DOUGLAS COUNTY, WA

COMMUNITY WILDFIRE PROTECTION PLAN

PREPARED FOR:

PREPARED BY:

NORTHWEST MANAGEMENT, INC.

JUNE 2025

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ACKNOWLEDGEMENTS

This Community Wildfire Protection Plan represents the efforts and cooperation of a number of organizations and agencies working together to improve preparedness for wildfire events while reducing factors of risk.

FOREWORD

It is important to note that the Community Wildfire Protection Plan (CWPP) is a planning document, meant to provide guidance for decision makers. It is not a decision document that carries the weight of policy. Recommended action items are not mandates. Priority mitigation areas and identified high-risk areas are based on the information available and at the time of planning, using the experiences of local fire officials, land managers, stakeholders, and residents. Wildfire hazards are identified so that planners can take steps to reduce risk to people and property. No ordinance, code, policy, or law should be assumed as a result of the planning process laid out in this document. The CWPP is also not a response plan. The CWPP is designed to assist in making key decisions to mitigate impacts of future wildfire events and to help recover from past wildfire events.

The process of developing a CWPP can help a community clarify and refine its priorities for the protection of life, property, and critical infrastructure in the wildland–urban interface on both public and private land. It also can lead community members through valuable discussions regarding management options and implications for the surrounding land base. Local fire service organizations help define issues that may place the county, communities, and/or individual homes at risk. Through the collaboration process, the CWPP steering committee discusses potential solutions, funding opportunities, and regulatory concerns and documents their resulting recommendations in the CWPP. The CWPP planning process also incorporates an element for public outreach. Public involvement in the development of the document not only facilitates public input and recommendations but also provides an educational opportunity through interaction between local wildfire specialists and an interested public.

A countywide CWPP steering committee generally makes project recommendations based on the issue causing wildfire risk, rather than focusing on individual landowners or organizations. Thus, projects are often mapped and evaluated without regard for property boundaries, ownership, or current management. Once the CWPP is approved by the Douglas County Commissioners and the State Forester, the steering committee will begin further refining proposed project boundaries, feasibility, and public outreach as well as seeking funding opportunities.

SIGNATURES

Adoption by the Douglas County Commissioners

8/12/2025

Marc S. Straub
Douglas County Commissioner
Vice Chair, District 1

Date

8/12/25

Dan Sutton
Douglas County Commissioner
Member, District 2

Date

8-12-25

Randy Agnew
Douglas County Commissioner
Chair, District 3

Date

Approval by the Washington State Department of Natural Resources

11/14/2025

George Geissler
Washington State Forester

Date

CONTENTS

1 PLAN OVERVIEW AND DEVELOPMENT

In 2024, the South Douglas Conservation District contracted with Northwest Management, Inc. to assist in updating the Douglas County Community Wildfire Protection Plan (CWPP). Wildfire events are a very real concern in Douglas County; thus, programs and projects that mitigate the impacts of wildfire are a benefit to the residents, property owners, environment, infrastructure, and the economy. In June of 2024, the CWPP update process began.

This CWPP is the result of analyses, professional collaboration, and assessments of wildfire risks and other factors focused on reducing wildfire threats to people, structures, infrastructure, and unique ecosystems in Douglas County. Agencies and organizations that participated in the planning process included:

- South Douglas Conservation District
- Foster Creek Conservation District
- Wenatchee Valley Fire Department
- Douglas County Fire District #1
- Douglas County Fire District #2
- Douglas County Fire District #3
- Douglas County Fire District #4
- Douglas County Fire District #5
- Douglas County Fire District #8
- Douglas County Fire District #15
- Douglas County Department of Emergency Management
- The Nature Conservancy
- Bureau of Land Management
- Douglas County Planning
- Chelan Douglas Land Trust
- Washington Department of Natural Resources
- Washington Department of Fish and Wildlife
- USDA Natural Resources Conservation Service

Northwest Management, Inc. (NMI) assisted the planning team and stakeholder group by facilitating meetings, conducting assessments, leading discussions around wildfire mitigation strategies, providing public outreach assistance, and authoring the updated document. The project manager from Northwest Management was Adam Herrenbruck.

1.1 GOALS AND GUIDING PRINCIPLES

The CWPP utilizes the best and most appropriate science from all partners as well as local and regional knowledge about wildfire risks and fire behavior while meeting the needs of local citizens and recognizing the significance wildfire can have on the regional economy.

1.1.1 MISSION STATEMENT

To make Douglas County residents, communities, state agencies, local and federal governments, and businesses less vulnerable to the negative effects of wildland fires through the effective administration of wildfire hazard mitigation grant programs, hazard risk assessments, wise and efficient fuels treatments, and a coordinated approach to mitigation policy through federal, state, regional, and local planning efforts. To also provide a plan that will not diminish the Private Property Rights of land/asset owners within Douglas County.

1.1.2 VISION STATEMENT

Our combined focus will be the protection of people, structures, infrastructure, livestock, state and federally listed species, and unique ecosystems that contribute to our way of life and the growth and sustainability of the local and regional economy through education, training, support, and planning.

1.1.3 GOALS

To protect people, structures, infrastructure, state and federally listed species, and unique ecosystems that contribute to our way of life and the sustainability of the local and regional economy.

Educate citizens about the unique challenges of wildfire preparedness in the County through the introduction of the Firewise USA® Recognition Program and encourage communities to pursue becoming recognized by Firewise USA.

Determine areas at risk of wildfire and establish/prioritize mitigation projects, without regard to ownership, and recommend both conventional and alternative treatment methods to protect people, homes, infrastructure, state and federal listed species, and natural resources throughout Douglas County.

Improve the ability of the County Fire Protection Districts to provide fire protection for the residents of Douglas County through improved resources and training.

1.1.4 STATE AND FEDERAL CWPP GUIDELINES

This Community Wildfire Protection Plan includes requirements adhering to the guidelines proposed in the Healthy Forests Restoration Act (2003) and the National Cohesive Wildland Fire Management Strategy.

The Healthy Forests Restoration Act of 2003 encourages the development of wildfire mitigation projects to reduce overall ignitability of a landscape and prioritizing areas of concern through a collaborative process involving all stakeholders.

The National Cohesive Wildland Fire Management Strategy is the encouragement for stakeholders to work collaboratively using the best available assessments to make meaningful progress towards three goals:

- Resilient Landscapes
- Fire Adapted Communities
- Safe and Effective Wildfire Response

The objective of combining these complementary guidelines is to facilitate an integrated wildland fire risk assessment, identify pre-hazard mitigation activities, and prioritize activities and efforts to achieve the protection of people, structures, the environment, and significant infrastructure in Douglas County while facilitating new opportunities for wildfire mitigation funding and cooperation.

2 DOCUMENTING THE PLANNING PROCESS

2.1 DESCRIPTION OF THE PLANNING PROCESS

The Douglas County Community Wildfire Protection Plan was developed through a collaborative process involving organizations and agencies detailed in Chapter 1 of this document. The planning process included the following steps:

Collection of Data about the extent and periodicity of the wildfire hazard in and around Douglas County.

Mapping of data relevant to pre-wildfire mitigation and treatments, structures, resource values, infrastructure, risk assessments, and related data.

Facilitation of Public Involvement from the formation of the steering committee to news releases, public meetings, public review of draft documents, and acknowledgement of the final plan by the signatory representatives.

Analysis and Drafting of the Report to integrate the results of the planning process, provide ample review and integration of committee and public input, and signing of the final document.

2.2 THE PLANNING TEAM

NMI facilitated the Community Wildfire Protection Plan meetings in partnership with South Douglas Conservation District. Stakeholders involved in the meetings included representatives from local communities, fire protection districts, federal and state agencies, and local organizations with an interest in the county's fire safety.

The planning philosophy in this project included the open and free sharing of information with interested parties. Information from federal, state, and local agencies was integrated into the database of knowledge used in this project. Meetings with the committee were held throughout the planning process to facilitate the sharing of information between participants. When the public meetings were held, many of the committee members were in attendance and shared their support and experiences and their interpretations of the results.

2.2.1 PLAN UPDATE PARTICIPATION

The following people participated in the update of the Douglas County Community Wildfire Protection Plan:

- Carol Cowling, South Douglas Conservation District
- Carolyn Kelly, South Douglas Conservation District

- Joe Sprauer, South Douglas Conservation District
- Becca Hebron, Foster Creek Conservation District
- Shannon Curran, Foster Creek Conservation District
- Molly Linville, Washington Department of Fish and Wildlife
- Richard Finger, Washington Department of Fish and Wildlife
- Katie Zander, Washington Department of Natural Resources
- Jake Hardt, Washington Department of Natural Resources
- Nolan Brewer, Washington Department of Natural Resources
- Amy Ramsey, Washington Department of Natural Resources
- Walter Escobar, Washington Department of Natural Resources
- Nicholas Gale, Washington Department of Natural Resources
- Marc Straub, Douglas County Commissioners
- Heather Mauseth, Douglas County
- Kurt Blanchard, Wenatchee Valley Fire
- Brian Brett, Wenatchee Valley Fire
- Erik Ellis, Wenatchee Valley Fire
- Curtis Lillquist, East Wenatchee Fire
- Sarah Troutman, United States Department of Agriculture
- Lexi Gardener, United States Department of Agriculture
- Makenzie Groves, United States Department of Agriculture
- Jim Oatey, Douglas County Fire District #4
- Jeff Zanol, Douglas County Fire District #4
- Adam Herrenbruck, Northwest Management, Inc.
- Tanner Paulson, Northwest Management, Inc.

These individuals were present at planning meetings and/or in public meetings and provided input throughout the process. Email correspondence among the planning team occurred regularly throughout the planning process as NMI made requests for information, sought feedback, facilitated discussion, and distributed elements of the plan for review.

2.3 PLANNING TEAM MEETINGS

Planning meetings were scheduled and held from June 2024 through June 2025. These meetings served to facilitate the sharing of information and discuss the different sections of the CWPP that required updates or full revision. NMI, in conjunction with South Douglas Conservation District, organized and led the meetings to walk through the planning process, make changes to the document, review the updated risk assessment and maps, and gather information needed to complete the plan update.

2.4 PUBLIC INVOLVEMENT

Public involvement was made a priority from the inception of the project. There were a number of ways that public involvement was sought and facilitated. The objective was to inform members of the public of the CWPP update process, to provide information about wildfire resiliency and to seek an active role in protecting their own homes and businesses. It could lead to the public becoming more aware of the process without becoming directly involved in the plan update.

2.4.1 FLYER AND SURVEY

Shown below is a flier that was distributed at multiple meetings and events by different stakeholders, as well as being posted on the South Douglas Conservation District website. In the bottom corner, there is a QR code that shares a link to a survey about the Community Wildfire Protection Plan for the public to provide input. Survey results are summarized and available in the appendices.

Figure 1: Community Wildfire Protection Plan flyer with survey

2.4.2 PUBLIC MEETINGS

The CWPP update was discussed as a topic at two separate meetings that were open to the public.

February 11, 2025 – Waterville, WA

Adam with NMI gave an informational presentation at the South Douglas and Foster Creek Conservation Districts' Douglas County Crop Improvement Annual Meeting. Topics covered included background information about a CWPP, the process of updating the Douglas County CWPP, mitigation projects, the Wildland Urban Interface, and the wildfire hazard assessment.

April 7, 2025 – East Wenatchee, WA

Adam and Tanner with NMI were invited to present some CWPP background information to the Douglas County Board of Commissioners. They also provided a progress report on the status of the plan update and some of the findings and recommendations from the planning team.

There were several additional events and meetings that occurred during the life of the update process where planning team members had the opportunity to mention the CWPP and/or discuss elements of the plan, such as the Wildland Urban Interface and wildfire mitigation projects.

3 DOUGLAS COUNTY CHARACTERISTICS

3.1 COUNTY DESCRIPTION

Douglas County was founded in 1883, named after U.S. Senator Steven Douglas who played a crucial role in the creation of Washington state. The county seat, Waterville, was established in 1886 and has been home to the current courthouse since its construction in 1905. The county boundary covers approximately 1,821 square miles, Douglas County ranks 17th in size among Washington state's counties.

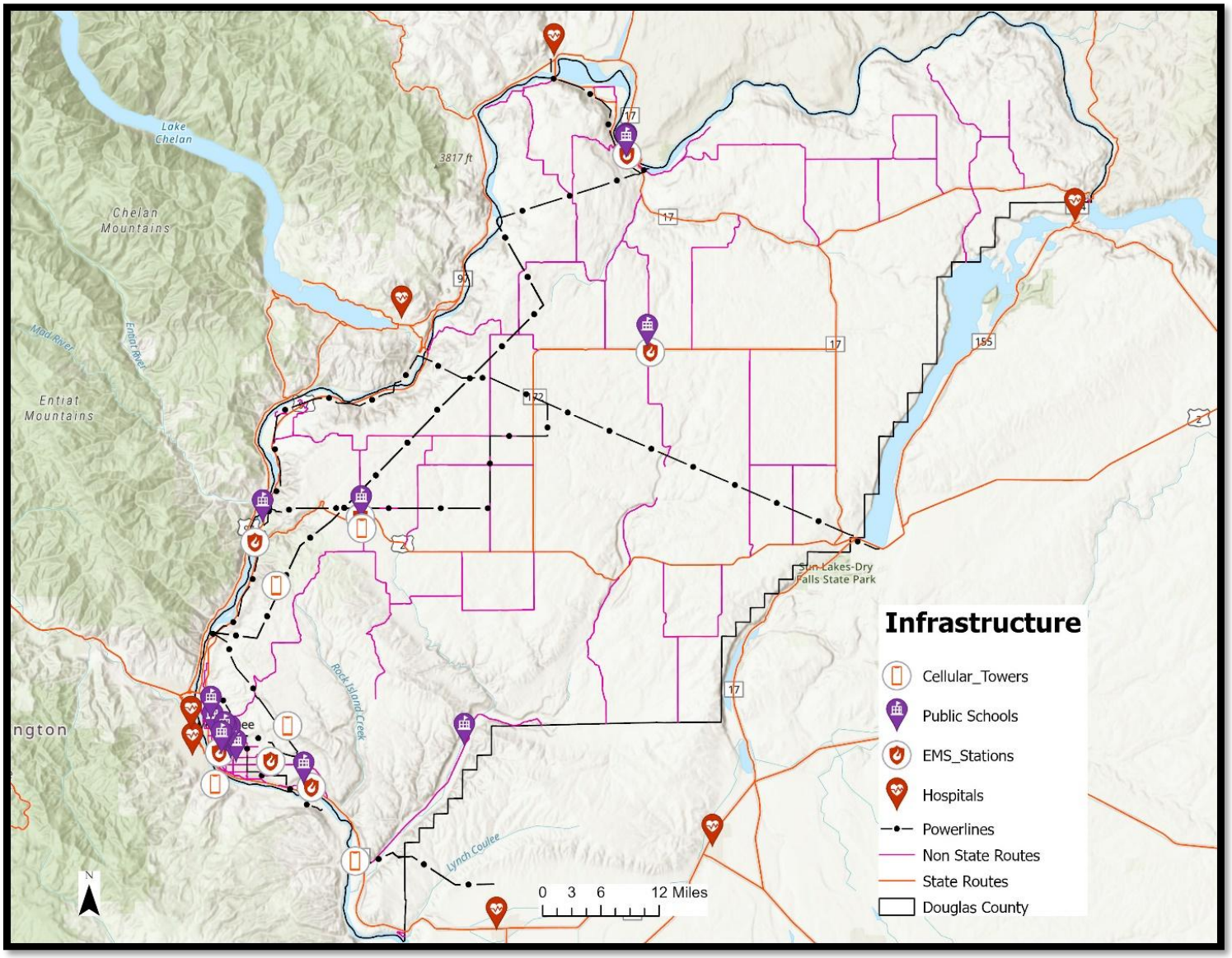
Located in North Central Washington, the county borders the Columbia River along its northern, western, and southern edges. With elevations ranging from 600 to 4000 feet, Douglas County features diverse eco-regions, including shrub steppe to mountain forests. The western part of Douglas County is nestled at the foothills of the Cascade Mountain range, where orchards flourish with apples, pears, and cherries. In contrast, the eastern part of the county is more level and is suitable for growing crops like wheat, barley, and canola.

Outdoor Recreation is a significant aspect of Douglas County. With attractions like Daroga State Park, Orondo River Park, Moses Coulee, and the Coulee Dam along the Columbia River. Inland, there are various bodies of water and rolling hills with trails ideal for biking, motorcycling, and off-road vehicles enthusiasts.

There are a total of five school districts in Douglas County serving a total of 7,647 students and twenty-three schools ranging from Pre-K to 12th grade. Eastmont School District being the biggest with a total enrollment of 6,032 kids and twelve different schools.

Medical services currently are in Waterville at the Douglas County Hospital District #1 and in Brewster at the northeast corner of the boundary. However, there is a recent levy that was passed in 2023 for Douglas County Hospital District #2 including ambulance services. Another recent proposal in 2023 was for the Okanogan-Douglas County Public Hospital District.

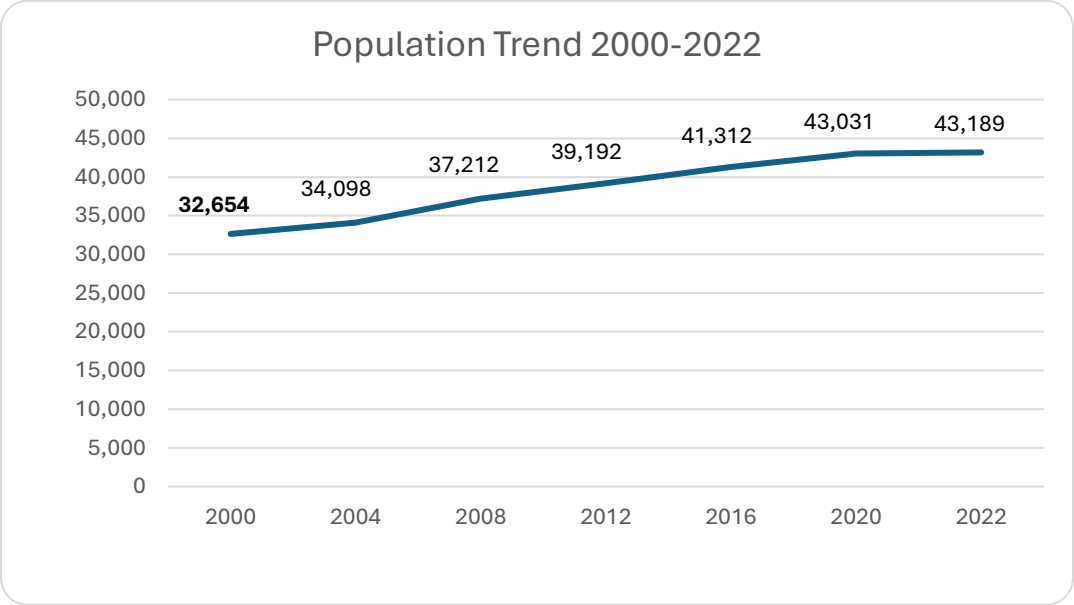
Figure 2: Infrastructure in Douglas County



3.2 POPULATION AND DEMOGRAPHICS

According to the US Census Bureau's 2022 American Community Survey (2022 ACS) 5-Year Estimates[1], Douglas County, WA had a population of 43,189 people with a median age of thirty-seven. Between 2021 and 2022 the population of Douglas County, WA grew from 42,622 to 43,189, a 1.33% increase. The 2020 US Census[2] was used to analyze race and ethnicity in Douglas County. The largest ethnic groups in Douglas County, WA include White (Non-Hispanic) (65.92%) and Other (Hispanic or Latino of any race) (34.08%). The total number of housing units is 17,438, 89% of which are occupied and 70% are owned. From the 1960s to today, the population of the county has increased by approximately 20%.

Figure 3: Population Data for Douglas County from 2000-2022



3.3 INCORPORATED AND UNINCORPORATED COMMUNITIES

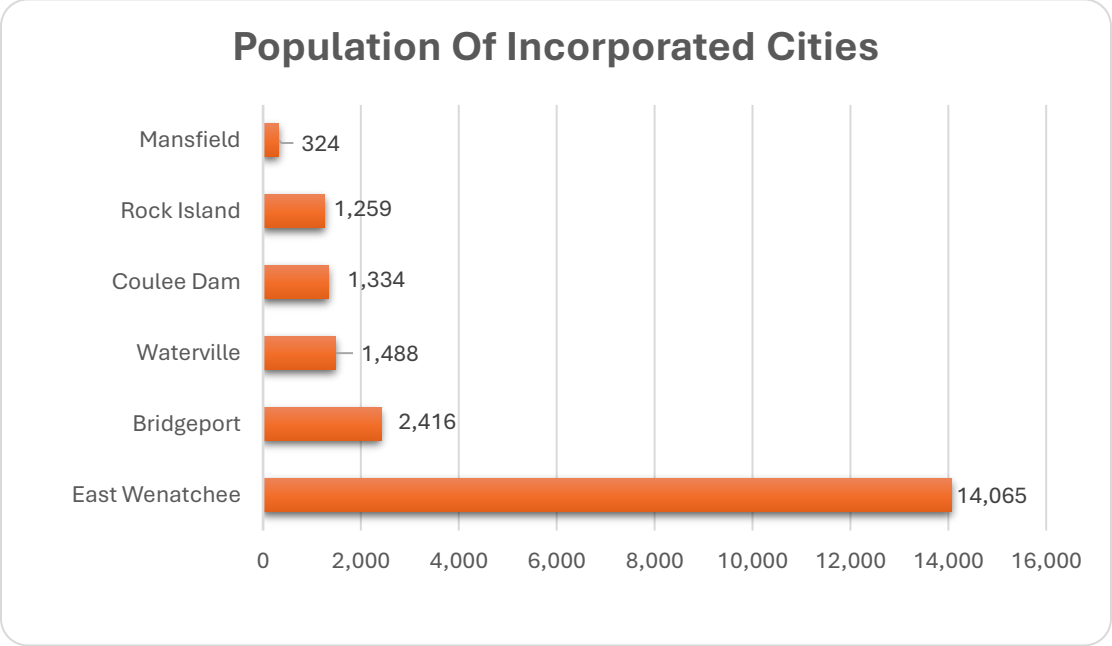
Douglas County is comprised of six incorporated communities including a portion of the town of Coulee Dam which also falls within Grant County and Okanogan County. The county's lowland regions are home to three of these incorporated towns: Bridgeport on the northwest border, East Wenatchee and Rock Island in the southwest. Mansfield and Waterville, the county seat, are the two oldest communities in the county and are situated on the plateau.

[1] https://www.census.gov/data/developers/data-sets/acs-5year.html

[2] https://data.census.gov/profile/Douglas_County,_Washington?g=050XX00US53017

The total unincorporated population of Douglas County is 22,303. Unincorporated communities in Douglas County include but are not limited to Douglas, Leahy, Orondo, Palisades, and Withrow. In these communities you will find lower population densities, but they are well known for being economically successful in agricultural industries like livestock farming, grain crops, and seed orchards. The unincorporated areas of Douglas County also hold historical value and feature infrastructure that supports newer communities.

Figure 4: Incorporated City Population Data



3.3.1 INCORPORATED COMMUNITIES

3.3.1.1 BRIDGEPORT

Founded in the late 1800s and officially incorporated in 1910, Bridgeport has a strong agricultural heritage. The city's primary industry is centered around farming, with a focus on apple orchards and wheat production. According to the 2022 ACS, the population of Bridgeport is 2,416. Within the Wenatchee Metro area there are a total of 742 housing units, with 92% being occupied, of that 63% are occupied by the owner. The demographic breakdown of the population is 51% male to 49% female. In terms of race and ethnicity, the population is made of up Hispanic (91%), white (8%) and those who identify as two or more ethnicities (1%).

3.3.1.2 EAST WENATCHEE

Located in Douglas County, East Wenatchee boasts the highest population density in the area. Situated across the Columbia River from Chelan County, the city's proximity to the river enabled access to vital irrigation water when the Columbia River Bridge was built in 1908. This led to the rapid development of apple orchards in the region, and by 1935, the town's residents voted to incorporate. According to the 2022 ACS, East Wenatchee is home to a population of 14,065 people, with a density of 3,712 individuals per square mile. The demographics reveal that 53% of the population identifies as male and 47% as female. The community's racial and ethnic breakdown is diverse, with 58% identifying as white, 35% Hispanic, 5% reporting two or more ethnicities, and 1% Asian.

3.3.1.3 ROCK ISLAND

Established in 1930, Rock Island experienced rapid growth following the construction of the first dam on the Columbia River in January of that year. The subsequent development of the Alcoa plant in Malaga necessitated the installation of additional power generators, ultimately bringing the total to 11. Today, 19 generators are operational, capable of serving a population of half a million people. According to the 2022 government census, Rock Island has a population of 1,259 individuals, with a density of 1,116 people per square mile. The town boasts 430 housing units, with a 97% occupancy rate and an ownership rate of 84%. In terms of ethnic diversity, Rock

Island's demographics are characterized by a mix of cultures: 50.8% identify as white, 1.6% as African American, 0.2% as Native American, 42% as another race alone, and 4.4% report having two or more combined ethnicities. Additionally, 0.8% identify as two races excluding others. Hispanic or Latino (of any race) make up 52% of the population (this can include the other races listed above) and 49% of households speak Spanish as an alternate to English.

3.3.1.4 COULEE DAM

As the construction headquarters for the Grand Coulee Dam, Coulee Dam has played a pivotal role in the region's history. Incorporated in 1959, the town is now the headquarters for the Lake Roosevelt National Recreation Area, named in honor of President Franklin D. Roosevelt. With a resident population of 1,334 and a visitor influx for recreational activities, the town's density is approximately 1,863 people per square mile. The town's housing stock consists of 636 units, with a 92% occupancy rate and a homeownership rate of 67%. The ethnic makeup of the population is diverse, comprising 54.6% white, 37.3% Native American, and smaller percentages of individuals identifying as two or more races (6.1%), Asian alone (1%), Native Hawaiian (.3%), African American (.6%), and other racial categories. Hispanic or Latino (of any race) makes up 4.8% of the population (this can include the other races listed above) and 2.6% speak Spanish as a primary language.

3.3.1.5 MANSFIELD

Located approximately sixty miles northeast of East Wenatchee, Mansfield's history is deeply tied to the arrival of the Great Northern Railroad in 1911, leading to its incorporation. The town has weathered various challenges, including fires, drought, and the Great Depression, but its agricultural heritage has remained strong. Today, Mansfield is still known as a thriving wheat town, with a population of 324 people and a population density ratio of 1,001 per square mile. The town's housing stock consists of 164 units, with a 95% occupancy rate and a homeownership rate of 65%. In terms of ethnic diversity, the majority of the population (92%) identifies as White, with smaller percentages identifying as Some Other Race (4.3%) and two or more Races (3.1%). Hispanic or Latino (of any race) makes up 17.4% of the population (this can include the other races listed above) and 2.2% of households speak Spanish as a primary language.

3.3.1.6 WATERVILLE

Perched atop the high plateau of the Big Bend of the Columbia River, Waterville is situated 28 miles northeast of East Wenatchee, boasting an elevation of 2,650 feet, the highest among all incorporated towns in Washington state. The town offers breathtaking views of Badger Mountain to the south and the majestic Cascade Mountains to the west. In 1887, Waterville was designated as the county seat, and a post office was established, with mail arriving via stagecoach from Spokane and Ellensburg. The town was officially incorporated in 1889. According to the 2022 census, Waterville's population stands at 1,488, with a density ratio of 1,719 people per square mile. The town's housing stock comprises 638 units, with an 89% occupancy rate and a homeownership rate of 85%. The town's demographics reflect a diverse community, with 80.4% of residents identifying as White, followed by Some Other Race (11.7%), Two or More Races (5.1%), Native American (2.1%), Asian Alone (.5%), and African American (.2%). Hispanic or Latino (of any race) makes up 11.6% of the population (this can include the other races listed above) and 1.8% of households speak Spanish as a primary language.

3.3.2 UNINCORPORATED COMMUNITIES

Unincorporated areas of Douglas County make up more than 51% of the total population. In these communities you will find lower population densities, but they are well known for being a big part of economic success through the agricultural industries with farming livestock, grain crops, and seed orchards. The unincorporated areas of Douglas County also hold historical value with infrastructure such as churches, cemeteries, railroads, and historical landmarks.

3.3.2.1 ORONDO

Situated along the eastern banks of the Columbia River, Orondo is a key part of the thriving Wenatchee-East Wenatchee Metropolitan Statistical Area. The region is renowned for its bountiful agricultural output, with prominent crops including apples, cherries, and pears. The town boasts a range of amenities, including a U.S. Post Office, an elementary school, and numerous fruit stands along U.S. Highway 97. Visitors can also enjoy the scenic beauty of two parks, Orondo River Park and Daroga State Park, which offer stunning views of the Columbia River and attract many recreational tourists each year.

3.3.2.2 DOUGLAS

Founded in 1883, this charming town has a rich history that dates back over a century. One of its most iconic landmarks is the 1905 general store, which has become a beloved historical destination, drawing visitors from near and far to this day. The arrival of the Northern Railway's Mansfield spur line in 1909 brought new life to the community, with trains chugging through the area until 1985, when the rails finally ceased operations.

3.3.2.3 PALISADES

Nestled 17.5 miles east of East Wenatchee, the community of Palisades boasts a rich history. Established in 1908, its post office has been serving the area for over a century. The community's unique name is derived from a striking rock formation that can be found nearby, a testament to the region's natural beauty.

3.3.2.4 WITHROW

Located at the foot of the Withrow Moraine and Jameson Lake Drumlin Field, this site is a prized possession of the National Park Service, designated as a National Landmark. The Withrow Moraine holds a unique distinction as the only Ice Age terminal moraine on the Waterville Plateau section of the Columbia Plateau. It marks the terminus of the Okanogan lobe of the Cordilleran Ice Sheet, which flowed southward through the Okanogan trough from the Interior Plateau of British Columbia, blocking the path of the Columbia River and eventually coming to rest on the elevations of the Waterville Plateau.

3.3.2.5 LEAHY

Located in Douglas County, Washington, Leahy is an unincorporated community that serves as the convergence point of Washington State Route 17 and Washington State Route 174. Situated 14.5 miles east-southeast of Bridgeport, Leahy offers easy access to the surrounding region.

3.3.3 LAND OWNERSHIP

Most of the ownership within Douglas County appears to be private. Federal ownership accounts for less than 5% of the land base with the Bureau of Land Management contributing the largest federal portion with over 50,000 acres. Approximately 11% of Douglas County is State owned land. The data used to develop this table was from Headwaters Economics "A Profile of Wildfire Risk. Local government property (i.e., County) is under the Private ownership category.

Table 1: Land Ownership in Douglas County

Entity	Percent
Private Lands	84%
Conservation Easement	2%
Federal Lands	4%
BLM	5%
State Lands	11%
State Trust Lands	9%
Other State	3%
City, County, Other	<1%

The primary land use in Douglas County is agriculture, in the form of dryland grain crops (including CRP), rangeland livestock grazing and irrigated orchard farming. Irrigated agriculture activities are in the Moses Coulee area, and along the Columbia River corridor. Dryland wheat, other grain crops, and livestock production are primarily located on the plateau area.

