is now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants through **[Date, 2025].**

Mitigation Plan Mission

The NHMP mission states the purpose and defines the primary functions of the NHMP. It is intended to be adaptable to any future changes made to the NHMP and need not change unless the community's environment or priorities change.

The City concurs with the mission statement developed during the Lincoln County planning process (Volume I, Section 3):

> ***To promote public policy and mitigation activities which will enhance the safety to life and property from natural hazards.***

The 2020 NHMP update Steering Committee reviewed the 2015 plan mission statement and agreed it accurately describes the overall purpose and intent of this plan. This is the exact wording that was present in the 2009 and 2015 plan. The Steering Committee believes the concise nature of the mission statement allows for a comprehensive approach to mitigation planning.

Mitigation Plan Goals

Mitigation plan goals are more specific statements of direction that Lincoln County citizens, and public, and private partners can take while working to reduce the City's risk from natural hazards. These statements of direction form a bridge between the broad mission statement, and serve as checkpoints, as agencies, and organizations begin implementing mitigation action items.

The City concurs with the goals developed during the Lincoln County planning process (Volume I, Section 3). All NHMP goals are important and are listed below in no order of priority. Establishing community priorities within action items neither negates nor eliminates any goals, but it establishes which action items to consider implementing first, should funding become available.

Goal 1: Protect life and reduce injuries resulting from natural hazards.

Goal 2: Minimize public and private property damages and the disruption of essential infrastructure and services from natural hazards.

Goal 3: Implement strategies to mitigate the effects of natural hazards and increase the quality of life and resilience of economies in Lincoln County.

Goal 4: Minimize the impact of natural hazards while protecting, restoring, and sustaining environmental processes.

Goal 5: Enhance and maintain local capability to implement a comprehensive hazard loss reduction strategy.

Goal 6: Document and evaluate progress in achieving hazard mitigation strategies and action items.

Goal 7: Motivate the public, private sector, and government agencies to mitigate the effects of natural hazards through information and education.

Goal 8: Apply development standards that mitigate or eliminate the potential impacts of natural hazards.

Goal 9: Mitigate damage to historic and cultural resources from natural hazards.

Goal 10: Increase communication, collaboration, and coordination among agencies at all levels of government and the private sector to mitigate natural hazards.

Goal 11: Integrate local NHMPs with comprehensive plans and implementing measures.

(Note: although numbered the goals are not prioritized.)

Process and Participation

This section of the NHMP addendum addresses 44 CFR 201.6(a)(3), *Participation.*

In addition to establishing a comprehensive community-level mitigation strategy, the Disaster Mitigation Act of 2000 (DMA2K), and the regulations contained in 44 CFR 201, require that jurisdictions maintain an approved NHMP to receive federal funds for mitigation projects. Local adoption, and federal approval of this NHMP ensures that the city will remain eligible for pre-, and post-disaster mitigation project grants.

The Oregon Partnership for Disaster Resilience (OPDR) at the University of Oregon's Institute for Policy Research and Engagement (IPRE) collaborated with the Department of Land Conservation and Development, Oregon Office of Emergency Management (OEM), Lincoln County, and Lincoln City to update their NHMP. This project is funded through the Federal Emergency Management Agency's (FEMA) Fiscal-Year 2017 (FY17) Pre-Disaster Mitigation (PDM) Competitive Grant Program OR-2018-001 (PDMC-PL-10-OR-2017-02).

Members of the Lincoln City NHMP Steering committee also participated in the County NHMP update process (Volume III, Appendix B).

The Lincoln County NHMP, and Lincoln City addendum, are the result of a collaborative effort between citizens, public agencies, non-profit organizations, the private sector, and regional organizations. The Lincoln City NHMP Steering Committee guided the process of developing the NHMP.

Convener and Committee

The Lincoln City Emergency Preparedness Coordinator serves as the NHMP addendum convener. The convener of the NHMP will take the lead in implementing, maintaining, and updating the addendum to the Lincoln County NHMP in collaboration with the designated conveners of the Lincoln County NHMP (Lincoln County Planning Director and Emergency Manager).

Representatives from the City of Lincoln City steering committee met formally, and informally, to discuss updates to their addendum (Volume III, Appendix B). The steering committee reviewed and revised the city's addendum, with focus on the plan's risk assessment and mitigation strategy (action items).

The current version of the addendum reflects changes decided upon at the designated meetings and through subsequent work and communication with OPDR. The changes are highlighted with more detail throughout this document and within Volume III, Appendix B. Other documented changes include revisions to the city's Risk Assessment and Hazard Identification sections, Action Items, and Community Profile.

The Lincoln City Steering Committee was comprised of the following representatives:

- Convener, Kenneth Murphey, Emergency Preparedness Coordinator
- Lindsey Sehmel, Planning and Community Development Director
- Lila Bradley, Public Works Director
- Alison Robertson, Urban Renewal Director

Public Participation

Public participation was achieved by posting the NHMP publicly and providing community members the opportunity to make comments and suggestions during the review process. Community members were also provided an opportunity for comment via a survey administered by IPRE (Volume III, Appendix F). During the public review period (Attachment B) there were no comments provided.

Implementation and Maintenance

The City Council will be responsible for adopting the Lincoln City addendum to the Lincoln County NHMP. This addendum designates a steering committee and a convener to oversee the development and implementation of action items. Because the city addendum is part of the county's multi-jurisdictional NHMP, the city will look for opportunities to partner with the county. The city's steering committee will convene after re-adoption of the City of Lincoln City addendum on an annual schedule; the county is meeting on a quarterly basis and will provide opportunities for the jurisdictions (cities and special districts) to report on NHMP implementation and maintenance during their meetings. The city's Emergency

Preparedness Coordinator will serve as the convener and will be responsible for assembling the steering committee. The steering committee will be responsible for identifying new risk assessment data, reviewing status of mitigation actions, identifying new actions, and seeking funding to implement the city's mitigation strategy (actions). The steering committee will be responsible for:

- Reviewing existing action items to determine suitability of funding;
- Reviewing existing, and new risk assessment data to identify issues that may not have been identified at NHMP creation;
- Educating, and training new steering committee members on the NHMP, and mitigation actions in general;
- Assisting in the development of funding proposals for priority action items;
- Discussing methods for continued public involvement; and
- Documenting successes, and lessons learned during the year.

The convener will also remain active in the County's implementation, and maintenance process (Volume I, Section 4).

The City will utilize the same action item prioritization process as the County (Volume I, Section 4).

Implementation through Existing Programs

This NHMP is strategic and non-regulatory in nature, meaning that it does not necessarily set forth any new policy. It does, however, provide: (1) a foundation for coordination and collaboration among agencies and the public in the city; (2) identification and prioritization of future mitigation activities; and (3) aid in meeting federal planning requirements and qualifying for assistance programs. The mitigation plan works in conjunction with other city plans and programs including the Comprehensive Land Use Plan, Capital Improvements Plan, and Building Codes, as well as the Lincoln County NHMP, and the State of Oregon NHMP.

The mitigation actions described herein (and priority actions in Attachment A) are intended to be implemented through existing plans and programs within the city. Plans and policies already in existence have support from residents, businesses and policy makers. Where possible, Lincoln City will implement the NHMP's recommended actions through existing plans and policies. Many land-use, comprehensive and strategic plans get updated regularly, allowing them to adapt to changing conditions and needs. Implementing the NHMP's action items through such plans and policies increases their likelihood of being supported and implemented. Implementation opportunities are further defined in action items when applicable.

Future development without proper planning may result in worsening problems associated with natural hazards. Lincoln City's acknowledged comprehensive plan is the City of Lincoln City Comprehensive Plan. The City implements the plan through the Community Development Code.

Existing Plans and 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 residents, businesses and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.

Lincoln City's Addendum includes a range of recommended 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. Linking existing plans and policies to the addendum helps identify what resources already exist that can be used to implement the action items identified in Lincoln City's Addendum. Implementing the city's mitigation actions through existing plans and policies increases their likelihood of being supported and getting updated and maximizes the city's resources.

The following are Lincoln City's existing plans and policies that relate to natural hazards:

- **Comprehensive Plan, 1998, last amended 2012:** A document stating the general, long-range policies that will govern a local community's future development. Ordinance No. 2012-08 updated the city's natural hazard Goal 7 element of the comprehensive plan to include policies for natural hazards, beaches and dunes (coastal erosion).

  Relation to Natural Hazard Mitigation: Contains city-specific information regarding natural hazards within the city's jurisdictional boundaries; including the comprehensive plan natural hazards map.

- **Municipal Code:** Establishes land use zones to regulate the location of building structure and the use of land within the city of Lincoln City.

  Relation to Natural Hazard Mitigation: Contains city-specific hazard related requirements for the placement and construction of the buildings. Issues such as floodplain development, fire resistant materials, etc. Chapter 17.47, Natural Hazards, Beaches and Dunes, includes identification of areas subject to coastal erosion and includes standards for development in identified areas.

- **Lincoln City Transportation Master Plan, 2015:** Addresses the county's anticipated transportation needs over a period of 20 years.

  Relation to Natural Hazard Mitigation: The Transportation Plan may be a resource to identify which roads and transportation systems are most vulnerable to natural disasters. Likewise, the Transportation Plan can be utilized to implement mitigation measures aimed at protecting "transportation disadvantaged" populations in emergency situations. When updated, the Transportation Plan can also include mitigation elements in its implementation considerations.

- **Lincoln County Community Wildfire Protection Plan, 2018:** Assists Lincoln City clarify and refine priorities for protection of life, property, and critical infrastructure in the wildland-urban interface on public and private lands.

  Relation to Natural Hazard Mitigation: Enhances the NHMP risk assessment, identification of hazard zones, and includes mitigation actions to reduce risk to wildfire.

- **Lincoln City Storm Water Management Plan, 2009:** The primary purpose of the storm water inventory is to improve and update the City's existing storm water infrastructure and conveyance maps. The intent is to better understand drainage paths and conveyance capacities in a complex and aging storm water network, so that when and if problems arise, they can be remedied as efficiently and effectively as possible.

  Relation to Natural Hazard Mitigation: Storm Water management looks at the water cycle, effects of development allowing the City to conduct mitigation activities for source control, treatment, flow control and low impact approaches for the community management and mitigation for the City.

Government Structure

The City Council is the policy making body for Lincoln City. As the elected legislative body in Lincoln City, the City Council has overall responsibility for the scope, direction and financing of city services. Council members serve four-year terms. Additional departments within the city include the following:

City Manager's Office: The city manager is appointed by City Council and serves as the administrative head of the city government. As chief executive officer, the city manager provides the leadership and direction for the operation and management of all city departments.

City Recorder: The city recorder assures the timely presentation of formal communications from the public, other agencies and city staff to the City Council. The recorder prepares City Council meeting agendas in coordination with the city manager; maintains official city records which reflect the actions of the governing body; maintains a depository of contracts, agreements and official Council actions and ensures the timely availability of these records to the Council, public, other agencies and staff.

Planning and Community Development Department: The Planning and Community Development Department provides service and information to the general public regarding all phases of community development. Planning staff implements ordinance and plan requirements through the Site Review Process, Land Use Action Process and Special Projects. Specifically, the Planning and Community Development Department reviews potential development opportunities to ensure compliance with zoning, setback, parking, landscaping, access and other city requirements.

In addition to oversight of the development process, the Planning and Community Development Department advises the City Council and Planning Commission on all land use and special project matters.

Public Works Department: The Lincoln City Public Works Department provides responsive community services related to planning, design, construction, operation, maintenance and management of public infrastructure, including streets, sewer, water treatment, wastewater treatment, public buildings and other facilities. Services provided by the department contribute to the public health, safety, economic diversity, environmental quality and citizen convenience.

Finance Department: The Finance Department serves the community by managing utility billing, business licenses, collecting taxes and fees, dealing with city expenditures, preparing

the city's budget and managing investments. The goal of the Finance Department staff is to provide all services with an emphasis on timeliness, accuracy and courteous customer service.

Police Department: The mission of the Lincoln City Police Department is to maintain human rights while enforcing state and local laws, protecting persons, property and providing the highest quality professional service to all.

Parks and Recreation Department: The Parks and recreation Department oversees parks and recreation activities for the city. There are several activities/areas the Parks and Recreation department oversee, such as: the swimming pool, rock climbing wall, youth activities, senior activities, adult fitness, after school program and camps.

Public Library: The Lincoln City Public Library collects, preserves, and administers organized collections of books and related materials. The library can also be used for public meetings and other organized activities for the community.

Urban Renewal Agency: Established in 1988, the Lincoln City Urban Renewal Agency mission is to eliminate blight and depreciating property values in areas within the Agency's jurisdiction, and in the process, attract job producing private investments that will improve property values, improve the Area's visual quality, and establish a positive linkage between the Area and the Pacific Ocean -- all in a manner which will be compatible with Lincoln City's natural and built setting.

Continued Public Participation

An open public involvement process is essential to the development of an effective NHMP. To develop a comprehensive approach to reducing the effects of natural disasters, the planning process shall include opportunities for the public, neighboring communities, local, and regional agencies, as well as, private, and non-profit entities to comment on the NHMP during review. Keeping the public informed of efforts to reduce its risk to future natural hazard events is important for successful NHMP implementation, and maintenance. As such, the City is committed to involving the public in the NHMP review and update process (Volume I, Section 4). The City posted the plan update for public comment before FEMA approval, and after approval will maintain their addendum to the NHMP on the City's website: https://www.lincolncity.org/

In addition, natural hazards information dissemination is conducted throughout the year when opportunities present themselves via the city offices and website.

NHMP Maintenance

The Lincoln County Multijurisdictional Natural Hazard Mitigation Plan and city addendum will be updated every five years in accordance with the update schedule outlined in the Disaster Mitigation Act of 2000. During the county plan update process, the city will also review and update its addendum. The convener will be responsible for convening the steering committee to address the questions outlined below.

- 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?
- Have new issues or problems related to hazards been identified in the community?
- Are the actions still appropriate given current resources?
- Have there been any changes in development patterns that could influence the effects of hazards?
- Have there been any significant changes in the community's demographics 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?

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

Mitigation Strategy

This section of the NHMP addendum addresses 44 CFR 201.6(c)(3(iv), *Mitigation Strategy*.

The City's action items were first developed through a two-stage process during the 2009 NHMP development and revised in 2015. In stage one, OPDR facilitated a work session with the steering committee to discuss the city's risk and to identify potential issues. In the second stage, OPDR, working with the local steering committee, developed potential actions based on the hazards and the issues identified by the steering committee. During the 2019-2020 update process OPDR re-evaluated the Action Items with the county and local steering committees and updated actions, noting what accomplishments had been made and if the actions were still relevant; any new action items were identified at this time. For additional information see the discussion near the end of this document.

The City's actions are listed in Table LA-1. For more detailed information on each action, see the action forms within Attachment A of this addendum.

In addition, there are 16 County Action Items that include the city as an "Affected Jurisdiction" (Table LA-14). For more detailed information on the county actions that involve city participation, see Volume I, Section 3 and the action item forms within Volume III, Appendix A.

Priority Action Items

Table LA-1 presents a list of mitigation actions. The steering committee decided to modify the prioritization of action items in this update to reflect current conditions (risk assessment), needs, and capacity. High priority actions are shown in bold text with grey highlight. The City will focus their attention, and resource availability, upon these achievable, high leverage, activities over the next five-years. Although this methodology provides a guide for the steering committee in terms of implementation, the steering committee has the option to implement any of the action items at any time. This option to consider all action items for implementation allows the committee to consider mitigation strategies as new opportunities arise, such as capitalizing on funding sources that could pertain to an action item that is not currently listed as the highest priority. Refer to Attachment A for detailed information for each high priority action.

Table LA-1 City of Lincoln City Action Items

Natural Hazard Action ID	Action Item	Coordinating Organization (Lead)	Cost	Timing
Lincoln City #1	**Acquire a safe haven shelter (and develop with supplies/ facilities) for Cutler City**	**Emergency Preparedness Coordinator**	**M**	**Short**
Lincoln City #2	**Seek funding, and develop, water storage capabilities and enhance resiliency of water storage, treatment and distribution systems.**	**Public Works**	**H**	**Long**
Lincoln City #3	Identify over-water transportation alternatives in the event that bridges collapse in an earthquake and/ or tsunami.	Public Works	M	Long
Lincoln City #4	Continue to educate citizens about earthquake and tsunami preparedness.	Emergency Preparedness Coordinator	L	Ongoing
Lincoln City #5	**Seismically retrofit vulnerable facilities and infrastructure to increase their resiliency to seismic hazards. Consider both structural and non-structural retrofit options.**	**Public Works**	**H**	**Long**
Lincoln City #6	Continue compliance with the National Flood Insurance Program.	Planning and Community Development	L	Ongoing
Lincoln City #7	**Explore steps needed to qualify Lincoln City for participation in the National Flood Insurance Program's Community Rating System (CRS)**	**Planning and Community Development**	**L**	**Short**
Lincoln City #8	Work with the owners of repetitive flood loss buildings in the city to identify cost effective mitigation strategies including consideration of relocation, elevation, or buy-out.	Planning and Community Development	H	Long
Lincoln City #9	Implement actions identified in the Lincoln City Storm Water Management Plan.	Public Works	M to H	Ongoing
Lincoln City #10	Replace undersized culverts	Public Works	M to H	Ongoing
Lincoln City #11	Research steep slope/ landslide ordinances; consider drafting a steep slope/ landslide development ordinance for Lincoln City	Planning and Community Development	L	Short
Lincoln City #12	**Develop disaster plans and provide caches (food and emergency supplies) in strategic locations throughout the city to support residents and visitors.**	**Emergency Preparedness Coordinator**	**L to M**	**Ongoing**
Lincoln City #13	**Integrate the NHMP into comprehensive plan.**	**Planning and Community Development**	**L**	**Medium**

Source: City of Lincoln City NHMP Steering Committee, 2020.
Cost: L (less than $50,000), M ($50,000-$100,000), H (more than $100,000)
Timing: Ongoing (continuous), Short (1-4 years), Medium (4-10 years), Long (10 or more years)

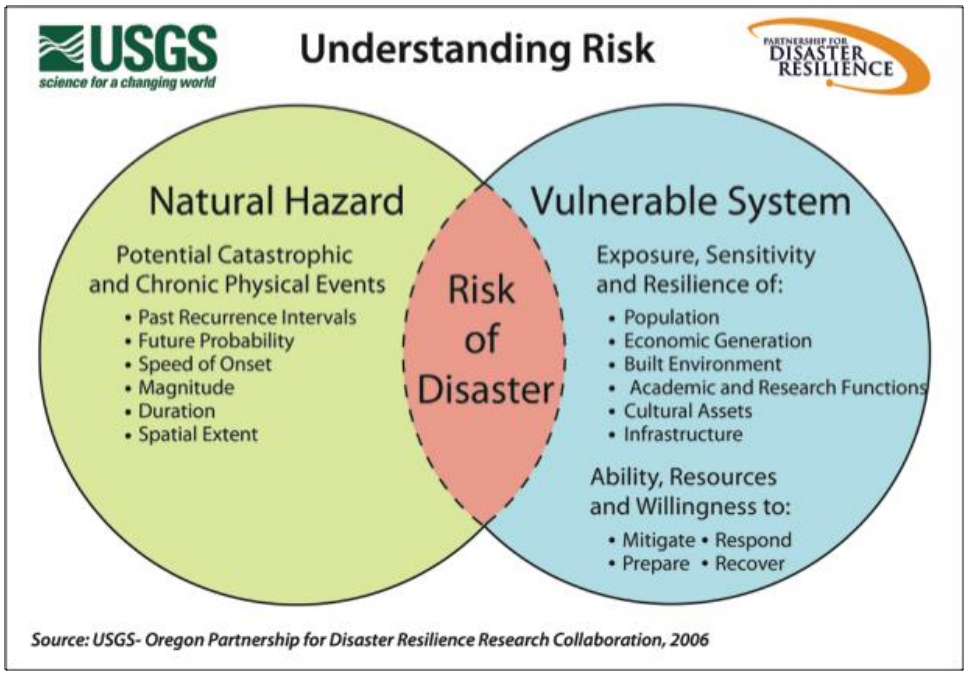
Risk Assessment

This section of the NHMP addendum addresses 44 CFR 201.6(b)(2) - Risk Assessment. In addition, this chapter can serve as the factual basis for addressing Oregon Statewide Planning Goal 7 – Areas Subject to Natural Hazards. Assessing natural hazard risk has three phases:

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

The local level rationale for the identified mitigation strategies (action items) is presented herein, and within Volume I, Section 2, and Volume III, Appendix C. The risk assessment process is graphically depicted in Figure LA-1. Ultimately, the goal of hazard mitigation is to reduce the area of risk, where hazards overlap vulnerable systems.

Figure LA-1 Understanding Risk



Hazard Analysis

The Lincoln City NHMP steering committee reviewed and revised the plan's Hazard Analysis and Risk Assessment section. Changes from their previous HVA and the County's HVA were made where appropriate to reflect distinctions in probability, vulnerability, and risk from natural hazards unique to the City of Lincoln City, which are discussed throughout this addendum.

Table LA-2 shows the hazard analysis matrix for Lincoln City listing each hazard in rank order from high to low. The table shows that hazard scores are influenced by each of the four categories combined. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation, response, and recovery. The method provides the jurisdiction with sense of hazard priorities but does not predict the occurrence of a hazard. See Volume I, Section 2: Risk Assessment of the Lincoln County NHMP for a description of the methodology.

Two catastrophic hazard (Cascadia Subduction Zone earthquake and tsunami) and three chronic hazards (windstorm, winter storm (snow/ice), and landslide) rank as the top hazard threats to the City (Top Tier). Riverine flood, wildfire, drought, coastal erosion, and coastal flood comprise the next highest ranked hazards (Middle Tier). Distant tsunami, tornado, crustal earthquake, and volcanic event comprise the lowest ranked hazards in the City (Bottom Tier).

Table LA-2 Hazard Analysis Matrix – City of Lincoln City

Hazard	History	Vulnerability	Maximum Threat	Probability	Total Threat Score	Hazard Rank	Hazard Tiers
Windstorm	20	50	100	70	240	#1	*Top Tier*
Winter Storm (Snow/Ice)	18	35	90	70	213	#2	
Landslide	20	40	80	70	210	#3	
Earthquake (Cascadia)	10	50	100	49	209	#4	
Tsunami (Local)	2	50	100	49	201	#5	
Flood (Riverine)	20	30	60	63	173	#6	*Middle Tier*
Wildfire	10	30	80	49	169	#7	
Drought	20	40	50	49	159	#8	
Coastal Erosion	20	20	40	70	150	#9	
Flood (Coastal)	20	20	40	56	136	#10	
Tsunami (Distant)	10	15	60	35	120	#11	*Bottom Tier*
Tornado	8	10	30	56	104	#12	
Earthquake (Crustal)	10	20	40	21	91	#13	
Volcanic Events	2	5	40	7	54	#14	

Source: City of Lincoln City NHMP Steering Committee (2020)

Table LA-**3** categorizes the probability and vulnerability scores from the hazard analysis for the city and compares the results to the assessment completed by the Lincoln County NHMP Steering Committee (areas of differences are noted with **bold** text within the city ratings).

