Seal Rock Water District Addendum

to the Lincoln County Multi-Jurisdictional NHMP

Photos courtesy of Seal Rock Water District

Effective: December 17, 2025 through December 16, 2030

Prepared for
Seal Rock Water District
1037 NW Grebe Street
Seal Rock OR 97376

Prepared by
The University of Oregon
Institute for Policy Research & Engagement
School of Planning, Public Policy, and Management

UNIVERSITY OF OREGON | Institute for Policy Research and Engagement

This Natural Hazard Mitigation Plan was prepared by:

UNIVERSITY OF OREGON | School of Planning, Public Policy and Management | Institute for Policy Research and Engagement

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U.S. Department of Homeland Security
Federal Emergency Management Agency
Region 10

130 228th St SW
Bothell, WA 98021

December 17, 2025

Stephen Richardson
State Hazard Mitigation Officer
Oregon Department of Emergency Management
3930 Fairview Industrial Dr SE
Salem, OR 97302

Reference: Approval of the Lincoln County Multi-Jurisdictional Natural Hazard Mitigation Plan

Dear Officer Richardson:

In accordance with applicable[1] laws, regulations and policy, the Risk Analysis Branch of FEMA Region 10 Mitigation Division has approved the local mitigation plan for the following jurisdictions:

Lincoln County	City of Depoe Bay	City of Newport
City of Toledo	Beverly Beach Water District	Central Lincoln People's Utility District
Central Oregon Coast FRD	Depoe Bay Fire District	Gleneden Sanitary District
Kernville-Gleneden Beach-Lincoln Beach Water District	North Lincoln Fire and Rescue District	Otter Rock Water District
Panther Creek Water District	Salishan Sanitary District	Seal Rock Water District
Siletz Valley Fire District	SW Lincoln County Water People's Utility District	

Mitigation plans may include additional content to meet Element H: Additional State Requirements or content the local government included beyond applicable FEMA mitigation planning requirements. FEMA approval does not include the review or approval of content that exceeds these applicable FEMA mitigation planning requirements.

The approval period for this plan is from December 17, 2025 through December 16, 2030.

[1] Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended; the National Flood Insurance Act of 1968, as amended; and National Dam Safety Program Act, as amended; 44 CFR Part 201, Mitigation Planning; and Local Mitigation Planning Policy Guide (FP-206-21-0002).

The jurisdictions' plan approval ensures the eligibility for project grants under FEMA's Hazard Mitigation Assistance programs. All requests for funding are evaluated individually according to eligibility and other program requirements. Having an approved mitigation plan does not mean that mitigation grant funding will be awarded. Specific application and eligibility requirements can be found in each FEMA grant program's respective policies and annual Notice of Funding Opportunities, as applicable.

FEMA's approval is for a period of five years, effective the date FEMA received the adoption documentation. For this plan, documentation was received on December 17, 2025 and is considered approved as of then. Prior to December 16, 2030, each jurisdiction must review, revise, and submit their plan to FEMA for approval to maintain eligibility for grant funding. The enclosed plan review tool provides opportunities to incorporate into future updates.

Sincerely,

Wendy Shaw, P.E.
Risk Analysis Branch Chief
Mitigation Division

JG: MB

Attachment**:** Local Mitigation Plan Review Tool

Resolution # 2511-01

A Resolution Adopting the Seal Rock Water District's Representation in the Updates to the Lincoln County Multi-Jurisdictional Natural Hazards Mitigation Plan

Whereas, the Seal Rock Water District recognizes the threat that natural hazards pose to people, property and infrastructure within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people, property and infrastructure from future hazard occurrences; and

Whereas, an adopted Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, the Seal Rock Water District has fully participated in the FEMA prescribed mitigation planning process to prepare the *Lincoln County, Multi-Jurisdictional Natural Hazards Mitigation Plan*, which has established a comprehensive, coordinated planning process to eliminate or minimize these vulnerabilities; and

Whereas, the Seal Rock Water District has identified natural hazard risks and prioritized a number of proposed actions and programs needed to mitigate the vulnerabilities of the Seal Rock Water District to the impacts of future disasters within the *Lincoln County, Multi-Jurisdictional Natural Hazards Mitigation Plan*; and

Whereas, these proposed projects and programs have been incorporated into the *Lincoln County, Multi-Jurisdictional Natural Hazards Mitigation Plan* that has been prepared and promulgated for consideration and implementation by the participating cities and special districts of Lincoln County; and

Whereas, the Oregon Department of Emergency Management and Federal Emergency Management Agency, Region X officials have reviewed the *Lincoln County, Multi-Jurisdictional Natural Hazards Mitigation Plan* and pre-approved it contingent upon this official adoption of the participating governments and entities;

Whereas, the NHMP is in an on-going cycle of development and revision to improve its effectiveness; and

Whereas, Seal Rock Water District adopts the NHMP and directs the General Manager to develop, approve, and implement the mitigation strategies and any administrative changes to the NHMP.

Now, therefore, be it resolved, that the Seal Rock Water District adopts *the Lincoln County Multi-Jurisdictional Natural Hazards Mitigation Plan* as an official plan; and

Be it further resolved, that the Seal Rock Water District will submit this Adoption Resolution to the Oregon Department of Emergency Management and Federal Emergency Management Agency, Region X officials to enable final approval of the *Lincoln County Multi-Jurisdictional Natural Hazards Mitigation Plan*.
Adopted this 20th day of November 2025

Robert Mills

Robert Mills, SRWD Board President

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Introduction

Purpose and Adoption

This is the Seal Rock Water District (Seal Rock WD) addendum to the Lincoln County Multi-Jurisdictional Natural Hazards Mitigation Plan (NHMP). This addendum is not intended to be a standalone document, rather information contained herein supplements information contained in Volume I (Basic Plan) which serves as the NHMP foundation and Volume II (Appendices), which provides additional information. This addendum meets the following requirements:

- Multi-jurisdictional **Plan Requirements: Participation** §201.6(a)(4),
- Multi-Jurisdictional **Plan Content: Risk Assessment** §201.6(c)(2)(iii),
- Multi-jurisdictional **Plan Content: Mitigation Strategy** §201.6(c)(3)(iv), and
- Multi-jurisdictional **Plan Content: Documentation** §201.6(c)(5).

This is the first addendum to the Lincoln County NHMP for the Seal Rock WD.

Seal Rock WD adopted their addendum to the Lincoln County Multi-jurisdictional NHMP on November 20, 2025. FEMA Region X approved the Lincoln County NHMP and the district's addendum on December 17, 2025. With approval of this NHMP the district is now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants through December 16, 2030.

Process and Participation

This section of the NHMP addendum addresses 44 CFR 201.6(a)(3), *Participation and* 44 CFR 201.6(c)(5), *Plan Adoption.*

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 Seal Rock WD will remain eligible for hazard mitigation assistance 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 Oregon Department of Emergency Management (OEM), Lincoln County, and Seal Rock WD to develop this addendum. Members of Seal Rock WD participated in the County NHMP update process (Attachment B and Volume II, Appendix B).

Convener and Committee

The district's General Manager serves as the NHMP addendum convener. The convener of the NHMP addendum will take the lead in implementing, maintaining, and updating the addendum in collaboration with the designated convener of the Lincoln County NHMP (Lincoln County Emergency Manager).

Representatives from the District met formally, and informally, to discuss the development of their addendum (Attachment A). They reviewed and developed the district's addendum, with a focus on their risk assessment and mitigation strategy (action items).

This addendum reflects decisions made at the designated meetings, and during subsequent work, and communication with OPDR. Other documented changes include the development of the district's risk assessment and mitigation strategy (action items).

The Seal Rock WD steering committee was comprised of the following representatives:

- Convener, Adam Denlinger, General Manager
- Trish Karlsen, Bookkeeper
- Brendi Hoch, Finance Clerk
- Joy King, Finance Manager
- Bradly Wynn, Operations Lead

Implementation and Maintenance

The Seal Rock WD Board of Directors will be responsible for adopting the addendum to the Lincoln County NHMP. This addendum designates the steering committee, and a convener to oversee the development, and implementation of action items. Because the District is part of the County's multi-jurisdictional NHMP, the District will look for opportunities to partner with the County. The district's steering committee will convene after adoption of the addendum on an annual schedule. The County is meeting on a quarterly basis and will provide opportunities for participating jurisdictions (cities and special districts) to report on NHMP implementation, and maintenance during their meetings. The steering committee, assembled by the convener, 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;
- Evaluating effectiveness of the NHMP at achieving its purpose and goals (use Table 4-1, Volume I, Section 4, as one tool to help measure effectiveness); and
- Documenting successes, and lessons learned.

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

The Steering Committee will be responsible for activities outlined in Volume I, Section 4.

The district will utilize the same action item prioritization process as the County (Volume I, Section 4 and Volume II, Appendix D).

Implementation through Existing Programs

Many of the NHMP's recommendations are consistent with the goals and objectives of the district's existing plans and policies. Where possible, the Seal Rock WD will implement the NHMP's recommended actions through existing plans and policies. Plans and policies already in existence have support from residents, businesses, and policy makers. 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.

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, residents, and the district; (2) identification and prioritization of future mitigation activities; and (3) aid in meeting federal planning requirements and qualifying for assistance programs. The Seal Rock WD currently has the following plan that relates to natural hazard mitigation. For a complete list visit the district's website.

- Water System Master Plan with addendums (2010)
- Water Management and Conservation Plan (2014, update 2019, updated 2024)
    - Water Conservation Ordinance (1992)
- Reconnaissance-Level Source Water Study (2015)
- Phase-IV Conceptual Design Report for the SRWD Beaver Creek Water Supply (2016)
    - Environmental Report (2017)
    - Preliminary Engineering Report (2017)
    - Biological Assessment (2018)
- Bayshore Dune Management Plan (2012)
- NOAA BiOp/FONSI (2019)
- SRWD Community Water System Risk and Resilience Assessment (2021)
- Beaver Creek Water Supply Project Environmental Report (2017)

The purpose of these documents is to outline the planned improvements to infrastructure and equipment for a period of three to five years. These documents provide the context for how the District will accomplish our mission to provide reliable, resilient source water to our customers for generations to come.