3.4 DEVELOPMENT TRENDS

Douglas County has a wide range of rural and agricultural land uses. Development activities consist of farms, rangeland, and isolated rural commercial, industrial development and regionally important recreation areas that have limited services and low rural densities. It is the intent of the comprehensive plan to recognize the traditional uses and patterns to fulfill county goals. The rural element seeks to defend the rural character of the County by reducing the inappropriate conversion of undeveloped land, low-density development and assuring the protection of the natural environment, historic properties, and rural lifestyles. Rural character will be safe guarded by encouraging cluster developments, revitalization of the existing rural service centers, planned resorts and other less invasive developments that minimize impacts to resources valued by the community. This strategy will continue to promote the agricultural uses that are vital to the County's economic base and support the rural aspects of Douglas County.

3.5 GEOGRAPHY AND CLIMATE

Douglas County is located on the Columbia Plateau, created by lava flows hundreds of feet thick, modified by glacial action and scoured by repeated floods during the Miocene and Pliocene eras. This landscape is the Channeled Scablands and includes features such as plateaus, buttes, and channels. Channels are composed of outwash terraces, bars, loess islands and basins. The plateaus contain circular mounds of loess surrounded by cobble-size fragments of basalt. Soil consists of silt loams with varying amounts of rock or gravel, and basaltic rock outcroppings. The soil along

the north end of the county contains granite, basalt, and imported material including glacial materials.

Douglas County's topography ranges from lowland areas along the Columbia River corridor to a high point on Badger Mountain with an approximate elevation of 4100 feet, but a mildly rolling plateau. There are small streams and lakes that provide a range of recreational opportunities.

The climate of Douglas County can change drastically based on the diversity of topography and relative distance from the Columbia River. Temperature ranges can vary noticeably between the lowland river corridor areas and the plateau, but they average between 22 degrees in January, to 86 degrees in the summer months. Average annual precipitation is up to 14 inches per year, not including the 51 inches of snow annually in parts of the County.

3.6 NATURAL RESOURCES

Douglas County is a diverse ecosystem with a complex array of vegetation, wildlife, and fisheries that have developed with, and adapted to fire as a natural/human-induced disturbance process. Years of wildland fire suppression coupled with past land-use practices (primarily agriculture and grazing) have altered plant community succession and has resulted in dramatic shifts in the fire regimes and species composition. As a result, areas of Douglas County have become more susceptible to large-scale, high-intensity fires posing a threat to life, property, and natural resources including wildlife and plant populations. High-intensity, stand-replacing fires have the potential to seriously damage soil, native vegetation, and fish and wildlife populations. In addition, an increase in the number of large, high-intensity fires throughout the nation's forest and rangelands has resulted in significant safety risks to firefighters and higher costs for fire suppression.

3.6.1 FISH AND WILDLIFE

There are various species of wildlife that inhabit the shrub / steppe region of central Washington. Sage Grouse, Columbian Sharp Tailed Grouse, and Columbian Pygmy Rabbit were historically populated throughout the Columbia Basin, however due to habitat loss; these populations have been drastically reduced in numbers and been genetically isolated from other populations. There have been significant efforts by federal, state, and private landowners in recent years to increase the preferred available habitat through the Conservation Reserve Program and incorporate higher grazing standards throughout the region.

3.6.2 VEGETATION

The Columbia Basin supports a complex landscape of native steppe and shrub steppe vegetation composed of scattered shrubs, typically sagebrush species or bitterbrush with a bunchgrass cover, usually blue bunch wheatgrass, Idaho fescue or needlegrasses, scablands (shallow rocky soils) that support specialized vegetation dominated by stiff sagebrush, one of several bushy buckwheat, and short bunchgrasses, and land largely converted to agricultural use or rangeland dominated by exotic plants or native vegetation tolerant of persistent land use.

Vegetation in Douglas County is a mix of shrubland, grassland, agricultural, and riparian ecosystems. A GIS analysis of ground cover composition indicates that the most represented vegetated cover type is agriculture followed by shrubland and grassland areas.

Table 2: Land Cover Types in Douglas County

Land Cover	Percent
Conifer-Hardwood	< 1%
Sparsely Vegetated	< 1%
Riparian	< 1%
Conifer	< 1%
Non-vegetated	2%
Exotic Herbaceous	3%
Developed	3%
Grassland	12%
Shrubland	39%
Agricultural	40%

3.6.3 HYDROLOGY

The Washington Department of Ecology & Water Resources Program is responsible for the development of the Washington State Water Plan. Included in the State Water Plan are the statewide water policy plan and component basin and water body plans, which cover specific geographic areas of the state (WDOE 2005). The Washington Department of Ecology has prepared general lithologies of the major groundwater flow systems in Washington.

The state may assign or designate beneficial uses for Washington water bodies shown in section WAC 173-201A-200 of the Washington Surface Water Quality Standards (WQS). These uses include:

Aquatic Life Uses: char; salmonid and trout spawning, rearing, and migration; non anadromous interior Redband trout, and indigenous warm water species.

Recreational Uses: primary (swimming) and secondary (boating) contact recreation

Water Supply Uses: domestic, agricultural, and industrial; and stock watering

While there may be competing beneficial uses in streams, federal law requires protection of the most sensitive of these beneficial uses.

Burned vegetation can result in changes in soil moisture and loss of rooting strength that can result in slope instability, especially on slopes greater than 30%. The greatest watershed impacts from increased sediment will be in the lower gradient; depositional stream reaches.

Of critical importance to Douglas County will be the maintenance of the domestic watershed supplies in the Columbia River, Grand Coulee Watershed (WRIA 42), Foster Creek (WRIA 50), and Moses Coulee (WRIA 44).

3.6.4 AIR QUALITY

Successful protection of air quality is done using the National Ambient Air Quality Standards (NAAQS). These standards address six pollutants known to harm human health including ozone, carbon monoxide, particulate matter, sulfur dioxide, lead, and nitrogen oxides.

The Clean Air Act, passed in 1963 and amended in 1977, is the primary legal authority of the U.S. Environmental Protection Agency. The Clean Air Act provides the principal framework for national, state, and local efforts to protect air quality. Under the Clean Air Act, the Organization for Air Quality Protection Standards (OAQPS) is responsible for setting the NAAQS standards for harmful pollutants.

Smoke emissions from fires potentially affect an area and the airsheds that surround it. Climatic conditions affecting air quality in Washington have multiple factors. Large-scale influences include latitude, altitude, prevailing hemispheric wind patterns, and mountain barriers. On a smaller scale, topography and vegetation cover also affect air movement patterns. Locally adverse conditions can result from occasional wildfires in the summer and fall, and prescribed fire and agricultural burning in the spring and fall.

Due principally to local wind patterns, air quality in Douglas County is good to excellent, rarely falling below the pollution standards of the Washington Department of Ecology.

3.6.5 WASHINGTON DEPARTMENT OF ECOLOGY

The Washington Department of Ecology Air Quality Program protects public health and the environment from pollutants caused by vehicles, outdoor and indoor burning, and industry. The DOE oversees permitting non-forested (i.e. agriculture and rangeland) burning.

3.6.6 WASHINGTON STATE SMOKE MANAGEMENT PLAN

The Department of Natural Resources (DNR), Department of Ecology (DOE), U.S. Forest Service (USDA), National Park Service (NPS), Bureau of Land Management (BLM), U.S Fish County falls under the authority of the Central Regional Office (CRO). The CRO can be contacted at: 509-575-2490. Wildlife Service (USDI), participating Indian nations, military installations (DOD), and small and large forest landowners have worked together to deal with the effect of outdoor burning on air. Public health, public safety, and forest health can be served through the application of the provisions of Washington State law and this plan, and with the willingness of those who do outdoor burning on forest lands to further reduce the negative effects of their burning.

The Washington State Smoke Management Plan pertains to DNR-regulated silvicultural outdoor burning only and does not include agricultural outdoor burning or outdoor burning that occurs on improved property. Although the portion of total outdoor burning covered by this plan is less than 10% of the total air pollution in Washington, it remains a significant and visible source. The purpose of the Washington State Smoke Management Plan is to coordinate and facilitate the statewide regulation of prescribed outdoor burning on lands protected by the DNR and on unimproved, federally managed forest lands and participating tribal lands. The purpose of the plan is to meet the requirements of the Washington Clean Air Act. The plan provides regulatory direction, operating procedures, and advisory information regarding the management of smoke and fuels on the forest lands of Washington State. It applies to all persons, landowners, companies, state and federal land management agencies, and others who do outdoor burning in Washington State on lands where the DNR provides fire protection, or where such burning occurs on federally managed, unimproved forest lands and tribal lands of participating Indian nations in the state. The Smoke Management Plan does not apply to agricultural outdoor burning and open burning as defined by the Washington Administrative Code (WAC) 173-425-030 (1) and (2), nor to burning done "by rule" under WAC 332-24 or on non-forested wildlands (e.g., rangelands).

4 RISK AND PREPAREDNESS ASSESSMENTS

4.1 WILDLAND FIRE CHARACTERISTICS

The first step in fire mitigation is understanding wildland fire behavior. Traits like how fires burn, the way fuels ignite, how flames develop and how fire spreads across the landscape determine how the fire is approached. The three major physical components that determine fire behavior are fuels, topography, and weather. At the landscape level, weather and topography cannot be controlled. However, one of the ways you can manipulate fires is by altering wildland fuels.

4.1.1 FUELS

Fire fuels are classified as any flammable material found in the landscape. Grass, brush, branches, logs, logging slash, forest floor litter, conifer needles, and buildings are all examples. The physical properties and characteristics of fuels dictate how fires burn. Fuel loading, size, shape, moisture content, continuity and arrangement all influence fire behavior. The smaller the fuels, the more quickly a fire may spread. Small fuels such as grass, needles and others less than a quarter inch in diameter are most responsible for fire spread. Fine fuels, with high surface to volume ratios, are considered the primary carriers of surface fire. As fuel size increases, the rate of spread decreases due to a low surface to volume ratio. Large fuels generally burn at a slower rate but release much more energy and burn with greater intensity. This increased energy release makes these fires more difficult to control. Thus, it is much easier to control a fire burning in grass than to control a fire burning in timber.

When burning under a forest canopy, the increased intensities can lead to torching (single trees becoming completely involved) and potential development of crown fires. That is, they release much more energy. Fuels are found in combinations of types, amounts, sizes, shapes, and arrangements. It's the unique combination of these factors, along with the topography and weather, that determine how fires will burn.

4.1.2 TOPOGRAPHY

Fires burning in similar fuel types will burn differently under varying topographic conditions. Topography alters heat transfer and localized weather conditions, which influences vegetative growth and fuels. Changes in slope and aspect can have significant influences on how fires burn. North slopes tend to be cooler, wetter, and more productive sites. This can lead to heavy fuel accumulations, with high fuel moisture, later curing of fuels, and lower rates of spread. In contrast, south and west slopes tend to receive more direct sun, and have the highest temperatures, lowest soil and fuel moisture, and lightest fuels. The combination of light fuels and dry sites lead to fires that typically display the highest rates of spread. These slopes also tend to be on the windward side of mountains. Slope also plays a significant role in fire spread, by allowing preheating of fuels upslope of the burning fire. As slope increases, the rate of spread and flame lengths tend to

increase. Therefore, we can expect the fastest rates of spread on steep, warm south and west slopes with fuels that are exposed to the wind.

4.1.3 WEATHER

Fire behavior is largely influenced by environmental conditions and weather. Wind speed, temperature, and relative humidity are all environmental factors that determine the rate at which fuels dry, and, in turn, how susceptible they are to ignition. These environmental parameters can be analyzed to determine current fuel conditions and generate estimates of how likely or easily fuels will ignite and the potential rate at which fire will spread. Once a wildfire has started, its behavior is further determined by atmospheric stability and local and regional weather. As temperature, wind speed, wind direction, and precipitation all influence fire behavior, weather is the most difficult component of the fire triangle to predict and interpret.

4.2 WILDFIRE HAZARDS

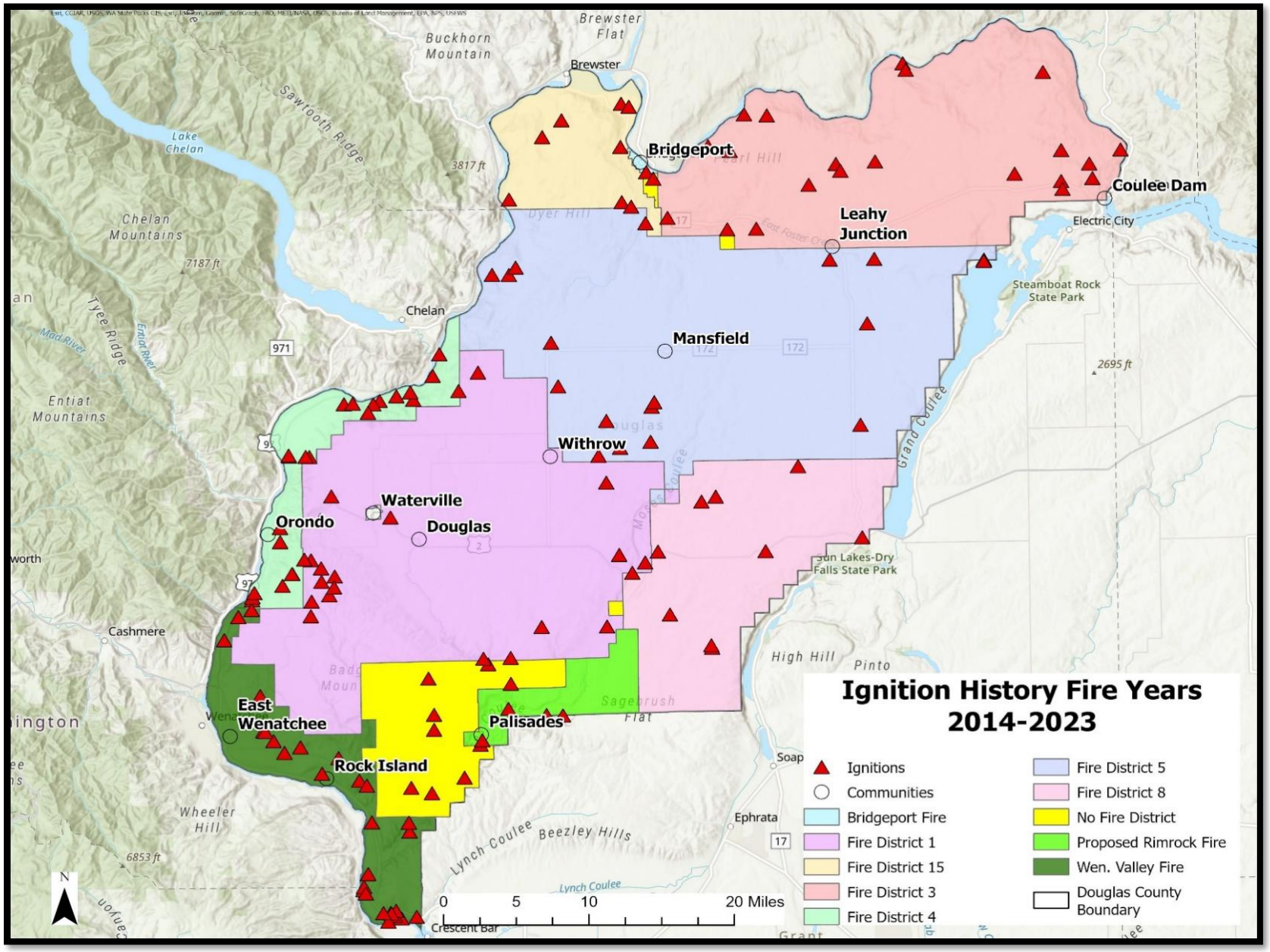
In the 1930s, wildfires consumed an average of 40 to 50 million acres per year in the contiguous United States, according to US Forest Service estimates. By the 1970s, the average acreage burned had been reduced to about 5 million acres per year. Over this time, fire suppression efforts were dramatically increased, and firefighting tactics and equipment became more sophisticated and effective. For the 11 western states, the average acreage burned per year since 1970 has remained relatively constant at about 3.5 million acres per year.

The severity of a fire season can usually be determined in the spring by how much precipitation is received, which in turn determines how much fine fuel growth there is and how long it takes this growth to dry. These factors, combined with annual wind events, can drastically increase the chance a fire start will grow and resist suppression activities. Furthermore, recreational activities typically occur throughout the months of July, August, and September. Occasionally, these types of human activities cause an ignition that could spread into populated areas and wildlands.

4.2.1 WILDFIRE IGNITION PROFILE

Detailed records of wildfire ignitions and extents from the National Interagency Fire Center represent all land ownership categories in Douglas County. The WFIGS incident data for wildfire ignitions were used to summarize total ignitions and known causes from 2014 to 2023. During this period, there were a total of 142 ignitions, 30 confirmed human caused ignitions, and 24 known naturally caused ignitions. There was a total of 88 unknown ignition causes from 2014 to 2023. The highest number of ignitions in Douglas County occurred in 2014 with a total of 22 ignitions. The most severe fire season for Douglas County was 2020 which saw a total of 234,079 acres burned. The year with the fewest number of acres burned was 2016 with 554 total acres.

Figure 5: Fire Districts and Ignitions from 2014-2023



4.2.2 FIRE HISTORY

Fire was once an integral function within the ecosystems of Washington. The seasonal cycling of fire across most landscapes was as regular as the July, August and September lightning storms plying across Washington State. Depending on different vegetation characteristics, fire burned with varying intensities. Shorter return intervals between fire events often resulted in less dramatic changes in plant composition. With infrequent return intervals, plant communities tended to burn more severely and be replaced by vegetation different in composition, structure, and age.

Since 2014 there has been a total of 452,191 acres burned in Douglas County. The graph above shows 2020 had the highest number of acres burned due to the historic Pearl Hill Fire.

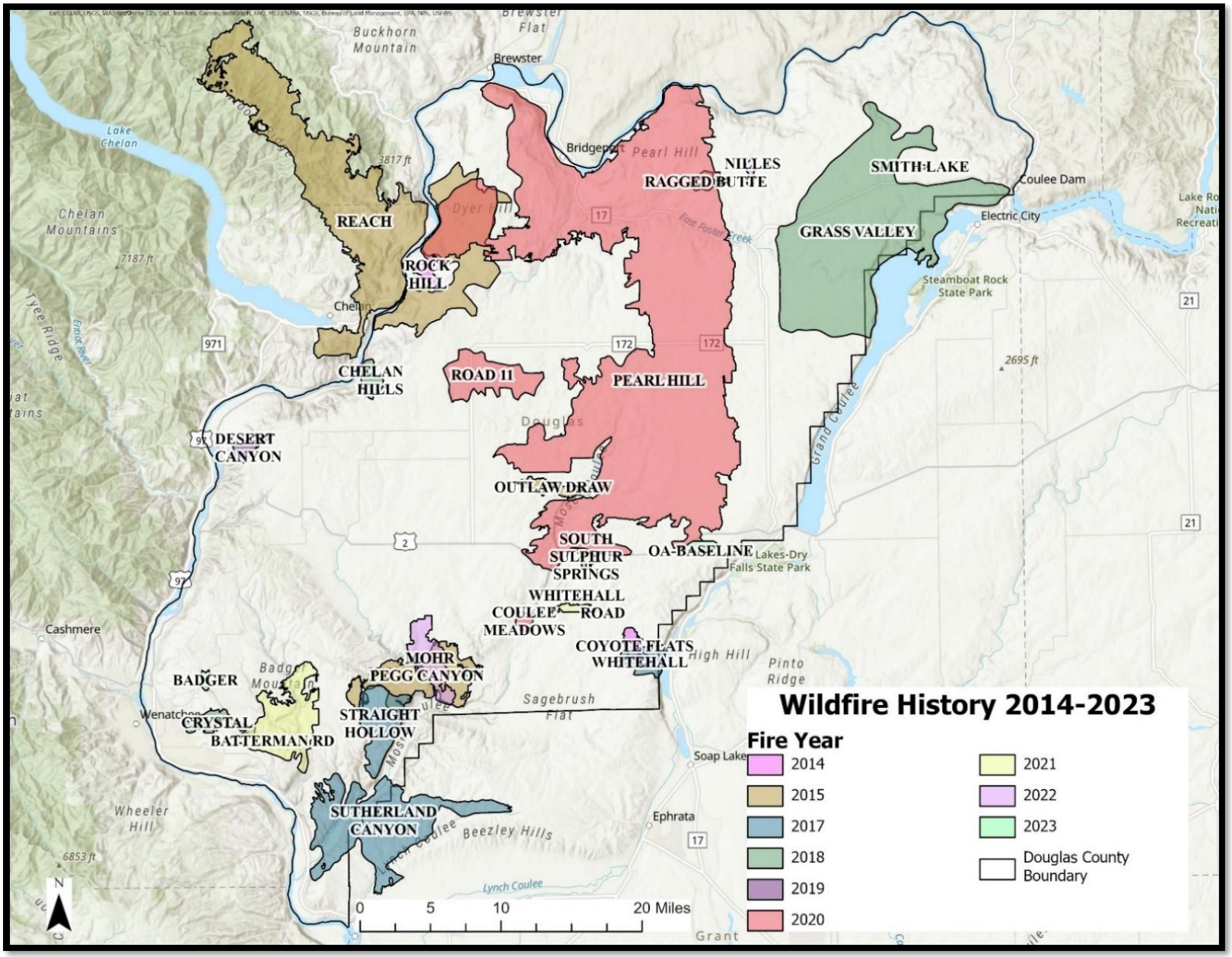
Below are statistics from the Washington Department of Natural Resources Wildfire GIS data. This was based on all large wildfires 100 acres or bigger from 2014 to 2023. The map displays more detail on the wildfire perimeter and geographic location and includes significant fires that started outside of Douglas County and ended up within the county boundary.[3]

Table 3: Ignitions and causes fire years 2014-2023

Year	Human	Natural	Unknown	Ignitions	Acres
2014	2	6	14	22	12,318
2015	4	3	9	16	51,552
2016	4	0	2	6	554
2017	2	2	7	11	44,614
2018	3	6	9	18	82,570
2019	2	0	10	12	2,427
2020	6	3	10	19	234,079
2021	2	2	10	14	15,285
2022	1	1	7	9	7,451
2023	4	1	10	15	2,538
Totals	**30**	**24**	**88**	**142**	**453,388**

[3] https://data-wadnr.opendata.arcgis.com/datasets/wadnr::washington-large-fires-1973-2023/explore?location=47.312740%2C-120.225150%2C8.13

Figure 6: Douglas County large fire perimeter fire years 2014-2023 of at least 300 acres



4.2.2.1 PEARL HILL FIRE SEPTEMBER 7, 2020

Based on data from 2014 to 2023, the Pear Hill Complex fire is one of the most significant wildfires in the last 10 years. The start was approximately 9 miles from Bridgeport under the jurisdiction of the Washington State Patrol's Fire Office. The event led to a Level 3 evacuation of the immediate and surrounding area. The cause of the fire is unknown but due to the drought conditions, wind, and the local fuels, it spread and burned a total of 223,730 acres by the time it was under control on the 28 of September. The significant impacts of this fire had catastrophic effects not only on homeowners, but also on local wildlife and agriculture. According to Shawn Goggins of the Local News, canola growers combined lost 1,000 acres from the fire[4]. Lynda Mapes of the Seattle Times mentioned that the Pearl Hill Fire was devastating to Endangered Species like Sage Grouse, Pygmy Rabbits, and Sharp Tailed Grouse, lowering their population levels by up to 70%.[5]

Figure 7: Photo by Douglas County Fire District 5 showing Pearl Hill Fire burning outside Mansfield WA (NCWLIFE)

[4] https://www.yoursourceone.com/columbia_basin/how-the-pearl-hill-fire-scarred-douglas-county-s-emerging-canola-industry/article_d2c0352e-495a-11eb-ac89-ffc8e4ddd60d.html

[5] https://www.seattletimes.com/seattle-news/environment/endangered-wildlife-habitat-burned-in-wildfires/#:~:text=But%20wildlife%20managers%20think%20the,be%20worse%20than%20presently%20understood.

4.2.2.2 BATTERMAN ROAD FIRE JULY 4, 2021

The Batterman road fire started a mile northeast of Pangborn Memorial Airport on the fourth of July and burned 14,123 acres. This was a human caused fire that threatened 80 structures and warranted level 3 evacuation notices. Estimated costs were over three million dollars by the time it was fully contained on July twelfth.

Figure 8: Fire crews battling 750-acre Batterman Road Fire east of Wenatchee (Douglas County Sheriff's Office) (KOMO)

4.3 WILDFIRE HAZARD ASSESSMENT

Douglas County was analyzed using a variety of models, managed on a Geographic Information System (GIS) system. Physical features of the region including Infrastructure, vegetation, and fire history were represented by data layers.

4.3.1 HISTORIC FIRE REGIME

Historical variability in fire regime is a conservative indicator of ecosystem sustainability, and thus, understanding the natural role of fire in ecosystems is necessary for proper fire management. Fire is one of the dominant processes in terrestrial systems. Land managers need to understand historical fire regimes, the fire return interval (frequency) and fire severity prior to settlement by Euro-Americans, to be able to define ecologically appropriate goals and objectives for an area. Moreover, managers need spatially explicit knowledge of how historical fire regimes vary across the landscape.

“Natural” fires in Douglas County would have been disproportionately caused by Native Americans. Aboriginal people intentionally set fires throughout the region for the purposes of controlling tree and shrub expansion and for the cultivation of select plants. When we describe “natural” in the Range of Natural Variability we are including indigenous peoples as natural disturbance agents and contributors to perceptions of what is “natural”.

A primary goal in ecological restoration is often to return an ecosystem to a previously existing condition that no longer is present at the site, under the assumption that the site’s current condition is somehow degraded or less desirable than the previous condition and needs improvement.

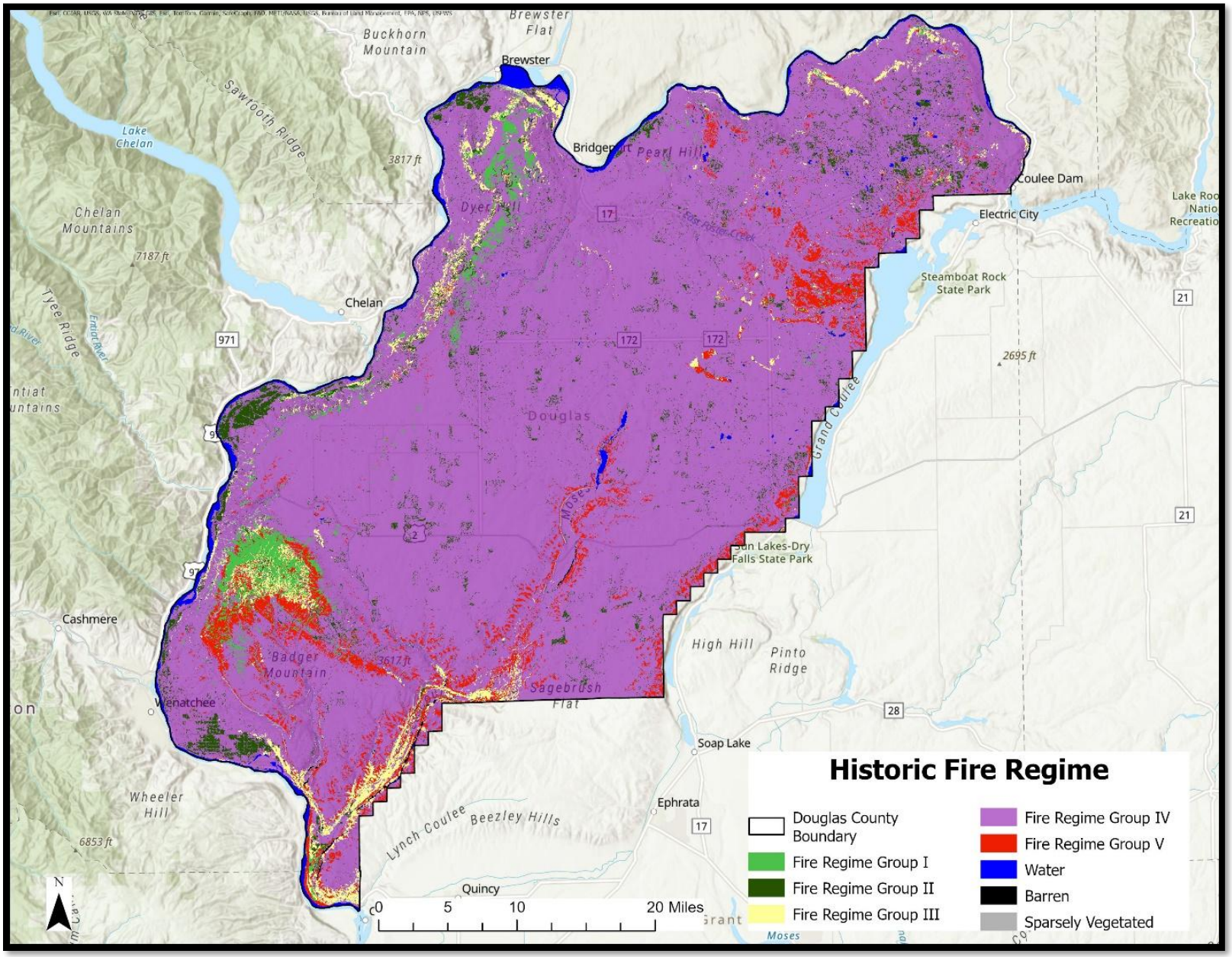
Many ecological assessments are enhanced by the characterization of the historical range of variability which helps managers understand: (1) how the driving ecosystem processes vary from site to site; (2) how these processes affected ecosystems in the past; and (3) how these processes might affect the ecosystems of today and the future. Historical fire regimes are a critical component for characterizing the historical range of variability in fire-adapted ecosystems. Furthermore, understanding ecosystem departures provides the necessary context for managing sustainable ecosystems. Land managers need to understand how ecosystem processes and functions have changed prior to developing strategies to maintain or restore sustainable systems. In addition, the concept of departure is a key factor for assessing risks to ecosystem components. For example, the departure from historical fire regimes may serve as a useful proxy for the potential of severe fire effects from an ecological perspective

Table 4: Douglas County Historic Fire Regime

Historic Fire Regime	Description	Percent Total
Fire Regime Grp I	<=35-year return interval, low, mixed severity	**<2%**
Fire Regime Grp II	<=35-year fire return interval, replacement severity	**4%**
Fire Regime Grp III	35–200-year fire return interval, low and mixed severity	**2%**
Fire Regime Grp IV	35–200-year fire return interval, replacement severity	**83%**
Fire Regime Grp V	>200-year fire return interval, any severity	**5%**
Water	Water	**1%**
Barren	Barren	**>1%**
Sparsely Vegetated	Sparsely Vegetated	**1%**

This model only uses the current vegetation types to determine the historic fire regime. The vegetation types were much different pre-Euro-American settlement than they are today and believed to be a more grassland dominated landscape. The Historic Fire Regime model suggests that fires in Douglas County historically burned with replacement severity fires on a longer return interval. More time between fires allows fuel to build up, which can burn very intensely when conditions are dry. For this reason, it may be reasonable to assume that most of the areas in the county have been categorized as having a 35-to-200-year return interval with fires of replacement severity.

