UMATILLA COUNTY OREGON

COMMUNITY WILDFIRE PROTECTION PLAN

2025

PREPARED FOR: UMATILLA COUNTY DEPARTMENT OF EMERGENCY MANAGEMENT

EMERGENCY MANAGEMENT UMATILLA COUNTY

NORTHWEST MANAGEMENT, INC

PREPARED BY: NORTHWEST MANAGEMENT INC.

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FOREWORD

The process of updating the 2005 Umatilla County Blue Mountains and Foothills Community Wildfire Protection Plan (CWPP) began in December 2023 with planning team interaction beginning in early 2024. Umatilla County Emergency Management led the effort with the goal of helping the community clarify and refine its priorities for the protection of life, property, and critical infrastructure in the wildland–urban interface (WUI) on both public and private land. The collaborative planning process guides community members, agency officials, and leaders 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. The CWPP planning team 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 which provides an educational opportunity through interaction of local wildfire specialists and an interested public.

The idea for community-based wildfire planning and prioritization is neither novel nor new. However, the incentive for communities to engage in comprehensive forest planning and prioritization was given new and unprecedented impetus with the enactment of the Healthy Forests Restoration Act (HFRA) in 2003. This landmark legislation includes the first meaningful statutory incentives for the US Forest Service (USFS) and the Bureau of Land Management (BLM) to consider the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects. For a community to take full advantage of this new opportunity, it must first prepare a CWPP.

RESOLUTION OF ADOPTION

RECEIVED
AUG 13 2025
UMATILLA COUNTY RECORDS

THE BOARD OF COMMISSIONERS OF UMATILLA COUNTY

STATE OF OREGON

In the Matter of Adoption of Umatilla County Wildfire Protection Plan - Eastern Portion	))))	Order No. BCC2025-035

WHEREAS a wildfire protection plan is part of emergency planning for a community to promote wildfire awareness, for fire prevention through identification and reduction of hazardous fuels, and for cooperative emergency fire response;

WHEREAS on June 16, 2005, Umatilla County endorsed the Umatilla County Community Wildfire Protection Plan as a planning tool to provide a framework for wildfire suppression and protection services to assess risk and hazards and identify strategies for reducing those risks;

WHEREAS Grant funding was awarded to Umatilla County by the State of Oregon Fire Marshal to update the 2005 Community Wildfire Protection Plan (CWPP) for the eastern portion of Umatilla County, with a contract with Northwest Management Inc. to act as consultant and update the plan; The CWPP for the western portion of the county will be updated at a different time, separate from this effort;

WHEREAS the process of updating the 2005 Umatilla County Blue Mountains and Foothills Community Wildfire Protection Plan (CWPP) began in December 2023 with planning team interaction beginning in early 2024. Umatilla County Emergency Management led the effort with the goal of helping the community clarify and refine its priorities for the protection of life, property, and critical infrastructure in the wildland-urban interface (WUI) on both public and private land;

WHEREAS the development of the updated plan has been drafted by Northwest Management Inc., with input from Umatilla County staff, public agencies and community members, to reduce the wildfire risk within the eastern part of Umatilla County;

WHEREAS the community wildfire protection plans for the county are part of the Multi-Jurisdiction Natural Hazards Mitigation Plan adopted by the Board of Commissioners on June 21, 2021.

NOW THEREFORE, IT IS ORDERED THAT:

1. The Board of Commissioners adopts the Community Wildfire Protection Plan [Eastern Portion], a copy of which is attached to this order and incorporated by this reference, as an official plan for Umatilla County.

2. The Community Wildfire Protection Plan is made part of the Umatilla County Natural Hazards Mitigation Plan via its Appendix I.

DATED this 13th day of August, 2025.

UMATILLA COUNTY BOARD OF COMMISSIONERS

Celinda A. Timmons, Chair

Daniel N. Dorran, Commissioner

John M. Shafer, Commissioner

ATTEST:
OFFICE OF COUNTY RECORDS

Records Officer

SIGNATURES OF APPROVAL

Adoption by the Umatilla County Commissioners

Celinda A. Timmons — 8.13.25

Celinda A. Timmons
Umatilla County Commissioner
Date

Daniel N. Dorran
Umatilla County Commissioner
8.13.2025
Date

John M. Shafer
Umatilla County Commissioner
8-13-25
Date

BOARD OF COMMISSIONERS UMATILLA COUNTY STATE OF OREGON

Approval by the Oregon Department of Forestry

Justin Lauer — 07-16-2025

Justin Lauer
District Forester, Oregon Department of Forestry
Date

TABLE OF CONTENTS

1 INTRODUCTION

Wildland fire is an inherent characteristic of the Oregon landscape. With over 41 million acres of land that are available to burn, Oregon has a history of extensive wildfire activity. As intensity and severity have increased alongside public interest in rural lifestyles, wildfires have become an even greater threat to communities in recent decades. Communities at the highest risk for wildfire are typically located within the east-central portion of the state where land is used for agriculture or is enrolled in programs such as the Conservation Reserve Program (CRP) and Conservation Reserve Enhancement Program (CREP). Under certain conditions, these lands become highly susceptible to wildfire and present high levels of risk to nearby communities.

More recently, wildfires in the western United States, including those in Oregon, have refocused the attention of the public on the potential for losses of life, property, and natural and cultural resources. The 2023 Oregon Senate Bill 80 (which refined and built upon the 2021 Senate Bill 762) has set new standards for Wildfire Hazard Mitigation in the Wildland Urban Interface (WUI). More specifically, the bill establishes building codes for new homes within certain, state-defined wildfire risk zones. This requires the "hardening" of homes/structures with fire resistant materials for both new construction and improvements to existing structures. Additionally, communities in proximity to dense wildland fuels have been designated as high-risk zones for wildfire.

Costs related to wildfire damage and suppression can be extraordinarily high. As of December 2024, the Governor of Oregon signed Senate Bill 5801 which allocated $218 million to help pay for wildfires that occurred that year. Of that funding, $191.5 million went to the Oregon Department of Forestry and $26.6 million went to the Oregon State Fire Marshall. The impacts of wildfire on people, property, and the environment can be reduced through mitigation planning efforts that coordinate the actions of local, state, and federal agencies, the private sector, community organizations, and individual property owners. Coordinated planning efforts can be used to increase community preparedness, identify and address wildfire hazard areas, and reduce wildfire risk through the implementation of mitigation projects. The coordination of planning partners and identification of wildfire mitigation projects is achieved through the development of a Community Wildfire Protection Plan (CWPP).

UMATILLA COUNTY CWPP UPDATE

Grant funding was awarded to Umatilla County by the State of Oregon Fire Marshal to update the 2005 Community Wildfire Protection Plan (CWPP) for the eastern portion of Umatilla County. To more accurately describe the portion of the county covered by this plan, the eastern Umatilla County CWPP project area will be referred to as the "Blue Mountain and

Foothills Project Area." This name or the abbreviated name (BMF Project Area) are used throughout this document.

This document only covers the BMF Project area (eastern Umatilla County). The CWPP for the western portion of the county will be updated at a different time, separate from this effort.

The Federal Emergency Management Agency (FEMA) has requirements under Title 44 CFR Part 201 of the Disaster Mitigation Act of 2000. This legislation specifies criteria for state and local hazard mitigation planning which require local and tribal governments applying for Pre-Disaster Mitigation (PDM) funds to have an approved local mitigation plan. These may include countywide or multi-jurisdictional plans if all jurisdictions adopt the plan. Activities eligible for funding include management costs, information dissemination, planning, technical assistance, and mitigation projects.

The Umatilla County Natural Hazard Mitigation Plan was updated in 2021 with funding through FEMA's Mitigation Grant Program and included the County's 12 incorporated cities and four districts to ensure eligibility for federal disaster related funding. The Umatilla Department of Emergency Management and County Planning Director led this collaborative planning effort.

2 THE PLANNING PROCESS

In the State of Oregon, CWPPs must satisfy certain criteria before they can be approved. All CWPPs must align with the Historical Forest Restoration Act (HFRA), which outlines four required elements. These elements include:

- Fostering collaboration among stakeholders at various levels.
- Prioritizing areas for hazardous fuel treatments and making recommendations for protecting "at-risk" communities.
- Suggesting strategies to reduce structural ignitability for homeowners.
- Reaching a consensus on the final plan.

These four primary elements were the responsibility of a planning team that consisted of various representatives and stakeholders from different agencies and entities at the federal, state, and local level. All interested parties and individuals were encouraged to participate in the planning process. Individuals who were invited to participate in the planning process are listed Table 1.

Table 1) Participants in the 2025 update of the Community Wildfire Protection Plan for the BMF Project Area of Umatilla County, OR.

Name	Organization and Job Title
Sage DeLong	Umatilla County Emergency Management
Simone Cordery-Cotter	Oregon State Fire Marshal's Office
Justin Lauer	Oregon Department of Forestry
Lindsay Olivera	Oregon Department of Forestry
William Crippen	Oregon Department of Forestry
James Hall	Confederated Tribes of the Umatilla Indian Reservation
Austin Lattin	United States Forest Service
Al Crouch	Bureau of Land Management
Scott Goff	Umatilla County Fire District #1
Anthony Pierotti	Pendleton Fire and Ambulance
Valorie Tomren	Pendleton Fire and Ambulance
Dave Baty	East Umatilla Fire & Rescue
Joseph Sciarrino	United States Forest Service
Tommy Mentzer	United States Forest Service
Kevin Bomberger	United States Forest Service
Lani Richard	Oregon Department of Transportation
Jeffery Casey	Bureau of Indian Affairs
Douglas Cates	United States Forest Service
Brian Hemphill	Pilot Rock Fire
Hans Rudolf	Oregon Department of Forestry
Amber Leahy	Pacific Power

Horace Ward	Pacific Power
Steve Harvey	Umatilla County GIS
McKenzie Bowey	Umatilla County GIS
Rosemary Mitchell	Umatilla County GIS
Tom Fellows	Umatilla County Public Works
Bob Fossek	Confederated Tribes of the Umatilla Indian Reservation
Kevin Knutz	Umatilla Electric Cooperative

3 UMATILLA COUNTY PROFILE

3.1 HISTORY

Umatilla County was established in 1862 as a direct result of the regional gold rushes. This gold rush led to the establishment of the riverport of Umatilla City, which attracted stock raisers to the area's lush grasslands. In 1868, Pendleton was chosen as the county seat, replacing Marshall Station and Umatilla City. Although Lewis and Clark's expedition and pioneers along the Oregon Trail traversed the region, it wasn't until the arrival of the railroad in 1881 and the development of dryland wheat farming that marked the County's significant growth. The first census in 1870 recorded a population of 2,916 residents. Over time, the population expanded primarily towards the north and east.

3.2 ENVIRONMENT

Umatilla County spans an area of 3,231 square miles, with elevation ranges from 296 feet at its western edge to over 5,800 feet in the Blue Mountains along its eastern boundary. The county is bordered by the Columbia River and Walla Walla County, Washington, to the north, Morrow County to the west, Grant County to the south, and Union and Wallowa Counties to the east. The Umatilla River originates in the Blue Mountains and flows westward across the Columbia Plateau for approximately 100 miles, emptying into the Columbia River at the town of Umatilla.

The region's continental climate is characterized by a winter precipitation pattern, with varying levels of precipitation throughout the county. While areas along the Columbia River receive around 8-10 inches of precipitation annually, the higher elevations of the Blue Mountains receive up to 60 inches. The Umatilla River typically reaches its peak flows in the spring due to snowmelt in the higher elevations, before gradually decreasing throughout the summer and reaching its lowest levels in August or September.

3.3 WEATHER EMERGENCIES

According to the Umatilla County Multi-Jurisdictional Natural Hazards Mitigation Plan, adopted in May 2021, floods pose the greatest threat to the county, followed by air quality, severe summer storms, severe winter storms, and wildfire.[1] A severe winter storm dumped heavy snow and freezing rain on the county in February 2019, causing power outages and road closures. In January 2020, a powerful windstorm brought strong gusts and large hail to

[1] Umatilla County Multi-Jurisdictional Natural Hazards Mitigation Plan: https://www.co.umatilla.or.us/fileadmin/user_upload/Planning/Umatilla_County_MJNHMP_FINAL_8-24-21Reduced.pdf

the area, damaging structures, and downing trees. In addition, the county was impacted by severe heatwaves in the summer of 2018, which posed a risk to public health and the agricultural industry.

Wildfires also pose a significant threat to the county. With approximately 12% of Umatilla County consisting of forestland used by the timber industry, small woodland owners, and the public for recreation activities, the risk of fires is ever-present. Fuel loading across forestlands is a concern for several reasons. The forestry sector has experienced a significant decline in recent years due to reduced harvests on national forest lands. Furthermore, damage from insect activity, disease, and severe weather events, such as the wind and ice storms described above, also contribute to the growing fuel loads on forestlands. Additionally, around 10-15% of the county's cropland has been retired from crop production and enrolled in the Conservation Reserve Program, with many acres seeded to grass, shrubs, and trees. This has created a heightened risk of fires spreading from large areas of rangeland and dry agriculture to areas with higher fuel loading, that include forestlands and even residential areas.

3.4 Demographics

There are 12 incorporated communities within Umatilla County. These communities are home to approximately two-thirds of the county's population. Of the 12 incorporated communities within the county, there are five whose boundaries overlap with the BMF Project Area. Weston and Ukiah are located entirely within the planning area while Pilot Rock, Pendleton, and Milton-Freewater are only partially within the planning area. These five communities will be the subject of the analysis in this document.

According to the 2022 American Community Survey, the total population of the communities within the BMF Project Area was 26,161 people (Table 2).

Table 2) Populations of incorporated cities within the BMF Project Area of Umatilla County, OR.

Incorporated Communities	Population Size
Milton-Freewater	7,137
Pendleton	17,005
Pilot Rock	1,271
Ukiah	265
Weston	483
Total	26,161

The population of Umatilla County is diverse, with 76% identifying as White, 28% as Hispanic or Latino, 23% as other races, 3.2% as Native American, and 0.8% as African American

(Values are reported by the U.S. Census Bureau; those who responded could identify as more than one race).

Most residents in the county live in single-family homes. As of 2022, the median home value in Umatilla County was $246,509, which is below the national median of $293,458. Approximately 66.5% of county residents are homeowners, while 33.5% rent their homes.

The Confederated Tribes of the Umatilla Indian Reservation (CTUIR) currently has 3,100 enrolled members, a significant decline from an estimated population of 8,000 prior to European contact. The Umatilla Indian Reservation is home to approximately 1,500 American Indians and 1,500 non-Indians. The Reservation spans 173,000 acres, most of which are located within Umatilla County. Of the total acreage, approximately 52% is owned by Native Americans, while 48% is owned by non-Indians. About 51% of the Native American population resides on the Reservation.

3.5 Incorporated Communities

Weston

Weston, Oregon, situated east of Athena and south of Milton-Freewater, was incorporated in 1878. As the second oldest city in Umatilla County, Weston was home to one of the state's first teacher training schools, established in 1893. The city is also renowned for being among the first to produce peas and for the development of the Weston Farmers Co-op canopy, which later became the Lamb-Weston processing plant. According to the 2020 U.S. Census, Weston had a population of 706 residents and 307 housing units.

Ukiah

Ukiah, Oregon, is situated at the crossroads of routes 395 and 244, along Camas Creek to the west of the Blue Mountains, near the Umatilla National Forest. The town's name was given by E.B. Gambee, who relocated from Ukiah, California, to Oregon in 1881. Established in 1890 and incorporated in 1972, Ukiah had a population of 159 residents and 106 housing units, according to the 2020 U.S. Census.

Pilot Rock

Pilot Rock, named after the distinctive rock formation at the base of the Blue Mountains, was established in the 1860s as a stagecoach stop along the Oregon Trail. The growth of agriculture, timber, and railroads contributed to its incorporation in 1901. The community is home to both a high school and an elementary school. According to the 2020 U.S. Census, Pilot Rock had a population of 1,328 residents and 620 housing units.

Pendleton

Deemed the county seat and incorporated in October of 1880, Pendleton is well known for its rodeos, wool materials, and correctional facilities. Part of the area is owned by the Confederated Tribes of the Umatilla Indian Reservation who have established the Wildhorse Resort & Casino along with the Tamástslikt Cultural Institute for education and interpretation of their cultures. Off the reservation There are three different schools, three airport facilities, a correctional institution, a hospital, and the Pilot Rock Fire District office. According to the 2020 U.S. Census, Pendleton had a population of 17,107 residents and a total of 6,938 housing units. The Umatilla Sheriff's Department is also located in Pendleton.

