5.5 Multnomah County

5.5.1 Mitigation Actions

<table>
<tr><th>Hazard</th><th>Action ID</th><th colspan="8">Mitigation Actions – Multnomah County</th></tr>
<tr><td rowspan="8">Multi-Hazard</td><td rowspan="8">1</td><td colspan="8">Build coordination with disability advocacy groups and disabled residents to analyze varied community risks and identify actions to enhance the safety of disabled residents in all types of hazards.</td></tr>
<tr><td colspan="3">Plan Goals – 1,2,4</td><td colspan="5">Hazards Addressed – All Hazards</td></tr>
<tr><td colspan="3">Lifelines – Community Resilience</td><td colspan="5">Prioritization Criteria</td></tr>
<tr><td>Implementation Lead</td><td>Coordinating Partnerships</td><td>Equity</td><td>Benefit</td><td>Cost</td><td>Risk</td><td>Capacity</td><td>Priority Score</td></tr>
<tr><td>Multnomah County Emergency Management Planning Division</td><td>MCEM Operations, Community Based Organizations, RDPO, Regional Partners</td><td>3</td><td>3</td><td>3</td><td>3</td><td>3</td><td>15</td></tr>
<tr><td colspan="8">Potential Funding – Emergency Management staff time, UASI partnerships and grants.</td></tr>
<tr><td colspan="8">Potential Implementation Methods – Emergency Operations Plan and Standard Operating Procedures</td></tr>
<tr><td colspan="8">Notes – Addresses potential disparate natural hazard community risk.</td></tr>
</table>

Hazard	Action ID	Mitigation Actions – Multnomah County								
Multi-Hazard	2	**Develop countywide recovery plan to enhance short-term disaster resilience and focus long-term social and economic equity in recovery processes.**								
		Plan Goals – 1,2,4,5		Hazards Addressed – All Hazards						
		Lifelines – Community Recovery, All Lifelines		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Emergency Management Planning Division	MCEM Operations, Multnomah County Cities, RDPO, All Recovery Support Function Leads	**3**	**2**	**3**	**2**	**3**	**13**	
		Potential Funding – Emergency Management staff time, FEMA Planning Grants, UASI partnerships								
		Potential Implementation Methods – Existing Recovery Frameworks								
		Notes –								
Multi-Hazard	3	**Continue to integrate hazard mitigation goals in the early design processes for County public facility and infrastructure projects, co-benefitting sustainability and resilience goals.**								
		Plan Goals – 2,3,5		Hazards Addressed – All Hazards						
		Lifelines – Public Facilities		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Facilities	Multnomah County Sustainability, Multnomah County Emergency Management	**2**	**2**	**3**	**3**	**3**	**13**	
		Potential Funding – Existing staff capacity								
		Potential Implementation Methods – Capital Improvement Plan								
		Notes – Continuing action from 2017 NHMP.								

Hazard	Action ID	Mitigation Actions – Multnomah County								
Multi-Hazard	4	**Enhance equitable community capacity building by applying for and managing resilience grants that can be administered by community-based organizations that represent underserved communities.**								
		Plan Goals – 1,2,4		Hazards Addressed – All Hazards						
		Lifelines – Community Resilience		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Emergency Management	Community-Based Organizations, Office of Community Involvement, RDPO	**3**	**3**	**2**	**3**	**2**	**13**	
		Potential Funding – Existing staff capacity, FEMA HMA, UASI, other grants								
		Potential Implementation Methods – Hazard Mitigation Plan, Emergency Operations Plan and Standard Operating Procedures, Sustainability and Climate Action Planning								
		Notes –								
Multi-Hazard	5	**Continue participation in state, regional, and local Critical Energy Infrastructure Hub all-hazard mitigation planning; supporting studies to identify mitigation strategies to reduce environmental impact and threat to life.**								
		Plan Goals – 1,2,3		Hazards Addressed – Earthquake, Flood Landslide, Wildfire and Wildfire Smoke						
		Lifelines – Fuel, Hazardous Materials		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Emergency Management	Multnomah County Sustainability, City of Portland, OEM	**2**	**3**	**3**	**3**	**2**	**13**	
		Potential Funding – Existing staff capacity								
		Potential Implementation Methods – State Legislation, City and County mitigation and evacuation planning								
		Notes –								

Hazard	Action ID	Mitigation Actions – Multnomah County								
Multi-Hazard	6	**Continue process of evaluating the resilience of all county facilities to all natural hazards, and recommend mitigation opportunities resulting from the evaluation.**								
		Plan Goals - 3		Hazards Addressed – All Hazards						
		Lifelines – Public Facilities		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Facilities	Multnomah County Emergency Management	**2**	**2**	**3**	**3**	**2**	**12**	
		Potential Funding – Existing staff capacity								
		Potential Implementation Methods – Capital Investment Plan, Facility Plans								
		Notes –								
Multi-Hazard	7	**Evaluate small residential care and child-care facilities licensed by Multnomah County for resilience to natural hazards and power loss and develop implementable mitigation strategies.**								
		Plan Goals – 1,2,3,4,5		Hazards Addressed – Earthquake, Flood, Landslide, Severe Weather, Wildfire and Wildfire Smoke						
		Lifelines – Care Facilities, Community Resilience		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Department of County Human Services	Multnomah County Emergency Management, Health Department	**3**	**2**	**1**	**3**	**3**	**12**	
		Potential Funding – HMA grants, other external funding								
		Potential Implementation Methods – County Care Facility Licensing Regulations, Emergency Operations Plan and Standard Operating Procedures								
		Notes –								

Hazard	Action ID	Mitigation Actions – Multnomah County							
Multi-Hazard	8	**Develop power backup and air quality resilience capabilities at critical county facilities, especially those that protect residents with heightened risk to climate and wildfire smoke impacts. Capabilities may include backup power generators, transfer switches, and portable or permanent air filtration or air conditioning systems.**							
		Plan Goals – 3,4,5		Hazards Addressed – All Hazards					
		Lifelines – Public Facilities, Disaster Sheltering		**Prioritization Criteria**					
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**
		Multnomah County Emergency Management	Multnomah County Facilities, Environmental Health, Joint Office of Homeless Services	**3**	**3**	**1**	**3**	**2**	**12**
		Potential Funding – Internal Facility Budgets, HMA grants, other external funding							
		Potential Implementation Methods – Emergency Operations Plan and Standard Operating Procedures, JOHS Strategic Planning							
		Notes –							
Multi-Hazard	9	**Convene an update to the Critical Facilities Inventories of the participating entities in this plan and analyze with updated natural hazard risk mapping.**							
		Plan Goals – 3,5		Hazards Addressed – All Hazards					
		Lifelines – Critical Facilities		**Prioritization Criteria**					
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**
		Multnomah County Emergency Management	Multi-Jurisdictional NHMP Participants	**2**	**3**	**3**	**2**	**2**	**12**
		Potential Funding – Existing staff time							
		Potential Implementation Methods – Hazard Mitigation Planning, Regional THIRA-SPR							
		Notes –							

Hazard	Action ID	Mitigation Actions – Multnomah County								
Multi-Hazard	10	**Support the development of resilience hubs to create sites for community pre-disaster engagement and response capacity in county locations with barriers to resilience and recovery.**								
		Plan Goals –		Hazards Addressed – All Hazards						
		Lifelines – Community Resilience		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**
		Multnomah County Sustainability	Multnomah County Emergency Management, Multnomah County Commissioners' Offices	**3**	**2**	**2**	**3**	**2**	**12**
		Potential Funding – Existing staff time, HMA grants, other external funding								
		Potential Implementation Methods – Climate Justice Planning								
		Notes –								
Multi-Hazard	11	**Develop a prioritization of county transportation emergency routes based on trip studies.**								
		Plan Goals – 1,2,3		Hazards Addressed – All Hazards						
		Lifelines – Roads		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**
		Multnomah County Roads	RDPO, Multnomah County Emergency Management	**2**	**2**	**1**	**3**	**1**	**9**
		Potential Funding – Existing staff time, regional funding								
		Potential Implementation Methods – Regional Emergency Transportation Routes, Emergency Operations Plan								
		Notes –								

Hazard	Action ID	Mitigation Actions – Multnomah County								
Multi-Hazard	12	**Develop accessible Story Maps and other GIS Mapping Tools to enhance risk communication and the visibility of natural hazard mitigation opportunities.**								
		Plan Goals – 1,2,4		Hazards Addressed – All Hazards						
		Lifelines – Community Resilience		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Emergency Management	Multnomah County GIS, Multnomah County Office of Community Involvement	**3**	**1**	**1**	**2**	**2**	**9**	
		Potential Funding – External grants								
		Potential Implementation Methods – Emergency Operations Plan, Community Wildfire Protection Plan								
		Notes –								
Earthquake	13	**Continue pursuit of funding for seismic home retrofit programs for historically underserved residents.**								
		Plan Goals – 1,4		Hazards Addressed – Earthquake						
		Lifelines – Housing		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Emergency Management	Multnomah County Cities, Affordable Housing Providers	**3**	**3**	**1**	**3**	**2**	**12**	
		Potential Funding – External grants								
		Potential Implementation Methods – Affordable Housing Strategic Planning, Poverty Report								
		Notes –								

Hazard	Action ID	Mitigation Actions – Multnomah County								
Earthquake	14	**Reassess existing seismic assessments of County facilities, and develop new project prioritization based on results.**								
		Plan Goals – 3		Hazards Addressed – Earthquake						
		Lifelines – Public Facilities		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Facilities	Multnomah County Emergency Management	**2**	**3**	**2**	**3**	**1**	**11**	
		Potential Funding – Existing county capacity								
		Potential Implementation Methods – Capital Improvement Plan								
		Notes –								
Earthquake	15	**Continue to develop the Earthquake Ready Burnside Bridge project and consider project and funding pathways for seismic retrofits of the Hawthorne, Broadway, and Morrison Bridges, as identified in the 2015 Willamette River Critical Infrastructure Plan (CIP).**								
		Plan Goals – 2,3,5		Hazards Addressed – Earthquake						
		Lifelines – Bridges		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Bridges (DCS)		**1**	**3**	**1**	**3**	**2**	**10**	
		Potential Funding – BRIC, other external grants								
		Potential Implementation Methods – Critical Infrastructure Plan								
		Notes –								

Hazard	Action ID	Mitigation Actions – Multnomah County								
Earthquake	16	**Identify and develop applications for ShakeAlert in public safety preparation and seismic resilience of critical county facilities.**								
		Plan Goals – 2,3,5		Hazards Addressed – Earthquake						
		Lifelines – Public Facilities		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Emergency Management	Multnomah County Facilities, Oregon Emergency Management, RDPO	**2**	**2**	**1**	**3**	**2**	**10**	
		Potential Funding – HMA, other external grants, internal construction budgets								
		Potential Implementation Methods – Capital Improvement Plan, Statewide ShakeAlert planning								
		Notes –								
Earthquake	17	**Identify post-earthquake debris storage sites and fully implement the current Multnomah County Debris Management Plan.**								
		Plan Goals – 2,3,5		Hazards Addressed – Earthquake						
		Lifelines – Debris Management		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Department of County Services	Multnomah County Emergency Management, Metro, RDPO, City of Gresham	**1**	**2**	**3**	**2**	**2**	**10**	
		Potential Funding – Existing staff capacity								
		Potential Implementation Methods – Debris Management Plan								
		Notes –								

Hazard	Action ID	Mitigation Actions – Multnomah County								
Flood	18	**Assess Emergency Action Plan for the Van Raden Dam and develop preparation and response planning for any potential dam failure.**								
		Plan Goals – 3,5		Hazards Addressed – Flood						
		Lifelines – Dam		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Emergency Management	Washington County Emergency Management, Oregon Water Resources Department, Dam Owner	**1**	**2**	**3**	**1**	**2**	**9**	
		Potential Funding – Existing staff capacity								
		Potential Implementation Methods – Emergency Operations Plan and Standard Operating Procedures								
		Notes –								
Flood	19	**Develop policy recommendations for channel migration zone impacts on the Sandy River to existing and future development.**								
		Plan Goals – 1,3		Hazards Addressed – Flood						
		Lifelines – Housing, Land Use, Zoning and Building		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Land Use	Multnomah County Emergency Management	**1**	**2**	**1**	**2**	**2**	**8**	
		Potential Funding – Existing staff capacity								
		Potential Implementation Methods – Land Use and Zoning Codes, Development Permit Processes								
		Notes –								

Hazard	Action ID	Mitigation Actions – Multnomah County								
Landslide	20	**Update the County's geological hazards overlay, building off the existing steep slope overlay and addressing stormwater management and slope stabilization for landslide prevention.**								
		Plan Goals – 1,2,5		Hazards Addressed – Landslide						
		Lifelines – Land Use, Zoning and Building		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Land Use		**1**	**2**	**2**	**2**	**2**	**9**	
		Potential Funding – Existing staff capacity								
		Potential Implementation Methods – Land Use and Zoning Codes, Development Permit Processes, Comprehensive Plan								
		Notes –								
Landslide	21	**Work with residents with homes in high landslide risk areas to identify mitigation opportunities, including potential property buyout grants when residents have interest.**								
		Plan Goals – 1,2		Hazards Addressed – Landslide						
		Lifelines – Housing, Community Resilience		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Emergency Management	DOGAMI, Oregon Emergency Management	**1**	**2**	**1**	**2**	**2**	**8**	
		Potential Funding – Existing staff capacity, HMA grants								
		Potential Implementation Methods – Emergency Operations Plan, DOGAMI Landslide Risk Reduction Recommendations								
		Notes –								

Hazard	Action ID	Mitigation Actions – Multnomah County								
Severe Weather	22	**Continue to fund and develop programs to support in-home mitigation for residents in high-risk housing and with limited resources, through weatherization programs and the delivery and installation of portable air conditioners and air filters.**								
		Plan Goals – 1,2,4,5		Hazards Addressed – Severe Weather						
		Lifelines – Housing, Community Resilience		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Department of County Human Services	Multnomah County Health Department, Emergency Management	**3**	**3**	**3**	**3**	**3**	**15**	
		Potential Funding – Existing staff capacity, state and federal grants								
		Potential Implementation Methods – Emergency Operations Plan and Standard Operating Procedures								
		Notes –								
Severe Weather	23	**Coordinate with cities on tree-planting, concrete removal, and other heat island mitigation projects across the county in neighborhoods with high proportions of historically underserved residents, with those living in vulnerable housing, and with those with high proportions of residents with pre-existing health conditions.**								
		Plan Goals – 1,2,3,4,5		Hazards Addressed – Severe Weather						
		Lifelines – Housing, Community Resilience		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Sustainability	Multnomah County Emergency Management, Multi-Jurisdictional NHMP Entities, Metro, RDPO, EPA	**3**	**2**	**2**	**3**	**2**	**12**	
		Potential Funding – EPA, FEMA HMA grants, internal funds								
		Potential Implementation Methods – Emergency Operations Plan and Standard Operating Procedures								
		Notes –								