Figure 9: Historic Fire Regime for Douglas County



4.3.2 VEGETATION CONDITION CLASS

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention but including the influence of aboriginal burning. Coarse scale definitions for historic fire regimes have been developed by Hardy et al and Schmidt et al and interpreted for fire and fuels management by Hann and Bunnell.

A vegetation condition class (VCC) is a classification of the amount of departure from the historic regime. The three classes are based on low (VCC 1), moderate (VCC 2), and high (VCC 3) departure from the central tendency of the natural (historical) regime. The central tendency is a composite estimate of vegetation characteristics (species composition, structural stages, stand age, canopy closure, and mosaic pattern); fuel composition; fire frequency, severity, and pattern; and other associated natural disturbances. Low departure is within the natural (historical) range of variability, while moderate and high departures are outside.

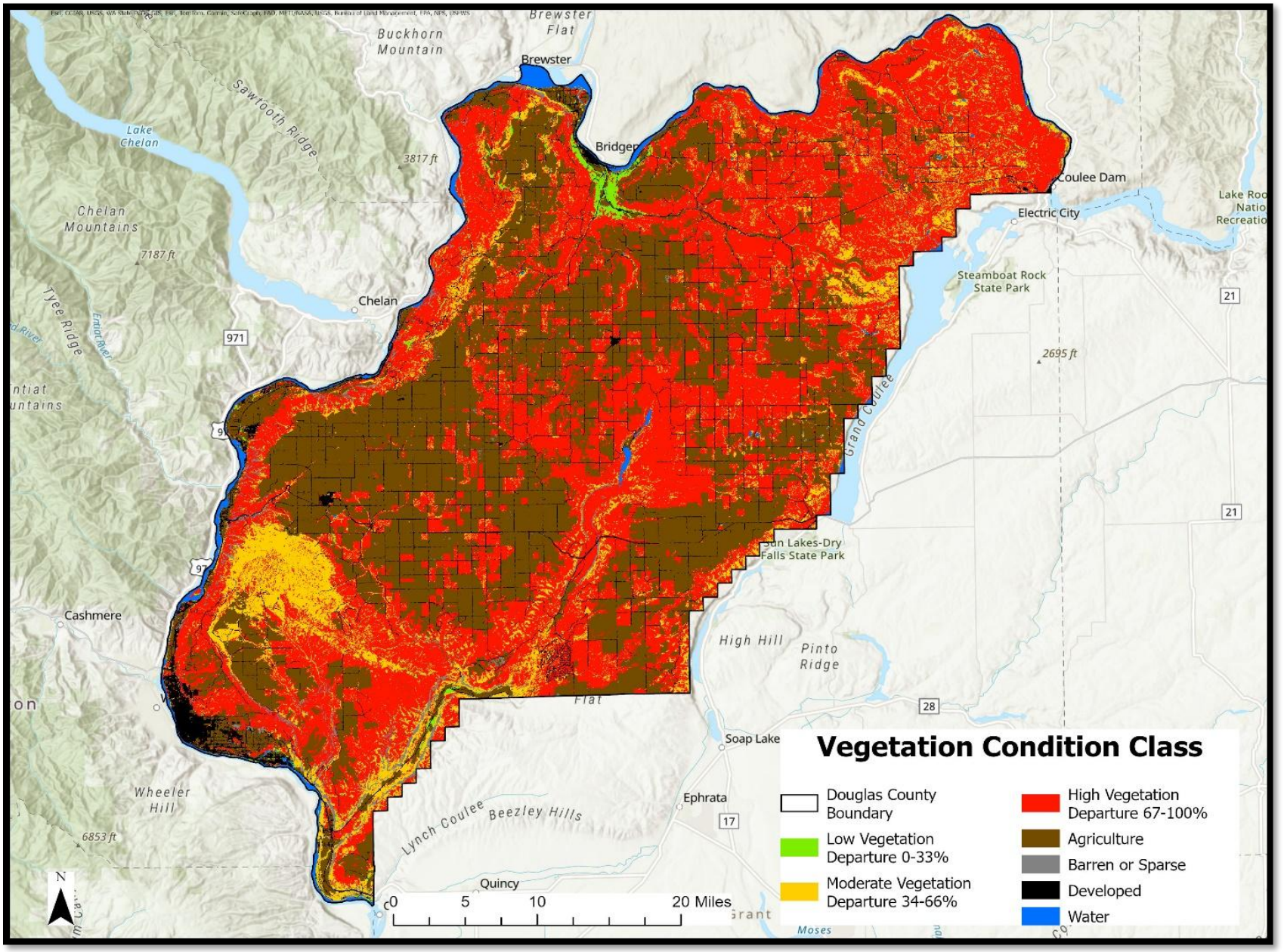
An analysis of Vegetation Condition Classes in Douglas County shows that the majority land in the county that has not been converted to agriculture (37%) is considered highly departed (50%) from its historic fire regime and associated vegetation and fuel characteristics. Approximately 2% have a low departure and less than about 10% is considered moderately departed.

Table 5: Douglas County Vegetation Condition Class

Vegetation Condition Class	Description	Percent Total
Vegetation Condition Class I	Low Departure 0-33%	**<2%**
Vegetation Condition Class II	Moderate Departure 34-66%	**>10%**
Vegetation Condition Class III	High Departure 67-100%	**>50%**
Water	Water	**>1%**
Developed	Developed	**>4%**
Barren or Sparse	Barren or Sparse	**>1%**
Agriculture	Agriculture	**37%**

The current Vegetation Condition Class model shows that much of Douglas County is highly departed. A concentration of the highly departed vegetation appears to occur in the northeast corner of the county where vast amounts of Conservation Reserve Program land exist. In addition, a majority of the county is dominated by various shrub species with a grass understory consisting of blue bunch wheatgrass, Idaho fescue, and other grass species. The current structure and density of the shrublands in many areas makes it susceptible to health issues from competition, insects, and disease. The current fire severity model suggests that a higher severity fire than historical norms would be expected in these areas.

Figure 10: Douglas County Vegetation Condition Class



4.3.3 EXISTING VEGETATION TYPE

The Columbia Basin supports a complex landscape of native steppe and shrubsteppe vegetation composed of; scattered shrubs, typically sagebrush species or bitterbrush with a bunchgrass cover, usually bluebunch wheatgrass, Idaho fescue or needlegrasses, scablands (shallow rocky soils) that support specialized vegetation dominated by stiff sagebrush, one of several bushy buckwheats, and short bunchgrasses, and land largely converted to agricultural use or rangeland dominated by exotic plants or native vegetation tolerant of persistent land use.

Table 6: Existing Vegetation Type

Existing Vegetation Type	Percent Total Area
Sparsely Vegetated	**<1%**
Riparian	**<1%**
Conifer	**<1%**
Exotic Herbaceous	**9%**
Developed	**4%**
Grassland	**23%**
Shrubland	**23%**
Agricultural	**33%**

Vegetation in Douglas County is a mix of shrubland, grassland, agricultural, and some riparian ecosystems. An evaluation of satellite imagery of the region provides some insight into the composition of the vegetation of the area. The most represented vegetated cover type is agriculture followed by shrubland and grassland areas.

4.3.4 CONDITIONAL FLAME LENGTH

Conditional Flame Length represents the mean flame length for a fire burning in the direction of maximum spread (headfire) at a given location if a fire were to occur. This portrays an average measure of wildfire intensity. It can be thought of as the most likely flame length for a wildfire at any given location. A range of weather types are reflected to calculate this, including combinations of wind speed, wind direction, and moisture content scenarios.

Areas of agriculture are highly likely to be classified with a conditional flame length of zero. Much of the county appears to have relatively low conditional flame lengths, anywhere from 0 to 6 feet. This is likely influenced by finer fuels in much of the county, such as grasses and shrubs. The only areas with higher conditional flame lengths (12 feet and more) fall in the more timbered parts of the county, most notably the Badger Mountain area. Topography may also be a factor. Some predominantly grass and shrubland areas have medium conditional flame lengths (6 to 12 feet) but they are located along steep canyon walls or areas with more drastic topographic relief.

Taken together, Existing Vegetation Type and Conditional Flame Length paint a picture of the potential fire activity and behavior in Douglas County based on the vegetation and fuels makeup.

Figure 11: Existing Vegetation Type

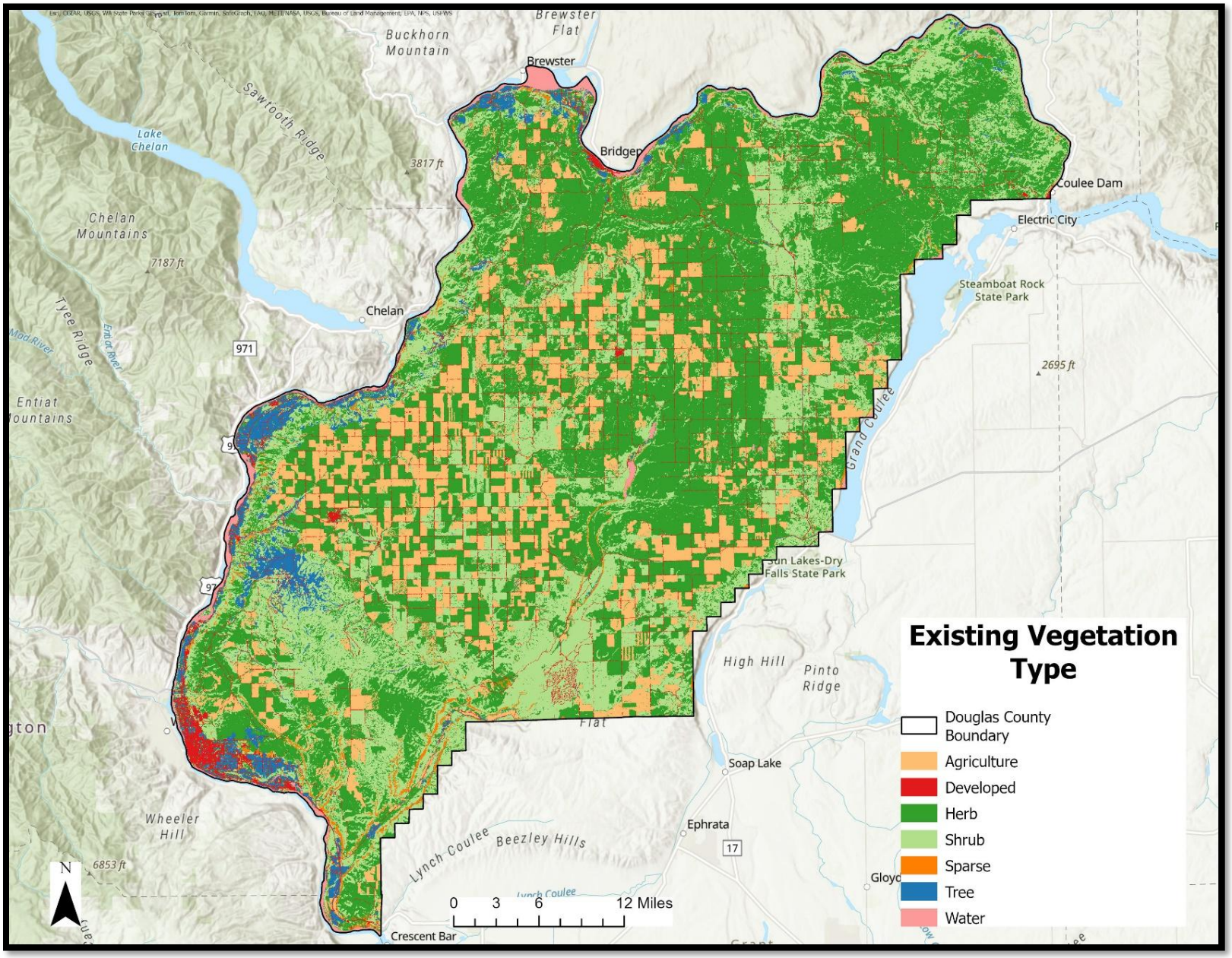
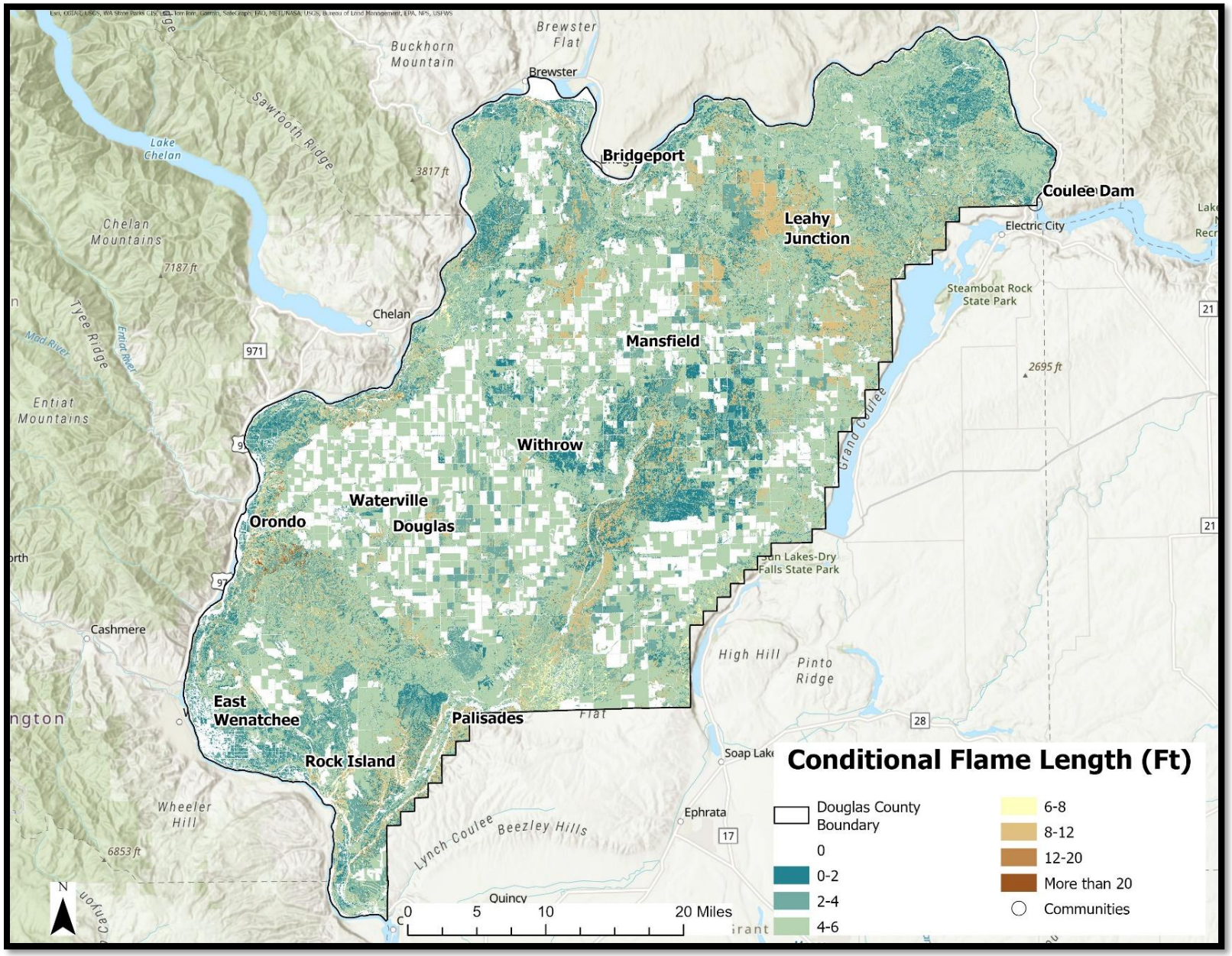


Figure 12: Conditional Flame Length



4.4 DOUGLAS COUNTY'S WILDLAND-URBAN INTERFACE

In Designating a Wildland Urban Interface, the purpose is to strategically prioritize and implement pre/post wildfire mitigation projects and gain access to funding.

The wildland-urban interface (WUI) has gained attention through efforts targeted at wildfire mitigation; however, this analysis technique is also useful when considering other hazards because the concept looks at where people and structures are concentrated in any region.

A key component in meeting the underlying need for protection of people and structures is the protection and treatment of hazards in the wildland-urban interface. The Core Wildland Urban Interface refers to areas where wildland vegetation meets critical infrastructure and areas of ecological significance. The WUI encompasses not only core zones but also an extended zone including areas with lower densities of WUI characteristics. Reducing the hazard in the wildland-urban interface requires the efforts of federal, state, and local agencies and private individuals. "The role of [most] federal agencies in the wildland-urban interface includes wildland firefighting, hazard fuels reduction, cooperative prevention and education, and technical experience. Structural fire protection [during a wildfire] in the wildland-urban interface is [largely] the responsibility of Tribal, state, and local governments". The role of the federal agencies in Douglas County is and will be much more limited. Property owners share a responsibility to protect their residences and businesses and minimize danger by creating defensible areas around them and taking other measures to minimize the risks to their structures. With treatment, a wildland-urban interface can provide firefighters with a defensible area from which to suppress wildland fires or defend communities against other hazard risks. In addition, a wildland-urban interface that is properly treated will be less likely to sustain a crown fire that enters or originates within by reducing hazardous fuel loads, ladder fuels, and tree densities, and creating new and reinforcing existing defensible space, landowners can protect the wildland-urban interface, the biological resources of the management area, and adjacent property owners by:

Minimizing the potential of high-severity ground or crown fires entering or leaving the area.

Reducing the potential for firebrands (embers carried by the wind in front of the wildfire) impacting the WUI. Research indicates that flying sparks and embers (firebrands) from a crown fire can ignite additional wildfires as far as 1¼ miles away during periods of extreme fire weather and fire behavior.

Improving defensible space in the immediate areas for suppression efforts in the event of wildland fire.

4.4.1 THE WILDLAND URBAN INTERFACE

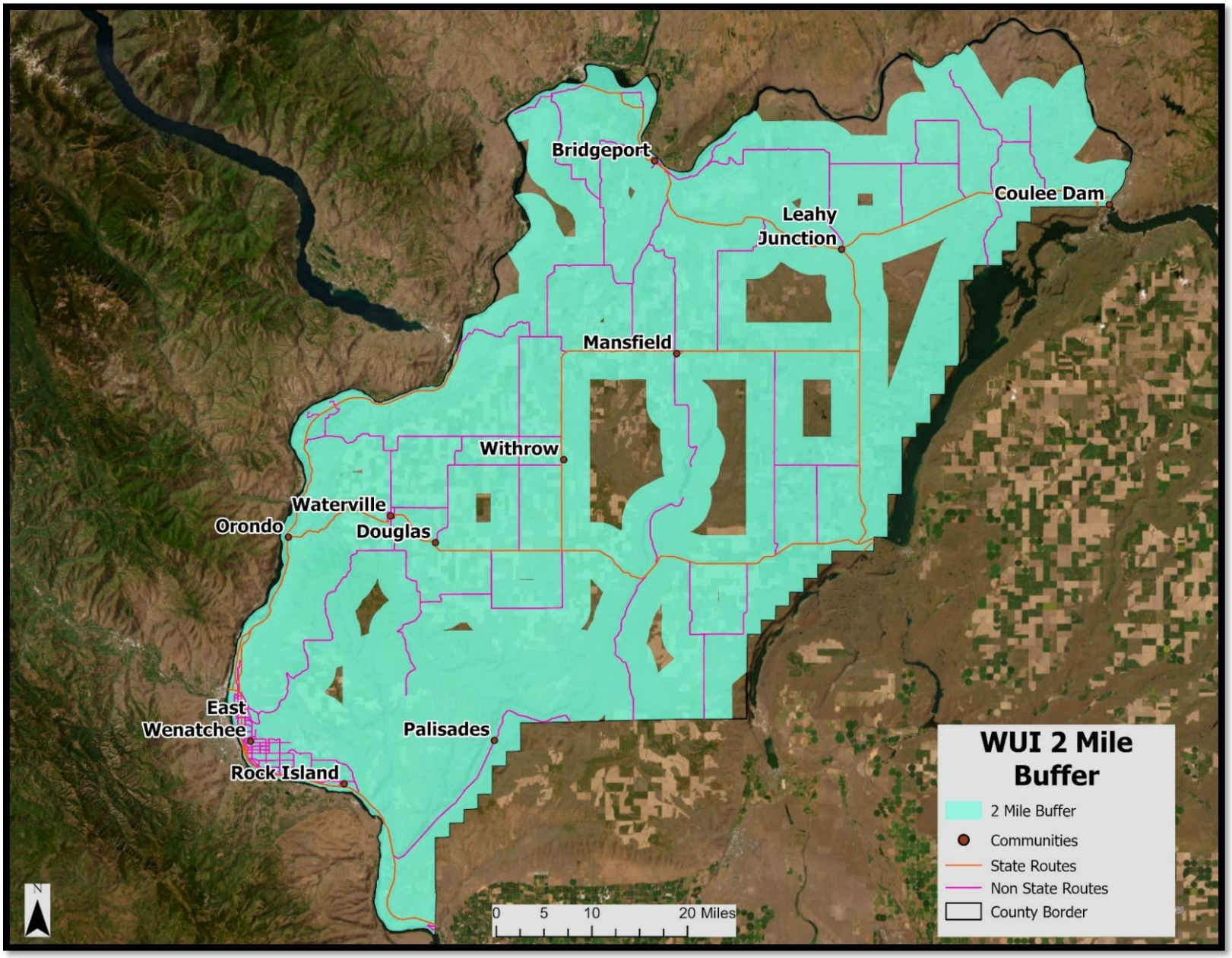
The **Core WUI** is buffered around areas containing infrastructure, areas without fire protection, and areas of cultural significance.

- State Roads and Highways
- Building Density
- Hospitals
- Schools
- EMS Stations
- Airports
- Homes/Structures
- Communication Towers
- Transmission Lines
- Areas not protected by a fire district
- Areas containing Endangered Species

The WUI, as defined here, is unbiased and consistent and most importantly – it addresses all the county, not just federally identified communities at risk. It is a planning tool showing definitive characteristics of the WUI in Douglas County. It can be determined again in the future, using the same criteria, to show how the WUI has changed in response to increasing population densities. It uses a repeatable and reliable analysis process that is unbiased.

The Healthy Forests Restoration Act makes a clear designation that the location of the WUI is at the determination of the county or reservation when a formal and adopted Community Wildfire Protection Plan is in place. It further states that the federal agencies are obligated to use this WUI designation for all Healthy Forests Restoration Act purposes. The Douglas County Community Wildfire Protection Plan steering committee evaluated a variety of different approaches to determining the WUI for the county and selected this approach and has adopted it for these purposes. In addition to a formal WUI map for use with the federal agencies, it is hoped that it will serve as a planning tool for the county, state and federal agencies, and local Fire Protection Districts.

Figure 13: The Wildland Urban Interface in Douglas County



4.4.2 POTENTIAL WUI TREATMENTS

The definition and mapping of the WUI is the creation of a planning tool to identify where structures, people, and infrastructure are in reference to each other. This analysis tool does not include a component of fuels risk. There are several reasons to map and analyze these two components separately (population density vs. fire risk analysis). Primary among these reasons is the fact that population growth often occurs independent from changes in fire risk, fuel loading, and infrastructure development. Thus, making the definition of the WUI dependent on all of them would eliminate populated places with a perceived low level of fire risk today, which may in a year become an area at high risk due to forest health issues or other concerns.

By examining these two tools separately, the planner can evaluate these layers of information to see where the combination of population density overlays areas of high current relative fire risk and then take mitigative actions to reduce the fuels, improve readiness, directly address factors of structural ignitability, improve initial attack success, mitigate resistance to control factors, or (more often) a combination of many approaches.

It should not be assumed that just because an area is identified as being within the WUI, it will therefore receive treatment because of this identification alone. Nor should it be implicit that all WUI treatments will be the application of the same prescription. Instead, each location targeted for treatments must be evaluated on its own merits: factors of structural ignitability, access, resistance to control, population density, resources and capabilities of firefighting personnel, and other site-specific factors. It should also not be assumed that WUI designation on national or state forest lands automatically equates to a treatment area.

Most treatments may begin with a home evaluation, and the implicit factors of structural ignitability (roofing, siding, deck materials) and vegetation within the treatment area of the structure. However, treatments in the low population areas of rural lands may look closely at access (two ways in and out) and communications through means other than land-based telephones. On the other hand, a subdivision with densely packed homes surrounded by forests and dense underbrush, may receive more time and effort implementing fuels treatments beyond the immediate home site to reduce the probability of a crown fire entering the subdivision.

4.4.3 WILDFIRE RISK MODELS

Several USFS-sponsored risk modeling tools were used to define and calculate probabilities and values related to risk of wildfire in communities. The different datasets and models looked at are Wildfire Likelihood (Burn Probability), Risk to Homes (Risk to Potential Structures) Risk Reduction Zones, and Wildfire Hazard Potential.