Table LA-3 Probability and Vulnerability Comparison

Hazard	Lincoln City		County	
	Probability	Vulnerability	Probability	Vulnerability
Coastal Erosion	High	**Moderate**	High	Low
Drought	**Moderate**	**High**	High	Moderate
Earthquake (Cascadia)	Moderate	High	Moderate	High
Earthquake (Crustal)	Low	Moderate	Low	Moderate
Flood (Coastal)	High	Moderate	High	Moderate
Flood (Riverine)	High	Moderate	High	Moderate
Landslide	High	High	High	High
Tornado	High	Low	High	Low
Tsunami (Distant)	Moderate	Low	Moderate	Low
Tsunami (Local)	Moderate	High	Moderate	High
Volcanic Event	Low	Low	Low	Low
Wildfire	**Moderate**	Moderate	High	Moderate
Windstorm	High	High	High	High
Winter Storm (Snow/Ice)	High	Moderate	High	Moderate

Source: City of Lincoln City NHMP Steering Committee and Lincoln County NHMP Steering Committee (2020)

Community Characteristics

Table LA-4, Appendix C (Volume III), and the following section provide information on City specific demographics and assets. Many of these community characteristics can affect how natural hazards impact communities, and how communities choose to plan for natural hazard mitigation. Considering the city specific assets during the planning process can assist in identifying appropriate measures for natural hazard mitigation. Between 2012 and 2019 the City grew by 830 people (10%).[1] According to the State's official coordinated population forecast, between 2019 and 2040 the City's population is forecast to grow by 20% to 10,565.[2] Median household income increased by 19% between 2012 and 2017.[3] The City has an educated population with 85% of residents 25 years, and older holding a high school degree, 24% have a bachelor's degree or higher. The Lincoln County School District has a 76% graduation rate as of 2019. Lincoln City includes industrial and commercial development but is zoned primarily residential.

Development in Lincoln City spreads mostly north to south along US-Highway 101 (see Figure LA-2). Dense commercial areas in Lincoln City exist along US-Highway 101. Residential development is located west of downtown and US-highway 101 along the Pacific Ocean as well as east near Devils Lake. The city's Comprehensive Plan identifies land use needs within the city and the Urban Growth Boundary. The city's Comprehensive Plan identifies land use needs within the city and its urban growth boundary. Figure LA-2 shows the city of Lincoln City's zoning map. New development has complied with the standards of the Oregon Building Code, and the city's development code including their floodplain ordinance.

[1] Portland State University, Population Research Center, "Annual Population Estimates", 2019.

[2] Portland State University, Population Research Center, "Oregon Population Forecast Program Cycle 1 (2014-2017)". 2017.

[3] Social Explorer, Table T57, U.S. Census Bureau, 2013-2017 and 2008-2012 American Community Survey Estimates.

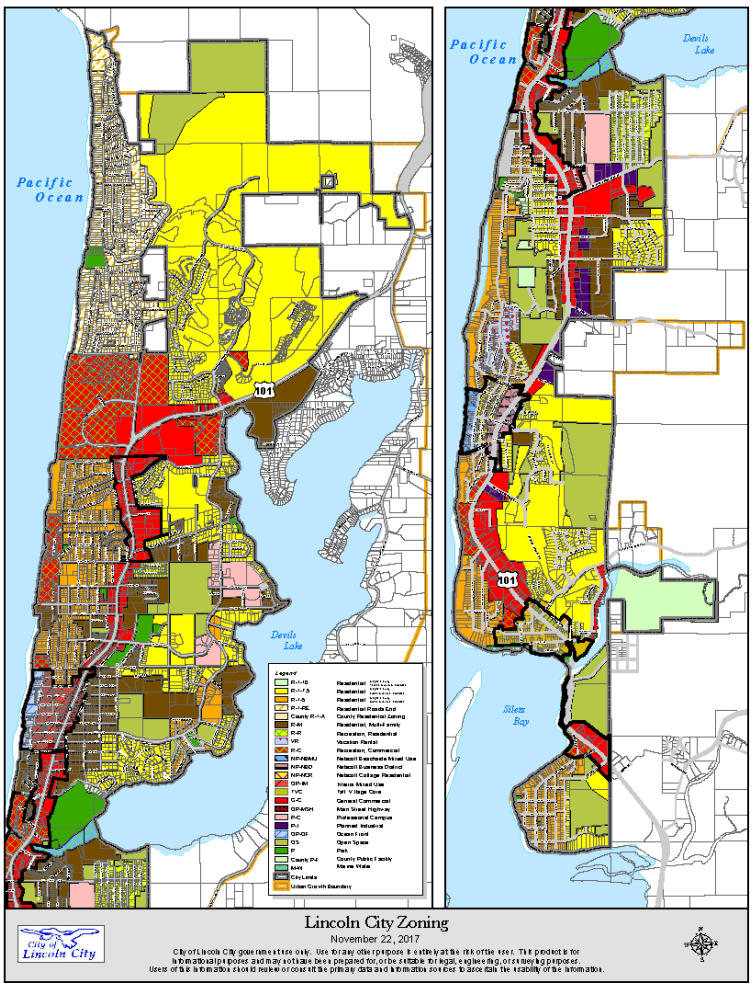
Economy

Lincoln City's commercial areas developed along primary routes and residential development followed nearby (see Figure LA-2).

Lincoln City is the second largest incorporated community in Lincoln County. Most workers residing in the city (57%, 2,435 people) travel outside of the city for work primarily to Portland metro area, Newport, Salem, and Lincoln Beach.[4] A significant population of people travel to the city for work, (64% of the workforce, 3,236 people) primarily from Rose Lodge, Lincoln Beach, and Newport.

Just over 52% of the resident population 16 and over is in the labor force (3,693 people) and are employed in a variety of occupations including food preparation and serving (16%), sales (16%), management, business, and financial operations (12%), office and administrative support (12%), and professional and related (12%) occupations.[5]

Figure LA-2 Zoning Map



Source: City of Lincoln City

[4] U.S. Census Bureau. LEHD Origin-Destination Employment Statistics (2002-2017). Longitudinal-Employer Household Dynamics Program, accessed on April 25, 2020 at https://onthemap.ces.census.gov.

[5] Social Explorer, Tables A17008 & A17002, U.S. Census Bureau, 2013-2017 American Community Survey Estimates.

Table LA-4 Community Characteristics

Population Characteristics		
2012 Population	7,965	
2019 Population	8,795	
2040 Forecasted Population	10,565	
Race (non-hispanic or latino) and Ethnicity (Hispanic)		
White		78%
Black/ African American		1%
American Indian and Alaska Native		3%
Asian		3%
Native Hawaiian and Other Pacific Islander		0%
Some Other Race		0%
Two or More Races		3%
Hispanic or Latino (of any race)		13%
Limited or No English Spoken	367	5%
Vulnerable Age Groups		
Less than 15 Years	1,354	16%
65 Years and Over	2,153	25%
Age Dependency Ratio		3.38
Disability Status		
Total Population	1,784	21%
Children (Under 18)	74	5%
Working Age (18 to 64)	902	19%
Seniors (65 and older)	808	39%

Income Characteristics		
Households by Income Category		
Less than $15,000	639	17%
$15,000-$29,999	852	22%
$30,000-$44,999	651	17%
$45,000-$59,999	540	14%
$60,000-$74,999	428	11%
$75,000-$99,999	347	9%
$100,000-$199,999	304	8%
$200,000 or more	24	1%
Median Household Income		$37,898
Poverty Rates		
Total Population	1,963	23%
Children (Under 18)	439	30%
Working Age (18 to 64)	1,216	25%
Seniors (65 and older)	308	15%
Housing Cost Burden (Cost > 30% of household income)		
Owners with Mortgage	408	23%
Renters	999	50%

Source: U.S. Census Bureau, 2013-2017 American Community Survey; Portland State University, Population Research Center, "Annual Population Estimates", 2019. Portland State University, Population Research Center, "Oregon Population Forecast Program Cycle 1 (2014-2017)". 2017.

Housing Characteristics		
Housing Units		
Single-Family	4,471	68%
Multi-Family	1,625	25%
Mobile Homes	439	7%
Year Structure Built		
Pre-1970	2,612	40%
1970-1989	1,763	27%
1990-2009	2,028	31%
2010 or later	132	15%
Housing Tenure and Vacancy		
Owner-occupied	1,785	27%
Renter-occupied	2,000	31%
Seasonal	2,296	35%
Vacant	454	7%

Located on the Coast of Oregon, Lincoln City resides in the northwestern border of Lincoln County. Lincoln City lies at an elevation of 11 feet above sea level. Devils Lake (680-acres) borders the northeast portion of the city. The Siletz Bay and Siletz River are south of the city, and the Salmon River is to the north. Lincoln City is home to one of the world's shortest river, the D River, which connects Devils Lake to the Pacific Ocean.

The climate in Lincoln City is moderate. Average monthly temperatures range from lows of 36-39° F (December through March) to highs of 70-72° F (July through September) degrees. The driest months are July and August (average about 1.4-1.5 inches of precipitation per month) the wettest months are November through January (average 10-15 inches of precipitation per month). Lincoln City has an average annual precipitation of approximately 95.4 inches (69%, 65.5 inches fall November through March).

Asset Identification

The following assets identified by the City of Lincoln City were first gathered from the Asset Identification meetings held with community members in 2007. These assets were confirmed and updated by the City steering committee during the 2019-2020 update process.

Cultural and Historic Resources

The first recorded tourists to Lincoln City came in August of 1837, establishing the beginning of the tourist industry that still exists today. In the 1930s the towns of Cutler City, Taft, Nelscott, Delake, Wecoma, and Oceanlake joined together to become Lincoln City, which helped attract tourists and increase business. Annual events like Taft's Redhead Roundup and Oceanlake's Regatta draw visitors from all over the state.[6]

Historic and cultural resources such as historic structures and landmarks can help to define a community 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 National Register of Historic Places and the State Historic Preservation Office lists historic sites and properties within the city:[7]

- The Dorchester House, 2701 NW Highway 101 (1929) – Listed on the National Register of Historic Places
- Lincoln Statue, Kirtsis Park (c. 1965)
- Neel's Autel, 2626 Highway 101, (1948)
- Nelscott Strip Commercial Historic District, Highway 101 (1929)
- Surftides Recreation Building, 2945 NW Jetty Avenue (1953)
- Jason Lee Campsite, Logan Road (1837)
- House, 340 S Drift Creek Road (c. 1928)
- House, 1327 NW 13th Street (c. 1932)
- House, 732 SW 28th Street (c. 1944)
- House, 1903 NW 37th Street (c. 1948)
- House, 2732 SW Coast (c. 1940)
- House, 6432 SW Inlet (c. 1930)
- House, 244 SE Port Avenue (c. 1944)

Lincoln City has many festivals throughout the year, including the Summer Kite Festival, Iris Pride Festival, Art on the Edge, Siletz Bay Music Festival, Sand Castle contest, Glass Float Gala and the Chowder Cook-off. Other local attractions include clamming, crabbing, whale-watching, coastal hiking trails, beachcombing, kite flying, and exploring tide pools. Recreational amenities include Devils Lake, Otter Crest viewpoint, factory stores, Chinook Winds Casino, The Connie Hansen Garden, Salmon River Estuary, Siletz Bay (Natural Scenic Wildlife Reserve), Chinook Winds Golf Course, city parks, beach access points, North Lincoln County Museum, Lincoln City Glass Center, Mor Art, and the Alder House glassblower.

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[6] Lincoln City, on the Central Oregon Coast. "Things to Do – Heritage & History." http://www.oregoncoast.org/pages/things-pages/heritage.php

[7] Oregon Historic Sites Database, http://heritagedata.prd.state.or.us/historic/, accessed July 17, 2020.

Critical Facilities & Infrastructure

Critical facilities are those that support government and first responders' ability to act in an emergency. They are a top priority in any comprehensive hazard mitigation plan. Individual communities should inventory their critical facilities to include locally designated shelters and other essential assets, such as fire stations, and water and wastewater treatment facilities.

Lincoln City has the following critical facilities (**bold** indicates facility was included in the Risk Report DOGAMI, O-20-11):

- Three fire stations:
  - **North Lincoln Fire Station 1400 (Bob Everest):** 2525 NW Hwy 101
  - **North Lincoln Fire Station 1500 (Delake):** 1500 SE 9th Street
  - **North Lincoln Fire Station 1600 (St Clair):** 4520 SE Hwy 101
- Three hospitals and clinics
  - **Samaritan North Lincoln Hospital:** 3043 NE 28th St
  - **Samaritan Coastal Clinic:** 825 NW US 101
  - **Samaritan Women's Health Center:** 3100 NE 28th St
  - Adventist Coastal Clinic: 1105 SE Jetty Ave
- Four Schools
  - **Oceanlake Elementary School:** 2420 NE 22nd Street
  - **Taft Elementary School:** 4040 High School Drive
  - **Taft 7-12 School:** 3780 SE Spyglass Ridge Road
  - **Career Tech Charter High School:** 801 SW Hwy 101
- **City Hall:** 801 SW Hwy 101
- **Police Department:** 1503 SE East Devils Lake Rd
- Water treatment plant: (317 S Anderson Creek Rd)
  - See Utility Lifelines for additional system details
- Wastewater plant (and 28 lift stations): 5000 SE Port Ave
  - See Utility Lifelines for additional system details

Transportation

Mobility plays an important role in Lincoln City, and the daily experience of its residents, and businesses. Motor vehicles represent the dominant mode of travel through, and within the City. Lincoln City is also served by Lincoln County Transit Routes 4, 60x, 492, and 495 with service running seven days a week with stops in Lincoln City. Caravan Airport Transportation also provides service from the City to Portland International Airport.

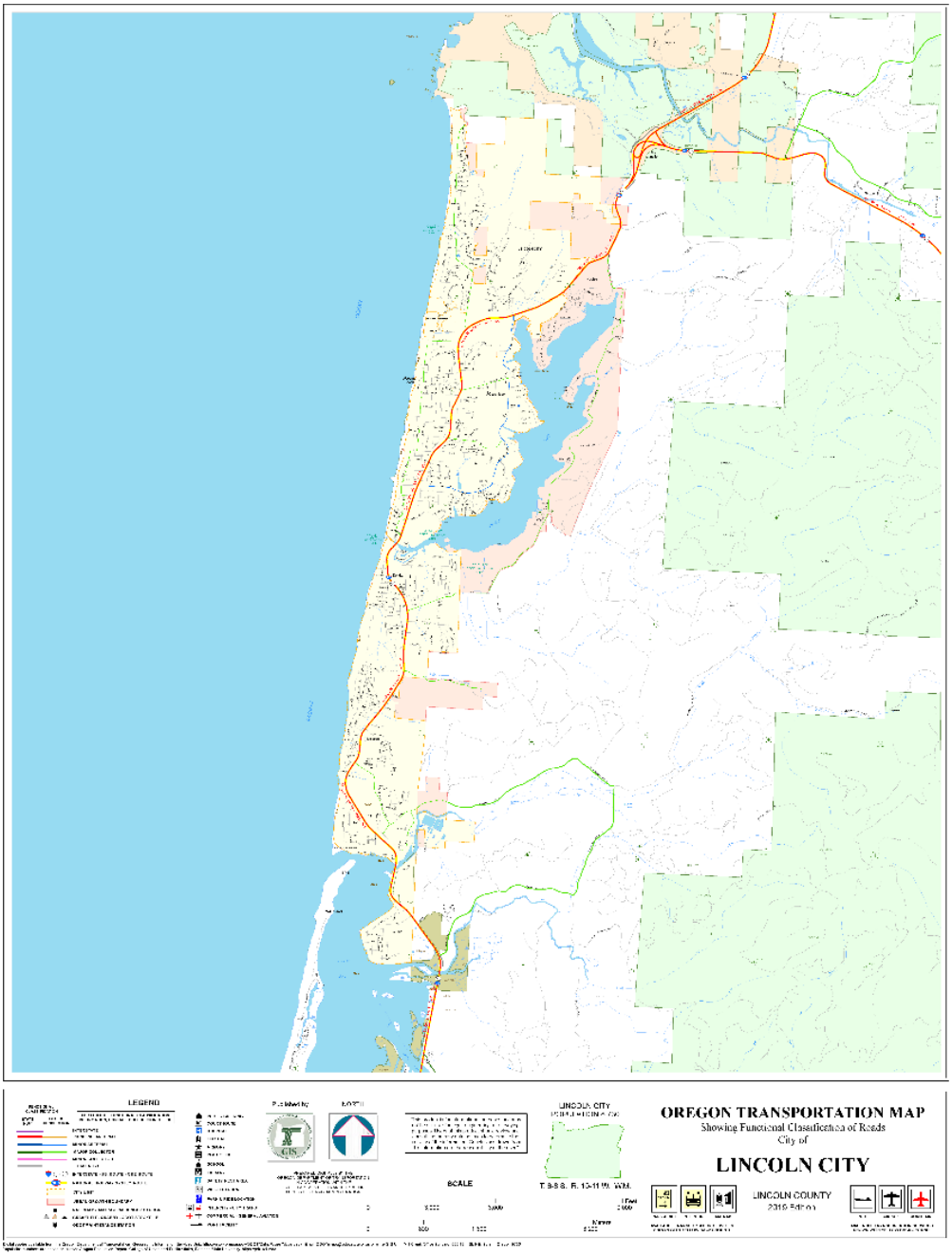
Roads/Seismic lifelines

Seismic lifeline routes help maintain transportation facilities for public safety and resilience in the case of natural disasters. Following a major earthquake, it is important for response and recovery agencies to know which roadways are most prepared for a major seismic event. The Oregon Department of Transportation has identified lifeline routes to provide a

secure lifeline network of streets, highways, and bridges to facilitate emergency services response after a disaster.[8]

Highway 101 (Tier I) is the major north-south transportation route through the City (see Figure LA-3). Highway 18 (Tier I, north of Lincoln City), and Highway 20 (Tier III, Newport) are the major east-west transportation routes connecting the coast to the Willamette Valley.

Figure LA-3 Lincoln City Functional Classification of Roads



Source: Oregon Department of Transportation

[8] Oregon Department of Transportation. Oregon Seismic Lifeline Evaluation, Vulnerability Synthesis, and Identification, *Oregon Seismic Lifeline Routes,* May 15 2012.

System connectivity and key geographical features were used to identify a three-tiered seismic lifeline system. Routes identified as Tier 1 are considered the most significant and necessary to ensure a functioning statewide transportation network. The Tier 2 system provides additional connectivity to the Tier 1 system, it allows for direct access to more locations and increased traffic volume capacity. The Tier 3 lifeline routes provide additional connectivity to the systems provided by Tiers 1 and 2.

Bridges

Because of earthquake risk, the seismic vulnerability of the city's bridges is an important issue. Non-functional bridges can disrupt emergency operations, sever lifelines, and disrupt local and freight traffic. These disruptions may exacerbate local economic losses if industries are unable to transport goods. Bridges within the city that are critical or essential include (see Figure LA-4):

- Devils Lake Creek, W Devils Lake Rd (1968), (Bridge ID 41C07) – Structurally Deficient
- Devils Lake Outlet, US 101 (D River, 1949), (Bridge ID 00822A) – Structurally Deficient
- E. Devils Lake Rd, Creek (1968), (Bridge ID 12003) – Structurally Deficient
- Rock Creek, E Devils Lake Rd (1954), (Bridge ID 12004)
- Schooner Creek, US 101 (1945), (Bridge ID 00924A)

Figure LA-4 Oregon Bridges and Structurally Deficient Bridges

Source: Oregon Department of Transportation, ODOT TransGIS, accessed July 29, 2020
More information on Seismic Design of bridges is on the ODOT website:
https://www.oregon.gov/odot/Bridge/Pages/Seismic.aspx

Railroads

There are no railroads in Lincoln City.

Airports

There are no public airports in Lincoln City. The Siletz Bay State Airport is the nearest airport (a few miles south of the City). The city has no commercial service airports. The nearest commercial airports are in Eugene and Portland.

Utility Lifelines

Utility lifelines are the resources that the public relies on daily such as, electricity, fuel and communication lines. If these lines fail or are disrupted, the essential functions of the community can become severely impaired. Utility lifelines are closely related to physical infrastructures, like dams and power plants, as they transmit the power generated from these facilities.

Generally, the network of electricity transmission lines running throughout the city is operated by Pacific Power. The Williams Gas Pipeline provides natural gas that is delivered to customers in the city by Northwest Natural Gas. These lines may be vulnerable as infrequent natural hazards, like earthquakes, could disrupt service to natural gas consumers across the region.

The city water, wastewater, and storm water (culvert) systems include the following:

Water Infrastructure

- Water Treatment Plant: 317 S. Anderson Creek Rd
- Reservoirs (3):SE 19th St, NE 20th St and Surf St, and Roads End
- Pump stations (6):
    - 4354 SE Jetty Ave
    - 2097 NE West Devils Lake Rd.
    - 2130 NE 36th Dr.
    - 5390 NE Port Ln
    - 1501 SE Oar Ave
    - 2440 SW Coast Ave

Wastewater Infrastructure

- Wastewater Treatment Plant: 5000 SE Port Ave
    - 28 lift stations to transport sewage

Community Organizations and Programs

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 communicating with the public or specific subgroups within the population (e.g. elderly, children, low income). The county and cities can use existing social systems as resources for implementing such communication-related activities because these service providers already work directly with the public on several issues, one of which

could be natural hazard preparedness and mitigation. The countywide community organizations that are active within the city and county and may be potential partners for implementing mitigation actions can be found in Appendix C: Community Profile.

Lincoln County School District

The Lincoln County School District has three schools in Lincoln City including Oceanlake Elementary, Taft Elementary, and Taft 7-12. In addition, Career Tech High Charter School is in is in Lincoln City. For more information on School District assets see their addendum in Volume II.

