Chapter 4.9
Wildfire Hazard Risk Assessment

Introduction

Between 2018 and 2022, a combined 8,138 wildfires burned 2,298,827 acres on all state and federal lands in Washington State. During the same period, 305 wildland fires burned 531 acres in Thurston County.

Wildfire is unique from other natural hazards:

- There was an annual average of 51 wildfire ignitions throughout Thurston County in the last decade; it is the most frequently occurring hazard in the Thurston Region.
- Human behavior and accidents start over 98 percent of wildfires in Thurston County; they are preventable.
- Local, state, and federal wildfire fighting capabilities and resources are readily available to suppress wildfire hazards, however these resources are increasingly in demand across western states.

Definition

A wildfire is an uncontrolled non-structural fire that occurs in undeveloped landscapes such as forests, prairies, brushlands and other naturally vegetated areas. In Thurston County, wildfires typically occur from June through October. Fires can rapidly burn natural resource lands, recreational areas, and wildlife habitat. Biologists, ecologists, foresters, and other natural resource managers view wildland fires as a natural process that is necessary to sustain the health of forests and prairie ecosystems, however wildfires threaten communities where wildlands meet human development. Wildfire hazards threaten public safety by destroying homes, neighborhoods, and infrastructure. They can injure or kill people, pets, livestock, and wildlife.

Area of Impact

For the purposes of the wildfire hazard risk analysis, the hazard assessment area is defined as the Washington State Department of Natural Resources (WADNR) wildland-urban interface and intermix mapped areas. In 2019, WADNR completed statewide mapping for wildlands and wildland-urban interface areas. In general, wildlands are areas covered with 50 percent or higher burnable vegetative cover (Map 4.9.1). There are two major land use characterizations for areas that are prone for wildfires:

1. **Wildland-Urban Interface (WUI)** – located on the periphery of urbanized areas where homes, businesses, and other structures meet wildlands. Areas mapped as a WUI include development that is bordered by wildlands on at least one side. Approximately 32 percent of Thurston County's population is located in areas mapped as a WUI.
2. **Wildland-Urban Intermix** – located between both the urban interface and wildlands. Most wildland-urban intermix areas in Thurston County are near lower density areas further away from urbanized areas. The urban intermix is where homes and structures intermingle with wildlands. Areas characterized as intermix consists of development or structures that are surrounded on two or more sides by wildlands. Approximately 33 percent of the county's population is located in areas mapped as wildland-urban intermix.

DNR's WUI map is not a wildfire risk map, but it is a useful planning tool to inform the region's wildland fire risk assessment. Interface and Intermix areas are prone to wildfires because they contain people and structures adjacent to wildland vegetation. People are attracted to natural and less developed rural landscapes. Over time, wildlands can convert to intermix as development spreads in unincorporated areas of Thurston County. The WUI communities and the adjacent wildlands are at risk for wildland fire hazards because a fire may originate in the wildland area and spread to structures and dwellings and vice versa.

Large areas outside of the urbanized areas of Lacey, Olympia, and Tumwater are prone to wildfires. Historic wildfire records show that fires occur throughout Thurston County, but most are small and burn less than one acre. Larger fires ranging from 10 to 300+ acres occur in areas with large continuous pastures or prairies intermixed with fragmented stands of trees. Southwest Thurston County, particularly around Scatter Creek Wildlife Area, Grand Mound, Rochester, and the Mima Mounds Natural Area Preserve (West Thurston Regional Fire Authority) have experienced the largest most destructive burns. Large fires have also occurred around Yelm, Lake Lawrence (Southeast Thurston Fire Authority) and Tenino (South Thurston Fire and EMS). Table 4.9.1 summarizes total wildland fires in Thurston County, by fire district from 2008 to 2022.

Table 4.9.1 Total Wildfire Starts and Acres Burned by Fire District, Thurston County, 2008-2022

Agency[1]	Total Starts[2]	Sum of Acres Burned	Average Acres Burned	Max Acre Burn Event
Bald Hills Fire Department FD 17	17	11.5	0.7	4.5
Bucoda	2	0.5	0.2	0.3
East Olmpia FD 6	28	8.1	0.3	2.0
Griffin Fire Department FD 13	17	3.3	0.2	1.0
Lacey FD 3	87	54.2	0.6	4.6
McLane Black Lake FD 9	63	43.2	0.7	8.5
Olympia	14	3.7	0.3	1.4
Outside Taxing Boundaries	37	24.4	0.7	9.7
South Bay FD 8	15	2.3	0.2	0.8
South East Thurston Fire Authority FD 2&4	117	144.2	1.2	29.0
South Thurston Fire and EMS FD 12	42	55.9	1.3	13.0
Tumwater	19	5.9	0.3	1.3
West Thurston Regional Fire Authority FD 1&11	179	859.0	4.8	384.0
Grand Total	**637**	**1216.1**	**1.9**	**384.0**

[1]Taxing district boundaries used for agency

[2]False alarm, unclassified records, and other agencies are omitted from results.

Extent

Human behavior, weather, fuel, terrain, and road access influence wildland fire behavior and suppression response activity.

Human Behavior

People desire to live in rural and less developed areas to own more land for livestock or farming, have greater privacy, and be closer to open space, forests, views, and wildlife. Over 196,000 people live in the WUI and Intermix areas in Thurston County (over 65 percent of the population). Nearly 98 percent of wildland fire starts in Thurston County are caused by accidental ignitions or other mechanical or technological means. Debris burns, campfires, vehicles, cigarettes, fireworks, and other accidental human-caused ignitions account for most wildfire starts that threaten people, property, pets, livestock, community, infrastructure, and the environment. The population density in the WUI and Intermix areas also enables early detection and reporting of wildfires through 9-1-1.

Weather

Humidity, temperature, and wind influence wildfire behavior. Low humidity and warmer ambient temperatures make fuels more susceptible to ignition. Winds blow oxygen onto flames and the stronger the wind, the faster the rate that wildfires can burn and spread. Precipitation in Western Washington tapers off in June and warmer dryer conditions generally persist through October. Winds in Thurston County generally prevail from the southwest and west. Stronger, dryer, and warmer easterly winds that prevail in the summer and early fall can produce extreme fire conditions. East wind events can persist for hours with wind speed reaching up to 60 miles-per-hour. While lightning ignitions are common east of the Cascades, they only account for about two percent of wildfire ignitions in Thurston County.