Figure 14: Burn Probability

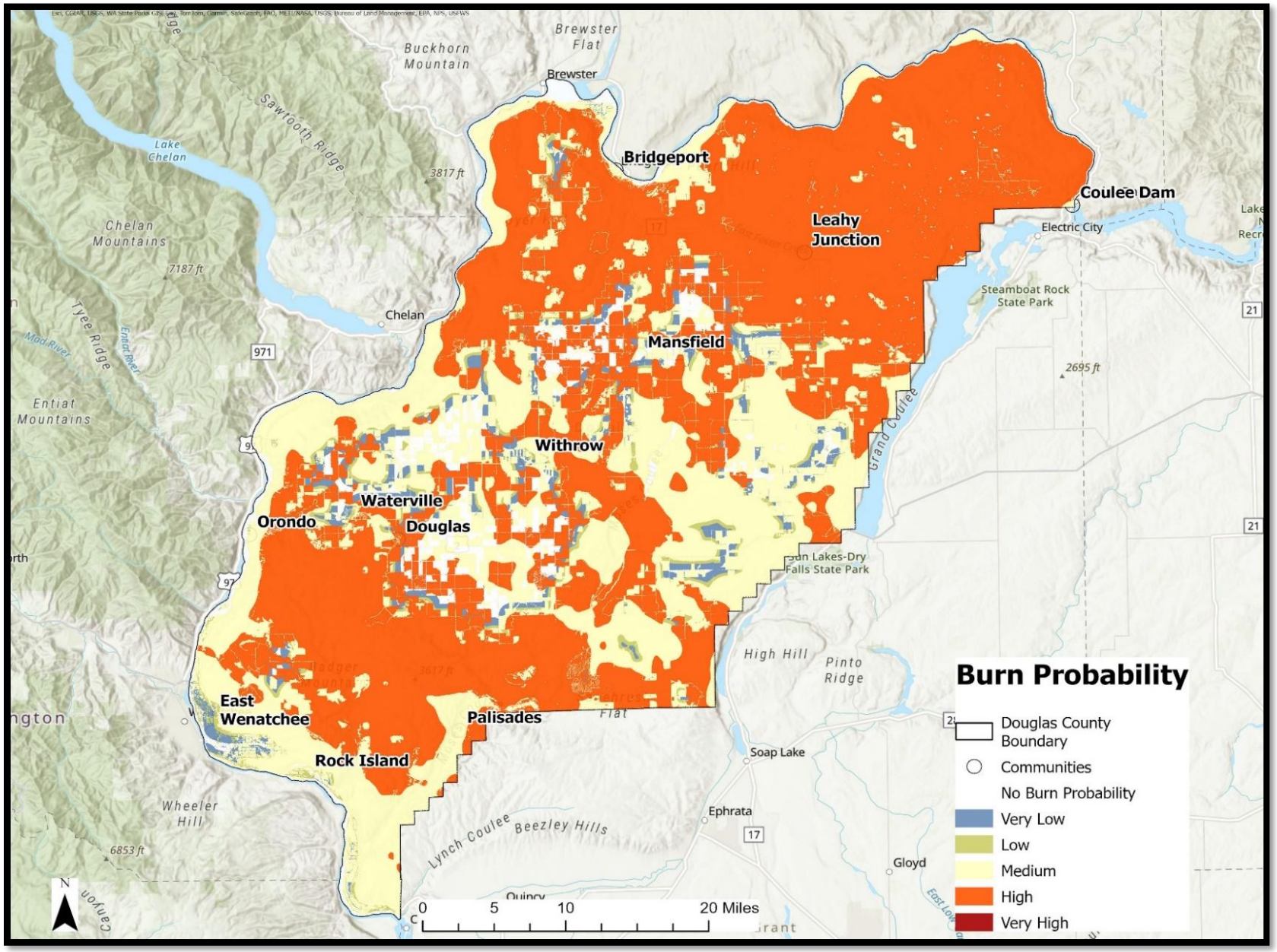


Figure 15: Risk to Potential Structures

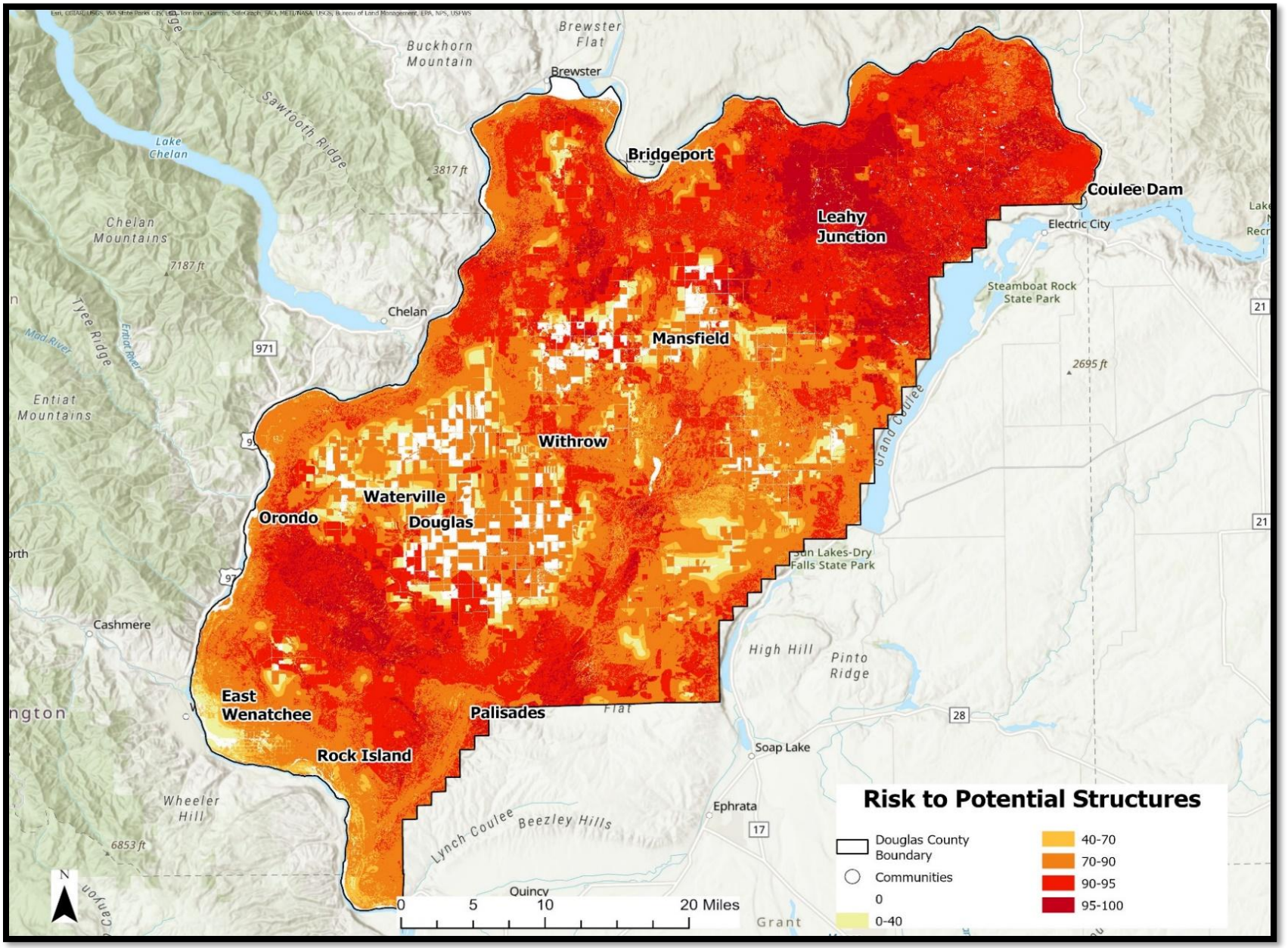
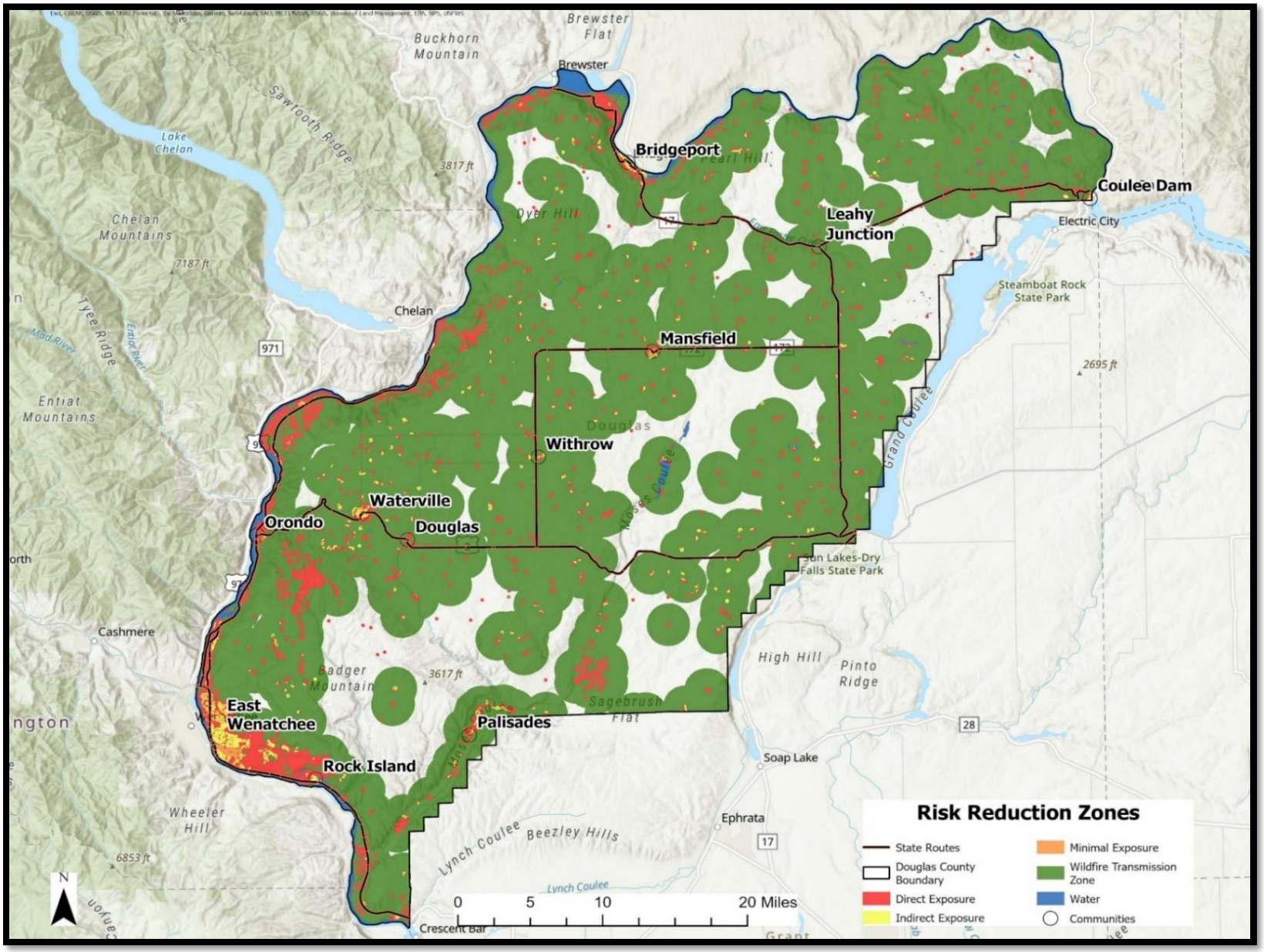


Figure 16: Risk Reduction Zones



4.4.3.1 WILDFIRE LIKELIHOOD (BURN PROBABILITY)

"Wildfire Likelihood is the probability of a fire occurring based on fire behavior modeling across thousands of simulations of possible fire seasons. In each simulation, factors contributing to the probability of a fire occurring – including weather, topography, and ignitions are varied based on patterns derived from observations in recent decades." Compared to counties across the nation, Douglas County is in the 97th percentile for wildfire likelihood and Douglas County has greater wildfire likelihood than 84% of counties in the state of Washington.[6]

Table 7: Burn Probability Parameters

Burn Probability	Values
Very Low	0-.021%
Low	.021%-.10%
Medium	.10%-.465%
High	.465%-2.17%
Very High	2.17%-10%

The Wildfire Likelihood tool uses the Burn Probability dataset. Burn Probability is the annual probability of wildfire burning in a specific location. For the purposes of this CWPP update, and to better visualize the contrast between the probabilities across the landscape, the dataset was divided into six classes that range from a 0% probability to a 10% probability. The category of "Very High" probability does not appear to occur within the county. Developed and agricultural areas tend to fall within the "No" to "Medium" range of probability.

4.4.3.2 WILDFIRE RISK TO HOMES

The USFS program *Wildfire Risk to Homes* models data in comparison to other counties in the nation and Washington State. This tool measures risk whether a home actually exists there or not so that wildfire risk is analyzed in areas of current development and planned or potential future development. According to the model, Douglas County is in the 96th percentile nationwide, and 84th in Washington state. [7]

The Risk to Potential Structures dataset is used to calculate Risk to Homes and integrates wildfire likelihood and intensity with generalized consequences to a home on every pixel. Across the landscape the question is asked, 'What would be the relative risk to a house if one existed here?'[8]

[6] https://wildfirerisk.org/explore/wildfire-likelihood/53/53017/

[7] https://wildfirerisk.org/explore/risk-to-homes/53/53017/

[8] https://www.fs.usda.gov/rds/archive/catalog/RDS-2020-0016-2

4.4.3.3 RISK REDUCTION ZONES

Risk Reduction Zones are the areas where mitigation activities will be most effective at protecting homes and other buildings from wildfires. Homes with minimal exposure are unlikely to be subjected to wildfire. Homes with indirect exposure may be ignited by embers or home ignition. Homes with direct exposure may be ignited by adjacent vegetation, flying embers, or nearby structures. Effective wildfire risk-reduction activities will vary depending on the zone. Risk Reduction Zones are based on the interplay between wildfire likelihood, flammable vegetation, and populated areas. Wildfires can start in any zone and pose a risk to homes and communities. This calculates the number of buildings in each Risk Reduction Zone based on building footprints within the political boundary of the selected location. The Risk Reduction Zone is split into 3 different categories that share common characteristics. The figures below show that Douglas County has 11% of buildings with minimal exposure, 48% indirectly exposed, and 42% directly exposed.

Table 8: Risk Reduction Zone Data

Exposed buildings by zone	Number of Buildings	Percent of Buildings Exposed
Minimal Exposure	2,471	**11%**
Indirect Exposure	10,871	**48%**
Direct Exposure	9,496	**42%**

The indirect zone is comprised of the non-combustible zone, intermediate zone, and the extended zone. The noncombustible zone ranges from the home itself to a 5-foot perimeter which is most vulnerable to embers. Recommendations are based on fire resistant building supplies and keeping the area clear of any sort of combustible material. The intermediate zone has a fire perimeter from 5-30 feet from the home and focuses on preventing ignitions in landscaping and any combustible materials around the property. The Extended Zone includes the majority of what's mentioned above but has a perimeter of 30 feet to more than 100 feet and includes pruning trees and fire fuel.[9]

[9] https://wildfirerisk.org/explore/risk-reduction-zones/53/53017/

4.4.3.4 VULNERABLE POPULATIONS

Social and economic factors can make vulnerable populations more difficult to prepare for, respond to, and recover from wildfire. Vulnerable population data is collected at the neighborhood level. Census tracts are highlighted that have values equal or greater than the community media. Data are from the 2018-2022 US Census Bureau's American Community Survey. Shown below is a table representing some of the vulnerable populations in Douglas County.[10]

Table 9: Vulnerable Populations Data

Indicator	Number	Percent
Families in Poverty	659	**5%**
People with Disabilities	7,972	**18%**
Difficulty with English	3,627	**9%**
Households with no car	695	**4%**
Mobile homes	2,530	**16%**

4.5 URBAN AND SUBURBAN FIRE MITIGATION

One challenge Douglas County faces is the large number of houses in the urban/rural fringe. Since the 1970s, a segment of Washington's growing population has expanded further into traditional rural or resource lands. The "interface" between urban and suburban areas and the resource lands created by this expansion has produced a significant increase in threats to life and property from fires and has pushed existing fire protection systems beyond original or current design or capability. In Douglas County there are two Firewise USA® sites located in the Orondo area (Lake Entiat Estates and Twin W HOA).

It is one of the goals of the Douglas County CWPP to help educate the public on the ramifications of living in the wildland-urban interface, including their responsibilities as landowners to reduce the fire risk on their property and to provide safe access to their property for all emergency personnel and equipment. Homeowners building in a high fire risk area must understand how to make their properties more fire resistant using proven firesafe construction and landscaping techniques and they must have a realistic understanding of the capability of local fire service organizations to defend their property.

[10] https://wildfirerisk.org/explore/vulnerable-populations/53/53017/

4.5.1 RURAL FIRE PROTECTION

People moving from mainland urban areas to the more rural parts of Douglas County frequently have high expectations for structural fire protection services. Often, new residents do not realize that the services provided are not the same as in an urban area. The diversity and amount of equipment and the number of personnel can be substantially limited in rural areas. Fire protection may rely more on the landowner's personal initiative to take measures to protect his or her property. Furthermore, subdivisions on steep slopes and the greater number of homes exceeding 3,000 square feet are also factors challenging fire service organizations. In the future, public education and awareness may play a greater role in rural or interface areas. Great improvements in fire protection techniques are being made to adapt to large, rapidly spreading fires that threaten large numbers of homes in interface areas. There is a total of 8 fire districts not including the recently proposed Rimrock Fire District in Douglas County.

4.5.2 DEBRIS BURNING

Local burning of yard debris is highly regulated in Douglas County. Permit burns in Douglas County are based on DNR cycle, while burn bans are a locally based decision determined by fuel moisture (see Fire District Summaries for more information on burning). Some people still burn outside of the designated time frame and escaped debris fires impose a very high fire risk to neighboring properties and residents. It is likely that regulating this type of burning will always be a challenge for local authorities and fire departments; however, improved public education regarding the county's burning regulations and permit system as well as potential risk factors would be beneficial.

4.5.3 PRE-PLANNING IN HIGH-RISK AREAS

Although conducting home, community, and road defensible space projects is a very effective way to reduce the fire risk to communities in Douglas County, recommended projects cannot all occur immediately, and many will take several years to complete. Thus, developing pre-planning guidelines specifying which and how local fire agencies and departments will respond to specific areas is very beneficial. These response plans should include assessments of the structures, topography, fuels, available evacuation routes, available resources, response times, communications, water resource availability, and any other factors specific to an area. All these plans should be available to the local fire departments as well as dispatch personnel.

4.5.4 COMMUNICATION

There are several communication issues being addressed in Douglas County. Many of the emergency responders have identified areas of poor reception for both radios and cell phones. The lack of communication between responders as well as with central dispatch significantly impairs responders' ability to effectively and efficiently do their job as well as lessens their safety. On a

smaller scale, many subdivisions or unincorporated population centers have identified the need to improve emergency communication between residents. In an emergency, there is no existing way of notifying each resident in an area of potential danger, the need for evacuation, etc. Many groups of homeowners have begun to establish phone trees and contact lists to communicate information at the individual scale; however, this is not being done in all the high wildfire risk areas within the county.

Another communication issue that was identified during the public meetings is the ability of wildfire suppression teams to tap into the local knowledge of many of the area residents, particularly the larger landowners. There are a handful of local landowners that could be an excellent resource advisor regarding the condition of the county and private roads, access points, fuel conditions, etc.

Communication is a central issue for the planning committee; thus, numerous recommendations targeting the improvement of communications infrastructure, equipment, and pre-planning have been made.

4.5.5 VOLUNTEER FIREFIGHTER RECRUITMENT

The rural fire departments in Douglas County are predominantly dependent on volunteer firefighters. Each district spends a considerable amount of time and resources training and equipping each volunteer, with the hope that they will continue to volunteer their services to the department for at least several years. One problem that all volunteer-based departments encounter is the diminishing number of new recruits. As populations continue to rise and more and more people build homes in high fire risk areas, the number of capable volunteers has gone down. Many departments have difficulty making volunteers available during regular workday hours (8am to 5pm).

One of the goals of this CWPP is to assist local fire departments and districts with the recruitment of new volunteers and retention of trained firefighters. This is a very difficult task, particularly in small, rural communities that have a limited pool; however, providing departments with funding for training, safety equipment, advertising, and possibly incentive programs will help draw more local citizens into the fire organizations.

4.6 WILDLIFE AND RESOURCE FIRE MITIGATION

4.6.1 PROTECTION OF GROUSE AND PYGMY RABBITS

The Washington Department of Fish and Wildlife (WDFW), in cooperation with the BLM and the Colville Confederated Tribes, are actively working on the re-establishment of both Columbian sharp-tailed grouse and greater sage-grouse in Douglas County. Declining populations and

distribution of the species in Washington have resulted in serious concerns for their long-term conservation status.

The CWPP planning committee has considered that some of the proposed fuels treatments recommended in this document may disturb the habitat of both sage-grouse and sharp-tailed grouse populations in Douglas County. The protection of these species must be balanced with the need to reduce the wildland fire hazards. The committee agreed that the implementation of fuels reduction projects in potential grouse habitat sites should consider methods that alleviate undue stress on the birds. The planning committee believes that the removal of small portions of grouse habitat in strategic areas may serve to protect larger acreages of habitat from loss due to wildfire. However, every effort should be made to conserve important grouse habitat whenever possible.

4.6.2 CONSERVATION RESERVE PROGRAM FIELDS

Since the introduction of the CRP by the federal government, many former crop producing fields have been allowed to return to native grasses. CRP fields are creating a new fire concern all over the west. As thick grasses are allowed to grow naturally year after year, dense mats of dead plant material begin to build up. Due to the availability of a continuous fuel bed, fires in CRP fields tend to burn very intensely with large flame lengths that often jump roads or other barriers, particularly under the influence of wind. Many landowners and fire personnel are researching allowable management techniques to deal with this increasing problem.

Currently, large blocks of land as well as scattered parcels in Douglas County are enrolled in the CRP program. Hundreds of acres of continuous higher fuel concentrations as well as limited access to these areas have significantly increased the potential wildfire risk in these areas. Many CRP landowners are willing to conduct hazardous fuel reduction treatments to lessen the fire risk; however, they are often limited by the regulations of the CRP program.

Due to the difficulties involved with conducting fuel reduction projects on CRP land as well as the enormity of the task in Douglas County, the CWPP committee has recommended disking fuel breaks adjacent to CRP land wherever possible. The goal is to lower the intensity of a wind-driven CRP fire before it threatens homes and other resources.

4.6.3 WATER RESOURCES

Nearly every fire district involved in this planning process indicated the need to develop additional water resources in several rural areas. Developing water supply resources such as cisterns, dry hydrants, drafting sites, and/or dipping locations ahead of an incident is considered a force multiplier and can be critical for successful suppression of fires. Pre-developed water resources can be strategically located to cut refilling turnaround times in half or more, which saves valuable time for both structural and wildland fire suppression efforts.

The CWPP planning committee has identified mapping of additional water resources as a priority action item in this document.

4.6.4 INVASIVE SPECIES

Fire behavior and fire regimes have been altered due to the proliferation of cheatgrass (*Bromus tectorum*) and other invasive species. Cheatgrass invades disturbed open sites and can dominate an area. Cheatgrass ripens and cures much earlier in the season when compared with native species, thus extending the fire season. According to some statistical analysis, cheatgrass dominated ranges are about 500 times more likely to burn than a native species dominated range. Fire return intervals in steppe and shrub-steppe fuel types, pre-European settlement was typically between 32 and 70 years. In certain Great Basin rangelands, the fire return interval is now less than 5 years on rangelands dominated by cheatgrass.

4.7 PUBLIC WILDFIRE AWARENESS

As the potential fire risk in the wildland-urban interface continues to increase, fire service organizations cannot be solely responsible for protection of lives, structures, infrastructure, ecosystems, and all the intrinsic values that go along with living in rural areas. Public awareness of the wildland fire risks as well as homeowner accountability for the risk on their own property is paramount to protection of all the resources in the wildland-urban interface.

The continued development of mechanisms and partnerships to increase public awareness regarding wildfire risks and promoting “do it yourself” mitigation actions is a primary goal of the CWPP steering committee as well as many of the individual organizations participating on the committee.

4.8 OVERALL MITIGATION ACTIVITIES

There are many specific actions that will help improve safety in a particular area; however, there are also many potential mitigation activities that apply to all residents and all fuel types. General mitigation activities that apply to all of Douglas County are discussed below while area-specific mitigation activities are discussed within the individual landscape assessments.

The safest, easiest, and most economical way to mitigate unwanted fires is to stop them before they start. Generally, prevention actions attempt to prevent human-caused fires. Campaigns designed to reduce the number and sources of ignitions can take many forms. Traditional “Smokey Bear” type campaigns that spread the message passively through signage can be quite effective. Signs that remind people of the dangers of careless use of fireworks, burning when windy and leaving unattended campfires have been effective. Fire danger warning signs posted along access routes remind residents and visitors of the current conditions. It’s impossible to say just how effective such efforts are; however, the low costs associated with posting of a few signs is inconsequential compared to the potential cost of fighting a fire.

Burn Permits: Washington State Department of Natural Resources is the primary agency issuing burn permits in forested areas of Douglas County. The Washington DNR burn permits regulate silvicultural burning. Washington Department of Ecology (DOE) is the primary agency issuing burn permits for improved property and agricultural lands. All DOE burn permits are subject to fire restrictions in place with WA DNR & local Fire Protection Districts. Washington DNR has a general burning period referred to as "Rule Burn" wherein a written burn permit is not required in low to some moderate fire dangers.

The timeframes for the Rule Burn are from October 16th to June 30th. Washington DNR allows for Rule Burns to be ten-foot (10') piles of forest, yard, and garden debris. From July 1st to October 15th if Rule Burns is allowed, they are limited to four-foot (4') piles.

Defensible Space: Effective mitigation strategies begin with public awareness campaigns designed to educate homeowners of the risks associated with living in a flammable environment. Residents of Douglas County must be made aware that home defensibility starts with the homeowner. Once a fire has started and is moving toward a structure or other valued resources, the probability of that structure surviving is largely dependent on the structural and landscaping characteristics of the home. "Living with Fire, A Guide for the Homeowner" is an excellent tool for educating homeowners as to the steps to take to create an effective defensible space. Residents of Douglas County should be encouraged to work with local fire departments and fire management agencies within the county to complete individual home site evaluations. Home defensibility steps should be enacted based on the results of these evaluations. Beyond the homes, forest management efforts must be considered to slow the approach of a fire that threatens a community.

Evacuation Plans: Development of community evacuation plans are necessary to ensure an orderly evacuation in the event of a threatening wildland fire. Designation and posting of escape routes would reduce chaos and escape times for fleeing residents. Community safety zones should also be established in the event of compromised evacuations. Efforts should be made to educate homeowners through existing homeowners associations or the creation of such organizations to act as conduits for this information.

Accessibility: Also of vital importance is the accessibility of homes to emergency apparatus. If a home cannot be protected safely, firefighting resources will not jeopardize lives to protect a structure. Thus, the fate of the home will largely be determined by homeowner actions prior to the event. In many cases, homes' survivability can be greatly enhanced by following a few simple guidelines to increase accessibility such as widening or pruning driveways and creating a turnaround area for large vehicles.

Fuels Reduction: Recreational facilities such as campgrounds and boat launches along Banks Lake should be kept clean and maintained. To mitigate the risk of an escaped campfire, escape proof fire rings and barbeque pits should be installed and maintained. Surface fuel accumulations in forests and shrubland can be kept to a minimum by periodically conducting pre-commercial

thinning, clearing, pruning and limbing, and possibly controlled burns. Other actions that would reduce the fire hazard would be creating a fire-resistant buffer along roads and power line corridors and strictly enforcing fire-use regulations.

Emergency Response: Once a fire has started, how much and how large it burns is often dependent on the availability of suppression resources. In most cases, rural fire departments are the first to respond and have the best opportunity to halt the spread of wildland fire. For many districts, the ability to reach these suppression objectives is largely dependent on the availability of functional resources and trained individuals. Increasing the capacity of departments through funding and equipment acquisition can improve response times and subsequently reduce the potential for resource loss.

Other Activities: Other specific mitigation activities are likely to include improvement of emergency water supplies, access routes, and management of vegetation along roads and power line rights-of-way. Furthermore, building codes should be revised to provide for more fire-conscious construction techniques such as using fire resistant siding, roofing, and decking in high-risk areas.

4.9 OVERALL FUELS ASSESSMENT

The gentle terrain that dominates Douglas County facilitates extensive farming and ranching operations. Agricultural fields occasionally serve to fuel a fire after curing, burning in much the same manner as short to tall grassy fuels. Fires in grass and rangeland fuel types tend to burn at relatively moderate intensity with moderate flame lengths, rapid rate of spread, and short-range spotting. Common suppression techniques and resources are generally quite effective in this fuel type. Homes and other improvements can be easily protected from direct flame contact and radiant heat through adoption of precautionary measures around structures.

Rangelands with a significant shrub component will have much higher fuel loads with greater spotting potential than grass and agricultural fuels. Although fires in agricultural and rangeland fuels may not present the same control problems as those associated with large, high intensity fires in timber, they can cause significant damage if precautionary measures have not been taken prior to a fire event. Wind driven fires in these fuel types spread rapidly and can be difficult to control. During extreme drought and when pushed by high winds, fires in agricultural and rangeland fuels can exhibit extreme rates of spread, which complicates suppression efforts.

Woodland fuels are mostly present in the canyons, river breaks on sloping terrain less favorable to clearing for agricultural development, and on Badger Mountain. A patchwork of ponderosa pine and Douglas-fir stands occupy sheltered areas on favorable soil where moisture is not a limiting factor. Wooded areas tend to be on steep terrain intermingled with grass and shrubs providing an abundance of ladder fuels which lead to horizontal and vertical fuel continuity. These factors, combined with arid and windy conditions characteristic of the river valleys in the region, can result

in high intensity fires with large flame length and fire brands that may spot long distances. Such fires present significant control problems for suppression resources and often result in large wildland fires.

Development is rapidly occurring along the Columbia River breaks on the west side of the county. Many people have purchased small tracts of land in this location and built dwellings amongst the shrubland. Scenic vistas and rolling topography with proximity to East Wenatchee, Wenatchee, and the Columbia River make this area desirable. However, the risk of catastrophic loss from wildfires in this area is significant. Fires igniting along the bottom of the canyon have the potential to grow at a greater rate of speed on the steeper slopes and rapidly advance to higher elevations. Fire suppression efforts that minimize loss of life and structures in this area are largely dependent upon access, availability and timing of equipment, prior fuels mitigation activities, and public awareness.

Riparian areas in arid environments often have a higher amount of fuel loading due to the relatively abundant water supply. Vegetation tends to be more abundant and robust in these areas. Fuel loading often compounds year after year as new growth replaces old growth. Deciduous trees and shrubs are common along waterways and contribute to on the ground fuel loads as they lose their leaves every year. Riparian areas experience a higher amount of recreational use due to various outdoor opportunities (fishing, camping, swimming, etc.). The increased activity may lead to unusually high amounts of ignitions.

4.10 FIREWISE USA®

The following information can be found at: NFPA - Firewise USA®.

“The national Firewise USA® recognition program provides a collaborative framework to help neighbors in a geographic area get organized, find direction, and take action to increase the ignition resistance of their homes and community and to reduce wildfire risks at the local level. Any community that meets a set of voluntary criteria on an annual basis and retains an “In Good Standing Status” may identify itself as being a Firewise Site. The Firewise USA program is administered by NFPA® and is co-sponsored by the USDA Forest Service and the National Association of State Foresters. While the NFPA administers this program, individuals and communities participate on a voluntary basis.”

5 LANDSCAPE RISK ASSESSMENT

5.1 LANDSCAPE ASSESSMENT

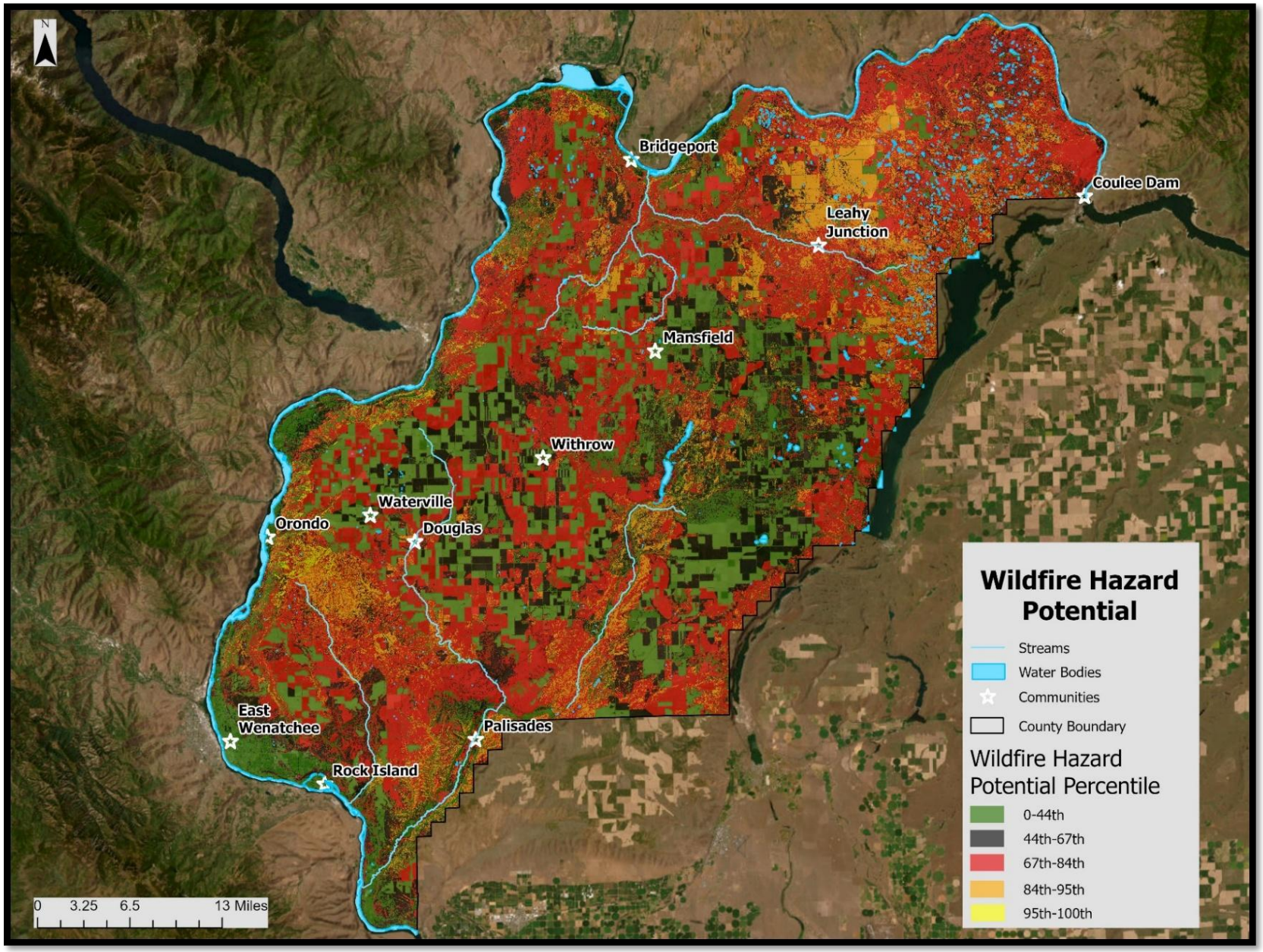
Douglas County covers approximately 1,820 square miles and has an elevation range from 600 to 4,000 feet above sea level. Land is owned primarily by private individuals, but the state of Washington and the federal government also have some ownership within the county. Federal lands are managed by the Bureau of Land Management, state lands include parcels managed by the Washington Department of Natural Resources and Washington Department of Fish and Wildlife. Douglas County lies within the channeled scablands of the Columbia Basin. Irrigated orchard lands are located primarily in the lower elevations while dryland farming dominates the upland areas. Forests and steppe shrub vegetation provide diverse wildlife habitats. Along the northern boundary the topography becomes steep as it plunges into wide valleys formed by the Columbia River. The mild climate, abundance of sunshine and low annual precipitation results in an environment that is potentially very prone to wildland fire. Although many of the native grasslands have been converted for agricultural purposes, there are many areas of native vegetation and fallow farmland that cures early in the summer and remain combustible until winter. If ignited, these areas burn rapidly, potentially threatening people, homes, and other valued resources.