Existing Mitigation Activities

Existing mitigation activities include current mitigation programs and activities that are being implemented by the community to reduce the community's overall risk to natural hazards. Documenting these efforts can assist participating jurisdictions better understand risk and can assist in documenting successes. The following efforts have occurred or are on-going within Lincoln City:

- The city maintains an emergency preparedness website that's devoted to earthquakes, tsunamis, storms/flooding, and pandemic flu. FEMA's "Are you Prepared?" document is posted for reference, as well as a link to the Community Emergency Response Team's (CERT) website. The Earthquake and Tsunami hazards have their own web pages for additional information.
    - Tsunami webpage: includes information about tsunamis' causes and characteristics, recommendations for how to prepare and survive a tsunami, and information about how to plan an evacuation route. Additionally, there is tsunami information for kids, post-tsunami information, and a listing of preparedness events in Lincoln City. Tsunami evacuation maps are posted as well.
    - Earthquake webpage: includes information about the latest earthquakes in Washington, Oregon, and Northern California. Additionally, the city provides earthquake preparedness recommendations, as well as some tips about what to do during and after an earthquake. Links to the American Red Cross and US Geological Survey (i.e., for more information about vulnerabilities and preparedness strategies) are posted as well.
- A Community Emergency Response Team (CERT) is active in Lincoln City. The CERT Program educates people about disaster preparedness for hazards that may impact their area, and trains them in basic disaster response skills such as fire safety, light search and rescue, team organization, and disaster medical operations. Lincoln City's CERT group has begun a 'Map Your Neighborhood' effort, which seeks to help neighborhoods prepare for disasters.
- The city enforces a setback requirement for all developments located along the coast. The purpose of the setback is to reduce property damages related to coastal erosion, windstorms, and flooding. The setback requirement also serves to meet the city's natural hazard goal, as defined within the Lincoln City Comprehensive Plan: "The city shall control development in hazardous areas to protect life and property from natural disasters and hazards."

- The city's Comprehensive Plan addresses natural hazards. Specific hazardous areas have been identified by RNKR Associates in their work Environmental Hazards, Coastal Lincoln County Oregon, 1979. The city has defined 'hazardous areas' on the RNKR map and will allow development in these areas if adequate protective measures can be employed to prevent or minimize damage. This portion of the Comprehensive Plan also lists policies related to development in hazardous areas.
- Lincoln City issues practice tsunami warnings every Wednesday morning. Additionally, the city distributes evacuation maps, and pamphlets that address preparedness strategies. A Tsunami Preparedness Coordinator conducted a public awareness survey, as well as an evacuation drill in the Nelscott and Delake areas; she initiated the "Neighbor Helping Neighbor" tsunami buddy system, and created door signs for hotels to show evacuation information (among several other education and outreach projects for the city).
- The City built a new Police Station in 2020 and worked with County School District to move school bus facilities out of the inundation zone.
- The city and county utilize a reverse 911 system for use during natural hazard events.
- State legislation:
    - SB 378 requires schools in potential inundation zones to teach students in K-8 grades about tsunamis and evacuation
    - SB 379, implemented as Oregon Revised Statutes (ORS) 455.446 and 455.447, limits construction of new essential facilities and special occupancy structures in tsunami flooding zones.

Hazard Profiles

The following sections briefly describe relevant information for each profiled hazard. More information on Lincoln County hazards can be found in Volume I, Section 2 *Risk Assessment* and in the Risk Assessment for Region 1, Oregon Coast, Oregon SNHMP (2020).

In addition, the Oregon Department of Geology and Mineral Industries (DOGAMI) conducted a multi-hazard risk assessment (Risk Report) for Lincoln County, including the City of Lincoln City. The study was funded through the FEMA Risk MAP program and was completed in 2020. The Risk Report provides a quantitative risk assessment that informs communities of their risk related to the following natural hazards: coastal erosion, Cascadia Subduction Zone earthquake and tsunami, flood, landslide, and wildfire (summarized herein). The City hereby incorporates the Risk Report into this NHMP addendum by reference (DOGAMI, O-20-11).

Coastal Erosion

The steering committee determined that the city's probability for coastal erosion is **high**, meaning at least one incident is likely within the next 35 years and that their vulnerability to coastal erosion is **moderate**, meaning it is expected that between 1% and 10% of the City's population or property could be affected by a major coastal erosion event. *These ratings have not changed since the previous NHMP.*

Volume I, Section 2 describes the characteristics of coastal erosion hazards, as well as the history, location, extent, and probability of a potential event. Coastal erosion is a natural process that continually affects coastal areas; in Lincoln City and elsewhere along the Pacific, coastal erosion becomes a hazard when lives and properties are at risk of death, injury, or damage. Coastal erosion is typically a gradual process, which can be greatly accelerated in the event of a storm or climate factors that increase the potential for coastal erosion.

Future Climate Projection:

According to OCCRI report "*Future Climate Projections: Lincoln County"* (Appendix G) the risk of coastal erosion is expected to increase due to sea level rise and changing wave dynamics.

Vulnerability Assessment

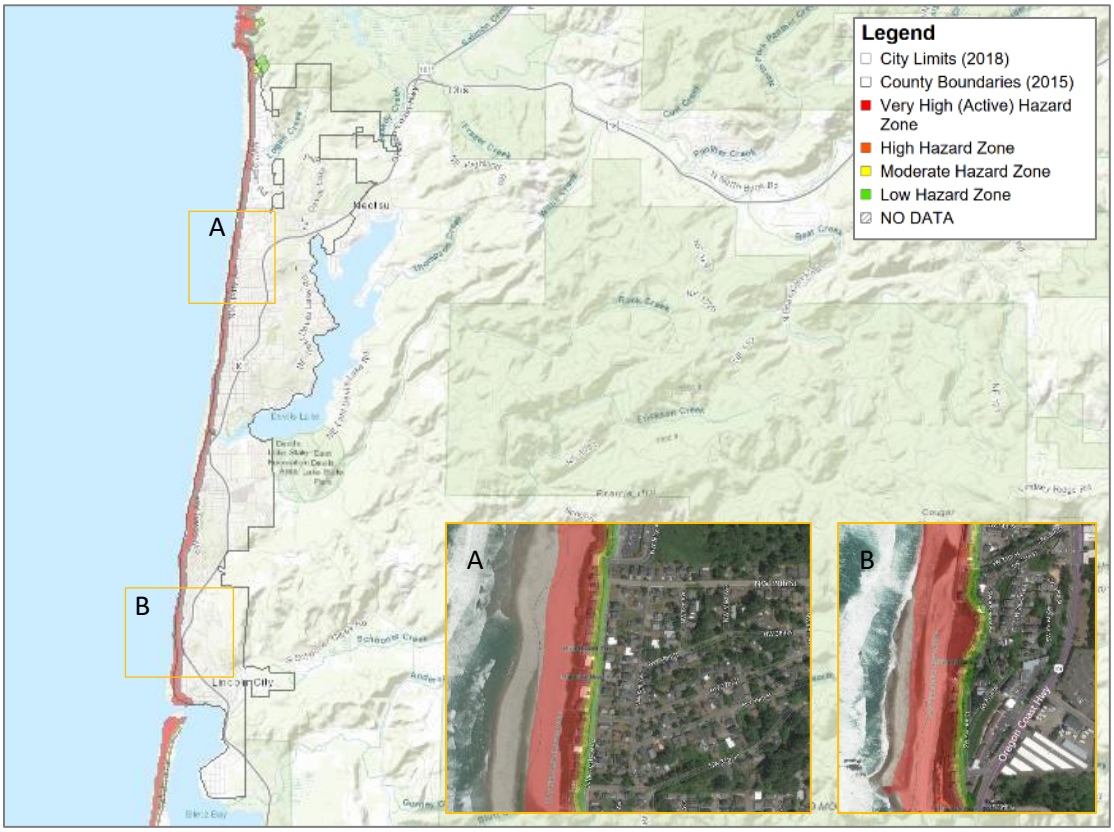
Private sea walls in Lincoln City require constant maintenance, and some property damage has occurred in areas within the city. Records of damages are not available at this time; however, events may have occurred in tandem with previous storms. Properties along Anchor Court, for example, have experienced partial and/or total damages due to storm-induced erosion. Over the last 15 years two houses have been removed and approximately six additional houses are affected in this area; as such, future damages here are likely. The county identified areas along Highway 101 that have sustained erosion-induced damages. Within Lincoln City, however, the Highway is safe.

To mitigate the effects of coastal erosion, the city requires new development to comply with setback restrictions. Permits, additionally, are required for the development of sea walls. Lincoln City believes that, due to their property setback requirements for new developments, they've reduced their vulnerability to this hazard.

Potential community-related impacts, including shoreline reduction, economic (tourism-related) impacts, and property/infrastructural damage, are adequately described within the Volume I, Section 2 of the NHMP. See Figure LA-5 for locations of the city's coastal erosion hazard along coastal bluffs on the city's western edge.

To address the risk for coastal erosion, Lincoln City enacted Ordinance 2012-08 (2012) amending the comprehensive plan to include standards for areas affected by coastal erosion.

Figure LA-5 Coastal Erosion Hazard



Source: Oregon Explorer: Map Viewer – To explore and view map detail click hyperlink to left.

Natural Hazard Risk Report for Lincoln County

The **Risk Report** (DOGAMI, O-20-11) provides hazard analysis summary tables that identify populations and property within Lincoln County that are vulnerable to coastal erosion. The Risk Report provides a distinct profile for Lincoln City.

The Risk Report provides an analysis of dune-backed beaches and bluff-backed shorelines to identify the general level of susceptibility due to storm-induced erosion, sea level rise, and subsidence due to CSZ earthquake event. The Risk Report performed an analysis of buildings, including critical facilities, to determine exposure for each community. According to the Risk Report the following resident population and property (public and private) within Lincoln City may be impacted by profiled coastal erosion scenario (Table LA-5).

Less than one percent of the City's population (65 people) may be displaced by coastal erosion. These people are expected to have mobility or access issues and/or may have their

residences impacted by coastal erosion. Properties that are most vulnerable to the coastal erosion hazard are those that are developed in an area of steep dunes or cliffs. Just under three percent (184 buildings) of all buildings (residential, commercial, industrial) are exposed to the high coastal erosion hazard zone. The value of exposed buildings is $60.4 million (about 6% of total building value). It is important to note that impact from coastal erosion may vary depending on areas that are impacted during an event.

Table LA-5 Potentially Displaced Residents and Exposed Buildings, Coastal Erosion

Community Overview: Lincoln City						
Population		Buildings		Critical Facilities	Total Building Value ($)	
7,930		6,687		11	1,086,802,000	
Exposure Analysis: Coastal Erosion High Hazard Scenario						
Potentially Displaced Residents		Exposed Buildings			Exposed Building Value	
Number	Percent	Number	Percent	Critical Facilities	Value ($)	Percent
65	0.8%	184	2.8%	0	60,436,000	5.6%

Source: IPRE. Data adapted from DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020). Table A-16. Note: City population based on the 2010 Census population.

Critical Facility Vulnerability[9]

There are no critical facilities exposed to the profiled coastal erosion scenario.

Drought

The steering committee determined that the city's probability for drought is **high**, meaning at least one incident is likely within the next 35 years and that their vulnerability to drought is **high**, meaning more than 10% of the city's population or property could be affected by a major drought event. *These ratings have not changed since the previous NHMP.*

Volume I, Section 2 of Lincoln County's NHMP adequately describes the causes and characteristics of drought hazards, as well as the history, location, extent, and probability of a potential event. Due to a cool, wet climate, past and present weather conditions have generally spared coastal communities from the effects of a drought.

Schooner Creek is the city's only water source, and the city's reservoirs store enough water for only one day of use. In the event that climate patterns change and drought becomes a probable hazard, Lincoln City would be extremely vulnerable to drought conditions. Furthermore, Schooner Creek is a direct-flow water source and contamination is a potential threat to the water supply.

Water from the city reservoirs is treated at the water treatment facility that can treat up to 6 million gallons per day (mgd). Following treatment water flows via 12 to 24-inch water transmission mains to three water storage reservoirs (combined 7.25 million gallons

[9] DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020), Table A-17.

capacity) at SE 19th, NE 20th, and Roads End. Most of the system utilizes 6- and 8-inch diameter pipes. There are five (5) pump stations that boost pressure to higher elevations. The City has enough capacity to meet current and anticipated future demand.

Future Climate Projection:

According to OCCRI report "*Future Climate Projections: Lincoln County"* (Appendix G) the probability of future drought conditions (low summer soil moisture, low spring snowpack, low summer runoff, low summer precipitation, and high summer evaporation) is expected to be more frequent by the 2050s.

Vulnerability Assessment

Due to insufficient data and resources, Lincoln City is currently unable to perform a quantitative risk assessment, or exposure analysis, for this hazard. State-wide droughts have historically occurred in Oregon, and as it is a region-wide phenomenon, all residents are equally at risk. Structural damage from drought is not expected; rather the risks apply to humans and resources. Industries important to the City of Lincoln City's local economy such as fishing have historically been affected, and any future droughts would have tangible economic and potentially human impacts.

In addition to reduced water supplies, a drought will increase the chances of wildfire and significantly reduce tourism activities. If hotels, for example, are unable to accommodate guests, the city's economy would greatly suffer. Currently, the city has a water curtailment plan that will go into effect in the event of a drought.

Earthquake

The steering committee determined that the city's probability for a Cascadia Subduction Zone (CSZ) Earthquake event is **moderate**, meaning one incident may occur within the next 35 to 75 years and that their vulnerability to a CSZ event is **high**, meaning that more than 10% of the City's population or property could be affected by a major CSZ earthquake event. The steering committee determined that the city's probability for a crustal earthquake event is **low**, meaning one incident may occur within the next 100 years and that their vulnerability to a Crustal Earthquake event is **moderate**, meaning that between 1% and 10% of the city's population or property could be affected by a major crustal earthquake event. *The city's probability to crustal earthquake was decreased since the previous NHMP, all other ratings have remained the same.*

Volume I, Section 2 of Lincoln County's NHMP adequately describes the causes and characteristics of earthquake hazards, as well as the history, location, extent, and probability of a potential event. Earthquake-induced damages are difficult to predict, and depend on the size, type, and location of the earthquake, as well as site-specific building and soil characteristics. Presently, it is not possible to accurately forecast the location or size of earthquakes, but it is possible to predict the behavior of soil at any site. In many major earthquakes, damages have primarily been caused by the behavior of the soil.

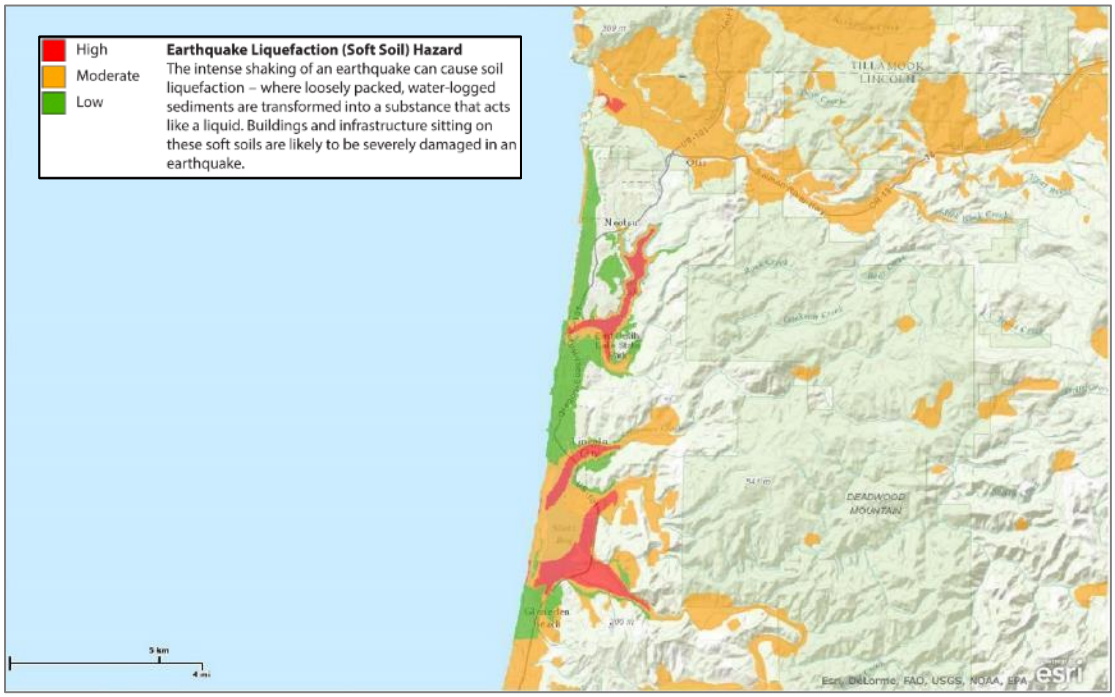
The Pacific Northwest experienced a subduction zone earthquake estimated at magnitude 9 on January 26, 1700. The earthquake generated a tsunami that caused damage as far away as Japan. Cascadia subduction zone earthquakes and associated tsunamis have occurred on average every 500 years over the last 3,500 years in the Pacific Northwest. The time

between events has been as short as 100 to 200 years and as long as 1,000 years. The geologic record indicates that over the last 10,000 years approximately 42 tsunamis have been generated off the Oregon Coast in connection to ruptures of the CSZ (19 of the events were full-margin ruptures and arrived approximately 15-20 minutes after the earthquake).[10]

The Oregon Department of Geology and Mineral Industries (DOGAMI), in partnership with other state and federal agencies, has undertaken a rigorous program in Oregon to identify seismic hazards, including active fault identification, bedrock shaking, tsunami inundation zones, ground motion amplification, liquefaction, and earthquake induced landslides.

The figures below show earthquake hazards that affect the city, including the soft soil/ liquefaction hazard (Figure LA-6), expected ground shaking for crustal events (Figure LA-**7**), and for the Cascadia Subduction Zone event (Figure LA-**8**). The extent of the damage to structures and injury and death to people will depend upon the type of earthquake, proximity to the epicenter and the magnitude and duration of the event. The soft soils figure below shows that in general the soils in Lincoln City have low to moderate liquefaction potential; the areas of the population along the coastline are more susceptible to liquefaction than areas further in land and away from rivers.

Figure LA-6 Earthquake Liquefaction (Soft Soil) Hazard

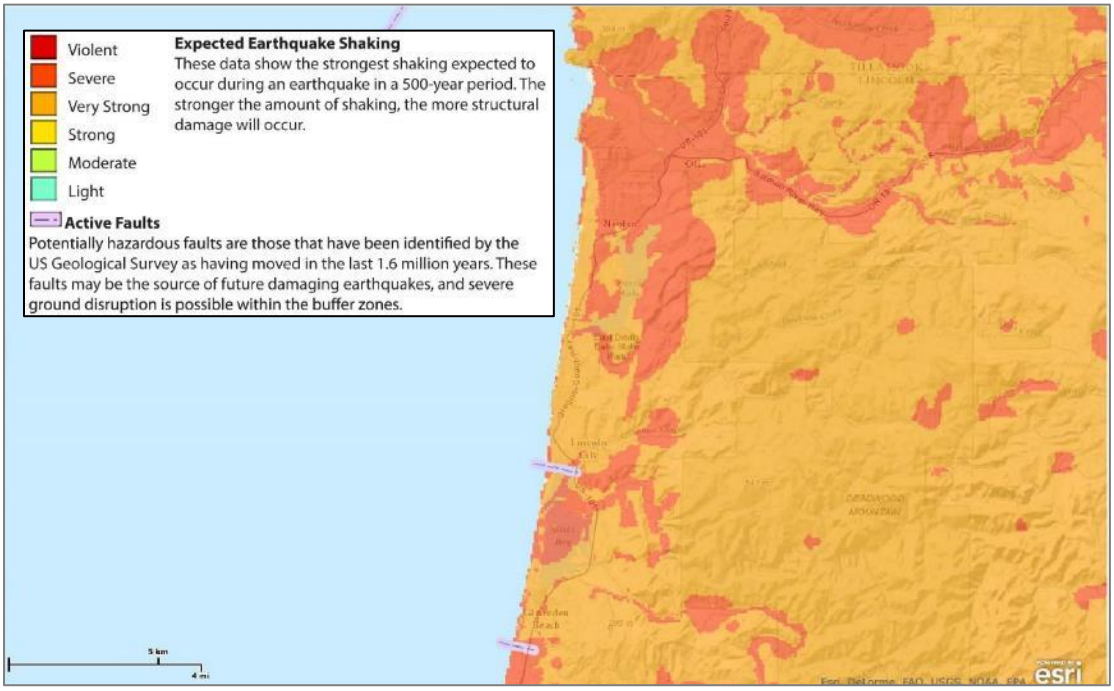


Source: Oregon HazVu: Statewide Geohazards Viewer – To explore and view map detail click hyperlink to left.

Shaking from the combined earthquake scenario is expected to be very strong to violent for much of Lincoln City as shown in Figure LA-**7**. The figure also shows one historically active fault southeast of the city.

[10] DLCD. *Oregon State Natural Hazard Mitigation Plan*. 2020 (Draft).

Figure LA-7 Combined Earthquake Events Expected Shaking and Active Faults



Source: Oregon HazVu: Statewide Geohazards Viewer – To explore and view map detail click hyperlink to left.

Figure LA-**8** shows expected shaking with a Cascadia Earthquake. The figure shows that the entire city will receive severe to violent shaking.

Figure LA-8 Cascadia Earthquake Expected Shaking

Source: Oregon HazVu: Statewide Geohazards Viewer – To explore and view map detail click hyperlink to left.

Vulnerability Assessment

The city's concentrated population and resources, as well as the soil characteristics and relative earthquake hazards described above are cause for significant effort toward mitigating the earthquake hazard. The city's infrastructure is highly vulnerable to a severe earthquake event. Sewer lines, water lines, power lines, water tanks, reservoirs, cell towers, the Samaritan North Lincoln Hospital, and City Hall were identified by the Steering Committee as vulnerable assets. The city would expect significant damage to roads and bridges following a Cascadia Subduction Zone event, as well as deaths and severe injuries region wide. Education and outreach regarding earthquakes (and resultant tsunami) is an ongoing endeavor in Lincoln City.

2007 Rapid Visual Survey

Building codes were implemented in Oregon in the 1970s, however, stricter standards did not take effect until 1991 and early 2000s. As noted in the community characteristics section (Table LA-4), approximately 67% of residential buildings were built prior to 1990, which increases the City's vulnerability to the earthquake hazard (according to the Risk Report 55% of all buildings are pre-code and 15% are low code)[11]. Information on specific public buildings' (schools and public safety) estimated seismic resistance, determined by DOGAMI in 2007, is shown in Table LA-6; each "X" represents one building within that ranking category. Of the facilities evaluated by DOGAMI, that have not been retrofitted, using their Rapid Visual Survey (RVS), no buildings have a very high (100% chance) collapse potential, while one (1) has a high (greater than 10% chance) collapse potential (note this school is Career Tech Charter HS which is in the same building as City Hall and the Driftwood Public Library). To fully assess a buildings potential for collapse, a more detailed engineering study completed by a qualified professional is required, but the RVS study can help to prioritize which buildings to survey.

Mitigation Activities

Earthquake mitigation activities listed here include current mitigation programs and activities that are being implemented by Lincoln City agencies or organizations.