Hazard	Action ID	Mitigation Actions – Multnomah County								
Wildfire & Wildfire Smoke	24	**Support grants for home ignition zone assessment and mitigation, including vegetation management and structure maintenance, especially for residents in high-hazard areas or with physical or resource limitations.**								
		Plan Goals – 1,2,4,5		Hazards Addressed – Wildfire & Wildfire Smoke						
		Lifelines – Housing, Community Resilience		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Emergency Management	County Fire Districts (Unincorporated Areas), ODF, OSFM	**2**	**3**	**3**	**3**	**3**	**14**	
		Potential Funding – CWDG grants, other Senate Bill 762 programs, Firewise Community opportunities								
		Potential Implementation Methods – Community Wildfire Protection Plan, Fire District Strategic Planning								
		Notes –								
Wildfire & Wildfire Smoke	25	**Implement mitigation strategies for wildfire and wildfire smoke identified in the current and upcoming revision of the Multnomah County Community Wildfire Protection Plan.**								
		Plan Goals – 1,2,5		Hazards Addressed – Wildfire & Wildfire Smoke						
		Lifelines –Community Resilience, Infrastructure		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Emergency Management	County Fire Districts (Unincorporated Areas), ODF, OSFM	**2**	**3**	**2**	**3**	**2**	**12**	
		Potential Funding – CWDG grants, other Senate Bill 762 programs, FEMA HMA grants, internal funding								
		Potential Implementation Methods – Community Wildfire Protection Plan, Fire District Strategic Planning								
		Notes –								

Hazard	Action ID	Mitigation Actions – Multnomah County								
Wildfire & Wildfire Smoke	26	**Identify strategies for supporting defensible space for structures in high-risk wildfire areas in zoning regulations, using Senate Bill 762 processes including new state land-use requirements, new risk mapping, and building code revision opportunities.**								
		Plan Goals – 1,2,5		Hazards Addressed – Wildfire & Wildfire Smoke						
		Lifelines – Land Use, Construction		**Prioritization Criteria**						
		Implementation Lead	**Coordinating Partnerships**	**Equity**	**Benefit**	**Cost**	**Risk**	**Capacity**	**Priority Score**	
		Multnomah County Land Use	Multnomah County Emergency Management	**1**	**2**	**2**	**3**	**2**	**10**	
		Potential Funding – CWDG grants, other Senate Bill 762 programs, FEMA HMA grants, internal funding								
		Potential Implementation Methods – Community Wildfire Protection Plan, Fire District Strategic Planning								
		Notes –								

5.5.2 County Overview

Multnomah County was founded in 1854 as a new county created from portions of Washington County and Clackamas County. The county is bordered on the west by Columbia County and Washington County, on the south and east by Clackamas County and to the northeast by Hood River County. The entire northern border of the county is the Columbia River looking across to the Washington state line. The entire county is 466 square miles, making it the smallest county by area in Oregon.

Portions of this Hazard Mitigation Plan chapter for Multnomah County focus predominantly on the risks and vulnerabilities of unincorporated areas. However, many key Multnomah County government services are also provided in incorporated areas, where Multnomah County is the primary governmental service provider and owns and operates critical facilities. Hazards most impactful to these countywide services receive a countywide lens. Some specific roles that Multnomah County has in the county that are especially reflected in natural hazard mitigation are listed here:

- The primary public provider for health and human services, including public health, environmental health, behavioral health, clinical services, and services for older adults, veterans, those with intellectual and developmental disabilities, residential care facilities, child care facilities and universal preschool.
- Shares administration of the Joint Office of Homeless Services with the City of Portland.
- Operates a number of bridges within incorporated areas, including several spans of the Willamette River in central Portland.
- Operates libraries and other critical facilities throughout the county.
- Provides contracted police services to Fairview, Troutdale, and Wood Village through the Multnomah County Sheriff's Office.
- Operates county jails in the City of Portland and in areas protected by the Columbia Corridor Drainage Districts.
- Provides animal services across the county.

Extreme heat, severe cold, wildfire smoke, and disaster-related long-term power loss are among the most likely hazards to be mitigated and responded to on a countywide level by Multnomah County. Earthquakes are also a hazard where countywide risk is important to document because of the county operation of important bridges.

Multnomah County's road and land use planning services are primarily focused in unincorporated areas. Multnomah County government has no fire services or water agency, but coordinates with multiple districts in unincorporated areas to assist in the management of natural hazard risks.

Some mitigation strategies prioritized in this plan would be implemented in both incorporated and unincorporated areas. Multnomah County may also share goals and strategies with cities or special districts, including the City of Portland, where coordination between governments is essential to successful mitigation.

The unincorporated portions of Multnomah County are primarily located in the eastern and western reaches of the county, and a few unincorporated enclaves remain within the county's Urban Growth Boundary. The Community Profile of this plan has demographic and infrastructure information for the county as a whole, including elements of vulnerability to different demographic populations.

The large unincorporated areas to the east and west hold some of the largest areas in the county with forests, farmland, and steep slopes, making them the highest risk areas for wildfire and landslide in the county. There are also unincorporated areas with particular risk from floods and volcanic impacts.

Unincorporated Multnomah County has seen a significant decline in population since the last version of the plan, due to annexations – especially by the City of Portland in the West Hills – not population loss.

The demographic characteristics of unincorporated Multnomah County differ between locations, but as a whole those outside of incorporated cities are older, less likely to meet definitions of living in poverty and less likely to be non-white or speak a language other than English. Rural unincorporated areas have fewer transportation routes, limited public transit options, and are farther from goods and services, making post-disaster evacuation and resource support more challenging and requiring the development of neighborhood-scale resilience and local planning.

Unincorporated Western Multnomah County

Sauvie Island is located between the Columbia River and the Multnomah Channel, and is only accessible from the rest of the county across the Sauvie Island Bridge. The island is about 15 miles long and four miles wide, with about half of the island managed as the Sauvie Island Wildlife Area and much of that half in Columbia County. Nearly all of the approximately 2,000 residents live in Multnomah County. The southern portion is well-known for small-scale agriculture, and is an important food-growing resource to the Portland Metro area, as well as a popular recreational area. Sauvie Island maintains its own Fire District.

Figure 156 - The Warrior Rock Lighthouse guides ships on the Columbia River from an eastern point on Sauvie Island. It is the smallest lighthouse in Oregon. Photo from the Sauvie Island Community Association.

The West Hills including Forest Park and Tualatin Mountains make up two census tracts have been used to estimate demographics. This area is located north of the City of Portland and reaches to the boundaries with Washington and Columbia Counties. Highway 30 runs through this area near the Multnomah Channel, but most of the terrain is mountainous and includes a portion of Forest Park. The City of Portland has annexed significant portions of this area since

the publication of the 2017 NHMP, leading to a large decline in population. There are several small unincorporated communities, including Burlington and Holbrook.

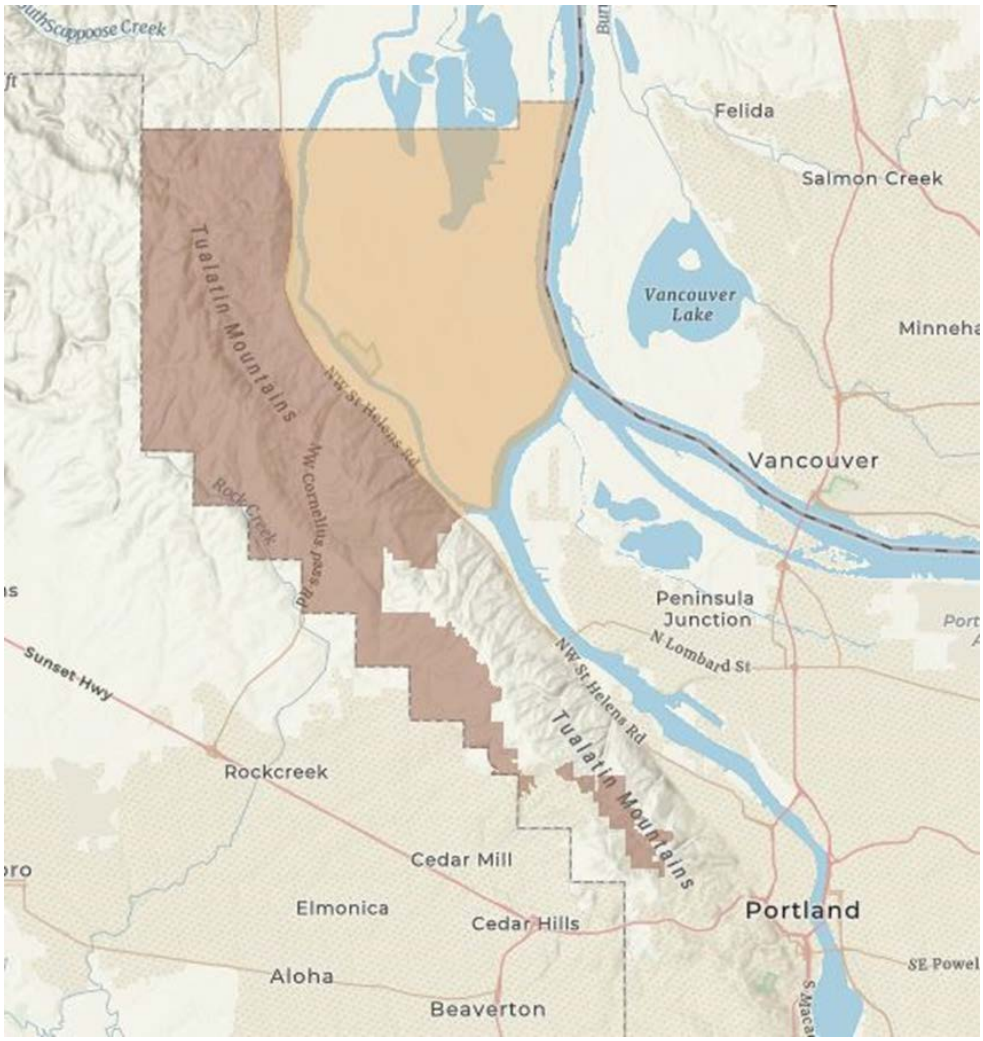

Figure 157 - Map showing the county planning areas for Sauvie Island (tan) and West Hills (brown). Map from Multnomah County Land Use Planning Reference Map.

Unincorporated Eastern Multnomah County

Two census tracts are used to measure demographics of unincorporated areas located to the east of Troutdale and Gresham and south of Gresham, all the way to the boundaries with Hood River County and Clackamas County.

West of the Sandy River makes up the unincorporated areas west of the Sandy River border the City of Gresham to the west and the City of Troutdale to the north. The area is primarily agricultural, and includes a high school. Some annexations have occurred here since the 2017 NHMP. The area approximately west of SE 282nd Avenue is within the Urban Growth Boundary

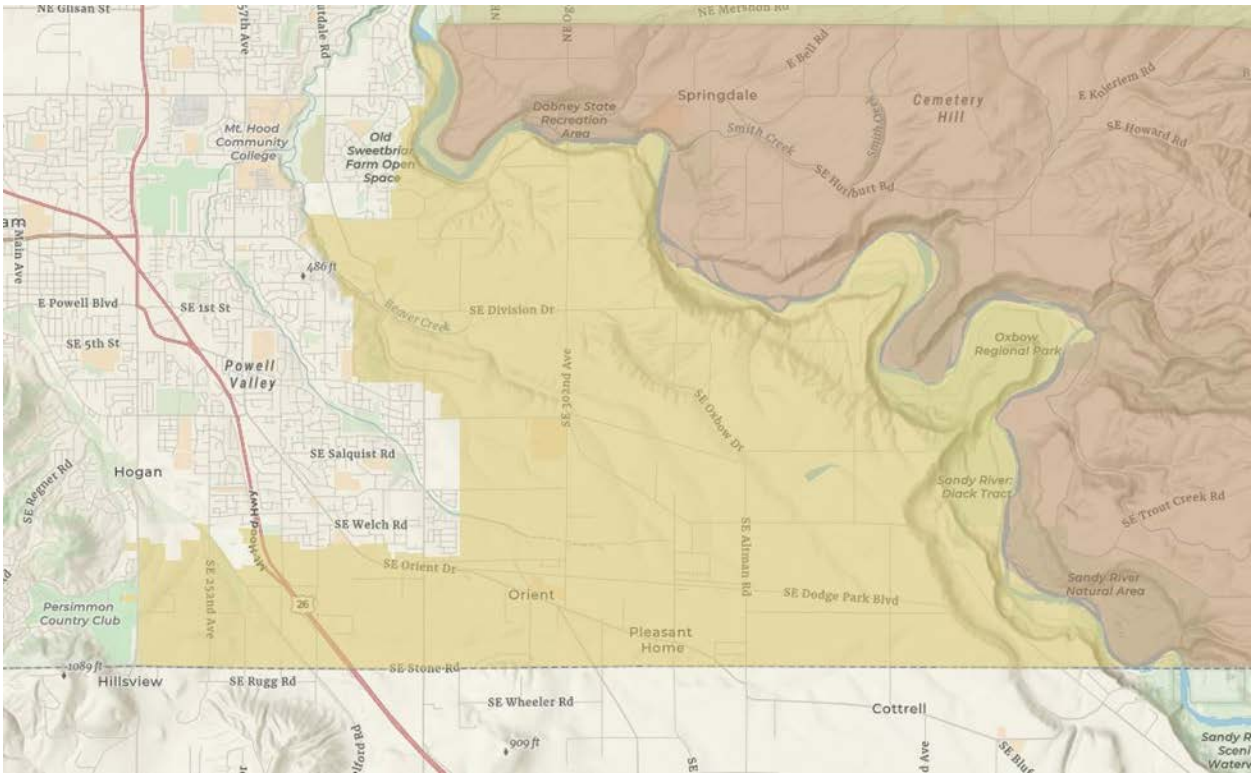

Figure 158 - Map showing county planning areas in East Multnomah County. The lighter area is 'West of the Sandy River' and the darker brown color is 'East of the Sandy River'. Map from [Multnomah County Land Use Planning Reference Map](#).

East of the Sandy River includes communities in the Columbia River Gorge. Corbett is the largest unincorporated community in Multnomah County, with around 2,300 people, and has local school, fire, and water districts. Springdale is located west of Corbett and three miles east of Troutdale, and has another approximately 1,000 people. Farther east in the gorge are the small communities of Latourell, Bridal Veil, Warrendale and Dodson, the Bonneville Dam, and highly valued recreational and cultural sites, including Multnomah Falls. Interstate Highway 84 is the primary transportation route through the gorge. Areas south of the gorge communities include the Aims community but are primarily part of the Mount Hood National Forest or the protected Bull Run Watershed.