Cover vegetation and wildland fuels exhibited across the county have been influenced by massive geologic events during the Pleistocene era that scoured and shifted the earth's surface leaving areas of deep rich soil interspersed with rocky canyons and deep valleys. In addition to the geological transformation of the land, wildland fuels vary within a localized area based on slope, aspect, elevation, management practices, and past disturbances. Geological events and other factors have created distinct landscapes that exhibit different fuel characteristics and wildfire concerns.

To facilitate a mutual understanding of wildfire risks specific to Douglas County, the landscape-level wildfire risk assessments in the following sections are based on four predominant landscape types that exhibit distinct terrain and wildland fuels. The four landscapes identified for the assessments are: agricultural lands, channeled scablands, river breaks and riparian areas. These landscapes, although intermixed in some areas, exhibit specific fire behavior, fuel types, suppression challenges, and mitigation recommendations that make them unique from a planning perspective.

By utilizing the Wildfire Hazard Potential model, we can evaluate the likelihood of a high-intensity wildfire occurring in various communities across Douglas County. The results show that the highest risk of potential wildfire is between the 95th and 100th percentile from Orondo along the Columbia River to Coulee Dam. The second highest percentile is generally concentrated on the northeast corner by Leahy Junction and the southwest by the Palisades. Central Douglas County has a relatively low potential for extreme wildfires, but throughout the county there are scattered areas within the 67thto the 84th percentile. Refer to the map below to see these results.

Figure 17: Countywide Wildfire Hazard Potential



5.2 AGRICULTURAL LANDSCAPE RISK ASSESSMENT

The terrain that dominates Douglas County facilitates extensive farming and ranching operations. Agricultural fields occasionally serve to fuel a fire after curing, burning in much the same manner as short or tall grassy fuels. Fires in grass and rangeland fuel types tend to burn at relatively moderate intensity with moderate flame lengths, rapid rate of spread, and short-range spotting. Common suppression techniques and resources are generally quite effective in this fuel type. Homes and other improvements can be easily protected from direct flame contact and radiant heat through adoption of precautionary measures around structures.

Rangelands with a significant shrub component will have much higher fuel loads with greater spotting potential than grass and agricultural fuels. Although fires in agricultural and rangeland fuels may not present the same control problems as those associated with large, high intensity fires in timber, they can cause significant damage if precautionary measures have not been taken prior to a fire event. Wind driven fires in these fuel types spread rapidly and can be difficult to control. During extreme drought and when pushed by high winds, fires in agricultural and rangeland fuels can exhibit extreme rates of spread, which complicates suppression efforts.

Douglas County is well known for being one of the top wheat and apple producing counties in the state. Other crops include cherries, barley, and hay as well as extensive areas of fallow land set aside in the CRP (Conservation Reserve Program). Most of these crops are vulnerable to wildland fire at certain times of the year. The agriculture landscape is the predominant cover vegetation and fuel type throughout the county particularly in the central portion of the county. Interspersed throughout this landscape are stream channels and rocky scabland areas. Landownership in the agricultural landscape is predominantly private with many sections owned by the State of Washington and scattered federal holdings. The major populated centers within this landscape include Waterville and Mansfield. Other rural developments found throughout the agricultural landscape include individual farms, small subdivisions, railroad sidings and grain elevators. Development is widely distributed. New developments occur primarily near communities and along major roads. In nearly all developed areas, structures are close to vegetation that becomes a significant fire risk at certain times of the year.

5.2.1 WILDFIRE POTENTIAL

Wildfire potential in the agricultural landscape is moderate in the rural farmland and moderate to high in the shrubby draws and waterways, pastures, and scattered patches of scabland. Virtually all the populated areas within the agricultural landscape face similar challenges related to wildfire control and opportunities for fuels mitigation efforts. Farming and ranching activities have the potential to increase the risk of a human-caused ignition. Large expanses of crops, CRP, rangeland or pasture provide areas of continuous fuels that may threaten homes and farm steads. Under extreme weather conditions, escaped fires in these fuels could threaten individual homes or a town site; however, this type of fire is usually quickly controlled. Clearings and fuel breaks disrupt a

slow-moving wildfire enabling suppression before a fire can ignite heavier fuels. High winds increase the rate of fire spread and intensity of crop and rangeland fires. It's imperative that homeowners implement fire mitigation measures to protect their structures and families prior to a wildfire event in these areas.

Wildfire risk in the agricultural landscape is at its highest during late summer and fall when crops are cured, and daily temperatures are at their highest. A wind-driven fire in agricultural fuels or dry native fuel complexes would produce a rapidly advancing, but variable intensity fire. Fires burning in unharvested fields would be expected to burn more intensely with larger flame lengths due to the greater availability of fuels resulting from the higher productivity of the vegetation. Fields enrolled in CRP or set aside for wildlife habitat can burn very intensely due to an increased amount of fuel build-up from previous years' growth. Fires in these types of fuels are harder to extinguish completely due to the dense duff layer, often leading to hold over fires that may reemerge later causing additional fire starts.

The Waterville Plateau in Douglas County is a mosaic of dryland agriculture, CRP/SAFE (State Acres for Wildlife Enhancements) acres and shrub steppe. Most farmers use a production practice called summer fallow to allow soil moisture to increase by leaving fields fallow for a full crop year. This allows the wheat producers to rotate half their cropland each year: one year it's planted to wheat and then next year it lies fallow. The relative threat level in this agricultural area increases in July and August because of significant wildfire hazards. Relative humidity is usually lower during this time, afternoon winds tend to increase, and the standing grain is cured to the point where it readily ignites. The ripened wheat, hot daytime temperatures, and erratic winds can produce extreme fire behavior and long flame lengths which can easily spread to adjacent rangelands or CRP/SAFE fields. These fires tend to burn very quickly and intensely. Summer fallow fields act as a natural barrier during these wildfires so if, and when, the fire reaches these areas, it will burn itself out or the fire slows enough that it is easily controlled. Irrigated ag lands, consisting of mostly orchards, are located primarily in the lower elevations of the county near the Columbia River and have been given a much lower threat level than dryland agriculture.

Figure 18: Agriculture Lands Wildfire Hazard Potential

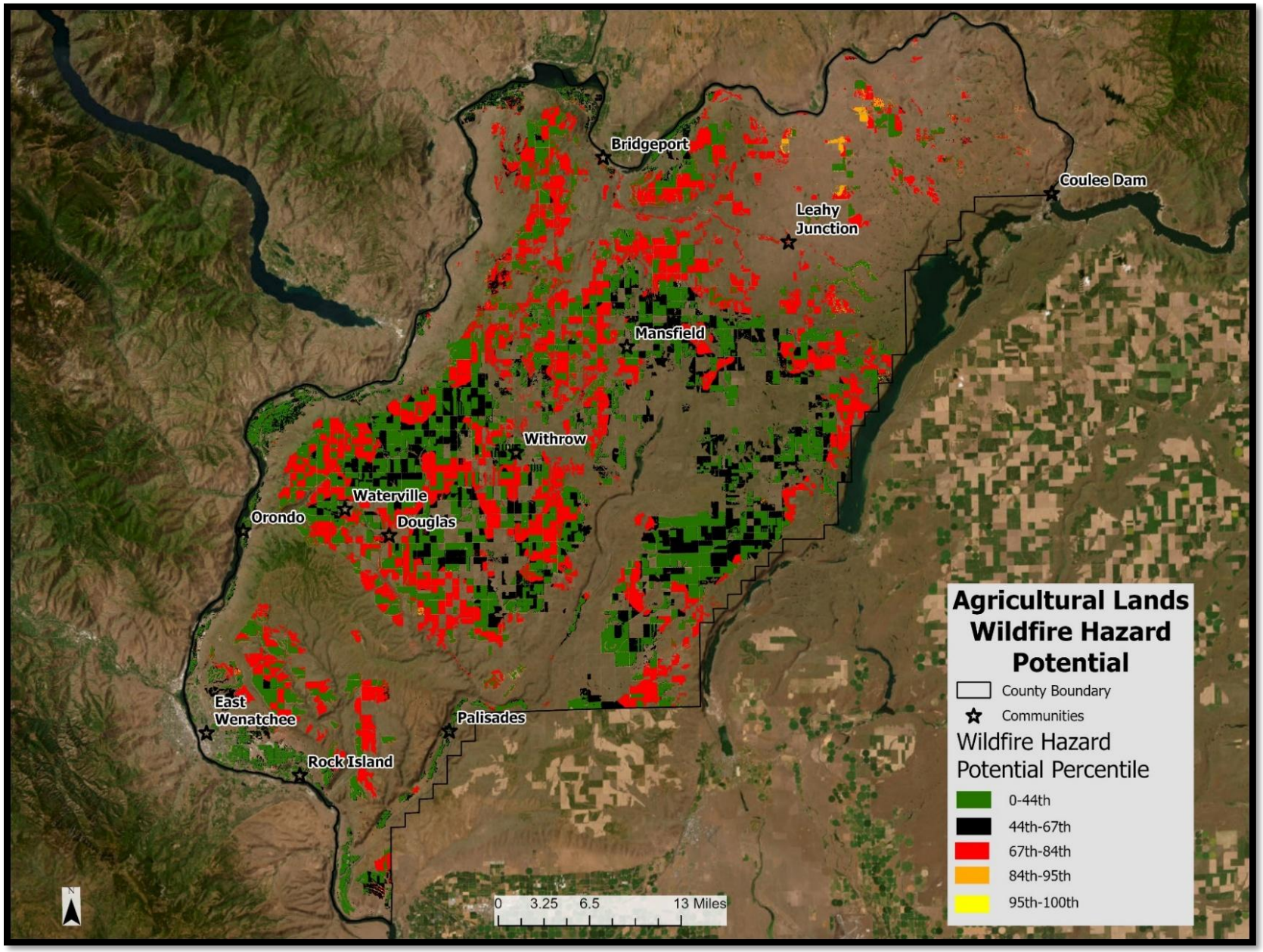


Figure 19: Waterville and the surrounding area Wildfire Hazard Potential

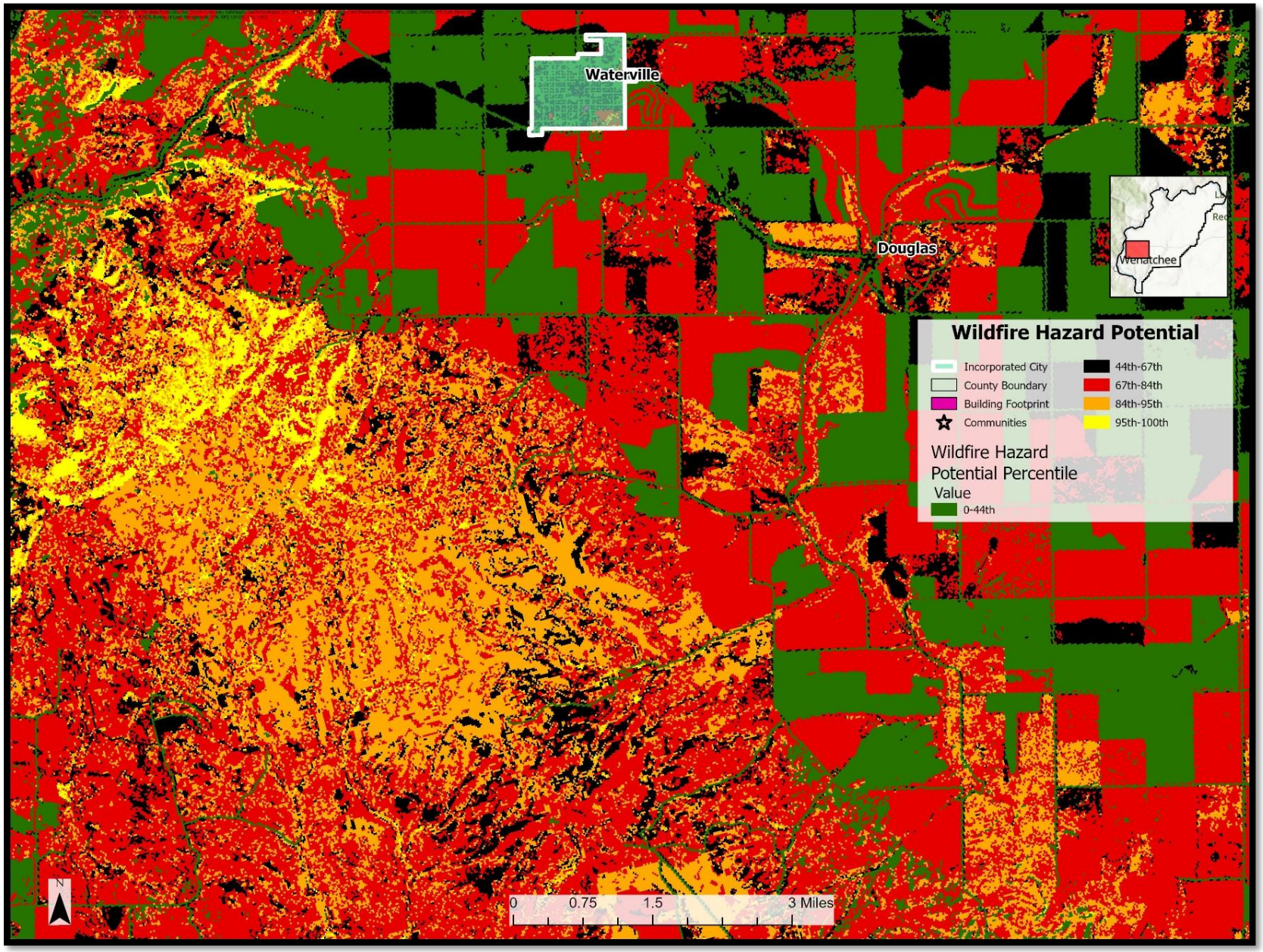
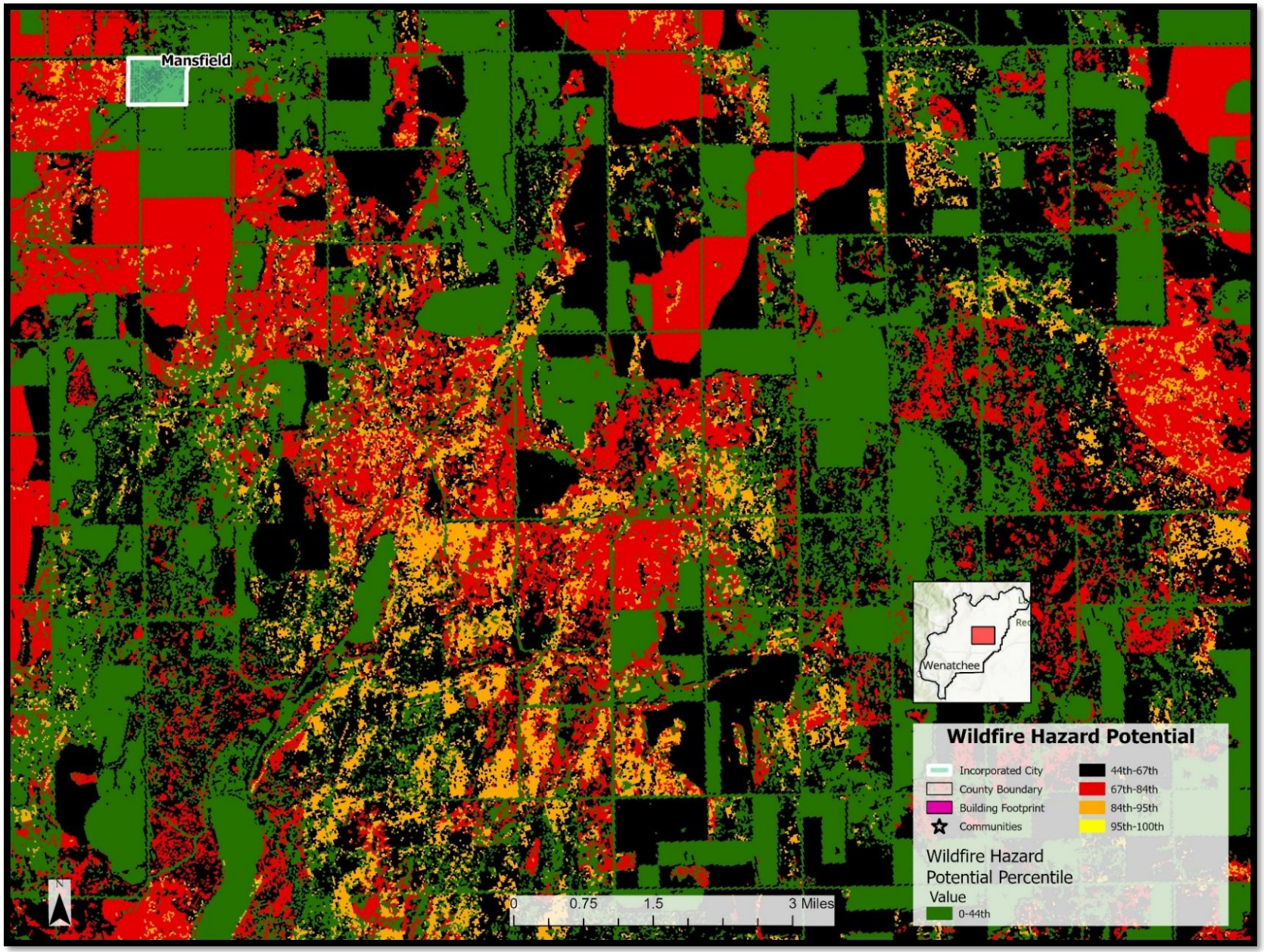


Figure 20: Mansfield and surrounding area Wildfire Hazard Potential



5.2.2 INGRESS-EGRESS

U.S. Highway 2 and State Routes 28 and 174 are the primary emergency access routes traveling east to west through the county. State Routes 17 and 97 are the primary access routes running north and south. County roads as well as rural ranch access roads are well distributed throughout most of the county, often following section lines or circumnavigating the multitude of draws and canyons. In remote rural areas, county roads often change from a paved or maintained gravel surface to unimproved primitive roads making access possible only during certain times of the year. Limited access within remote areas and a lack of maintenance on existing travel routes, increases fire suppression response time and has a direct effect on fire spread leading to increased fire size and destructive potential.

There are a few bridges in the agricultural landscape of Douglas County. Bridge load rating signs are mostly in place for the existing bridges and do not impose a limitation to access for firefighting equipment.

5.2.3 INFRASTRUCTURE

Urban residents throughout most of the agricultural landscape area have municipal water systems, which include a network of public fire hydrants. New development is required by the International Fire Code to have hydrant placement in their development plan. Subdivisions and development outside municipal boundaries typically rely on community water systems or multiple-home well systems.

Above ground, high voltage transmission lines cross the planning area in many directions in corridors cleared of most vegetation, which provides for a defensible space around the power line infrastructure and may provide a control point for fire suppression. Local public electrical utility lines are both above and below ground traveling through back yards and along roads and highways. Many of these lines are exposed to damage from falling trees and branches. Power and communications may be cut to some of these during a wildfire event.

Public utility lines travel both above and below ground along roads and cross-country to remote facilities. Many irrigation systems and wells rely on above ground power lines for electricity. These power poles pass through areas of dense wildland fuels that could be destroyed or compromised in the event of a wildfire. Cell phone service is well established in most parts of the county with only limited dead zones.

5.2.4 FIRE PROTECTION

The agricultural landscape type is present in all the fire protection districts in Douglas County. Fire protection districts provide both structural and wildland fire protection. Mutual aid agreements between fire protection districts supplement wildland fire protection when needed. The DNR does not provide structural fire suppression but does provide wildfire protection on non-forested land

that threatens DNR-protected lands. The BLM does not provide structural protection but does provide wildfire protection on their ownership within Douglas County and will assist neighboring fire protection districts when available.

5.2.5 POTENTIAL MITIGATION ACTIVITIES

Mitigation measures needed in the agricultural landscape include maintaining a defensible space around structures and access routes that lie adjacent to annual crops and other wildland fuels. Around structures, this includes maintaining a green or plowed space, mowing weeds and other fuels away from outbuildings, pruning and/or thinning larger trees, using fire resistant construction materials, and locating propane tanks, fuel tanks and firewood away from structures. Roads and driveways accessing rural residents may or may not have adequate road widths and turnouts for firefighting equipment depending on when the residences were constructed. Performing road inventories in high-risk areas to document and map their access limitations will improve firefighting response time and identify areas in need of enhancement. Primitive or abandoned roads that provide key access to remote areas should also be maintained in such a way that enables access for emergency equipment so that response times can be minimized. Roads can be made more fire resistant by frequently mowing along the edges or spraying weeds to reduce the fuel. Aggressive initial attacks on fires occurring along travel routes will help ensure that these ignitions do not spread to nearby home sites. Designing a plan to help firefighters control fires in CRP lands that lie adjacent to agricultural crops would significantly lessen a fire's potential of escaping to the higher value resource. Mitigation associated with this situation might include installing fuel breaks or plowing a fire-resistant buffer zone around fields and along predesigned areas to tie into existing natural or manmade barriers or implementing a prescribed burning program during less risky times of the year.

Maintaining developed drafting sites, increasing access to water from irrigation facilities, and developing other water resources throughout the agricultural landscape will increase the effectiveness and efficiency of emergency response during a wildfire.

5.3 CHANNELED SCABLANDS RISK ASSESSMENT

Development is rapidly occurring along the Columbia River breaks on the west side of the county. Many people have purchased small tracts of land in this location and built dwellings amongst the shrubland. Scenic vistas and rolling topography with proximity to East Wenatchee, Wenatchee, and the Columbia River make this area desirable. However, the risk of catastrophic loss from wildfires in this area is significant. Fires igniting along the bottom of the canyon have the potential to grow at a greater rate of speed on the steeper slopes and rapidly advance to higher elevations. Fire suppression efforts that minimize loss of life and structures in this area are largely dependent upon access, availability and timing of equipment, prior fuels mitigation activities, and public awareness.

The channeled scablands are a dominant landscape in Douglas County. This unique geological feature was created by ice age floods that swept across eastern Washington and down the Columbia River Plateau periodically during the Pleistocene era. The massive erosion caused by the flooding events scoured the landscape down to the underlying basalt creating vast areas of rocky cliffs, river valleys, channel ways and pothole lakes. Typical vegetation found throughout this landscape is grass, mixed shrub and sagebrush with areas of wetlands, cultivated crops, and CRP fields. The channeled scablands landscape prevails in the central, southern and northeastern portions of the

Figure 21: Image showing the Three Devils Grade in Moses Coulee

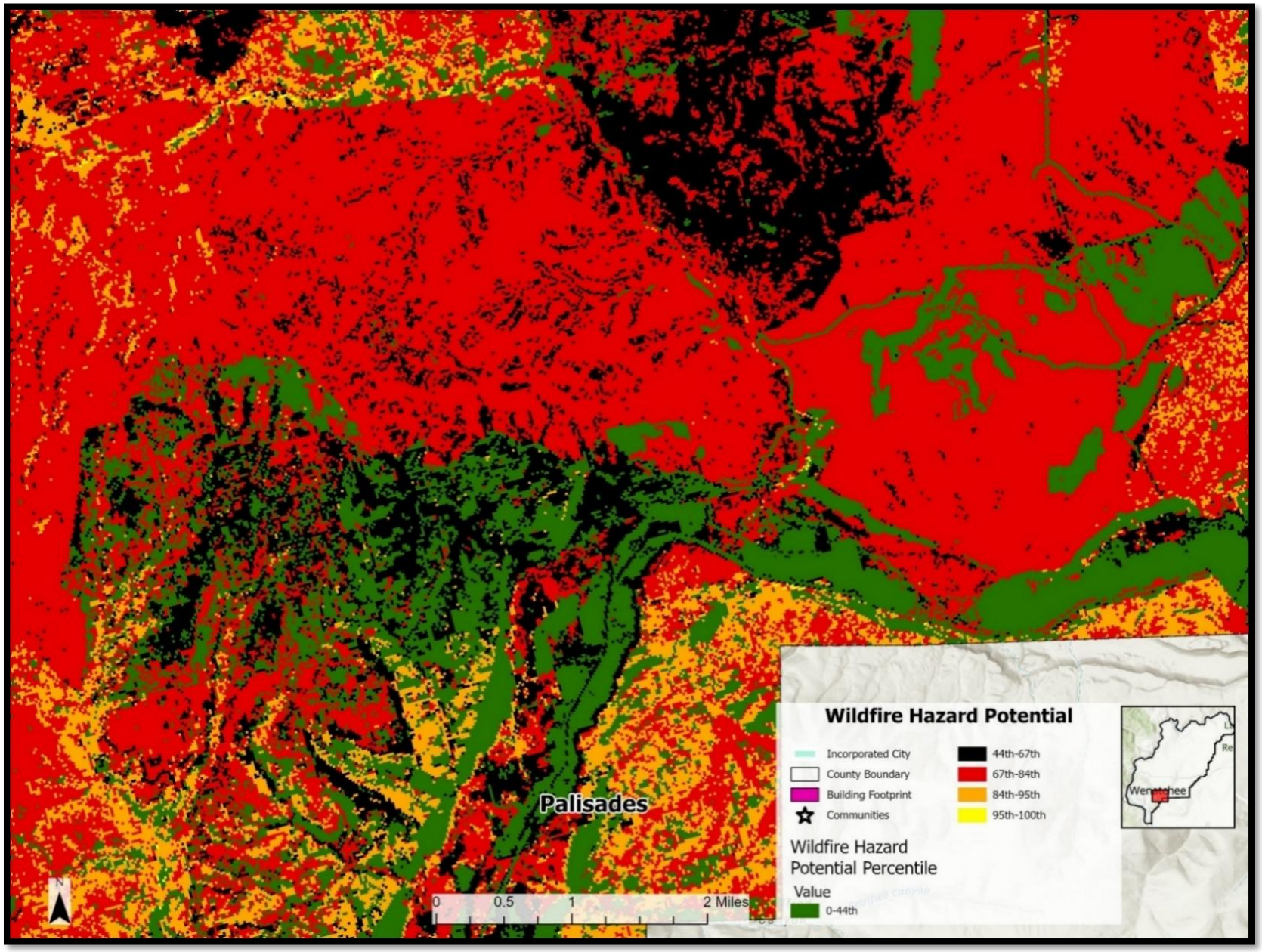
county and along the major waterways of Moses Coulee and Slack Canyon. Major population centers within the channeled scabland landscape include Palisades and the Rimrock subdivision. New developments occur primarily near communities and along major roads. Most of the pressure for multi-housing subdivisions occurs near the towns. Rural development is widely dispersed consisting primarily of isolated ranching headquarters, home sites, irrigation systems, and developed springs or wells. In nearly all developed areas, structures are around vegetation that becomes a significant fire risk at certain times of the year.

5.3.1 WILDFIRE POTENTIAL

The channeled scablands landscape has a moderate to high wildfire potential due to a characteristically high occurrence of shrubby fuels mixed with grass, sloping terrain and somewhat limited access. Large expanses of open rangeland or pasture provide a continuous fuel bed that could, if ignited, threaten structures and infrastructure under extreme weather conditions. Cattle grazing will often reduce fine, flashy fuels, reducing a fire's rate of spread. However, high winds increase the rate of fire spread and intensity of rangeland fires. A wind-driven fire in dry, native fuel complexes on variable terrain produces a rapidly advancing, very intense fire with large flame lengths, which enables spotting ahead of the fire front.

Wildfire risk in the channeled scablands landscape is at its highest during summer and fall when daily temperatures are high and relative humidity is low. Fires burning in some types of unharvested fields would be expected to burn more intensely with larger flame lengths due to the greater availability of fuels. Fields enrolled in conservation programs or managed for wildlife habitat, can burn very intensely due to an increased amount of fuel build-up from previous years' growth. Fires in this fuel type are harder to extinguish completely due to the dense duff layer, which often leads to hold-over fires that may re-emerge later causing additional fire starts.

Figure 22: Palisades and surrounding area Wildfire Hazard Potential



5.3.2 INGRESS-EGRESS

U.S. Highway 2 and State Routes 28 and 174 are the primary emergency access routes traveling east to west through the county. State Routes 17 and 97 are the primary access routes running north and south. County roads as well as rural ranch access roads are well distributed throughout most of the channeled scablands, often following section lines or traversing the multitude of draws and drainage ways. In remote rural areas, county roads often change from a paved or maintained gravel surface to unimproved primitive roads making access possible only during certain times of the year. Limited access within remote areas and a lack of maintenance on existing travel routes, increases fire suppression response time and has a direct effect on fire spread leading to increased fire size and destructive potential.

5.3.3 INFRASTRUCTURE

Residents living in the populated centers and most subdivisions surrounding the towns have access to municipal water supply systems with public fire hydrants. Outside these areas, development relies on individual, co-op, or multiple-home well systems. Creeks, ponds, and developed drafting areas provide water sources for emergency fire suppression in the rural areas to a limited extent. Irrigation systems can provide additional water supply for suppression equipment on a limited basis. Additional water resources distributed and documented throughout the agricultural landscape are needed to provide water for fire suppression.

Public utility lines travel both above and below ground along roads and cross-country to remote facilities. Many irrigation systems and wells rely on above ground power lines for electricity. These power poles pass through areas of dense wildland fuels that could be destroyed or compromised in the event of a wildfire. Cell phone service is well established in most parts of the county with only limited dead zones.

5.3.4 FIRE PROTECTION

The channeled scablands landscape type is present in Fire Protection Districts 1, 2, 3, 5, and 8. The fire protection districts provide structural fire protection as well as wildland fire protection. Mutual aid agreements between Fire Protection Districts supplement the wildland fire protection response when needed. The DNR does not provide structural fire suppression, but it does provide wildfire protection on non-forested land that threatens DNR-protected lands. BLM does not provide structural protection but does provide wildfire protection on their lands within Douglas County and will assist neighboring Fire Protection Districts when available.

5.3.5 POTENTIAL MITIGATION ACTIVITIES

Mitigation measures needed in the channeled scabland landscape include maintaining a defensible space around structures and access routes that lie adjacent to wildland fuels. Around structures this

includes maintaining a green or plowed space, mowing weeds and other fuels away from outbuildings, pruning and/or thinning larger trees, using fire resistant construction materials, and locating propane tanks and firewood away from structures. Roads and driveways accessing rural development need to be kept clear of encroaching fuels to allow escape and access by emergency equipment. Performing road inventories in high-risk areas and documenting and mapping their access limitations will improve firefighting response time and identify areas in need of improvement. Primitive or abandoned roads that provide key access to remote areas should be maintained to allow access for emergency equipment so that emergency response times are minimized. Designing a plan to help firefighters control fires in conservation lands and wildlife habitat areas will significantly lessen a fire's potential of escaping to other areas. Mitigation associated with this situation might include managed grazing in designated fuel reduction areas, creating fuel breaks, and implementing a prescribed burning program during less risky times of the year.

Additional mitigation activities include installing more water storage sites, improving water access from irrigation facilities, and developing other water resources throughout the landscape. This will increase the effectiveness and efficiency of emergency response during wildfire.