A primary mitigation objective of the city is to construct or upgrade critical and essential facilities and infrastructure to withstand future earthquake events. Seismic retrofit grant awards per the Seismic Rehabilitation Grant Program[12] have been funded to retrofit the North Lincoln Fire and Rescue Station 1400 (2015-17, Phase II grant award, $1,048,039), the Taft Elementary School gym (2017-19, Phase II grant award, $2,493,455), and Oceanlake Elementary School (2020 grant award. $2,499,090). The police department and Samaritan North Lincoln Hospital were rebuilt through local funding resources in 2020. The School District has retrofitted at risk schools through local resources (see the Lincoln County School District addendum for more information).

[11] DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020), Table D-2.

[12] The Seismic Rehabilitation Grant Program (SRGP) is a state of Oregon competitive grant program that provides funding for the seismic rehabilitation of critical public buildings, particularly public schools and emergency services facilities.

Table LA-6 Rapid Visual Survey Scores

Facility	Site ID*	Level of Collapse Potential			
		Low (< 1%)	Moderate (>1%)	High (>10%)	Very High (100%)
Schools					
Ocreanlake Elementary** (2420 NE 22nd Street)	Linc_sch01		**SRGP 2020 $2,499,090**		
(former) Taft Elementary (1545 SE 50th Street)	Linc_sch03		**Demolished. Site Vacant.**		
Taft Elementary (*former MS*)** (4040 High School Drive)	Linc_sch04		**SRGP 2017-2019 Phase II: $2,493,455**		
Taft 7-12 (*former HS*)** (3780 SE Spyglass Ridge Road)	Linc_sch10	X			
Career Technical High School (Charter)** (801 SW Hwy 101)	Linc_sch14			X	
Public Safety					
North Lincoln Fire and Rescue Station 1400 (2525 NW Hwy 101)	Linc_fir01		**SRGP 2015-2017 Phase II: $1,048,039**		
City Building (*former Taft-Nelscott-DeLake FD*) (914 SW 4th Street)	Linc_fir12	X			
North Lincoln Fire and Rescue Station 1600 (4520 SE Hwy 101)	Linc_fir16	X			
Lincoln City Police Department** (1503 SE Devils Lake Road)	Linc_pol06		**New building 2020**		
Hospitals					
Samaritan North Lincoln Hospital** (3043 NE 28th Street)	Linc_hos02		**New building 2020**		

Source: DOGAMI 2007. Open File Report 0-07-02. Statewide Seismic Needs Assessment Using Rapid Visual Assessment. Notes: "*" – Site ID is referenced on the RVS Lincoln County Map;"**" – Facility determined to be vulnerable to CSZ earthquake and should expect moderate to complete damage (> 50% probability). DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020).

Natural Hazard Risk Report for Lincoln County

The **Risk Report** (DOGAMI, O-20-11) provides hazard analysis summary tables that identify populations and property within Lincoln County that are vulnerable to earthquake. The Risk Report provides a distinct profile for Lincoln City.

According to the Risk Report the following resident population and property (public and private) within the study area may be impacted by the profiled magnitude 9.0 Cascadia Subduction Zone (CSZ) event. *Note: Due to the simultaneous nature of a CSZ earthquake and tsunami, loss estimates have been separated in the following tables to avoid double counting. Building losses within the tsunami zone are considered total. See the tsunami section for additional information.*

The Risk Report performed an analysis of buildings, including critical facilities, to determine exposure for each community. According to the Risk Report the following resident population and property (public and private) within Lincoln City may be impacted by the profiled earthquake scenarios (Table LA-7). *Note: Due to the simultaneous nature of a CSZ earthquake and tsunami, loss estimates have been separated in the following tables to avoid*

double counting. Building losses within the tsunami zone are considered total. See the tsunami section for additional information. [13]

Approximately 16% of the City's population (1,230 people) may be displaced by a magnitude 9.0 CSZ earthquake and tsunami event. Of those, approximately 3% will be impacted by the accompanying tsunami. *Note: The data does not include potentially impacted visitor populations that may be lodging or at a public venue during a CSZ earthquake and tsunami event.* Earthquakes will impact every building in the City, to some degree, by a CSZ magnitude 9.0 earthquake and tsunami. Building damage (loss) estimates are reported for buildings expected to be damaged by the earthquake outside of the tsunami inundation zone (medium-sized). Additional exposure information is provided for buildings within the tsunami inundation zone to obtain the combined total damage (loss) estimate. Buildings reported as "damaged" in the area *outside* the tsunami zone include yellow tagged (extensive, limited habitability) and red tagged (complete, uninhabitable) buildings, while 100% of buildings exposed *inside* the tsunami inundation area are considered "damaged" (complete, uninhabitable). The City has 1,621 buildings that are expected to be damaged by the CSZ earthquake and tsunami event. The combined (earthquake and tsunami) value of building damage losses are $241 million.

The Risk Report estimated losses show that the age of the building stock is the primary metric of earthquake vulnerability. Communities with older building stock are expected to have higher losses. However, if buildings were retrofitted to at least "moderate code" standards the impact of the event would be reduced. The Risk Report concludes that loss estimates for the City drop from 19% to 12% ($74.3 million decrease in loss) when all buildings are upgraded to at least moderate code level.[14] *Note: earthquake vulnerability retrofit benefits are minimized in areas of liquefaction and landslide where additional geotechnical mitigation would be needed.*

[13] DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020), Tables A-16.

[14] Ibid, Table B-2.

Table LA-7 Potentially Displaced Residents and Exposed Buildings, Earthquake

Community Overview: Lincoln City						
Population		Buildings		Critical Facilities	Total Building Value ($)	
7,930		6,687		11	1,086,802,000	
Exposure Analysis: Earthquake CSZ M9.0 (Deterministic) Scenario						
Potentially Displaced Residents		Damaged Buildings			Exposed Building Value	
Number	Percent	Number	Percent	Critical Facilities	Loss Estimate ($)	Loss Ratio
1,029	13.0%	1,350	20.2%	6	209,653,000	19.3%
Exposure Analysis (within Tsunami Zone - Medium)						
201	2.5%	271	4.1%	0	31,377,000	2.9%
Total Exposure						
1,230	15.5%	1,621	24.2%	6	241,030,000	22.2%

Source: IPRE. Data adapted from DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020). Table A-16. Note: City population based on the 2010 Census population.

Critical Facility Vulnerability[15]

- Lincoln City City Hall (also houses the Public Library and Career Tech High School)
- Lincoln City Police Department
  (new building built to current seismic code in 2020)
- Oceanlake Elementary School
- Samaritan North Lincoln Hospital
  (new building built to current seismic code in 2020)
- Taft Elementary School
- Taft 7-12 School

Note 1: In 2020, DOGAMI published an analysis of people and structures impacted by a CSZ earthquake and tsunami for the M, L, and XXL event scenarios. This report provides information on building damage and impact to residents and tourists (including injury and fatality estimates). For details, see *Analysis of Earthquake and Tsunami Impacts for People and Structures inside the Tsunami Zone for Five Coastal Communities* (DOGAMI, 2020, O-20-03).

Note 2: It is expected that bridges in the area may be impassable by vehicles for over 24 months. As such bringing resources into Lincoln City by sea and air will be necessary.

For more information, see the following DOGAMI reports:

- Analysis of earthquake and tsunami impacts for people and structures inside the tsunami zone for five Oregon coastal communities: Gearhart, Rockaway Beach, Lincoln City, Newport, and Port Orford (2020, O-20-03)
- Oregon Coastal Hospital Resilience Project (2020, O-20-02)

[15] Ibid, Table A-17.

Tsunami

The steering committee determined that the city's probability for a distant tsunami event is **moderate** meaning one incident may occur within the next 35 to 75 years and that their vulnerability to a distant tsunami event is **low**, meaning that less than 1% of the city's population or property could be affected by a major distant tsunami event. The steering committee determined that the city's probability for a local tsunami event is **moderate**, meaning one incident may occur within the next 35 to 75 years and that their vulnerability to a local tsunami event is **high**, meaning that more than 10% of the City's population or property could be affected by a major local tsunami event. *The city's probability to distant tsunami decreased since the previous NHMP, all other ratings have remained the same.*

Volume I, Section 2 of Lincoln County's NHMP adequately describes the causes and characteristics of tsunami hazards, as well as the history, location, extent, and probability of a potential event. The Pacific Northwest experienced a subduction zone earthquake estimated at magnitude 9 on January 26, 1700. The earthquake generated a tsunami that caused damage as far away as Japan. Cascadia subduction zone earthquakes and associated tsunamis have occurred on average every 500 years over the last 3,500 years in the Pacific Northwest. The time between events has been as short as 100 to 200 years and as long as 1,000 years. The geologic record indicates that over the last 10,000 years approximately 42 tsunamis have been generated off the Oregon Coast in connection to ruptures of the CSZ (19 of the events were full-margin ruptures and arrived approximately 15-20 minutes after the earthquake).[16] Distant tsunamis happen more regularly that CSZ related local tsunamis.

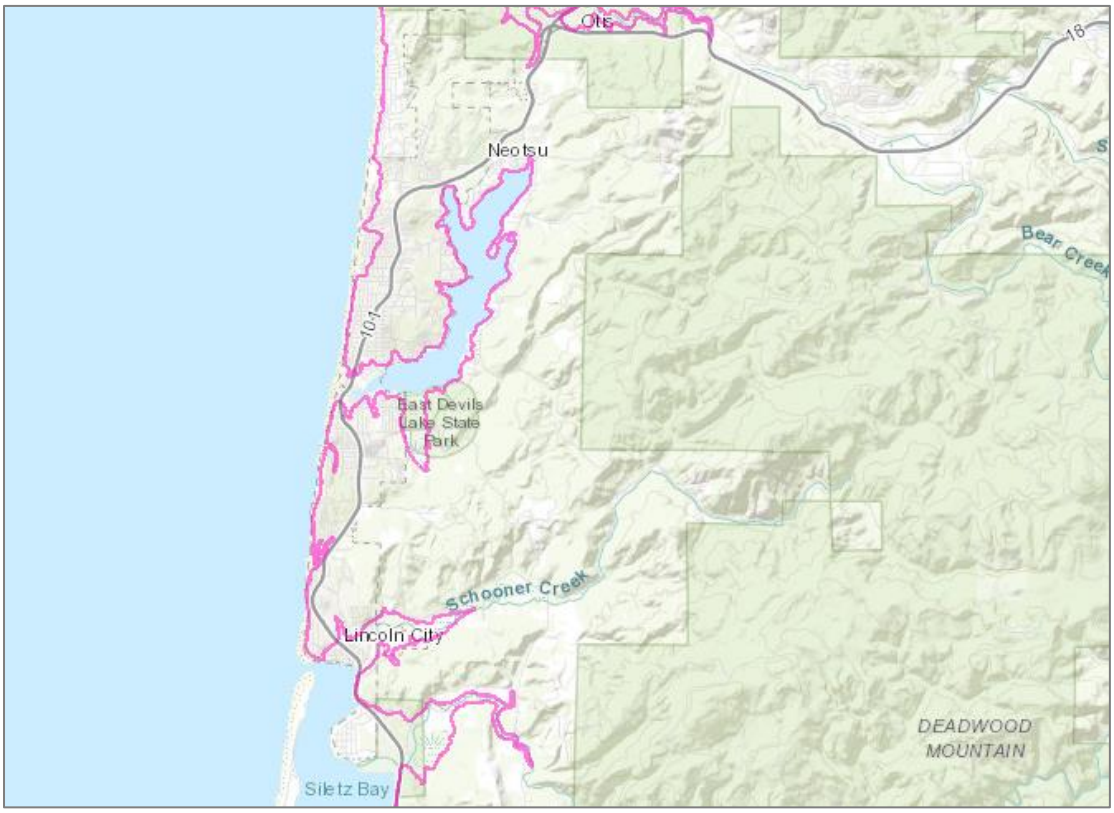
It is difficult to predict when the next tsunami will occur. According to the Oregon NHMP the coast has experienced 25 distant tsunamis in the last 145 years with only three causing measurable damage. Thus, the average recurrence interval for tsunamis on the Oregon coast from distant sources would be about six (6) years. However, the time interval between events has been as little as one year and as much as 73 years. Since only a few tsunamis caused measurable damage, a recurrence interval for distant tsunamis does not have much meaning for the City.

A 9.0 magnitude earthquake originating from Japan caused approximately $7.1 million worth of damages along the Oregon Coast. Particularly, there was extensive damage to the Port of Brookings (Curry County; $6.7 million), as well as the Port of Lincoln City (Lincoln County; $182,000), and Charleston Harbor (Coos County; $200,000); Salmon Harbor on Winchester Bay (Douglas County) and the South Beach Marina in Newport (Lincoln County) were also affected. On March 15, 2011 Governor Kitzhaber declared a State of Emergency was declared by Executive Order in Curry County. Approximately 40% of all docks at the Port of Brookings were destroyed or rendered unusable (including a dock leased by the U.S. Coast Guard) compromising commercial fishing and U.S. Coast Guard operations. Along the Oregon Coast local official activated the Emergency Alert System and sirens, implemented "reverse 9-1-1" and conducted door-to-door notices in order to evacuate people form the tsunami inundation zone. Local governments activate their Emergency Operations Centers and the state activated its Emergency Coordination Center. For more information view Volume II, Hazard Annex.

[16] Oregon Natural Hazard Mitigation Plan. Department of Land Conservation and Development. 2015

In 1995, the Department of Geology and Mineral Industries (DOGAMI) conducted an analysis resulting in extensive mapping along the Oregon Coast. The maps depict the expected inundation for tsunamis produced by a magnitude 8.8 to 8.9 undersea earthquake. The tsunami maps were produced to help implement Senate Bill 379 (SB 379); digitized in 2014 (O-14-09). SB 379, implemented as Oregon Revised Statutes (ORS) 455.446 and 455.447, and Oregon Administrative Rules (OAR) 632-005, limit construction of new essential facilities and special occupancy structures in tsunami flooding zones. Figure LA-9 shows the regulatory tsunami inundation line showing the much of the residential development west of Highway 101, and areas in, and adjacent to, the harbor are vulnerable to tsunami. It should be noted that the updated tsunami inundation maps (described below) show an increased vulnerability in many areas (Figure LA-10). Note: HB 3309 (2019) effective January 1, 2020 repealed the ban on building "new essential facilities, hazardous facilities, major structures, and special occupancy structures" inside the tsunami inundation zone (SB 379 line):[17]

Figure LA-9 Regulatory (SB 379) Tsunami Inundation Line



Source: Oregon HazVu: Statewide Geohazards Viewer – To explore and view map detail click hyperlink to left.

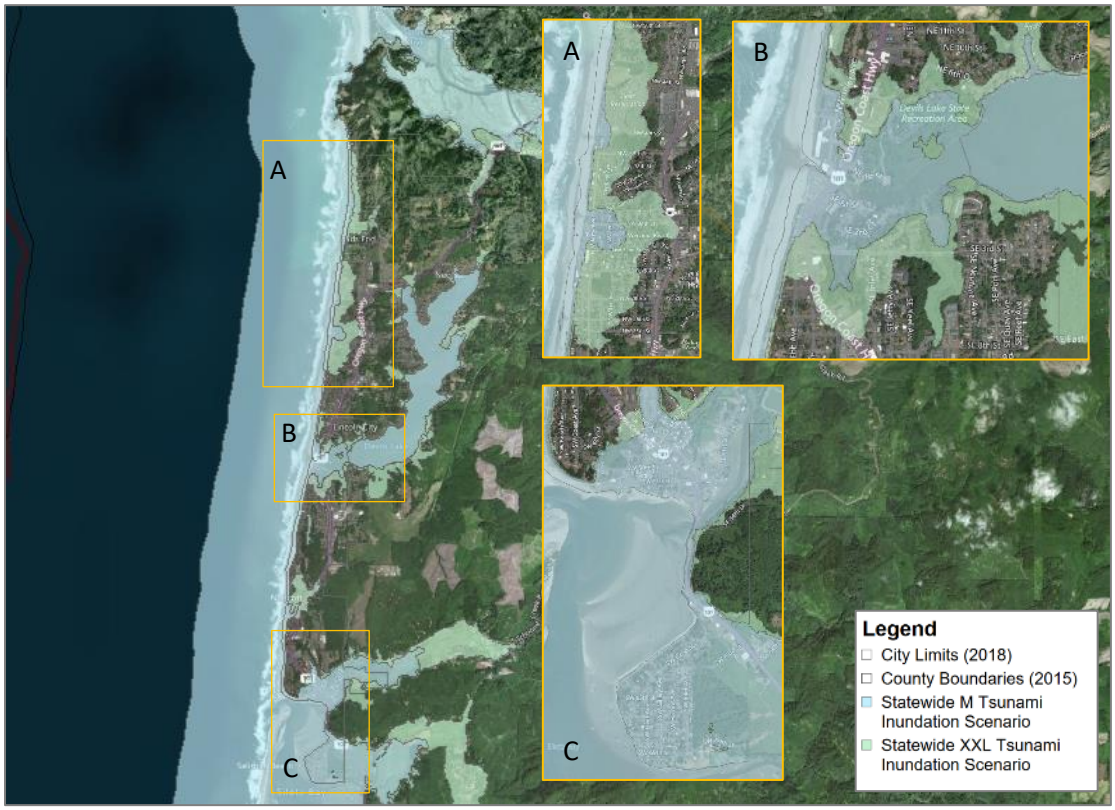
Lincoln City has put forth much effort to educate and inform citizens of tsunami hazards found within the city. The city obtained a reverse 911 system; hotels are encouraged to post evacuation signs in private rooms; evacuation signs are posted throughout the city; evacuation maps are posted on the city's website; and a fire station and school were moved away from the inundation zone two years ago. In the event of a tsunami, the hospital may

[17] Oregon Legislature. HB 3309 (2019). https://olis.leg.state.or.us/liz/2019R1/Downloads/MeasureDocument/HB3309

be at risk; currently it's just outside the tsunami inundation zone. Severe damage is expected to occur on various properties, roads, bridges, communication systems, and critical infrastructure within Lincoln City, among other assets described in the county's plan. Lincoln City recognizes the importance of continuing education and outreach, especially to the transient populations (i.e., tourists), and plans to implement greater outreach in the future.

Tsunami inundation maps were created by the Department of Geology and Mineral Industries (DOGAMI) to be used for emergency response planning for coastal communities. Maps were created for local and distant source tsunami events. The local source tsunami inundation maps display the output of computer modeling showing five tsunami event scenarios shown as "T-shirt" sizes S, M, L, XL, and XXL. Figure LA-10 shows the M and XXL tsunami inundation scenarios. The distant source tsunami inundation maps show the potential impacts of tsunamis generated by earthquakes along the "Ring of Fire" (the Circum-Pacific belt, the zone of earthquake activity surrounding the Pacific Ocean). The distant tsunami inundation maps model the 1964 Prince William Sound event (Alaska M9.2) and a hypothetical Alaska Maximum event scenario; only the Alaska Maximum Wet/ Dry Zone is shown on the map. Both the local and distant source tsunami inundation maps show simulated wave heights and inundation extents for the various scenarios.

Figure LA-10 Tsunami Inundation Map (M and XXL Scenarios)



Source: Oregon Explorer: Map Viewer – To explore and view map detail click hyperlink to left.

For more information on the regulatory and non-regulatory maps visit the Oregon Tsunami Clearinghouse resource library:

Regulatory (SB 379) - http://www.oregongeology.org/tsuclearinghouse/pubs-regmaps.htm (Note: HB 3309, effective January 1, 2020, repealed ban on building essential facilities within the tsunami inundation zone, SB 379 line.)

Non-Regulatory Tsunami-Inundation Maps:
http://www.oregongeology.org/tsuclearinghouse/pubs-inumaps.htm

Evacuation maps (brochures) are available for the populated areas of Lincoln County. The Department of Geology and Mineral Industries (DOGAMI) developed the evacuation zones in consultation with local officials; local officials developed the routes that were reviewed by the Oregon Department of Emergency Management (OEM). The maps show the worst-case scenario for a local source and distant source tsunami event and are not intended for land-use planning or engineering purposes.

For more information on the evacuation brochures visit the Oregon Tsunami Clearinghouse resource library:

http://www.oregongeology.org/tsuclearinghouse/pubs-evacbro.htm

A free application is also available that displays the evacuation routes in coastal areas of Oregon: http://www.nanoos.org/mobile/tsunami_evac_app.php

Vulnerability Assessment

In 2013, DOGAMI produced new Tsunami Inundation Maps (TIMs) for the entire Oregon coast. The TIMs identify both local and distant Tsunami Inundation Zones (TIZs) by event size. The maps also tabulate the affected buildings located within the local and distant source tsunami inundation zones. The Risk Report section below provides detailed information on the impact to the City from a CSZ earthquake and medium tsunami.

Severe damage could occur to low-lying areas of the city in a local source tsunami event, including roads, bridges, communication systems, and infrastructure within Lincoln City, particularly surrounding, and including facilities near NW Jetty Ave between NW 26th St and NW 50th St, D River and Devils Lake, and the Siletz Bay including Cutler City and Taft (see Figure LA-10 areas A, B, and C respectively) among other assets described in the county's plan. Some damage is also expected in a large distant source tsunami event (such as the 2011 Tohoku tsunami). The city of Lincoln City recognizes the importance of continuing education and outreach, especially to the transient populations (i.e., tourists), and plans to implement greater outreach in the future.

As shown in Table LA-4 there are about 439 manufactured housing units (mobile homes) in Lincoln City. Manufactured homes built prior to 2003 are subject to slipping off their foundations potentially compromising the occupants' ability to exit. The compromised egress may hinder timely evacuation.