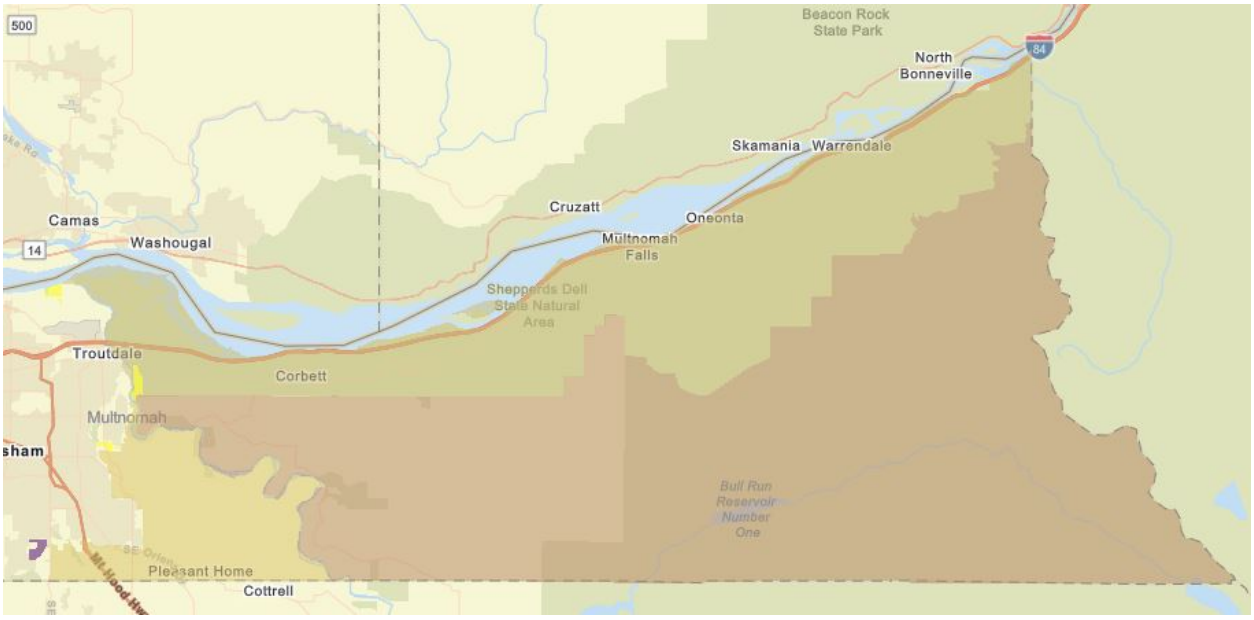

Figure 159 - Map showing Multnomah County Planning Areas. All three colors east of the Sandy River are considered to be the area 'East of the Sandy River' for the purpose of this plan. Map from [Multnomah County Land Use Planning Reference Map]

Unincorporated Urban Pockets

There are a number of additional enclaves surrounded by cities that have not been annexed and remain unincorporated. These areas are too small to be differentiated through census data tracts and so are not broken out in the Community Profile chapter. Many of these areas are also administered by neighboring cities through Intergovernmental Agreements (IGAs), so are not included as part of this plan, and risk is captured within planning for the administering municipality. The two largest enclaves still administered by Multnomah County are detailed in this chapter:

- The Interlachen neighborhood is located on a ridge between Blue Lake and Fairview Lake, with the City of Fairview to the east, south and north and the City of Gresham to the west. The area has about 150 homes.

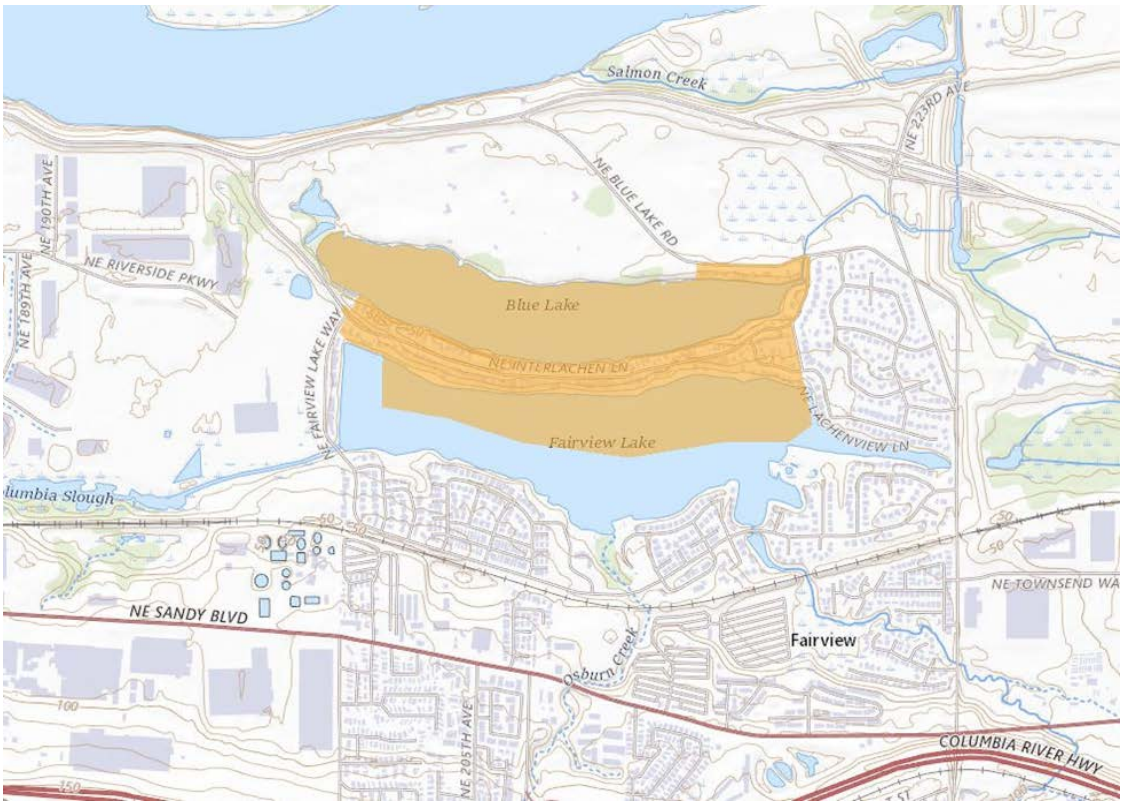

Figure 160 - Map showing the location of the Interlachen neighborhood. Map from [Multnomah County Land Use Planning Reference Map]

- Pleasant Valley is located between the Cities of Portland and Gresham, and borders Clackamas County to the south. The area is bisected by SE Foster Road and is primarily agricultural, but includes an elementary school. This area is also located within the Urban Growth Boundary.

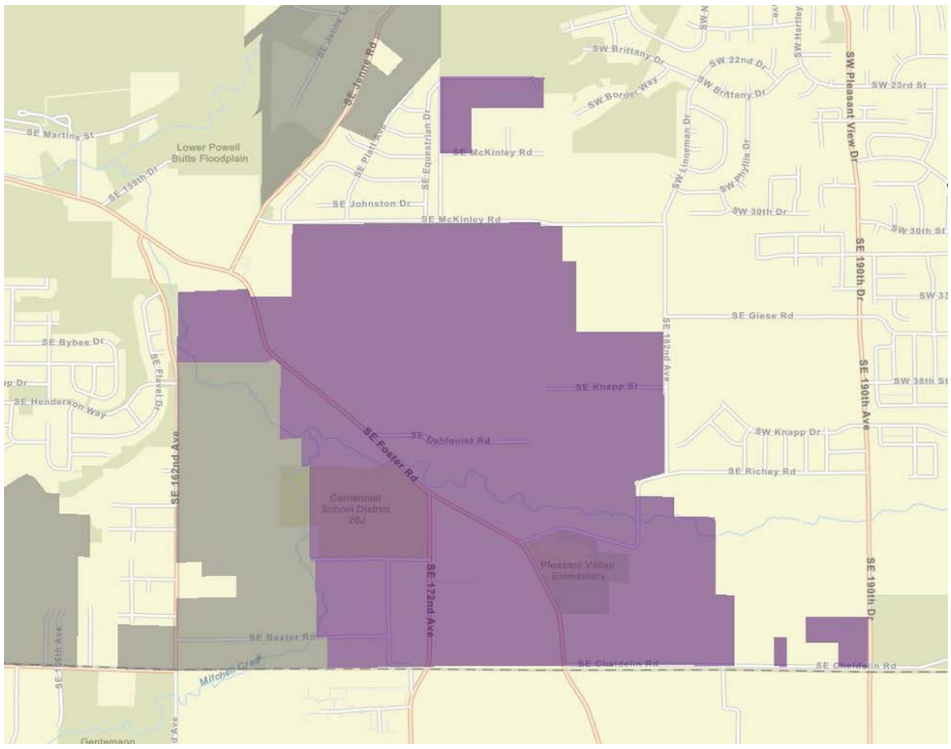

Figure 161 - Map showing the unincorporated Pleasant Valley neghborhood in purple. Gray areas are also unincorporated, but at are administered by the City of Portland. Unshaded areas are part of the City of Portland or the City of Gresham. Map from [Multnomah County Land Use Planning Reference Map]

Transportation

The center of Multnomah County is bisected by Interstate Highways 5 and 405 running through the City of Portland. The western and eastern sides of Multnomah County have just a few important routes that carry most of the through traffic in areas with terrain susceptible to natural hazards.

Western Multnomah County

- State Highway 30, connecting to Columbia County
- State Highway 26, on the west side, connects Portland to Washington County over the West Hills.
- NW Cornelius Pass Road, the primary crossing in northern Multnomah County over the West Hills to Washington County

Eastern Multnomah County

- Interstate Highway 84, connecting to Hood River County through the Columbia River Gorge
- State Highway 26, on the east side connects to Clackamas County through the Mount Hood National Forest
- East Historic Columbia River Highway, connecting unincorporated communities and recreational travelers through the Columbia River Gorge

Public transit options are generally not available in rural unincorporated parts of the county, while the urban enclaves are in the vicinity of TriMet bus routes.

Utilities

A number of water utilities service residents in unincorporated Multnomah County. The majority of residents in the county as a whole are served by the Portland Water Bureau via water from the Bull Run Reservoir and supplemented by the Columbia South Shore Well Field. The Corbett Water District serves about 1,100 customers with surface water from Gordon Creek. Wells and septic systems are also used in rural areas.

Electricity in unincorporated areas is primarily provided by Portland General Electric (PGE) and natural gas by NW Natural. Three other electric utilities operate in small portions of the farthest east and west reaches of the County.

Critical Facilities

A full list of critical facilities can be found in the Human-Caused and Technological Hazard Identification and Risk Assessment, included as an annex to this plan. Communities define their own critical facilities by type. The Critical Facilities identified in unincorporated areas of Multnomah County are:

- Bridges
- Childcare Facilities
- Community Centers
- County Assets
- Fire Stations
- Licensed Medical Facilities
- Law Enforcement Facility
- Private and Public Schools

When considering county-identified Critical Facilities in incorporated cities, the following types of facilities are added:

- Ambulance Services
- Homeless Shelters
- Hospitals
- Jails
- Law Enforcement Facilities
- Libraries
- Residential Care Facilities
- Urgent Care Centers

5.5.3 Five-Year Update, 2017-2022

Hazard Events

Multnomah County suffered a number of significant natural disasters since the adoption of the 2017 NHMP, which have guided a reconsideration of mitigation priorities. The most significant localized events occurred in unincorporated areas, while countywide climate events particularly impacted Multnomah County service providers because of their disparate impacts to residents served by Multnomah County Health, Human Services, and the Joint Office of Homeless Services.

- *2021 Heat Dome*

The 2021 Heat Dome was a transformative event for Multnomah County as a health disaster responsible for at least 69 deaths from heat illness. Deaths were concentrated among older adults living in spaces without climate control and in areas identified as urban heat islands. Response to the disaster included emergency notification and the operation of cooling shelters. As a result of this disaster, heat interventions were developed or expanded, including pre-event preparedness messaging, distribution of air conditioners, and delivery of cooling kits to housed and unhoused people with the most vulnerability.

- *2017 Eagle Creek Fire*

All direct fire impacts from the Eagle Creek Fire occurred in unincorporated Multnomah County, in a location mapped as having high wildfire risk. The fire threatened Columbia River Gorge communities, required significant evacuation, and caused long-term damage to recreation and forestry. The impact of the fire also created increased risk of flood and landslide in burned areas, and was implicated as a factor in the fatal 2021 Dodson landslide. The magnitude of the Eagle Creek Fire increased awareness of wildfire risk throughout the county.

- *2021 Dodson Landslide*

The most significant landslide in the last five years was a fatal event that occurred in 2021 near the unincorporated community of Dodson, in the northeasternmost portion of the county. The landslide was caused by heavy rain and was likely influenced by post-fire effects from the Eagle Creek Fire. The Dodson-Warrenton area has a long geological history of major landslides.

- *2020 September Wildfire Smoke Event*

The wildfire smoke event in September 2020 blanketed the entire county in thick smoke for nearly a week. This disaster led to elevated emergency room visits and was of particular concern for those with existing respiratory illness. Shelter space was provided for unsheltered residents, as well as for those evacuating from fire in Clackamas County. Personal protective equipment was distributed and communication was provided on the risk of wildfire smoke and how to make homes safer from unhealthy air.

- *Other Heat and Cold Events*

Deaths occurred in a number of other heat and cold events over the past five years, including the death of five unhoused residents in the severe winter of 2016-2017, and five hyperthermia deaths from a weeklong heatwave in 2022.

Mitigation Successes

- After the Heat Dome event in 2021, Multnomah County began purchasing portable air conditioner units to distribute to County Human Services clients determined to be particularly at risk from heat. This intervention is part of a number of climate-based mitigation programs, including home weatherization programs, emergency sheltering, and coordination with affordable housing providers with residents particularly at risk from heat. Residents in the City of Portland have also received air conditioners through the Portland Clean Energy Fund and as of 2022, The State of Oregon also has a distribution program through the Oregon Health Authority.

- A major project to replace the Burnside Bridge began in earnest around the time the previous plan was adopted. The county-owned bridge is a central lifeline route in Portland connecting the east and west sides of the county. Feasibility studies were completed between 2016 and 2018 and four alternatives were moved forward to environmental review in 2019.

  The preferred alternative, a full replacement span, was approved in October 2020. Refinements to the plan developed through additional public input and environmental review were occurring through 2022. Construction is hoped to begin in 2025 and be completed in 2029.

- The Sauvie Island Drainage Improvement Company (SIDIC) received accreditation of its levees from the United States Army Corps of Engineers (USACE) in 2019. This accreditation certifies the protective quality of the levees for 10 years, and the report recommended that FEMA maintain levee protection status on Flood Insurance Rate Maps.

- A new Central County Courthouse opened in 2020, replacing a 106-year-old building located along the Willamette River in Portland in an area with high soil liquefaction risk. The new $34 million building was built with an elastic concrete frame to lessen the risk of collapse and fluid viscous dampers to dissipate shaking energy.

- The Multnomah County Office of Sustainability has worked with the City of Gresham to increase tree planting in urban heat island neighborhoods. The office released a final progress report on the 2015 Climate Action Plan in 2021, which included strategies linked to hazard mitigation planning work. Climate planning is continuing with a focus on climate justice and the centering of front-line communities to address disparities in

climate impacts caused by non-weatherized homes, lack of tree canopy, and inequitable health outcomes.

Growth and Development Impacts

As noted above, the population of unincorporated Multnomah County has declined in the last five years, as areas with new development inside the Urban Growth Boundary have been mostly annexed by neighboring cities.

Development managed by Multnomah County continues to be low-density and rural, requiring management of natural hazard threats most prominent in those locations–landslide, wildfire, and flood. Planning and building codes continue to evolve to make future development more resistant to these hazards.