5.4 RIVER BREAKS RISK ASSESSMENT

Development is rapidly occurring along the Columbia River breaks on the west side of the county. Many people have purchased small tracts of land in this location and built dwellings amongst the shrubland. Scenic vistas and rolling topography with proximity to East Wenatchee, Wenatchee, and the Columbia River make this area desirable. However, the risk of catastrophic loss from wildfires in this area is significant. Fires igniting along the bottom of the canyon have the potential to grow at a greater rate of speed on the steeper slopes and rapidly advance to higher elevations. Fire suppression efforts that minimize loss of life and structures in this area are largely dependent upon access, availability and timing of equipment, prior fuels mitigation activities, and public awareness.

The River Breaks landscape encompasses an area along the western boundary of Douglas County from the county line near Coulee Dam to Rock Island. This area is predominantly shrub-steppe grassland on steep broken terrain and escarpments sloping into the eastern shore of the Columbia River. Shrub-steppe grasslands are a mixed plant community consisting of bunchgrasses, forbs, and a variety of shrubs including big sage brush, rabbit brush, and antelope brush. Some soil types within this area support isolated pockets of Douglas-fir and ponderosa pine forest, but the area is dominated by shrubs and grassland from the agricultural fields at the top of the breaks to the water's edge of the Columbia River. Major population clusters include Bridgeport, Brewster, Rock Island, East Wenatchee, and Orondo, as well as the subdivisions near McNeil Canyon and Sand Canyon roads. The subdivision of land for recreational and home site development is widespread along the river. In nearly all developed areas, structures are near vegetation on steep slopes that become a significant fire risk at certain times of the year.

Figure 23: Image showing the Wells Dam and a portion of the Columbia River breaks

5.4.1 WILDFIRE POTENTIAL

Wildfire potential in the western river breaks landscape is high due to past fire exclusion, steep broken terrain and the introduction of invasive grasses. Prior to settlement, the historic fire regime consisted of small, relatively frequent fires that created a mosaic or patchwork of shrubs mixed with discontinuous areas of bunchgrass. Recent introduction of organized fire suppression along with cattle grazing and land development for agriculture have disrupted this fire regime, allowing widespread establishment of fire-intolerant sagebrush and invasive grasses. This heavy buildup of brush species over vast acres indicates that future fires will be more frequent with higher intensities and cover larger areas than in the past. High intensity fires in large expanses of continuous fuels may threaten structures and infrastructure under extreme weather conditions. A wind-driven fire in dry native fuel complexes on variable terrain produces a rapidly advancing very intense fire with large flame lengths capable of widespread damage. High wildfire risk in the western river breaks landscape typically lasts from late March to mid-October.

Figure 24: Brewster/Bridgeport and surrounding area Wildfire Hazard Potential

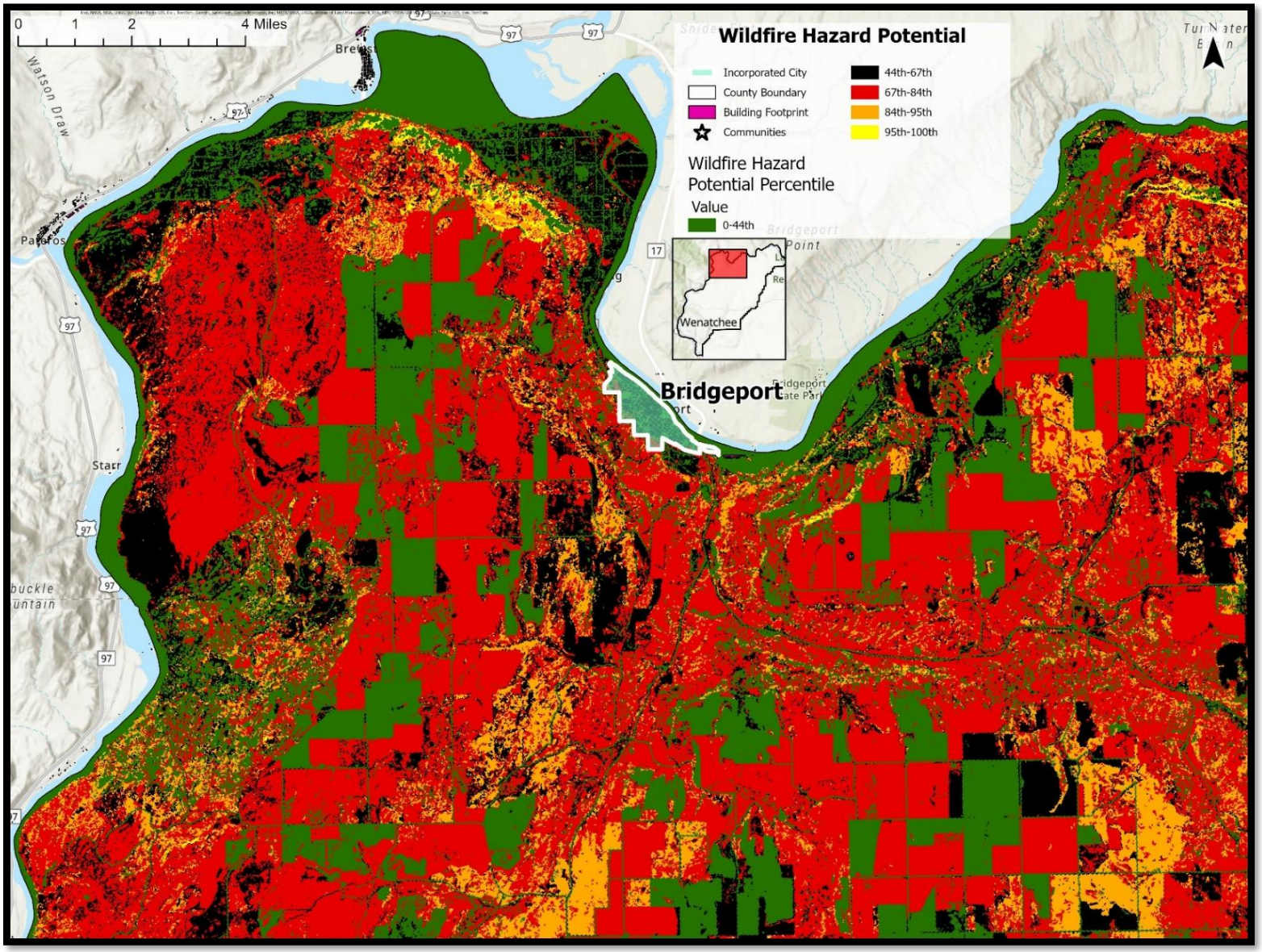


Figure 25: East Wenatchee, Rock Island, Slack Canyon Road, and surrounding area Wildfire Hazard Potential

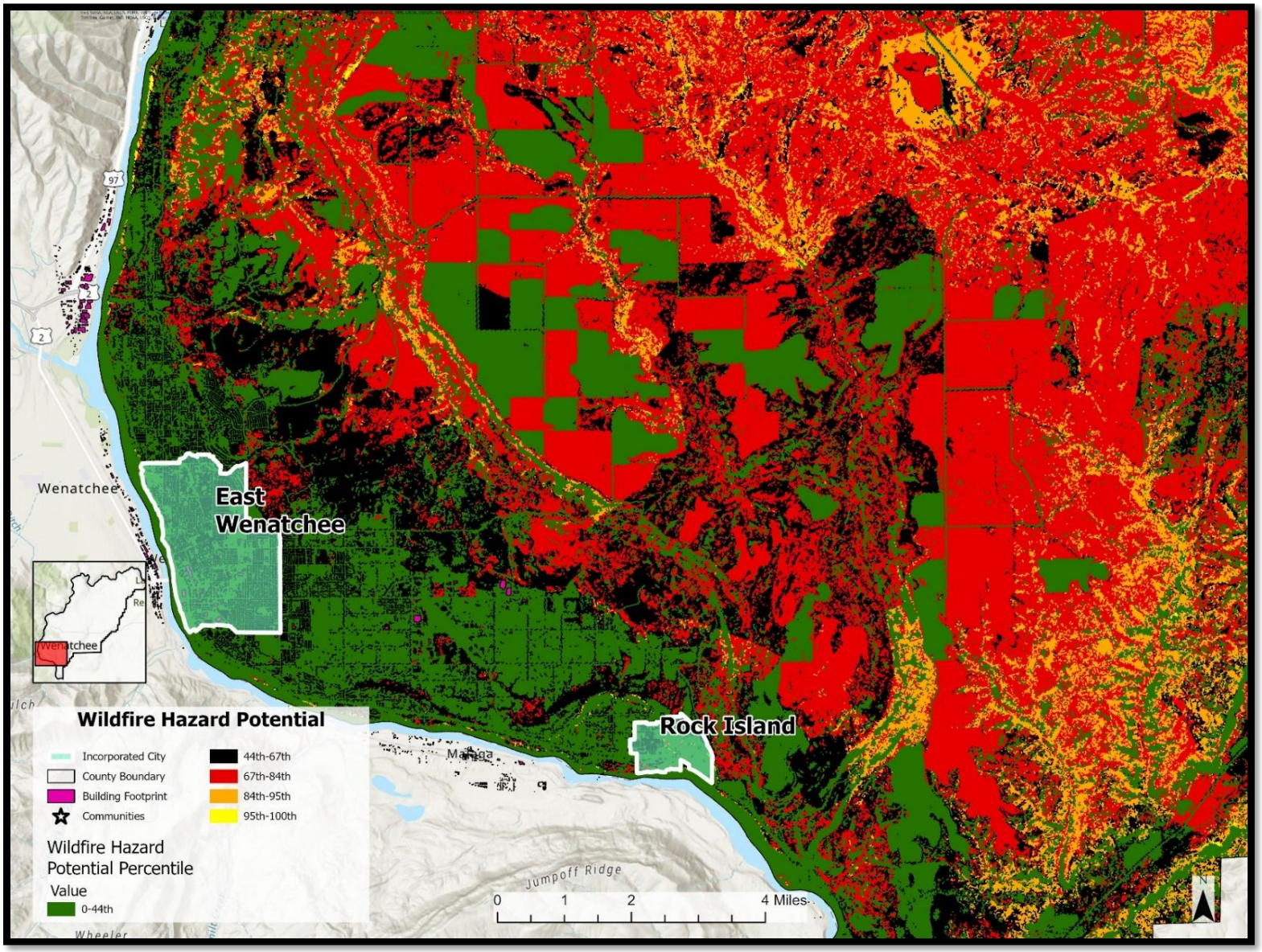


Figure 26: Orondo and surrounding area Wildfire Hazard Potential

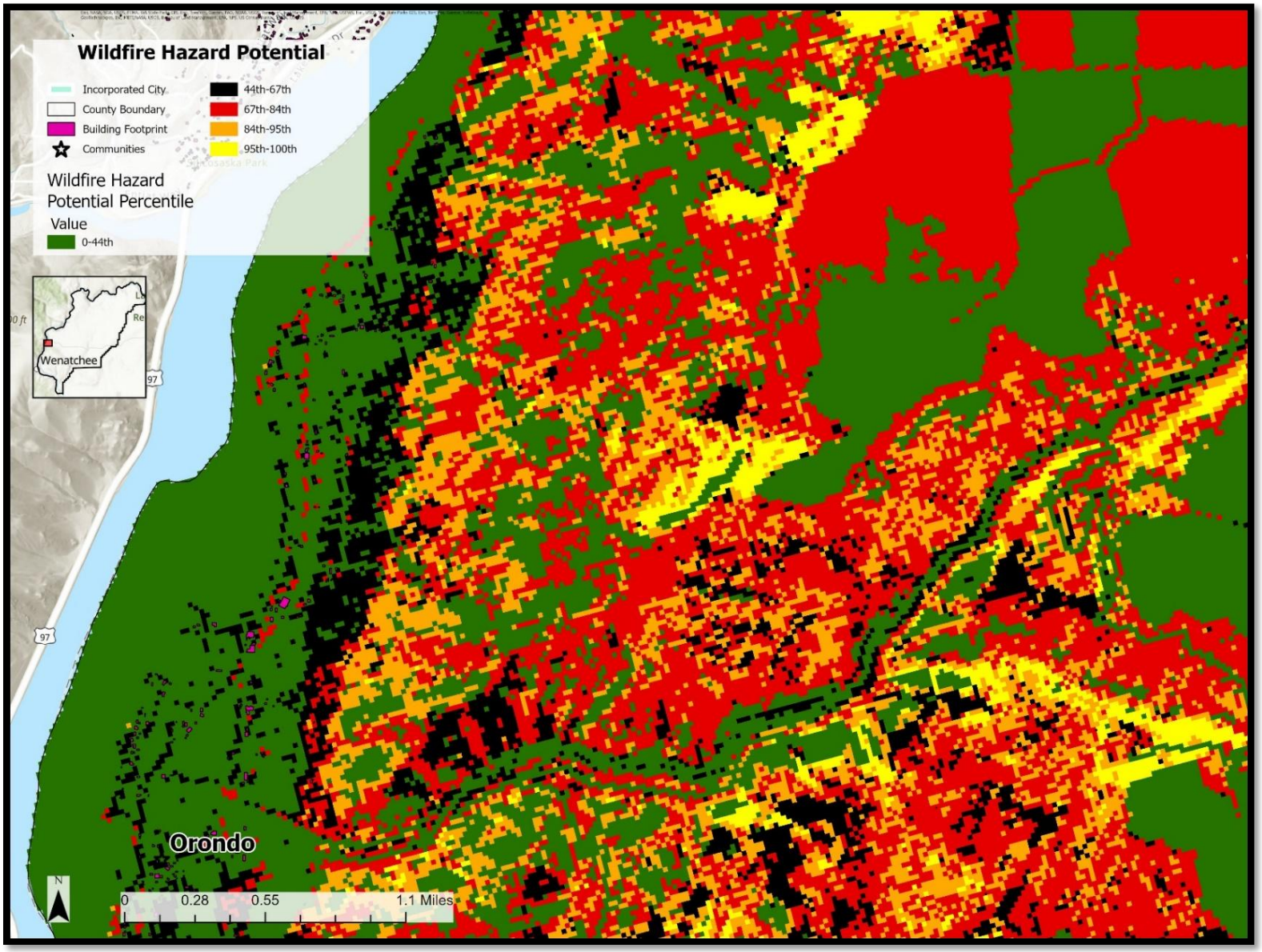


Figure 27: McNeil Canyon and surrounding area Wildfire Hazard Potential

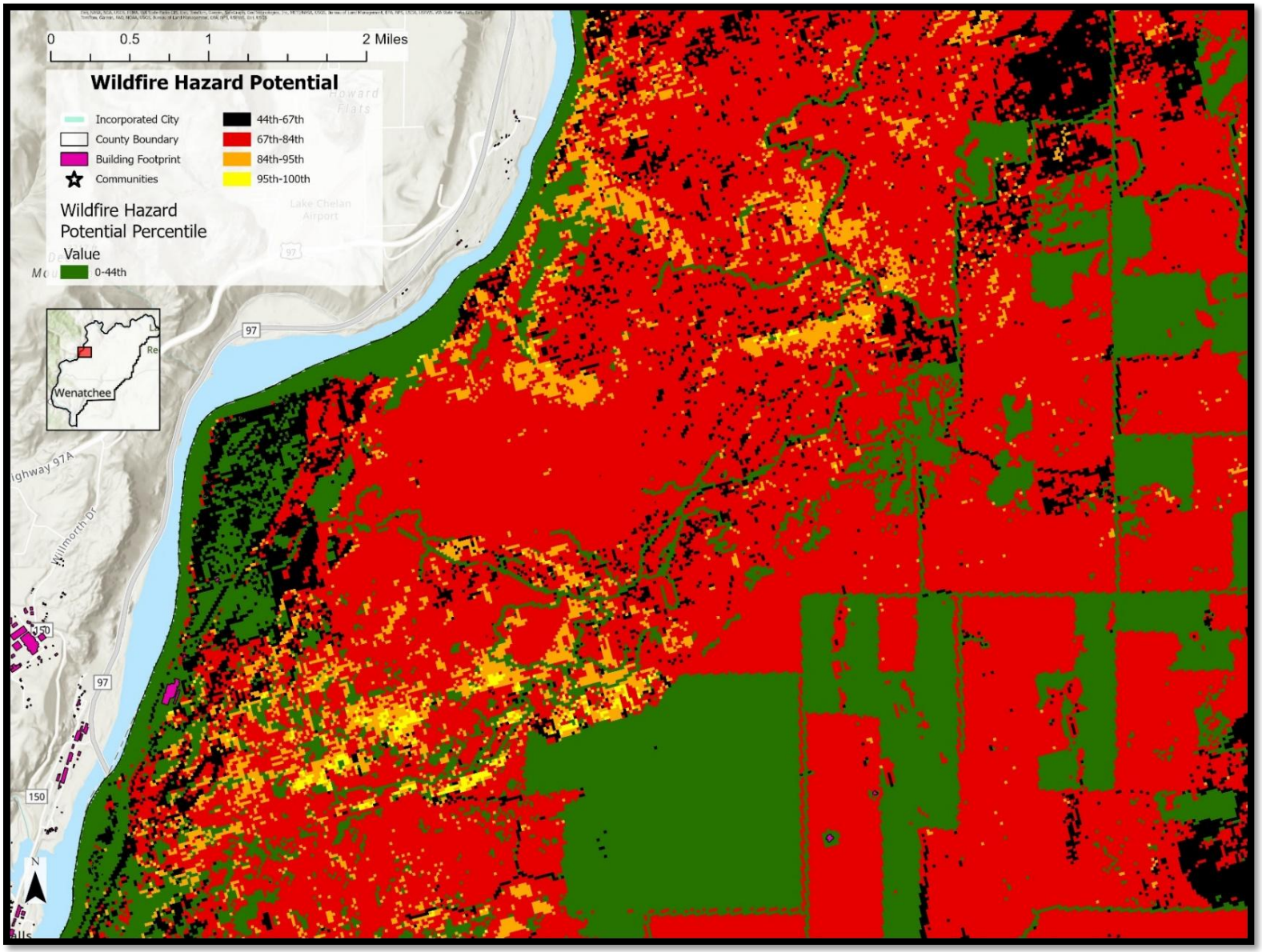
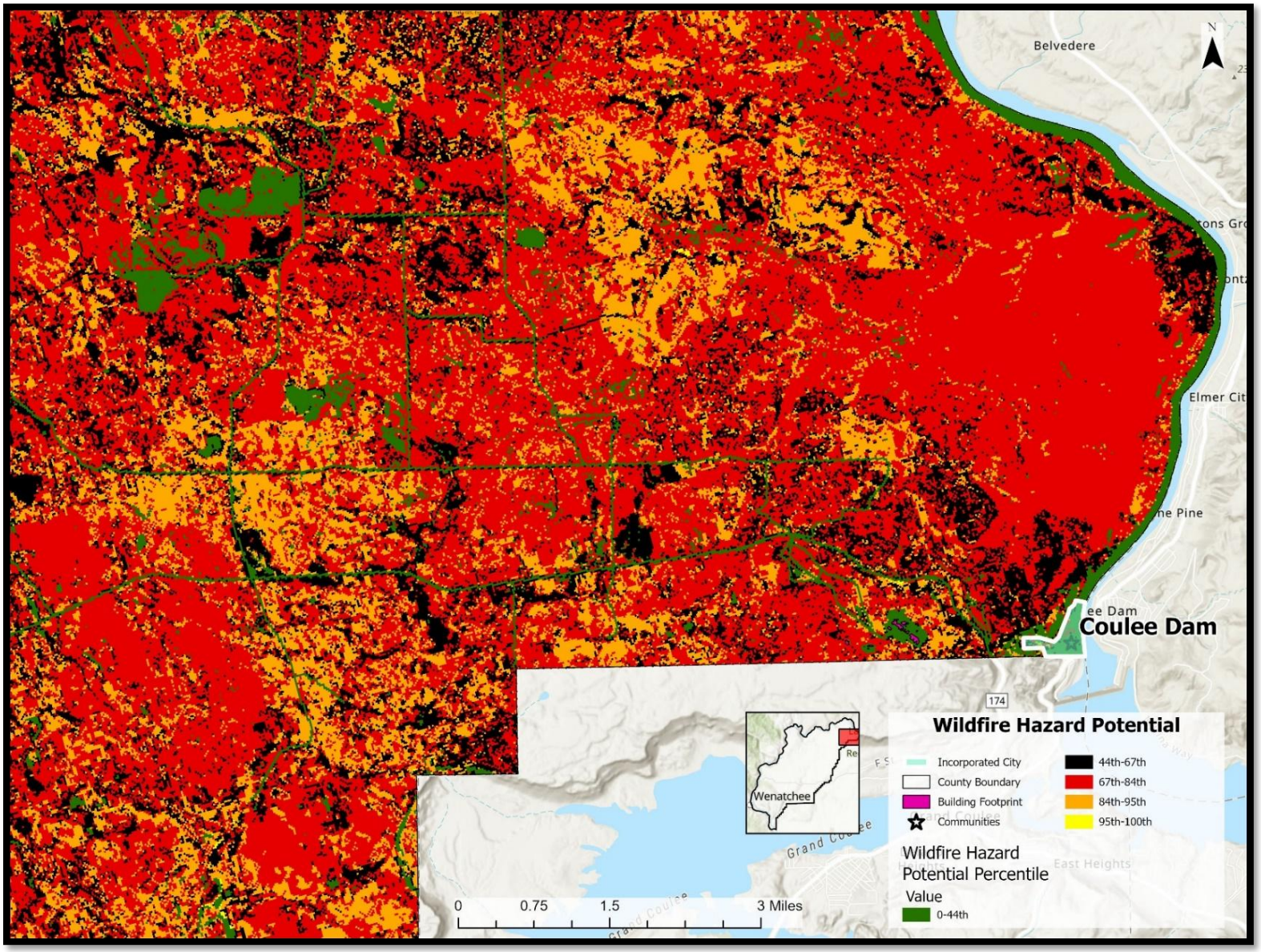


Figure 28: Coulee Dam and surrounding area



5.4.2 INGRESS-EGRESS

U.S. Highway 2 and State Routes 28 and 174 are the primary emergency access routes traveling east to west through the county. State Routes 17 and 97 are the primary access routes running north and south. The steep topography of the River Breaks greatly limits access to the bottom or top of the slopes. There are no roads along the River Breaks between McNeil Canyon and Brewster and from Bridgeport to Coulee Dam. Limited access within remote areas and a lack of maintenance on existing travel routes, increases fire suppression response time and has a direct effect on fire spread leading to increased fire size and destructive potential.

Many private homes and subdivisions are accessed via unimproved, single-lane roads accessible only by small emergency vehicles. Often, access roads and driveways are steep and/or lined with wildland fuels that can limit or prohibit safe access during wildfire. Many of these roads have only one way in and one way out and lack adequate turnout and turn-around areas for emergency vehicles. The inability of emergency resources to safely access structures reduces or may even eliminate suppression response. Most of the roads in newer subdivisions have been designed to accommodate emergency vehicles with either loop roads or cul-de-sacs with wide turning radii and easily negotiable grades, which are better suited to all types of emergency response equipment.

5.4.3 FIRE PROTECTION

The channeled scablands landscape type is present in all the Douglas County Fire Protection Districts except #8. The Fire Protection Districts provide structural fire protection as well as wildland fire protection. Mutual aid agreements between Fire Protection Districts supplement the wildland fire protection response when needed. The DNR does not provide structural fire suppression, but it does provide wildfire protection on non-forested land that threatens DNR-protected lands. BLM provides wildfire protection on their lands within Douglas County and will assist neighboring Fire Protection Districts when available. BLM also does not provide structural fire suppression.

5.4.4 INFRASTRUCTURE

Residents living in the populated centers and most subdivisions surrounding the towns have access to municipal water supply systems with public fire hydrants. Outside these areas, development relies on individual, co-op, or multiple-home well systems. Creeks, ponds, and developed drafting areas provide water sources for emergency fire suppression in rural areas to a limited extent. Irrigation systems can provide additional water supply for suppression equipment on a limited basis. Additional water resources distributed and documented throughout the agricultural landscape are needed to provide water for fire suppression.

Public utility lines travel both above and below ground along roads and cross-country to remote facilities. Many irrigation systems and wells rely on above ground power lines for electricity.

These power poles pass through areas of dense wildland fuels that could be destroyed or compromised in the event of a wildfire. Cell phone service is well established in most parts of the county with only limited dead zones.

5.4.5 POTENTIAL MITIGATION ACTIVITIES

The grass and sagebrush fuels in this landscape are very conducive to rapidly spreading surface fires. During a wildfire event, families in threatened structures would have very little time to protect their homes and evacuate. Therefore, it is very important that a defensible space is maintained around structures prior to an ignition. Keeping a clean green yard and using fire resistant construction materials will help reduce the risk of loss to fire. Homeowners along the Columbia River should be even more vigilant about maintaining a fuel break between their homes and the shoreline as fires caused by recreational use on the reservoir could start at any time with little warning or chance for suppression by the fire department. The use of campfires, fireworks, and other potential ignition sources should be highly regulated during the fire season, especially in areas adjacent to structures and development. Using escape-proof fire rings and BBQ pits at recreational areas, limiting off-road vehicle use to designated trails, and restricting fireworks will help reduce the potential for an ignition.

5.5 RIPARIAN AREAS RISK ASSESSMENT

Riparian areas in arid environments often have a higher amount of fuel loading due to the relatively abundant water supply. Vegetation tends to be more abundant and robust in these areas. Fuel loading often compounds year after year as new growth replaces old growth. Deciduous trees and shrubs are common along waterways and contribute to on the ground fuel loads as they lose their leaves every year. Riparian areas experience a higher amount of recreational use due to various outdoor opportunities (fishing, camping, swimming, etc.). The increased activity may lead to unusually high amounts of ignitions.

The Riparian landscape occurs in small to large drainages throughout the county. These areas produce high densities of shrubs and grass with scattered deciduous trees due to the relative abundance of water. Upslope from the waterway, vegetation generally resorts back to typical shrub-steppe fuel type that dominates much of the county. These areas are generally low in population, but one major population cluster is Palisades.

Figure 29: Image showing a riparian zone in Douglas County[11]

5.5.1 WILDFIRE POTENTIAL

The riparian area landscape has a moderate to high wildfire potential due to a characteristically high fuel load occurrence, terrain that can exhibit a chimney effect, high recreation use, and somewhat limited access. The steep walls contribute to rapid rates of spread by funneling fire up canyon. The high amount of fuel loading, coupled with the chimney effect, could create very intense fires.

[11] https://www.wlfw.org/landowner-agencies-secure-major-grants-protect-restore-sage-grouse-oasis-douglas-county/

Figure 30: Northern Riparian Zone Wildfire Hazard Potential

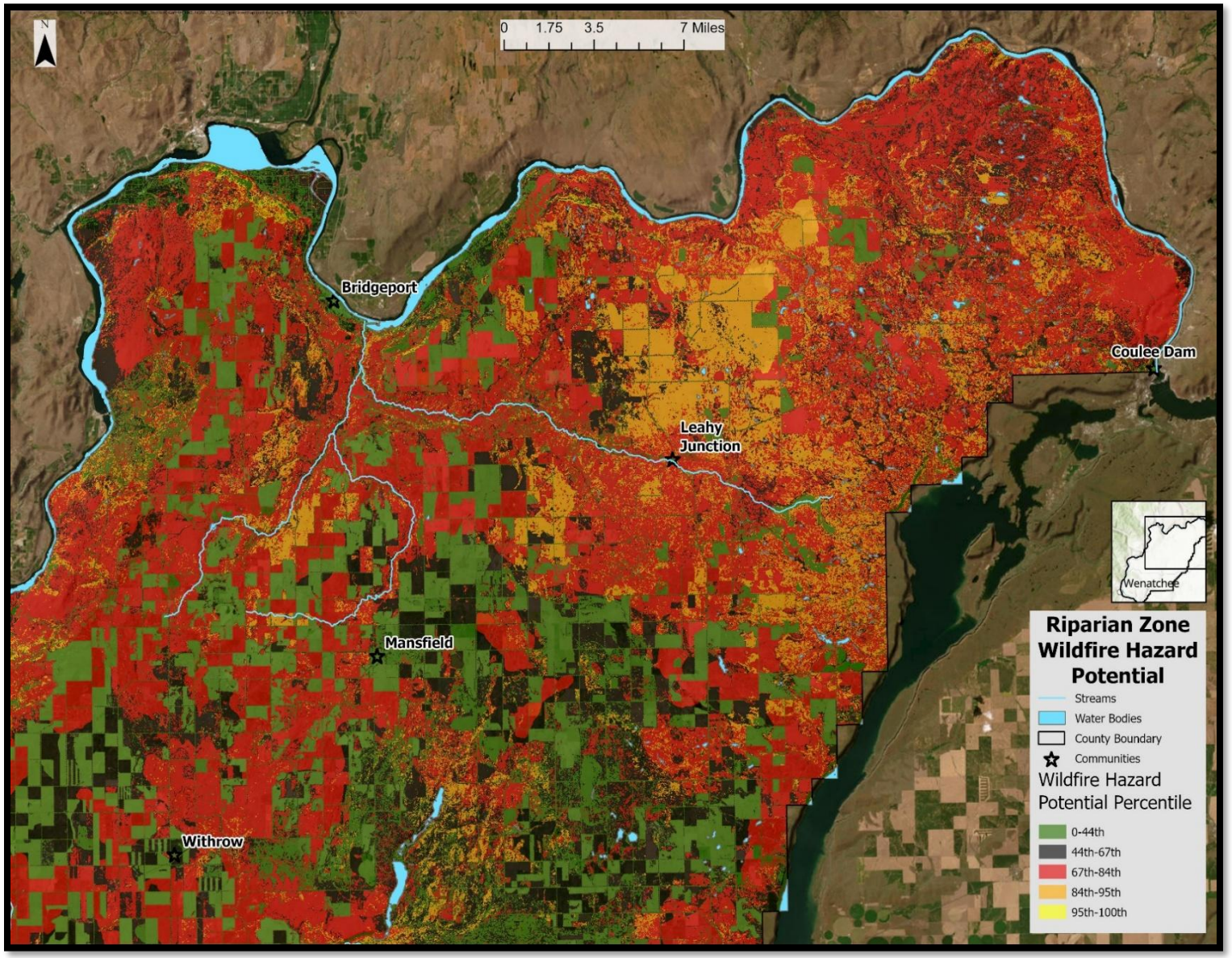
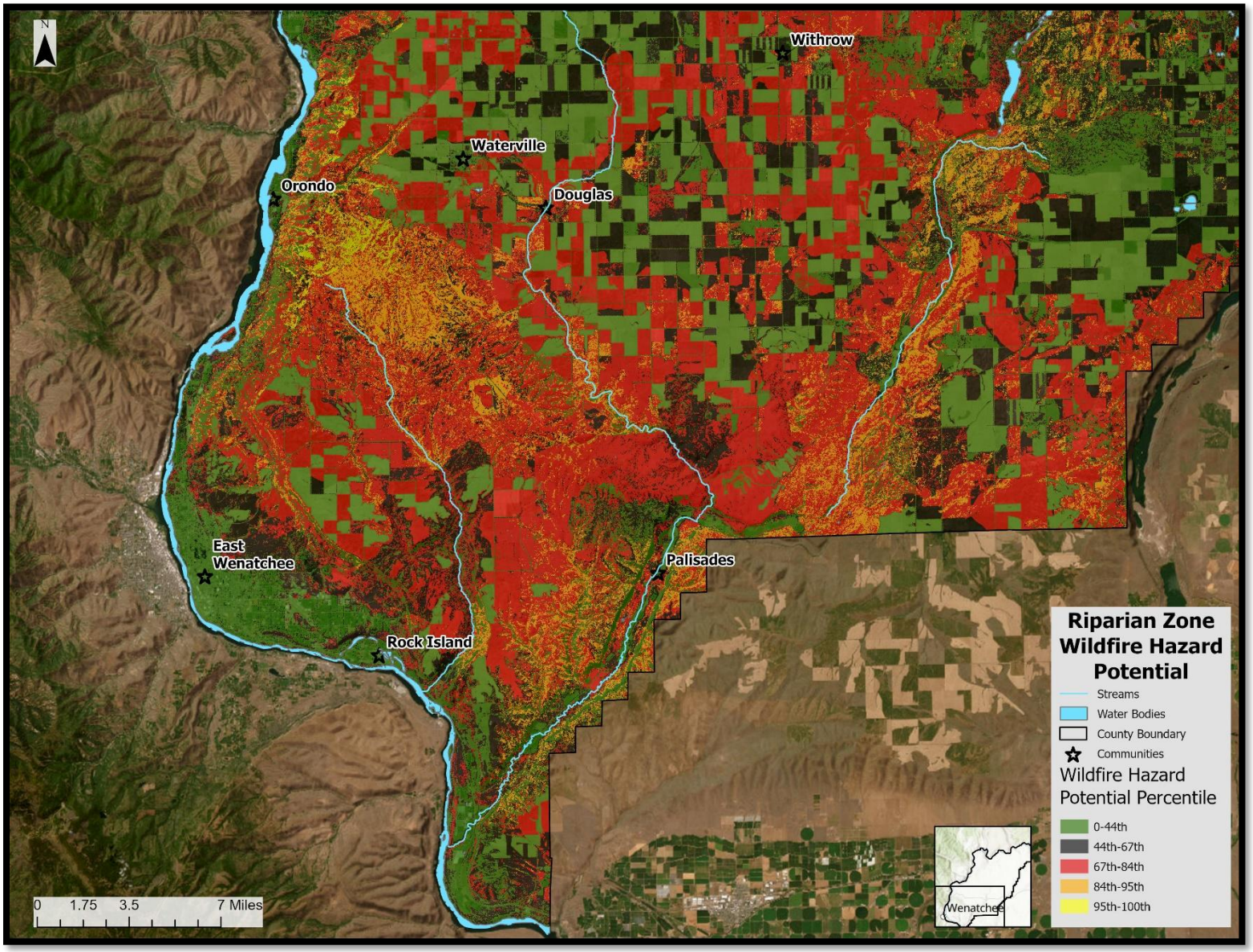


Figure 31: Southern Riparian Zones Wildfire Hazard Potential



5.5.2 INFRASTRUCTURE

Unimproved campsites as well as interpretive signs are common in these areas providing recreational users with information and areas to camp. Interpretive signs can assist land managers with educating the public about the risk of wildfire and how to minimize the risk. Providing campers with fire rings keeps fires contained to specific sites and reduces the risk of an escape.