Fuel

Spring rains promote the growth of grasses, herbaceous plants, and shrubs in prairies and pastures. Fragmented conifer and oak stands are interspersed throughout the county's landscapes. Glacial outwash soils are also prevalent throughout the county. These soils drain quickly. Combined with warm summer temperatures, the vegetation in these areas quickly dry out to create an abundance of fuels that can readily ignite and burn quickly. Where lighter fuels are in abundance, flame heights have been observed to reach 20 feet and greater with strong winds. In such conditions, fires can jump roads and breaks to spread to other areas. Denser fuels such as tree branches, logs, and trunks take longer to warm and ignite. Often the ground cover or understory layer of vegetation burns, leaving the timber. Larger mature trees often survive wildfire burns in Thurston County.

Map 4.9.2 shows the land cover for Thurston County. The map identifies areas of forest, dry grasses, soils, and non-forest vegetation with an overlay of the fire districts. Vegetative ground cover varies widely in Thurston County. For example, the forest vegetation type in the

Griffin, McLane, and Black Lake fire districts are characterized by a large amount of salal and Oregon grape, whereas the Tenino Fire District is chiefly composed of grasses and Scotch broom.

Terrain

The varied topography of Thurston County influences the amount of moisture and fuel. Terrain can either act as a barrier or conduit for a fire. Fire spreads more easily traveling uphill than downhill. Map 4.9.3 shows areas in Thurston County with steep slopes. Steep slopes are most pronounced in along the western and southern boundaries of the county. This map also shows the Natural Resource Conservation Service (NRCS) designation of Category 1 soil types, which are referred to as excessively-drained, glacial-outwash soils. The map clearly illustrates that almost all communities and fire districts contain glacial-outwash soils.

Road Access

Road access is crucial for on-ground fire suppression operations. Unlike large federal wildlands, the WUI and Intermix areas of Thurston County have well-developed and connected road network that support the mobilization of firefighting units. However, there are residences throughout Thurston County's intermix areas that have narrow private roads, tight turns, and inaccessible driveways that restrict the maneuverability or positioning of apparatuses and other emergency vehicles to effectively perform fire defense and suppression. Limited route options also pose challenges for evacuation of residents and livestock from affected areas.

Previous Incidents

Wildfires have impacted Washington State and the Thurston County region over the last several decades. Previous incidents offer insights into the types of losses that Thurston County communities could experience in future wildfire events.

September 8-11, 2020, Bordeaux Road Fire. FM-5359.

The Bordeaux Road Fire started on September 8, 2020 due to a blowout of an electrical transformer. The fire rapidly spread and West Thurston Regional Fire Authority requested state assistance to combat the fire. The fire burned in excess of 60 acres of private land by the time the state requested federal assistance. This fire incident resulted in the region's first federal Fire Management Assistance declaration. The fire threatened approximately 175 homes in and around the community of Littlerock. Level 3 "Get Out" evacuations were issued for approximately 475 people. The fire also threatened electrical utilities, agricultural resources, and a Washington State Department of Corrections prison facility in the area. The fire destroyed two homes and two outbuildings and burned 268 acres before it was extinguished.

August 22-30, 2017, Scatter Creek Fire.

The Scatter Creek Fire started as a result of sparks from someone cutting metal near 183rd Avenue SW and Wakly Lane SW and spread quickly near Interstate 5 on August 22. A second fire, east of I-5, was believed to be ignited by "superheated carbon particles" from a commercial vehicle traveling on I-5.

Approximately 100 households around Sargent Road SW were ordered to evacuate. The fire destroyed four homes, a business, and two barns, and burned over 380 acres. Combined with the second fire, the complex is estimated to have burned over 400 acres.

Probability of Occurrence

The Federal Emergency Management Agency National Risk Index score for wildfire in Thurston County is 50.3 which is classified as very low. Historic wildfire data from WADNR indicates that there is a high probability for wildfire ignitions, however the probability for destructive wildland fires varies across the planning area. Figure 4.9.1 shows the probability for destructive wildfires of 10-acres (fire size Class C) or larger by fire protection districts/departments.

Figure 4.9.1 Probability of a 10-Acre Wildland Fire Occurring within 25 Years

Probability Rating	Fire Protection District/Community
Low Event is unlikely to occur within 100 years	Bald Hills, Fire District 17 Bucoda East Olympia, Fire District 6 Griffin, Fire District 13 Lacey, Fire District 3 Olympia South Bay, Fire District 8 Tumwater
Medium Event is likely to occur within 100 years	McLane – Black Lake, Fire District 9
High Event is likely to occur within 25 years	South East Thurston Fire Authority, Fire Districts 2 and 4 South Thurston Fire and EMS, Fire District 12 West Thurston Regional Fire Authority, Fire Districts 1 and 11

Effects of Climate Change

Research and climate forecasts offer evidence that long-term climate change will have a measurable impact on the risk of wildland fires for Puget Sound lowland communities. The University of Washington Climate Impacts Group published a detailed report on the state of science on climate change and its effects within the region titled, "State of Knowledge: Climate Change in the Puget Sound." The report identifies several factors that will influence wildland fires for communities around the Puget Sound.

Air temperatures are increasing in the region. They are projected to warm rapidly during the 21st century. By mid-century, warming will be outside of the range of historical variations. Warming is projected for all seasons but will be greatest for summer. Warmer, drier, and longer summers will increase the number of high fire danger days and increase the likelihood of having vegetative fuel conditions that create wildfires.

The wildland-urban interface and intermix areas will face a greater risk for fires than they do at present. An increase in high fire danger days and an increase in future likelihood indicates greater potential for wildfire danger to damage infrastructure, interrupt businesses, and affect public health and individuals' and communities' overall well-being.

Table 4.9.2 shows climate model future forecast changes in annual high fire danger days compared to the 1971-2000 average. A high fire danger day is a day in which 100-hour fuel moisture is less than the historical 20th percentile. For example, a location with a value of 2 means that there are 2 additional days in which 100-hour fuel moisture is less than the 20th percentile.