The county's population growth continues to increase the number of people at risk from climate hazards. The population has grown older in the last five years, increasing the number of older adults more at risk from these hazards. The number of unhoused residents has also sharply increased, increasing a population group with often the most difficulty moving to climate-controlled spaces and with high rates of pre-existing health conditions and disability.

5.5.4 Local Hazard Analysis

Earthquake – Risk Rating High

See Earthquake Section for more detailed risk and vulnerability information.

The most severe impacts to Multnomah County from earthquakes will likely be caused in densely populated areas. This risk will place a large burden on Multnomah County to support mass sheltering, health services, and support to human services clients, including older adults, children, and those with disabilities. Damage to county bridges could be extensive, and many other county facilities will likely also be damaged.

Unincorporated areas have fewer structures and infrastructure to be at risk than in cities, but face vulnerability because of the lack of redundant systems that could leave at-risk residents without evacuation routes and the ability to reach critical resources and health services. Earthquake-triggered landslides are also a major concern on both sides of the county, as are potential post-disaster fires.

Areas located in the western part of the county and areas located in wet soils in the historical Columbia River floodplain face the highest risk from a Cascadia Subduction event or a Portland Hills crustal quake. Liquefaction may occur throughout the western portion of the county, even in higher elevation areas along creeks. The entirety of Sauvie Island is considered to have high liquefaction potential, which will threaten residences and the protective levee system.

An interactive version of this map can be found here (Earthquake Hazard – Earthquake Liquefaction (Soft Soil) Hazard)

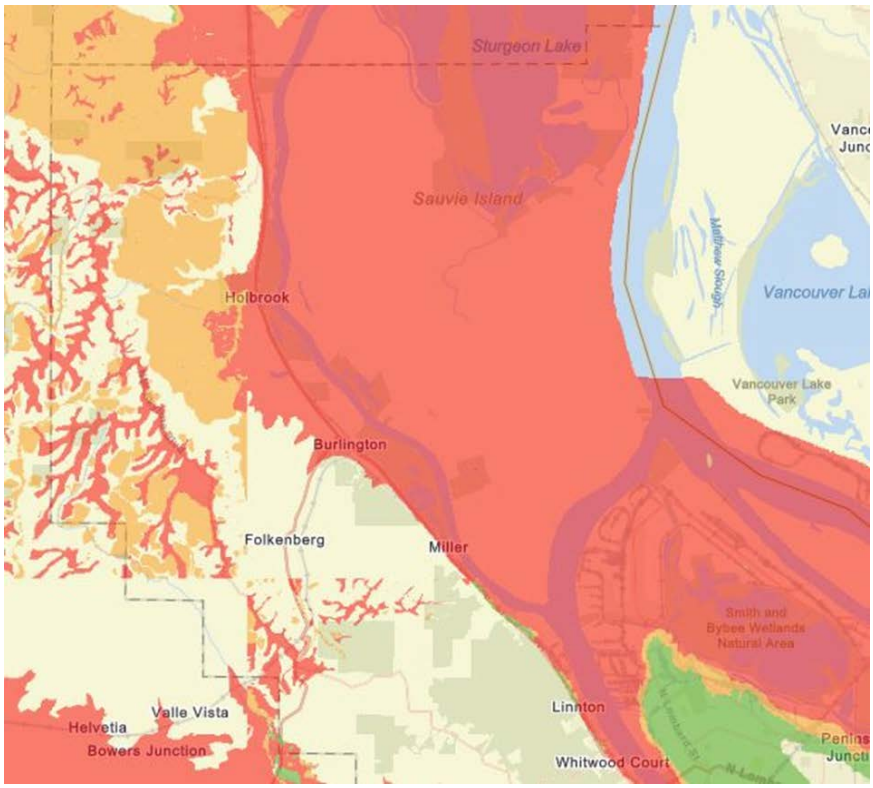

Figure 162 - Map showing soil liquefaction risk in the Western portion of Multnomah County. Red is the highest risk area, orange is moderate, and green has a lower risk. Map from DOGAMI's HazVu site.

The Critical Energy Infrastructure (CEI) Hub in Northwest Portland near Linnton is also a major concern, as major damage to the facility would likely send a huge amount of liquid fuel downriver, create a toxic plume, and render Highway 30 impassable. The entirety of the facility is also located in a high-risk soil liquefaction area.

Much of the eastern side of the county has less risk from Cascadia Subduction or Portland Fault events. Generally, the eastern portion of the county has much less soil prone to liquefaction but areas with wet soils along the Columbia and Sandy Rivers would still see elevated shaking and liquefaction potential. The Sandy River Delta is the most earthquake-prone area and has been a frequent camping site for unsheltered residents and is a popular recreation area.

An interactive version of this map can be found here (Earthquake Hazard – Earthquake Liquefaction (Soft Soil) Hazard)

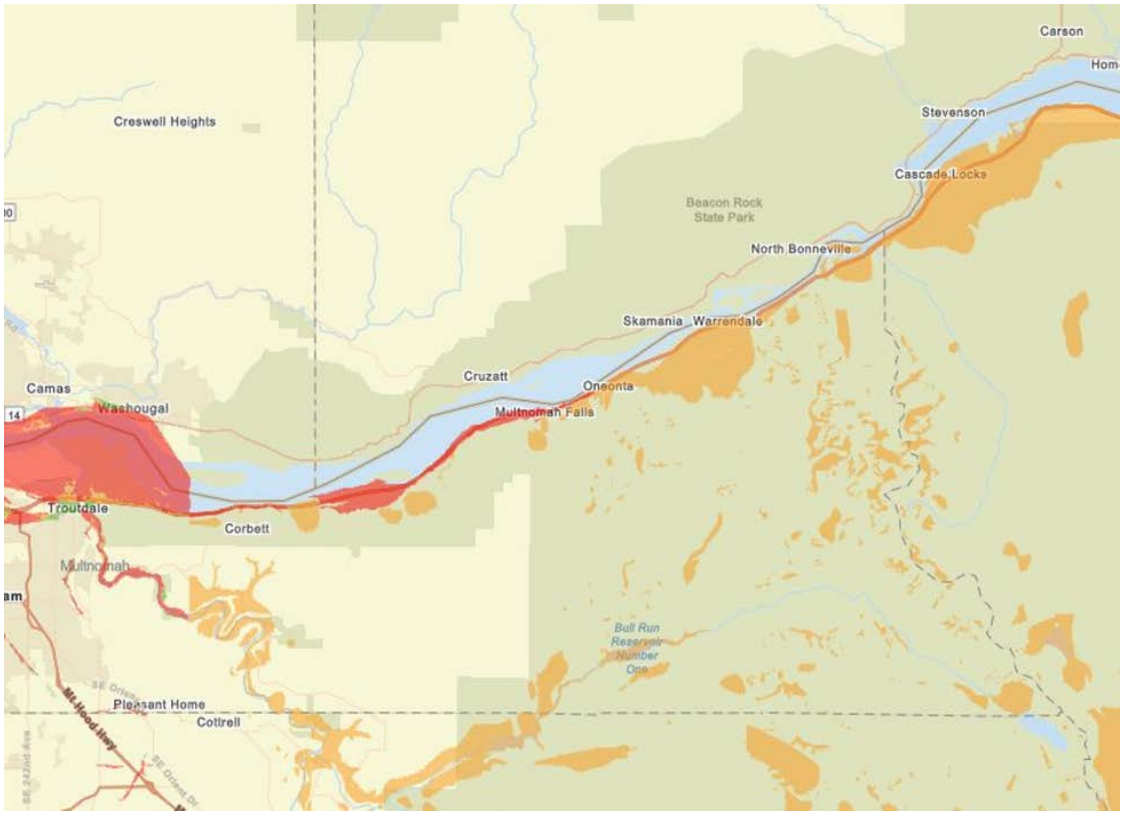

Figure 163 - Map showing soil liquefaction risk in the Eastern portion of Multnomah County. Red is the highest risk area, orange is moderate, and green has a lower risk. Map from DOGAMI's HazVu site.

More damage may occur in eastern Multnomah County from a large earthquake on the Mount Hood fault. An earthquake at that location would have stronger shaking and could trigger additional landslides that could threaten communities and block emergency routes, including Interstate Highway 84. A Mount Hood earthquake is considered to be less likely than a Cascadia Subduction Zone event.

There are additional small faults identified in eastern Multnomah County, but these faults are not part of the National Seismic Hazard Model and are not currently considered to be of significant risk.

An interactive version of this map can be found here (Earthquake Hazard – Active Faults)

Figure 164 - Map showing mapped crustal faults in Eastern Multnomah County. Map from DOGAMI HazVu site.

The urban pocket areas also face significant risk from soil liquefaction. The Interlachen neighborhood is located on wet soils between lakes, and is subject to heavy shaking as well as road and foundation damage from lateral spreading.

An interactive version of this map can be found here (Earthquake Hazard – Earthquake Liquefaction (Soft Soil) Hazard)

Figure 165 - Map showing soil liquefaction potential in the Interlachen neighborhood. Red areas have the highest soil liquefaction potential, orange areas have moderate risk, and green areas have lower risk. Map from DOGAMI HazVu site.

The Pleasant Valley area has less potential for shaking during a Cascadia event, but also lies on wet soils in one of the largest liquefaction areas in the southern portion of the county.

An interactive version of this map can be found here (Earthquake Hazard – Earthquake Liquefaction (Soft Soil) Hazard)

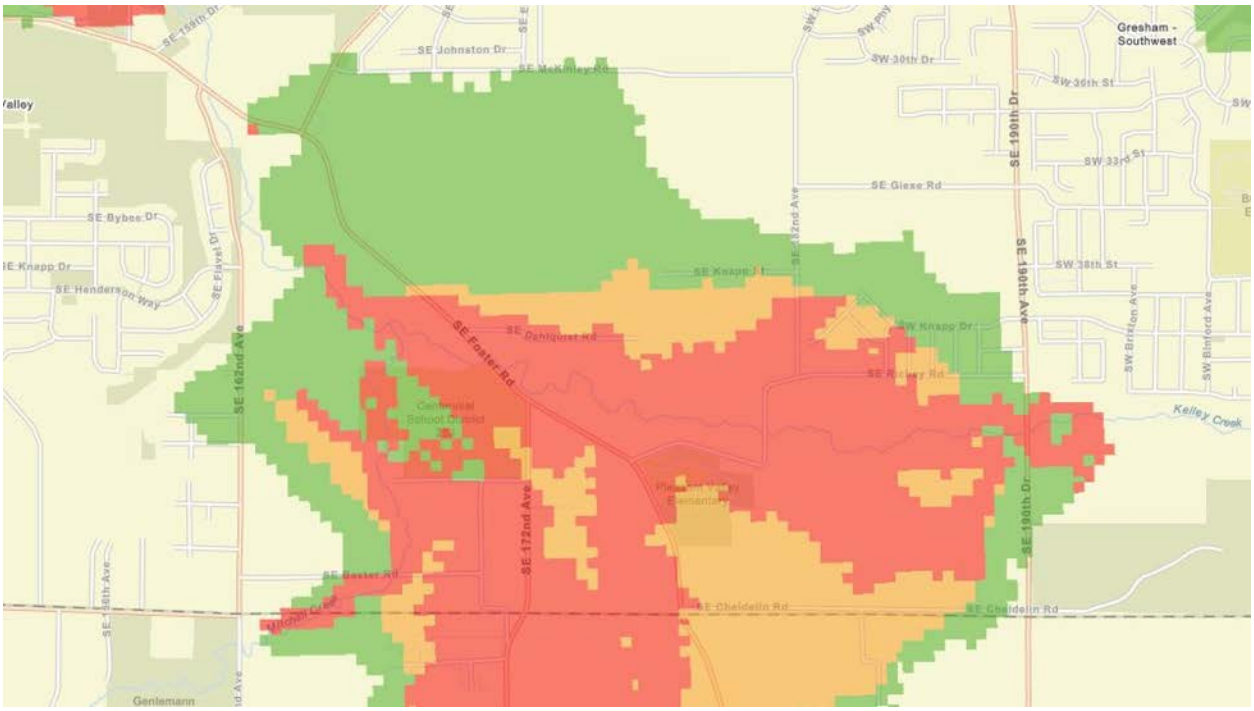

Figure 166 - Map showing soil liquefaction potential in the Pleasant Valley neighborhood. Red areas have the highest soil liquefaction potential, orange areas have moderate risk, and green areas have lower risk. Map from DOGAMI HazVu site.

Bridges

Multnomah County operated bridges are highly vulnerable to earthquake damage. The banks along both sides of the Willamette River are highly subject to heavy shaking and liquefaction, and remaining unreinforced bridges are likely to see damage to both approaches and spans.

An interactive version of this map can be found here (Earthquake Hazard – Earthquake Liquefaction (Soft Soil) Hazard)

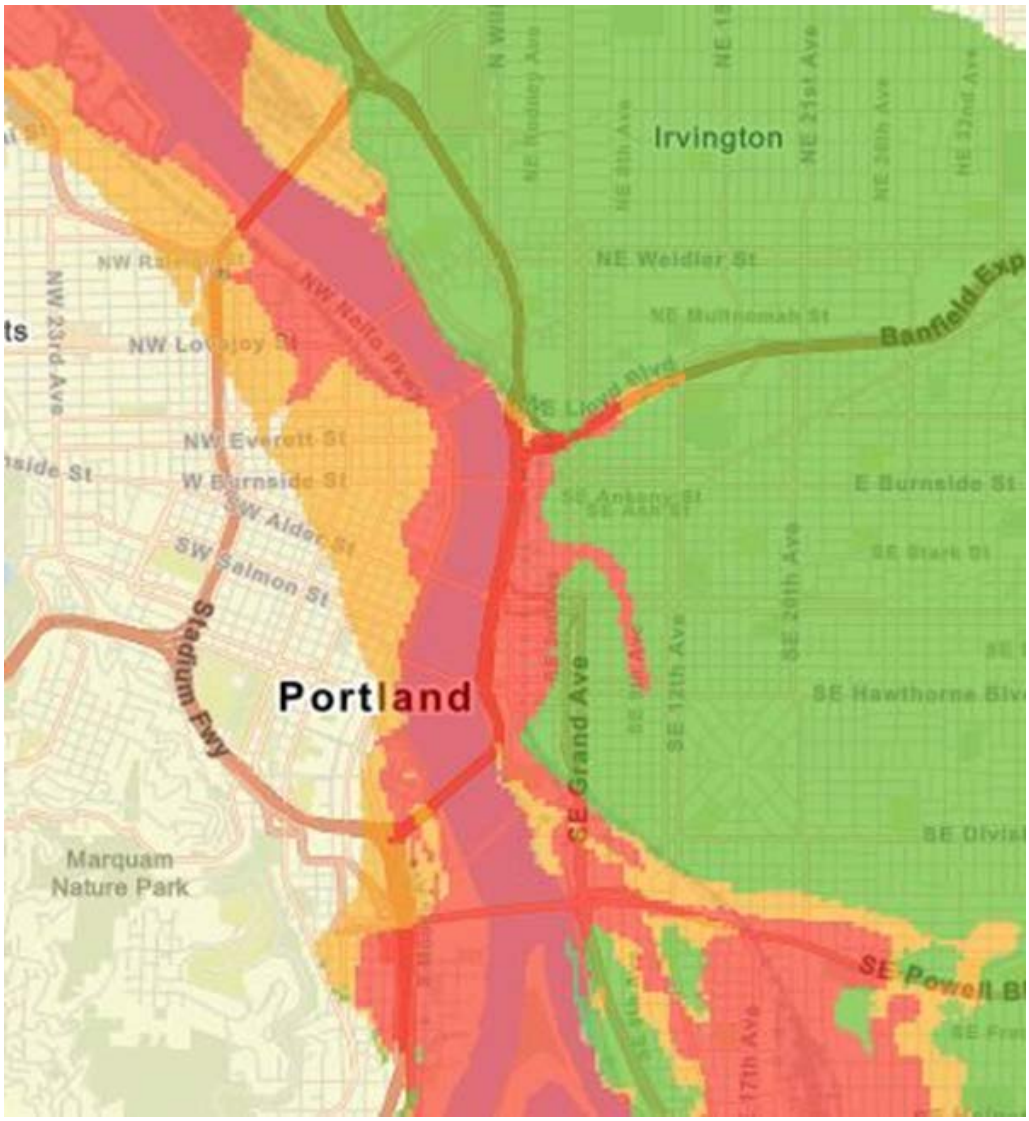

Figure 167 - Map showing soil liquefaction threat at bridge sites across the Willamette River operated by Multnomah County. Red are areas with the highest risk, yellow is moderate risk, and green is lower risk. Map from DOGAMI HazVu site.