Milton-Freewater

Milton-Freewater is located at the base of the Blue Mountains, just seven miles from the Oregon-Washington state line. In 1951, an agreement was made to merge the areas, resulting in the hyphenated name Milton-Freewater. Positioned in the northeastern part of the county along SR 11, the city is home to four schools and the Milton-Freewater Police Department. According to the 2020 U.S. Census, Milton-Freewater had a population of 7,151 residents and 2,724 housing units.

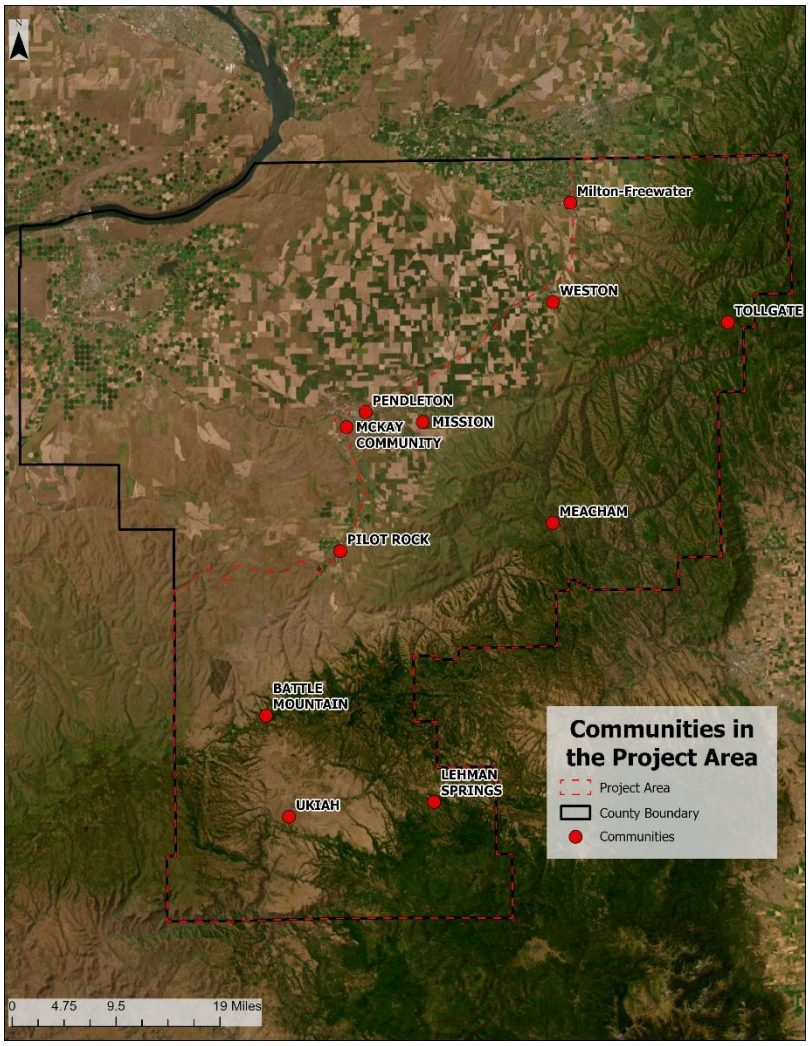


Figure 1: Blue Mountain and Foothills Project Area and Communities

3.6 UNINCORPORATED COMMUNITIES

There are five unincorporated communities within the eastern CWPP planning area. These locations are significant to wildfire planning as some are home to county residents and others host numerous visitors throughout the year for outdoor recreation:

- **Battle Mountain:** Situated west of Albee along US 395, Battle Mountain is known for its scenic viewpoints and Battle Mountain State Park. This area is a popular destination for outdoor recreation.
- **Lehman Hot Springs:** Located east of Ukiah on SR 244, the Lehman Hot Springs area has campgrounds and road systems that pass through the Blue Mountains. It is primarily known for having the area's largest network of natural hot springs.
- **Tollgate:** located along SR 204, Tollgate is known for its outdoor recreational opportunities, including winter sports, camping, and visits to nearby hot springs.

- **Mission:** Situated just east of Pendleton off Interstate 84, Mission is within the boundaries of the Umatilla Indian Reservation. It is home to the Tamástslikt Cultural Institute, Nixya'awii Community School, a Bureau of Indian Affairs office, and the headquarters of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR). The Umatilla National Forest Supervisor's Office is also located in this area. According to the U.S. Census, Mission has a population of 960 residents and 278 households.
- **McKay:** Located just off US 395, McKay features a reservoir and a national wildlife refuge, offering various recreational opportunities.
- **Meacham:** Southeast of Pendleton along I-84 and active rail, this community provides some basic services and the area has seen much growth in recent years.

3.7 Economy

Water has played a crucial role in Umatilla County's economic development, driving diversification and growth across various sectors, including agriculture, forestry, tourism, manufacturing, recreation, aggregate production, and power generation. According to the 2022 American Community Survey, 74% of residents aged 16-64 were employed, with 26% not working. Most residents are employed in the private sector, followed by manufacturing, trade, transportation and utilities, local government, education and health services. Food manufacturing is a significant contributor to employment opportunities.

Umatilla County is a prominent agricultural hub, ranking third in the state in 2022 for the sale of agricultural commodities. The sector is divided into two segments: production (growing) and processing. Wheat is the leading commodity, followed by legumes (beans and peas) and cattle. Hay and vegetables are also important commodities, with vineyards, canola, potatoes, and other alternative crops emerging as new growth areas.

The county has two primary irrigated regions: the western area near Hermiston, known for its watermelons, potatoes, and vegetables; and the northern region near Milton-Freewater, home to fruit orchards. The central part of the county is primarily dedicated to dryland farming, with wheat as the main crop, and other grains, canola, and peas as secondary crops. Limited timber harvesting still occurs in the southern and eastern areas. Livestock, mainly cattle and some sheep, are found throughout the county.

Tourist activities in the area are becoming increasingly important to the local economy. The Blue Mountains provide many opportunities for outdoor recreation. Regional tourism events such as the annual Pendleton Round-Up rodeo bring in thousands of visitors from outside the county.

CTUIR is the largest employer in the county with 1,600 government and Tribal enterprise employees[2]. Wildhorse Casino & Resort, with its hotel, RV Park, and golf course, is considered a destination attraction for many people. Tamastslikt Cultural Institute, opened in July 1998, is considered its centerpiece attraction.

3.8 Land Use and Ownership

Umatilla County covers roughly 3,231 square miles, or about 2.05 million acres. The Umatilla County CWPP for the Blue Mountain and Foothills Project Area focuses primarily on the southern and eastern areas of the county, which include the Blue Mountains and Foothills.

Overall, most land within the county (68%) is privately owned. Second to private ownership is the USFS (18%) which holds and manages 375,669 acres of forestland within the county. Table 3 provides a summary of the percentage of total acres by ownership type and Figure 2 depicts the distribution of ownership across Umatilla County.

Table 3) Summary of land ownership in Umatilla County, OR.

Landowner	Percent
Private	68%
Forest Service	18%
Tribal	8%
US Fish and Wildlife Service	1%
Military	1%
Other Federal	1%
State lands	1%
City/County/Other	1%
Bureau of Land Management	<1%
Total	**100%**

[2] Confederated Tribes of the Umatilla Indian Reservation Coordinated Human Services Public Transportation Plan: https://ctuir.org/media/soshe5z0/21-002-ctuir-coordinated-human-services-public-transporation-plan-exhibit-1.pdf

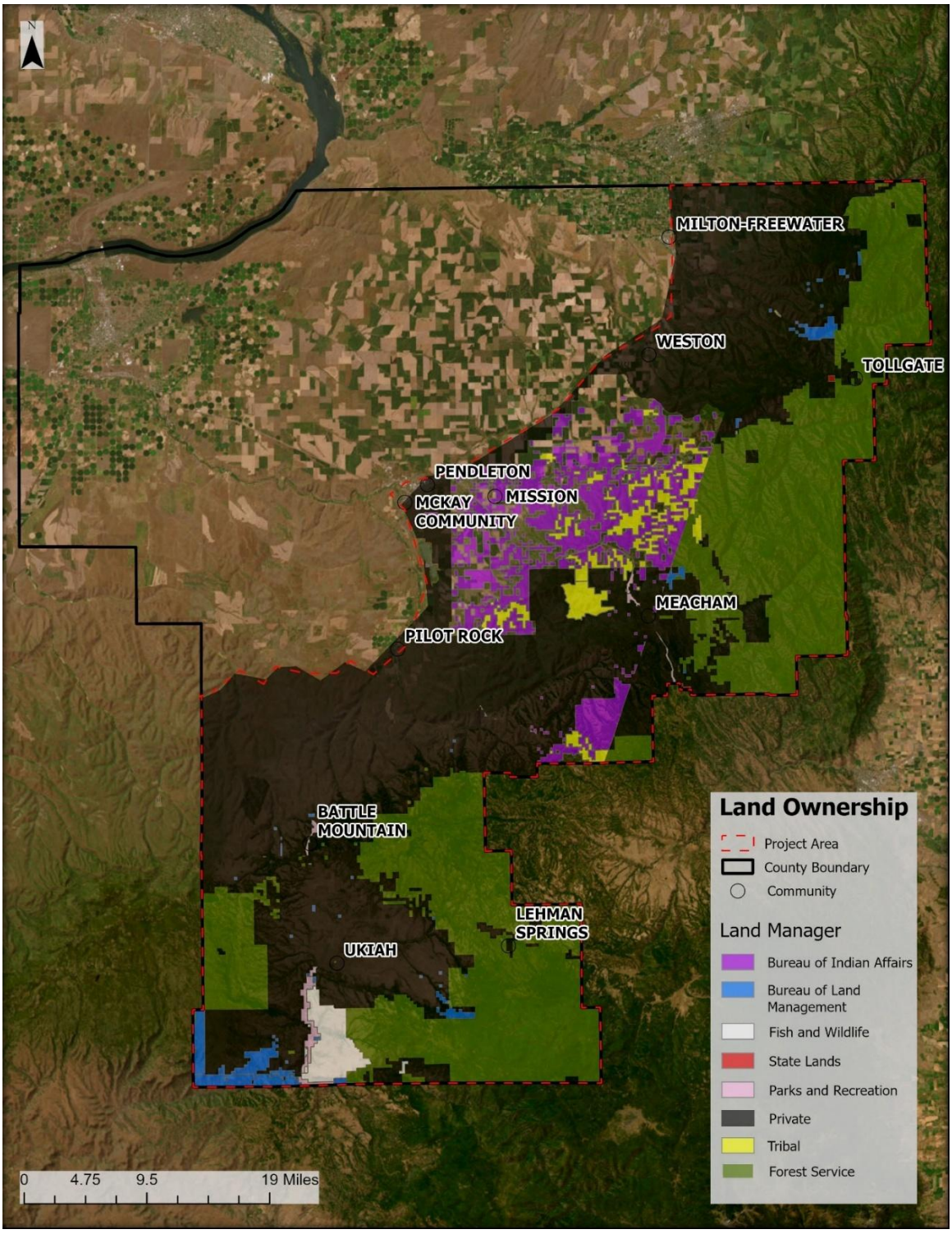


Figure 2) Land ownership in the BMF Project Area of Umatilla County, OR.

3.9 TRANSPORTATION

Located in northeastern Oregon, Umatilla County serves as a critical transportation hub, connecting the region to the broader Northwest through a comprehensive network of highways, railways, and waterways. The county is bisected by Interstate 84, which stretches from west to east over the Blue Mountains. U.S. Highway 395 runs north-south through Grant County, while State Route 11 serves as a major thoroughfare from Pendleton to Milton-Freewater, Oregon, and into Washington State. Beyond the road system, the county boasts significant water transportation infrastructure along the Columbia River, including the Port of Umatilla. Additionally, the Union Pacific Railroad traverses the length of the county, facilitating east-west commerce. Major highways within the county are depicted in Figure 3.

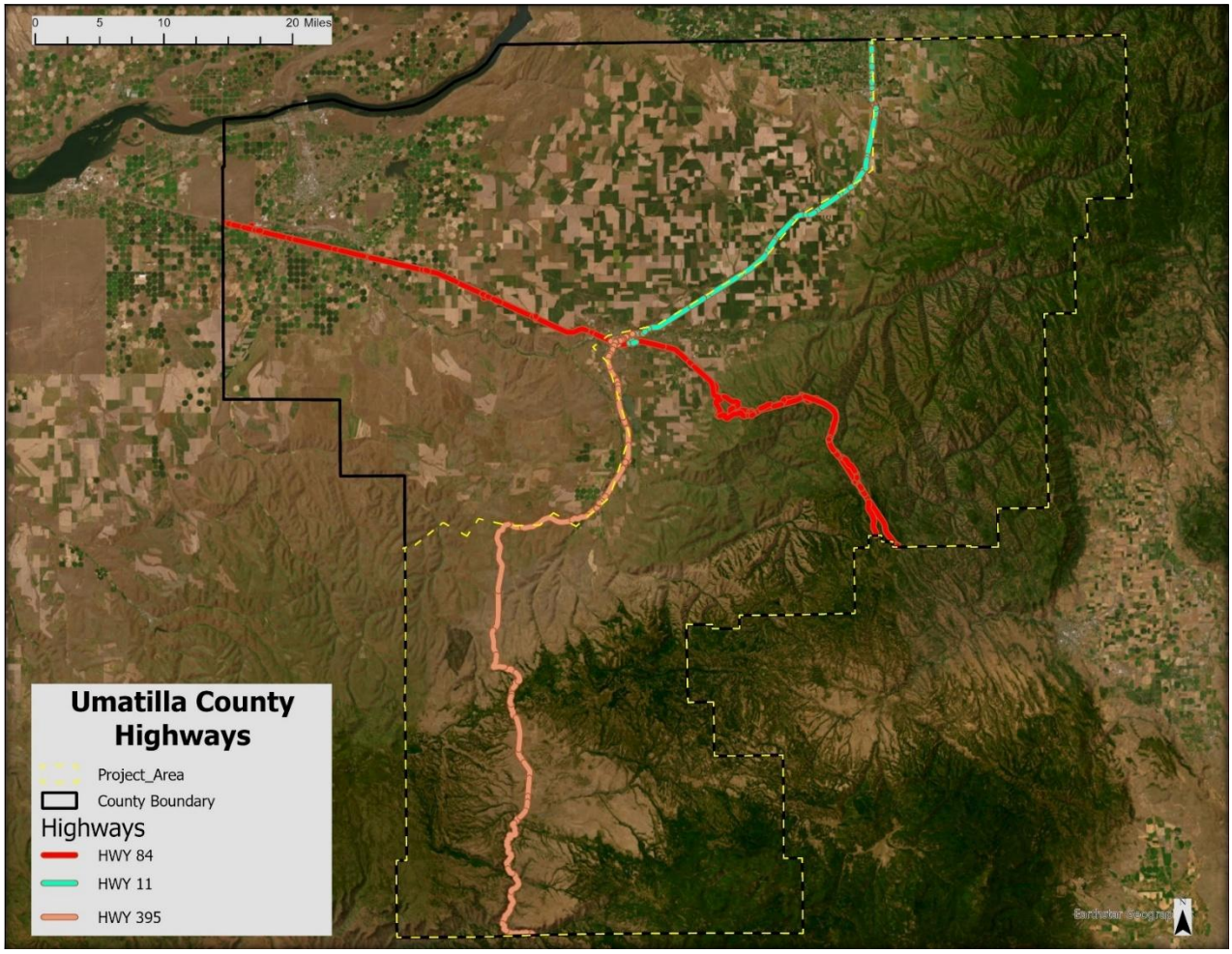


Figure 3) Major highways in Umatilla County, OR.

4 WILDLAND FIRE HAZARD PROFILE

This section provides an overview of wildland fire activity in Umatilla County. This includes a review of the fire environment (weather, topography, and fuels), a historical perspective of wildfire activity, and an analysis of changes in the distribution and composition of fuels as predicted by various models. When considered together, these variables help to explain modern wildfire risk, hazards, and trends observed in Umatilla County.

4.1 WILDLAND FIRE CHARACTERISTICS

In general, wildland fire behavior describes how fire reacts to available fuels, local topography, and current weather conditions. The relationships between these three components are dynamic; changing one condition can exacerbate the effects that the other conditions have on fire behavior. As such, fire behavior is often modeled as a triangle with fuels, topography, and weather serving as the three sides (Figure 4, right triangle). Understanding the relationships between the fire behavior components has important implications for not only managing an active wildfire but also mitigating wildfire risk. Since fuel is the only component that can be managed directly, management decisions regarding fuel types and fuel loading across the landscape need to be made based on characteristics that are inherent of the region, primarily climate and topography. Strategic fuel breaks, conservation and restoration of native species, and prescribed burns are examples of management activities that can reduce wildfire risk and simplify the process of assessing potential wildfire behavior.