Climate models also forecast the future likelihood of climate and fuel conditions being conducive to wildfire in a 30-year period compared to a baseline 1980-2009 average (Table 4.9.3). For example, a value of 0.50 means that there is a 50% chance that any year in that time period will have climate and fuel conditions that are favorable for wildfires. Climate change increases the probability for larger wildfires to occur in urban-interface and intermix areas. Jurisdictions that currently have a low to medium probability for wildfire can expect that their probability for wildfire will be medium to high by midcentury.

Table 4.9.2 Thurston County Change in High Fire Danger Days

	Model Median[3]	Model Range (10th to 90th percentile)
1971-2000		
Historical Baseline	56 days	56 to 56 days
2010-2039		
Higher Scenario (RCP 8.5)	7 days	-0 to 9 days
Lower Scenario (RCP 4.5)	4 days	-0 to 8 days
2040-2069		
Higher Scenario (RCP 8.5)	9 days	2 to 16 days
Lower Scenario (RCP 4.5)	7 days	1 to 15 days

Table 4.9.3 Thurston County Change in Wildfire Likelihood

	Model Median	Model Range (10th to 90th percentile)
1980-2009		
Historical Baseline	0	0 to 0
2020-2049		
Higher Scenario (RCP 8.5)	0.01	0.00 to 0.03
Lower Scenario (RCP 4.5)	0	0.00 to 0.01
2030-2059		
Higher Scenario (RCP 8.5)	0.03	0.00 to 0.05
Lower Scenario (RCP 4.5)	0.01	0.00 to 0.03
2040-2069		
Higher Scenario (RCP 8.5)	0.05	0.02 to 0.12
Lower Scenario (RCP 4.5)	0.03	0.00 to 0.04

[3]Representation concentration pathways, or RCPs are climate model scenarios for the 21st century. RCP 4.5 — a "low" scenario that assumes greenhouse gas emissions (GHG) stabilize by mid-century and fall sharply thereafter; and RCP 8.5 — a "high" scenario that assumes substantial GHG increases until the end of the 21st century.

Vulnerabilities and Impacts

Impacts to People

Wildfires are very dangerous. Smoke from wildfires burning outside the Puget Sound lowlands deteriorates Western Washington's air quality. Poor air quality is the most common, widespread, and frequent source of adverse wildfire impacts on individuals and communities in Thurston County. Finding respite from smoke is extremely difficult during extreme heat incidents for people who are unsheltered, experiencing homelessness, or do not have access to a cooling shelter. Community members with chronic respiratory diseases, heart disease, children, older adults, and pregnant women are especially at risk for health impacts. Outdoor workers in agriculture, roofers, road crews, and first responders are also at risk. Exposure and inhalation of wildfire smoke can irritate eyes and throats and cause coughing and shortness of breath. Excess smoke inhalation can lead to more serious illnesses including reduced lung function, bronchitis, asthma attacks, heart failure, and premature death.

Locally, heat from intense wind driven flames and rapid spreading fires can catch people off guard. People can suffer burn and non-burn injuries, or death while trying to escape a fire. People who lose a home, business, a loved one, pets, or livestock can suffer prolonged post-traumatic stress disorder. Tables 4.9.3 and 4.9.4 show the total population residing within the wildland-urban interface and intermix Areas.

Table 4.9.3 Thurston County Population Residing in Wildland-Urban Interface Areas

Jurisdiction	Population	Population Exposed	% Population Exposed
Bucoda	610	561	92.0%
Lacey	58,180	12,951	22.3%
Olympia	56,370	10,142	18.0%
Rainier	2,510	1,437	57.2%
Tenino	2,030	1,868	92.0%
Tumwater	26,360	11,431	43.4%
Yelm	10,680	9,226	86.4%
Unincorporated	143,760	49,279	34.3%
Total Planning Areal	**300,500**	**96,894**	**32.2%**

Table 4.9.4 Thurston County Population Residing in Wildland-Urban Intermix Areas

Jurisdiction	Population	Population Exposed	% Population Exposed
Bucoda	610	49	8.0%
Lacey	58,180	6,469	11.1%
Olympia	56,370	4,757	8.4%
Rainier	2,510	1,073	42.8%
Tenino	2,030	162	8.0%
Tumwater	26,360	3,499	13.3%
Yelm	10,680	1,454	13.6%
Unincorporated	143,760	81,849	56.9%
Total Planning Area	**300,500**	**99,313**	**33.0%**

Impacts to Structures and Systems

Structures that lack adequate defensible spaces from fire-prone vegetative fuels are at risk of ignition during a fast-moving fire. Wildfires can destroy or cause damage to homes, businesses, schools, vehicles, electric utilities, and critical infrastructure. Wildfires can delay transportation in and around affected areas. Loss of power disrupts communications which in turn can impact a wide range of public and private sector lines of service and business operations. There are a total of 34,630 structures located in the wildland-urban interface and 35,395 structures in the intermix areas. An estimated 43 billion dollars in structural and contents value is located in the combined WUI and intermix areas for the entire planning area. Tables 4.9.5 through 4.9.8 show the total value of buildings exposed.

Table 4.9.5 Number of Structures in the Wildland Urban Interface

	Number of Structures in Wildland-Urban Interface							
Jurisdiction	Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Bucoda	218	4	0	0	0	2	0	**224**
Lacey	3,926	347	19	0	5	1	44	**4,342**
Olympia	2,925	507	2	0	5	1	4	**3,444**
Rainier	466	42	0	0	2	1	6	**517**
Tenino	599	72	0	1	7	5	9	**693**
Tumwater	3,646	433	48	1	1	6	7	**4,142**
Yelm	2,442	262	10	1	13	5	11	**2,744**
Unincorporated	17,629	669	94	4	32	24	72	**18,524**
Total	**31,851**	**2,336**	**173**	**7**	**65**	**45**	**153**	**34,630**