Bridges across the Sandy River are also threatened by soil liquefaction and shaking from earthquakes. The Stark Street Bridge is operated by Multnomah County and has high soil liquefaction threat on both sides of the span.

An interactive version of this map can be found here (Earthquake Hazard – Earthquake Liquefaction (Soft Soil) Hazard)

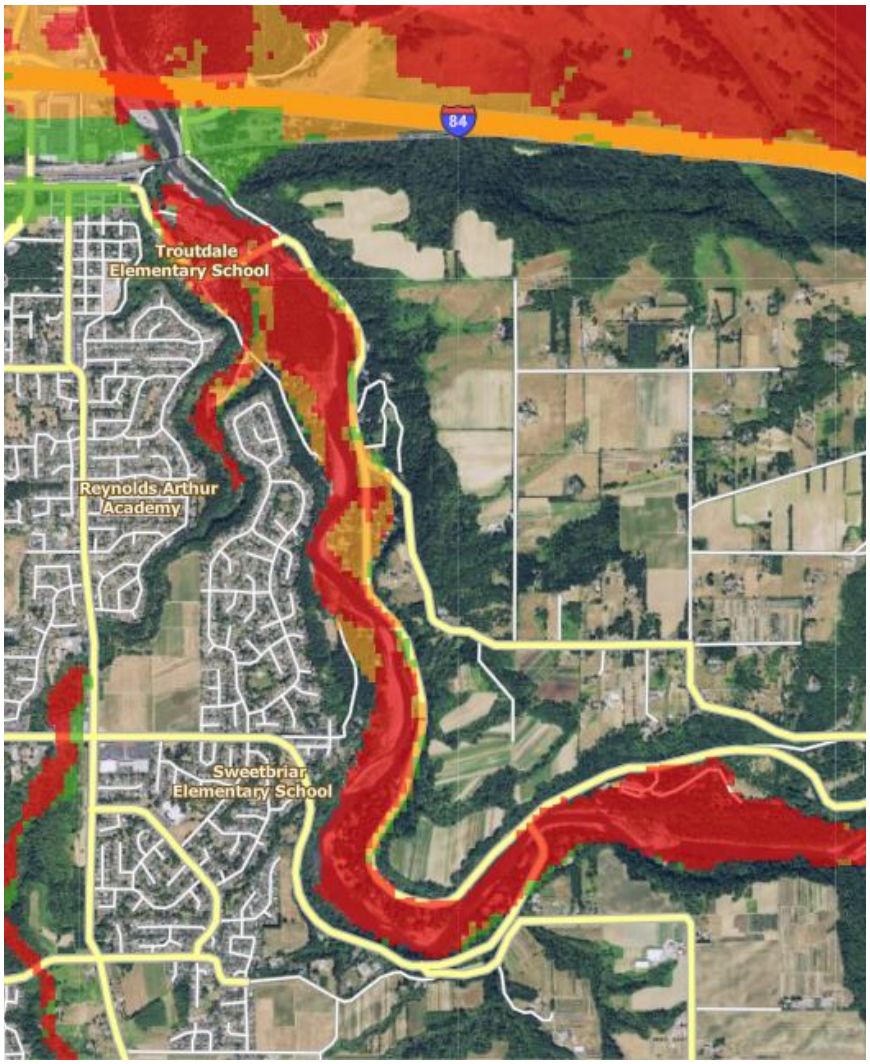

Figure 168 - Map showing soil liquefaction risks around Sandy River bridges. Red indicates high soil iquefaction risk, orange is moderate risk, and green are lower risk. Map from DOGAMI HazVu site.

Flood – Risk Rating Moderate

See Flood Section for more detailed risk and vulnerability information.

Flood is considered a moderate risk for Multnomah County. As with other hazards, a major countywide flooding event would require significant resources for evacuation, sheltering, and care for the most at-risk residents of the county who might be cut off from power, services, and caregiver support. However, flood risk to people and structures in unincorporated portions of the county is somewhat limited, in part due to the low population density, levee protection, and flood sources being channelized because of steep topography.

The largest area of risk is Sauvie Island, due to its flat topography and location between channels of the Columbia River. The levee system provides protection to a 0.2% annual chance (500-year) flood to most of the populated lower portion of the island. There are a few locations with 1% annual chance (100-year) mapped regulatory floodplain at Bell View Point and around Virginia Lake. The recent recertification of the levees is expected to maintain the current status for the most part, but revised mapping with improved ground-elevation data will slightly alter flood risk zones and will provide more detail of interior ponding areas inside the levees. The new maps are expected to be completed in 2023.

An interactive version of this map can be found here (Flood Hazard – Effective FEMA Flood Data)

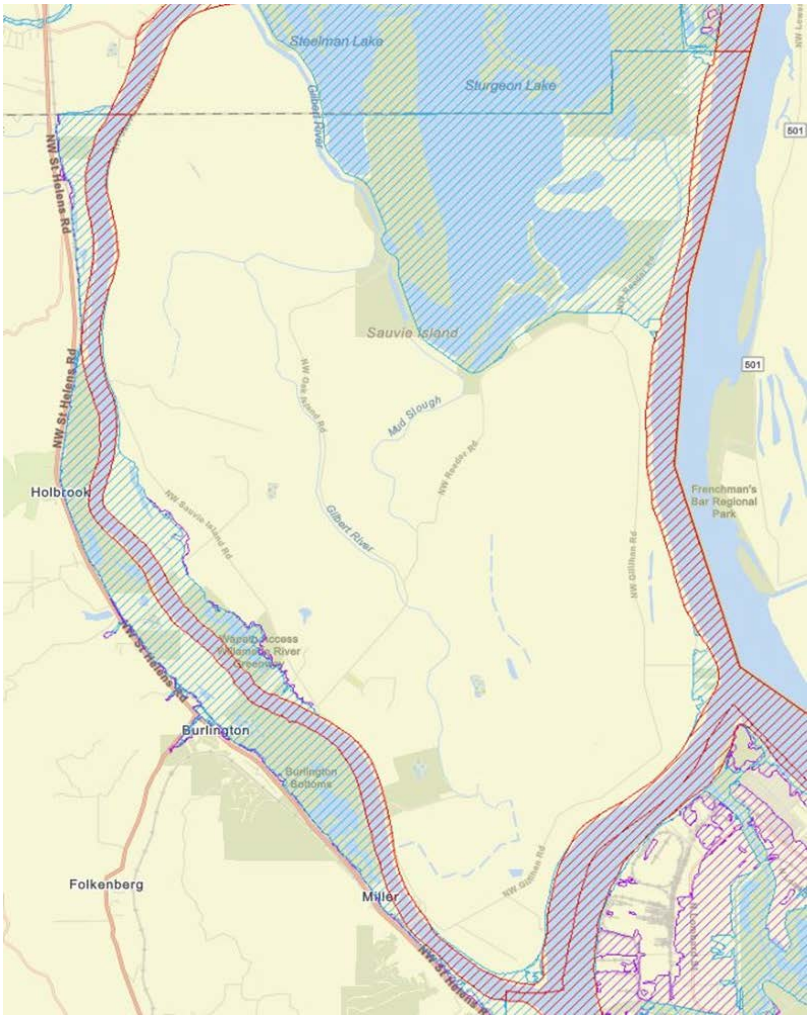

Figure 169 - Map showing mapped flood risk areas in and around Sauvie Island. Areas in blue are in the 1% annual chance (100-year) and those in purple are in the 0.2% annual chance (500-year) floodplain. Map from DOGAMI's HazVu site.

Areas between Highway 30 and the Multnomah Channel from Burlington north to the county boundary have flood risk, but development in these areas is limited to marina parking and facilities, with the majority of the area reserved as open space.

There are no currently mapped floodplains in the unincorporated portions of the West Hills/Tualatin Mountains, although fast-moving stormwater in creeks can exceed banks during heavy rain events. However, there is little development in these areas. Land movement and debris flows during flooding rains are a concern.

Flood risk zones in the eastern unincorporated portion of the county are most significant along Beaver Creek, Johnson Creek, and the Sandy River. These areas are primarily approximate studies, meaning they lack the detail of mapping in more urbanized areas, reflecting low mapping priority because of low population density.

An interactive version of this map can be found here (Flood Hazard – Effective FEMA Flood Data)

Figure 170 - Map showing flood risk areas along the Sandy River in Unincorporated Multnomah County. Areas in blue are part of the 1% annual chance (100-year) floodplain and areas in purple are part of the 0.2% (500-year) floodplain. Floodways are shown in red. Map from DOGAMI HazVu site.

The Columbia River through the Gorge has mapped regulatory floodplain, but at elevations below developed areas. Interstate Highway 84 has only one location, at Bridal Veil Creek, where it would be expected to be inundated by the regulatory level of flood. Land movement and debris flows during heavy rain events are the most significant risk in this part of the county.

[An interactive version of this map can be found here (Flood Hazard – Effective FEMA Flood Data)]

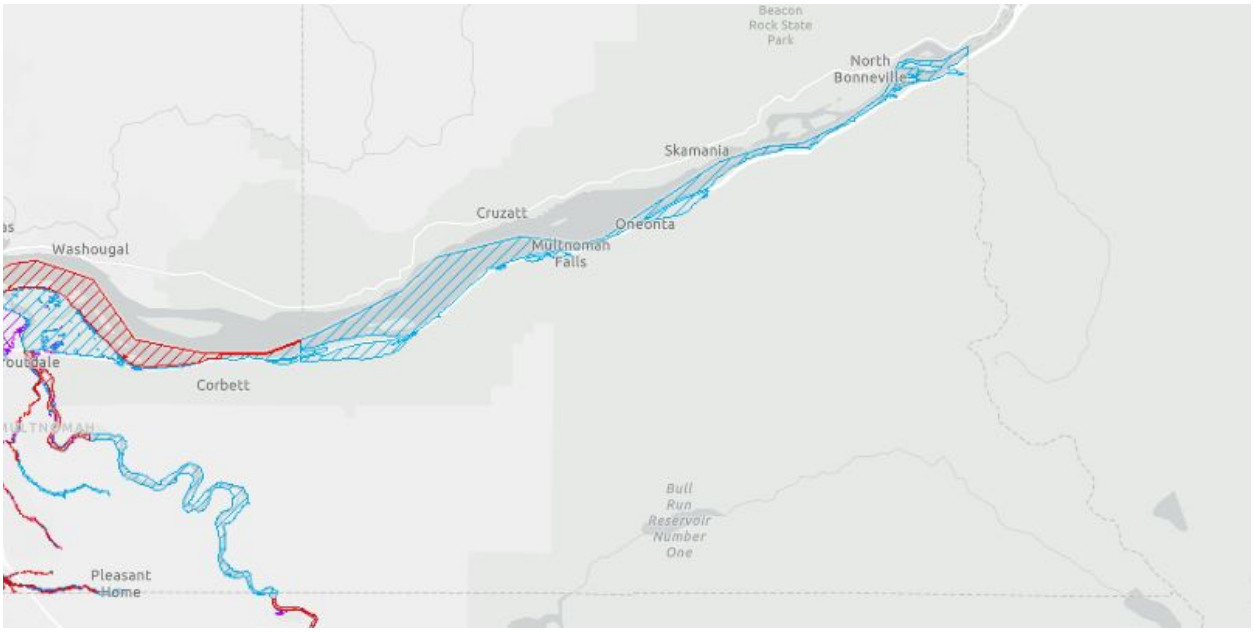

Figure 171 - Map showing flood risk areas in eastern Unincorporated Multnomah County. Areas in blue are part of the 1% annual chance (100-year) floodplain and areas in purple are part of the 0.2% (500-year) floodplain. Floodways are shown in red. Map from DOGAMI HazVu site.

Pleasant Valley has some flood risk from a confluence of creeks and tributaries, with a small number of structures potentially threatened by a major event.

An interactive version of this map can be found here (Flood Hazard – Effective FEMA Flood Data)

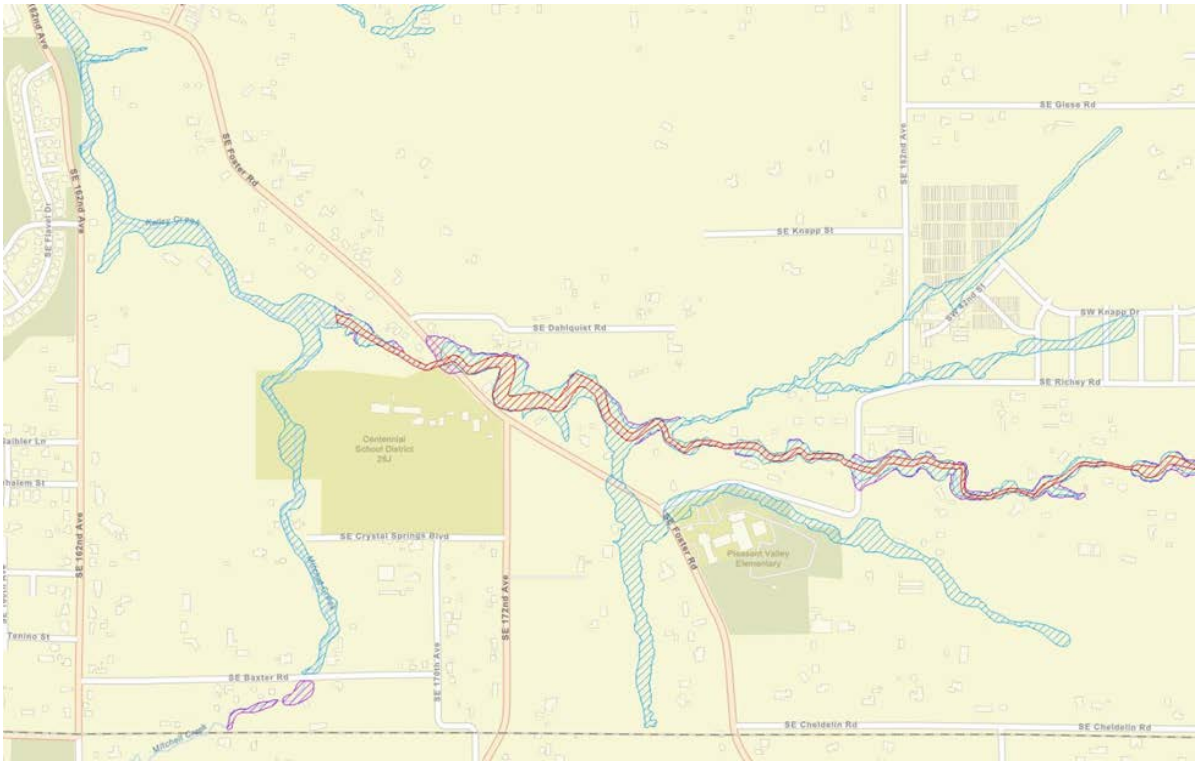

Figure 172 - Map showing flood risk areas along in the Pleasant Valley area of Unincorporated Multnomah County. Areas in blue are part of the 1% annual chance (100-year) floodplain and areas in purple are part of the 0.2% (500-year) floodplain. Map from DOGAMI HazVu site.