Population vulnerability is characterized in terms of exposure, demographic sensitivity, and short-term resilience of at-risk individuals. Nate Wood, et al. (USGS) performed a cluster analysis of the data for coastal communities in the Pacific Northwest to identify the most vulnerable communities in the region.[18] Wood, et al. conducted a comprehensive analysis to derive overall community clusters based on (1) the number of people and businesses in the

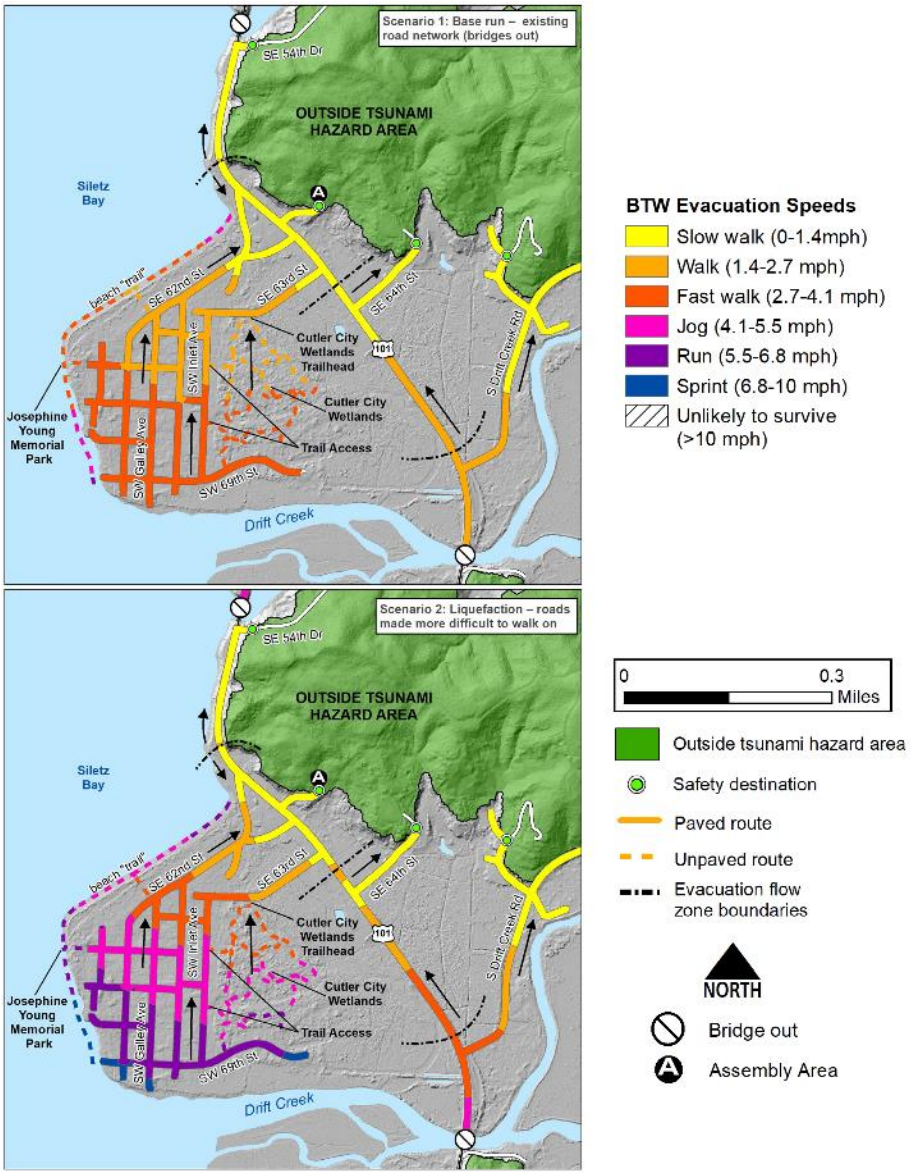
[18] Nathan J. Wood, Jeanne Jones, Seth Spielman, and Mathew C. Schmidtlein. "Community clusters of tsunami vulnerability in the US Pacific Northwest", PNAS 2015 112 (17) 5354-5359.

tsunami hazard zone, (2) the demographic characteristics of residents in the zone, and (3) the number of people and businesses that may have insufficient time to evacuate based on slow and fast walking speeds. According to the study Lincoln County (including Lincoln City) has relatively low numbers of "residents, employees, or customer-heavy businesses" inside the tsunami hazard zones and will likely have enough time to reach high ground before a tsunami wave arrives.

In 2019, DOGAMI published a tsunami evacuation analysis using the XXL inundation zone which covers the largest CSZ event likely to occur based on the historical record.[19] Safety is reached when evacuees have reached "high ground", or 20 feet beyond the limit of tsunami inundation. An analysis was conducted for the Roads End, Wecoma, Oceanlake, Delake, Nelscott, Taft, and Cutler City neighborhoods within Lincoln City. According to the model the first waves arrive along the open coast 20-22 minutes after the start of earthquake shaking with most of Lincoln City inundated about 4 to 6 minutes later. All of Lincoln City, except for Cutler City, has significant high ground that will accommodate evacuees traveling at a moderate walking speed of 4 feet per second (fps) or less (2.7 mph). Evacuees within the Cutler City neighborhood, particularly in the southwest section near where Drift Creek enters Siletz Bay, will need to move faster in order to beat the wave and make it to high ground (see Figure LA-11). For details, including neighborhood analysis, see *Tsunami evacuation analysis of Lincoln City and unincorporated Lincoln County: Building community resilience on the Oregon coast* (DOGAMI, 2019, O-19-06).

[19] DOGAMI, Open-Fire Report O-19-06.

Figure LA-11 Beat the Wave modeling in Cutler City (CSZ earthquake XXL inundation zone)



Source: DOGAMI, Open-File Report O-19-06.

In 2020, DOGAMI published an analysis of people and structures impacted by a CSZ earthquake and tsunami for the M, L, and XXL event scenarios. This report provides additional information on building damage and impact to residents and tourists (including injury and fatality estimates). The report identifies Cutler City and SE 2nd Court south of Devils Lake, the Taft Trailer Park at SE 52nd St, and residences along SE 52st Ave and SE Lee Ave as areas of concern for tsunami evacuation.[20]

The report includes additional information on earthquake and building damage, injuries and fatalities, and displaced population which are, in part, included in the Risk Report

[20] DOGAMI, Open-File Report O-20-03, Section 8.3 Lincoln City.

information below. For more information, see *Analysis of Earthquake and Tsunami Impacts for People and Structures inside the Tsunami Zone for Five Coastal Communities* (DOGAMI, 2020, O-20-03).

Natural Hazard Risk Report for Lincoln County

The **Risk Report** (DOGAMI, O-20-11) provides hazard analysis summary tables that identify populations and property within Lincoln County that are vulnerable to tsunami. The Risk Report provides a distinct profile for Lincoln City.

The Risk Report performed an analysis of buildings, including critical facilities, to determine exposure for each community. According to the Risk Report the following resident population and property (public and private) within Lincoln City may be impacted by the profiled tsunami scenario (Table LA-8).

Just under 12% the city's population (923 people) may be displaced by a magnitude 9.0 CSZ tsunami event (note there are additional people that will be displaced by the earthquake). This is slightly fewer people than those exposed within the Senate Bill 379 line (1,097 people). *Note: The data does not include potentially impacted visitor populations that may be lodging or at a public venue during a CSZ earthquake and tsunami event (for more information on temporary residents see DOGAMI O-20-03 referenced in the previous section).* Building damage (loss) estimates are reported for buildings expected to by damaged by the tsunami inundation zone (medium-sized and SB 379). All 899 buildings exposed *inside* the tsunami inundation area are considered "damaged" (complete, uninhabitable); the number of buildings damaged is slightly higher under the SB 379 scenario (1,121 buildings). No critical facilities are expected to be damaged under the CSZ M9.0 scenario, none are expected to be damaged under the SB 379 scenario.

Table LA-8 Potentially Displaced Residents and Exposed Buildings, Tsunami

Community Overview: Lincoln City						
Population		Buildings		Critical Facilities	Total Building Value ($)	
7,930		6,687		11	1,086,802,000	
Exposure Analysis: Tsunami CSZ M9.0 (Deterministic) Scenario						
Potentially Displaced		Exposed Buildings			Exposed Building	
Number	Percent	Number	Percent	Critical Facilities	Value ($)	Percent
923	11.6%	899	13.4%	0	128,896,000	11.9%
Exposure Analysis: Tsunami SB 379 Regulatory Line						
1,097	13.8%	1,121	16.8%	0	176,978,000	16.3%

Source: IPRE. Data adapted from DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020). Table A-16. Note: City population based on the 2010 Census population.

Critical Facility Vulnerability[21]

- There are no critical facilities exposed to the profiled tsunami scenarios.

[21] DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020), Table A-17.

Note 1: DOGAMI, Open-Fire Report O-20-03 includes the following key infrastructure facilities in the tsunami zone (XXL): [22]

- Lift Station, SW Anchor Court
- Water Treatment Plant (317 S. Anderson Creek Rd)
- Antenna Structure (3277 NE Devils Lake Rd, includes KBCH AM 1400 radio)

Note 2: Although critical facilities are not exposed to the profiled tsunami scenarios it is expected that bridges in the area may be impassable by vehicles for over 24 months. As such bringing resources into Lincoln City by sea and air will be necessary.

For more information, see the following DOGAMI reports:

- Analysis of earthquake and tsunami impacts for people and structures inside the tsunami zone for five Oregon coastal communities: Gearhart, Rockaway Beach, Lincoln City, Newport, and Port Orford (2020, O-20-03)
- Oregon Coastal Hospital Resilience Project (2020, O-20-02)
- Tsunami evacuation analysis of Lincoln City and unincorporated Lincoln County: Building community resilience on the Oregon coast (2019, O-19-06)

Flood

The steering committee determined that the city's probability for riverine or coastal flood is **high**, meaning at least one incident is likely within the next 35-year period and that their vulnerability to coastal or riverine flood is **moderate**, meaning that between 1% and 10% of the City's population or property could be affected by a major coastal or riverine flood event. *These ratings have not changed since the previous NHMP.*

Volume I, Section 2 of Lincoln County's NHMP adequately describes the causes and characteristics of coastal and riverine flood hazards, as well as the history, location, extent, and probability of a potential event. Schooner Creek and Devils Lake are the city's primary sources of flooding– typically due to rain and snowmelt. The extent of flooding varies depending on rainfall, and/or precipitation levels throughout the year. Lincoln City's most significant flood event occurred in November 1999; every road out of town was under water, including East Devils Lake Rd just south of Devils Lake. Road closures are the most common flood-related impacts within the community. East Devils Lake Road floods frequently, and despite efforts to mitigate flood related damages by widening culverts along this road, flooding continues. Almost all of Lincoln City's 31 pump stations are in the floodplain. Areas of concern for the city include the floodgate at Schooner Creek and the modular home parks near 51st street.

The Lincoln City Storm Water Master Plan includes additional information on flood impacts to the community and includes additional mitigation actions.

FEMA has mapped most of the flood-prone streams in Oregon for 100- and 500-year flood events. A 100-year flood (a flood with a one percent probability of occurring within any given year) is used as the standard for floodplain management in the United States and is referred to as a base flood; also known as the Special Flood Hazard Area (SFHA). The SFHA is the area where the National Flood Insurance Program's (NFIP's) floodplain management

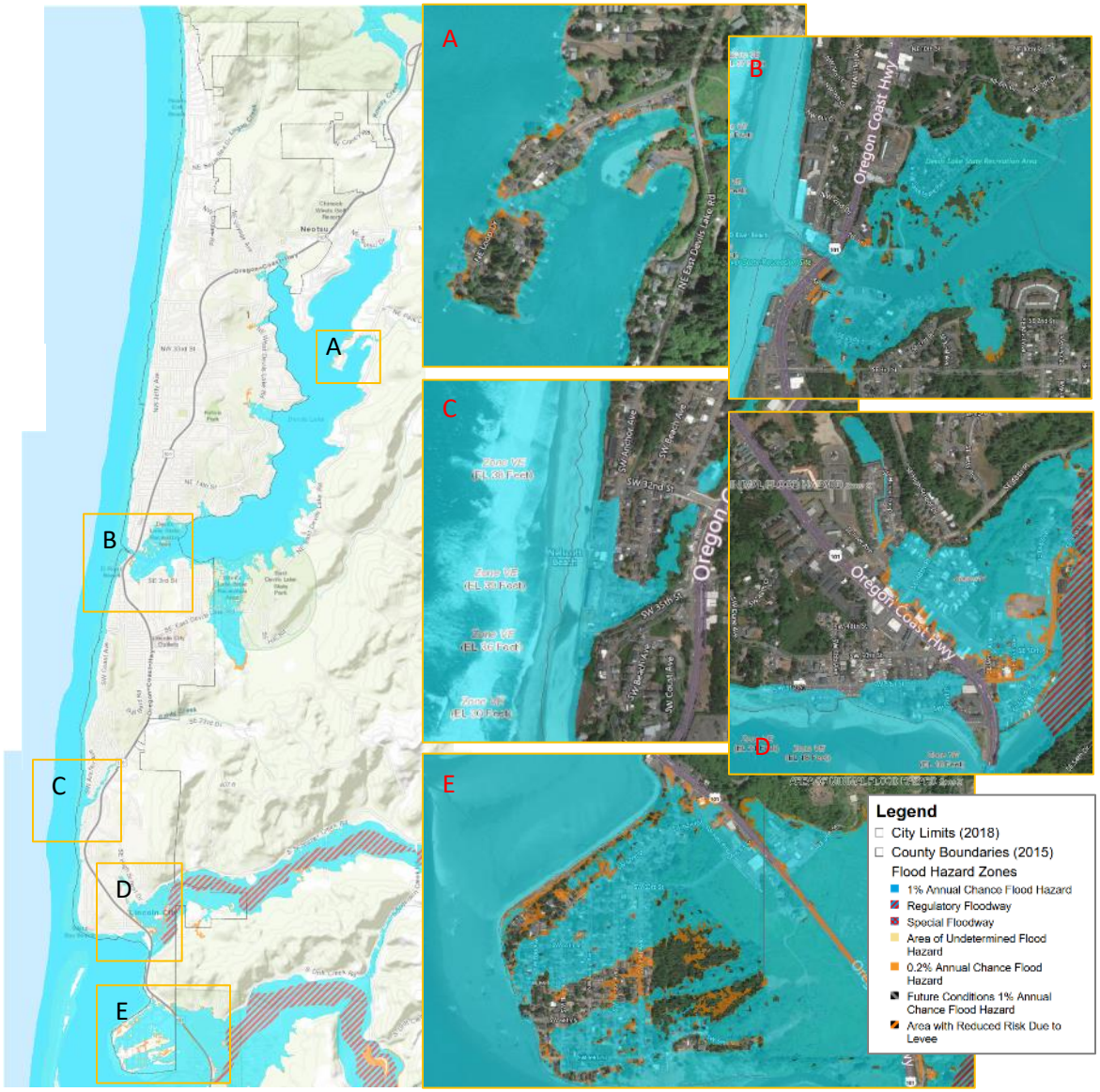
[22] DOGAMI, Open-File Report O-20-03. Section 8.3.5.

regulations must be enforced and the area where the mandatory purchase of flood insurance applies. Flood Insurance Rate Maps (FIRMs) prepared by FEMA provide the most readily available source of information for 100-year floods (Figure LA-12). These maps are used to support the NFIP. FIRMs delineate 100- and 500-year (a flood with a 0.2-percent probability of occurring within any given year) floodplain boundaries for identified flood hazards. These maps represent a snapshot in time, and do not account for later changes which occurred in the floodplains. According to Oregon Explorer about 14% of the City is within the 100-year floodplain (see Figure LA-12). In addition, less than 2% of the City is within the 500-year floodplain.

Future Climate Projection:

According to OCCRI report "*Future Climate Projections: Lincoln County"* (Appendix G) the intensity of extreme precipitation is expected to increase as the atmosphere warms. The magnitude of the wettest days and the wettest consecutive five days is expected to increase by about 13% (range 4% to 28%) by the 2050s under the higher emissions scenario relative to historical baselines. The probability of winter flood risk will increase within coastal rain-dominated watersheds (such as the Siletz River) due to projected greater winter precipitation and warmer winter temperatures that will cause precipitation to fall more as rain than snow. There will also be an increase in atmospheric river events. Additionally, coastal flooding is expected to increase due to sea level rise (SLR) and changing wave dynamics. Sea level is projected to rise by 1.7 to 5.7 feet by 2100. Tidal wetlands and estuaries throughout the county are also expected to experience changes to their composition and area, thereby impacting their ability to naturally mitigate flood events.

Figure LA-12 Flood Hazard Zones (100- and 500-year floodplains)



Source: Oregon Explorer: Map Viewer – To explore and view map detail click hyperlink to left.

Vulnerability Assessment

A floodplain vulnerability assessment combines the floodplain boundary, generated through hazard identification, with an inventory of the property within the floodplain. Understanding the population and property exposed to natural hazards will assist in reducing risk and preventing loss from future events.

Natural Hazard Risk Report for Lincoln County

The **Risk Report** (DOGAMI, O-20-11) provides hazard analysis summary tables that identify populations and property within Lincoln County that are vulnerable to flood. The Risk Report provides a distinct profile for Lincoln City.

The Risk Report provides a flood analysis for four flood scenarios (10-, 50-, 100-, and 500-year). The 100-year flood scenario is used for reporting since it is commonly used as a reference level for flooding and is the standard FEMA uses for regulatory purposes. In addition to the riverine flood scenarios coastal flooding information is available for the 100-year flood scenario for the city. The Risk Report only analyzed buildings within a flood zone, or within 500 feet of a flood zone. First-floor building height and presence of basements was also considered. Buildings with a first-floor height above the flood level were not included in the flood loss estimate, however, their assumed building occupants (residents) were counted as potentially displaced. According to the Risk Report the following resident population and property (public and private) within Lincoln City may be impacted by the profiled flood scenario (Table LA-9).

Just over six percent (6%) of the City's population (505 people) may be displaced by flooding. These people are expected to have mobility or access issues due to surrounding water. About four percent (4%) of the City's buildings (249 buildings) are exposed to the flood hazard and may be damaged. The loss estimate for exposed buildings is $3.6 million (less than one percent of total building value).

Table LA-9 Potentially Displaced Residents and Exposed Buildings, Flood

Community Overview: Lincoln City						
Population		Buildings		Critical Facilities	Total Building Value ($)	
7,930		6,687		11	1,086,802,000	
Exposure Analysis: Flood (1% Annual Chance)						
Potentially Displaced Residents		Damaged Buildings			Exposed Building Value	
Number	Percent	Number	Percent	Critical Facilities	Loss Estimate ($)	Loss Ratio
505	6.4%	249	3.7%	0	3,648,000	0.3%

Source: IPRE. Data adapted from DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020). Table A-16. Note: City population based on the 2010 Census population..

Critical Facility Vulnerability[23]

There are no critical facilities exposed to the profiled flood scenario.

National Flood Insurance Program (NFIP)

FEMA's Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRMs) are effective as of October 10, 2019. Table LA-10 shows that as of August 2019, the City has 730 National Flood Insurance Program (NFIP) policies in force, representing almost $139.6 million in coverage. Of those, 437 are for properties that were constructed before the initial FIRMs. The last Community Assistance Visit (CAV) for the City was April 16, 2004. The table shows that most flood insurance policies are for residential structures, primarily single-family homes. Flood insurance covers only the improved land, or the actual building structure.

[23] DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020), Table A-17.

There have been 44 paid flood insurance claims for a combined total of just over $1.2 million.

The City complies with the NFIP through enforcement of their flood damage prevention ordinance and their floodplain management program.

The NFIP's Community Rating System (CRS) recognizes jurisdictions for participating in floodplain management practices that exceed NFIP minimum requirements. As of 2019 the City did not participate in the CRS and, therefore, does not receive discounted flood insurance premiums for residents in a special flood hazard zone. However, the City is currently taking steps to participate and is working towards achieving a Class 4 or 5 rating.

Table LA-10 Flood Insurance Detail

	Lincoln County	Lincoln City
Effective FIRM and FIS	10/18/2019	10/18/2019
InitialFIRM Date	-	4/17/1978
Total Policies	2,325	730
Pre-FIRM Policies	1,067	437
Policies by Building Type		
Single Family	1,685	306
2 to 4 Family	57	19
Other Residential	462	375
Non-Residential	121	30
Minus Rated A Zone	98	23
Minus Rated V Zone	3	1
Insurance in Force	$585,856,500	$139,598,200
Total Paid Claims	343	44
Pre-FIRM Claims Paid	265	37
Substantial Damage Claims	53	2
Total Paid Amount	$5,479,221	$1,257,285
Repetitive Loss Structures	64	6
Severe Repetitive Loss Properties	12	0
CRS Class Rating	NP	NP^
Last Community Assistance Visit	-	4/16/2004

Source: Department of Land Conservation and Development, August 2019. Repetitive Flood Loss information provided by FEMA correspondence on September 10, 2020. NP = Not Participating
^ - The City is currently taking steps to participate and is working towards achieving a Class 4 or 5 rating

Repetitive Loss Properties

The Community Repetitive Loss record for Lincoln City identifies six (6) Repetitive Loss Properties[24], of which two (2) are Severe Repetitive Loss Properties[25]. Five (5) of the

[24] A Repetitive Loss (RL) property is any insurable building for which two or more claims of more than $1,000 were paid by the National Flood Insurance Program (NFIP) within any rolling ten-year period, since 1978. A RL property may or may not be currently insured by the NFIP.

repetitive loss properties are single-family residential (one is a severe repetitive loss property) and one is non-residential. Two (2) repetitive loss properties have been mitigated.

Landslide

The steering committee determined that the city's probability for landslide is **high,** meaning at least one incident is likely within the next 35-year period, and that their vulnerability to landslide is **high**, meaning that more than 10% of the City's population or property could be affected by a major landslide event. *These ratings have not changed since the previous NHMP.*

Volume I, Section 2 of Lincoln County's NHMP adequately describes the causes and characteristics of landslide hazards, as well as the history, location, extent, and probability of a potential event.

The severity or extent of landslides is typically a function of geology and the landslide triggering mechanism. Rainfall initiated landslides tend to be smaller and earthquake induced landslides may be very large. Even small slides can cause property damage, result in injuries or take lives. Landslide susceptibility exposure for Lincoln City is shown in Figure LA-13. Approximately 53% of the City has very high or high, and 21% moderate, landslide susceptibility exposure.[26] In general, the areas of greater risk are located adjacent to rivers and creeks and indicate potential areas of erosion. *Note that even if a City has a high percentage of area in a high or very high landslide exposure susceptibility zone, this does not mean there is a high risk, because risk is the intersection of hazard and assets.*

Future Climate Projection:

According to OCCRI report "*Future Climate Projections: Lincoln County"* (Appendix G) the intensity of extreme precipitation is expected to increase as the atmosphere warms. The magnitude of the wettest days and the wettest consecutive five days is expected to increase by about 13% (range 4% to 28%) by the 2050s under the higher emissions scenario relative to historical baselines. Landslide risk is not expected to change significantly.

Vulnerability Assessment

Development pressure on steep slopes is an issue that Lincoln City is facing. Also, the road to the city's wastewater treatment plant has occasional slides (last slide was in 1999, the existing Wastewater Master Plan has an action identified for this vulnerability).