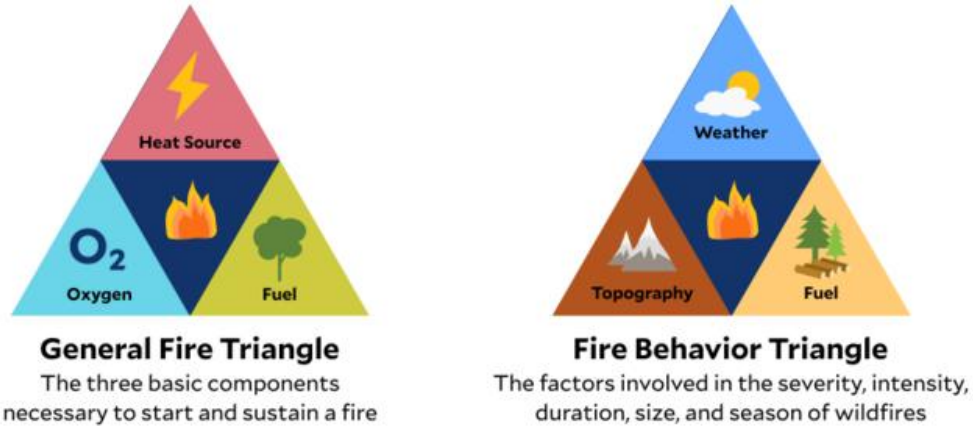


Figure 4) Examples of fire triangles.[3] The left triangle is a general representation of the three elements required to ignite and sustain a fire. The right triangle is a representation of the three elements that dictate wildland fire behavior.

[3] Yale Sustainability. Yale Experts Explain Wildfires. Accessed online at https://sustainability.yale.edu/explainers/yale-experts-explain-wildfires

A brief description of each of the fire behavior elements follows to illustrate their effect on fire behavior, this includes an overview of each element in Umatilla County.

4.1.1 Weather

Fire behavior is largely influenced by weather conditions. Wind, moisture levels, temperature, and relative humidity are all factors that determine the rate at which fuels dry, and vegetation is cured. The ignition potential of fuels is also determined by these factors; weather patterns and trends can be analyzed to determine how likely or easily a certain fuel type will ignite and if a fire is sustained. Once started, the behavior of wildfire is further determined by atmospheric stability and local and regional weather. As temperature, wind speed, wind direction, precipitation, storm systems, and prevailing winds all influence fire behavior, weather is the most difficult component of the fire triangle to predict and interpret.

In Umatilla County, summer lighting storms are common. These storms can occur at times when fuel moisture levels and relative humidity are exceptionally low. This creates the potential for rapid ignitions and large-scale fires, especially if a storm system produces strong winds and little or no precipitation. Under these circumstances, lighting strikes can start multiple fires. Situations with multiple fire starts place a heavy demand on wildland firefighting resources as multiple fires across the county must be addressed simultaneously.

Average monthly precipitation is summarized in Table 4. Precipitation totals are the lowest during late summer months (July and August) which is when lightning storms present the greatest risk for wildfire.

Table 4) Monthly precipitation totals (inches) for Oregon State for the period 2021-2023[4].

Month	2021	2022	2023
January	4.15	3.17	2.76
February	4.47	1.32	2.23
March	1.84	2.18	4.74
April	0.66	4.15	3.45
May	1.07	3.71	1.60
June	0.97	2.68	0.96
July	0.16	0.22	0.05
August	0.21	0.30	0.92
September	1.88	0.54	1.53
October	3.12	1.40	2.10
November	3.86	4.13	3.28
December	5.75	5.71	5.23
Total	**28.85**	**29.51**	**28.14**

[4] Times Record News – Oregon Weather Data: https://data.timesrecordnews.com/weather-data/oregon/41/2021-12-01/?syear=1895&eyear=2024#summary

4.1.2 Topography

Slope and aspect affect both the intensity and rate of spread of wildfire. The terrain in the BMF Project Area varies from gently sloping hills to steep, rugged ridgelines, which create natural barriers and pathways for wildfire spread. Steeper slopes tend to increase the speed at which a fire spreads. When a fire moves uphill, flames can rapidly move through preheated vegetation and fuels, allowing them to burn more intensely. On steeper slopes, fire behavior is exacerbated by the "chimney effect," where heat rises, creating updrafts that can carry embers for miles, igniting new spots ahead of the main fire. This is particularly dangerous when combined with dry conditions and high winds, both of which are common in the region during the warmer months.

On flat terrain, fires tend to spread more slowly, but they are still highly dependent on wind direction and speed. Winds can carry embers long distances, starting new fires called “spot fires” on the leeward side of a ridge or across a valley. The configuration of ridges and valleys across the landscape can determine where wildfire is likely to spread, and at what speed, because of how wind is channeled through these areas.

Aspect also plays a role in influencing fire behavior. Many slopes in the eastern part of Umatilla County face east and west. South-facing slopes, which are sun-exposed and often warmer and drier, are more likely to experience faster-moving fires as vegetation tends to be drier and more flammable. North-facing slopes, in contrast, may harbor more moisture, and while vegetation may not be as dry and fires may spread more slowly, they can still result in intense burns when fueled by hot winds.

4.1.3 Fuels

In the context of wildfire, fuels describe any organic material, dead or alive, found in the fire environment. Grasses, brush, branches, logs, logging slash, forest-floor litter, conifer needles, and buildings are all examples of fuel types found in the fire environment. The physical properties and characteristics of fuels govern how fires burn. Fuel loading, size and shape, moisture content, and continuity and arrangement all influence fire behavior. Small fuels such as grass, needle litter, and other fuels less than a quarter inch in diameter are most responsible for fire spread and are associated with higher rates of spread. Fine fuels, those with high surface to volume ratios, are considered the primary carriers of surface fire. As fuel size increases, the rate of spread tends to decrease due to a decrease in surface to volume ratio. Fires in large fuels generally burn at a slower rate but release much more energy and burn with much greater intensity. This increased energy release, or intensity, makes these fires more difficult to control.

Fuels are classified by diameter as that has important implications for fuel moisture retention. Fuel moisture content of smaller fuel types changes much more quickly than that of larger fuels. In terms of fire potential on the landscape and fire suppression, the amount

of time that is required for a fuel type to become volatile is critical which is why fuels are referred to as either one-hour, ten-hour, 100-hour, or 1,000-hour fuels. This method of classifying fuels describes the amount of time required for the status of a fuel type to change from non-combustible to combustible because of altered moisture levels in the surrounding environment.

There are two broad vegetative groups in Umatilla County -**grasslands and shrublands** and **forestlands**. Grassland and shrubland areas present different types of fire hazards and risks than forested areas. These vegetative types and the fire risk they pose are described below.

Grasslands and Shrublands

The vast grasslands in the eastern part of Umatilla County are highly susceptible to fast-moving fires, especially during the hot, dry summer months. These areas are dominated by fine fuels such as dry grasses and small shrubs that ignite quickly, allowing fires to spread rapidly. Grass fires tend to have a relatively low intensity compared to forest fires, but they can still cause significant damage by rapidly consuming large areas, especially when winds are strong. The introduction and spread of invasive grasses, such as cheatgrass, exacerbates fire risk, as these non-native species can dry out early in the season, becoming what is called a “flash fuel”, and create highly volatile conditions.

Shrublands, typically dominated by sagebrush, are another important fuel type. These plants are often aromatic and contain high concentrations of volatile oils, which means they can ignite quickly and burn intensely. Fires in shrublands can become more intense than those in grasslands due to the presence of large fuels and higher fuel loads. Sagebrush fires are particularly dangerous in areas with steep terrain, as the fire can move rapidly uphill, preheating fuels above it and causing fire to spread with increased intensity. The dense growth of shrubs also limits firefighting access and makes containment more challenging.

Forestlands

The forested portions of the BMF Project Area, particularly those dominated by ponderosa pine and mixed conifer forests, present a different set of challenges to wildland firefighters and forest managers. These forests, especially under drier conditions, are prone to crown fires that spread through the upper canopy of trees. The dense accumulation of dead wood, needles, and other fuels on the forest floor, combined with dry conditions, creates an ideal environment for high-intensity fires. Additionally, ladder fuels, such as small trees and shrubs, can facilitate the transition of fires from surface fuels into the forest canopy. Fire severity and potential for spread is also influenced by other variables such as forest health, species composition, stand density, and fire exclusion.

4.2 Fire History and Occurrence

4.2.1 Historic Frequency of Fires

Risk for severe wildfires begins to increase in July and can last through October. However, risk can increase earlier in the year if winter snowpack is thin or melts quickly. Under these circumstances, fuels can dry out earlier in the summer and the risk of catastrophic fires can be extraordinarily high later in the summer. Other factors that influence the frequency and severity of wildfires include forest health, fire suppression, fuel loading, and long-term changes in weather patterns.

From 2006 to 2023, the primary cause of wildfire in Umatilla County was lightning which started 187 fires that accounted for 13,407 acres burned (Figure 5). In general, fire starts are categorized as either lightning or human-caused. Human caused fires are split out into eight categories: railroad activity, equipment uses, recreational activities, smoking, debris burning, arson, juveniles, or miscellaneous (a group that includes other categories such as automobile accidents).

Larger fires, those at least 100 acres in size, for the period 2000 to 2023 are mapped in Figure 6.

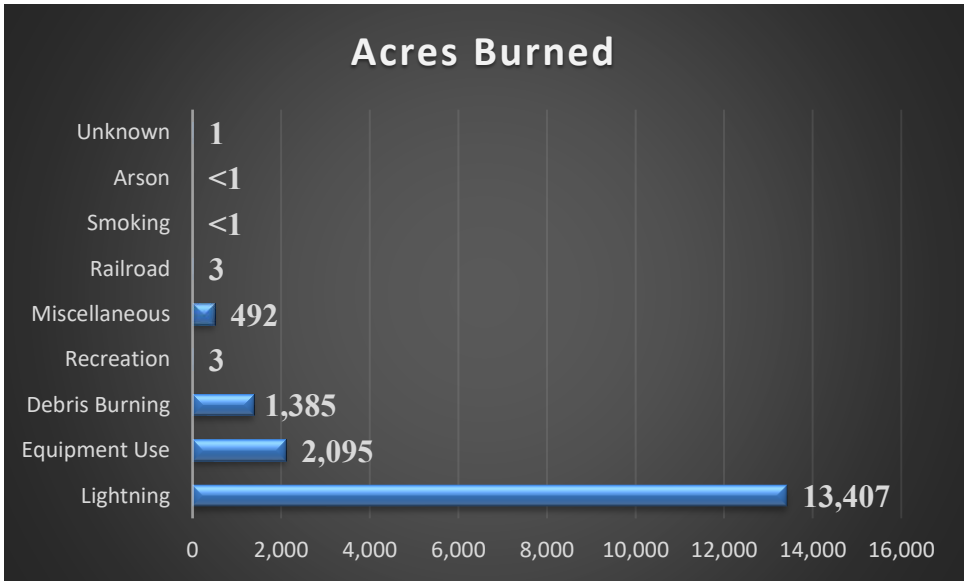


Figure 5: Acres burned by ignition source in the BMF Project Area for the period 2006-2023[5]

[5] National Interagency Fire Center – Wildfire and Acres: https://www.nifc.gov/fire-information/statistics/wildfires

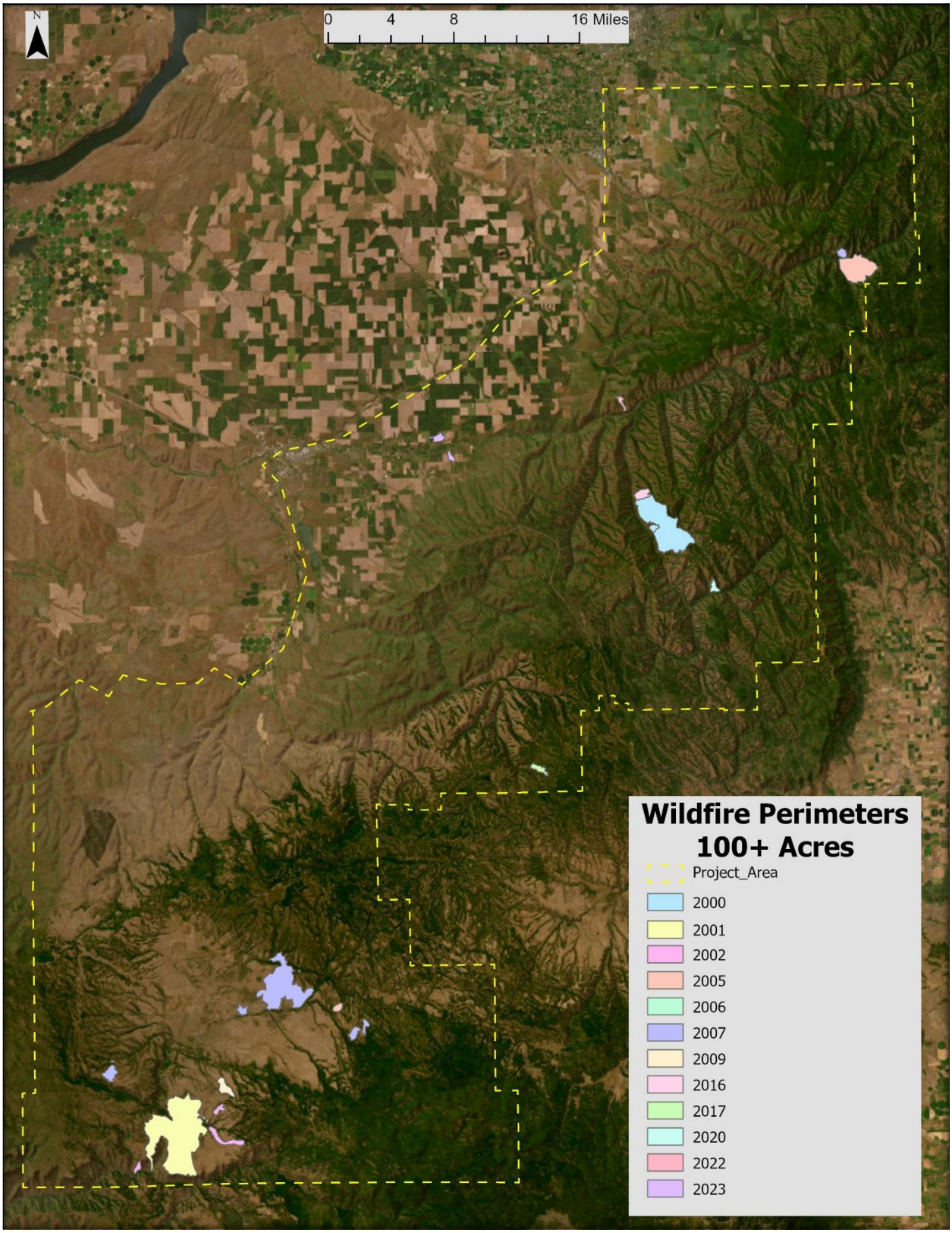


Figure 6) Large wildfires (100 acres or larger) in the BMF Project Area by year for the period 2000 to 2023.

4.2.2 2024 Wildfire Season

The 2024 fire year was a historic fire season for the state of Oregon. More than 2,000 individual fires burned more than 1.9 million acres. The largest fires occurred in eastern Oregon, in Umatilla County and the counties that surround it.

Battle Mountain Complex

The Battle Mountain Complex fire of 2024 included the North Fork Owens Fire and the Monkey Creek Fire. Much of the Monkey Creek fire burned outside Umatilla County to the south and west in two other counties.

The fires started on July 17, 2024, and burned a total of 183,026 acres before containment in late August. Evacuation orders were sent to the incorporated city of Ukiah along US 395. The cause is undetermined, and suppression efforts were estimated to cost 81 million dollars. This complex damaged 7 homes and 10 other structures while posing a threat to 357 other residencies and 530 structures. The fuels of this fire consisted of cured grasses at lower elevations and a mix of timber understory with patches of grass on north slopes above 4000 feet.[6]

Pilot Rock Fire

Started July 17, 2024, southwest of Pilot Rock, burned about 20,000 acres and triggered level 3 evacuations.