Table 4.9.6 Value of Structures and Contents in the Wildland-Urban Interface

Jurisdiction	Total Buildings	Total Residential Buildings	Total Building & Contents Value	Buildings Exposed	Total Building & Contents Exposed	% Total Value
Bucoda	245	237	$63,726,655	224	$58,588,795	91.9%
Lacey	18,985	17,637	$17,357,526,547	4,342	$5,971,417,351	34.4%
Olympia	18,242	16,257	$19,116,213,011	3,444	$4,786,058,977	25.0%
Rainier	875	814	$393,003,023	517	$239,746,104	61.0%
Tenino	751	651	$404,778,123	693	$382,700,888	94.5%
Tumwater	9,513	8,408	$9,362,171,728	4,142	$3,425,444,918	36.6%
Yelm	3,139	2,827	$2,077,637,133	2,744	$1,836,416,094	88.4%
Unincorporated	53,104	51,429	$24,765,596,428	18,524	$9,112,434,176	36.8%
Total Planning Area	**104,854**	**98,260**	**73,540,652,648**	**34,630**	**$25,812,807,303**	**35.1%**

Table 4.9.7 Number of Structures in the Wildland-Urban Intermix

	Number of Structures in Wildland-Urban Intermix							
Jurisdiction	Residential	Commercial	Industrial	Agriculture	Religion	Government	Education	Total
Bucoda	19	2	0	0	0	0	0	21
Lacey	1,961	38	1	0	3	2	2	2,007
Olympia	1,372	52	0	0	1	0	2	1,427
Rainier	348	7	1	0	1	1	0	358
Tenino	52	4	0	0	0	2	0	58
Tumwater	1,116	41	2	0	3	0	0	1,162
Yelm	385	5	4	0	1	0	0	395
Unincorporated	29,281	557	24	1	37	28	39	29,967
Total Planning Area	**34,534**	**706**	**32**	**1**	**46**	**33**	**43**	**35,395**

Table 4.9.8 Value of Structures and Contents in the Wildland-Urban Intermix

Jurisdiction	Total Buildings	Total Residential Buildings	Total Building & Contents Value	Buildings Exposed	Total Building & Contents Exposed	% Total Value
Bucoda	245	237	$5,137,860	21	$5,137,860	8.1%
Lacey	18,985	17,637	$1,709,603,307	2,007	$1,709,603,307	9.8%
Olympia	18,242	16,257	$785,829,525	1,427	$785,829,525	4.1%
Rainier	875	814	$153,256,919	358	$153,256,919	39.0%
Tenino	751	651	$22,077,234	58	$22,077,234	5.5%
Tumwater	9,513	8,408	$756,650,143	1,162	$756,650,143	8.1%
Yelm	3,139	2,827	$241,221,039	395	$241,221,039	11.6%
Unincorporated	53,104	51,429	$13,646,602,334	29,967	$13,646,602,334	55.1%
Total Planning Area	**104,854**	**98,260**	**$17,320,378,361**	**35,395**	**$17,320,378,361**	**23.6%**

There are approximately 760 community lifeline assets that are located in the wildland-urban interface and intermix areas in Thurston County (Table 4.9.9).

Table 4.9.9 Count of Thurston County Community Lifelines located in Wildland-Urban Interface and Intermix Areas

Location in Planning Area	Comm-unications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Trans-portation	Total
Bucoda	1	0	4	0	0	5	0	**10**
Lacey	11	2	38	13	19	14	8	**105**
Olympia	11	2	5	1	40	5	8	**72**
Rainier	0	1	10	1	0	17	1	**30**
Tenino	0	1	5	0	1	9	0	**16**
Tumwater	4	3	3	6	12	8	27	**63**
Yelm	5	2	2	5	6	16	1	**37**
Unincorporated Thurston County	33	24	148	10	58	110	44	**427**
Total Planning Area	**65**	**35**	**215**	**36**	**136**	**184**	**89**	**760**

Impacts to Natural, Cultural, and Historic Resources

Historic structures such barns, churches, civic buildings, granaries, grange halls, museums, monuments residences, and other buildings and properties are located in wildland-urban interface and intermix areas. These historic resources are community gathering spaces for social, religious, and civic functions. Most of these structures predate modern building codes and are vulnerable to wildfires. These assets could suffer damage or total loss from a wildfire. Original historic structures and assets are irreplaceable.

Tribal reservation lands and traditional fishing, hunting, and foraging grounds are also located in the intermix areas. Reductions in fish, wildlife, and native flora due to habitat loss from wildfires would have adverse impacts on the social, cultural, and sustenance needs of tribal members who are dependent on these resources.

Impacts to Activities

Wildland firefighting requires significant local and state resources. A wildland fire in Thurston County requires rapid containment and suppression to protect public safety and property. Local capabilities can quickly become overwhelmed with larger faster spreading fires. Local agencies frequently rely on state air and ground resources for firefighting operations. During wildfire season, fire service agencies from Thurston County regularly assist wildland fire operations in Eastern Oregon and

Washington. When major wildland fires on federal and state lands mobilize firefighting personnel and assets across western states, local firefighting resources can become strained, reducing the capability to effectively respond to local wildfires.

Risk Ratings

There are varied wildfire fire risk characterizations for the planning area. The 2018 Washington State Enhanced Hazard Mitigation Plan rated Thurston County's wildfire risk as medium high. The United States Forest Service Missoula Fire Sciences Laboratory's Wildfire Hazard Potential (WHP) Map highlights areas where vegetation management could reduce the intensity of future wildfires. Thurston County's WHP ranges from very low to moderate (Map 4.9.4).

Social Vulnerability Rating and National Risk Index

Social vulnerability is the susceptibility of social groups to the adverse impacts of natural hazards, including disproportionate death, injury, loss, or disruption of livelihood. As a consequence enhancing risk component of the National Risk Index, a Social Vulnerability score and rating represent the relative level of a community's social vulnerability compared to all other communities at the same level. A community's Social Vulnerability score measures its national rank or percentile. A higher Social Vulnerability score results in a higher Risk Index score. Map 4.9.5 shows assets and structures in Thurston County that are located in the wildland-urban interface and intermix Areas by census tract social vulnerability ratings.

The Federal Emergency Management Agency National Risk Index (NRI) for wildfire in Thurston County is 50.3 or very low. The rating represents a community's relative risk for wildfire when compared to the rest of the United States. For comparison, Pierce County's NRI wildfire rating is 69.7 or relatively low. The NRI reports an estimated wildfire hazard annual loss of $39,000.