Planning documents will be used to support and justify funds necessary to develop source water improvements for the district which include: Replacing several miles of water distribution mainline throughout the distribution system. The evaluation and installation of a Granulated Activated Carbon (GAC) system at the Beaver Creek Water Treatment Facility To withstand natural hazards, improvements will be designed considering resiliency and rapid recovery opportunities.

Capability Assessment

The Capability Assessment identifies and describes the ability of the Seal Rock WD to implement the mitigation strategy and associated action items. This is a key component of the 2024 Natural

Hazard Mitigation Plan (NHMP) update. Capabilities can be evaluated through an examination of broad categories, including existing authorities, policies, programs, funding, and resources.

Governance Structure

Seal Rock Water District is governed by a five-member Board of Commissioners elected to four-year terms by District voters. The Board of Commissioners, with help from the district's management team, set policies and procedures.

Policies and Programs

The NHMP provides direction for the Seal Rock WD to explore integration into other planning documents and processes.

Water System Master Plan (2010)
The plan was created to ensure high quality water supply is available to the community living within the district. Section 7, Improvement Needs, details the needs of the water supply and distribution system, as well as recommendations for satisfying these needs. Section 8, Capital Improvement Plan, consists of various projects to maintain and protect existing water system assets, projects to correct deficiencies, and projects necessary to increase water system capacity.

Water Management and Conservation Plan (2014)
The plan includes much of the same information as the districts water system master plan. This water conservation plan is important because it prepares the district to curtail water when drought emergencies are declared.

Environmental Report (2017)
The report was created to satisfy requirements for the U.S. Department of Agriculture (USDA) Rural Development Loan Program. It states that the water supply is vulnerable to landslides, flooding, and earthquakes. It also says the main pipelines of the system are prone/vulnerable to leaks and breaks from ground movement. The rest of the reports analyzes the environmental impacts of improvement projects.

Personnel

The following Seal Rock WD personnel have assignments that correspond to natural hazard mitigation,

- Board of Commissioners
- General Manager
- Operations Lead

Mitigation Successes

This is a list of funding that Seal Rock WD has sought out or received, as well as recently completed projects to improve mitigation.

- USDA Emergency Community Water Assistance Grant (ECWAG) of $150,000 for the replacement of water line that was failing in the Bayshore Spit community due to shifting sands.
- American Rescue Plan Act (ARPA) grant for the replacement of water lines on South bay Road that was damaged by shifting soil.
- Water lines near Newport airport along HWY 101 were replaced after being damaged by landslides.

Mitigation Strategy

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

The Seal Rock WD adopts the mission and hazard mitigation goals described in Volume I.

To develop the district's mitigation strategy (action items), the Steering Committee assessed the district's risk and identified potential issues to be addressed. The Steering Committee also noted what mitigation accomplishments have been made in recent years.

The steering committee opted to not include mitigation strategies for low vulnerability and low probability hazards including: air quality, extreme heat, and volcanic event The steering committee will study these hazard further during the implementation and maintenance phase of this NHMP, seeking to identify cost effective actions that might be implemented to reduce community vulnerability.

Priority Action Items

Table WD-1 presents a list of mitigation actions. The highest priority actions are shown with orange highlight. The District 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.

Table WD-1 Action Items

Mitigation Strategies		Impacted Hazard												Implementation and Maintenance			
Action Item #	Statement	Air Quality	Coastal Erosion	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic Event	Wildfire	Windstorm*	Winter Storm	Potential Funding Resources	Lead	Timeline	Cost
1	Strengthen local redundancy in municipal source water supply systems by actively participating as a co-convener in the Mid-Coast Water Planning Partnership. Coordinate stakeholder meetings and field tours annually to support the development of an Integrated Water Resources Plan aligned with Oregon's Integrated Water Resources Strategy (IWRS). This effort will ensure a collaborative, place-based approach to balancing water supply and demand, enhancing long-term water resilience for the Mid-Coast region.		X	X	X		X	X	X		X	X	X	CIP, OWRD, Grants	SRWD Engineering, Operations, and Governing Body	S	L
2	Develop and implement a preventative maintenance program for existing water and communication infrastructure to ensure system reliability during natural hazard events. This includes evaluating and upgrading the District's Supervisory Control and Data Acquisition (SCADA) system to maintain consistent communication with field operations. Field staff will conduct quarterly system evaluations to monitor SCADA performance and identify areas for improvement, with findings documented and reviewed annually to guide maintenance priorities.		X	X	X		X	X	X		X	X	X	CIP	SRWD Consultant Engineers	M	M
3	Develop redundant water supply connections with neighboring communities to ensure emergency water availability during disruptions. The district will continue collaboration with the City of Waldport, ODOT, and consulting engineers to advance preliminary engineering for a connection through the Alsea Bridge raceway, enhancing regional water system resilience.		X	X	X		X	X	X		X	X	X	CIP	SRWD Operations, Consultant Engineers	L	H
4	Evaluate the relocation of underground utility infrastructure located in identified erosion and landslide hazard zones to enhance the resilience of the water distribution system. Field operations staff will conduct assessments of vulnerable infrastructure in remote areas, documenting erosion and slide risks that may impact system reliability. Building on past mitigation efforts—such as the 2022 and 2025 replacement of 300 linear feet of piping along South Bay Road with flexible High-Density Polyethylene (HDPE) pipe—the District will prioritize relocation or reinforcement projects based on risk severity and system criticality.		X					X						CIP, USDA-RD RUAP	SRWD Consultant Engineers	S	L

Mitigation Strategies		Impacted Hazard												Implementation and Maintenance			
Action Item #	Statement	Air Quality	Coastal Erosion	Drought	Earthquake	Extreme Heat	Flood	Landslide	Tsunami	Volcanic Event	Wildfire	Windstorm*	Winter Storm	Potential Funding Resources	Lead	Timeline	Cost
5	Incorporate landslide and settlement risk considerations into the design of all new underground and water distribution infrastructure to improve system resilience. This includes designing a new primary source water intake and treatment system with geotechnical risk in mind, informed by lessons learned from the successful completion of the Beaver Creek Source Water Supply Project. Future capital improvement projects will be identified and prioritized through the District's comprehensive Water Master Plan (WMP), with ongoing monitoring of vulnerable infrastructure to guide adaptive design strategies.							X						CIP, USDA-RD RUAP, Business Oregon SDWRRLFP	SRWD Consultant Engineers	M	H
6	Evaluate the relocation of underground utility infrastructure located within identified tsunami hazard zones to enhance the reliability and resilience of the water distribution system. District staff will continue working with consultants and permitting agencies to secure necessary approvals for infrastructure improvements, building on completed milestones including the Preliminary Engineering Report, Environmental Report, and 100% Design Plans and contract documents finalized as of June 30, 2019. These efforts will be further guided by the District's comprehensive Water Master Plan currently in development, which will help prioritize future relocation and mitigation projects.								X					CIP, USDA-RD RUAP	SRWD Consultant Engineers	S	L

Source: Seal Rock WD steering committee, 2025.
Cost: L (less than $50,000), M ($50,000-$499,999), H ($500,000-$5 million), VH (more than $5 million),
Potential Funding Sources: HMA=FEMA's Hazard Mitigation Assistance disaster and non-disaster grant programs
Timing: S=Short (1-4 years), M=Medium (4-10 years), L=Long (10 or more years)
Priority Actions: Identified with orange highlight
* - the windstorm hazard includes tornadoes (water spouts)

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 II, Appendix C.

Hazard Analysis

The NHMP steering committee updated the district's previous hazard analysis, to reflect current conditions. Where appropriate, changes were made to distinguish the district's risks from those in the County's hazard analysis, as detailed throughout this addendum.

Table WD-2 shows the hazard analysis matrix listing each hazard in rank from high to low. For local governments, conducting hazard analysis is a useful step in planning for hazard mitigation, response, and recovery. The method provides the jurisdiction with a sense of hazard priorities but does not predict the occurrence of a particular hazard. See Volume I, Section 2 for methodology details.

Drought, Cascadia Subduction Zone earthquake, local tsunami, landslide, and riverine flood are the **high hazard threats** to the city. Wildfire, coastal erosion, winter storm, and coastal flood are the **middle hazard threats.** Distant tsunami, windstorm, tornado, crustal earthquake, air quality/smoke, extreme heat event, and volcanic event are the **low hazard threats**.

In addition, hazards identified within the "bottom tier" have low vulnerability and/or low probability to the district. as such the district has elected to not include mitigation strategies. Instead. the district will collaborate with the County and applicable cities to implement mitigation strategies related to these hazards.

Table WD-2 Hazard Analysis Matrix

Hazard	History	Vulnerability	Maximum Threat	Probability	Total Threat Score	Hazard Rank	Hazard Tiers
Drought	20	35	80	70	205	#1	Top Tier
Earthquake (Cascadia)	2	50	100	49	201	#2	
Local Tsunami	2	50	100	49	201	#3	
Landslide	20	40	70	70	200	#4	
Flood (Riverine)	20	25	80	70	195	#5	
Wildfire	12	20	80	70	182	#6	Middle Tier
Coastal Erosion	20	30	60	70	180	#7	
Winter Storm	18	15	30	70	133	#8	
Flood (Coastal)	20	10	30	70	130	#9	
Distant Tsunami	10	20	50	35	115	#10	Bottom Tier
Windstorm	20	5	10	70	105	#11	
Tornado	8	10	30	56	104	#12	
Earthquake (Crustal)	10	20	40	21	91	#13	
Air Quality/Smoke	10	5	10	56	81	#14	
Extreme Heat Event	4	10	30	21	65	#15	
Volcanic Event	2	5	40	7	54	#16	

Source: Seal Rock WD steering committee, 2025.

Community Characteristics and Assets

The following section provides information on Seal Rock WD specific demographics and assets (see Table WD-5). Many of these community characteristics can affect how natural hazards impact communities, and how communities choose to plan for natural hazard mitigation. Considering the District specific assets during the planning process can assist in identifying appropriate measures for natural hazard mitigation.

Community Characteristics

The Water District's service area is approximately 12.5 square miles and has a population of about 5,500 (expands up to 8,000 during summer months); the population is expected to grow to about 6,000 by the year 2035.[1] Land within the service area is primarily zoned residential near the Pacific Ocean with some commercial areas along Highway 101. Land to the east of the service area is forested and used for timber production. The Water District has emergency water connections with the cities of Newport and Toledo and provides support to the area fire districts. There are about 2,684 service connections, 95% are residential (by 2035 it is expected service connections will expand to about 3,500).