Powerline Road Fire

Grass fire southeast of Milton-Freewater started on July 25, 2024, and grew to approximately 1,500 acres, triggering evacuations.

4.3 Existing Vegetation Cover

The Exiting Vegetation Cover model describes the distribution of general vegetation types across the landscape. Accurate modeling of vegetative cover can be used to inform wildfire management, enhance predictive capabilities, and conduct risk assessments.

4.3.1 Management Implications

Modeling existing vegetative cover is a crucial aspect of wildfire management as it provides valuable insights into the distribution and characteristics of vegetation that influence fire behavior. This information plays an important role in wildfire management by informing:

- **Fire Behavior Prediction:** Vegetation types, density, and moisture content significantly affect how a fire spreads. By modeling existing vegetative cover, fire

[6] NW Fire Blog: https://thenwfireblog.com/?s=Battle+Mountain+Complex

managers can predict fire behavior, such as rate of spread, intensity, and potential hotspots. This aids planning and resource allocation.

- **Risk Assessment:** Vegetation models assist in identifying areas at high risk of ignition or rapid fire spread. By understanding the composition and structure of vegetation, managers can prioritize areas for mitigation strategies, such as fuel reduction.
- **Resource Allocation:** Knowing the distribution of vegetative cover allows for more effective deployment of firefighting resources. Areas with dense or highly flammable vegetation may require more firefighting efforts or specialized equipment.
- **Fire Prevention Planning:** Identifying types of vegetation that are particularly fire-prone (e.g., dry grasses or pine forests) can guide fire prevention strategies, such as creating defensible spaces, prescribed burns, or vegetation clearing.
- **Ecosystem and Habitat Protection:** Vegetative modeling also informs post-fire recovery and habitat preservation, helping to identify areas that may be more vulnerable to erosion or habitat loss after a fire.

4.3.2 Existing Vegetative Cover of Umatilla County

The analysis identified seven different vegetation cover categories within the BMF Project Area (Table 5). Tree cover types are dominant on approximately 50% of the acreage in the planning area followed by herbaceous cover types (22%) and shrub cover types (17%). Agriculture and developed areas account for approximately 10% of the planning area.

Most cover types are intermixed across the landscape. However, agricultural areas are primarily found in the valley, herbaceous cover types are in the foothills, and timber cover types are in the Blue Mountains. The distribution of vegetation may add additional perspective on how and why wildfire burns in certain areas. It may be useful in identifying strategic locations for fuel breaks and other mitigation efforts. Refer to Figure 7 for a map of vegetation cover types in the BMF Project Area.

Table 5) Existing Vegetation Cover within the BMF Project Area in Umatilla County, OR.

Cover Type	Acres	Percent
Tree	631,121	50%
Herbaceous	273,587	22%
Shrub	218,833	17%
Agriculture	96,074	8%
Developed	26,024	2%
Water	1,942	<1%
Sparsely Vegetated	734	<1%
Total	**1,246,376**	**100%**

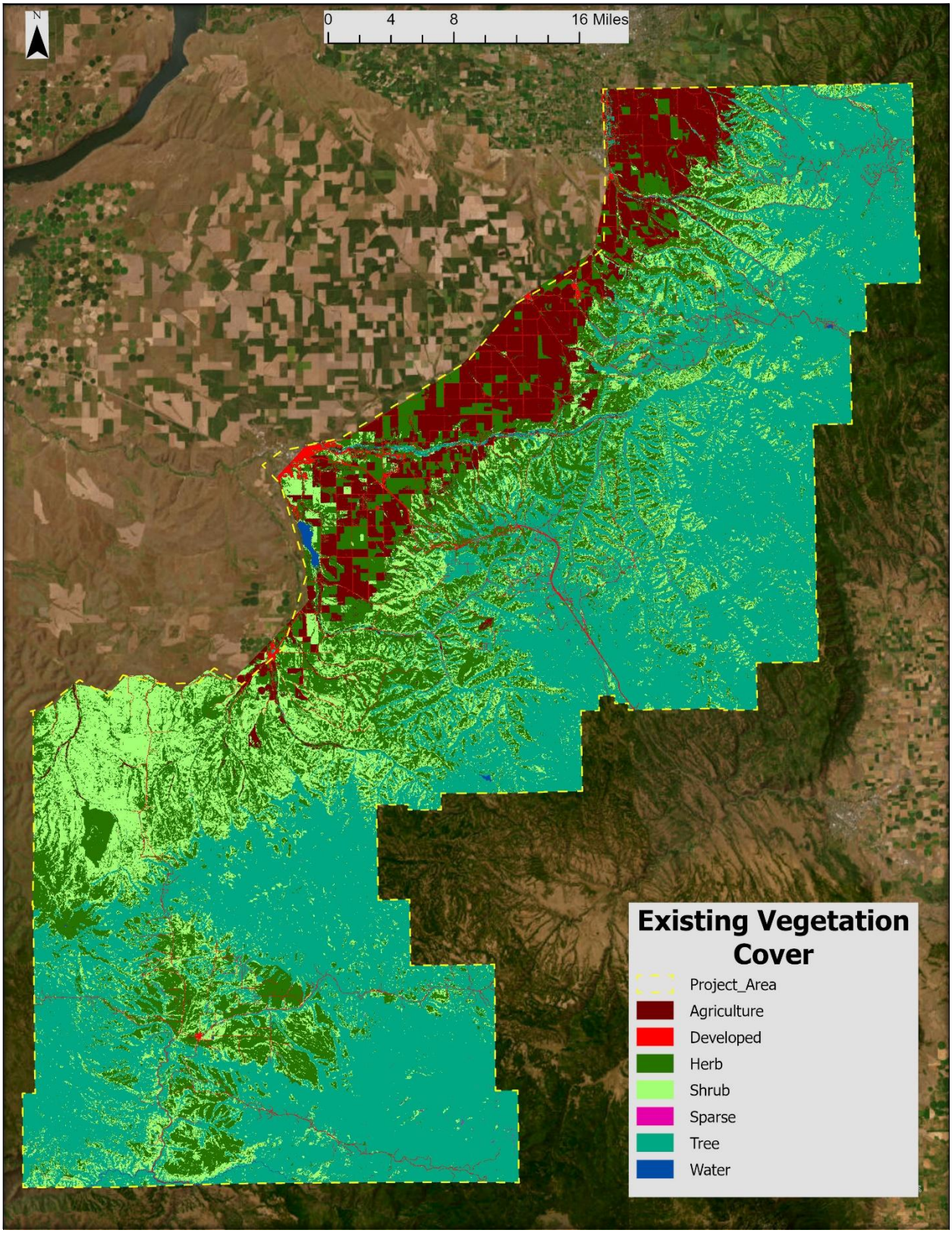


Figure 7) Existing Vegetation Cover in the BMF Project Area in Umatilla County, OR.

4.4 HISTORIC FIRE REGIME[7]

Wildfire is a type of natural disturbance that plays an important role in shaping the development of vegetative communities. This includes the distribution, health, and composition of vegetative communities from the stand level to the landscape level. Prior to the settlement of Euro-Americans, wildfires were primarily started by lightning strikes, or cultural burning which was a means of land management practiced by Native Americans. These fires burned naturally (i.e., without significant human intervention) and, over time, began to follow patterns related to timing and severity. In general, this pattern is referred to as a Fire Regime which describes the typical range of wildfire characteristics associated with different vegetative communities and environmental conditions. Two major components of a fire regime are Fire Return Interval and Fire Severity. The fire return interval describes the average amount of time between fires in a specific area while severity describes the extent of vegetation loss or destruction because of wildfire (with "replacement severity" referring to the complete loss of the vegetative overstory).

4.4.1 Management Implications

Historic fire regimes reveal much about how fire influences landscapes and how ecosystems have adapted to fire over time. This information plays an important role in informing land management decisions by:

- **Guiding Restoration Efforts:** By understanding the natural fire patterns of an area, land managers can design restoration projects that reintroduce fire in a controlled manner, promoting the recovery of fire-adapted ecosystems
- **Assessing Ecological Conditions:** Historic fire regime data allows for comparisons between past and current conditions, helping to identify areas where fire-dependent ecosystems have been altered due to fire suppression or other factors.
- **Prioritizing Management Actions:** Knowledge of historic fire regimes aids in identifying areas that would benefit from fire management practices, such as prescribed burns or thinning, to reduce fuel loads and mitigate the risk of catastrophic wildfires.
- **Informing Policy and Decision-Making:** Understanding the role of fire in ecosystems helps policymakers and land managers make informed decisions about fire management strategies, balancing ecological health with human safety and property protection.

Incorporating information about historic fire regimes into land management practices ensures that fire is used as a tool to maintain or restore ecological balance, reduce the risk of severe wildfires, and support biodiversity conservation.

[7] LANDFIRE Data: https://landfire.gov/data

4.4.2 Fire Regime Groups of Umatilla County

Umatilla County falls within the Blue Mountains ecoregion which contains large swaths of forestland as well as some of the largest intact native grasslands in the state[8]. Prior to Euro-American settlement and the influence of settlers, these vegetative communities were regularly exposed to wildfire which continually influenced how wildland fuels were distributed across the landscape as well as the levels of intensity at which fires typically burned.

The Historic Fire Regime model predicts how these vegetative communities would have burned historically. Table 6 includes a summary of Fire Regime Group coverage in the BMF Project Area and the distribution of FRG groups is displayed in Figure 8. Approximately 47% of the BMF Project Area is classified as FRG I. Vegetative communities in these areas, which are primarily forestlands in the Blue Mountains, would have burned at least once every 35 years and burned at low to mixed severity. Burning more frequently, wildland fuels would have been consumed more often which would have reduced the risk of catastrophic, stand-replacing fires. An additional 13% of the county falls into the FRG III category which would have burned less often, every 35 to 200 years, but at the same levels of intensity as FRG 1. FRG I and FRG III areas are heavily intermixed in the Blue Mountains.

Approximately 36% of the county is classified as FRG IV. These areas would have burned every 35 to 200 years at replacement levels of severity. Burning less often, higher fuel loads would have sustained fire intensities that resulted in the loss of all vegetative cover. These areas primarily include grassland and shrubland vegetation types in the valley and foothills in the county.

Table 6) Historic Fire Regime Groups in BMF Project Area of Umatilla County, OR.

Group	Description	Percent of Total Area
Fire Regime Group I	<=35 Year Fire Return Interval, Low and Mixed Severity	47%
Fire Regime Group II	<= 35 Year Fire Return, Replacement Severity	4%
Fire Regime Group III	35-200 Year Fire Return Interval, Low and Mixed Severity	13%
Fire Regime Group IV	35-200 Year Fire Return Interval, Replacement Severity	36%
Fire Regime Group V	>200 Year Fire Return Interval Any Severity	<1%
Water	Water	<1%
Barren	Barren	<1%
Sparsely Vegetated	Sparsely Vegetated	<1%

[8] Oregon Conservation Strategy – Blue Mountains Ecoregion: https://www.oregonconservationstrategy.org/ecoregion/blue-mountains/

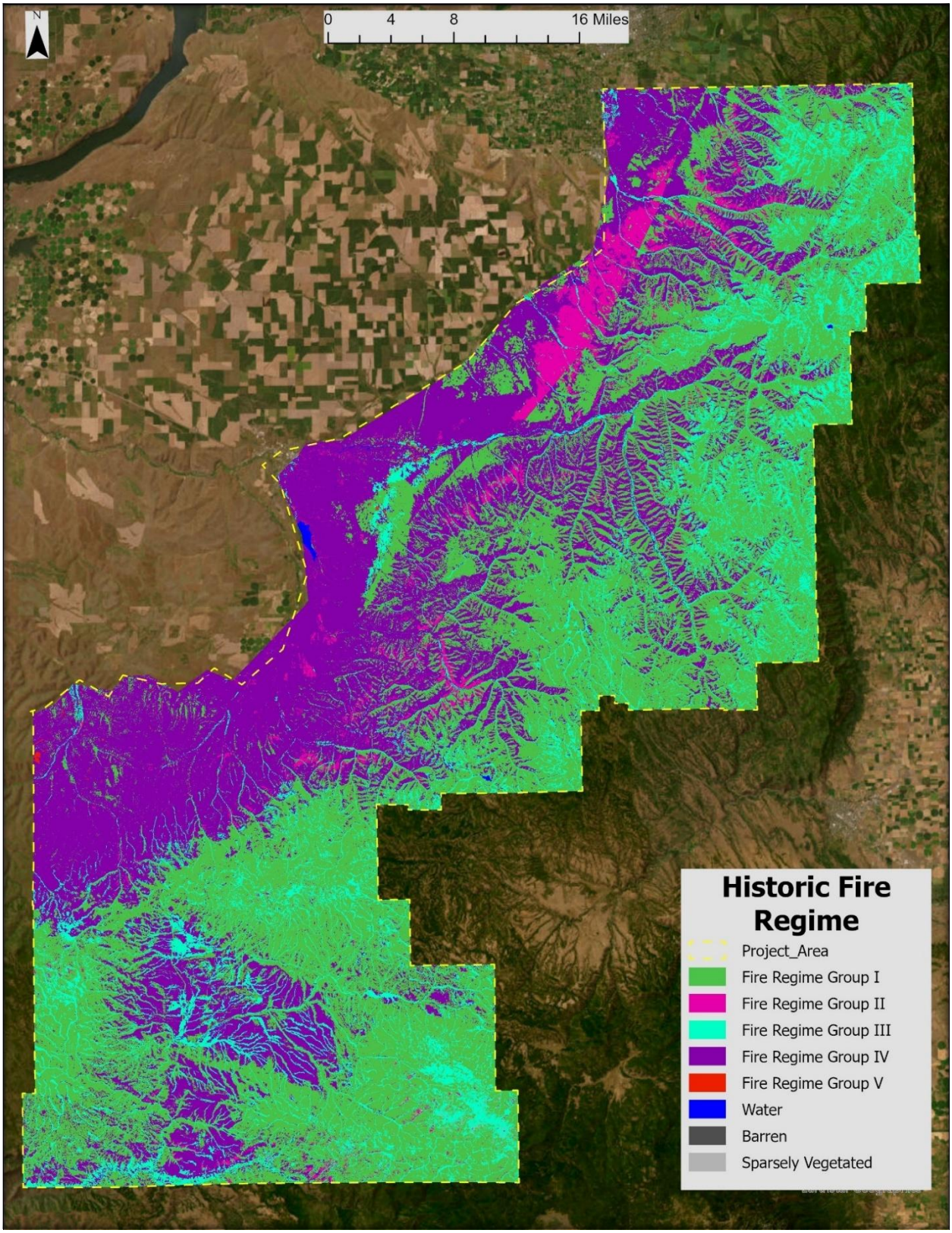


Figure 8) Historic Fire Regimes in the BMF Project Area in Umatilla County, OR.

4.5 VEGETATION CONDITION CLASS[9]

Vegetation Condition Class describes how departed, or different, modern vegetative communities are from historic vegetative communities. The term "Departure" can describe changes in species composition, the size and arrangement of vegetation, the distribution of vegetative communities across the landscape, as well as other attributes that describe how the condition of vegetation on a particular site has changed over time. Assessing these changes is important as they can have a major effect on the frequency and severity of wildland fires. To understand these differences, modern vegetative communities are compared to those associated with historic fire regimes. As modern vegetative communities become increasingly different from historic communities they are described as having a higher level of departure. Higher levels of departure could indicate a decrease in the adaptiveness of vegetation to wildfire.

Vegetation condition class consists of three different classes. 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.

4.5.1 Management Implications

VCC helps land managers identify areas where modern vegetative communities no longer resemble those of the past and how that is likely to affect wildfire frequency and severity. This information can aid land managers in making decisions related to:

- **Identifying Ecological Departures:** VCC helps determine areas where vegetation has significantly diverged from its historical state, often due to disturbances like fire suppression, invasive species, or land-use changes. Recognizing these departures is essential for prioritizing restoration efforts.
- **Guiding Restoration and Management Strategies:** By understanding the current condition of vegetation relative to its historical baseline, land managers can develop targeted interventions to restore ecological balance. This may involve reintroducing natural disturbances, such as controlled burns, or removing invasive species.
- **Assessing Fire Risk and Behavior:** VCC provides insights into fuel loads and vegetation structure, which are critical for evaluating fire behavior and associated risks. This information is vital for planning prescribed burns and other fire management practices to reduce the likelihood of catastrophic wildfires.

[9] LANDFIRE – Vegetation Condition Class: https://www.landfire.gov/vegetation/vcc

- **Informing Policy and Resource Allocation:** Data on VCC supports policymakers in making informed decisions regarding land use, conservation priorities, and resource distribution. It ensures that management actions are based on a clear understanding of ecological conditions and their historical context.