The Interlachen community is on a ridge above the adjacent lakes and is not part of the regulatory floodplain. The purple hatching represents risk from a larger event, the 0.2% annual chance (500-year) flood. A catastrophic flood of this size is shown to completely inundate the community as well as all transportation routes in and out of the neighborhood. Because the risk from the 0.2% chance event is not regulated under the NFIP, residents may be less likely to have flood insurance.

An interactive version of this map can be found here (Flood Hazard – Effective FEMA Flood Data)

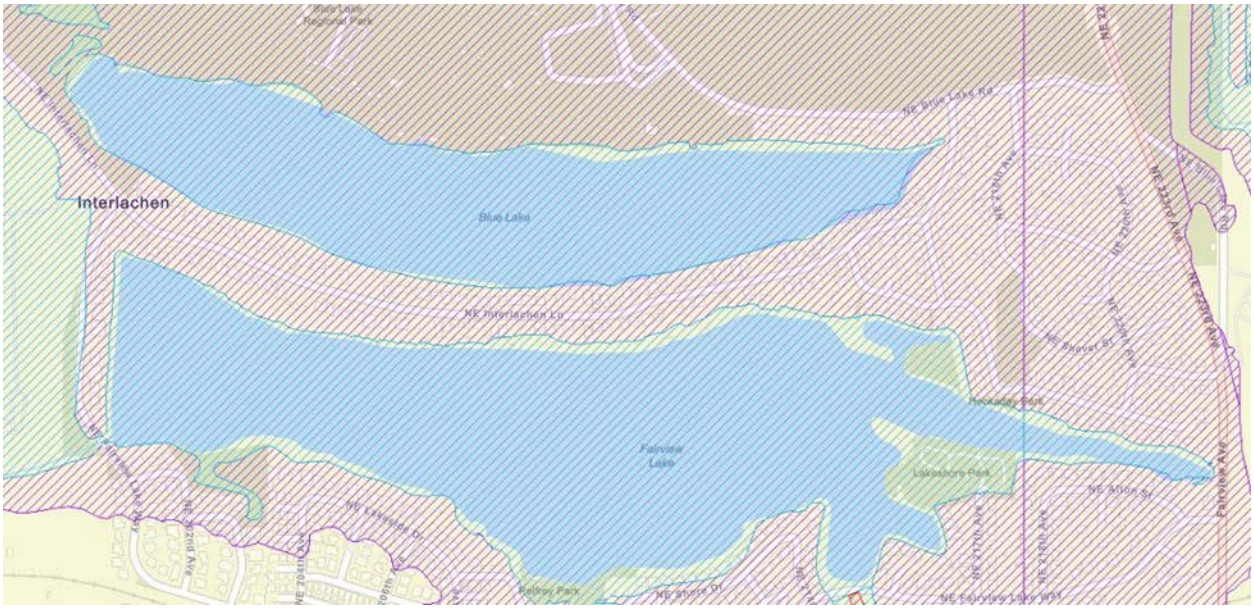

Figure 173 - Map showing flood risk areas along in the Pleasant Valley area of Unincorporated Multnomah County. Areas in blue are part of the 1% annual chance (100-year) floodplain and areas in purple are part of the 0.2% (500-year) floodplain. Map from DOGAMI HazVu site.

Stormwater management undertaken by the county is more limited than in cities, because of the lower density of development in unincorporated areas. Areas around county-owned roads and bridges are primary areas of concern, to prevent stormwater from washing out roads or culverts and impacting water quality to nearby surface waters. The unincorporated urban pocket areas are also subject to county stormwater permitting

NFIP Data

Multnomah County participates in the National Flood Insurance Program (NFIP), which allows residents in unincorporated areas to purchase flood insurance. The county maintains a Flood Hazard Overlay in its Zoning Code, to apply development requirements as part of its NFIP participation. NFIP program requirements are currently administered by Multnomah County Land Use, including the application of regulating substantially damaged or substantially improved structures, as defined in Section §39.5005 of the Flood Hazard Overlay. Substantial damage and substantial improvement determinations are made in coordination with the County's Department of Assessment, Recording and Taxation (DART).

As of April 27, 2022, there are 110 Federal flood insurance policies held in the unincorporated county. Since Multnomah County joined the program in 1982, there have been 78 NFIP claims, totaling $1,086,652.16 in losses paid.

Most Flood Insurance Rate Maps in unincorporated Multnomah County were published in 2009, except those in the Lower Columbia-Sandy Watershed along the Sandy River, which were updated in 2019.

There is one repetitive loss structure in Unincorporated Multnomah County, in the Dunthorpe neighborhood in the southwest portion of the county near the Clackamas County line. There are no severe repetitive loss structures.

Channel Migration

The movement of streams due to bank cutting and new channel formation during flood events is specifically mentioned as a flood concern in the Multnomah County Comprehensive Plan that could be addressed in the future through development overlay.

Channel migration creates a risk to existing development from foundation undercutting as the bank erodes and moves a river closer and closer to homes or other structures. The altered channels can also create new flooding risk in areas and put structures at risk that were not built under flood mitigation building standards.

The Sandy River is extremely prone to channel migration because of the soft volcanic silt of the banks. The upland areas of the river in unincorporated Multnomah County have wide areas that could be cut. Although development is fairly limited, there are a number of homes near Oxbow Park that could be at risk, depending on how the river moves in the future.

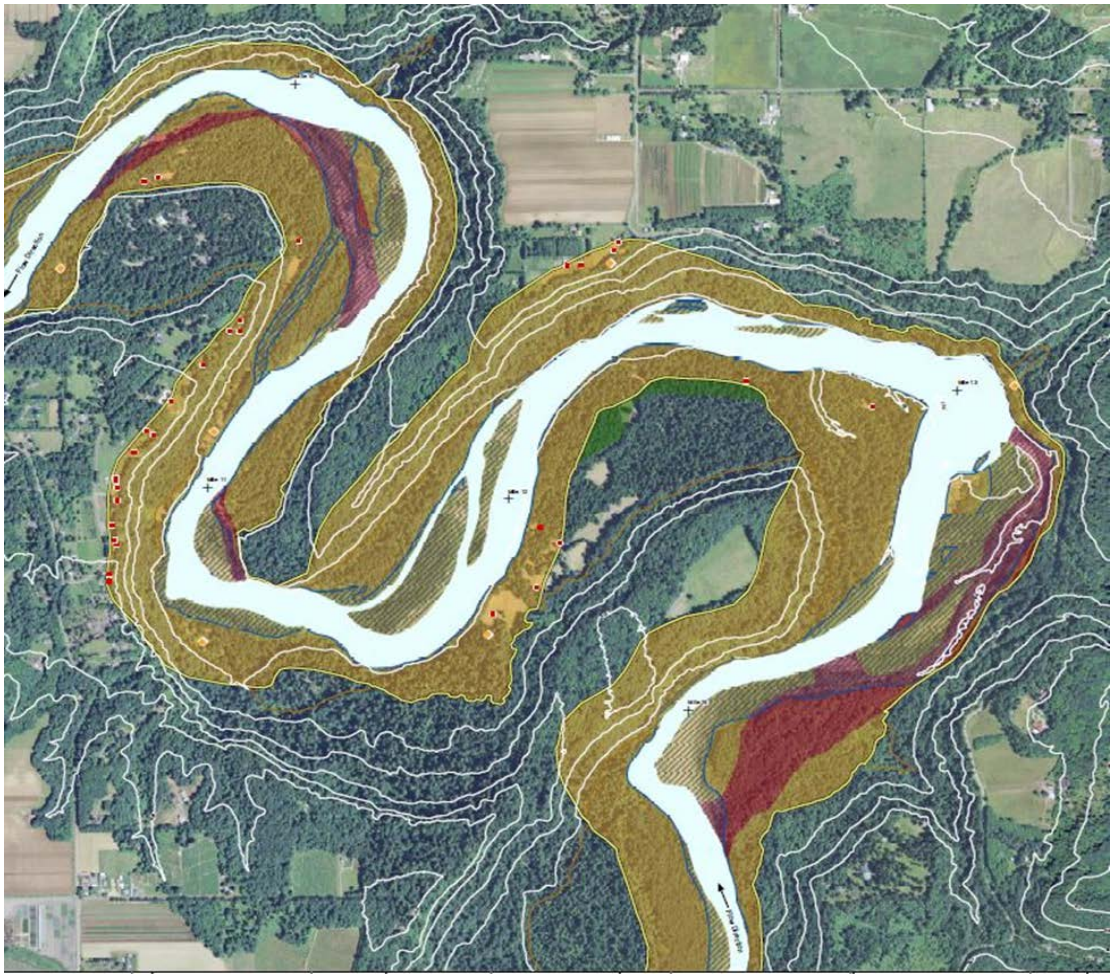

Figure 174 - Map showing channel migration potential on the upper portion of the Sandy River in Unincorporated Multnomah County. The yellow areas have risk from bank erosion in the next 100 years, the red areas have risk from the formation of a new river channel, the blue shaded areas are previous locations of the river channel at some point between 1955-2019, and the green areas are where built structures have eliminated risk of channel migration. The small red squares are the location of structures. Map from DOGAMI report O-13-10

Landslide – Risk Rating

See Flood Section for more detailed risk and vulnerability information.

Landslide has been elevated from low risk to moderate risk in this update for Multnomah County. This change is in part due to observed events, the increased likelihood of future landslides caused by climate-driven winter precipitation events, and improved landslide mapping showing the scope of historical deep landslides in the western and eastern reaches of the county.

The Columbia River Gorge is a particularly dangerous area for landslides and debris flows and was the site of significant land movement during the 1996 flood and a fatal landslide in 2021.

DOGAMI published an inventory of historical events using LIDAR data to visualize ground composition that shows past landslide deposits. This data shows the scale of the risk in the

Gorge. The Warrendale/Dodson area has massive areas of soil and rock deposits and alluvial fans (areas where landslide material has spread out at the confluence of a river). Landslide deposits are also widespread in the Gorge, especially to the east of Corbett and areas just east of the Sandy River. Previous landslides have covered numerous areas through which Highway 84 now passes, showing the vulnerability of the highway as an evacuation route during earthquake or flooding events. The Bull Run Watershed also has a number of deep landslide risk areas that could threaten reservoirs with sedimentation.

An interactive version of this map can be found here (Landslide Hazard – Deposits)

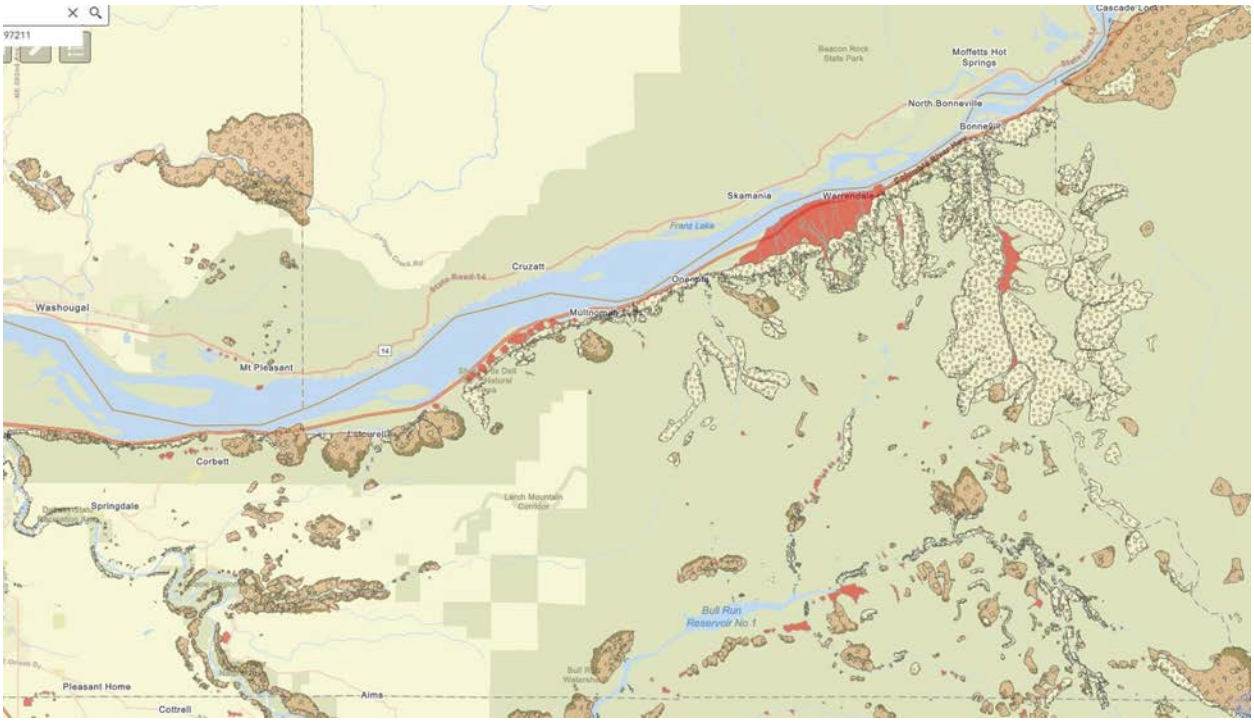

Figure 175 - Map showing historic landslide deposits in eastern Multnomah County. These areas have greater risk of future deep landslides. Brown areas are landslide deposits, light colored areas are locations of historic rock deposits, and red are historic alluvial fans. Map from DOGAMI SLIDO site.

A vulnerability analysis that shows the percentage of structures in landslide risk areas and the amount of expected damage from landslides has not been performed for locations east of the Sandy River. Most of the historic deposits are in unpopulated areas, but some developed areas in Corbett are at risk as are the small eastern gorge communities of Latourell, Warrendale and Dodson.