Overall Risk Ratings

A GIS exposure analysis was performed for Thurston County population, general building stock, and critical facilities to calculate the risk ranking scores and risk ratings for the county, cities, and special purpose districts for wildland-urban interface and intermix areas. Risk ranking scores and risk ratings vary by jurisdiction due to variations in probability of 10-acre or larger fire scenario, and impacts on people, property, and the economy. The details of the wildfire risk assessment calculations and results is shown in Appendix C.

Wildfire Hazard Risk Ratings for the Wildland-Urban Interface and Intermix Areas

The countywide wildland fire risk rating score for the WUI is 34 – a high risk rating. Wildfire hazard risk rating scores varies among the plan participants from 0 to 54. The countywide wildfire hazard risk rating score for the Intermix areas is 30, a medium risk (Tables 4.9.10 and 4.9.11).

Table 4.9.10: Community Wildland-Urban Interface and Intermix Hazard Risk Ratings.

Municipal Plan Participants	Wildland-Urban Interface Risk Ranking Score	Wildland-Urban Interface Risk Rating	Wildland-Urban Intermix Risk Ranking Score	Wildland-Urban Intermix Risk Rating
Bucoda	18	Medium	6	Low
Lacey	14	Low	9	Low
Olympia	14	Low	6	Low
Rainier	18	Medium	17	Medium
Tenino	18	Medium	6	Low
Tumwater	17	Medium	9	Low
Yelm	18	Medium	11	Low
Unincorporated Thurston County	34	High	36	High
Total Planning Area	**34**	**High**	**30**	**Medium**

Table 4.9.11 Special Purpose District Wildland-Urban Interface and Intermix Hazard Risk Ratings.

Special Purpose District Plan Participants	Wildland-Urban Interface Risk Ranking Score	Wildland-Urban Interface Risk Rating	Wildland-Urban Intermix Risk Ranking Score	Wildland-Urban Intermix Risk Rating
East Olympia Fire District	12	Low	12	Low
Intercity Transit	0	Low	0	Low
Lacey Fire District	15	Low	15	Low
McLane Black Lake Fire District	36	High	36	High
Olympia School District	11	Low	11	Low
SE Thurston Fire Authority	54	High	54	High
South Bay Fire District	15	Low	15	Low
The Evergreen State College	18	Medium	18	Medium
Thurston PUD	24	Medium	24	Medium
West Thurston Regional Fire Authority	54	High	54	High

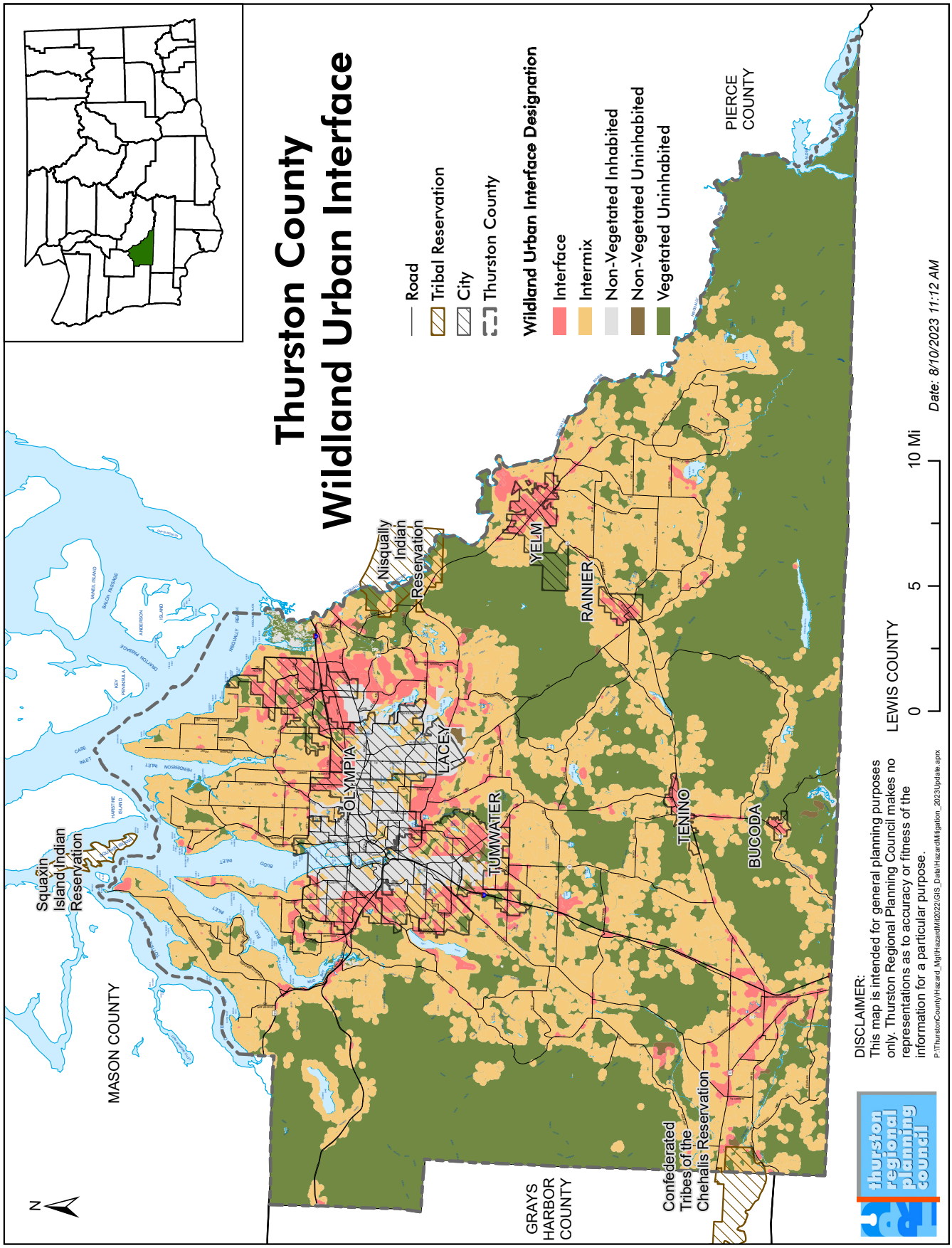
Changes in Wildfire Hazard Risks Since Last Plan Update

The availability of the WADNR Wildland-Urban Interface Map provided the 2023 Hazard Mitigation Plan update process the means to assess community wildfire risk using a new data-based approach. This new methodology allows the plan participants to assess their population and assets' exposure to the WUI classifications that differs from the previous plans' assessment. However, new assessment does not allow a direct wildfire risk comparison between this plan and the last plan as the geographies for the wildland fire hazard delineation areas are markedly different.