Incorporating VCC information into land management practices can help make interventions ecologically sound, more effective at addressing current challenges, and ensure that efforts promote the restoration of natural vegetation dynamics.

4.5.2 Vegetation Condition Classes of Umatilla County

Vegetative communities within the Blue Mountain Ecoregion have changed, ecologically, over time due to impacts from fire suppression, selective harvest practices, and unsustainable grazing[10]. Consequently, vegetative communities have exhibited changes in species composition, vertical and horizontal structure, and distribution across the landscape. These changes have increased the vulnerability of forests to insects, disease, and uncharacteristically severe wildfire as well as increased the vulnerability of sagebrush shrublands and steppe to wildland fire and invasive species[10].

In areas where the impacts of past management practices, fire suppression, grazing, and other activities are more extensive, vegetation is likely to exhibit increased levels of departure from historic conditions. Although there are exceptions, it is assumed that there is a relationship between levels of departure and levels of wildland fire activity (i.e., risk for ignition, risk for more extreme fire behavior, etc.). In general, the more departed vegetation is from historic conditions the more likely it is to be associated with increased levels of wildland fire activity.

An analysis of Vegetation Condition Classes in the BMF Project Area shows that 55% of vegetation is moderately departed from historic conditions while 29% is highly departed (Table 7; Figure 9). Only 1% of the county is classified as low departure which indicates that vegetation in those areas is within the natural range of variability.

Table 7) Vegetation Condition Classes of the BMF Project Area in Umatilla County, OR.

Class	Description	Percent
Vegetation Condition Class I	Low Vegetation Departure 0-33%	**1%**
Vegetation Condition Class II	Moderate Vegetation Departure 34-66%	**55%**
Vegetation Condition Class III	High Vegetation Departure 67-83%	**29%**
Water	Water	**<1%**
Developed	Developed	**2%**
Barren/Sparse	Barren/Sparse	**<1%**
Agriculture	Agriculture	**11%**

[10] Oregon Conservation Strategy – Blue Mountains Ecoregion: https://www.oregonconservationstrategy.org/ecoregion/blue-mountains/

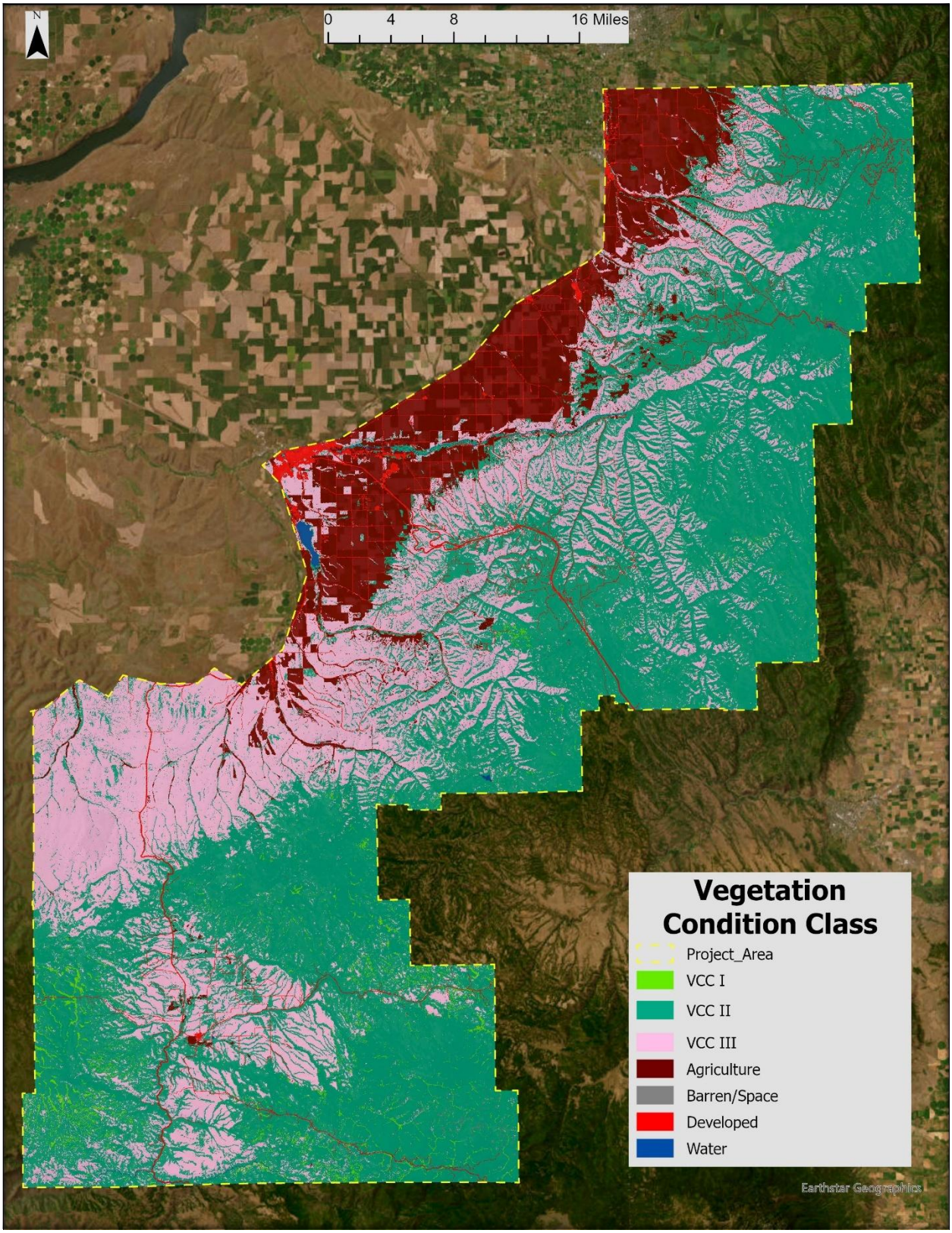


Figure 9) Vegetation Condition Classes of the BMF Project Area in Umatilla County, OR.

5 WILDLAND FIRE RISK ASSESSMENT

5.1 WILDFIRE RISK MODELS

Several USFS-sponsored risk modeling tools were used to estimate and describe wildfire risk to communities and identify hazard areas within Umatilla County[11]. Included in this analysis are the outputs for the Risk to Homes (Risk to Potential Structures), Wildfire Likelihood (Burn Probability), Risk Reduction Zones, and Vulnerable Populations models.

Language highlighted in blue are direct excerpts from the Wildfire Risk to Communities website.

5.1.1 Risk to Homes

The Wildfire Risk to Homes model assesses the relative risk for wildfire damage to homes on a site whether homes do or do not actually exist on that site. In addition to providing a risk assessment at the site-level, the model also provides a county-level ranking for risk relative to other counties within the State of Oregon as well as across the United States.

Risk to homes allows us to consider wildfire risk in places with homes in addition to places where new construction is proposed. Risk to homes integrates modeled data about wildfire likelihood and intensity with a generalized concept of susceptibility for homes. Communities in all but the lowest risk class need to be prepared for wildfire.

Homes in Umatilla County have, on average, greater risk for wildfire damage than 91% of counties in the US and greater risk than 51% of counties in Oregon[12]. The model output (Figure 10) identifies areas in Umatilla County where risk to homes is elevated. These areas may benefit from additional mitigation efforts and heightened levels of community wildfire preparedness.

Listed by ranking, Table 8 shows the relative risk for homes in each community within the BMF Project Area. Ukiah, which has a ranking of "1", has the highest levels of relative risk while Weston, which is ranked "7", has the lowest levels of relative risk.

[11] Wildfire Risk to Communities. USDA, USFS. Accessed online at https://wildfirerisk.org/explore/overview/41/41045/

[12] Wildfire Risk to Communities – Risk to Homes – Umatilla County: https://wildfirerisk.org/explore/risk-to-homes/41/41059/

Table 8) Wildfire risk to communities in the BMF Project Area of Umatilla County relative to other counties in the State of Oregon as well as other counties nation-wide. This output was generated using Wildfire Risk to Communities planning tool.

Rank	City/Community	County Level	State Level
1	Ukiah	Greater Risk than 100%	Greater Risk than 84%
2	McKay	Greater Risk than 95%	Greater Risk than 82%
3	Pendleton	Greater Risk than 81%	Greater Risk than 78%
4	Pilot Rock	Greater Risk than 57%	Greater Risk than 72%
5	Mission	Greater Risk than 52%	Greater Risk than 71%
6	Milton-Freewater	Greater Risk than 38%	Greater Risk than 64%
7	Weston	Greater Risk than 24%	Greater Risk than 56%

Wildfire Risk to Communities assumes all homes that encounter wildfire will be damaged, and the degree of damage is directly related to wildfire intensity. Wildfire Risk to Communities does not account for homes that may have been mitigated.

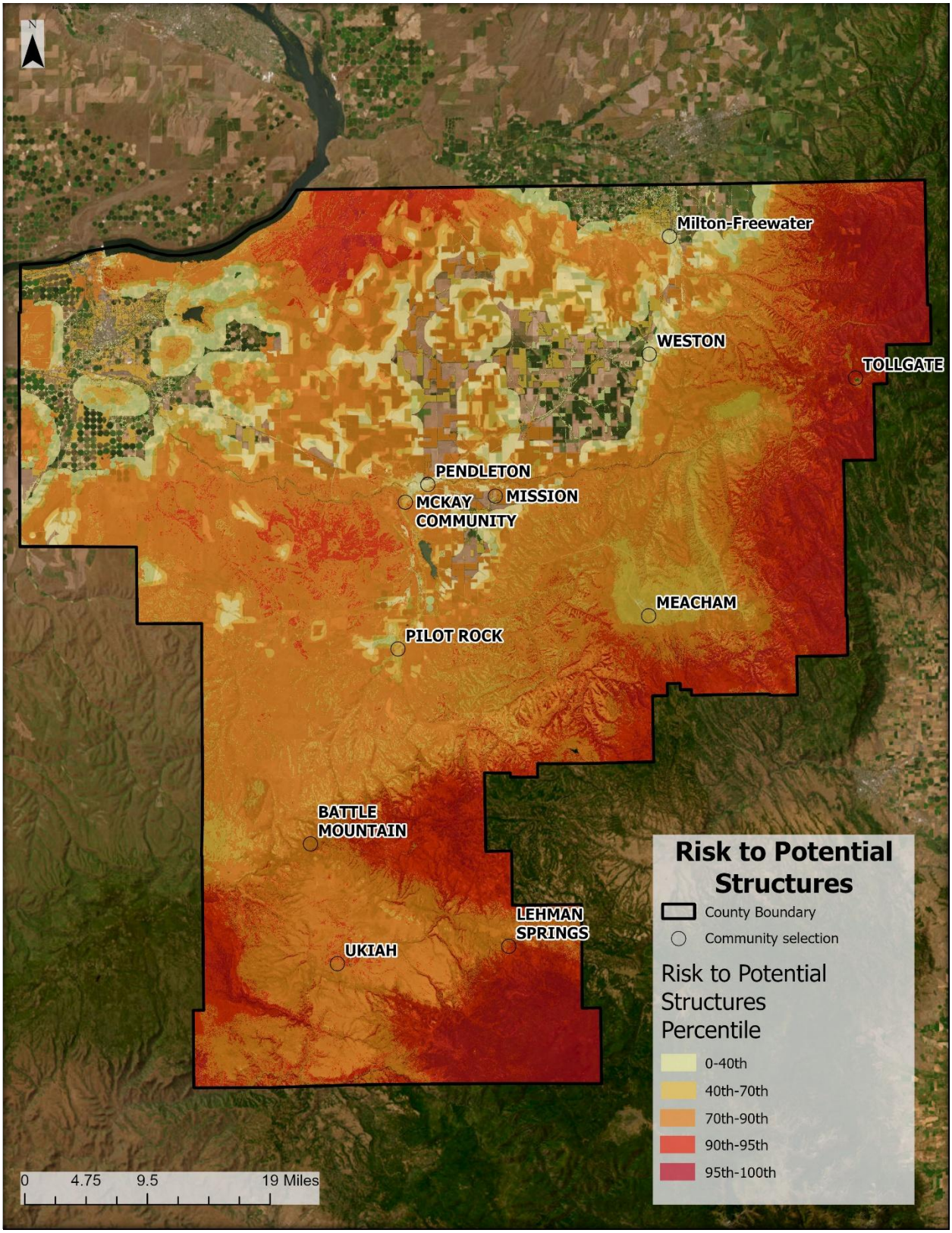


Figure 10) Risk to Homes (potential structures) map output for Umatilla County, OR.

5.1.2 Wildfire Likelihood (Burn Probability)

The Wildfire Likelihood model estimates the probability of wildfire occurrence in any given year. It does not report the severity or intensity of a fire, only the likelihood that one occurs.

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.

Wildfire likelihood is not predictive and does not reflect any currently forecasted weather or fire danger conditions.

Umatilla County has, on average, a greater likelihood of wildfire occurrence in any given year than 92% of counties in the US and a greater likelihood than 57% of counties in Oregon. The probability of wildfire occurrence across Umatilla County is displayed in Figure 11.

The relative wildfire likelihood for each community within the BMF Project Area is displayed in Table 9. Communities are listed by ranking for likelihood of wildfire relative to other communities within Umatilla County and other communities across the state of Oregon. Ukiah, which has a ranking of "1", has the highest relative likelihood of wildfire while Weston, which is ranked "7", has the lowest relative likelihood.

Table 9) Data comparing the likelihood of wildfires at the community level compared to Umatilla County and the State of Oregon.

Rank	City/Community	Umatilla County	State of Oregon
1	Ukiah	Greater than 100%	Greater than 88%
2	McKay	Greater than 95%	Greater than 84%
3	Pendleton	Greater than 81%	Greater than 79%
4	Mission	Greater than 67%	Greater than 73%
5	Pilot Rock	Greater than 62%	Greater than 73%
6	Milton-Freewater	Greater than 38%	Greater than 66%
7	Weston	Greater than 24%	Greater than 55%

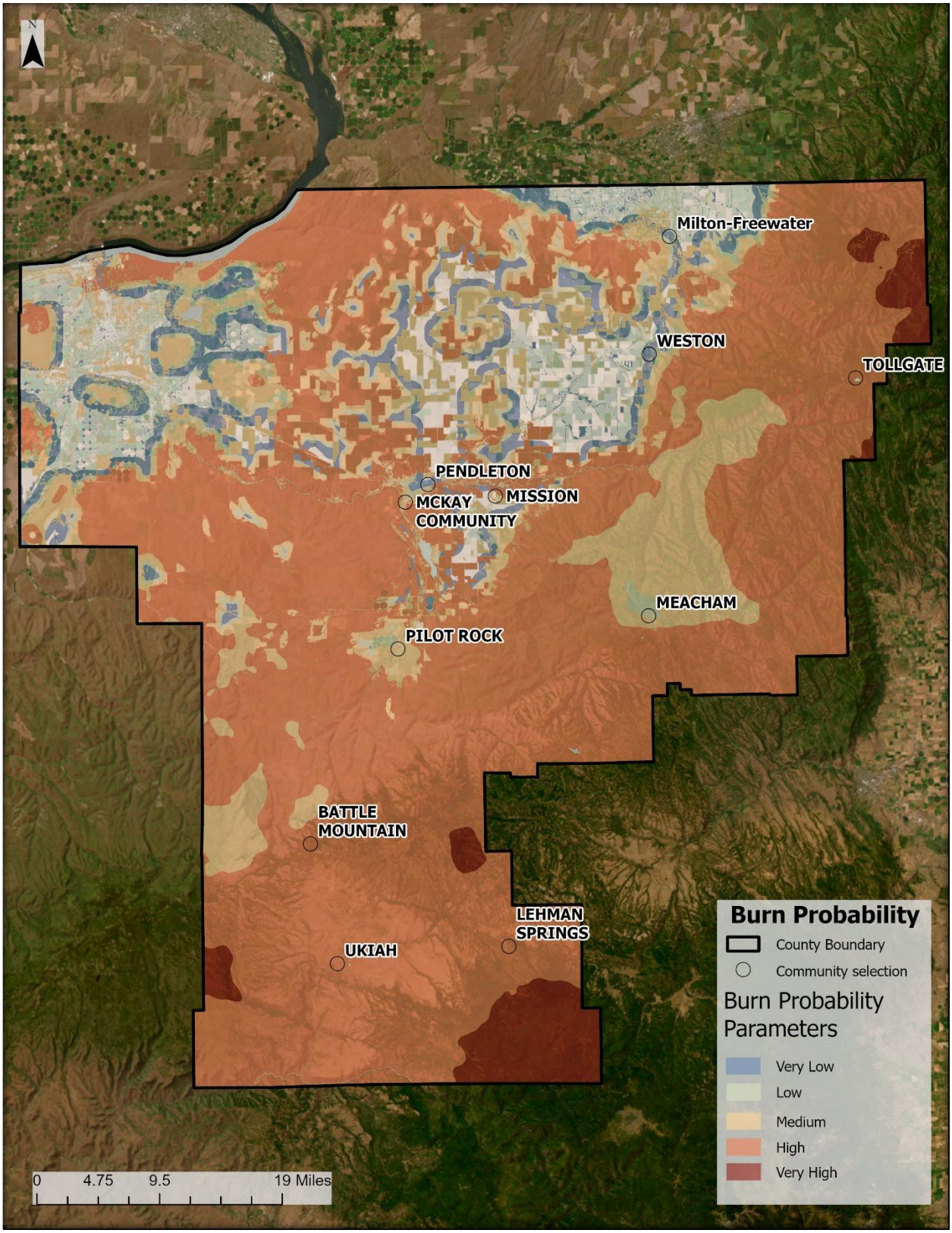


Figure 11) Wildfire Likelihood (Burn Probability) map output for Umatilla County, OR.