There are several state parks including Driftwood State Park, Seal Rock State Park, Ona Beach State Park, and Lost Creek State Park. The National Register of Historic Places and the State Historic Preservation Office lists Seal Rock as the only archaeological/historic site (historical village) within the service area.[2] The Water District is part of the Siletz Service Area of the

[1] Seal Rock Water District, Water System Master Plan (2010); Seal Rock Water District, One Stop Meeting (2017)

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

Confederated Tribes of the Siletz Indians. Historical tribal lands include areas around the Yaquina Bay and River (Yaquina Tribe) and Alsea Bay and Tribe (Alsea Tribe). Remnants of tribal settlements have been found in these areas including fishing weirs at the Ahnkuti site along Yaquina Bay (near Toledo).[3]

The Water District has an existing water right on the Siletz River (2.6 cfs) which is junior to instream rights (and could be restricted during summer drought periods for months at a time). With the construction of the Beaver Creek source water supply, Seal Rock Water District no longer purchases water from the City of Toledo. . The Water District has enough capacity to meet current and anticipated future demand until at least the year 2035.

Seal Rock WD currently produces about 120-130 million gallons of treated water per year. About 95 million gallons are sold to Water District customers while the remaining water is unaccounted (lost). Raw water from Beaver Creek is treated at the district's 2.0 MGD membrane water treatment facility located just east of the Makai Community. Production water is delivered to two SRWD storage water reservoirs. The Driftwood Tank (ca. 1981) has a storage capacity of 0.9 MG and a water surface elevation of 265.5 feet. The Lost Creek Storage Tank (ca. 2005) has a storage capacity of 2.3 MG and a water surface elevation of 301 feet. The Water District has about 65 miles of piping and is separated into six pressure zones. About 30% of the pipes are 4-inch in diameter or less.

The Oregon Water Resources Department coordinates with water districts to implement water conservation or curtailment plans when drought emergencies are declared. The Water District's Water System Master Plan addresses conservation and rationing protocols and includes a Water Management and Conservation Plan which was updated in 2024.

Facilities and Property Assets Inventory

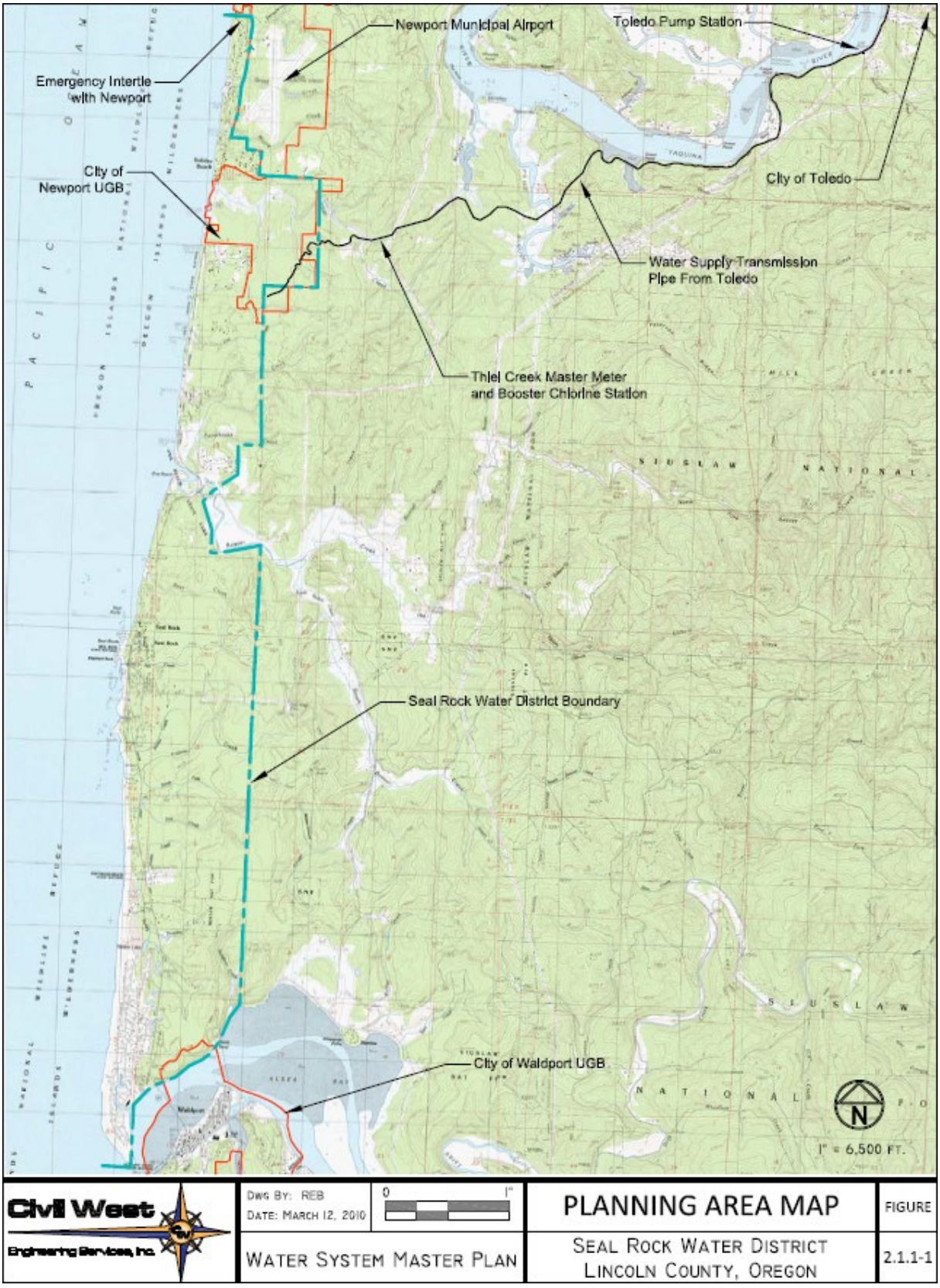
This section provides information on district specific assets. Assets that may be affected by hazard events include residential and nonresidential buildings, critical facilities, and infrastructure. Considering the district specific assets during the planning process can assist in identifying appropriate measures for natural hazard mitigation.

Table WD-5 lists the resources, facilities, and infrastructure that, if damaged, could significantly impact the public safety, economic conditions, and environmental integrity of the district.

The district's facilities are located within their service area (Map WD-1)which includes the Lincoln County unincorporated communities of Seal Rock and Bayshore and small portions of the cities of Newport and Waldport. Additional infrastructure, including the main water transmission line, is in Lincoln County and the City of Toledo (Map WD-1). The service area extends from the unincorporated community of South Beach in the north (Henderson Creek area) to the Alsea Bay in the south (including the portion of Waldport on the north side of Alsea Bay).

[3] Seal Rock Water District, Water System Master Plan (2010)

Map WD-1 District Boundaries



Source: Seal Rock WD Water System Master Plan (2010)

Hazard Identification

This section profiles the district's hazards and assesses their vulnerabilities, distinct from the countywide planning area. Detailed hazard profiles of the most significant countywide hazards are described in Volume I, Section 2. The detailed profiles include hazard characteristics, history, location, extent, previous occurrences, and probability of future occurrences. An event that affects the County, or applicable cities where district assets are located, is likely to affect the district as well. However, not all hazards impact the district assets. The district chose to profile the hazards shown in Table WD-2 due to the impact these hazards have upon their assets. Factors included during discussions by the district included the number of potential assets damaged, extent of damage, and length of time required for repairs (economic losses were also considered).

Additional information is found in the Risk Assessment for Region 1, Oregon Coast, Oregon SNHMP (2020).

National Flood Insurance Program (NFIP)

FEMA updated the Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRMs) in 2019 (effective October 18, 2019). The district is not a community which has authority to adopt and enforce floodplain management regulations for the areas within its jurisdiction. Lincoln County participates in the National Flood Insurance Program (NFIP).

There are no repetitive loss or severe repetitive loss properties owned or operated by the district. For specific information for communities within the district's service area see Volume I, Section 2) for more information.

Vulnerability Assessment

Development and population forecasts are not expected to increase or decrease the impact of most of the profiled hazards. However, the population of adults aged 65 and older is increasing within this jurisdiction. As a result, the impact of the air quality hazard may increase.

The district's concentrated population and resources, as well as the soil characteristics and relative earthquake hazards described herein and in Volume I, Section 2 are cause for significant effort toward mitigating the earthquake hazard. The district's infrastructure (water lines, tanks, treatment plant, etc.) is highly vulnerable to a severe earthquake event. No quantitative assessment of the risk of natural hazards has been conducted at a district wide scale. However, there have been several reports conducted for the unincorporated region of the county that include the district's service area.

Table WD-3 provides the ranking of hazards of concern based on total threat score and Table WD-5 shows hazard impact to the district's assets. Maps of select geologic hazards and wildfire are provided in Attachment C.

Hazard area extent and location maps are included in Attachment B. Information shown on the maps is for planning purposes, represents the conditions that exist at the map date, and is

subject to change. Refer to the original source documentation to better understand the data sources, results, methodologies and limitations of each dataset presented.