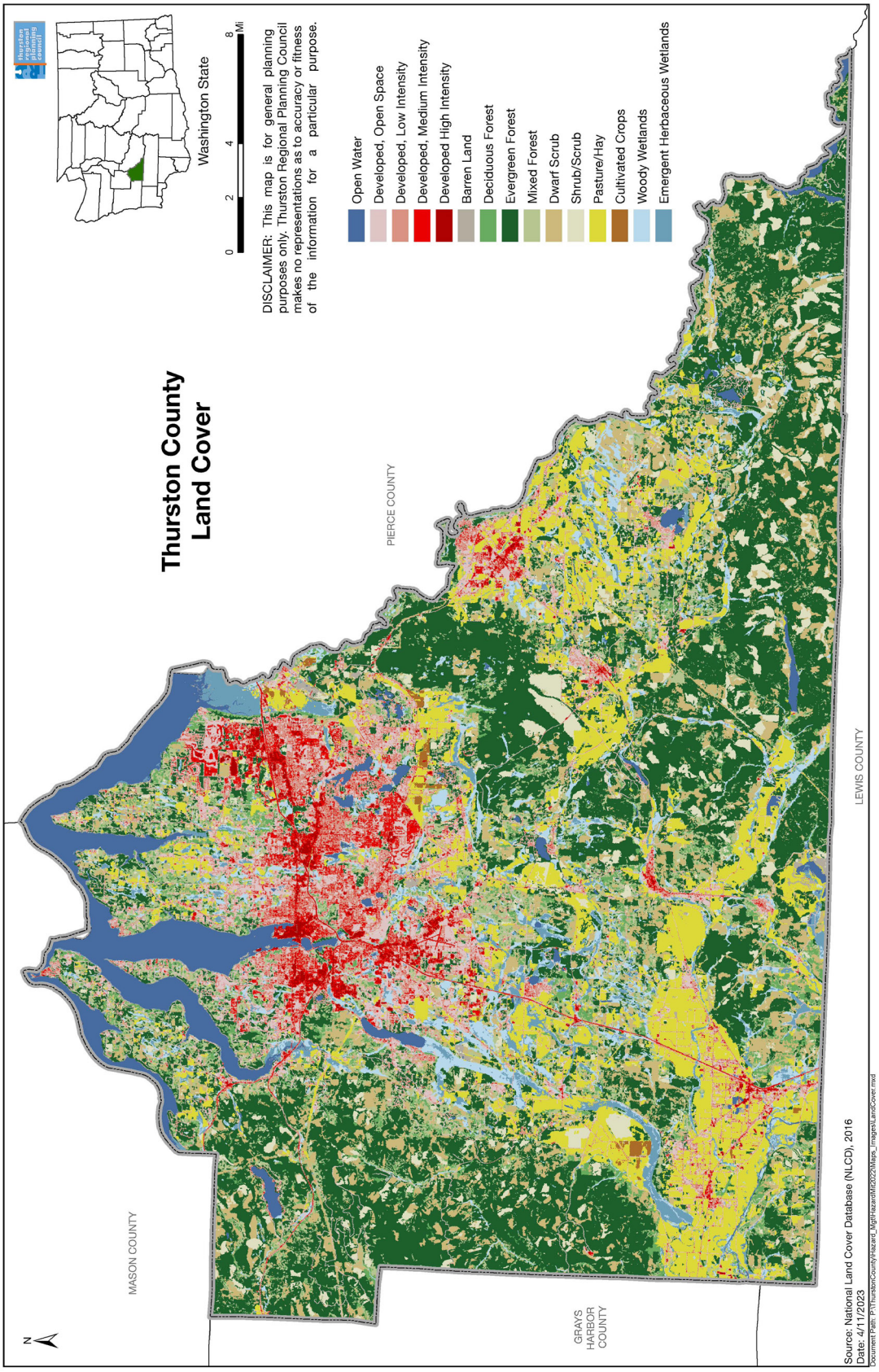
Thurston County's population is forecast to increase by 83,000 people over the next 22 years placing more homes and structures in the region's WUI and Intermix areas. The county and cities are required to adopt and enforce the International Wildland Urban Interface Building Code for new and substantial development occurring in areas classified as WUI and Intermix. These new codes will become effective in late 2023. The implementation of these new codes should considerably reduce structural losses from wildfires for new development occurring throughout Washington State.