5.1.3 Risk Reduction Zones

The Risk Reduction Zone model identifies areas where mitigation practices could be the most effective at protecting structures from wildfire. The model places these areas into different zones based on the spatial relationship between structures and vegetation. Some wildfire mitigation activities may be more effective in some zones than others; zones are defined below in Table 10.

Risk reduction zones are calculated by comparing wildfire likelihood, flammable vegetation, and populated areas. The number of buildings in each zone is found by using building footprints within the political boundaries of the location.

Table 10) Risk Reduction Zone definitions

Risk Reduction Zones	Zone Definition
Minimal Exposure	Unlikely to be affected by wildfire
Indirect Exposure	Embers can cause ignitions from home to home but there isn't a direct risk of wildfire
Direct Exposure	Homes in this category are in direct contact with wildfire through vegetation, embers, or nearby structures
Wildfire Transmission	Area near homes where flammable vegetation may expose homes to wildfire

In Umatilla County most buildings (39%), given their spatial relationship to wildland fuels, fall within the Direct Exposure Zone[13]. This would include buildings that are in proximity to or adjacent to wildland fuels which puts them at risk of being in direct contact with wildfire. The Indirect Exposure Zone contains the second highest number of buildings (31%). Buildings in this zone are at risk of exposure to embers and ember-caused fires that spread from home to home. The remaining 30% of buildings are in the Minimal Exposure Zone. This would include buildings in the interior of developed areas that have spatial separation from continuous wildland fuels and are unlikely to be affected by embers. The Wildfire Transmission Zone does not contain buildings as these are areas with dense or continuous wildland fuels that may facilitate the spread of fire to areas with buildings, such as Direct Exposure Zones. The distribution of Risk Reduction Zones within Umatilla County is displayed in Figure 12.

[13] Wildfire Risk to Communities – Umatilla County: https://wildfirerisk.org/explore/risk-reduction-zones/41/41059/

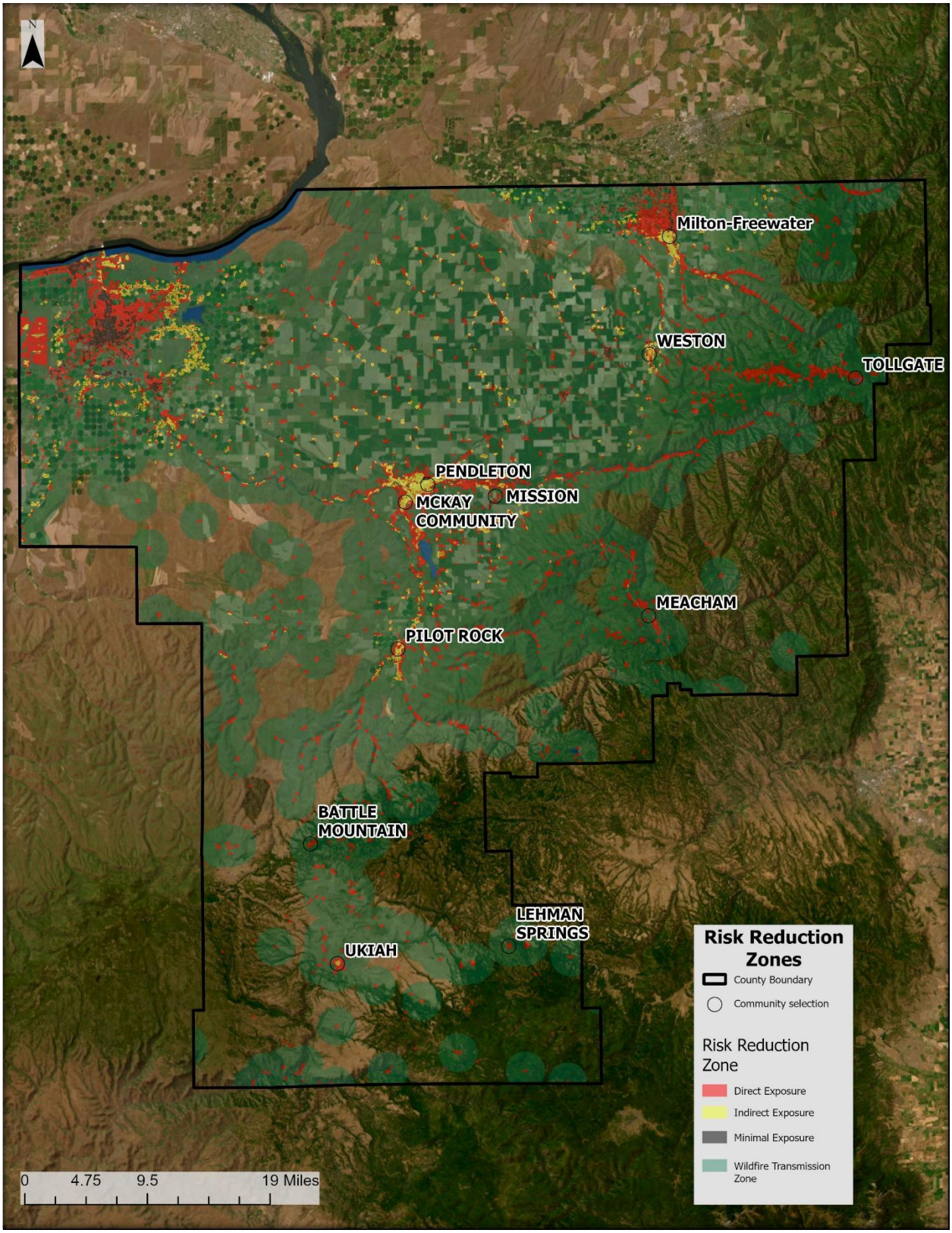


Figure 12) Risk Reduction Zones map output for Umatilla County, OR.

The percentage of structures by zone for each community within the BMF Project Area is displayed in Table 11. Most structures within each community fall within the Indirect Exposure Zone and Direct Exposure Zone.

Table 11) Percentage of buildings that fall into each Risk Reduction Zone category by community in the project area.

Community	Minimal Exposure	Indirect Exposure	Direct Exposure
Mckay	<1%	<1%	100%
Milton-Freewater	<1%	94%	6%
Mission	6%	39%	54%
Pendleton	2%	89%	8%
Pilot Rock	<1%	88%	12%
Ukiah	<1%	68%	32%
Weston	<1%	79%	21%

In each of these zones there are different steps that communities and homeowners can take to mitigate wildfire hazards and reduce the risk of structure exposure to wildfire. Such actions include, but are not limited to, creating buffers around structures, creating fuel breaks between wildland fuels and structures, using fire resistant building materials, creating safe access for emergency responders, and, in general, limiting potential sources of ignition around structures. Such actions are more thoroughly described in section 6.2.

5.1.4 Vulnerable Populations

Vulnerable populations are those experiencing certain social and economic conditions that serve as obstacles to wildfire preparedness, response, and recovery. Some of these factors include limited financial resources, access to transportation, language barriers, mobility, medical needs, and disparities related to other variables such as race.

For example, people over age 65 and people who are disabled are more susceptible to air pollution and particulates associated with wildfire smoke. Language barriers can make it difficult to follow directions during an evacuation or to access support after a disaster. Race and ethnicity are strongly correlated with disparities in health and access to aid and resources. Wildfires disproportionately impact people with low incomes because of factors such as inadequate housing and a diminished ability to evacuate or relocate.

According to the Vulnerable Populations model, vulnerable populations in Umatilla County are at moderate risk of encountering difficulties in preparing for, responding to, and recovering from wildfire. According to the model output for Umatilla County, there are more than 2,700 people with disabilities, 217 households without a vehicle, 105 people who have difficulty with English, and more than 2,900 people over the age of 65[14].

[14] Wildfire Risk to Communities – Vulnerable Populations – Umatilla County: https://wildfirerisk.org/explore/vulnerable-populations/41/41059/

Depending on the type of disparities associated with each population, mitigation efforts can be made to, for example, increase the level of preparedness of vulnerable populations or to increase the likelihood that members of vulnerable populations will be able to shelter in-place or effectively evacuate during a wildfire.

Note about the Vulnerable Populations Mapping Tool: *Data about potentially vulnerable populations are shown at the neighborhood level so that leaders can direct resources within a community. Census tracts are highlighted that have values equal to or greater than the community median. Data are from the U.S. Census Bureau's American Community Survey.*

5.2 WILDLAND URBAN INTERFACE (WUI)

The wildland urban interface (WUI) has gained attention in recent decades due to growing public interest in rural living. This has increased the need for wildland fire hazard awareness in these areas and for analytics that examine the spatial relationships between the distribution of people and structures relative to wildland fuels.

Key to protecting people and structures in the WUI is the identification and treatment of wildland fire hazards. The WUI refers to areas where wildland vegetation abuts development; this can include individual homes, neighborhoods, and larger urban areas. The WUI encompasses not only the interface (areas immediately adjacent to urban development), but also the surrounding vegetation and topography.

Reducing the hazard in the WUI requires the efforts of federal, state, local agencies, and private individuals.[15] "The role of [most] federal agencies in the WUI includes wildland firefighting, hazard fuels reduction, cooperative prevention and education, and technical experience. Structural fire protection [during a wildfire] in the WUI is [largely] the responsibility of Tribal, state, and local governments".[16]

5.2.1 Umatilla County WUI

In the event of wildfire in the county, the role of federal agencies will likely be limited to wildland fire suppression. Property owners do have a responsibility to protect their residences and businesses from wildfire by creating defensible space and making their homes less susceptible to fire embers, intense heat, and other hazards associated with wildfire[17]. With proper treatment, defensible space allows safe access for firefighters, or other emergency responders, who are attempting to protect people and/or property. Safe access entails both the reduction of fuels around structures as well as roadways that are

[15] Norton, P. Bear Valley National Wildlife Refuge Fire Hazard Reduction Project: Final Environmental Assessment. Fish and Wildlife Services, Bear Valley Wildlife Refuge. June 20, 2002.
[16] USFS. 2001. United States Department of Agriculture, Forest Service. Wildland Urban Interface. Web page. Date accessed: 25 September 2001. Accessed at: http://www.fs.fed.us/r3/sfe/fire/urbanint.html
[17] USFS. 2001. United States Department of Agriculture, Forest Service. Wildland Urban Interface. Web page. Date accessed: 25 September 2001. Accessed at: http://www.fs.fed.us/r3/sfe/fire/urbanint.html

both clear of vegetation and large enough to accommodate emergency response vehicles. When treated properly, losses of both life and property in the WUI may be dramatically reduced.

Through fuel reduction and the creation of defensible space, landowners can make the WUI more resistant and resilient to the effects of wildfire. Fuels reduction projects and structure modifications can help with the following:

- Limiting the movement of high-severity ground or crown fires between different areas of the WUI;
- Reducing the potential for firebrands (embers carried by the wind in front of the wildfire). Research indicates that flying sparks and embers from a crown fire can ignite additional wildfires as far as 1¼ miles away during periods of extreme fire weather and fire behavior;[18]
- Improving defensible space within the WUI which increases safety for first responders and improves the effectiveness of wildland fire response.

5.2.2 Methodology

The Umatilla County WUI was developed using criteria and parameters that were selected and approved by the planning team. The planning team also reviewed and gave approval to the final output (Figure 13). During the review process, land managers and fire personnel from local, state, and federal agencies were given the opportunity to suggest areas that should be added or removed from the WUI. The final WUI polygon was created using the following criteria and parameters:

- **Buildings:** A one-mile buffer was created around building clusters with densities of 100 homes/km^2 and higher.
- **Highways:** A one-mile buffer was created around all highways.
- **Roadways:** A one-mile buffer was created around important road corridors. These corridors, which were identified by local fire response experts and fuels managers, were selected because they meet one or more of the following conditions:
    - Are of importance for ingress/egress
    - Present challenges to fire response efforts
    - Have other unique features that affect wildland fire response
- **Communities At Risk (CARs):** All CARs were included in the final WUI polygon. CARs were initially identified from a list created for the 2020 ODF report. More recent perspectives on and definitions of CARs were also considered as a means of identifying any additional qualifying communities that may have been excluded from the list in the ODF report.

[18] McCoy, L. K., et all. Cerro Grand Fire Behavior Narrative. 2001.

- **Critical Infrastructure:** Communications towers, critical facilities, transmission lines, and other important features were analyzed to ensure that they predominantly fell within the WUI polygon.

5.2.3 WUI Model Output

This section includes descriptions and maps of the final WUI polygon, as approved by the planning team, as well as variations of the WUI map that include critical infrastructure.

Wildland Urban Interface

The areas that are officially designated as the Umatilla County WUI are displayed in Figure 13. These areas include clusters of buildings, transportation corridors, critical infrastructure, and other concentrations of development within the county. This map serves as the official WUI map for Umatilla County. Variations of this map were created so other resources at risk could be displayed separately.

Building Density

Building density across Umatilla County has been mapped with the WUI in Figure 14. Areas where building density is 100 homes/km^2 or greater are included in the WUI. The map also shows where other concentrations of buildings are in the county.

Roads

Roadways in Umatilla County have been mapped with the WUI in Figure 15. Major roadways and roads that have been identified as critical means of ingress and egress have been included in the WUI. These roads will be prioritized for fuels treatments and other projects that ensure that roads support emergency response efforts.

Transmission Lines

Major transmission lines in Umatilla County have been mapped with the WUI in Figure 16. Because of their location relative to other structures and roadways, which are primary criteria that were used to develop the WUI, much of the transmission line footprint overlaps with the WUI.

Communication Towers

In total, there are eight communication towers within the BMF Project Area WUI (Figure 17). These towers have been identified as critical infrastructure as they support communication during emergency response efforts. These sites are inspected and treated regularly to minimize the likelihood that a tower is damaged by wildfire.