The west side of the county is also highly susceptible to landslides and has very large areas with historical slide deposits, especially in the northwesternmost part of the county. Residential and commercial development is sparse in many of these areas, but population and infrastructure are at risk. Extensive landslides during a flood or earthquake event could block Highway 30 and important roads connecting through the West Hills such as NW Skyline Boulevard, NW Cornelius Pass Road, NW Logie Trail Road and NW Rocky Point Road.

An interactive version of this map can be found here (Landslide Hazard – Deposits)

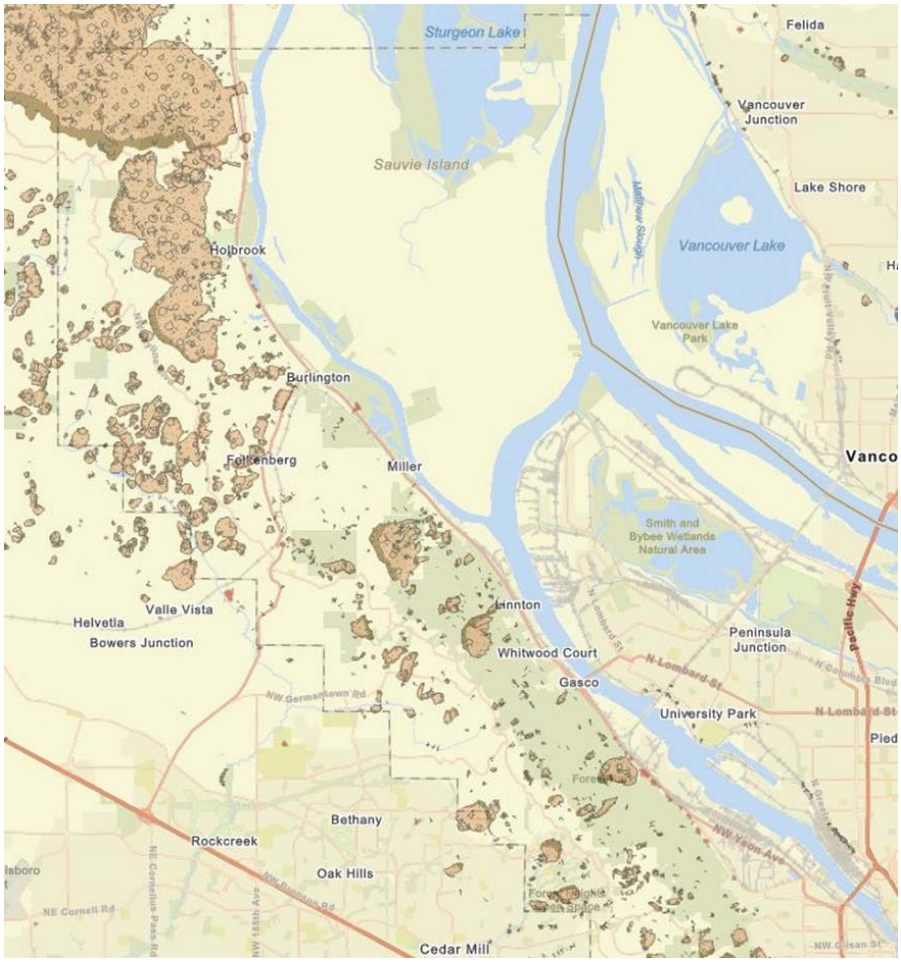

Figure 176 - Map showing historic landslide deposits in eastern Multnomah County. These areas have greater risk of future deep landslides. Map from DOGAMI SLIDO site.

These risks are only for the more dangerous deep landslides. More frequent, shallow landslides are a risk through the entire west and east county areas at high elevation. Shallow landslides are seen nearly every year during winter rains, creating short and medium term impacts to roads and infrastructure. The areas of highest risk shown in the below map match those with deep landslide susceptibility, but the areas in orange show additional risk areas without historical landslide deposits but with particularly steep slopes and loose soils.

An interactive version of this map can be found here (Landslide Susceptibility – Susceptability to Shallow Landslides)

Figure 177 - Map showing landslide risk across Multnomah County. Red has the highest risk, orange is moderate risk and yellow areas have lower risk. Map from DOGAMI SLIDO site.

Sauvie Island, Interlachen, and unincorporated Pleasant Valley are all largely flat and low-lying and have only minor, shallow landslide risk.

Multnomah County has a Hillside Development overlay zone creating requirements for assessing risk on slopes with a greater than 25% grade. Development on slopes with grades between 10%-25% are reviewed via Grading and Erosion Control code to determine if more study is needed. The Hillside Development overlay is being considered for update with the release of the updated DOGAMI risk maps in 2017.

Severe Weather – Risk Rating High

See Severe Weather Section for more detailed risk and vulnerability information.

The four types of Severe Weather described in this plan have been kept together into a single risk rating to emphasize that all climate-based hazards being affected by climate change are a high priority for county mitigation work. Risks described below focus on unincorporated areas, but mitigating public health risks for all county residents is a key function of Multnomah County government. Extreme heat and winter storms have made up the majority of Multnomah County responses and the largest loss of life among natural hazard events over the last five years.

Locations within cities are the most likely to have urban heat island effects and residents living on upper floors of buildings without air conditioning. Both of these factors were implicated in the location of deaths during the 2021 Heat Dome event, and the in-home distribution of air conditioners to those most at risk is a priority for pre-event mitigation. Building the resilience of emergency shelters, residential care facilities, and child care facilities to extreme weather, smoke, and power loss events is also a priority.

Urban heat island effects are shown below. Apart from large industrial sites, the areas most susceptible to heat island effects are on Portland's west side, East Portland and Gresham, all with lower levels of tree canopy and high proportions of pavement. These areas coincide with higher poverty rates, increased health risks, and barriers to accessing governmental services.

Because most unincorporated areas are low density, they are generally not subject to urban heat island effects. However older adults, children, and disabled populations still face elevated risks from extreme heat, as do those working outdoors in farming, forestry, construction, and other jobs.

An interactive version of this map can be found here

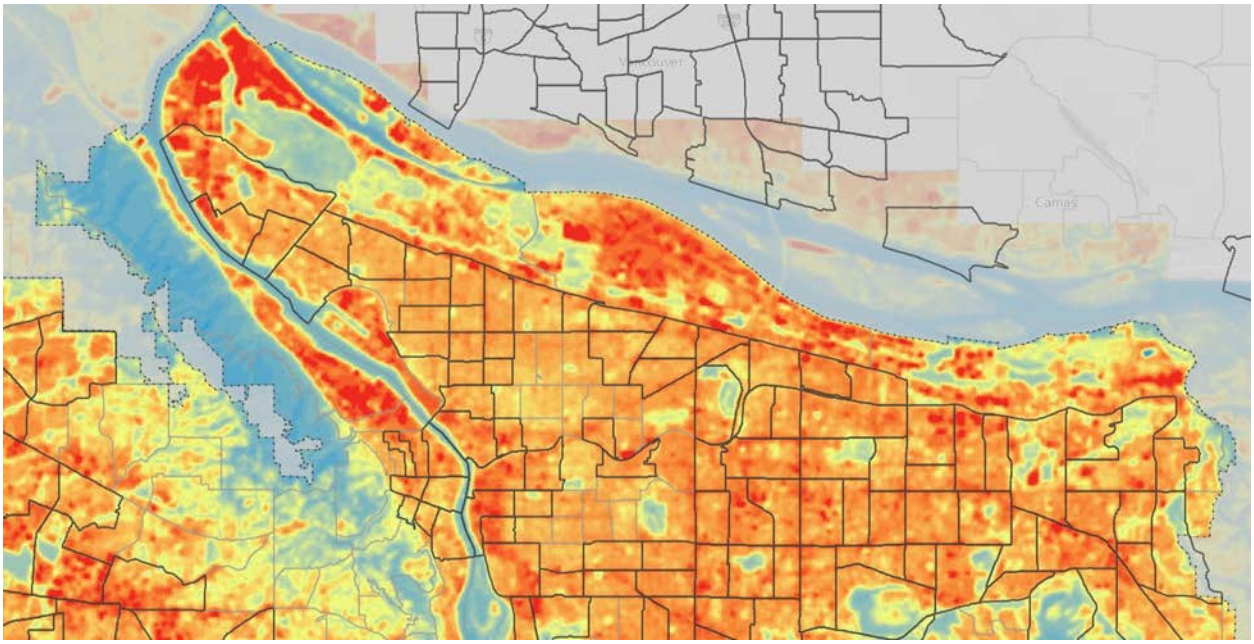

Figure 178 - Map showing urban heat island effects in locations inside Metro planning boundaries. Areas in red have the most intense heat island effects, with orange areas having moderate effects, yellow having lower effects, and blue areas having no effects.

Winter storms have been especially deadly for unhoused residents living without shelter. Although unsheltered residents are located throughout the county, the majority of those identified in the 2019 Point-In-Time count were located in the City of Portland, with the highest proportions in Southeast Portland (22.1%) and Downtown Portland (21%). Warming spaces and shelters and the distribution of winter gear and safety kits have been prioritized as life-saving interventions.

Unincorporated areas of the county face differing risks from severe weather hazards. High elevation areas on both sides of the county see much more snow, ice, and colder temperatures than at low elevations, and are therefore more likely to have disruptions to power and roads. Winter storms are especially precarious in the Columbia River Gorge, where gorge wind effects can lower temperatures and blow snow, making visibility difficult. Highway 84 was closed numerous times in the last five years because of winter conditions, most significantly in 2017.

Power loss from severe weather events or for fire prevention create risk for many of the same populations as the weather itself. Lengthy outages can be harmful to those who use powered medical devices or need refrigerated medicine. Multnomah County Health and Human Services has worked to identify clients at highest risk from outages to develop pre-event communication and response interventions.

Drought has not been a significant problem in Multnomah County, even during a historic statewide dry period. Most water comes from providers or wells that use groundwater that can recharge during rains and do not require snowpack to maintain flows in the summer. However, Corbett Water District does use surface water for their customers, and may have higher sensitivity to winter precipitation changes. Drought is a primary driver of Multnomah County's wildfire risk, and has causing impacts to local ecosystems and natural resources.

Volcano – Risk Rating Low

See Volcano Section for more detailed risk and vulnerability information.

Unincorporated areas along the Sandy River will see lahar impacts if Mount Hood erupts again in the future. Residential upriver areas are most at risk, although much of this area are undeveloped locations at Indian John Island, Oxbow Park, and Dabney State Park. Parts of the Parkdale community are at moderate risk from lahar damage, as are some homes at SE Hosner Terrace near Oxbow Park. These upriver areas would see lahars arrive sooner than any other populated area in Multnomah County, but an eruption large enough to threaten these areas is very unlikely. Because of the very low probability of this event, risk continues to be considered low.

An interactive version of this map can be found here (Volcano Hazard – Moderate Hazard Zone)

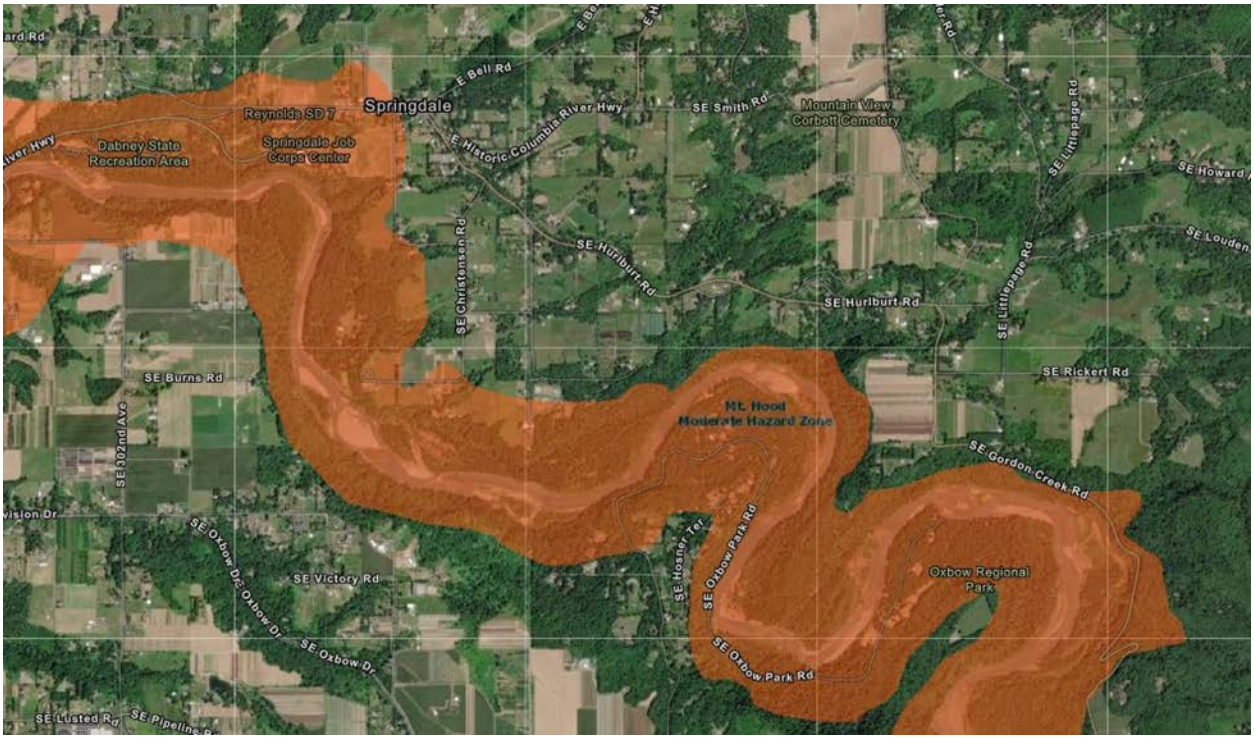

Figure 179 - Map showing potential lahar impacts from an extra-large eruption of Mount Hood. The orange areas would be inundated by debris in this volcano scenario. Map from DOGAMI HazVu site.

A major eruption at Mount Hood, Mount Saint Helens, or other regional volcanoes could bring significant ash into Multnomah County, depending on winds. An ash event would require a public health response to respond to risk to those with respiratory illnesses or other existing risk factors similar to wildfire smoke risk.

Wildfire and Wildfire Smoke – Risk Rating High

See Wildfire and Wildfire Smoke Section for more detailed risk and vulnerability information.

The impacts from wildfire and wildfire smoke events over the last five years have highlighted the risk to Multnomah County from both types of event. Risk has been combined into a single high rating.

The 2020 Wildfire Smoke event was unprecedented and impacted the entire county, requiring a public health response with similarities to those for extreme heat and winter storms. Clean air spaces, the distribution of protective equipment, and safety messaging were used to respond to the disaster. Impacts may be particularly severe for residents of the county living in areas that already have poor air quality, and where health effects may become compounded.