Creeks, ponds, and developed drafting areas provide water sources for emergency fire suppression in rural areas to a limited extent. Irrigation systems can provide additional water supply for suppression equipment on a limited basis. Additional water resources distributed and documented throughout the agricultural landscape are needed to provide water for fire suppression.

Public utility lines travel both above and below ground along roads and cross-country to remote facilities. Many irrigation systems and wells rely on above ground power lines for electricity. These power poles pass through areas of dense wildland fuels that could be destroyed or compromised in the event of a wildfire. Cell phone service is well established in most parts of the county with only limited dead zones.

5.5.3 FIRE PROTECTION

The riparian area landscape type is present in all the Douglas County Fire Protection Districts. The Fire Protection Districts provide structural fire protection as well as wildland fire protection. Mutual aid agreements between Fire Protection Districts supplement the wildland fire protection response when needed. The DNR does not provide structural fire suppression, but it does provide wildfire protection on non-forested land that threatens DNR-protected lands. BLM provides wildfire protection on their lands within Douglas County and will assist neighboring Fire Protection Districts when available. BLM also does not provide structural fire suppression.

5.5.4 POTENTIAL MITIGATION ACTIVITIES

The high fuel loading and the narrow canyons are very conducive to rapidly spreading surface fires. During a wildfire event, recreationists would have very little time to evacuate. Therefore, it is very important to educate the public on the dangers of wildfires. The use of campfires, fireworks, and other potential ignition sources should be highly regulated during the fire season, especially in areas adjacent to structures and development. Using escape-proof fire rings and BBQ pits at recreational areas, limiting off-road vehicle use to designated trails, and restricting fireworks will help reduce the potential for an ignition.

Wildfire risk in the riparian area landscape is at its highest during summer and fall when daily temperatures are high and relative humidity is low. Fires burning in some types of riparian vegetation would be expected to burn more intensely with larger flame lengths due to the greater availability of fuels. Some riparian areas occur within narrow walls that would increase the intensity of wildfire. These areas are not easily accessible, which would compound the difficulties

during fire suppression efforts. Most firefighters learn early that these areas are dangerous to attempt fighting fires due to the unpredictability of fire within narrow canyons.

5.5.5 INGRESS-EGRESS

U.S. Highway 2 and State Routes 28 and 174 are the primary emergency access routes traveling east to west through the county. State Routes 17 and 97 are the primary access routes running north and south. The steep topography of the riparian areas greatly limits access to the bottom or top of the slopes. The road in Slack Canyon is a one-way in, one-way out road due to a landslide that covered the road. Limited access within remote areas and a lack of maintenance on existing travel routes, increases fire suppression response time and has a direct effect on fire spread leading to increased fire size and destructive potential.

6 MITIGATION STRATEGY

6.1 IMPLEMENTED PROJECTS

Since the previous CWPP, several fire mitigation projects have been completed. in Douglas County. The projects include chipping, cost share programs, distributing supplies and the Washington Department of Natural Resources' Forest Health Tracker Program.

6.1.1 FUELS REDUCTION

The South Douglas Conservation District has been participating in annual chipping events since 2016 covering an area from Farmer to Rock Island. In total there were 225 completed projects for landowners (some multiple times). These activities have taken place on properties both within and outside city limits, with landowners retaining the wood chips. Treated landscapes include forested areas on Badger Mountain as well as other parts of the county where sagebrush is the predominant vegetation type.

Figure 32: After Forested Chipping Project

Figure 33: After Forested Chipping Project

Figure 34: Before Sagebrush Fuels Reduction

Figure 35: After Sagebrush Fuels Reduction

6.1.2 COST SHARE PROGRAM COLLABORATION

In collaboration with the Washington State Department of Natural Resources and the Washington Conservation Commission, the South Douglas Conservation District has partnered with 20 landowners on Badger Mountain to complete fuels reduction work across a total of 475 acres through cost-share programs. As of now the focus has been to target forestlands on Badger Mountain, however, the goal is to expand fuels reduction efforts to properties with dense sagebrush and other vegetation that contribute to wildfire risk.

Figure 36: Before the Program

Figure 37: After the program

6.1.3 IMPROVING EMERGENCY PREPAREDNESS

The South Douglas Conservation District has distributed a total of 150 blue address emergency signs to landowners in Douglas County for better emergency response. They also provided two GPS units to each of the fire districts to help improve communication reliability.

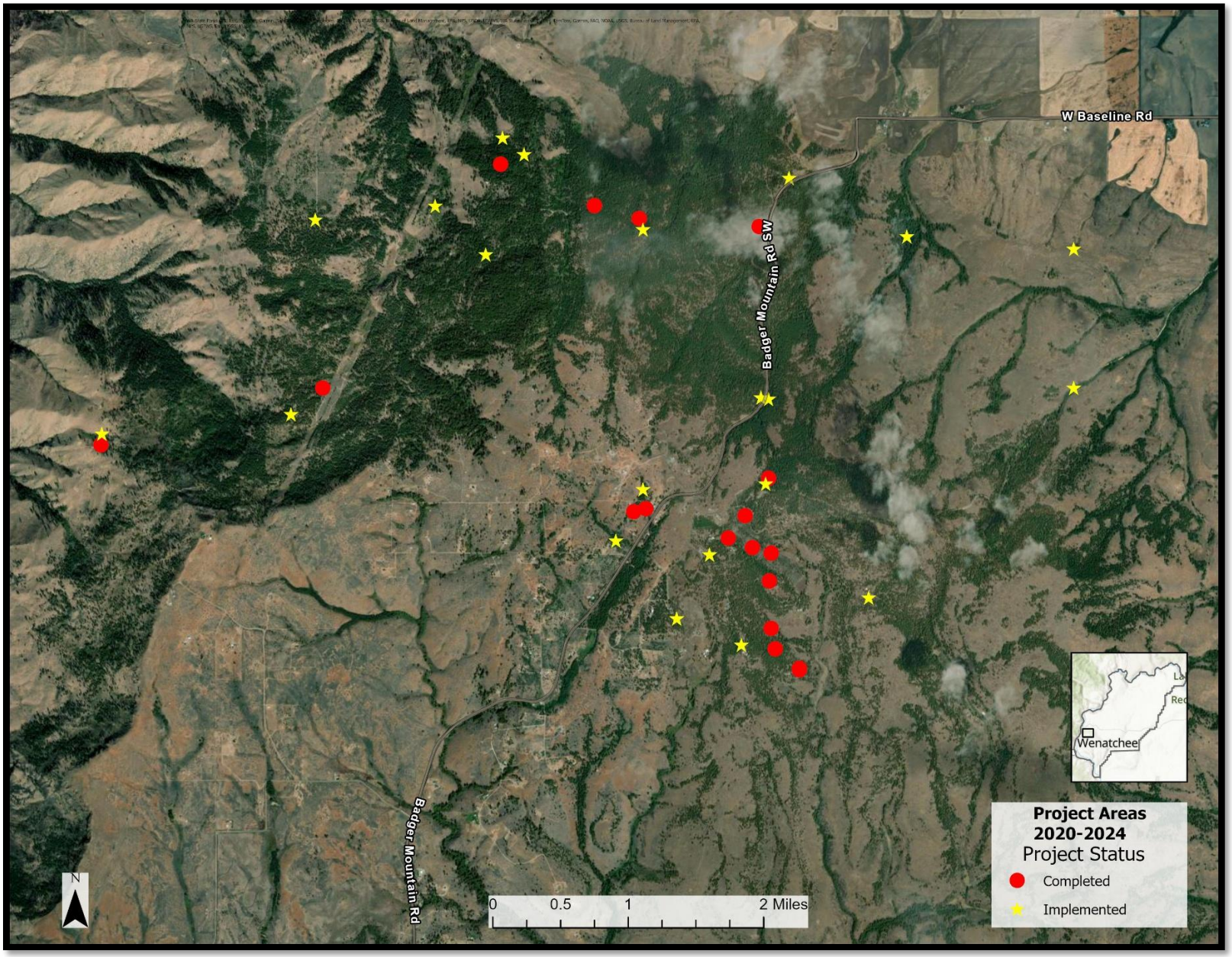
6.1.4 WASHINGTON DNR HEALTH FOREST TRACKER

The Washington Department of Natural Resources has developed an online platform to gather and display forest health project information across Washington to facilitate strategic cross boundary-planning implementation and monitoring of forests in shared stewardship.[12]

Specifically in Doulgas County there are implemented and completed projects in the Badger Mountain Area from 2020-2024. In Douglas County, several projects were implemented and completed in the Badger Mountain area between 2020 and 2024. These fuels mitigation projects involve pruning and thinning, followed by pile burning to reduce wildfire risk.

[12] https://foresthealthtracker.dnr.wa.gov/

Figure 38: Forest Health Tracker Implemented and Completed Projects



6.1.5 CAMP SAGEBRUSH

Camp Sagebrush is an overnight camp for middle school students that Foster Creek Conservation District has been hosting every summer since 2021. This camp provides an opportunity for kids to learn about natural resources, the ecosystem and all that creates the shrub steppe landscape. The camp incorporates fire-focused education by teaching kids about fire ecology, red flag warnings, and how weather and soil moisture influence fire behavior. A full day is dedicated to fire awareness, including personal storytelling about local evacuations, preparedness activities like designing "get-out-and-go" pillowcases, and hands-on firefighter-inspired challenges. These activities helped campers understand emergency response, evacuation planning, and the importance of teamwork and communication during a fire.

Figure 39: Camp Sagebrush

6.2 MITIGATION RECOMMENDATIONS

A key component of implanting this Community Wildfire Protection Plan is the development and execution of a coordinated schedule of action items aimed at reducing both the number of human-caused fires and the overall impact of wildland fires in Douglas Count. Critical to implementation of this Community Wildfire Protection Plan is the identification and implementation of an integrated action items targeted at achieving a reduction in the number of wildfire ignitions in Douglas County. This section of the plan identifies mitigation actions, including treatments that can be implemented to pursue the goal of reducing wildfire risk. As there are land management agencies and private landowners in Douglas County, it is reasonable to expect that differing schedules of adoption will be made, and varying degrees of compliance will be observed across various ownerships.

As part of the policy of Douglas County, the Community Wildfire Protection Plan will be reviewed at least annually at special meetings of the CWPP Steering committee, open to the public and involving all municipalities/jurisdictions, where action items, priorities, budgets, and modifications can be made or confirmed. Amendments to the plan should be documented and attached to the formal plan as an amendment. Re- evaluation of this plan should be made in 5-year increments once accepted.

6.3 PLANNED MITIGATION PROJECTS

A key component of implementing this Community Wildfire Protection Plan is the development and execution of action items aimed at reducing the number of human-caused fires and minimizing the impact of wildfires in Douglas County. This section outlines prioritized mitigation actions for their urgency and critical importance and implementation. The following categories describe each table of action items presented in this chapter.

6.3.1 PUBLIC OUTREACH/EDUCATION PLANNING EFFORTS

Identify education and outreach programs and methods already in place that could be used to implement mitigation activities and communicate hazard-related information. Education efforts most often concern the public and could be related to health hazards related to smoke, wildfire hazards in the wildland urban interface, evacuation, etc.

6.3.2 WILDFIRE MITIGATION PROJECTS

Wildfire Mitigation actions are on-the-ground treatments of wildland fuels that are implemented to reduce the threat of wildfire. These actions can take place before, during or after a wildfire has occurred and should consider other hazards.

6.3.3 INFRASTRUCTURE ENHANCEMENT

Critical infrastructure refers to the communications, transportation, power lines, and water supply that service a region or a surrounding area. These networks are, by definition, a part of the wildland urban interface in the protection of people, structures, infrastructure, and unique ecosystems. Without supporting infrastructure, a community's structure may be protected, but the economy and ways of life would be lost.

6.3.4 SAFETY AND POLICY

These projects are focused on evacuation plans, pre-wildfire readiness, and improving ingress/egress routes for emergency services to efficiently travel to fight fire.

6.3.5 RESOURCE CAPABILITY ENHANCEMENT

The implementation of each action item will rely on either the isolated efforts of the rural Fire Protection Districts or a concerted effort by the county to achieve equitable enhancements across all the districts. Given historic trends, individual departments competing against neighboring departments for grant monies and equipment will not necessarily achieve countywide equity.

Project ID	Project Name	Type	Project Location	Description	Sources of Funding	Involved Organizations	Completion Date
ED1	Wildfire Awareness	Education	Douglas County (East Wenatchee)	Implementation of youth and adult wildfire educational programs and improve access to wildfire preparedness information and programs to Spanish speaking communities	TBD	Lead: South Douglas Conservation Districts Support: Douglas County Fire Protection Districts and Local Schools	On-Going
ED2	Fire Protection CO-OP	Education	Douglas County	Develop a Douglas County fire protection co-op to provide a continuing public wildfire education program and better capture defensible space and prevention with teachable mom	TBD	Lead: South Douglas Conservation District Support: Douglas County Fire Protection Districts, WSU Extension, and BLM	On-Going
ED3	Landowner Landscaping Education	Education	Douglas County	Work with WSU Extension, Master Gardeners, and other existing programs to offer landscaping clinics to assist property owners in maintaining fire-resistant defensible space around structures.	TBD	Lead: South Douglas Conservation District Support: Transportation Land Services Douglas County Fire Protection Districts	On -Going (Trainings in late Fall/Winter/Earl Spring)
ED4	Landowner Education	Education	Douglas County	Develop a forest and range public education program to encourage healthy management of natural resources on private property	TBD	Lead: South Douglas Conservation District Support: Douglas County Fire Protection Districts, WSU Extension, and BLM; Foster Creek CD	On-Going
ED5	Jr Firefighters	Education	Douglas County	Create an education program to involve local high school students with local fire districts. Students would be able to learn about the operations of a fire district and engage in limited ways across the fire district. This project would increase fire awareness in our youth and could potentially increase recruitment for the fire districts.	DNR	South Douglas Conservation District WA DNR NRCS FSA	1-10 Years
MIT1	Post Fire Recovery	Mitigation	Douglas County	Post Fire Recovery work: Local fire departments and many local state and federal partners work together to respond to post-fire recovery in the shrub-steppe; these agencies work together to identify the effective treatments on the landscape to help the recovery of native fire adapted plant species become established and create a more resilient landscape.	TBD	Lead: Douglas County Fire Protection Districts, Conservation Districts, BLM, USFWS, WDFW Support: WA DNR Community Resiliency	On-Going
MIT2	Landowner Site Assessments	Mitigation	Douglas County	Prepare for wildfire events in high-risk areas by conducting home site risk assessments and developing area-specific “Response Plans” to include participation by all affected jurisdictions and landowners	TBD	Lead: South Douglas Conservation District	On-Going

Project ID	Project Name	Type	Project Location	Description	Sources of Funding	Involved Organizations	Completion Date
			(East Wenatchee)			Support: Douglas County Fire Protection Districts	
MIT3	HOA Outreach	Mitigation	Sand Canyon Fancher Heights/Canyon Hills Rock Island Batterman Road Spanish Castle	Work with area homeowners associations to foster cooperative approach to fire protection and awareness and identify mitigation needs	TBD	Lead: South Douglas Conservation District Support: Douglas County Fire Protection Districts	Ongoing
MIT4	Fire Prevention Occupation	Mitigation	Douglas County	Explore creating a grant funded fire prevention position for Douglas County	TBD	Lead: Douglas County Fire Protection Districts Support: Douglas County Commissioners South Douglas Conservation District WSU Extension, and BLM	On-Going
MIT5	Training	Mitigation	Douglas County	Training and certification for Douglas County Fire Protection Districts staff to improve departmental capability to provide better protection for Douglas County Residents	TBD	Lead: Douglas County Fire Protection Districts Support: BLM Douglas County Commissioners	On-Going
MIT6	Steering Committee Meetings	Mitigation	Douglas County	Continue meetings as a CWPP Steering Committee to plan mitigation efforts and projects with Douglas County	TBD	Lead: Fire Protection Districts Support: BLM WA DFW, BOR, WA DNR. Conservation District, County Emergency Management	On-Going
MIT7	Fuels Reduction	Mitigation	Douglas County	Douglas County has a large amount of land in CRP contracts and many of these fields have unmaintained roads, lots of fuels, and no fuel breaks. The addition of fuel breaks on roads along CRP fields as well as fuel reductions within FSA regulations would protect both residents and property from wildfire.	DNR	Lead: South Douglas CD Support: Foster Creek CD	1-10 Years

Project ID	Project Name	Type	Project Location	Description	Sources of Funding	Involved Organizations	Completion Date
						DNR NRCS FSA	
MIT8	Badger Mountain Fuels Reduction	Mitigation	Badger Mountain	Badger Mountain is the primary forested area in Douglas County. In order to decrease fire risk in this area we would like to thin both trees along the right of ways as well as dead trees.	DNR	Lead: South Douglas CD	1-3 Years
MIT9	Community Assistance Fuels Reduction	Mitigation	Mansfield Bridgeport Unincorporated Douglas County	Northern Douglas County has an older and less financially secure population than the WA state average. Hazard mitigation around the HIZ in residential areas in Mansfield, Bridgeport, or Unincorporated Douglas County would reduce the fire risk to structures in these communities. Mitigation practices include contract hardscaping, tree work, and brush chipping. We will work with a partner organization to mitigate homes that have been identified as high need/risk following an outreach event that they will conduct independently of this project.	DNR	Lead: Town of Mansfield Support: Town of Bridgeport Douglas County Fire Districts Foster Creek CD DNR	1-3 Years
MIT10	Grass Valley Fuel Reduction	Mitigation	Del Rio	The Grass Valley Fire burned a significant area in Del Rio near Grand Coulee in 2018. In the aftermath of the fire noxious weeds have overrun the area. Treating these noxious weeds will greatly reduce fuels and fire risk in this area/	DNR FEMA Other State and Federal Agencies	Lead: Foster Creek CD	1-3 Years
MIT11	McNeil Canon Fuel Reduction	Mitigation	McNeil Canyon	Evaluate the McNeil Canyon area for vegetation treatment and removal. Vegetation at the site may be treated with herbicides and/or mowed. The size of the cleared area will depend on the type, height and density of fuels in the canyon.	DNR Alternate State or Funding Sources	Lead: Foster Creek CD	2-10 Years
MIT12	Post Fire Tree Removal	Mitigation	Pearl Hill	The area of Pearl Hill was burned in 2020 and left many burnt trees behind. To reduce further risk to structures hazard mitigation in the form of tree removal will be done throughout the Pearl Hill burn scar with priority for landowners unable to finance it & physically unable to do the work.	DNR WAFAC Other State Agencies	Lead: Foster Creek CD Support: DNR BLM	1-3 Years
INF1	Inventory of Ingress and Egress Routes	Infrastructure Enhancement	Douglas County	Inventory, map, and sign all potential evacuation routes and procedures countywide and educate the public on use and post fire danger signs throughout the County on local, state and federal lands	TBD	Lead: Douglas County Fire Protection Districts Support: Douglas County GIS Analyst	On-Going
INF2	GIS Mapping for Signage	Infrastructure Enhancement	Douglas County	Map, Develop GIS Database, and provide signage for onsite water sources such as hydrants, underground storage tanks,	TBD	Lead: Douglas County Fire Protection Districts	On-Going

Project ID	Project Name	Type	Project Location	Description	Sources of Funding	Involved Organizations	Completion Date
				and drafting or dipping sites on all ownerships across the county		Support: Douglas County GIS Analyst: Transportation Land Services Support: Douglas County Fire Marshal's Office	
INF3	Road Barrier Caches	Infrastructure Enhancement	Douglas County	Develop a cache of road barriers and temporary evacuation signage that will be placed strategically throughout the county to be used during emergencies.	TBD	Lead: Douglas County Sherrif's Office EMD Support: Douglas County Fire Protection Districts	On-Going
INF4	Signage for Landowners	Infrastructure Enhancement	Douglas County	Develop a program to encourage landowners to put up reflective address signage on their drive to allow firefighters to better locate residencies	Small Fee for Landowners	Lead: Transportation Land Services Support: Douglas County Fire Protection Districts, Rivercom, BLM, DNR Community Resiliency	On-Going
INF5	Signage Replacement	Infrastructure Enhancement	Douglas County	Develop a program to replace worn out road signage with new reflective road signs to allow firefighters to easily navigate to a wildfire	TBD	Lead: Transportation Land Services Support: Douglas County Fire Protection Districts, Rivercom, BLM	On-Going
INF6	Cell Service Improvement	Infrastructure Enhancement	Douglas County	Increase the cellular coverage throughout the county to increase communications	TBD	Lead: Douglas County Commissioners Support: Planning Commission	On-Going
INF7	GIS Funding	Infrastructure Enhancement	Douglas County	Obtain funding for GIS equipment and software which would allow field notes and GIS data to be directly available for Emergency management teams located offsite.	TBD	Lead: Douglas County Sheriff's Office Support: Douglas County GIS Analyst	On-Going
CAP1	Rimrock Meadows Signage	Capacity Building	Rimrock Meadows	Rimrock Meadows currently lacks adequate road signs and is a one way in, one way out community. Reflective road signs and fire risk signs would decrease the risk for fire fighters and increase the response ability.	Douglas County DOT Wenatchee Valley Fire DNR South Douglas CD	Lead: Douglas County DOT	1-3 Years

Project ID	Project Name	Type	Project Location	Description	Sources of Funding	Involved Organizations	Completion Date
CAP2	Withrow Water Reservoir	Capacity Building	Withrow	Douglas County has limited water resources, particularly in the middle of the county away from the Columbia River. The addition of a water reservoir with a backup generator in Withrow, a central location in the county, would increase the response capability of local fire districts. The Withrow PUD station would be an ideal location for this reservoir.	State and Other Federal Funding	Lead: Douglas County PUD Support: Foster Creek Conservation District Douglas County Fire Districts	1-5 Years
CAP3	Douglas County Above Ground Water Tanks	Capacity Building	McNeil Canyon and Badger Mountain	Water Resources in Douglas County are limited, even more so the further away from the Columbia River and Lakes the fire is. The addition of above ground water tanks in remote locations, McNeil Canyon and Badger Mountain, would increase the response capability of local fire districts	DNR Alternate State or Federal Funding Resources	Lead: South Douglas CD Support: Foster Creek CD DNR Douglas County Fire Districts	3-8 Years
SAF1	Fire Resistant Building Permits	Safety/Policy	Douglas County	Distribute educational brochures with building permit applications regarding fire adapted landscaping and fire-resistant construction for home hardening	TBD	Lead: South Douglas Conservation District Support: Transportation Land Services	On-Going
SAF2	Farm Service Agency Committee	Safet/Policy	Douglas County	Establish committee to work with the Farm Service Agency on feasible solutions for reducing the wildland fire risk associated with land enrolled in the Conservation Reserve Program and SAFE	TBD	Lead: CWPP Subcommittee Support: Douglas County Board of Commissioners NRCS	On-Going
SAF3	Road Improvement	Safety/Policy	Douglas County	Continue to work with developers and private landowners to enhance road layout and adherence to accepted road standards that will improve emergency services" accessibility as well as provide for better road connectivity avoiding single ingress/egress access.	TBD	Lead: Transportation Land Services Support: Douglas County Fire Protection Districts	On-Going
SAF4	Contact List	Safety/Policy	Douglas County	Develop a local contact list of individuals that could be used in advisory capacity to fire suppression teams	TBD	Lead: Douglas County Fire Protection Districts Support: Grand Coulee & Chief Joseph Dam, BLM	On-Going
SAF5	Public Emergency Planning	Safety/Policy	Douglas County	Continue to encourage local residents to develop pre-emergency communication plans including a Reverse 911 system or phone trees, contact lists and neighborhood communication apps	TBD	Lead: Douglas County Fire Protection Districts Support: Rivercom Douglas County Commissioners	On-Going
SAF6	Douglas County Livestock	Safety/Policy	Douglas County	Obtain the materials and funding to complete and implement the Douglas County Livestock Evacuation Plan	TBD	Lead: Cattleman's Association and Douglas County Sheriff's EMD	On-Going

Project ID	Project Name	Type	Project Location	Description	Sources of Funding	Involved Organizations	Completion Date
	Evacuation Plan Implementation					Support: emergency Response Veterinarian	
SAF7	Wildfire Preparedness Sites	Safety/Policy	Douglas County	Maintain and develop new Firewise USA® or Community Wildfire Ambassador sites	TBD	Lead: Douglas County Fire Protection Districts, Conservation Districts Support: WA DNR Community Resiliency	On-Going
SAF8	Smoke Preparedness Outreach	Safety/Policy	Douglas County	Improve smoke preparedness and resources for residents to stay safe during smoke events. HEPA filter loan program, smoke preparedness education campaign, outreach to farm workers and outdoor laborers	TBD	Lead: Chelan Douglas Health District, Red Cross Support: Douglas County Fire Protection Districts, Conservation Districts, Café, NCW Libraries	On-Going

6.4 FUELS TREATMENT PROJECT PRESCRIPTIONS

The following project areas were identified during the field assessments and interviews as potentially having several factors contributing to high wildfire risk as well as being representative of the types of projects likely to be pursued for grant funding. These include the forested areas of Badger Mountain and the Upper Communication site. The intent is that these project prescriptions be as site specific as possible but serve as templates for writing prescriptions for similar projects throughout the County. These projects/templates will aid land stewards in applying for grants specific to their property. The chosen project areas do not reflect the highest priority projects identified by the steering committee but were written for communities with a high level of existing interest in implementation.

Badger Mountain is a heavily populated community that exists in the Wildland Urban Interface. The vegetation that exists throughout the community consists of a dense forest with a sagebrush understory. Many communities throughout the county face similar issues.

The Upper Badger Communication Site is located within the Badger Mountain community. This communication site is surrounded by shrubs and grass. Sites such as this one are scattered throughout the county and are essential to communicate during emergencies.

The project areas were identified without regard for landownership boundaries; thus, site-specific prescriptions will require coordination and approval by the various landowners. The following descriptions provide as much detail as possible regarding the objectives, prescription, and unique nature of each project; however, exact acreages and site plans will be determined after consultation with the affected landowners. The prescriptions described in the following projects may be modified to suit other similar projects, for example the Badger Mountain project may apply to the McNeil Canyon community. Contact your local fire department or Firewise USA® representative for assistance in developing goals and prescriptions specific to your project.