Table WD-3 Hazard Risk and Description of Impact

Hazard	Description of Impact	Total Threat Score
Drought	A prolonged drought in the Seal Rock Water District could strain limited water supplies, reduce streamflow in Beaver Creek, impact water quality, and challenge the district's ability to meet residential and ecological demands.	205
Earthquake (CSZ Event)	A major Cascadia Subduction Zone earthquake could cause widespread devastation to the Seal Rock Water District, including ruptured pipelines, damaged treatment facilities, landslides, and long-term service outages due to regional infrastructure collapse.	201
Local Tsunami	A local tsunami triggered by a Cascadia earthquake could inundate low-lying coastal infrastructure within minutes, severely damaging water systems and isolating the district from emergency support, especially in areas below the tsunami inundation zone.	201
Landslide	Landslides in the Seal Rock Water District can damage critical infrastructure, disrupt water service, and degrade water quality by introducing sediment into sources like Beaver Creek.	200
Flood (Riverine)	Beaver Creek and its tributaries are the main waterways in the area, and they can overflow during heavy rain or snowmelt, especially in low-lying or poorly drained zones. The surrounding wetlands and floodplains naturally contribute to seasonal flooding.	195
Wildfire	Wildfire poses a moderate but growing risk to the Seal Rock Water District, particularly due to its proximity to forested areas and the wildland-urban interface, which could threaten water infrastructure, degrade water quality through ash and debris runoff, and strain emergency response systems. While not as wildfire-prone as inland regions, increasing drought and climate variability heighten the district's vulnerability over time	182
Coastal Erosion	Coastal erosion threatens infrastructure near the shoreline, including pipelines and access roads, as wave action and rising sea levels gradually wear away bluffs and dunes	180

Hazard	Description of Impact	Total Threat Score
Air Quality	Air quality risks are generally low but can spike during regional wildfire events, potentially affecting outdoor operations and posing health risks to staff and residents.	146
Winter Storm	Severe winter storms can cause flooding, landslides, and power outages, disrupting water treatment and distribution systems	133
Flood (Tidal)	Low-lying areas (e.g., Bayshore) near the coast are vulnerable to storm surge and tidal flooding, which can inundate infrastructure and contaminate water sources.	130
Distant Tsunami	Although less severe than local tsunamis, distant tsunamis can still cause coastal flooding and infrastructure damage, especially in low-lying zones.	115
Windstorm	High winds can damage power lines and above-ground infrastructure, leading to service interruptions and increased maintenance needs.	105
Tornado	Tornado risk is extremely low in this region, but a rare event (originating from waterspouts) could still damage exposed infrastructure and disrupt operations.	104
Earthquake (Crustal)	A crustal earthquake could severely damage pipelines, treatment facilities, and reservoirs, especially if it triggers landslides or liquefaction.	91
Extreme Heat Event	While not a major threat historically, increasing temperatures could stress water supply and demand systems, particularly during drought conditions.	65
Volcanic Event	Ashfall from distant volcanic eruptions could contaminate surface water sources and clog filtration systems, requiring emergency treatment protocols.	54

Source: Seal Rock WD steering committee, 2025.

Risk Report

The Oregon Department of Geology and Mineral Industries (DOGAMI) conducted a multi-hazard risk assessment (Risk Report) for Lincoln County, including the Seal Rock-Bayshore area (approximately the same boundaries as the Seal Rock WD service area). 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. The district hereby incorporates the Risk Report into this NHMP addendum by reference (DOGAMI, O-20-11).

Natural Hazard Risk Report for Lincoln County

The Risk Report provides hazard analysis summary tables that identify populations and property within Lincoln County that are vulnerable to coastal erosion, earthquake, flood, landslide, tsunami, and wildfire hazards. The Risk Report does not include a quantitative assessment for the drought, severe weather (windstorm, winter storm), or volcanic event hazards.

The Risk Report performed an analysis of population and buildings, including the Seal Rock WD office (1037 NW Grebe St, Seal Rock) to determine exposure for each community (see Table WD-4). The Seal Rock-Bayshore communities are most vulnerable to earthquake (Cascadia Subduction Zone), the associated CSZ tsunami, landslides, and coastal erosion. Note: The data does not include potentially impacted visitor populations that may be lodging, or at a public venue, during hazard events.

The Seal Rock WD Office is located within the moderate and high landslide susceptibility hazard zones. The report does not provide an analysis for any other district facility or infrastructure listed in Table WD-5.

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

Table WD-4 Hazard Profile

Community Overview							
Community Name		Population	Number of Buildings		Critical Facilities[1]	Total Building Value ($)	
Seal Rock-Bayshore		2,766	3,345		2	347,085,000	
Hazus-MH Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Damaged Buildings	Damaged Critical Facilities	Loss Estimate ($)	Loss Ratio
Flood[2]	1% Annual Chance	43	2%	17	0	372,000	0.1%
*Earthquake**	*CSZ M9.0 Deterministic*	546	20%	968	0	61,629,000	18%
Earthquake (within Tsunami Zone)		44	2%	86	0	12,237,000	3.5%
Exposure Analysis Summary							
Hazard	Scenario	Potentially Displaced Residents	% Potentially Displaced Residents	Exposed Buildings	Exposed Critical Facilities	Building Value ($)	Percent of Exposure
Tsunami	*CSZ M9.0 – Medium*	289	11%	450	0	65,926,000	19%
Tsunami	Senate Bill 379 Regulatory Line	309	11%	476	0	67,481,000	19%
Landslide	High and Very High Susceptibility	364	13%	445	1	55,334,000	16%
Coastal Erosion	High Hazard	105	4%	155	0	25,329,000	7%
Wildfire	High Hazard	0	0%	0	0	0	0%

Source: IPRE. Data adapted from DOGAMI, Open-File Report O-20-11, Lincoln County Natural Hazard Risk Report (2020), Table A-8.
*Earthquake losses were calculated for buildings outside of Medium tsunami zone.
Rows with italicized text and tan shaded background indicate results should be considered in tandem as they are expected to occur within minutes of one another.

[1] Facilities with multiple buildings were consolidated into one building complex.
[2] No damage is estimated for exposed structures with "First floor height" above the level of flooding (base flood elevation).

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. [4] Safety is reached when evacuees have reached "high ground", or 20 feet beyond the limit of tsunami inundation. An analysis was conducted for cities and unincorporated areas of the county including the Seal Rock-Bayshore (Alsea Spit) area. According to the analysis the Seal Rock community is almost entirely outside the XXL tsunami inundation hazard area except for Highway 101 and the streets immediately south of Seal Rock. The report defines the Alsea Spit area (aka Bayshore) as extending from the mouth of Alsea Bay (south) to NW Hidden Lake Drive (north). The low-lying areas in the northern section of the Alsea Spit and almost all the southern section is expected to be overtopped by the expected XXL tsunami inundation. Liquefaction is also expected in these areas during earthquake shaking. District infrastructure within these areas is vulnerable to both earthquake shaking and tsunami inundation. Evacuation to high ground for residents and visitors is accessible and nearby to the east of Highway 101 for most of the district service area except for areas closest to the Alsea Bay (see Volume I, Section 2 for more information).

For more information, see the following DOGAMI reports:

- Tsunami evacuation analysis of Lincoln City and unincorporated Lincoln County: Building community resilience on the Oregon coast (2019, O-19-06)
- 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)

[4] DOGAMI, Open-File Report O-19-06.

Table WD-5 Facilities Summary

Name/Number	Address	Identified Hazard Exposure										
		AQ	CE	DR	EQ	EH	FL	LS	TS	VE	WF	WS	WT
Water Treatment													
Membrane Water Treatment Facility	13745 NW Kona Street, Seal Rock				X						X	X	X
Beaver Creek Source Water Intake	South Beaver Creek Rd and Beaver Creek Rd			X	X		X				X	X	X
Storage Tanks													
Driftwood Tank - 0.9 MG (ca. 1981)	NW Terrace Road, Seal Rock				X			X				X	X
Lost Creek Tank - 2.3 MG (ca. 2005)	593 SE 123rd Street, Seal Rock				X			X				X	X
Makai Tank 0.5 MG (ca. 2022)	Membrane Water Treatment Facility				X			X				X	X
Pump Stations													
Toledo Pump Station	Near city of Toledo (1621 S Bay Road)				X		X	X	X		X	X	X
Cross Street Pump Station	NW Corner of Cross St. & Seal Rock St.				X			X				X	X
East Bayshore Pump Station	NE Corner of N. Bay Road and HWY-101				X			X				X	X
York Pump Station	6161 NW Pacific Coast Hwy				X			X				X	X
Driftwood Booster Pump Station	NW Terrace Road, Seal Rock				X			X				X	X
Lost Creek Booster Pump Station	593 SE 123rd Street, Seal Rock				X			X				X	X
Piping, Hydrants, Generators, and other infrastructure													
65 miles of piping (2-inch to 14-inch)	Throughout District		X		X			X	X			X	X
South Bay Road supply line	Throughout District		X		X			X	X			X	X
150 fire hydrants	Throughout District		X		X			X	X			X	X
Pump station generators	All Pump Stations				X			X					X

Source: Information provided by Seal Rock WD

Table Key:

"X" – Facility may be exposed and may be impacted by the identified hazard per a visual inspection of the mapped hazard area

[blank] = facility exposure has not been assessed for this hazard

Hazard Descriptions:

AQ = Air Quality
CE = Coastal Erosion
DR = Drought
EH = Extreme Heat
EQ = Earthquake
FL = Flood
LS = Landslide
TS = Tsunami
VE = Volcanic Event
WF = Wildfire
WS = Windstorm/Tornado
WT = Winter Storm

Attachment A: Action Items

Table WD-6 is an accounting of the status (complete or not complete) and major changes to actions since the previous NHMP. All actions were renumbered in this update to be consistent with other jurisdictions that are participating in the multi-jurisdictional NHMP. Actions identified as still relevant are included in the updated action plan (Table WD-1).

Previous NHMP Actions that are Complete:
SRWD #6: "Construct the SRWD Beaver Creek primary source water project."

SRWD #6: "Construct Membrane Water Treatment Facility within the District's boundaries outside the tsunami inundation zone."

SRWD #6: "Construct a primary source water intake on Beaver Creek in Lincoln County."

SRWD #6: "Construct primary source water supply piping from Beaver Creek intake site 1.5-miles to proposed Water Treatment Facility on South Beaver Creek Road and Beaver Creek Road."

Previous NHMP Actions that are Not Complete and No Longer Relevant:
None

Table WD-6 Status of All Hazard Mitigation Actions in the Previous Plan

2020 Action Item	2025 Action Item	Status	Still Relevant? (Yes/No)
SRWD #1	#1	Not Complete	Yes
SRWD #2	#2	Not Complete	Yes
SRWD #3	#3	Not Complete	Yes
SRWD #4	#4	Not Complete	Yes
SRWD #5	#5	Not Complete	Yes
SRWD #6	-	Complete	No
SRWD #7	-	Complete	No
SRWD #8	-	Complete	No
SRWD #9	-	Complete	No
SRWD #10	#6	Not Complete	Yes

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. In addition, a survey was distributed that included responses from residents of the district (Volume II, Appendix F).