[An interactive version of this map can be found here (Wildfire Potenial Impacts – Overall Potential Impacts)]

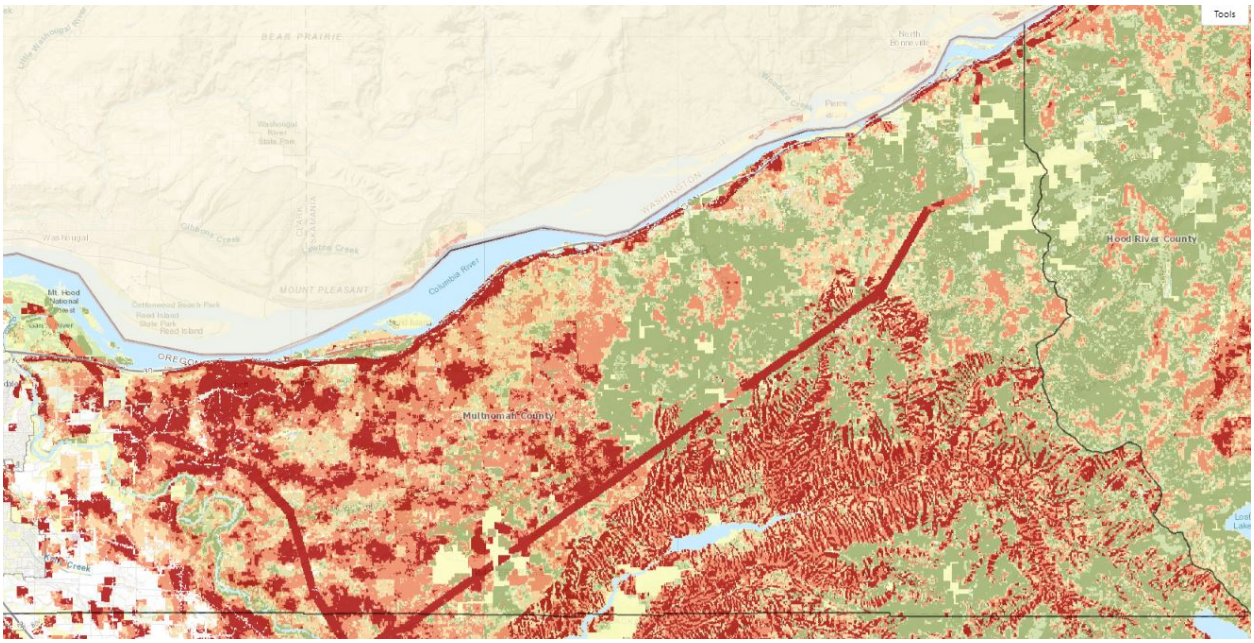

Figure 180 – Potential wildfire impact across eastern Multnomah County. Areas in red would see very high impacts to structures, infrastructure, or natural resources. Areas in orange would see moderate impacts and yellow and would have low impacts. Areas of green would have limited impacts and could see ecosystem benefits from fire. Map from the Oregon Wildfire Explorer with data from the PNW-QWRA.

Risk of large wildfires is much higher in unincorporated areas in Multnomah County than in the cities participating in this plan. The eastern side of the county has the highest annual risk of fire, especially in the southeastern corner. This area is part of the Mount Hood National Forest, so immediate threat to life, property, and infrastructure is reduced by the lack of development, but concern of a fire starting there and spreading to populated areas or the Bull Run Watershed is high. Throughout the gorge and all the way to the Sandy River, communities face some of the highest county risk of annual wildfire.

The west side of the county has a lower likelihood of seeing fire each year, but is more developed and has more people and structures at risk. Risk is spread fairly evenly across the West Hills/Tualatin Mountains, and could also be a danger for spreading fire into more populated areas along the edge of the park. Sauvie Island has more limited risk of an agricultural or forest fire, but the high number of day visitors during high-hazard periods is a concern for notification and evacuation.

An interactive version of this map can be found here (Wildfire Potential Impacts – Overall Potential Impacts)

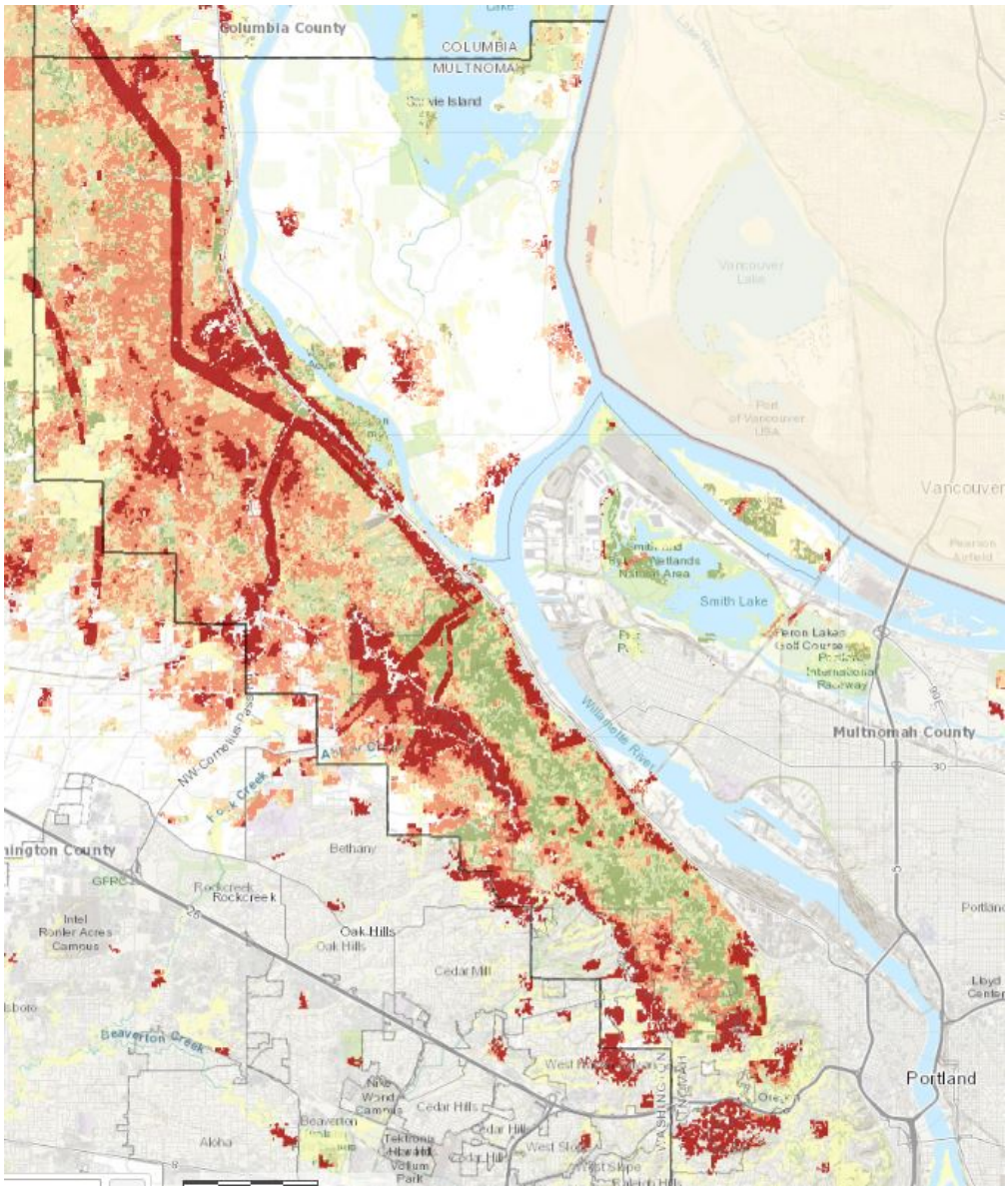

Figure 181 - Potential wildfire impact across western Multnomah County. Areas in red would see very high impacts to structures, infrastructure, or natural resources. Areas in orange would see moderate impacts and yellow and would have low impacts. Areas of green would have limited impacts and could see ecosystem benefits from fire. Map from the Oregon Wildfire Explorer with data from the PNW-QWRA.

Risk from wildfire on both sides of the county is heightened when taking into account the limited number of evacuation routes, difficulty evacuating residents with mobility barriers, pets and livestock, as well as the greater difficulty in emergency alerting because of the mountainous topography. Both sides of the unincorporated county also have unsheltered residents and temporary recreational users who may be difficult to find and assist during a fire.

Statewide mapping shows that wildfire is not as likely in Multnomah County compared to many other parts of Oregon, but when conditions do become severe enough for a major fire, damage

and loss may be severe. When major fire occurs it will likely be at the same time as extreme drought and high winds, making future fires difficult to control, and expanding risk to a large number of Wildfire Urban Interface areas. The long return interval between fires, the wet growing environment, and climate-driven changes to forest ecology mean that wildfire fuels will continue to expand and change–making fuel mitigation a long-term and complex effort.
To manage wildfire risk for future catastrophic fires, mitigation strategies have included improving emergency alerting systems and evacuation planning. Implementing neighborhood-level mitigation and coordination is important, through creating defensible space around homes and building local capacity through localized community organizations. Revising development codes in coordination with Oregon Senate Bill 762 provisions is in process.

5.5.5 Hazard Risk Scoring

The identified levels of risk from each hazard were determined by the Multnomah County, using a scoring methodology designed by Oregon Emergency Management, and applied across the state to contextualize local risk perception.

Multnomah County Hazard Risk Analysis

Hazard	History (Weight Factor = 2)		Vulnerability				Probability (Weight Factor = 7)		Risk Score	Initial Risk Ranking
			Average (WF = 5)		Max (WF = 10)					
Earthquake	2 x	**10**	5 x	**10**	10 x	**10**	7 x	**8**	**226**	**High**
Flood	2 x	**7**	5 x	**6**	10 x	**6**	7 x	**8**	**160**	**Moderate**
Landslide	2 x	**3**	5 x	**7**	10 x	**7**	7 x	**10**	**181**	**Moderate**
Severe Weather – Extreme Heat, Winter Storm, Wind Storm, Drought	2 x	**10**	5 x	**10**	10 x	**10**	7 x	**10**	**240**	**High**
Volcano	2 x	**1**	5 x	**8**	10 x	**8**	7 x	**2**	**136**	**Low**
Wildfire and Wildfire Smoke	2 x	**8**	5 x	**8**	10 x	**8**	7 x	**10**	**206**	**High**

5.5.6 Multnomah County Aligned Plans and Other Implementation Processes

Overview

Multnomah County's plans and processes have some differences to the cities included in this plan, due to the types of services that specifically are provided or not provided by county government. The county does not have water or wastewater services, but does have roads and land-use responsibilities in unincorporated areas and the county's bridge operations are unique among this plan's partners. The county provides health and human services across the county, so planning and processes to limit health impacts from disasters are able to be leveraged for hazard mitigation coordination, especially for climate-related hazards. Multnomah County also plays a central role in the project management of countywide plans, such as the Recovery Plan and the Community Wildfire Protection Plan, and provides Emergency Management support for small cities – creating additional coordination points for developing broader scale, multi-jurisdictional mitigation actions.

- Climate Action Planning
  - Climate Action Plan released in 2015, Climate Justice Plan in development
  - The Climate Action Plan provided a roadmap for climate related programs and projects, including direct coordination with the NHMP for wildfire and heat risks. The Climate Justice Plan will bring together leaders of frontline communities, community-based organizations, government partner's and the county's Advsory Committee on Sustainability & Innovation. The plan will again coordinate action to reduce risks from climate change to those most at risk.
- Climate Change and Health Planning
  - The county recognized
- Community Wildfire Protection Plan (CWPP)
  - Most recently adopted in 2011, being updated in 2023
  - The CWPP includes all jurisdictions and fire districts in the county, addressing wildfire risk in coordination with state and federal partners. The 2023 update is including wildfire smoke in risk reduction consideration, and is a key addition to mitigating these hazards by bringing in additional stakeholders that can address them in more detail. The NHMP links actions to strategies identified in the CWPP.
- Comprehensive Plan
  - Most recently adopted in September 2016
  - The plan provides long-term planning for development and land use in unincorporated areas of the county. Chapter 7 focuses on natural hazards, and includes maps and risk data for all hazards with specific locational impacts. The Comprehensive Plan can be updated in the future to incorporate updated risk mapping and integrate long-term planning with mitigation goals identified in the NHMP.
- County Budget
  - Adopted for each fiscal year, beginning on July 1
  - The county budget provides funding for county programs, which can include resilience and mitigation programs and projects that require funding beyond

existing budgets. Continuing awareness of natural hazard vulnerability by county leadership can assist with integrating budget funding with future initiatives.

- Emergency Operations Plan (EOP)
  - Most recently updated in 2017 – update planned for late 2023
  - The EOP describes the county's plans for response in the event of a natural hazard disaster. The upcoming update to the EOP will integrate updated risk assessment information from this volume, and revised county hazard prioritization can inform EOP annex development.
- Facilities Maintenance Plan
  - The Facilities Maintenance Plan sets out a process for keeping county facilities safe, accessible and effective. Actions may be for short-term disruptions or long-term facility maintenance, and larger projects may be managed through the Facilities Capital Improvement Program. The NHMP can inform the potential of facilities vulnerability to natural hazards that can be accounted for in maintenance planning.
- NPDES Stormwater Management Plan
  - Most recently adopted in November 2022
  - This plan provides best management practices for stormwater discharge permitting in unincorporated urban pockets and county and bridge right-of-ways. Along with maintaining water quality, stormwater management can prevent urban flooding. Future updates can continue to integrate with the NHMP in identifying stormwater flood risk areas and sharing strategies for reducing risk.
- Regional Recovery Framework
  - Developed in 2019
  - The regional framework will guide the county's future recovery plan and will focus on how to restore all functions of the county in a way that enhances future resilience. The future recovery plan priorities can be informed by the risk assessment in this plan, and provide concents for future mitigation strategies that can enhance resilience during recovery.
- Roads Capital Improvement Plan
  - Adopted January 2020 for the time period of 2020-2024
  - The Roads Capital Improvement Plan identifies priorities for major road and bridge infrastructure spending. Roads and bridges are critical disaster lifelines and resilience to hazards that threaten this infrastructure are included in project prioritization.
- Transportation System Plan (TSP)
  - Most recently adopted in September 2016
  - The TSP is a master plan for county roads outside of incorporated cities. The primary focus is to enhance the safety of rural roads, and these roads are threatened by different hazards. Rural roads are also a critically important lifeline, and the TSP can further integrate with the NHMP risk assessment to identify projects that will make roads safer and more resilient.
- Willamette River Bridges Capital Improvement Plan
  - Most recently revised in August 2015, for the time period of 2015-2034
  - This plan focuses on capital expenditures for bridges, including for seismic resilience. This plan is already being used in this plan to prioritize future bridge

retrofit projects that will considerably strengthen the county resilience in a future earthquake.

- Zoning and Development Codes
  - Most recently amended on May 2022
  - The Zoning and Development Codes address building and land use regulations in unincorporated portions of Multnomah County. The current zoning code has overlays for Flood Hazard and Geologic Hazards (5A and 5B), with the Flood Hazard Overlay making up the county's floodplain management ordinance. Overlays can be added or amended based on risk priorities established in this plan and building codes are monitored when state codes are strengthened, or when local opportunities for more resilient building code standards are offered.