6.4.1 BADGER MOUNTAIN

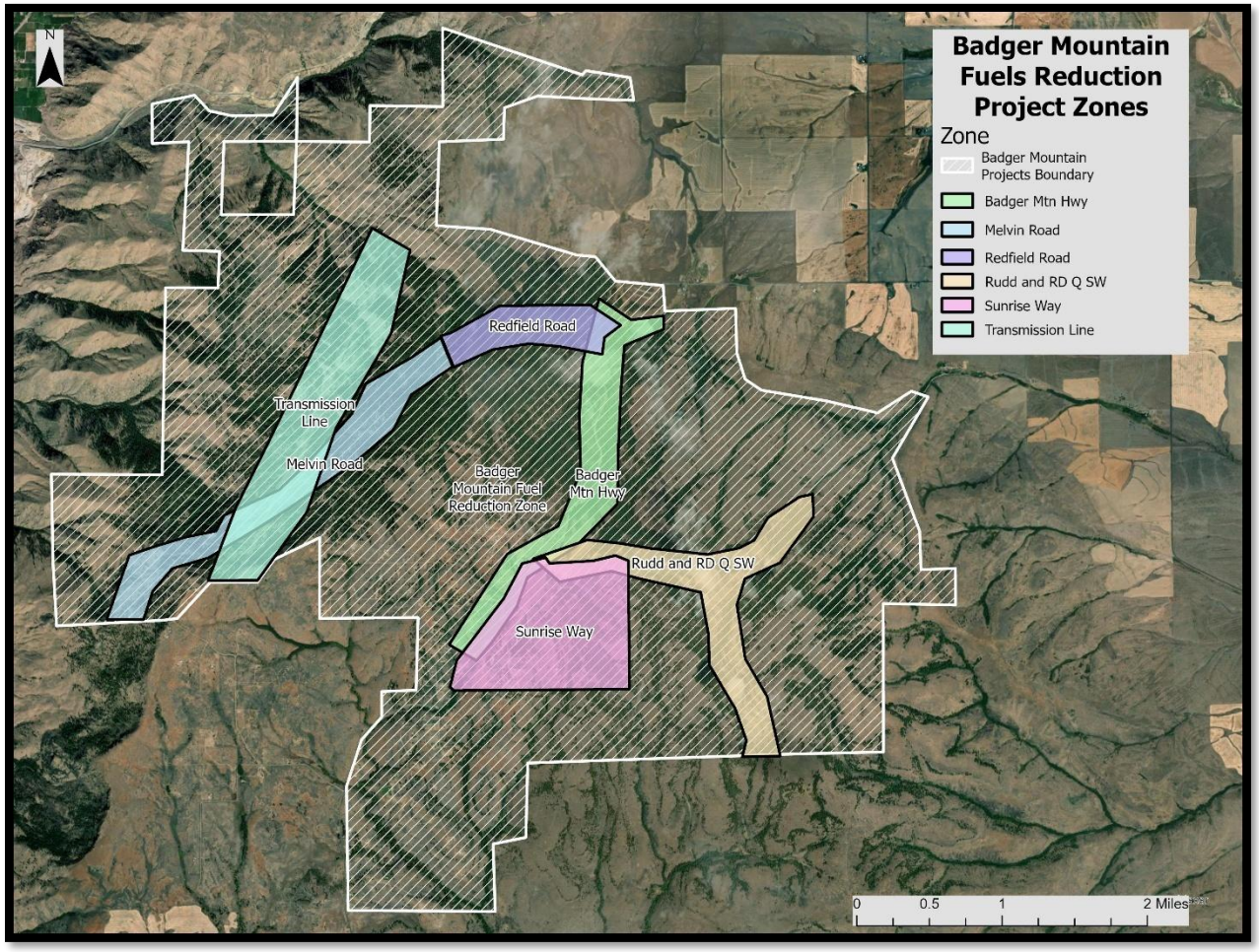
Badger Mountain, is the highest point in Douglas County, is a densely populated area situated within the Wildland-Urban Interface. The Landscape features dense forest vegetation with a scattered sagebrush, contributing to elevated wildfire risk. The area includes approximately 400 residences, a mix of vacation and permanent homes. Badger Mountain Road is the primary access route on the mountain, connecting Waterville and East Wenatchee. There are some secondary roads but they're all privately owned. Badger Mountain has a relatively high density of Douglas fir and ponderosa pine trees when compared to the entire county. There is a substantial understory consisting of sagebrush, bitterbrush, and bunchgrasses. Cheatgrass does occur in some places in the community due to the high amount of disturbance. Some locations have tree canopies so dense that there is little understory, however there is large amounts of heavy slash on the forest floor in these areas. Reducing the ladder fuels and tree densities would be one priority in this project area.

Figure 40: Image showing one of the trails on Badger Mountain

6.4.1.1 PROJECT

Education is one of the most important steps in fire mitigation of any community. Having a trained professional assess a property and provide a risk score is a critical step in evaluating the wildfire risk to a home and proper before implementing a fuels mitigation project. Community workshops are also a great way to educate the public. Organizations like the BLM, USFS, and WA DNR can teach and show why defensible space practices are important in fire mitigation. The main objective of this project is to educate the community on different defensible practices that lead to long-term benefits for fire mitigation. Around homes, Firewise USA® suggests that structures should have a non-combustible zone three to five feet from any structure and a thirty-foot perimeter of properly thinned vegetation (15 feet between crowns of trees and 2.5 times a shrubs height in-between plants). Roads require fuel reduction within a 30-foot buffer on both sides. The benefits of this are not only to be used as a fuel break but also allows access for crews to access in and control structure fires that could lead to wildfire. One way to show the public how the process works is by using a "demo" property by selecting a place that's highly visible with a variety of fuel types. This approach provides nearby residents with a clear example of how their own properties can be managed to reduce wildfire risk.

Figure 41: Badger Mountain Fuels Reduction Project Areas



6.4.2 UPPER COMMUNICATION SITE

This is the highest point in Douglas County. Badger Mountain has a relatively high density of Douglas fir and ponderosa pine trees when compared to the entire county. There is a substantial understory consisting of sagebrush, bitterbrush, and bunchgrasses. Cheatgrass does occur in some places in the community due to the high amount of disturbance. Some locations have tree canopies so dense that there is little understory, however there is large amounts of heavy slash on the forest floor in these areas. Reducing the ladder fuels and tree densities would be one priority in this project area. The Upper Badger Mountain Communication Site is located on Mule Deer Road about two tenths of a mile from Badger Mountain Road. The site is at an elevation of approximately 4,100 feet. The site occurs on the fringe of the forested area and is primarily surrounded by dense shrubs and grass.

6.4.2.1 PROJECT PRESCRIPTION

Reducing the fuels here would be the primary objective to minimize wildfire risk. A five-to-ten-acre treatment area placed strategically around the Communication Site should be sufficient. Two concentric rings within the treatment area would allow for different management severities. The first ring would extend two hundred feet out from the communication towers. This inner ring would be mowed with a brush-hog (or equivalent) annually. The outer ring would encompass the remainder of the treatment area. Shrubs in the outer ring would be thinned to a distance equal to or greater than 2.5 times the shrub height. Herbicide should be applied to shrub stumps shortly after they have been cut to reduce the amount of regrowth, thus limiting the amount of future maintenance.

6.5 REGIONAL LAND MANAGEMENT RECOMMENDATIONS

Wildfires will continue to ignite and spread, influenced by weather conditions and other factors previously discussed. However, proactive land management that reduces fuel loads, supports healthy shrubland and grassland ecosystems, and encourages both consumptive and non-consumptive use of natural resources can help ensure these landscapes remain valuable to both society and the local region. The Washington DNR, Washington Department of Fish and Wildlife Service, BLM, private forest landowners, and all agricultural landowners in the region should be encouraged to actively manage their wildland-urban interface lands in a manner consistent with reducing fuels and wildfire risks.

6.5.1 TARGETED LIVESTOCK GRAZING

Livestock grazing, particularly cattle grazing, has been a long-standing tradition in the rangelands of central Washington. Historically, ranchers were able to make agreements with state and federal land managers to expand their grazing operations on public ground for mutual benefit. In the last 30 years, this practice has been limited due to liability issues, environmental concerns, and litigation. Additionally, where federal grazing allotments are still available, the restrictions on timing are often inappropriate and/or too inflexible for the objectives of reducing fuel loads (i.e. wildfire risk), eradicating noxious and invasive species, and restoring native grass and sagebrush communities.

Most rangeland ecologists agree that in site-specific situations, livestock can be used as a tool to lower fire risk by reducing the amount, height, and distribution of fuel. Livestock can also be used to manage invasive weeds in some cases and even to improve wildlife habitat.

Targeted grazing can indeed reduce the amount, height, and distribution of fuel on a specific rangeland area, potentially decreasing the spread and size of wildfires under normal burning conditions. Targeted or “prescribed” grazing is the use of an appropriate kind of livestock at a specified time, duration, and intensity to accomplish a specific vegetation management goal.

There are many factors to consider regarding the use of livestock for reducing the amount, height, and continuity of herbaceous cover (especially cheat grass) in site-specific situations:

During the spring, cheatgrass is palatable and high in nutritional value before the seed hardens. Repeated intensive grazing (two or three times) at select locations during early growth can reduce the seed crop that year, as well as the standing biomass. In areas where desirable perennial species are also present, the intensive grazing of cheatgrass must be balanced with the growth needs of desired plants that managers and producers want to increase.

Late fall or winter grazing of cheatgrass-dominated areas, complemented with protein supplement for livestock, should also be considered. After the unpalatable seeds have all dropped, cheatgrass is a suitable source of energy, but low in protein. Strategic intensive grazing of key areas can reduce carry-over biomass that would provide fuel during the next fire season. Late fall grazing can also target any fall-germinating cheatgrass before winter dormancy, thus reducing the vigor of these plants the following spring. Fall/winter grazing when desirable perennial grasses are dormant and their seeds have already dropped, results in minimal impact to these species and therefore can be conducted with minimal adverse impact to rangeland health in many areas.

The Bureau of Land Management (BLM) in some locations has an active “green strip” program designed to reduce fire size and spread in key areas. Obviously, livestock can be used to maintain such green strips to reduce the fine fuels (grasses) and control the spread of fire.

The concept of “brown strips” refers to areas where one or more treatments (prescribed fire, mechanical thinning, herbicide, and/or grazing) are used to reduce shrub cover, releasing the native perennial grasses. These grassy areas are preferred by cattle, which can then be grazed to reduce herbaceous fuels. This method leaves “brown-strips” when the stubble dries out in mid-summer, serving as fuel breaks to control the spread of wildfire. Where appropriate, protein-supplemented cows or sheep could be used to intensively graze and create brown-strips (e.g. along fences) to reduce the spread of fires during or after years of excess fuel build-up.

Targeted grazing for the management of herbaceous fuels often requires a high level of livestock management, especially appropriate timing, as well as grazing intensity and frequency. To meet prescription specifications, operators often use herders, portable fencing, and/or dogs to ensure pastures are grazed to specification before the livestock are moved. Other expenses may include feed supplements, guardian dogs and/or night enclosures for protection from predators, water supply portability, mobile living quarters, and grazing animal transport. Targeted grazing is a business whose providers must earn a profit. Therefore, land management agencies need the option of contracting such jobs to willing producers and paying them for the ecosystem service rendered. This payment approach is already being implemented in some private and agency-managed areas to a limited extent, primarily for control of invasive perennial weeds. The use of and payment for prescription livestock grazing as a tool has substantial potential in the immediate and foreseeable future for managing vegetation in site-specific situations.

In general, and less intensively, livestock can be used strategically by controlling the timing and duration of grazing in prioritized pastures where reduction of desirable perennial grass cover is needed for fire reduction purposes. Strategic locations could be grazed annually to reduce fuel loads and continuity at specific locations. Rotation of locations across years prevents overgrazing of any one area but confers the benefits of fuel load reductions to much larger landscapes. Even moderate grazing and trampling can reduce fuels and slow fire spread.

Dormant season grazing of perennial grasses has also been reported to aid in seedling recruitment. Some seeds require scarification before they germinate. That can be accomplished by passage through the digestive tract or by hoof action on the seed. Hoof action can also press the seed into the ground and compress the soil around it, i.e. preparing a beneficial seed bed. These processes can also reasonably be expected to provide some benefit to the exotic annual grasses. These grasses, however, appear to succeed very well without that assistance. One can speculate that the perennial grasses would demonstrate a greater response to these effects and thus would gain some edge in the struggle for dominance with the exotic annuals. If those annuals were also grazed in the early spring before the perennials started or during fall germination events, or both, it is likely the annuals would have less vigor and produce less seed which would detract from their ability to out compete the perennials. While the exact details of how the perennials benefit from dormant season grazing are not fully understood, Agricultural Research Service research in Nevada has reported success in decreasing annual grass dominance.

Targeted grazing can reduce wildfire risk in specific areas. The targeted grazing strategies discussed above all require a very flexible adaptive management approach by both land management agencies and targeted grazing providers. Managers must determine objectives, then select and implement the appropriate livestock grazing prescription, monitor accomplishments, and adjust as needed.

Many residents feel that livestock grazing is a more desirable tool for managing wildland fire risk on both private and public lands because it poses less risk than prescribed burning, is less expensive than chemical applications, can be managed effectively for the long-term, and it benefits a large sector of the local economy.

7 APPENDICES

7.1 GLOSSARY

ACS	American Census Survey
BLM	Bureau of Land Management
CAP	Capacity Building
CRO	Central Regional Office
CRP	Conservation Reserve Program
CWPP	Community Wildfire Protection Plan
DNR	Department of Natural Resources
DOD	Department of Defense
DOE	Washington Department of Ecology
ED	Education
GIS	Geographic Information System
INF	Infrastructure Enhancement
MIT	Mitigation
NAAQS	National Ambient Air Quality Standards
NPS	National Park Service
OAQPS	Air Quality Protection Standards
SAF	Safety and Policy
USDA	United States Forest Service
USDI	United States Department of the Interior
WAC	Washington Administrative Code
WDOE	Washington Department of Ecology
WQS	Washington Surface Water Quality Standards
WRIA 42	Grand Coulee Watershed
WRIA 44	Moses Coulee
WRIA 50	Foster Creek
WUI	Wildland Urban Interface

7.2 FIRE PROTECTION AGENCY INFORMATION

Agency	Protection Area	Employees	Apparatus
Douglas County Fire District #1	500 Sq Miles Waterville and Surrounding Area	Volunteers	Engine 211 Rescue 211 Brush 214 Brush 217 Brush 219
Douglas County Fire District #2	100 Sq Miles East Wenatchee/Rock Island and Surrounding Area	12 Career Approximately 40 Volunteers 3 Administrative	3 Pierce Impel Pumper Pierce Velocity 7000 Aerial Freightliner M2 106 Ram 3500 Oshkosh Striker 1500 Stewart and Stevenson M1078 International 7400 Type 3 Wildland Ford F 350 Local RIV Ford F 550 Jackal Type 5 Wildland 2000 E One Cyclone Pumper
Douglas County Fire District #3	328 Sq Miles Grand Coulee/Chief Joseph Dam and Surrounding Area	Volunteer	
Douglas County Fire District #4	Orondo	Volunteer	Engine 241 Engine 241H Brush 241 Brush 2412 Rescue 241 Command 241 Command 242 Engine 242 Engine 242H Brush 242 Engine 243 Tender 243 Brush 243 Engine 244H Brush 244H
Douglas County Fire District #5	540 Sq Miles Mansfield and Surrounding Area	Volunteer	Engine 251 Engine 252 Aid 251 Aid 252 Tender 251 Tender 254 Tender 255 Rescue 251

Agency	Protection Area	Employees	Apparatus
			Brush 251 Heavy Brush 252 Brush 253 Brush 254 Brush 255 Brush 256 Heavy Brush 257 Heavy Brush 258 Brush 259 Command 25
Douglas County Fire District #8	200 Sq Miles Moses/Grand Coulee and Surrounding Area	Volunteers and Local Community Members	Fire Trucks Farm Equipment
Douglas County Fire District #15	230 Sq Miles Brewster and Surrounding Area	Fire Chief 60 Volunteers 4-EMT1s EMS Supervisor	Ambulance

7.3 SUMMARY OF SURVEY RESULTS

Overall, 51 people responded to the survey. In addition to the survey questions shared on subsequent pages, responders were asked if they had any additional comments. Below is a summary of those 16 responses:

1. *I worry about fire and not being in a fire district. Please help us get into a fire district.*
2. *We have been in touch with Kurt Blanchard and Hillary Heard and other agencies expressing our concerns. To be pro-active, we have removed 841 feet of junipers along the canyon and several landscaping trees.*
3. *Emergency alerts are often garbled on the radio, the tests are always clear but when there is an emergency it is difficult to understand*
4. *Thank you for updating this plan!*
5. *WA Dept Fish & Game has decreed that a part time stream behind our house as a "salmon stream", where the only way for salmon eggs to arrive is on tumbleweeds. Sand Canyon is filled with invasive tree/brush species, that have filled the bottom of the canyon with 6-18" of dry burnable debris. It is impossible to travel in the canyon and step on "mineral soil". Even though half of my land is unusable, I am taxed on all of it. Getting the bureaucratic department to review or adjust it's "finding" is as impossible for a citizen to appeal as if I lived in North Korea. I'm awaiting a 14 year old sto set the Canyon on fire and endanger the couple hundred neighboring houses. State Government at it's worst.*
6. *What is the game department doing to control their fuel loads on their land? Or- is there any programs that incentivize private landlords to control their fuel loads? IE - CRP, un-used grazing land, etc*
7. *rimrock meadows needs to be part of a fire district!*
8. *Some sections of this survey only opened as half the page so I didn't answer the questions. Our greatest concern is that homeowners don't understand that some of their landscaping is highly flammable and that the wild areas in East Wenatchee that have sage, bitter brush, rabbit bush are highly flammable and that if a fire broke out in the wild vegetation everyone around would turn on their irrigation system and nobody would have water pressure in their hoses. Too much ignorance. Our neighbors don't seem to care or know that they should. Some education in the news letter would be great.*
9. *We do not live in a fire district and feel very vulnerable if there weren't be a fire. Please help us get a fire district!*
10. *The fire station should be better located near population, not at the furthest end of the district. A year around water tank for fire suppression should be studied.*
11. *Rimrock Meadows should be in a fire district!*
12. *seems as though there were less fires when contract loggers and logging companies worked in this area*
13. *My wife & I have lived in our home for 7 years and don't leave home very often. There is a fire hydrant in our front yard and we have never seen anyone come by to test/inspect the hydrant. This concerns me because I think there should be regular periodic inspections to these valuable tools to fire mitigation.*
14. *We look forward to DC receiving their grant to help clean up Sand Canyon*
15. *The population centers of this country (East Wenatchee, Rock Island) can be sources of ignition as house fires can spread to the nearby brush. They are also concentrated pockets of people who could be stuck in traffic or panicking in the event of a larger fire that necessitates evacuation. In my opinion, integrating the CWPP with existing urban/county planning in these areas would make a more actionable CWPP. There are already many fantastic partnerships, mutual aid agreements, and memorandums of understanding between Wenatchee Valley Fire and other entities, and I think the CWPP core group would do well to arrange meetings with local fire departments to truly gain an understanding of resources & needs.*
16. *Douglas County is not following the adopted WUI code for development. Property is being divided and developed and homes built contrary to the state GMA.*

DOUGLAS COUNTY COMMUNITY WILDFIRE PROTECTION PLAN SURVEY

51 responses

Publish analytics

Location: Where do you live in Douglas County?

50 responses

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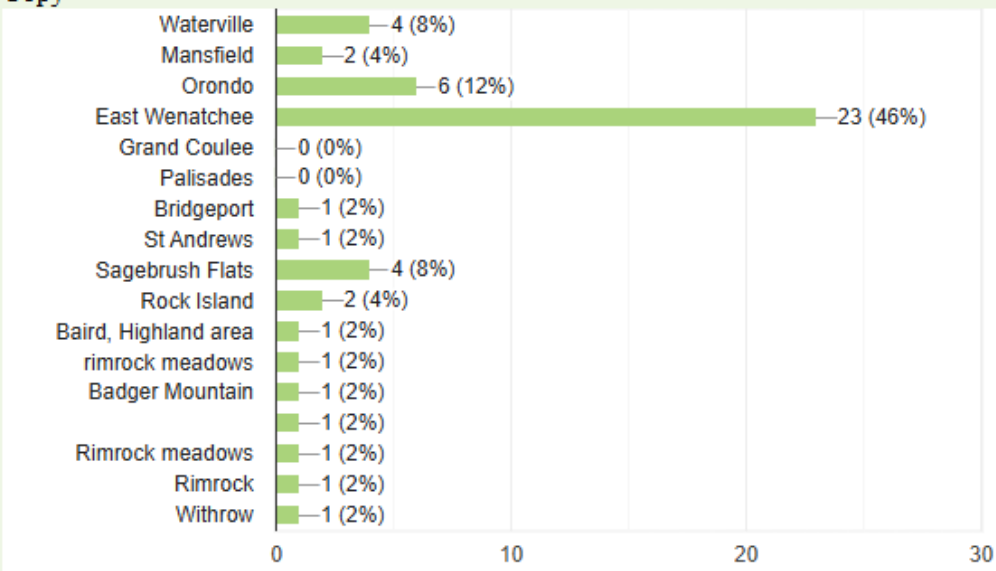

How would you describe your home/business? Check all that apply

50 responses

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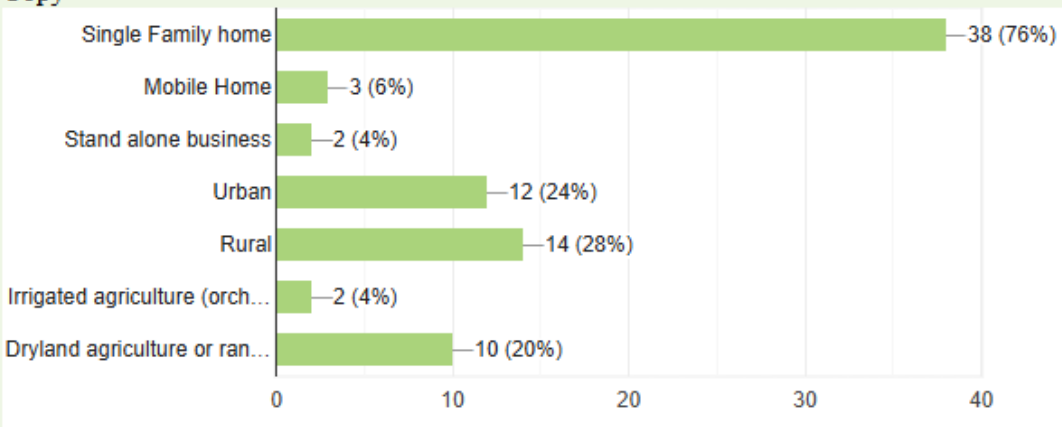

How would you describe your home/business? Check all that apply
50 responses

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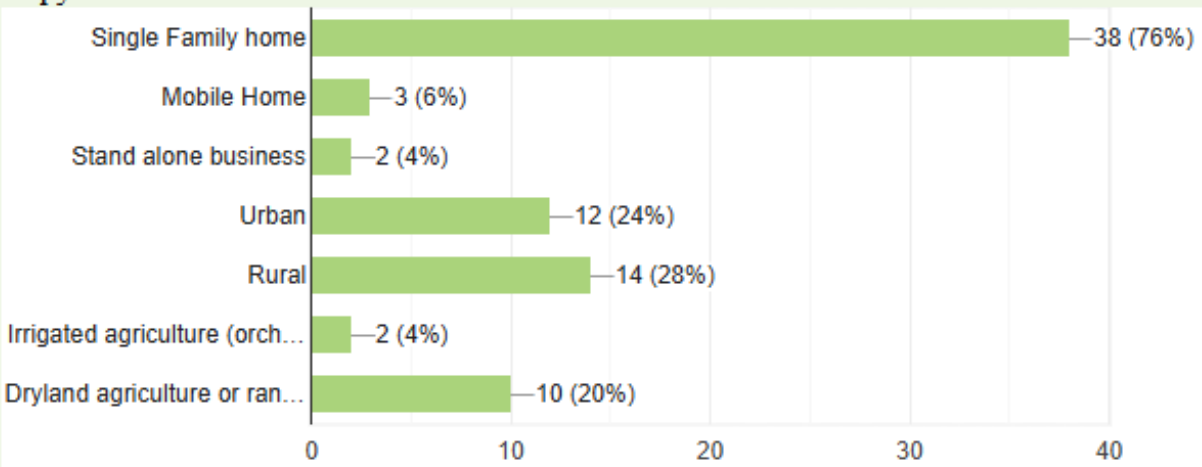

How long have you lived/owned property in Douglas County?
50 responses

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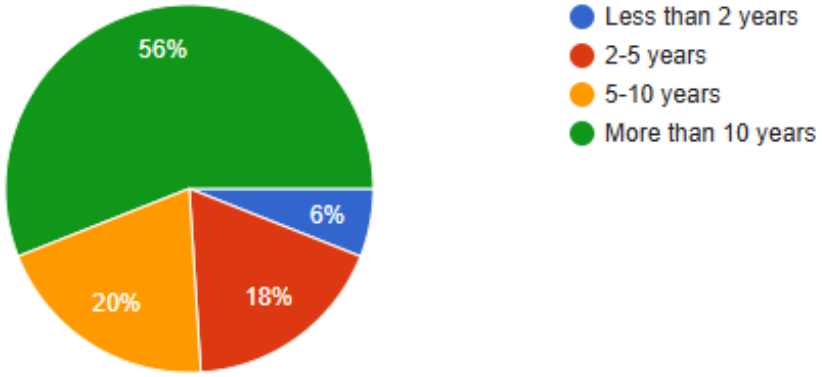

What do you think are the main fire hazards or risk factors near you? Check all that apply.
48 responses

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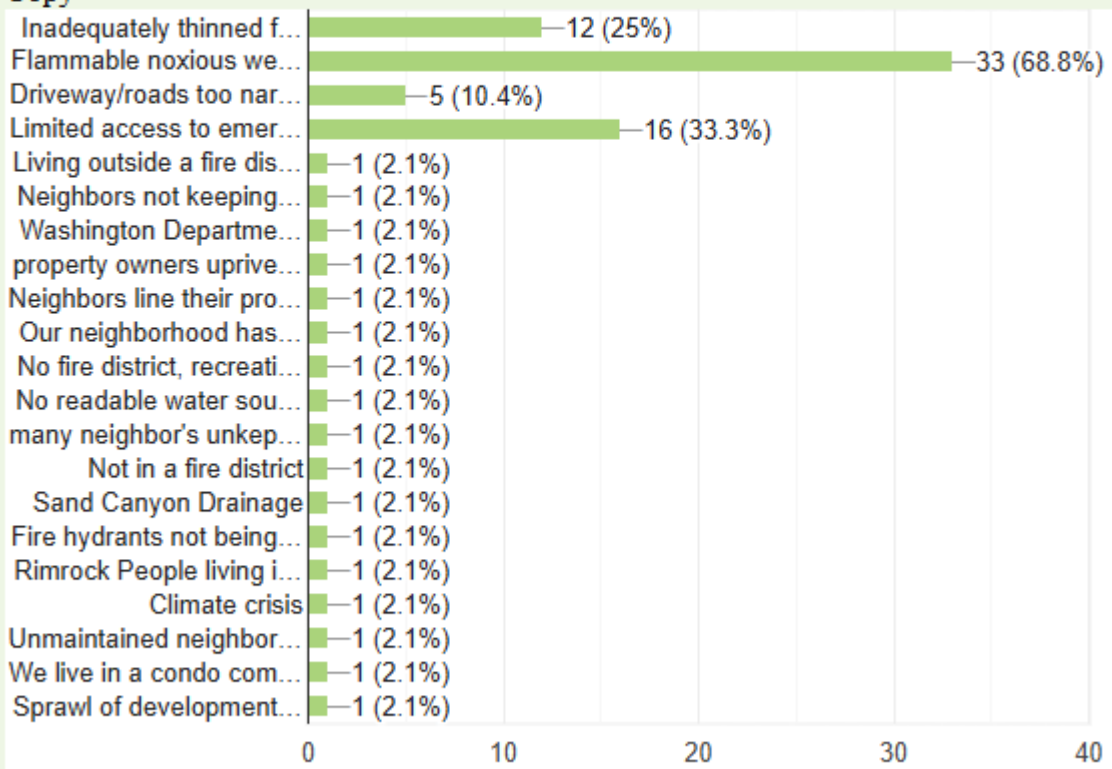

How concerned are you about the following issues if a wildfire were to occur in your community? Please check one box for each category

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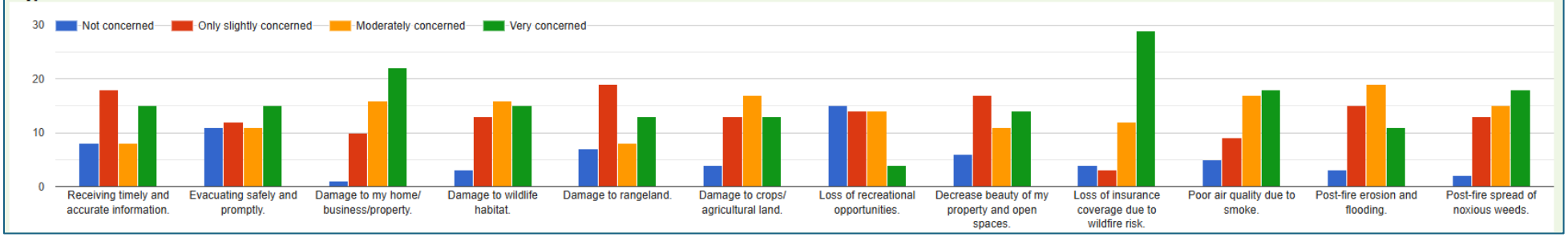

What issues do your fire district or first responders who respond to incidents in your community face? Check all that apply
44 responses

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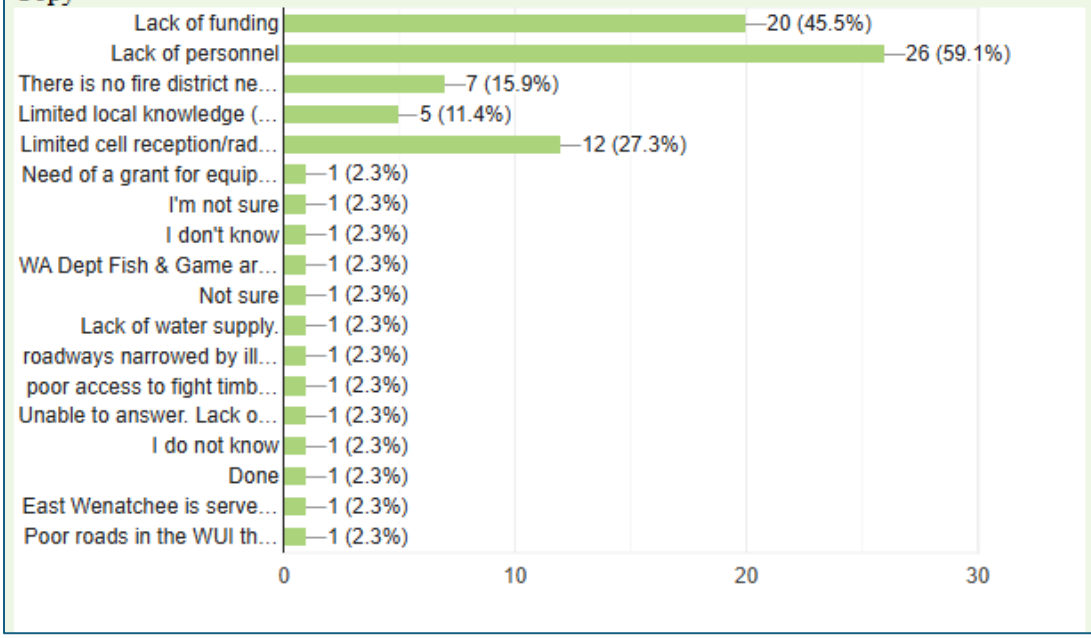

If you had to evacuate your home/business, which of the following would you be MOST concerned about?
46 responses

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