To provide the public information regarding the draft NHMP addendum, and provide an opportunity for comment, an announcement was from August 7 through 21, 2025 on the County's website and publicized by the district. Comments were reviewed and integrated into the NHMP as applicable. Additional opportunities for stakeholders and the public to be involved in the planning process are addressed in Volume II, Appendix B.

Various agencies and organizations contributed input through multiple channels, including comments on the draft. These groups include local and regional hazard mitigation agencies, development regulators, neighboring communities, businesses, academia, nonprofits, and community-based organizations serving underserved and socially vulnerable populations (see Volume II, Appendix B).

Steering Committee

Steering Committee members possessed familiarity with the district and how it is affected by natural hazard events. The Steering Committee guided the update process through several steps including goal confirmation and prioritization, action item review and development, and information sharing, to update the NHMP and to make the NHMP as comprehensive as possible. The Steering Committee met formally on the following dates:

Meeting #1: April 02, 2025 (virtually via Zoom)
During this meeting, the Steering Committee was provided updates on hazard mitigation planning, the NHMP update process, and project timeline. The Steering Committee meeting details include:

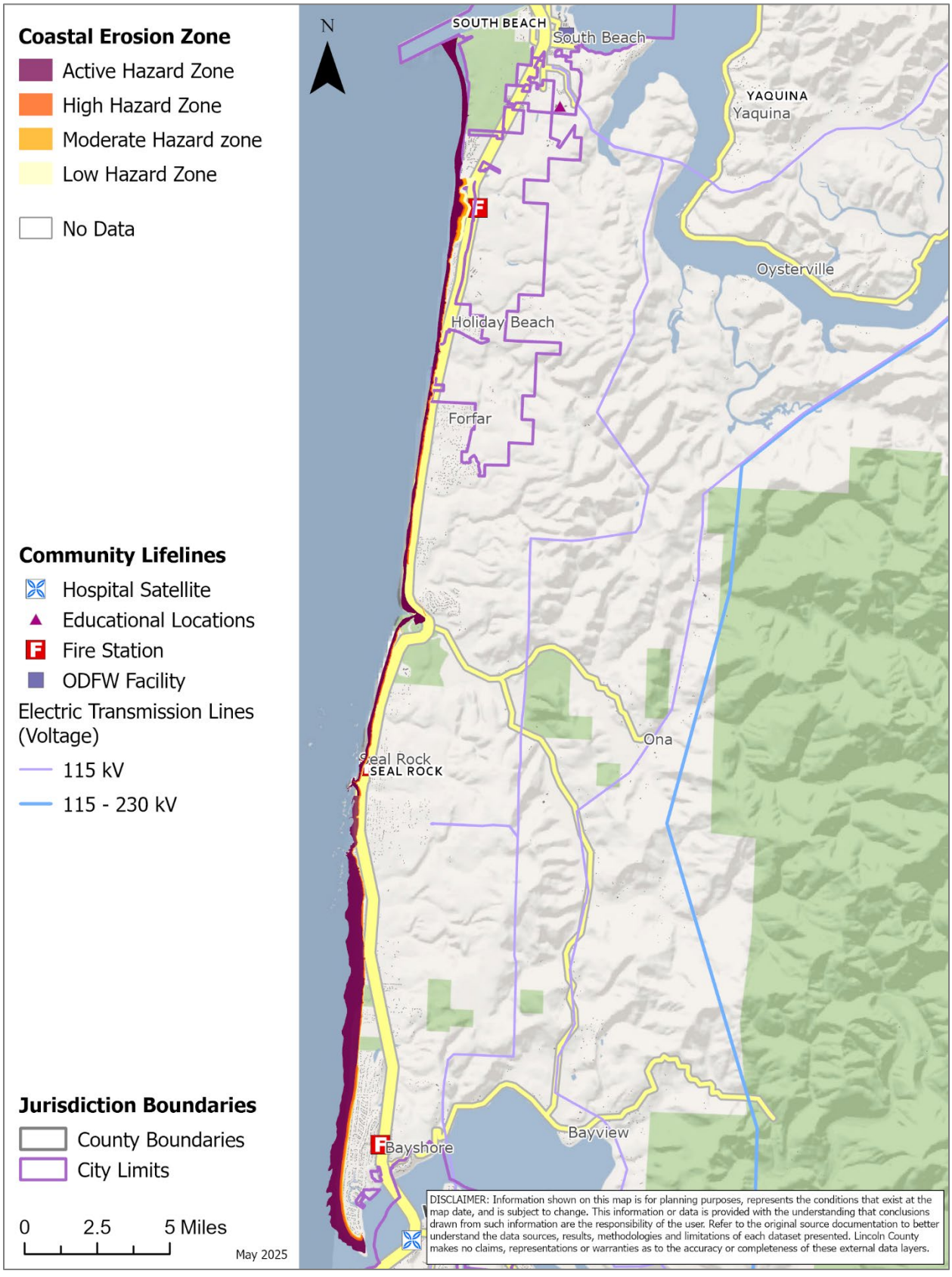
- Reviewed and provided feedback on recent history of hazard events.
- Reviewed and confirmed the County NHMP's mission and goals.
- Discussed the NHMP public outreach strategy.
- Reviewed and provided feedback on the draft risk assessment including community vulnerabilities and hazard information.
- Developed their mitigation strategy (actions).
- Reviewed and provided feedback on their implementation and maintenance program.

Meeting Attendees:

- Convener, Adam Denlinger, General Manager
- Trish Karlsen, Bookkeeper
- Brendi Hoch, Finance Clerk
- Joy King, Finance Manager
- Bradly Wynn, Operations Lead