Potential landslide-related impacts are adequately described within the county's plan, and include infrastructure damages, economic impacts (due to isolation and/or arterial road closures), property damages, and obstruction to evacuation routes. Rain-induced landslides and debris flows can potentially occur during any winter in Lincoln County, and

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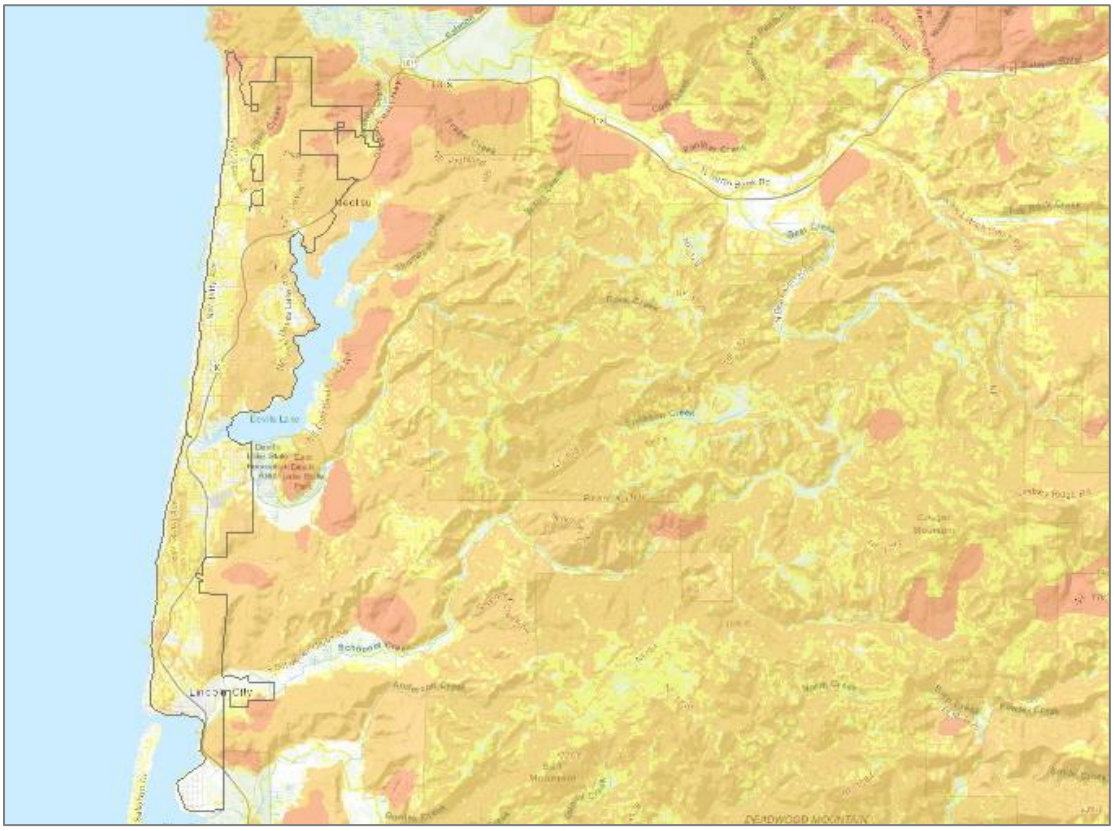
[25] A Severe Repetitive Loss (SRL) property is a single family property (consisting of 1 to 4 residences) that is covered under flood insurance by the NFIP, and has incurred flood-related damage for which 4 or more separate claims payments have been paid under flood insurance coverage, with the amount of each claim payment exceeding $5,000, and with cumulative amount of such claims payments exceeding $20,000; or for which at least 2 separate claims payments have been made with the cumulative amount of such claims exceeding the reported value of the property.

[26] DOGAMI. Open-File Report, O-16-02, *Landslide Susceptibility Overview Map of Oregon* (2016)

thoroughfares beyond city limits are susceptible to obstruction as well. As such, Lincoln City is vulnerable to isolation for an extended period.

Figure LA-13 Landslide Susceptibility Exposure



Source: Oregon Explorer: Map Viewer – To explore and view map detail click hyperlink to left.

Natural Hazard Risk Report for Lincoln County

The **Risk Report** (DOGAMI, O-20-11) provides hazard analysis summary tables that identify populations and property within Lincoln County that are vulnerable to landslide. The Risk Report provides a distinct profile for Lincoln City.

The Risk Report provides an analysis of landslide susceptibility to identify the general level of susceptibility to landslide hazards, primarily shallow and deep landslides. The Risk Report performed an analysis of buildings, including critical facilities, to determine exposure for the City. According to the Risk Report the following resident population and property (public

and private) within the city may be impacted by the profiled landslide scenario (Table LA-11).

Approximately 35% of the City's population (2,758 people) may be displaced by landslides. These people are expected to have mobility or access issues and/or may have their residences impacted by a landslide. It is important to note that impact from landslides may vary depending on the specific area that experiences landslides during an event. Properties that are most vulnerable to the landslide hazard are those that are developed in an area of, or at the base of, moderate to steep slopes. Approximately 33% of all buildings (2,180 buildings) within the City are exposed to the High or Very High landslide susceptibility zones (see Figure LA-13). The value of exposed buildings is just over $343 million (about 32% of total building value).

Table LA-11 Potentially Displaced Residents and Exposed Buildings, Landslide

Community Overview: Lincoln City						
Population		Buildings		Critical Facilities	Total Building Value ($)	
7,930		6,687		11	1,086,802,000	
Exposure Analysis: Landslide High & Very High Susceptibility						
Potentially Displaced		Exposed Buildings			Exposed Building	
Number	Percent	Number	Percent	Critical Facilities	Value ($)	Percent
2758	34.8%	2180	32.6%	3	343,400,000	31.6%

Source: IPRE. Data adapted from DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020). Table A-16. Note: City population based on the 2010 Census population.

Critical Facility Vulnerability[27]

- Lincoln City Police Department (new building built in 2020)
- North Lincoln Fire Station 1400 (new building built in 2020)
- Oceanlake Elementary School

Severe Weather

Severe wind events may occur throughout Oregon during all seasons. Often originating in the Pacific Ocean, westerly winds pummel the coast, slowing as they cross the Coastal mountain range and head into the inland valleys.[28] Similarly, severe winter storms consisting of rain, freezing rain, ice, snow, cold temperatures, and wind originate from troughs of low pressure offshore in the Gulf of Alaska or in the central Pacific Ocean that ride along the jet stream during fall, winter, and early spring months. [29] In summer, the most common wind directions are from the west or northwest; in winter, they are from the south and east. Local topography, however, plays a major role in affecting wind direction.

[27] DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020), Table A-17.

28 US Department of Agriculture. http://www.fsa.usda.gov/or/Notice/Flp104.pdf.

[29] Interagency Hazard Mitigation Team. 2000. State Hazard Mitigation Plan. Salem, OR: Oregon Office of Emergency Management.

Future Climate Projections

Oregon and the Pacific Northwest experience a variety of extreme weather incidents ranging from severe winter storms and floods to drought and dust storms, often resulting in morbidity and mortality among people living in the impacted regions. According to the Oregon Climate Change Research Institute, climate change is expected to increase the frequency and intensity of some weather incidents.[30]

Climate change poses risks for increased injuries, illnesses and deaths from both direct and indirect effects. Incidents of extreme weather (such as floods, droughts, severe storms, heat waves and fires) can directly affect human health as well as cause serious environmental and economic impacts. Indirect impacts can occur when climate change alters or disrupts natural systems.

According to OCCRI report "*Future Climate Projections: Lincoln County"* (Appendix G) windstorm events are not expected to increase, however, air temperatures on the coldest day of the year will increase by about 5°F by the 2050s under the higher emissions scenario relative to historical baselines.

Windstorm

The steering committee determined that the city's probability for windstorm is **high** (the probability of tornado is also high), meaning at least one severe incident is likely within the next 35-year period, and that their vulnerability to windstorm is **high**, meaning that more than 10% of the City's population or property could be affected by a major windstorm event. The Steering Committee rated the County as having a **"low" vulnerability to a tornado hazard**, meaning that less than 1% of the City's population or property could be affected by a major tornado event. *The windstorm ratings have not changed since the previous NHMP. The tornado ratings are new with this version of the NHMP.*

Volume I, Section 2 of Lincoln County's NHMP adequately describes the causes and characteristics of windstorm hazards, as well as the history, location, extent, and probability of a potential event. Because coastal windstorms typically occur during winter months, ice, freezing rain, flooding, and very rarely, snow sometimes accompany them. More than likely, however, the coast's winter will just be windy, cold, and wet.

Vulnerability Assessment

Due to insufficient data and resources, Lincoln City is currently unable to perform a quantitative risk assessment, or exposure analysis, for this hazard. In Lincoln City, power outages are the greatest concern during windstorms. Building codes require new developments to place power lines below ground; currently, however, new construction only accounts for about 5% of the city's total development. Without power, communication is lost, and fuel and food stores shut down. In the December 2007 windstorm, the water treatment plant nearly used up its diesel supply, and the city lost its primary communications route (provided through Telecommunication Utility-owned Fiber Optic routes). Lincoln City patrons were additionally unable to access 911.

[30] Oregon Climate Change Research Institute http://occri.net/wp-content/uploads/2011/04/chapter9ocar.pdf Page 412.

Winter Storm (Snow/ Ice)

The steering committee determined that the city's probability for winter storm is **high**, meaning at least one severe incident is likely within the next 35-year period, and that their vulnerability to winter storm is **moderate**, meaning that between 1% and 10% of the city's population or property could be affected by a major winter storm event. *These ratings have not changed since the previous NHMP.*

Volume I, Section 2 of Lincoln County's NHMP adequately describes the causes and characteristics of winter storm hazards, as well as the history, location, extent, and probability of a potential event. Severe winter storms can consist of rain, freezing rain, ice, snow, cold temperatures, and wind. They originate from troughs of low pressure offshore that ride along the jet stream during fall, winter, and early spring months. Severe winter storms affecting the city typically originate in the Gulf of Alaska or in the central Pacific Ocean. These storms are most common from October through March. More than likely, however, the coast's winter will just be windy, cold, and wet.

Vulnerability Assessment

Due to insufficient data and resources, Lincoln City is currently unable to perform a quantitative risk assessment, or exposure analysis, for this hazard. Major winter storms can and have occurred in the Lincoln City area, and while they typically do not cause significant damage; they are frequent and have the potential to impact economic activity. Road closures on Highway 101, or the passes to the Willamette Valley (Hwy 18 and 20), due to winter weather are an uncommon occurrence, but can interrupt commuter and large truck traffic.

Volcanic Event

The steering committee determined that the city's probability for volcanic event is **low**, meaning one incident is likely within the next 75 to 100-year period, and that their vulnerability to volcanic event is **low**, meaning that less than 1% of the city's population or property would be affected by a major volcanic event (ash/lahar). *These ratings have not changed since the previous NHMP.*

Volume I, Section 2 of Lincoln County's NHMP adequately describes the causes and characteristics of volcanic event hazards, as well as the history, location, extent, and probability of a potential event. Generally, an event that affects the county is likely to affect Lincoln City as well.

Vulnerability Assessment

Due to insufficient data and resources, Lincoln City is currently unable to perform a quantitative risk assessment, or exposure analysis, for this hazard. Lincoln City is very unlikely to experience anything more than volcanic ash during a volcanic event. When Mt. Saint Helens erupted in 1980, the city received small amounts of ashfall, but not enough to cause significant health and/or economic damages.

Wildfire

The steering committee determined that the city's probability for wildfire is **moderate**, meaning one incident is likely within the next 35 to 75-year period, and that their vulnerability to wildfire is **moderate**, meaning that between 1% and 10% of the City's population or property could be affected by a major wildfire event. *These ratings have not changed since the previous NHMP.*

The Lincoln County Community Wildfire Protection Plan (CWPP) was completed in 2010 and revised in 2018. CWPP is hereby incorporated into this NHMP addendum by reference, and it will serve to supplement the wildfire section in this addendum.

Volume I, Section 2 of Lincoln County's NHMP adequately describes the causes and characteristics of wildfire hazards, as well as the history, location, extent, and probability of a potential event. The location and extent of a wildfire vary depending on fuel, topography, and weather conditions. Wildfires in 1849 and 1936 were particularly devastating in Lincoln County, but since then, there have been few large events. In 2020, the Echo Mountain Fire Complex burned more than 2,500 acres northeast of the city and impacted hundreds of homes in the Otis, Rose Lodge, Panther Creek area. As shown in Figure LA-14 the City has mostly low, with some moderate, overall wildfire risk. Areas of concern include the eastern side of the city (where forestland borders development), and some of the open spaces within the city's limits. Due to the prevailing wind patterns (i.e., from the north or south), the city's steering committee felt that the east and south ends of the city might be the most vulnerable. Power, natural gas, and phone lines run through the forest to the east of the city and would be affected in the event of a wildfire. Likewise, active commercial logging occurs just outside the city, and slash burns are a potential wildfire concern.

Future Climate Projection:

According to OCCRI report "*Future Climate Projections: Lincoln County"* (Appendix G) wildfire risk is expected to increase as the frequency of higher fire danger days per year increases by 37% by the 2050s under the higher emissions scenario compared with the historical baseline.

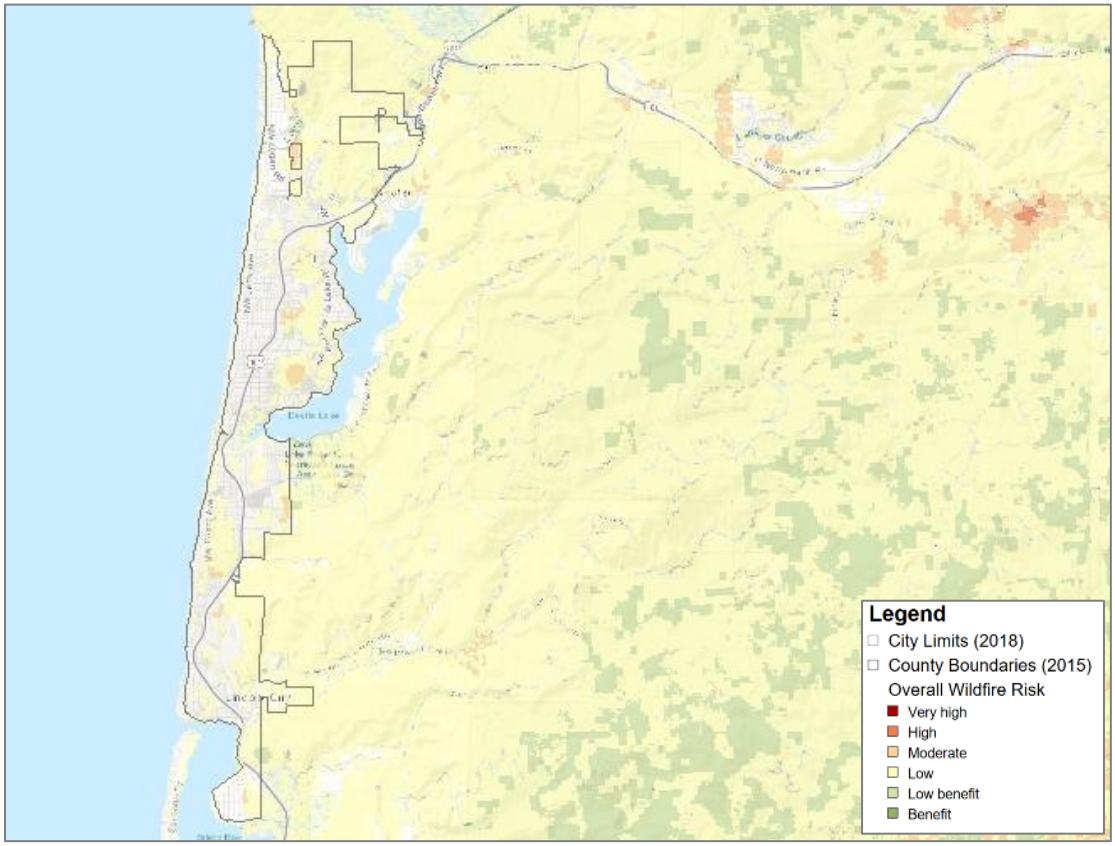
Vulnerability Assessment

Overall, the city, and its watershed, has low to moderate overall wildfire risk, however, the forested areas have the potential for large wildfires and a wildfire within the watershed could impact the city's water supply and quality.

Property can be damaged or destroyed with one fire as structures, vegetation, and other flammables easily merge to become unpredictable, and hard to manage. Other factors that affect ability to effectively respond to a wildfire include access to the location, and to water, response time from the fire station, availability of personnel, and equipment, and weather (e.g., heat, low humidity, high winds, and drought).

Exposed infrastructure including wastewater main lines, major water lines, natural gas pipeline and fiber optic lines are buried, decreasing their vulnerability to damage from wildfire hazards. However, wildfire conditions could potentially limit or delay access for the purposes of operation or repair.

Figure LA-14 Overall Wildfire Risk



Source: Oregon Explorer: Map Viewer – To explore and view map detail click hyperlink to left.

Natural Hazard Risk Report for Lincoln County

The **Risk Report** (DOGAMI, O-20-11) provides hazard analysis summary tables that identify populations and property within Lincoln County that are vulnerable to landslide. The Risk Report provides a distinct profile for Lincoln City.

The Risk Report provides an analysis of the West Wide Wildfire Risk Assessment's Fire Risk Index (FRI) High Hazard category to identify the general level of susceptibility to the wildfire hazard. The Risk Report performed an analysis of buildings, including critical facilities, to determine exposure for the City. According to the Risk Report the following resident population and property (public and private) within the City may be impacted by the profiled wildfire scenario (Table LA-12).

Approximately one percent of the City's population (89 people) may be displaced by wildfires. These people are expected to have mobility or access issues and/or may have their residences impacted by a wildfire (more people may also be impacted by smoke and traffic disruptions that are not accounted for within this analysis). It is important to note that impact from wildfires may vary depending on the specific area that experiences a wildfire. The value of exposed buildings (75 buildings) is just over $8 million (less than one percent of total building value).

Table LA-12 Potentially Displaced Residents and Exposed Buildings, Wildfire

Community Overview: Lincoln City						
Population		Buildings		Critical Facilities	Total Building Value ($)	
7,930		6,687		11	1,086,802,000	
Exposure Analysis: Wildfire High-Hazard						
Potentially Displaced		Exposed Buildings			Exposed Building	
Number	Percent	Number	Percent	Critical Facilities	Value ($)	Percent
89	1.1%	75	1.1%	1	8,049,000	0.7%

Source: IPRE. Data adapted from DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020). Table A-16. Note: City population based on the 2010 Census population.

Critical Facility Vulnerability[31]

- Samaritan North Lincoln Hospital (new building built in 2020)

[31] DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020), Table A-17.

ATTACHMENT A: ACTION ITEM FORMS

Table LA-1 and Table LA-13 provide a summary list of actions for the city. Each high priority action item has a corresponding action item worksheet describing the activity, identifying the rationale for the project, identifying potential ideas for implementation, and assigning coordinating and partner organizations. The action item worksheets can assist the community in pre-packaging potential projects for grant funding. The worksheet components are described below.

Table LA-13 Action Item Timelines, Status, High Priority and Related Hazards

Action Item	Priority	Timeline	Status	Related Hazard									
				Coastal Erosion	Drought	Earthquake	Flood	Landslide	Tsunami	Volcano	Wildfire	Windstorm	Winter Storm
Lincoln City #1	X	Medium	Ongoing						X				
Lincoln City #2	X	Long	Ongoing		X								
Lincoln City #3		Long	Ongoing			X			X				
Lincoln City #4		Ongoing	Ongoing			X			X				
Lincoln City #5	X	Long	Ongoing			X							
Lincoln City #6		Ongoing	Ongoing				X						
Lincoln City #7	X	Short	Ongoing				X						
Lincoln City #8		Long	Ongoing				X						
Lincoln City #9		Ongoing	Ongoing				X						
Lincoln City #10		Ongoing	Ongoing				X						
Lincoln City #11		Short	Ongoing	X				X					
Lincoln City #12	X	Ongoing	Ongoing	X	X	X	X	X	X	X	X	X	X
Lincoln City #13	X	Medium	Deferred	X	X	X	X	X	X	X	X	X	X

Previous NHMP Actions Completed:

Lincoln City #1 (2015): "Relocate Police Station out of tsunami inundation zone and establish a police communications system safe from disasters." is considered complete. The Police Station was relocated, and a new building constructed outside the tsunami inundation zone (2020).

Lincoln City #15 (2015): "Acquire generators for service stations" is considered complete since three key facilities are retrofitted with transfer switches.

Lincoln City #19 (2015): "Add debris removal and emergency response strategies to the Lincoln City Storm Water Management Plan" was removed since the activity is considered complete since the City is working with the county on a debris management plan and normal response strategies are all part of the City's emergency operations plan.

Lincoln City #21 (2015): "Relocate school buses to a site outside of the tsunami inundation zone" is considered complete since the school buses and barn have been relocated to an area outside the tsunami inundation zone (see School District addendum for more detail).

Previous NHMP Actions Removed/Deleted:

Lincoln City #10 (2015): "Implement actions identified in the Devils Lake Water Improvement District's Lake Management Plan." was removed since the City does not believe this action needs to be accomplished through the NHMP.

Lincoln City #11 (2015): "Construct a bridge on east Devils Lake Road where flooding typically occurs" was removed since the road/bridge is not under City jurisdiction and the activity is accomplished through County NHMP actions.

Lincoln City #16 (2015): Encourage emergency-related intergovernmental planning" was removed since this is a normal job duty of the emergency preparedness coordinator and the action does not need to be accomplished through the NHMP.

Lincoln City #17 (2015): "Seek funding to expand tsunami alert systems and to maintain existing tsunami sirens" was removed since the system belongs to North Lincoln Fire & Rescue, not the City.

Lincoln City #18 (2015): "Explore opportunities to limit and/ or restrict slash-burning near city limits" was removed since the activity is not within the jurisdiction of the City and is accomplished through the Community Wildfire Protection Plan and County NHMP actions.

Lincoln City #20 (2015): "Evaluate and implement erosion control mitigation projects for Anchor Court" was removed since the area is no longer considered a concern.

Lincoln City #23 (2015): "Research and develop plans for evacuating / sheltering/ feeding the thousands of tourists that might be in city at time of disaster" was removed since this action duplicates another action (2020 Action: Lincoln City #12).

Note: 2015 Actions were renamed as follows:

2015 Action Item	2020 Action Item
Lincoln City #2	Lincoln City #1
Lincoln City #3	Lincoln City #2
Lincoln City #4	Lincoln City #3
Lincoln City #5	Lincoln City #4
Lincoln City #6	Lincoln City #5
Lincoln City #7	Lincoln City #6
Lincoln City #8	Lincoln City #7
Lincoln City #9	Lincoln City #8
Lincoln City #12	Lincoln City #9
Lincoln City #13	Lincoln City #10
Lincoln City #14	Lincoln City #11
Lincoln City #22	Lincoln City #12
Lincoln City #24	Lincoln City #13

ALIGNMENT WITH EXISTING PLANS/POLICIES

The City NHMP includes a range of action items that, when implemented, will reduce loss from hazard events in the City. Existing programs and other resources that might be used to implement these action items are identified. The City addresses statewide planning goals and legislative requirements through its comprehensive land use plan, capital improvements plan, mandated standards and building codes. To the extent possible, the City will work to incorporate the recommended mitigation action items into existing programs and procedures. Each action item identifies related existing plans and policies.

STATUS/RATIONALE FOR PROPOSED ACTION ITEM

Action items should be fact-based and tied directly to issues or needs identified throughout the planning process. Action items can be developed at any time during the planning process and can come from several sources, including participants in the planning process, noted deficiencies in local capability, or issues identified through the risk assessment. The rationale for proposed action items is based on the information documented in this addendum and within Volume I, Section 2. The worksheet provides information on the activities that have occurred since the previous plan for each action item.