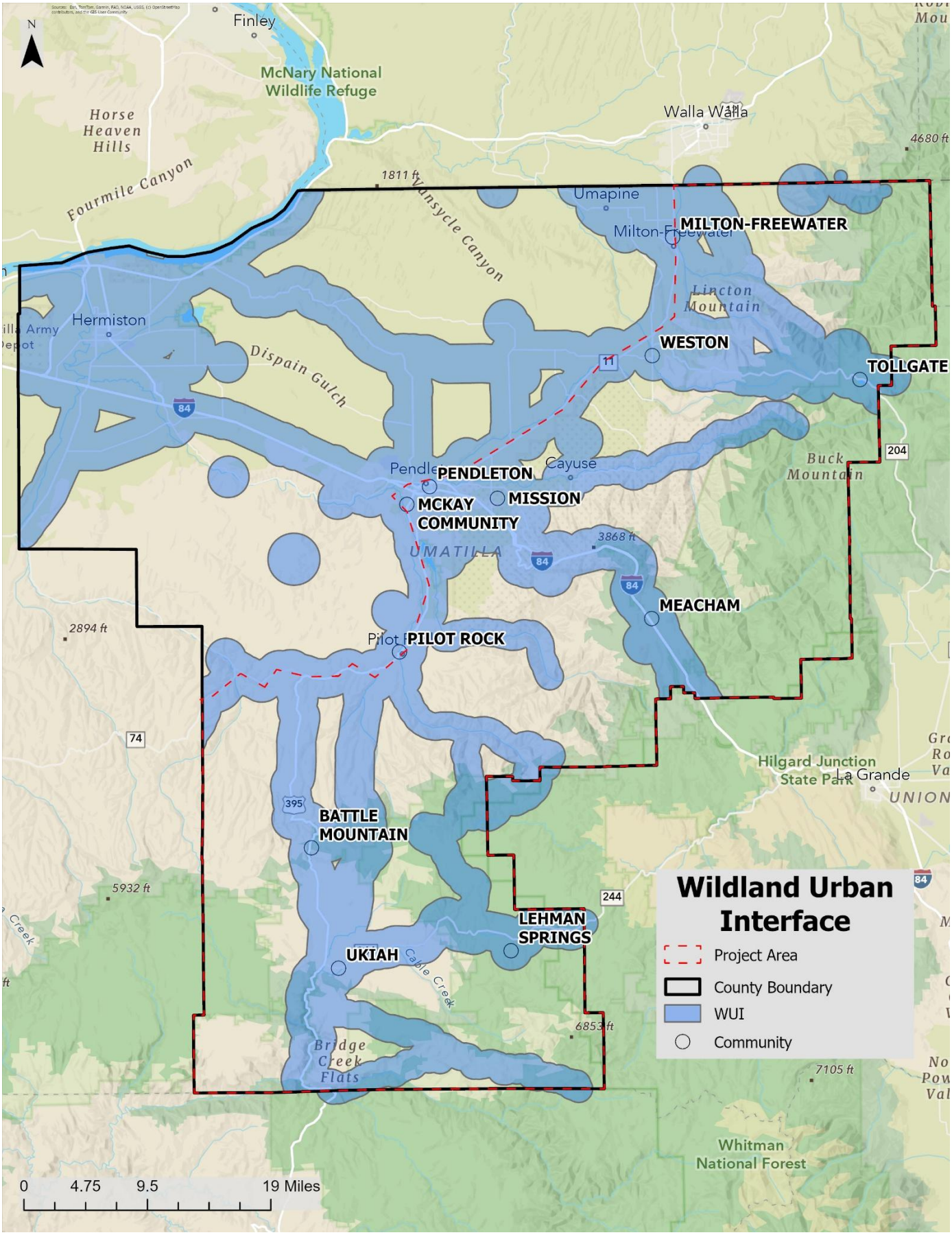


Figure 13) Map of the Wildland Urban Interface (WUI) in Umatilla County, OR.

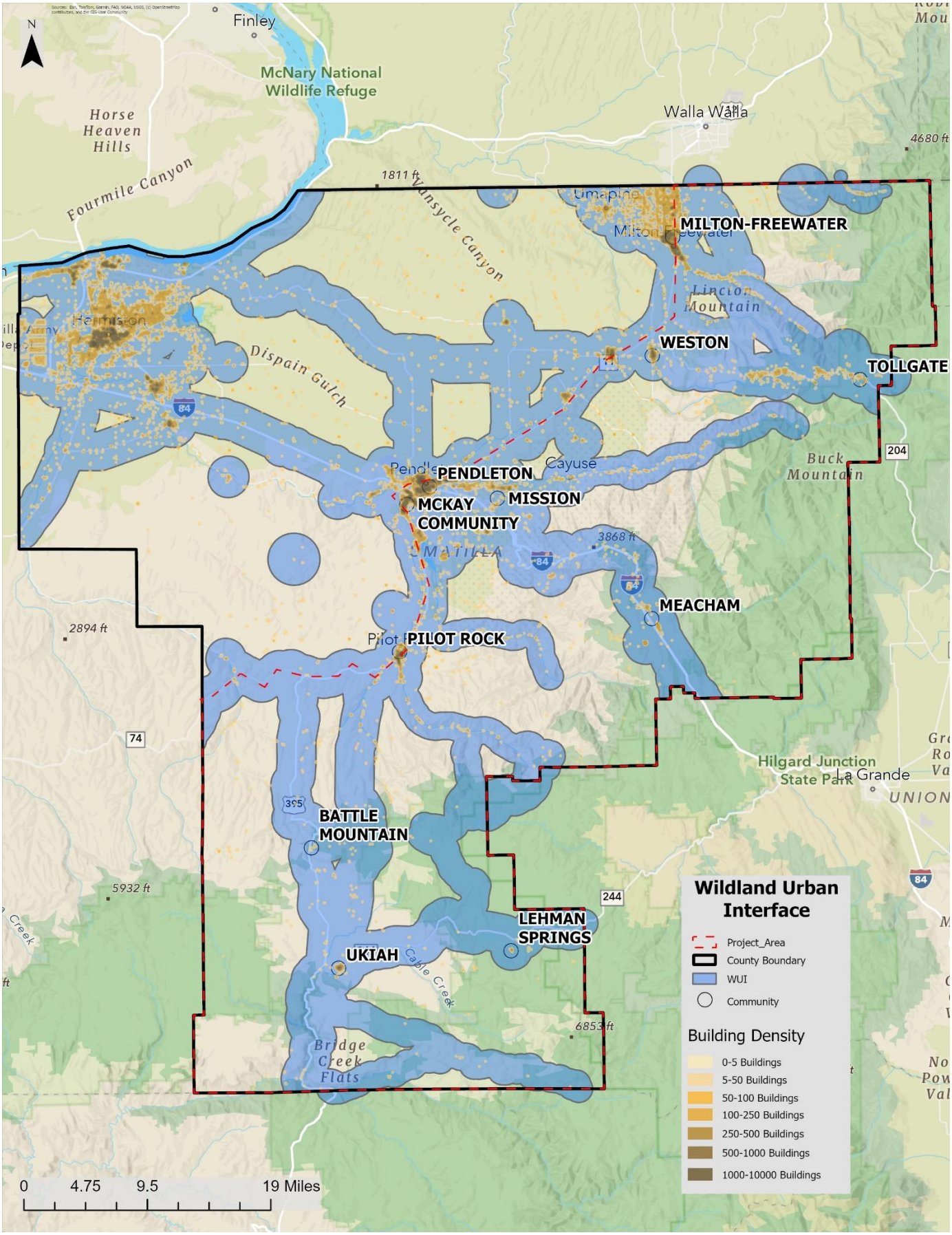


Figure 14) Map of the Umatilla County, OR Wildland Urban Interface (WUI) overlayed with building density.

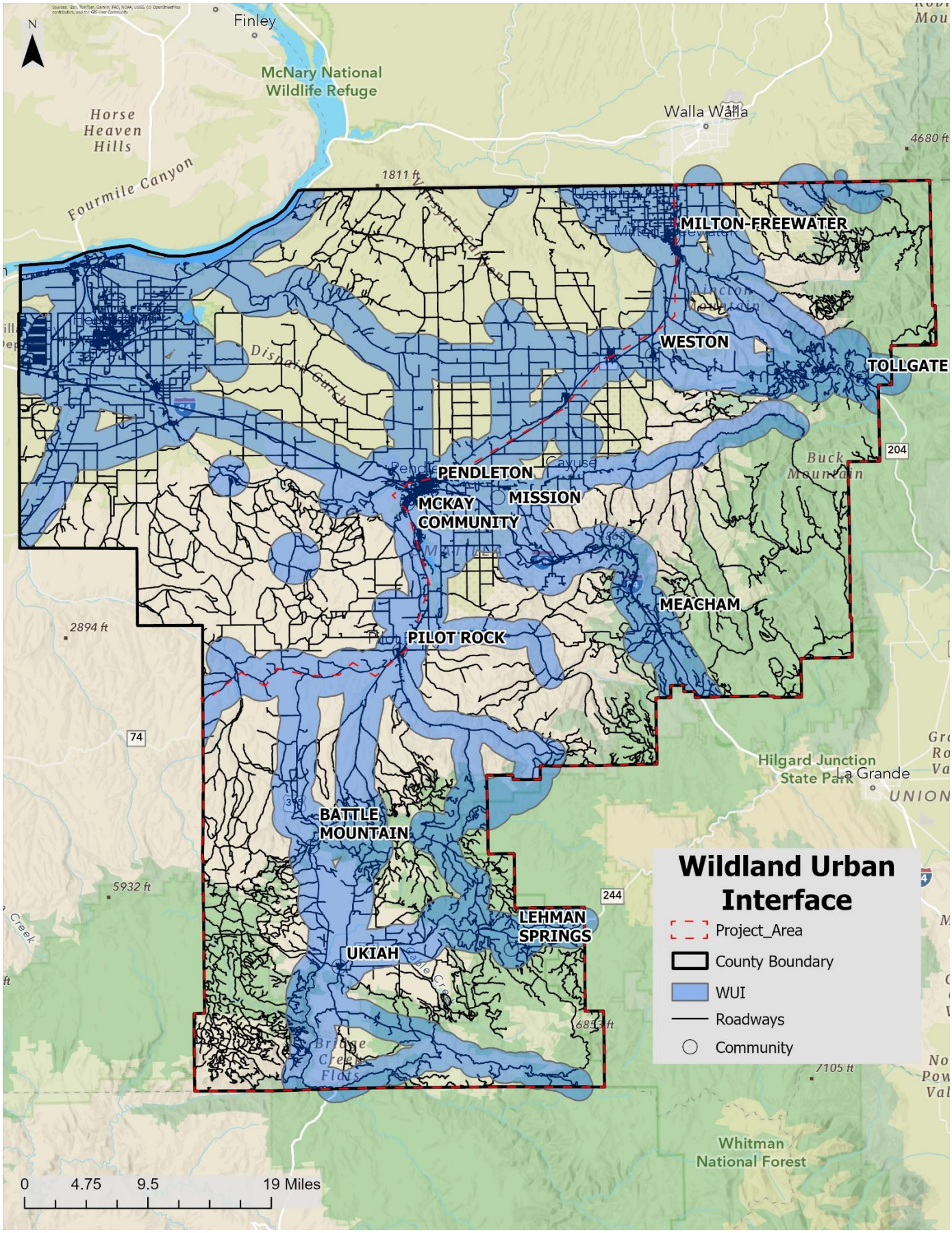


Figure 15) Map of the Umatilla County, OR Wildland Urban Interface (WUI) overlayed with roadways.

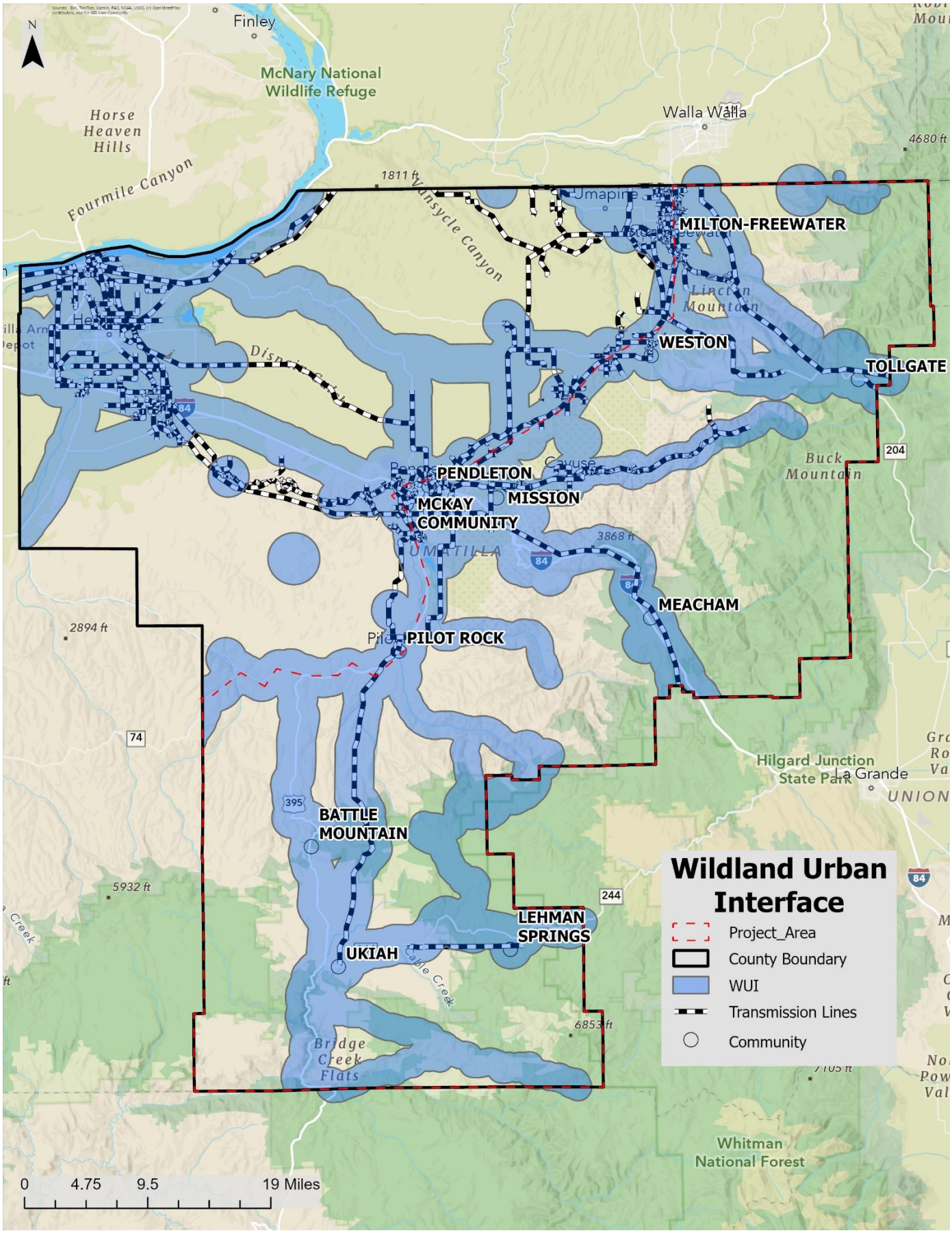


Figure 16) Map of the Umatilla County, OR Wildland Urban Interface (WUI) overlayed with transmission line locations.

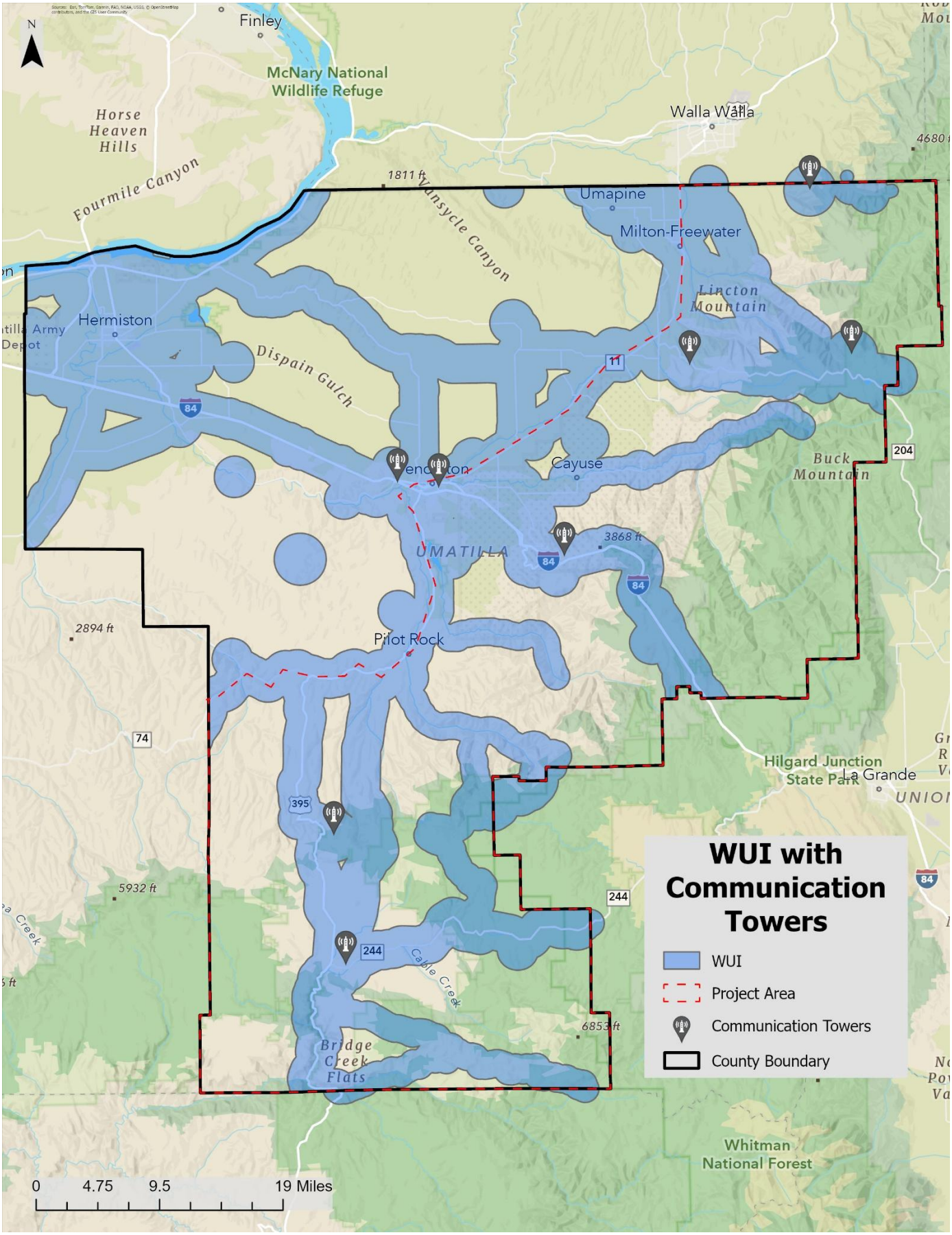


Figure 17) Map of the Umatilla County, OR Wildland Urban Interface (WUI) overlayed with communication tower locations.