Connection to the Regional Mitigation Strategy

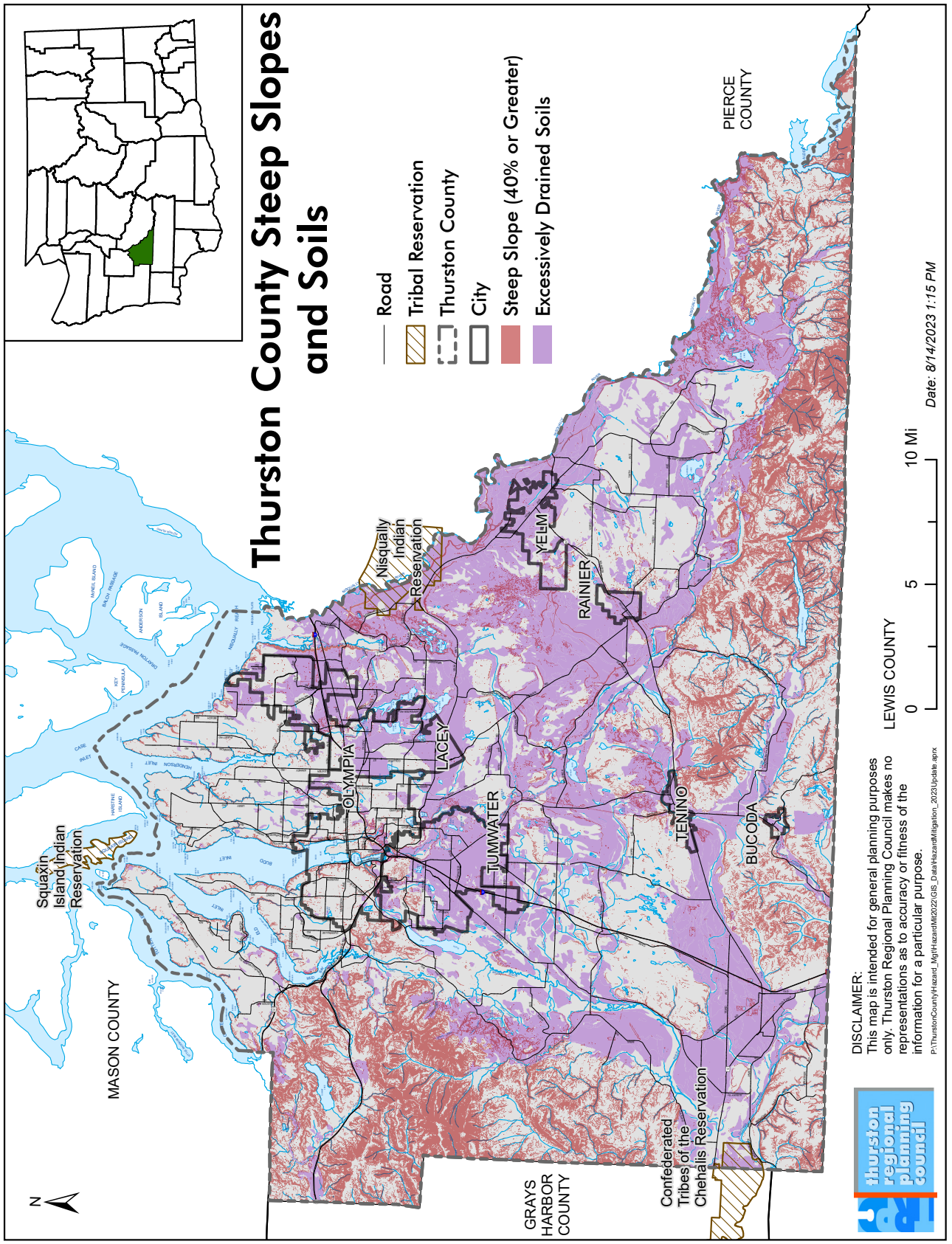
Threats from wildfires have been persistent since the adoption of the last plan in 2017. The September 2020 Bordeaux Fire in southwest Thurston County resulted in the region's first federal Fire Management Assistance Declaration. The August 2017 Scatter Creek fire was the largest and most destructive wildfire in Thurston County's modern history. The region's communities recognize that more research and coordination is necessary to gain a more comprehensive understanding of which sub areas and neighborhoods within the county are most prone to wildfire hazards, and to identify a strategy with a range of actions to reduce wildfire hazard potential and mitigate impacts to people, property, and other valued assets. To this end, this plan update includes a recommendation for the development of a Countywide Multijurisdictional Community Wildfire Protection Plan (see Chapter 2, Recommendations). This mitigation initiative is one of the highest scoring actions in the Countywide Mitigation Strategy.