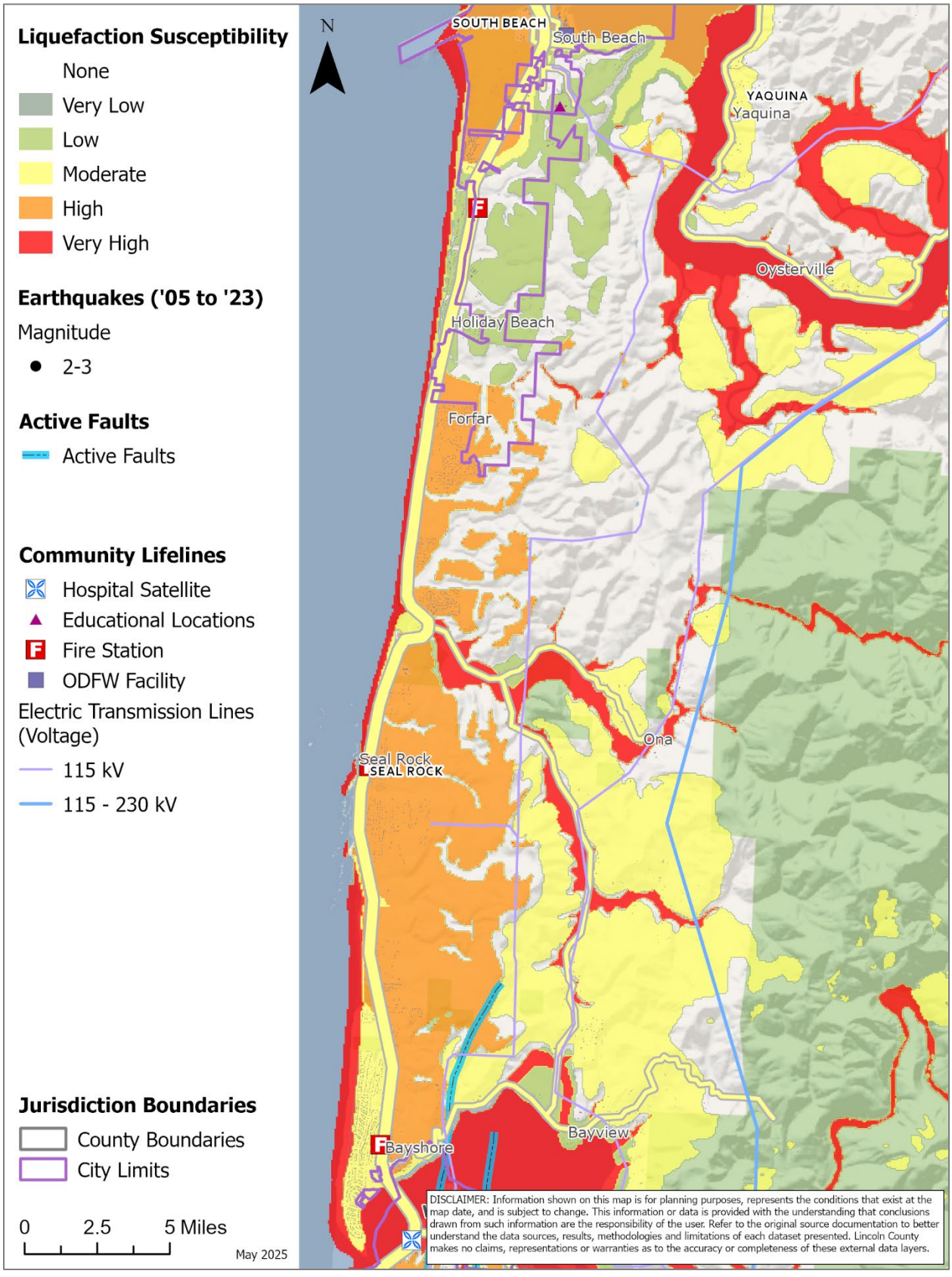
Attachment C: Hazard Maps

Map WD-2 Coastal Erosion Hazard



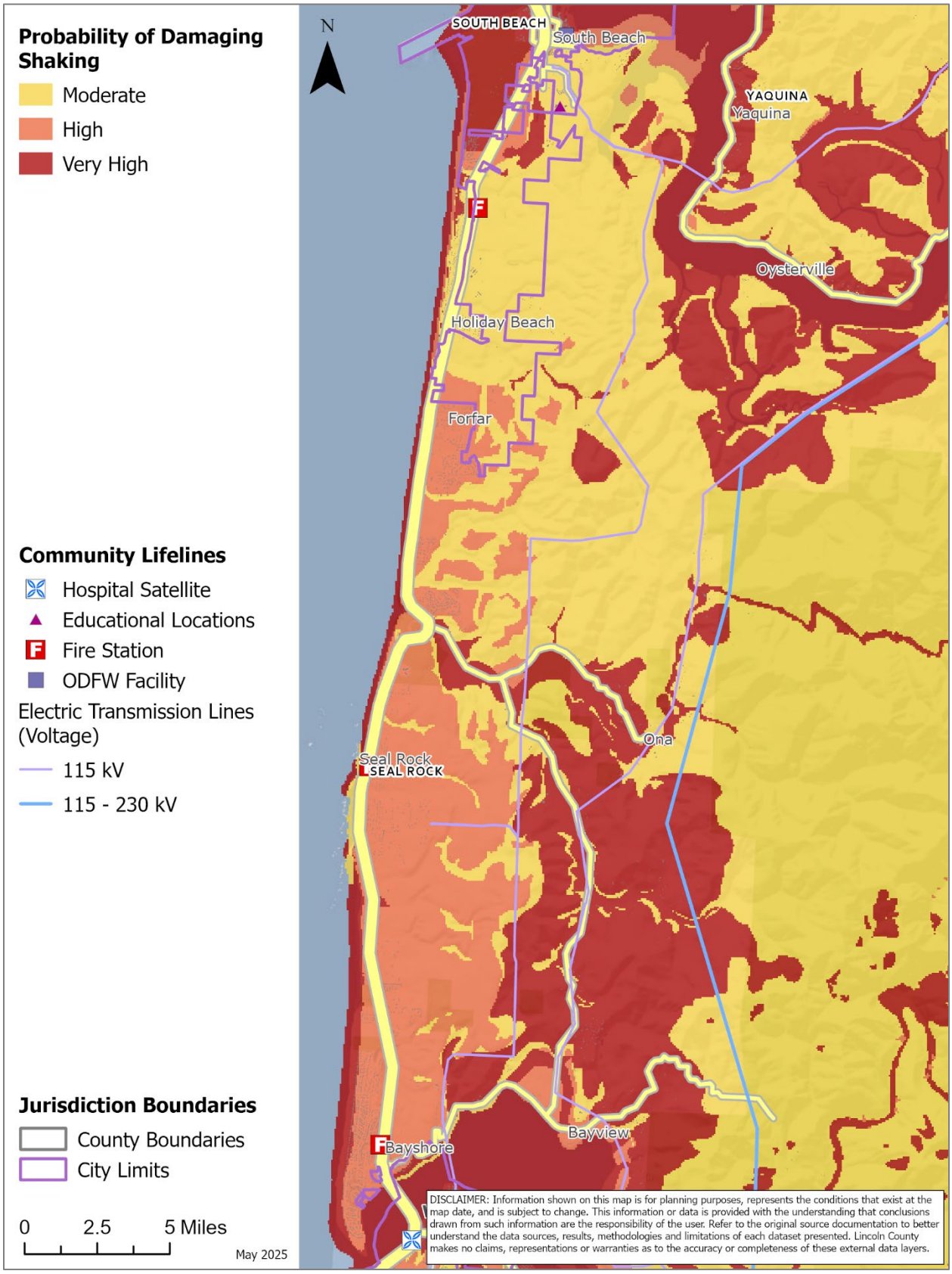
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-3 Earthquake Liquefaction (Soft Soil) Hazard and Active Faults



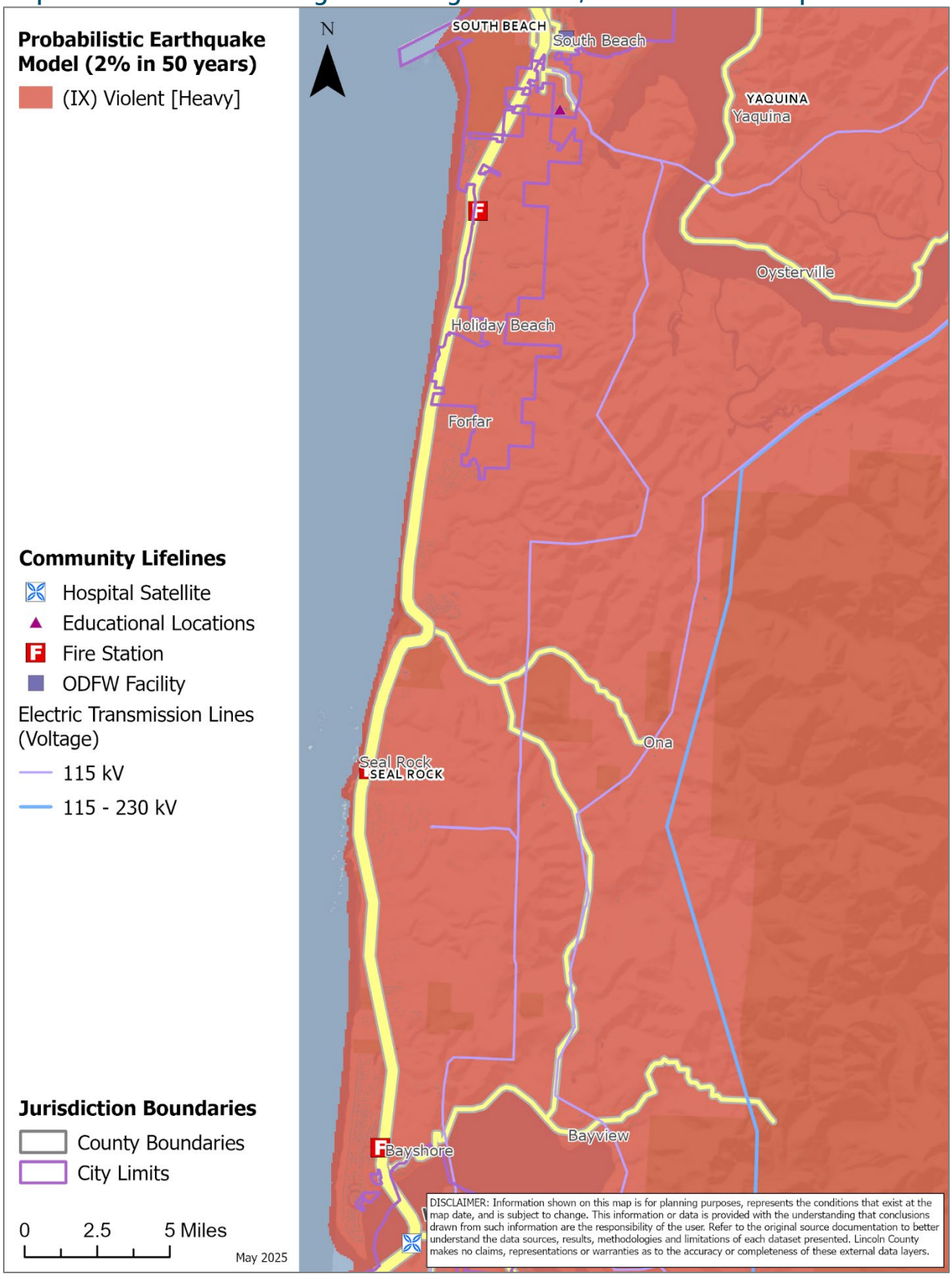
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-4 Probability of Damaging Shaking



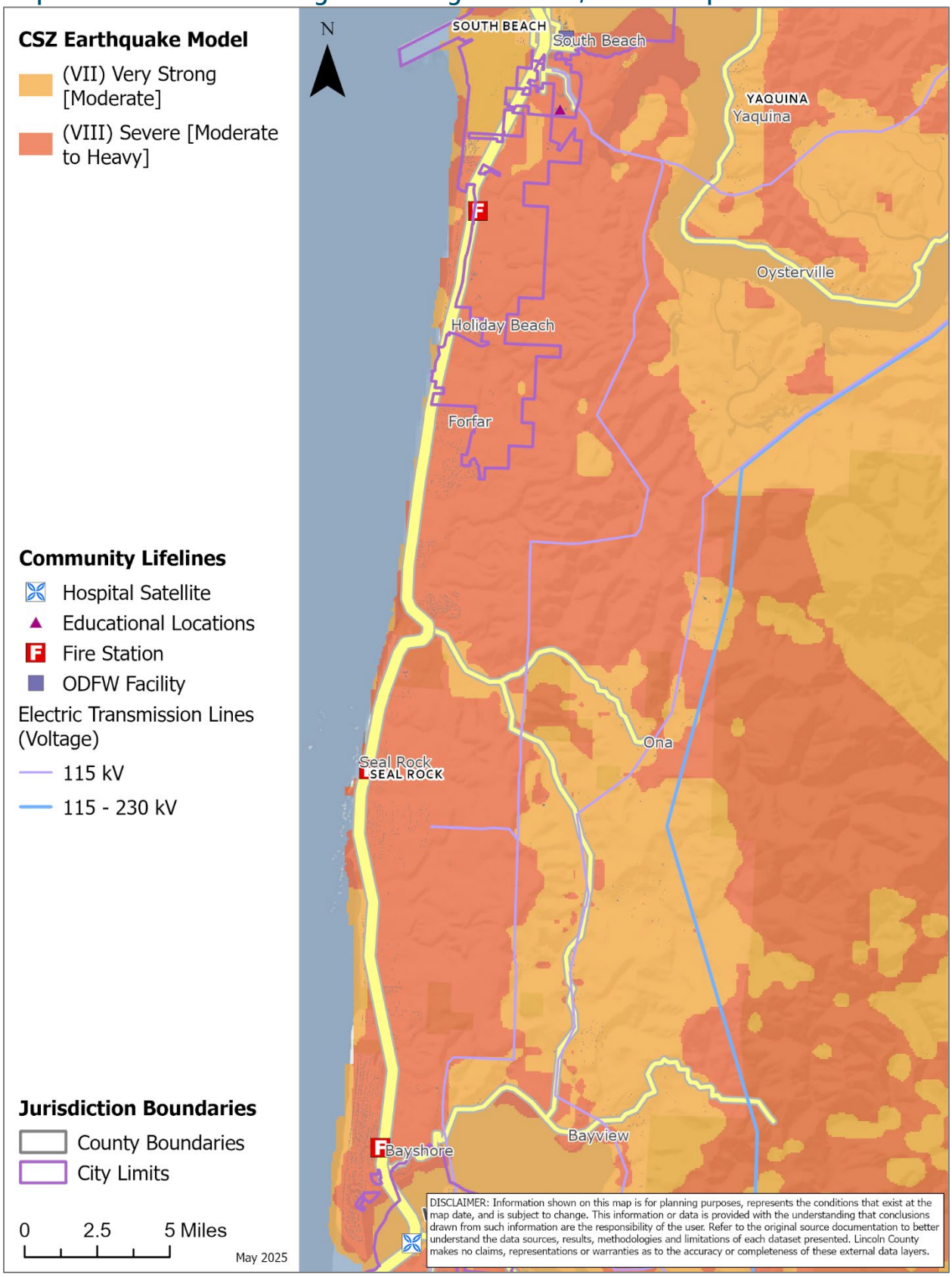
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-5 Perceived Shaking and Damage Potential, Probabilistic Earthquake Model