IDEAS FOR IMPLEMENTATION

The ideas for implementation offer a transition from theory to practice and serve as a starting point for this plan. This component of the action item is dynamic, since some ideas may prove to not be feasible, and new ideas may be added during the plan maintenance process. Ideas for implementation include such things as collaboration with relevant organizations, grant programs, tax incentives, human resources, education and outreach, research, and physical manipulation of buildings and infrastructure.

COORDINATING (LEAD) ORGANIZATION:

The coordinating organization is the public agency with the regulatory responsibility to address natural hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring and evaluation.

INTERNAL AND EXTERNAL PARTNERS:

The internal and external partner organizations listed in the Action Item Worksheets are potential partners recommended by the project steering committee but not necessarily contacted during the development of the plan. The coordinating organization should contact the identified partner organizations to see if they are capable of and interested in participation. This initial contact is also to gain a commitment of time and/or resources toward completion of the action items.

Internal partner organizations are departments within the City or other participating jurisdiction that may be able to assist in the implementation of action items by providing relevant resources to the coordinating organization.

External partner organizations can assist the coordinating organization in implementing the action items in various functions and may include local, regional, state, or federal agencies, as well as local and regional public and private sector organizations.

PLAN GOALS ADDRESSED:

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

TIMELINE:

All broad scale action items have been determined to be ongoing, as opposed to short (1 to 4 years), medium (4-10 years), or long (10 or more years). This is because the action items are broad ideas, and although actions may be implemented to address the broad ideas, the efforts should be ongoing.

POTENTIAL FUNDING SOURCE

Where possible potential funding sources have been identified. Example funding sources may include: Federal Hazard Mitigation Assistance programs, state funding sources such as the Oregon Seismic Rehabilitation Grant Program, or local funding sources such as capital improvement or general funds. An action item may include several potential funding sources.

ESTIMATED COST

A rough estimate of the cost for implementing each action item is included. Costs are shown in general categories showing low, medium, or high cost. The estimated cost for each category is outlined below:

Low - Less than $50,000

Medium - $50,000 – $100,000

High - More than $100,000

STATUS

The 2020 status of each action item is indicated: new actions were developed in 2020, ongoing actions are those carried over from the previous plan, and deferred actions are those that are carried over from the previous plan but had limited or no activity.

County level actions that the city is listed as a partner are shown in Table LA-14. These actions are led by the County; however, the City will incorporate elements of the action that are applicable to their jurisdiction.

Table LA-14 County Specified Actions that the City is Partner

Action Item (2015 NHMP)	City Partner	Action Item
MH #1	Yes	Consider Local Energy Assurance Planning for critical areas countywide
MH #2	Yes	Improve technology capacity of communities, agencies and responders needed to adequately map hazard areas, broadcast warnings, inform, and educate residents and visitors of natural hazard dangers
MH #3	Yes	Develop, enhance, and implement strategies for debris management and/or removal after natural hazard events.
MH #4	Yes	Work with coastal communities, citizen groups, property owners, recreation areas, emergency responders, schools and businesses in promoting natural hazard mitigation opportunities.
MH #5		Encourage purchase of hazard insurance for business and homeowners by forming partnerships with the insurance and real estate industries.
MH #6	Yes	Integrate the NHMP into County and City comprehensive plans.
MH #7	Yes	Prepare long-term catastrophic recovery plan
MH #8		Review recommended mitigation strategies identified in DOGAMI reports (including O-19-06, O-20-03, O-20-11) and make recommendations to BOC for consideration as long-term mitigation strategies.
CE #1		Improve knowledge of effects of climate change and understanding of vulnerability and risk to life and property in hazard prone areas.
CE #2	Yes	Evaluate revising existing county coastal hazard area regulations based on the DOGAMI risk zone mapping.
EQ #1	Yes	Integrate new earthquake hazard mapping data for Lincoln County and improve technical analysis of earthquake hazards.
EQ #2	Yes	Identify, inventory, and retrofit critical facilities for seismic and tsunami rehabilitation (consider both structural and non-structural retrofit options).
EQ #3	Yes	Stay apprised of new earthquake and landslide data and perform mitigation of infrastructure where possible to increase resilience of critical transportation links to the valley and along the coast during earthquake events.
TS #1		Relocate county controlled critical/essential facilities and key resources, and encourage the relocation of other critical facilities and key resources that house vulnerable populations (e.g., hospitals, nursing homes, etc.) that are within the tsunami

Action Item (2015 NHMP)	City Partner	Action Item
		inundation zone and likely to be impacted by tsunami.
TS #2	Yes	Implement land use strategies and options to increase community resilience
FL #1		Explore steps needed to qualify Lincoln County for participation in the NFIP Community Rating System (CRS)
FL #2		Update the Lower Siletz Flood Mitigation Action Plan; develop flood mitigation action plan(s) for the lower Alsea and Salmon River, and Drift Creek and other areas.
FL #3		Work with affected property owners to elevate or relocate non-conforming, pre-FIRM structures in flood hazard areas
FL #4	Yes	Continue compliance with the National Flood Insurance Program (NFIP).
LS #1	Yes	Encourage construction, site location and design that can be applied to steep slopes to reduce the potential threat of landslides.
LS #2		Protect existing development in landslide-prone areas.
LS #3	Yes	Collaborate with the Oregon Department of Geology and Mineral Industries to work on landslide risk reduction.
SW #1		Develop and implement programs to keep trees from threatening lives, property, and public infrastructure during severe weather events (windstorms, tornados, and winter storms).
SW #2	Yes	Continue and enhance severe weather (windstorm, tornado, winter storm) resistant construction methods where possible to reduce damage to utilities and critical facilities from windstorms and winter storms (snow/ice). In part, this may be accomplished by encouraging electric utility providers to convert existing overhead lines to underground lines.
WF #1	Yes	Implement actions identified within the Lincoln County Community Wildfire Protection Plan (CWPP) and continue to participate with ongoing maintenance and updates.

Mitigation Action: Lincoln City #1 **(What do we want to do?)**	**Alignment with Plan Goals:**	**High Priority Action Item?**
Acquire a safe haven shelter (and develop with supplies/ facilities) for Cutler City	☒ 1 ☒ 2 ☐ 3 ☐ 4 ☒ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11	☒ Yes

Alignment with Existing Plans/Policies:

It is expected that this project will be included in the new comprehensive planning effort now underway.

Rationale for Proposal (Why is this important?):

Cutler City (located west of Hwy 101 at SW 62nd St on the Siletz Bay) is identified on DOGAMI's tsunami inundation maps as at risk of inundation for distant and local tsunamis. The community is at low elevation (approximately 9-10 feet above sea level) and lacks high ground for an evacuation assembly area; evacuation for the area is east of Hwy 101 at higher ground off of SE 64th Street). At present, there are only rudimentary pathways to the top of the assembly area, which will make it difficult to access in the event of a Cascadia earthquake.

Cutler City has most affordable housing within Lincoln City and also contains many vacation rentals. The area is susceptible to liquefaction and subsidence following an earthquake/ tsunami event. No high areas are located west of Hwy 101 to accommodate existing residents/ tourists.

Ideas for Implementation (How will it get done?):	**Action Status Report**
Investigate the viability of a safe haven shelter east of Hwy 101 utilizing geotechnical analysis and benefit-cost analysis to show that improvements are prudent investment. Install improvements, which may include new sidewalks, pathways, stairs, signage, lighting, and an emergency storage shed.	2020 update: The City placed one emergency cache near Cutler City at the wastewater treatment plant. The City is working with one potential commercial developer to share land in elevated area on the eastern side of highway 101 for additional assembly area and cache site.

Champion/ Responsible Organization:	Emergency Preparedness Coordinator

Internal Partners:	**External Partners:**
Planning and Community Development, Neighborhood Associations, City Planning Commission	DLCD, OEM, FEMA, DOGAMI

Potential Funding Sources:	**Estimated cost:**	**Timeline:**
Local Funding Resources, FEMA PDM, HMGP	Medium	☐ Ongoing ☒ Short Term (1-4 years) ☐ Medium Term (4-10 years) ☐ Long-Term (10+ years)

Form Submitted by:	NHMP Steering Committee, revised 2020 (Emergency Preparedness Coordinator)
Action Item Status:	Ongoing

Mitigation Action: Lincoln City #2 **(What do we want to do?)**	**Alignment with Plan Goals:**	**High Priority Action Item?**
Seek funding, and develop, water storage capabilities and enhance resiliency of water storage, treatment and distribution systems.	☒ 1 ☒ 2 ☒ 3 ☒ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11	☒ Yes

Alignment with Existing Plans/Policies:

Water System Master Plan

Rationale for Proposal (Why is this important?):

Schooner Creek is the City's only water source, and the City's reservoirs store enough water for only one day of use. In the event that climate patterns change and drought becomes a probable hazard, Lincoln City would be extremely vulnerable to drought conditions. Furthermore, Schooner Creek is a direct-flow water source and contamination is a potential threat to the water supply.

The water system serves 4300 residential and 650 commercial customers. As a tourist community, the population swells from a normal daily average of 13,500 to 23,000 on any given Friday evening. Only the amount of water necessary to satisfy the demand of the users is processed.

The City has 3 reservoirs, which store a total of 7.25 million gallons. The water is mostly stored for emergency fire protection, but extra capacity additionally helps to ease peak demands and maintain constant pressure within the system.

In addition to meeting customer demand, Schooner Creek must additionally maintain a sufficient flow for fisheries and recreational uses.

Survey existing systems, identify gaps and develop strategy for water system resiliency

Design and implement water resiliency education plan for residents and businesses

Ideas for Implementation (How will it get done?):	**Action Status Report**
Obtain funding to construct additional reservoirs for emergency drought-related storage. Research ways to reduce drought risk within the City. (This may potentially result in non-storage projects) Survey existing systems, identify gaps and develop strategy for water system resiliency Design and implement water resiliency education plan for residents and businesses	2020 update: Three water storage tanks have been purchased and placed in the city. This action has given the city 7.2 million gallons of water storage. City public works has completed updating numerous water lines and fixing leaks. City public works has completed XXX% of a loop water system which provides redundancy for the city. 2015 update: Upgraded storage capacity of Port Ave reservoir to 4.25 million gallon to assist with emergency water outages. Concentrated effort on finding and fixing leaks has resulted in cutting water loss in half. The city has repaired water line from Schooner Creek (main water source). Has a 24" line in Schooner Creek partially exposed due to last slide. Road slide

	on SE 48th near 51st involves water and sewer lines. Drift Creek is the emergency backup water source in drought conditions.		
Champion/ Responsible Organization:	Public Works		
Internal Partners:		**External Partners:**	
City Manager, Finance		USDA, USGS, Western States Water Council	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
Local Funding Resources		High	☐ Ongoing ☐ Short Term (1-4 years) ☐ Medium Term (4-10 years) ☒ Long-Term (10+ years)
Form Submitted by:	NHMP Steering Committee, revised 2020 (Public Works Director)		
Action Item Status:	Ongoing		

Mitigation Action: Lincoln City #3 **(What do we want to do?)**	**Alignment with Plan Goals:**	**High Priority Action Item?**
Identify over-water transportation alternatives in the event that bridges collapse in an earthquake and/ or tsunami.	☒ 1 ☒ 2 ☒ 3 ☐ 4 ☒ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11	☐ Yes

Alignment with Existing Plans/Policies:

Emergency transportation and disaster recovery plans to be built into transportation master plan

Rationale for Proposal (Why is this important?):

In the event of a Cascadia Subduction Zone (CSZ) earthquake and/or tsunami, the City expects to lose the bridges over D River, and by 22nd St. The southern portion of the City will be separated from the hospital. Region-wide, portions of the coast may be isolated due to bridge failure.

Tsunami destruction can come from both the tsunami wave and from the rapid retreat of the water from the coastline. Tsunami waves tend to be fast moving, rising surges of water.

The average recurrence interval for a CSZ event is between 500 and 600 years. There have been seven CSZ events in the last 3500 years with time between individual events varying from 150 to 1000 years. The last CSZ event occurred approximately 315 years ago.

Restoration of key infrastructure is essential after a natural disaster "to support the industry and the jobs it provided." To sustain the economy, communities should "provide for temporary infrastructure while long-term rebuilding efforts are underway." Source: Governor's Commission Report on Recovery, Rebuilding, and Renewal. After Katrina: Building Back Better than Ever. December 31, 2005. p. 112.

Ideas for Implementation (How will it get done?):	**Action Status Report**
Build boat launches in strategic locations to serve as bridge replacements after an earthquake and tsunami. ($50K) Obtain emergency equipment in preparation for an earthquake and/or tsunami event. Consider fillable sandbags. ($10-$20K) Explore with ODOT to contribute to these disaster recovery solutions	2020 Update: Developed more alternatives, purchasing flat cars is not the most effective method for solving this issue. They are expensive, hard to move, and would potentially rust out and be of no value. Currently ODOT is completing rebuilds on the D River bridge and Schooner Creek Bridge. 2015 Update: Railroad sections/flatcars considered but abandoned due to difficulty in storage and transport, and probable destruction due to rust Considering fillable sandbags, but need funds to purchase; Primary obstacle to implementing sand bag option is budgetary, estimates ranging from $10-20K. Specify equipment necessary to fill and move sand bags. For time being, assumption is that bridges could be bypassed by emergency vehicles on the beach. After a tsunami/earthquake which vehicles will likely be able to use beach.

Champion/ Responsible Organization:	Public Works		
Internal Partners:		**External Partners:**	
City Manager, Finance, Emergency Preparedness Coordinator, Community Development and Planning,		ODOT, Department of Homeland Security, NOAA	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
Local Funding Resources		Medium	☐ Ongoing ☐ Short Term (1-4 years) ☐ Medium Term (4-10 years) ☒ Long-Term (10+ years)
Form Submitted by:	NHMP Steering Committee, revised 2020 (Emergency Preparedness Coordinator)		
Action Item Status:	Ongoing		

Mitigation Action: Lincoln City #4 **(What do we want to do?)**	**Alignment with Plan Goals:**	**High Priority Action Item?**
Continue to educate citizens about earthquake and tsunami preparedness.	☒ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☒ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11	☐ Yes

Alignment with Existing Plans/Policies:

Hazard mitigation and preparedness should be included in discussions/presentations of all master plans and items incorporated as appropriate

Include issues such as water resiliency as discussed in Lincoln City #3

Rationale for Proposal (Why is this important?):

Lincoln City has engaged in numerous education & outreach activities related to earthquake and tsunami preparedness. The City recognizes the importance of an ongoing education & outreach program that's specifically related to these two hazards.

Public education and outreach can be inexpensive and provide information that results in safer households, workplaces and other public areas. Some outreach materials include: informational brochures about community seismic risks and mitigation techniques, public forums, newspaper articles, training classes and television advertisements. Source: Oregon Technical Resource Guide. July 2000. Community Planning Workshop. Eugene, OR: University of Oregon. p. 8-20.

Ideas for Implementation (How will it get done?):	**Action Status Report**
Continue to encourage hotels to post tsunami evacuation maps within individual rooms. Explore the possibility of requiring hotels to post evacuation maps. Develop messaging to account for language diversity of residents and tourists. Evaluate if there is enough signage on both sides of the D River Beach Wayside river outlet to help guide the public toward high ground. Acquire funding to support a permanent tsunami preparedness coordinator position within the City. Continue to update and improve the City's emergency preparedness website Conduct awareness campaigns to encourage home and business owners to perform seismic retrofits. Our findings indicate that seismic upgrades can significantly reduce losses to buildings. Pursue adoption of 30 days / 30 ways program; beach evacuation race; geocaching	<u>2020 Update:</u> March 2018, earthquake-tsunami brief Lincoln City, September 2018, readiness fair in Lincoln City, February -April 2019, all hazards brief to Lincoln City employees, May 2019 briefing to Roads End Neighborhood association, June 2019, briefing to Indian Shores HOA, June 2019 Wildfire presentations in Lincoln City. June 2019 briefing to Lincoln City Rotary, July 2019 briefing to Lincoln City Kiwanis, September 2019 briefing to Nelscott Neighborhood association, September 2019 briefing to Lincoln City Chamber of Commerce <u>2015 Update:</u> Cutler City evacuation drill completed 7/9/12 DOGAMI presentation to planning commission NW Natural Get Ready fairs annually 2012-2014 Lincoln City participation in Great Oregon Shake-out DOGAMI seminars and discussions with release of new tsunami inundation maps in 2013 Emergency Preparedness Coordinator hired in 2013; AmeriCorps Outreach Coordinator as of 9/14 New signage including 15 Assembly Area, evacuation

		signs, five beach signage in 2013 Adoption of Everbridge as a public notification tool in the county and city Adoption of QR codes and updates to city web sites to add links to relevant information Produced new tsunami posters in 2014 with Spanish and English	
Champion/ Responsible Organization:	Emergency Preparedness Coordinator		
Internal Partners:		**External Partners:**	
All city departments, CERT, GIS		Chamber of Commerce, neighborhood associations, Red Cross, North Lincoln Fire & Rescue, Tsunami Advisory Committee (TAC), DOGAMI, OEM (Hospitality Industry Awareness and Preparedness program)	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
Local Funding Resources		Low	☒ Ongoing ☐ Short Term (1-4 years) ☐ Medium Term (4-10 years) ☐ Long-Term (10+ years)
Form Submitted by:	NHMP Steering Committee, revised 2020 (Emergency Preparedness Coordinator)		
Action Item Status:	Ongoing		

Mitigation Action: Lincoln City #5 **(What do we want to do?)**	**Alignment with Plan Goals:**	**High Priority Action Item?**
Seismically retrofit vulnerable facilities and infrastructure to increase their resiliency to seismic hazards. Consider both structural and non-structural retrofit options.	☒ 1 ☒ 2 ☒ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☒ 9 ☐ 10 ☐ 11	☒ Yes

Alignment with Existing Plans/Policies:

Capital Improvement Programs

Rationale for Proposal (Why is this important?):

"For governments, less damage to government structures will mean continued services and normal processes or at least minimal interruptions. If government structures come through an earthquake with little or no damage, agencies will not have to relocate services, and public officials can respond to the immediate and long-term demands placed on them by the event. In short, seismic rehabilitation as a pre-event mitigation strategy actually will improve post-event response by lessening life loss, injury, damage, and disruption." Source: FEMA. Chapter 1: Why Seismic Rehabilitation?

DOGAMI conducted a seismic needs assessment for public school buildings, acute inpatient care facilities, fire stations, police stations, sheriffs' offices and other law enforcement agency buildings. Buildings were ranked for the "probability of collapse" due to the maximum possible earthquake for any given area. Table LA-4 lists the vulnerable buildings within Lincoln City

In addition to the structures listed in Table LA-6, the City's infrastructure is highly vulnerable to a severe earthquake event. Sewer lines, water lines, power lines, water tanks, reservoirs, cell towers, and City Hall (also houses the Public Library and Career Tech High School) were identified by the Steering Committee as vulnerable assets. The City would expect significant damage to roads and bridges following a Cascadia Subduction Zone event, as well as deaths and severe injuries region wide. See the vulnerable critical facilities listed in the Earthquake section for more information.

School District Priorities are included in their addendum. Below are facilities within Lincoln City that are listed as vulnerable to earthquake in the DOGAMI Risk Report.

- Lincoln City Community Center
- City Hall (also houses the Public Library and Career Tech High School)

Ideas for Implementation (How will it get done?):	**Action Status Report**
Inventory community buildings and infrastructure: determine which structures may be particularly vulnerable to earthquake damage. Seek funding to retrofit and/or re-build structures. Create a local rehabilitation and retrofit program for existing buildings. Rehabilitate identified vulnerable schools, emergency facilities, infrastructure, and public buildings/lifelines. Coordinate activity with plans to replace/upgrade police station in Lincoln City #1	2020 Update: Lincoln City police station constructed new facility, Cache locations identified, placed and stocked for Taft and Oceanlake schools. New hospital built in 2020. 2015 Update: Taft Elementary relocated (new location is in former Taft Middle School, which has a building with moderate collapse potential) Lincoln City Career Tech getting new emergency egress from 4th floor New seismic ready EOC building getting improved infrastructure: data drops, phones, satellite trailers, backup computer systems Backup repeater acquired

		Agreements in place with Toledo and WVCC to act as backup dispatch Taft and Oceanlake schools supply caches installed	
Champion/ Responsible Organization:	Public Works/ School District		
Internal Partners:		**External Partners:**	
Finance, City Manager, Planning and Community Development		Oregon Emergency Management, DOGAMI, IFA, SHPO	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
Seismic Rehabilitation Grants (IFA), Local Funding Resources		High	☐ Ongoing ☐ Short Term (1-4 years) ☐ Medium Term (4-10 years) ☒ Long-Term (10+ years)
Form Submitted by:	NHMP Steering Committee, revised 2020 (Emergency Preparedness Coordinator)		
Action Item Status:	Ongoing		

Mitigation Action: Lincoln City #6 **(What do we want to do?)**	**Alignment with Plan Goals:**	**High Priority Action Item?**
Continue compliance with the National Flood Insurance Program.	☒ 1 ☒ 2 ☒ 3 ☐ 4 ☐ 5 ☐ 6 ☒ 7 ☒ 8 ☐ 9 ☒ 10 ☐ 11	☐ Yes

Alignment with Existing Plans/Policies:
Lincoln City Flood Ordinance, Comprehensive Plan, FEMA Flood Insurance Study, Flood Insurance Rate Maps
Rationale for Proposal (Why is this important?):
The City estimates a high probability that flooding will occur in the future; see Table LA-10 for detail on current NFIP participation and the flood section of the city addendum and Volume I, Section 2 for detail on city risk and vulnerability to the flood hazard. Everyone in a participating community of the National Flood Insurance Program (NFIP) can buy flood insurance. Increasing flood insurance coverage will allow the county to reduce vulnerability and facilitate recovery.

Ideas for Implementation (How will it get done?):	**Action Status Report**
Continue to participate in the NFIP. Explore participation in the National Flood Insurance Program's Community Rating System (CRS). Encourage property owners that are within the XXL tsunami inundation zone to purchase flood insurance that covers tsunami. Continue to educate and reinforce the need for flood insurance.	2020 Update: City updated their flood damage prevention ordinance; including raising the BFE by one-foot, and adding content to "substantial improvement". The city complies with the NFIP. 2015 Update: Completed elevation project for residence on SE 1st Ave, funded by FEMA Severe Repetitive Loss program.