Map 4.9.1 Wildland-Urban Interface and Intermix Areas of Thurston County

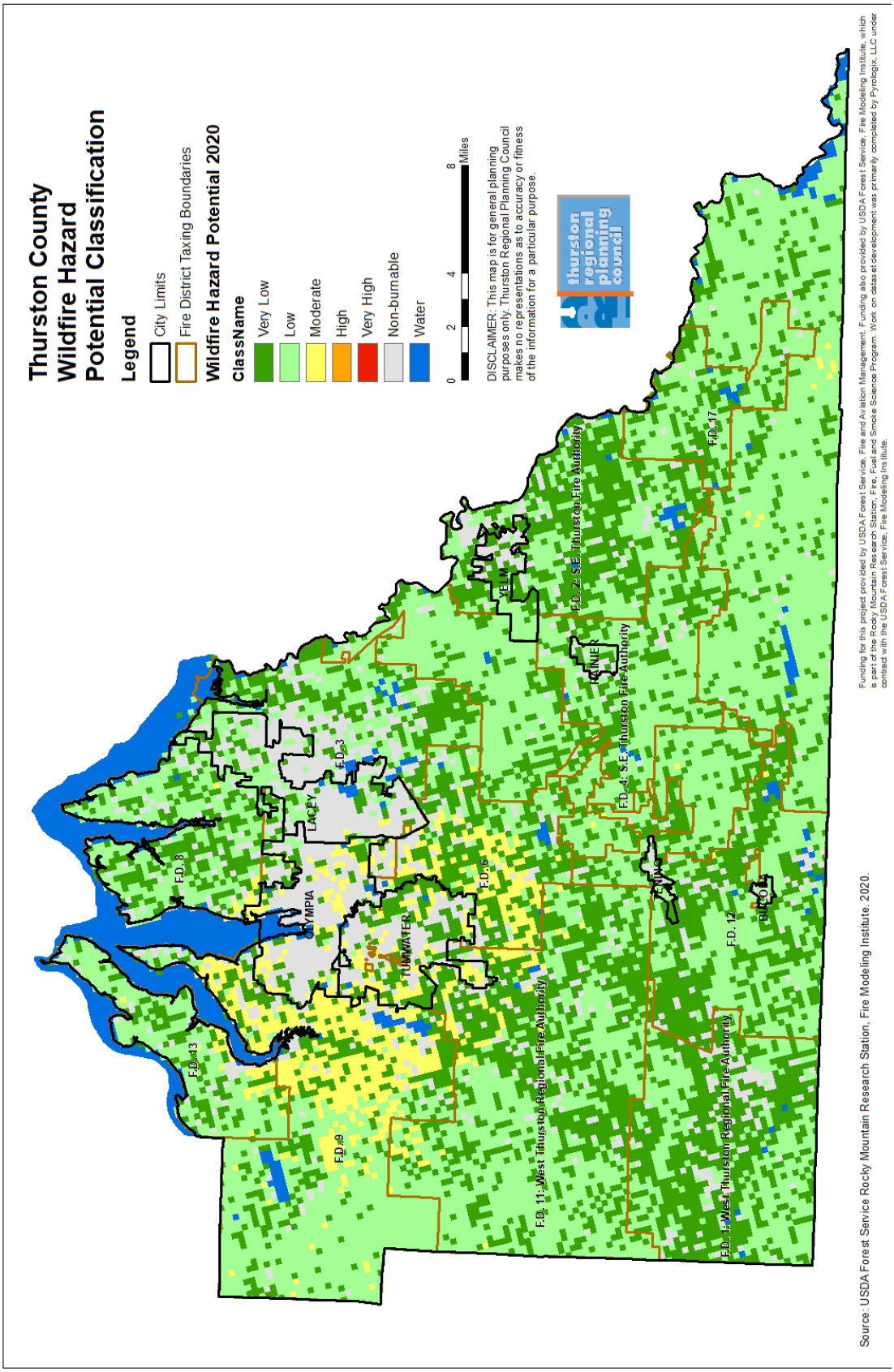


Map 4.9.2 Landcover of Thurston County



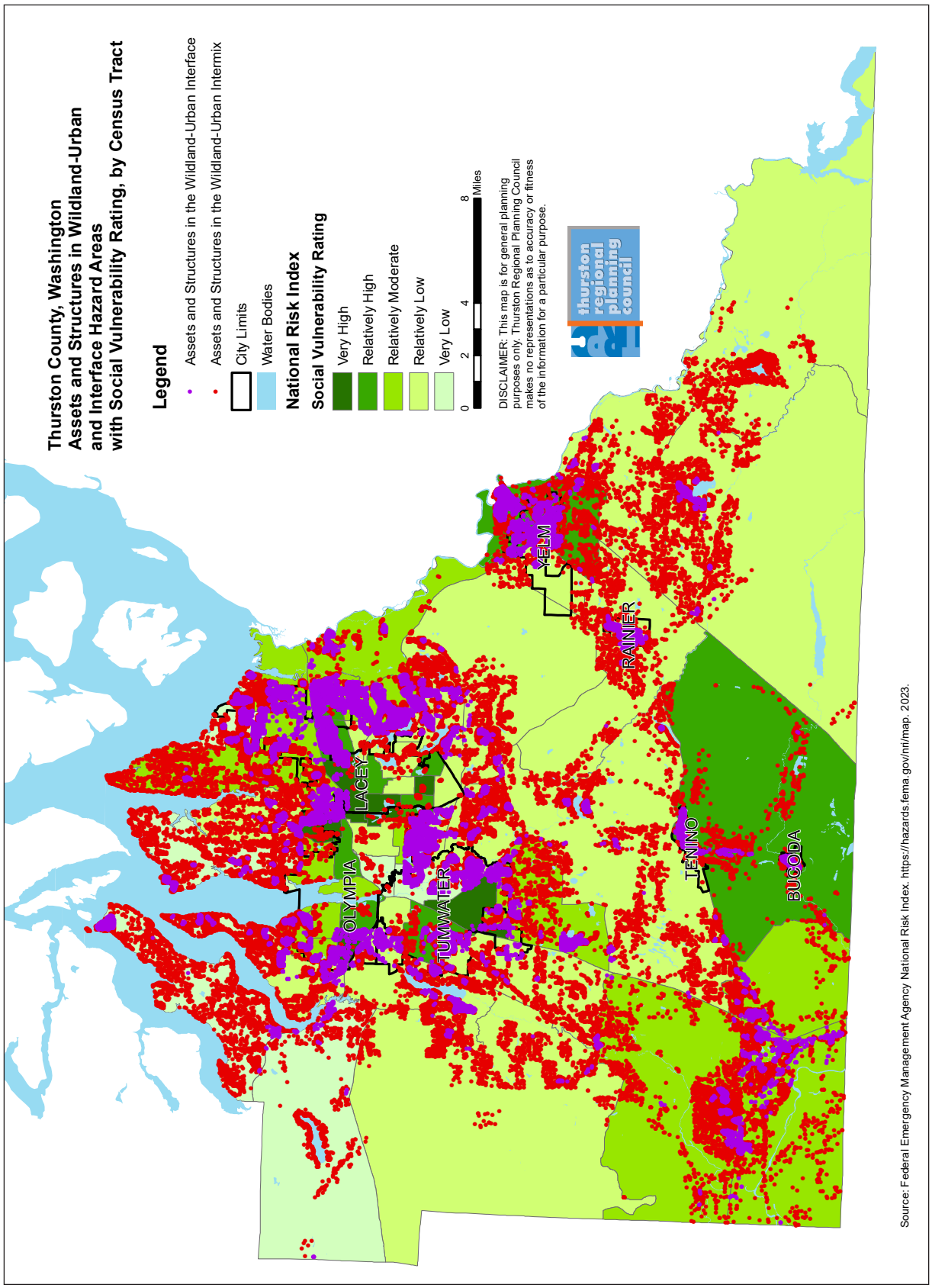
Map 4.9.3 Thurston County Steep Slopes and Excessively Drained Soils

Map 4.9.4 US Forest Service Wildfire Hazard Potential Map for Thurston County



Explanation: Wildfire hazard potential (WHP) is an index that depicts the relative potential for wildfire that would be difficult for suppression resources to contain, based on wildfire simulation modeling.

Map 4.9.5 Assets and Structures in the Wildland-Urban Interface and Intermix Areas Thurston County Social Vulnerability Index Rating by Census Tract



Wildland Fire Hazard Profile Endnotes

[1]National Interagency Fire Center. 2023. Historical Year-End Fire Statistics by State. https://www.nifc.gov.

[2]Washington State Department of Natural Resources. Fire Statistics 2008 to 2022: https://data-wadnr.opendata.arcgis.com/datasets/wadnr::dnr-fire-statistics-2008-present/about

[3]University of Washington Climate Impacts Group. 2023. Climate Mapping for a Resilient Washington: a Web Application for Climate Resilience Planning in Washington. https://cig.uw.edu/resources/analysis-tools/climate-mapping-for-a-resilient-washington/.

[4]U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 2023. https://www.firelab.org/project/wildfire-hazard-potential