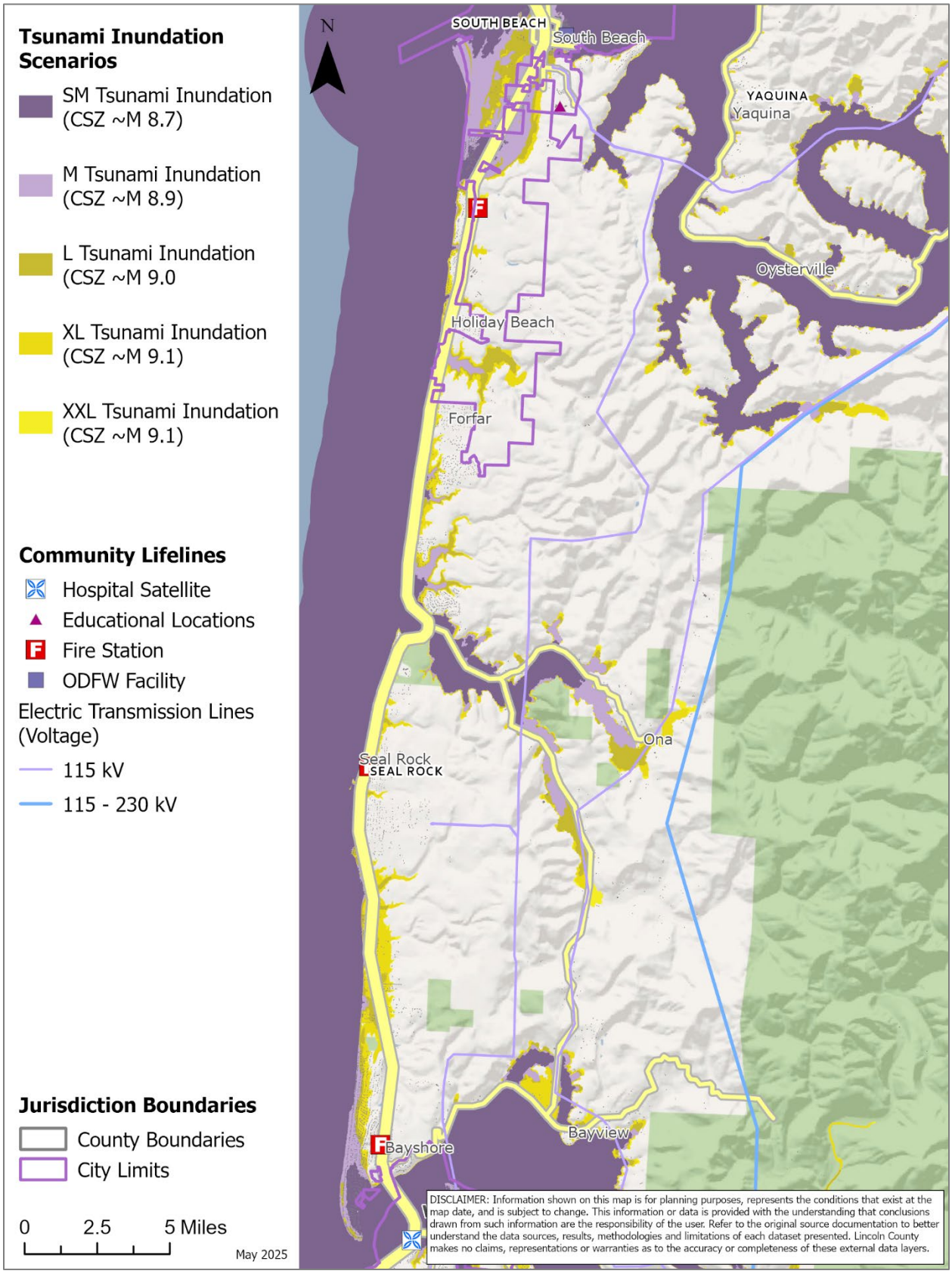
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-6 Perceived Shaking and Damage Potential, CSZ Earthquake Model



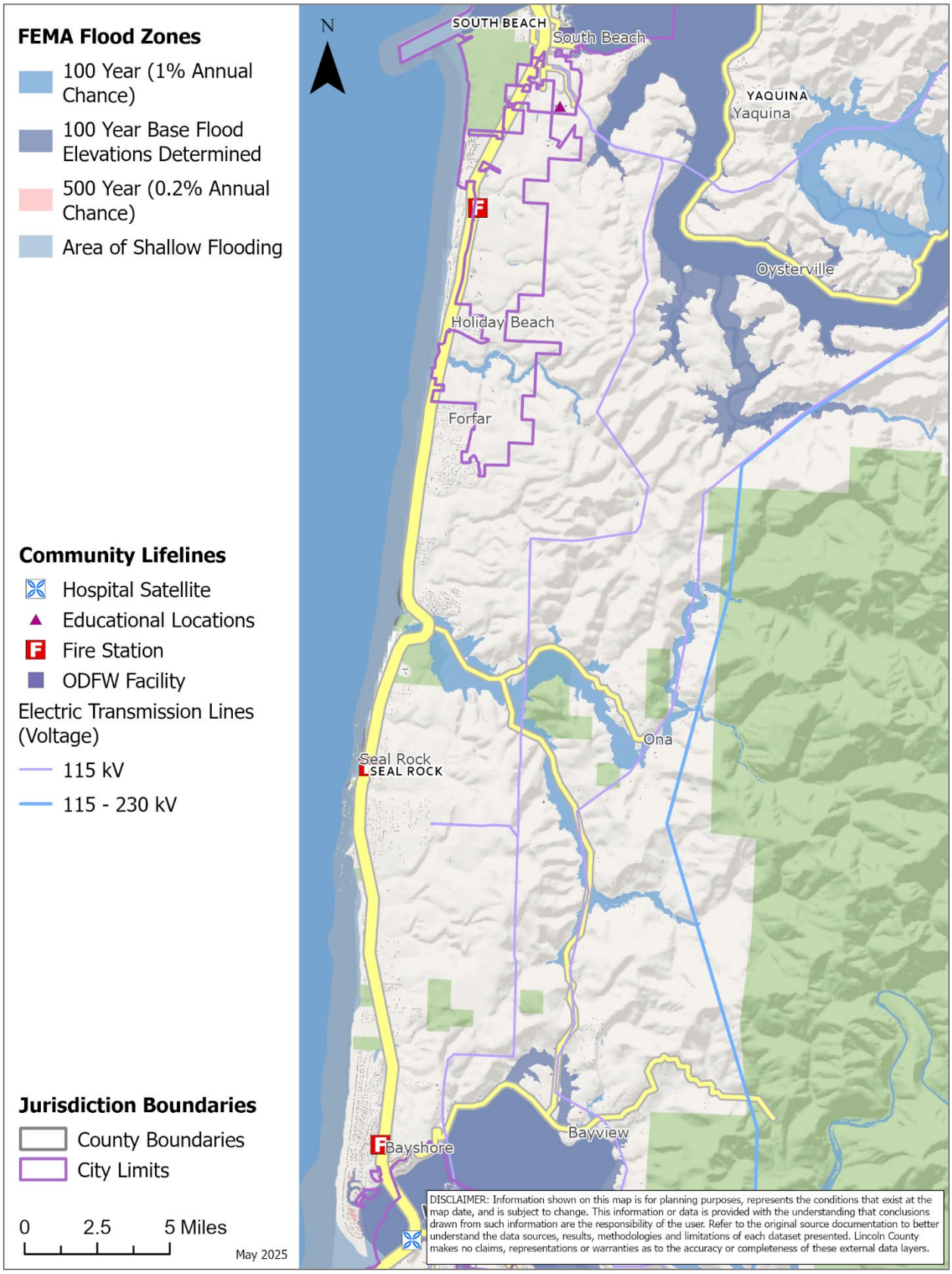
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-7 Tsunami Inundation Scenarios