Champion/ Responsible Organization:	Planning and Community Development

Internal Partners:	**External Partners:**	
Finance	FEMA, DLCD	
Potential Funding Sources:	**Estimated cost:**	**Timeline:**
Local Funding Resources	Low	☒ Ongoing ☐ Short Term (1-4 years) ☐ Medium Term (4-10 years) ☐ Long-Term (10+ years)

Form Submitted by:	NHMP Steering Committee, revised 2020 (Emergency Preparedness Coordinator and Planning and Community Development)
Action Item Status:	Ongoing

Mitigation Action: Lincoln City #7 **(What do we want to do?)**	**Alignment with Plan Goals:**	**High Priority Action Item?**
Explore steps needed to qualify Lincoln City for participation in the National Flood Insurance Program's Community Rating System (CRS)	☒ 1 ☒ 2 ☒ 3 ☒ 4 ☐ 5 ☐ 6 ☒ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11	☒ Yes

Alignment with Existing Plans/Policies:

Lincoln City Flood Ordinance, Comprehensive Plan, FEMA Flood Insurance Study, Flood Insurance Rate Maps

Rationale for Proposal (Why is this important?):

The City estimates a high probability that flooding will occur in the future; see Table LA-10 for detail on current NFIP participation and the flood section of the city addendum and Volume II, Hazard Annex, for detail on city risk and vulnerability to the flood hazard.

The Community Rating System (CRS) is operated under the National Flood Insurance Program (NFIP). The NFIP provides flood insurance to homes and businesses located in floodplains at a reasonable cost, and encourages the movement of development away from the floodplain. The program is based upon mapping areas of flood risk, and requiring local implementation to reduce that risk, primarily through restrictions on new development in floodplains. CRS recognizes community efforts that go beyond the minimum standards of the NFIP. This recognition is in the form of reduced flood insurance premiums for communities that adopt such standards. CRS encourages community activities that reduce flood losses, facilitate accurate insurance rating, and promote flood insurance awareness. Source: Oregon Technical Resource Guide. July 2000. Community Planning Workshop. Eugene, OR: University of Oregon. p. 4-34.

For communities with a high risk and high vulnerability to a flood, participating in the CRS can help a community reduce flood risk and save money by earning reduced insurance premiums.

Ideas for Implementation (How will it get done?):	**Action Status Report**
Review CRS participation requirements, and take steps toward reaching the first ranking.	<u>2020 Update</u>: City updated ordinance intended to raise standards to comply with CRS level 4 or 5. Need State and FEMA to do community assistance visit and evaluate Cities improvements and then apply for CRS initially. <u>2015 Update</u>: City evaluating whether to pursue CRS rating and cost effectiveness of program Completed elevation project for residence on SE 1st Ave, funded by FEMA Severe Repetitive Loss program

Champion/ Responsible Organization:	Planning and Community Development

Internal Partners:	**External Partners:**	
City Manager, Finance	FEMA, DLCD, OEM	
Potential Funding Sources:	**Estimated cost:**	**Timeline:**

Local Funding Resources, Floodplain Manager	Low	☐ Ongoing ☒ Short Term (1-4 years) ☐ Medium Term (4-10 years) ☐ Long-Term (10+ years)
Form Submitted by:	NHMP Steering Committee, revised 2020 (Emergency Preparedness Coordinator and Planning and Community Development)	
Action Item Status:	Ongoing	

Mitigation Action: Lincoln City #8 **(What do we want to do?)**	**Alignment with Plan Goals:**	**High Priority Action Item?**
Work with the owners of repetitive flood loss buildings in the city to identify cost effective mitigation strategies including consideration of relocation, elevation, or buy-out.	☒ 1 ☒ 2 ☒ 3 ☒ 4 ☐ 5 ☐ 6 ☒ 7 ☐ 8 ☐ 9 ☒ 10 ☐ 11	☐ Yes

Alignment with Existing Plans/Policies:

Lincoln City Flood Ordinance, Comprehensive Plan, FEMA Flood Insurance Study, Flood Insurance Rate Maps, Storm Water Master Plan (2015), Lincoln County Risk Report, 2015

Rationale for Proposal (Why is this important?):

The City estimates a high probability that flooding will occur in the future; see Table LA-7 for detail on current NFIP participation and the flood section of the city addendum and Volume II, Hazard Annex, for detail on city risk and vulnerability to the flood hazard.

Concentrations of pre-FIRM structures in areas subject to flooding are present in several areas along the County's major rivers. Experience with the floods of the late 1990s showed that properly elevated structures in the flood plain performed well during major flood events, most suffering minimal if any, damage. Especially in areas which may be subject to damage during relatively high frequency flood events, elevating structures in conformance with the County's flood hazard area codes (lowest floor at least one foot above the base flood level) is a cost effective way to reduce risk.

Ideas for Implementation (How will it get done?):	**Action Status Report**
Assess individual properties for possible mitigation measures (elevation, acquisition, relocation) to reduce or prevent future flood losses. Implement mitigation measures (elevation, acquisition, relocation) for properties within the floodplain. Continue to educate and encourage relocation or buy out of properties. Relocate or elevate vulnerable structures above the estimated base flood elevation. In some cases, communities can use FEMA's property acquisition or "buyout" program to remove structures that have repeatedly flooded in the past. https://www.fema.gov/media-library-data/20130726-1507-20490-4551/fema_317.pdf. Evaluate and implement flood mitigation projects for flood prone mobile/ manufactured homes at the mouth of Schooner Creek (Taft Mobile Homes/ 52 St.); large number of low-income population; consider developing a pump station to move flood waters across road	2020 Update: School District has demolished the former Taft Elementary school and relocated the bus barn to an area outside the flood hazard zone (see Lincoln County School District addendum for more information). City has mitigated two properties within the SFHA.

Champion/ Responsible Organization:	Planning and Community Development

Internal Partners:		**External Partners:**	
Building, Public Works		DLCD, OEM, DOGAMI, FEMA	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
Local Funding Resources, FEMA PDM, HMGP, FMA		High	☐ Ongoing ☐ Short Term (1-4 years) ☐ Medium Term (4-10 years) ☒ Long-Term (10+ years)
Form Submitted by:	NHMP Steering Committee, revised 2020 (Emergency Preparedness Coordinator and Planning and Community Development)		
Action Item Status:	Ongoing		

Mitigation Action: Lincoln City #9 **(What do we want to do?)**	**Alignment with Plan Goals:**	**High Priority Action Item?**
Implement actions identified in the Lincoln City Stormwater Management Plan.	☒ 1 ☒ 2 ☒ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☒ 10 ☒ 11	☐ Yes

Alignment with Existing Plans/Policies:

Lincoln City Stormwater Management Plan.

Rationale for Proposal (Why is this important?):

Lincoln City is recently updated its Stormwater Master Plan. Mitigation actions are identified within that plan as well.

The Disaster Mitigation Act of 2000 requires communities to describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information (201.6(b)). Implementing actions identified within the Lincoln City Stormwater Management Plan will assist the City in meeting this requirement.

Stormwater management is a key element in maintaining and enhancing a community's livability. There is a direct link between stormwater and a community's surface and ground waters. As a community develops, the impervious surfaces that are created increase the amount of runoff during rainfall events, disrupting the natural hydrologic cycle. Without control, these conditions erode stream channels and prevent groundwater recharge. Parking lots, roadways, and rooftops increase the pollution levels and temperature of stormwater runoff that is transported to streams, rivers, and groundwater resources. Protecting these waters is vital for a great number of uses, including fish and wildlife habitat, recreation, and drinking water. Source: Eugene Stormwater Management Manual. Section 1.1

Ideas for Implementation (How will it get done?):	**Action Status Report**
Monitor the Stormwater Plan's update process. Review the Plan's mitigation actions at one of the County's future semi-annual natural hazard mitigation meetings. Identify and assist with actions that reduce the City's vulnerability to flood-related hazards.	2020 Update: Stormwater master plan updated in 2020 Actions included in City's capital improvement plan.

Champion/ Responsible Organization:	Public Works

Internal Partners:	**External Partners:**
Planning and Community Development	

Potential Funding Sources:	**Estimated cost:**	**Timeline:**
Local Funding Resources	Medium to High	☒ Ongoing ☐ Short Term (1-4 years) ☐ Mid-Term (4-10 years) ☐ Long-Term (10+ years)

Form Submitted by:	NHMP Steering Committee, revised 2020 (Public Works)
Action Item Status:	Ongoing

Mitigation Action: Lincoln City #10 **(What do we want to do?)**	**Alignment with Plan Goals:**	**High Priority Action Item?**
Replace undersized culverts	☒ 1 ☒ 2 ☒ 3 ☒ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11	☐ Yes

Alignment with Existing Plans/Policies:

Stormwater Master Plan

Rationale for Proposal (Why is this important?):

Road closures are the most common flood-related impacts within Lincoln City. East Devils Lake Road floods frequently, and despite efforts to mitigate flood related damages by widening culverts along this road, flooding continues.

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)]. Replacing undersized culverts will lessen the effect of flooding within Lincoln City.

Ideas for Implementation (How will it get done?):	**Action Status Report**
Inventory culverts; identify culverts in need of replacement Define priorities for culvert replacement in support of storm water master plan.	2020 Update: Lincoln City replaced undersized culverts in the Nelscott area along highway 101. 2015 Update: Nelscott highway project has increased some culvert sizes considerably See also action #10, Stormwater Master Plan

Champion/ Responsible Organization:	Public Works

Internal Partners:	**External Partners:**	
	Water Districts, ODFW	
Potential Funding Sources:	**Estimated cost:**	**Timeline:**
Local Funding Resources	Medium to High	☒ Ongoing ☐ Short Term (1-4 years) ☐ Mid-Term (4-10 years) ☐ Long-Term (10+ years)

Form Submitted by:	Lincoln City Steering Committee, revised 2015
Action Item Status:	Ongoing

Mitigation Action: Lincoln City #11 **(What do we want to do?)**	**Alignment with Plan Goals:**	**High Priority Action Item?**
Research steep slope/ landslide ordinances; consider drafting a steep slope/ landslide development ordinance for Lincoln City	☒ 1 ☒ 2 ☒ 3 ☒ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10 ☐ 11	☐ Yes

Alignment with Existing Plans/Policies:

Rationale for Proposal (Why is this important?):

The steering committee determined that the city's probability for landslide is **high** and that their vulnerability to landslide is **high.**

Development pressure on steep slopes is an issue that Lincoln City is beginning to deal with. Likewise, the road to the City's wastewater treatment plant has occasional slides. No significant losses have occurred, but the potential for future damages are believed to exist along this road. Potential impacts from landslides include infrastructural damages, economic impacts (due to isolation and/or arterial road closures), property damages, and obstruction to evacuation routes.

Landslides and mudflows typically accompany rainstorms on the coast. Increasing development, and logging activities may increase the likelihood that landslides will occur.

DOGAMI maps the State Landslide Information Layer for Oregon (SLIDO); the 2012 SLIDO data shows Lincoln City landslides that have been identified on published maps. The database contains only landslides that have been located on these maps. The map shows that the history of landslide events, and landslide deposits, is moderate within the city and distributed along Devils Lake.

Oregon Land Use Goal 7 states that local governments shall adopt or amend plan policies that avoid "development in hazard areas where the risk to people and property cannot be mitigated" and prohibit "the siting of essestial facilities and special occupancy structures...in identified hazard zones.

Ideas for Implementation (How will it get done?):	**Action Status Report**
Create modern landslide inventory and susceptibility maps and use in planning and regulations for future development. Utilize lidar mapping from DOGAMI to analyze landslide potential within Lincoln City. Develop/ update existing code to strengthen development regulations within areas impacted by landslide. Utilize the DLCD report *Preparing for Landside Hazards, A Land Use Guide for Oregon Communities (October 2019)* Look at existing landslide ordinances within the State and determine how ordinances should be drafted for the City. Control storm water in landslide-prone areas. Monitor ground movement in high susceptibility areas. Implement grading codes, especially in high	2020 Update: Some controls implemented through existing erosion control measures. The City has amended its natural hazards section of the zoning ordinance to reference Priest-Allan 2004 coastal erosion data and to specify standards for geo-technical reports. Planning and community development have proposed part two of amendments to natural hazards of the zoning ordinance. 2015 Update: PUD regulations include incentives to avoid steep slopes, while not prohibiting building on these slopes Some control through existing erosion control measures The city has amended its natural hazards section of the zoning ordinance to reference the Priest-Allan 2004 coastal erosion data and to specify standards

susceptibility areas		for geo-technical reports. 7/9/2012 Planning has proposed part two of amendments to natural hazards of the zoning ordinance.	
Champion/ Responsible Organization:	Planning and Community Development		
Internal Partners:		**External Partners:**	
Public Works		DLCD, ODF, DOGAMI	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
Local Funding Resources		Low	☐ Ongoing ☒ Short Term (1-4 years) ☐ Medium Term (4-10 years) ☐ Long-Term (10+ years)
Form Submitted by:	NHMP Steering Committee, revised 2020 (Planning and Community Development)		
Action Item Status:	Ongoing		

Mitigation Action: Lincoln City #12 **(What do we want to do?)**	**Alignment with Plan Goals:**	**High Priority Action Item?**
Develop disaster plans and provide caches (food and emergency supplies) in strategic locations throughout the city to support residents and visitors.	☒ 1 ☒ 2 ☒ 3 ☐ 4 ☐ 5 ☐ 6 ☒ 7 ☐ 8 ☐ 9 ☒ 10 ☐ 11	☒ Yes

Alignment with Existing Plans/Policies:
City Emergency Operations Plan, City Continuity of Government Plan, and City Ordinances
Rationale for Proposal (Why is this important?):
Lincoln School District has disaster plans and caches on school property that serve students and employees; however, the city does not have existing disaster caches. The city is vulnerable to a Cascadia Subduction Zone earthquake/tsunami event. Other natural hazards such as flood, landslide and windstorm can leave populations without basic resources during emergencies. The city chooses to be proactive in being prepared to provide basic services when disrupted by natural hazard events.

Ideas for Implementation (How will it get done?):	**Action Status Report**
Seek funding for storage containers that will be stocked with emergency supplies and equipment and be strategically placed in key locations. Make part of the City budget each year. Develop and implement education and usage plan for the City.	2020 Update: Funding approved, containers purchased, city ordinances have been adjusted to allow for placement of containers. Begin filling containers with emergency supplies. Funding and some issues with finding appropriate physical locations. All containers have been placed in the City and we have begun purchasing items to fill the containers.

Champion/ Responsible Organization:	Emergency Preparedness Coordinator

Internal Partners:	**External Partners:**
Community Development, Public Works, Finance, Police Department; School District	ODOT, OEM, DOGAMI, Chamber of Commerce, Neighborhood Associations

Potential Funding Sources:	**Estimated cost:**	**Timeline:**
Local Funding Resources	Low to Medium ($1,700 per container, emergency supplies $40K)	☒ Ongoing ☐ Short Term (1-4 years) ☐ Medium Term (4-10 years) ☐ Long-Term (10+ years)

Form Submitted by:	NHMP Steering Committee, revised 2020 (Emergency Preparedness Coordinator)
Action Item Status:	Ongoing

Mitigation Action: Lincoln City #13 **(What do we want to do?)**	**Alignment with Plan Goals:**	**High Priority Action Item?**
Integrate the NHMP into comprehensive plan.	☒ 1 ☒ 2 ☒ 3 ☒ 4 ☒ 5 ☐ 6 ☒ 7 ☐ 8 ☐ 9 ☒ 10 ☐ 11	☒ Yes

Alignment with Existing Plans/Policies:
City Comprehensive Plan; Lincoln County Risk Report
Rationale for Proposed Action Item:
Comprehensive plans provide the framework for the physical design of a community. They shape overall growth and development while addressing economic, environmental and social issues. Oregon's statewide goals are accomplished through local comprehensive plans. State Law requires local governments to adopt a comprehensive plan and the zoning and land-division ordinances needed to put the plan into action. Integration of NHMPs into comprehensive plans will help to reduce a community's vulnerability to natural hazards, support in mitigation activities, help to increase the speed in which action items are implemented and therefore the speed in which communities recover from natural disasters. Integration of NHMPs into comprehensive plans gives the action items identified in the NHMP legal status for guiding local decision-making regarding land use and/ or capital expenditures. .

Ideas for Implementation:	**Actions Taken Since 2009**
Conduct a policy crosswalk of the NHMP and the comprehensive plan to identify areas of possible integration. Integrate natural hazards information and policies into the comprehensive plan. Engage in collaborative planning and integration. Coordinate future NHMP and comprehensive plan reviews and updates. Incorporate relevant aspects of the DLCD Tsunami Land Use Guide ("Preparing for a Cascadia Subduction Zone Tsunami: A Land Use Guide for Oregon Coastal Communities")	2020 Update: No activity has occurred to accomplish this action. Staff resources, funding, and time are limited.

Coordinating Organization:	Community Development

Internal Partners:	**External Partners:**
City Council, Emergency Management	DLCD, OEM, FEMA, OPDR

Potential Funding Sources:	**Estimated cost:**	**Timeline:**
Local Funding Resources, DLCD	Low	☐ Ongoing ☐ Short Term (1-4 years) ☐ Medium Term (4-10 years) ☒ Long-Term (10+ years)

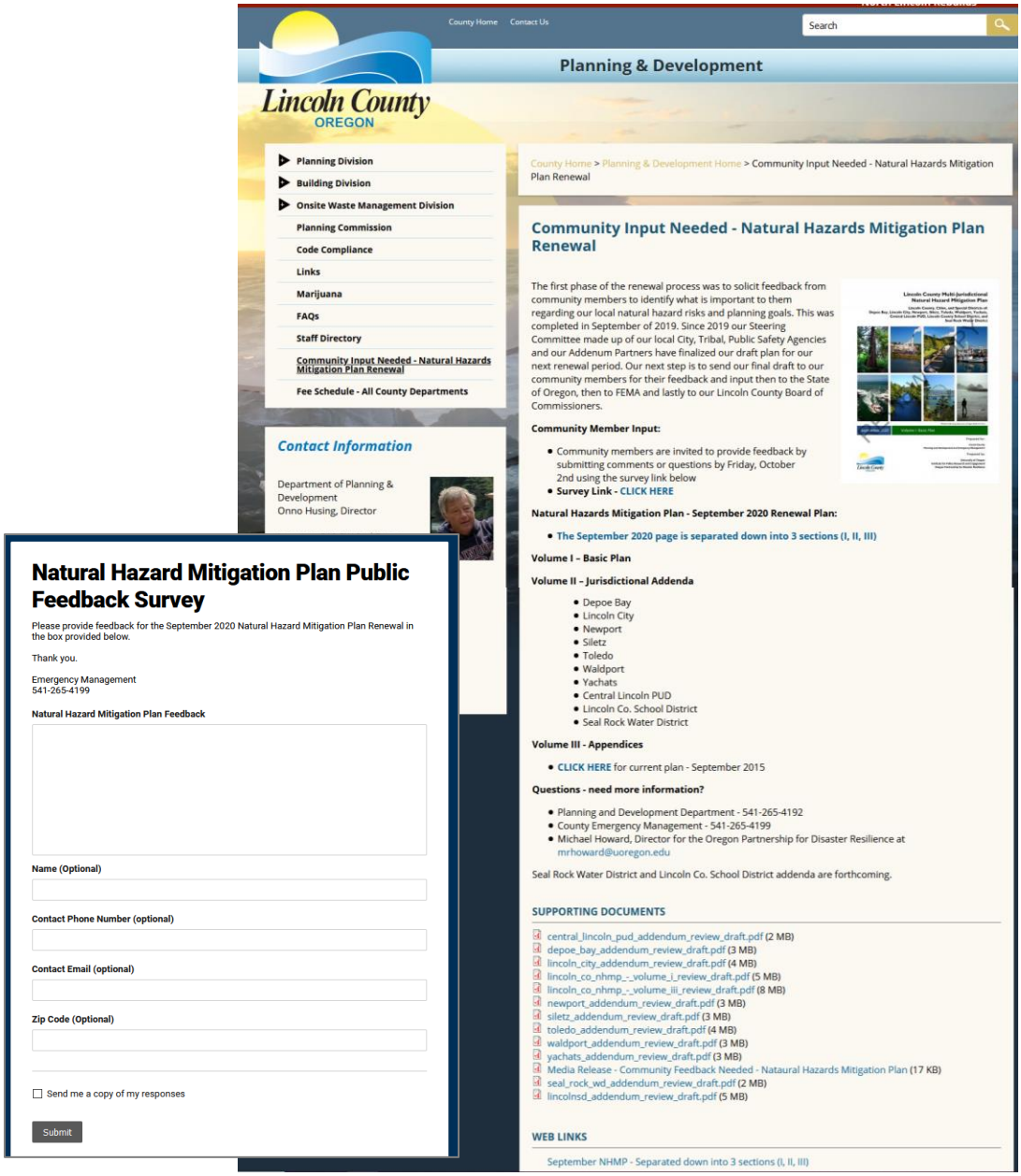
Form Submitted by:	NHMP Steering Committee, revised 2020 (Planning and Community Development)
Action Item Status:	Deferred

ATTACHMENT B:
PUBLIC INVOLVEMENT SUMMARY

Members of the steering committee provided edits and updates to the NHMP prior to the public review period as reflected in the final document.

To provide the public information regarding the draft NHMP addendum, and provide an opportunity for comment, an announcement (see text below) was announced on the county's website and reference on the city's social media and feedback form was provided for public comment.

During the public review period there were no comments provided.



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ATTACHMENT C:
ACTION ITEM FORM TEMPLATE

<table>
<tr><td>Mitigation Action: Lincoln City #
(What do we want to do?)</td><td colspan="4">Alignment with Plan Goals:</td><td>High Priority Action Item?</td></tr>
<tr><td></td><td colspan="4">☐ 1 ☐ 2 ☐ 3 ☐ 4
☐ 5 ☐ 6 ☐ 7 ☐ 8
☐ 9 ☐ 10 ☐ 11</td><td>☐ Yes</td></tr>
<tr><td colspan="6">Alignment with Existing Plans/Policies:</td></tr>
<tr><td colspan="6"></td></tr>
<tr><td colspan="6">Rationale for Proposal (Why is this important?):</td></tr>
<tr><td colspan="6"></td></tr>
<tr><td colspan="3">Ideas for Implementation (How will it get done?):</td><td colspan="3">Action Status Report</td></tr>
<tr><td colspan="3"></td><td colspan="3"></td></tr>
<tr><td colspan="2">Champion/
Responsible Organization:</td><td colspan="4"></td></tr>
<tr><td colspan="3">Internal Partners:</td><td colspan="3">External Partners:</td></tr>
<tr><td colspan="3"></td><td colspan="3"></td></tr>
<tr><td colspan="3">Potential Funding Sources:</td><td>Estimated cost:</td><td colspan="2">Timeline:</td></tr>
<tr><td colspan="3"></td><td></td><td colspan="2">☐ Ongoing
☐ Short Term (1-4 years)
☐ Medium Term (4-10 years)
☐ Long-Term (10+ years)</td></tr>
<tr><td colspan="2">Form Submitted by:</td><td colspan="4"></td></tr>
<tr><td colspan="2">Action Item Status:</td><td colspan="4"></td></tr>
</table>

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