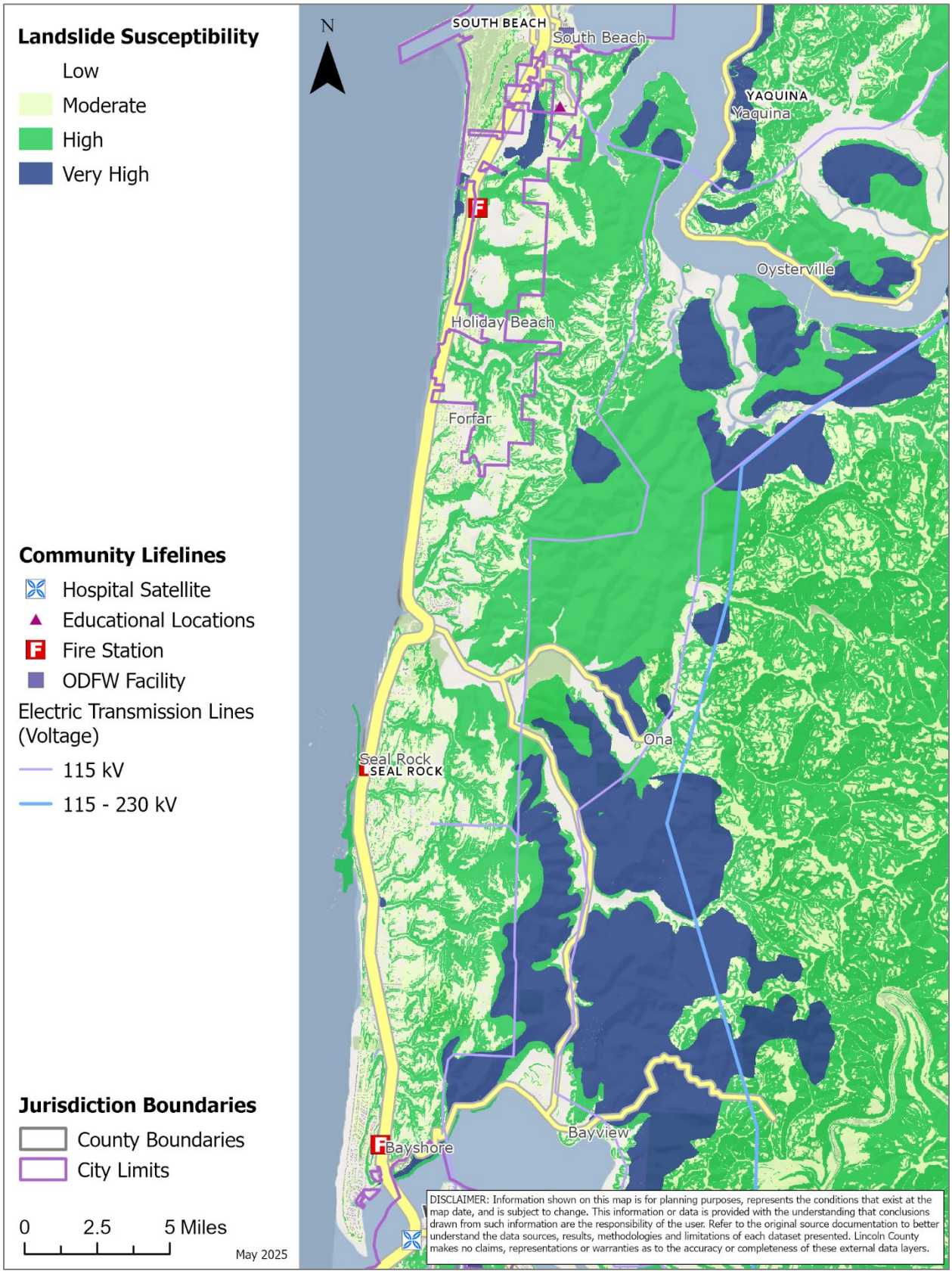
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-8 Flood Hazard Zones (100- and 500-year floodplains)



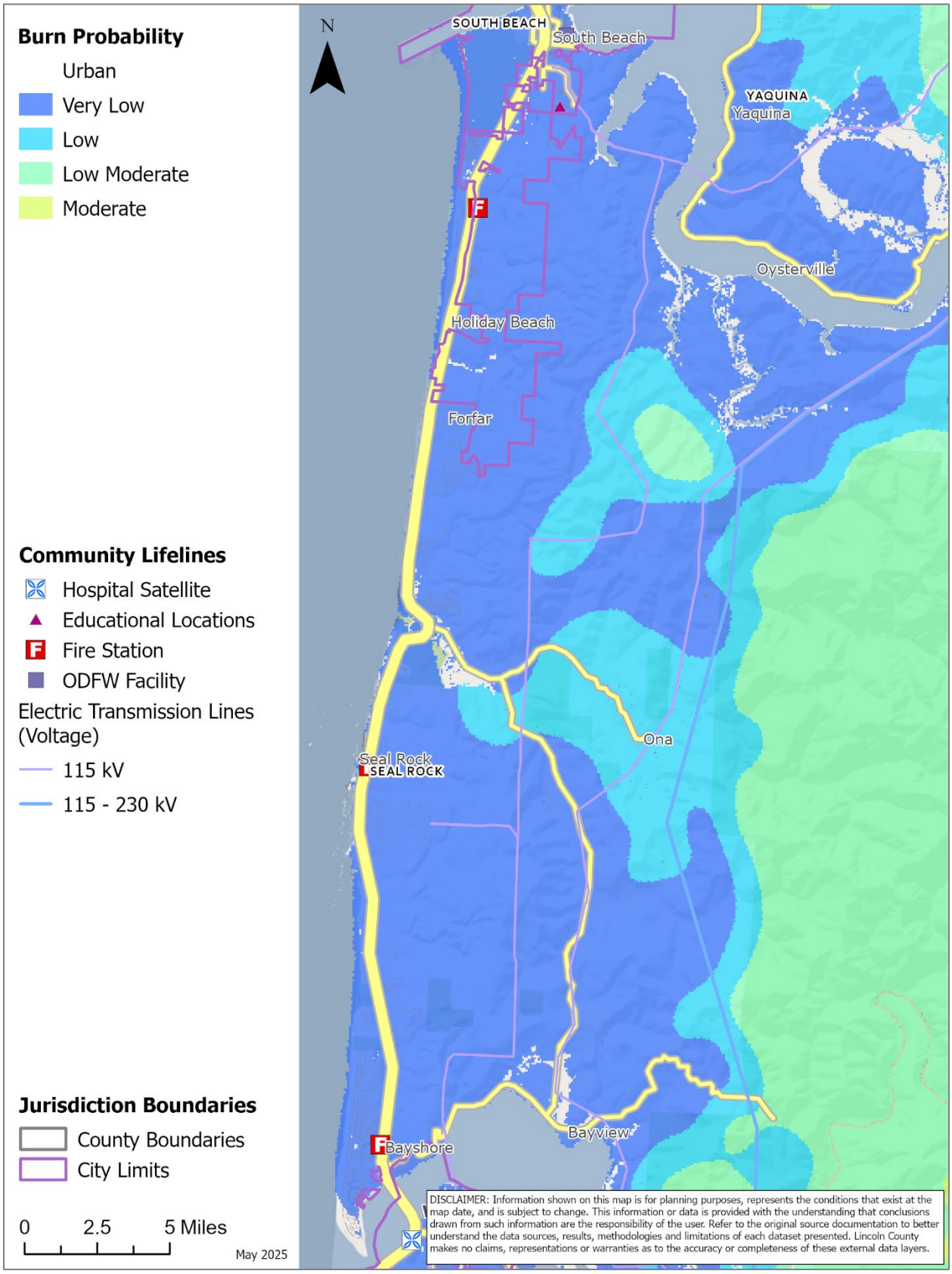
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-9 Landslide Susceptibility Exposure



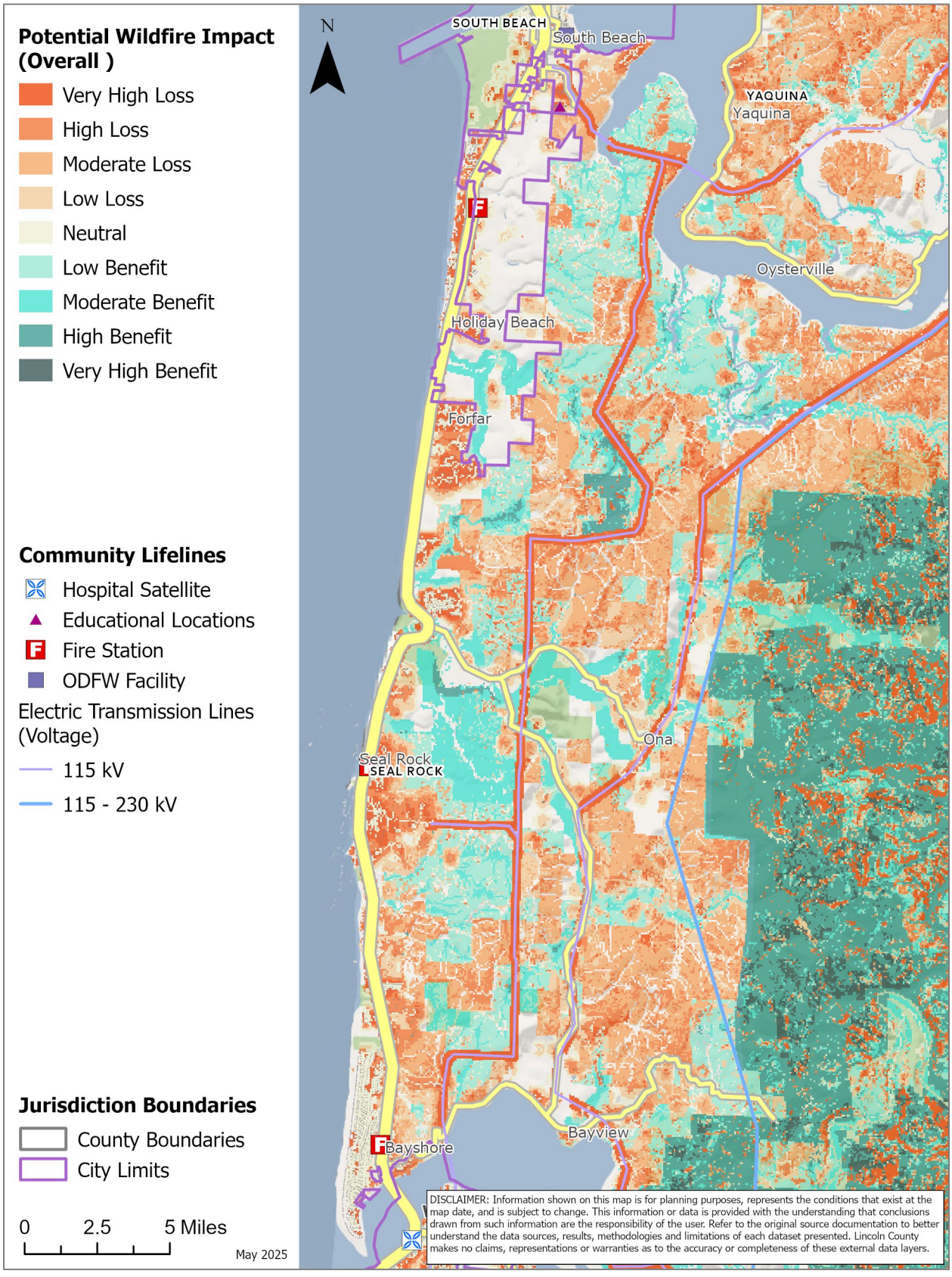
Source: Oregon Explorer: Map Viewer – To view map detail click hyperlink to left.

Map WD-10 Burn Probability and Fire History (1992-2022)



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

Map WD-11 Potential Wildfire Impact (Overall)



Source: PNW Quantitative Wildfire Risk Assessment (2023, layer name = icNVC), To view map detail click hyperlink to left.