5.3 VALUES AT RISK

The following is a lightly modified excerpt from the FEMA National Risk Website[19].

Expected Annual Loss (EAL) represents the average economic loss in dollars resulting from natural hazards each year. It is calculated for various hazard types and quantifies loss for relevant consequences which includes impacts to buildings, people, and agriculture.

Expected Annual Loss is calculated using an equation that includes exposure, annualized frequency, and historic loss ratio risk factors.

- **Exposure:** is a natural hazard consequence factor that is the representative value of buildings, population, or agriculture potentially exposed to a nature hazard occurrence.
- **Annualized Frequency:** is a natural hazard incidence factor that represents the expected frequency or probability of a nature hazard occurrence per year.
- **Historic Loss Ratio:** is a natural hazard consequence factor that represents the estimated percentage of the exposed building value, population, or agriculture value expected to be lost due to a natural hazard occurrence.

While building and agriculture values are expressed in dollars, population is measured in fatalities and injuries. To ensure a common unit of measurement in the Risk Index, the population Expected Annual Loss was monetized into a population equivalence using a value of statistical life (VSL) approach where each fatality or ten injuries is treated as $11.6 million of economic loss.

UMATILLA COUNTY

Exposure Values and Expected Annual Loss values for wildfire for Umatilla County are displayed in Table 12. As stated above, the exposure value represents the total value of agricultural resources, buildings, and population equivalence that could be affected (damaged or destroyed) by wildfire while expected annual loss is the average value that is expected to be lost annually. Total Expected Annual Loss for wildfire in Umatilla County is just under $3 million[20].

[19] FEMA National Risk Index – Expected Annual Loss: https://hazards.fema.gov/nri/expected-annual-loss
[20] FEMA National Risk Index – Expected Annual Loss – Umatilla County: https://hazards.fema.gov/nri/report/viewer?dataLOD=Counties&dataIDs=C41059#SectionExpectedAnnualLoss

Table 12) Summary of Expected Annual Loss values for Umatilla County, OR. These values are from the FEMA National Risk Index.

Loss Category	Exposure Values	Expected Annual Loss
Agriculture	$96,376,236	$456
Buidlings	$2,255,387,243	$2,935,286
Population Equivalence	$81,174,275,049	$540
Total	$83,526,038,528	$2,936,282

6 WILDLAND FIRE MITIGATION STRATEGY

Critical to the effectiveness of this Multi-Hazard Mitigation Plan is the development and implementation of an integrated schedule of action items. The action items included in this plan were identified and selected after costs and effectiveness at protecting life, property, and the natural environment were evaluated by the planning team. This schedule, in combination with actionable mitigation projects, is the strategy that will be used to address and mitigate the impacts of wildland fire in Umatilla County.

Each mitigation action item was developed based on local knowledge, historical events, and current conditions. However, the components of risk and the preparedness of county residents and resources are not static so it will be necessary to review and modify the projects and implementation schedule at least annually. These modifications will reflect changes in the components of risk, population density and distribution, infrastructure modifications, and other factors as well.

Also included in this section are mitigation recommendations for homeowners. These recommendations are intended to compliment the work conducted by firefighting or land management entities. The more engaged and proactive individual property owners are the more effective other projects will be.

6.1 MITIGATION ACTION ITEMS

This section contains all mitigation action items identified by the planning team. All participating entities were encouraged to contribute projects to the document. However, because of the interagency approach that is often required to complete mitigation projects, participating entities that did not submit projects may have instead opted to be a contributor to a project submitted by a different entity. Projects have been sorted into tables by entity. Each project table contains the following information:

- **Project I.D.:** This is a unique identifier for projects in each table. The table is currently set up so the ID for each project consists of an abbreviated name for the lead entity paired with a unique number.
- **Project Name:** A general idea of where and what the project is (e.g. Rural Road Fuel Break).
- **Project Location:** Describes where a project will take place (this could be a general location within the county, an address, a segment of road, etc.)
- **Project Description:** The description of the project includes as much detail as is necessary for future planning partners to understand the purpose and objectives of the project.

- **Sources of Funding:** A general idea of where funding for the project will come from (county, state, federal, or some other funding source)
- **Involved Organizations:** Includes any entities that may have an interest in the project (project planning, land or property ownership, project execution, expertise, etc.)
- **Projected Completion Date:** This is the anticipated date by which a project will be completed. Completion dates might also imply priority of the project or how urgent a project is.

There is also a list of action items directly related to wildfire mitigation in the Umatilla County Multi-Jurisdictional Natural Hazards Mitigation Plan.[21] This plan was completed in 2021 and so not all of these projects are still applicable in 2025. They are referenced here as there is still some overlap between the mitigation efforts undertaken in that plan and this CWPP. Wildfire action items are located on pages 3-11 through 3-13.

[21] https://www.co.umatilla.or.us/fileadmin/user_upload/Planning/Umatilla_County_MJNHMP_FINAL_8-24-21Reduced.pdf

6.1.1 Umatilla National Forest

Project I.D.	Project Name	Project Location	Project Description	Sources of Funding	Involved Organizations	Projected Completion
UK-1	54 North	North of Hwy 244 to forest boundary	This is a vegetation management project designed to promote forest stand resilience to uncharacteristic wildfire disturbance and restore the vigor of traditional First Foods within the 54 North Fuels Reduction and Huckleberry Restoration (54 North) project area.	USFS, ODF, Tribal funding	USFS, CTUIR, ODF	2030
UK-2	P-52 Fuel Break	52 road south of Ukiah	Create and maintain Fuel Break along 52 roads and around Pearson summer cabins.	USFS	USFS	2027
UK-3	Ellis Integrated Veg Project	National forest west of Ukiah	Vegetation management project designed to promote forest stand resilience to uncharacteristic wildfire disturbance	USFS	USFS	2035
UK-4	Willoughby WUI	54 Road South of Highway 244	The Willoughby project area on the North Fork John Day Ranger District is located within the Lehman/Hideaway WUI. It was identified as a high-risk area in this plan.	USFS	USFS	2030

6.1.2 Oregon Department of Forestry

Project I.D.	Project Name	Project Location	Project Description	Sources of Funding	Involved Organizations	Projected Completion
ODF-1	Ukiah CIS	Ukiah, OR	The project involves reducing forest stand density to reduce the risk of catastrophic wildfires. In total, the project aims to reduce wildfire hazards, improve forest health, restore native plant communities, support management goals related to recreation and view sheds, improve wildlife habitat, improve water yield, and increase the quantity/quality of forest products.	NRCS	NRCS; ODF	2026
ODF-2	RCPP	I-84/Meacham	In progress, not finalized.	NRCS	NRCS; ODF	2032

Project I.D.	Project Name	Project Location	Project Description	Sources of Funding	Involved Organizations	Projected Completion
ODF-3	ODF Umatilla SFG	Upper 204 / Tollgate WUI Mill Creek / Government Mtn WUI Weston Mountain / Umatilla River WUI	Treat 200 acres of overstocked and decadent ponderosa pine, lodgepole pine, and mixed conifer forest stands near identified Communities at Risk. Increased ladder fuels, resulting from grand fir encroachment and increased density of understory vegetation, widespread insect damage/mortality, and fire exclusion have increased the risk of catastrophic fires. Treatments will focus on thinning mixed conifer stands at higher elevations (above 4000'), thinning pine stands at lower elevations (1500-4000') and treating ladder fuels throughout the project area. Where terrain allows, machinery will be used to reduce costs and increase efficiency. Slash will be masticated or piled and burned. Where possible, firewood will be harvested from slash piles prior to burning.	ODF	ODF; OSU Extension; OSFM	May 2025

6.1.3 Pendleton Fire District

Project I.D.	Project Name	Project Location	Project Description	Sources of Funding	Involved Organizations	Projected Completion
PFD-1	Goat Grazing for Fuel Reduction		Use goat grazing for targeted fuel reduction in steep, hard-to-access areas, prioritizing South Hill, North Hill, and Tutuilla.	U.S. Forest Service (USFS) WUI grants; Local government budgets	Pendleton Fire and Ambulance; Local landowners; Grazing contractors	Annual grazing cycles starting Year 1.
PFD-2	Grazing, Herbicide, and Seeding		Combine goat grazing with herbicide treatments to clear dense overgrowth in McKay, Tutuilla, and Airport Hill areas, followed by aerial seeding of fire-resistant native species.	NRCS Agricultural Conservation Easement Program (ACEP); USFS Wildfire Resilience Grants	Pendleton Fire and Ambulance; Local grazing contractors	Seasonal grazing and treatment cycles, with seeding in the fall.
PFD-3	Field and Brush Mowing		Mow overgrown fields and brush in areas not accessible to goats, including McKay and Riverside.	Oregon Department of Forestry (ODF) grants; Local Fire Protection funds	Pendleton Fire and Ambulance; City of Pendleton Public Works	Biannual mowing, starting in Year 1.

Project I.D.	Project Name	Project Location	Project Description	Sources of Funding	Involved Organizations	Projected Completion
PFD-4	Herbicide Treatment for Invasive Veg		Apply herbicides to control invasive species like cheatgrass across service areas, including South Hill, Rieth, and Airport Hill, and riparian zones.	NRCS Environmental Quality Incentives Program (EQIP); FEMA Hazard Mitigation Assistance (HMA) funds	Pendleton Fire and Ambulance; Oregon Department of Forestry (ODF);	Seasonal applications (spring and fall), starting in Year 1.
PDF-5	Aerial Seeding of Fire-Resistant Veg		Use seeding to replace flammable vegetation with fire-resistant species in areas like Rieth, Tutuilla, and riparian zones, and along steep slopes such as Airport Hill.	USFS Wildland Urban Interface (WUI) grants; NRCS Conservation Innovation Grants	Pendleton Fire and Ambulance; Bureau of Indian Affairs (BIA); Local conservation groups	Initial seeding in late fall Year 1, with follow-up over 3 years.
PDF-6	Evacuation Route Mapping		Develop and distribute detailed evacuation maps for all service areas, including digital and printed versions.	FEMA pre-disaster mitigation funds; Local emergency management budgets	Pendleton Fire and Ambulance; Local GIS teams	Initial mapping in Year 1, with annual updates.
PDF-7	Evacuation Route Maintenance		Clear vegetation, repair road surfaces, and improve accessibility along key evacuation routes, including Highway 395 and Tutuilla Road.	ODOT; Transportation Safety Division grants; FEMA Hazard Mitigation Assistance funds	Pendleton Fire and Ambulance; ODOT; City of Pendleton Public Works	Annual maintenance cycles starting Year 1.
PDF-8	Community Evacuation Drills		Organize neighborhood-specific evacuation drills, simulating wildfire scenarios in areas like Tutuilla, Rieth, and South Hill	Firewise USA Program grants; Local community development funds	Pendleton Fire and Ambulance; Local law enforcement	Pilot drill in Year 1, expanding annually.
PDF-9	Wildfire Resilient Landscaping Workshops		Educate homeowners on fire-resistant landscaping, using demonstration plots and interactive workshops.	Community Foundation grants; Local business sponsorships	Pendleton Fire and Ambulance; Firewise USA; Local garden centers	Monthly workshops January – June before fire season, starting Year 1

Project I.D.	Project Name	Project Location	Project Description	Sources of Funding	Involved Organizations	Projected Completion
PDF-10	Collaborative Prescribed Burns		Partner with the ODF, BIA, and USFS to conduct controlled burns in wildland areas near Reith, Tutuilla, McKay, and Airport Hill to reduce accumulated fuels.	USFS and DOI preparedness funding; USFS Wildfire Risk Reduction Program; BIA collaborative grants	Pendleton Fire and Ambulance; BIA; USFS; ODF, Oregon Prescribed Fire Council	Annual prescribed burns beginning in Year 2.
PDF-11	"Know Your Zone" Public Awareness		Launch a public campaign to educate residents on evacuation zones, routes, and emergency alerts.	FEMA HMA funds; Local media sponsorships	Pendleton Fire and Ambulance; Local schools and media outlets	Initial rollout in Year 1, with annual updates
PDF-12	GIS-Based Wildfire Scenario Simulations		Use GIS tools to simulate wildfire scenarios and evaluate evacuation strategies.	FEMA pre-disaster mitigation funds; USFS technology grants	Pendleton Fire and Ambulance; Local GIS teams	Annual simulations starting Year 1.
PDF-13	Utility Corridor Vegetation Management		Clear vegetation along powerlines and utility corridors in Riverside, McKay, and North Hill, with herbicide applications and reseeding coordinated to reduce future maintenance needs.	Utility company partnerships; ODF Wildfire Resilience Funds	Pendleton Fire and Ambulance; Pacific Power; Bureau of Indian Affairs (BIA)	Multi-year project starting in Year 1, with annual maintenance.
PDF-14	Riparian Zone Seeding Along the Umatilla River		Remove invasive vegetation using herbicides, followed by aerial seeding of fire-resistant native plants in riparian zones along the Umatilla River in Riverside, Tutuilla, and Reith areas.	NRCS Conservation Stewardship Program (CSP); USFS Watershed Restoration funds	Pendleton Fire and Ambulance; Bureau of Indian Affairs (BIA)	Seasonal projects aligned with seeding windows over 2-3 years.

6.2 MITIGATION STRATEGIES FOR HOMEOWNERS

6.2.1 Preparing Homes for Wildfire

This section is a direct excerpt from the "Preparing homes for wildfire" section of the National Wildfire Protection Association website[22]*. The following information describes different actions that homeowners can take to create defensible space and reduce fire risk on their property and around their homes.*

What are the primary threats to homes during a wildfire?

Research around home destruction vs. home survival in wildfires point to embers and small flames as the main way that the majority of homes ignite in wildfires. Embers are burning pieces of airborne wood and/or vegetation that can be carried more than a mile through the wind can cause spot fires and ignite homes, debris and other objects.

There are methods for homeowners to prepare their homes to withstand ember attacks and minimize the likelihood of flames or surface fire touching the home or any attachments. Experiments, models and post-fire studies have shown homes ignite due to the condition of the home and everything around it, up to 200' from the foundation. This is called the Home Ignition Zone (HIZ) (Figure 18).

The concept of the home ignition zone was developed by retired USDA Forest Service fire scientist Jack Cohen in the late 1990s, following some breakthrough experimental research into how homes ignite due to the effects of radiant heat. The HIZ is divided into three zones.

Immediate Zone

The home and the area 0-5' from the furthest attached exterior point of the home; defined as a non-combustible area. Science tells us this is the most important zone to take immediate action on as it is the most vulnerable to embers. START WITH THE HOUSE ITSELF then move into the landscaping section of the Immediate Zone.

- Clean roofs and gutters of dead leaves, debris and pine needles that could catch embers.
- Replace or repair any loose or missing shingles or roof tiles to prevent ember penetration.
- Reduce embers that could pass through vents in the eaves by installing 1/8 inch metal mesh screening.

[22] *Preparing homes for wildfire*. National Fire Protection Association. Found online at: https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Preparing-homes-for-wildfire. Accessed March 17, 2025.

- Clean debris from exterior attic vents and install 1/8 inch metal mesh screening to reduce embers.
- Repair or replace damaged or loose window screens and any broken windows Screen or box-in areas below patios and decks with wire mesh to prevent debris and combustible materials from accumulating.
- Move any flammable material away from wall exteriors – mulch, flammable plants, leaves and needles, firewood piles – anything that can burn. Remove anything stored underneath decks or porches.

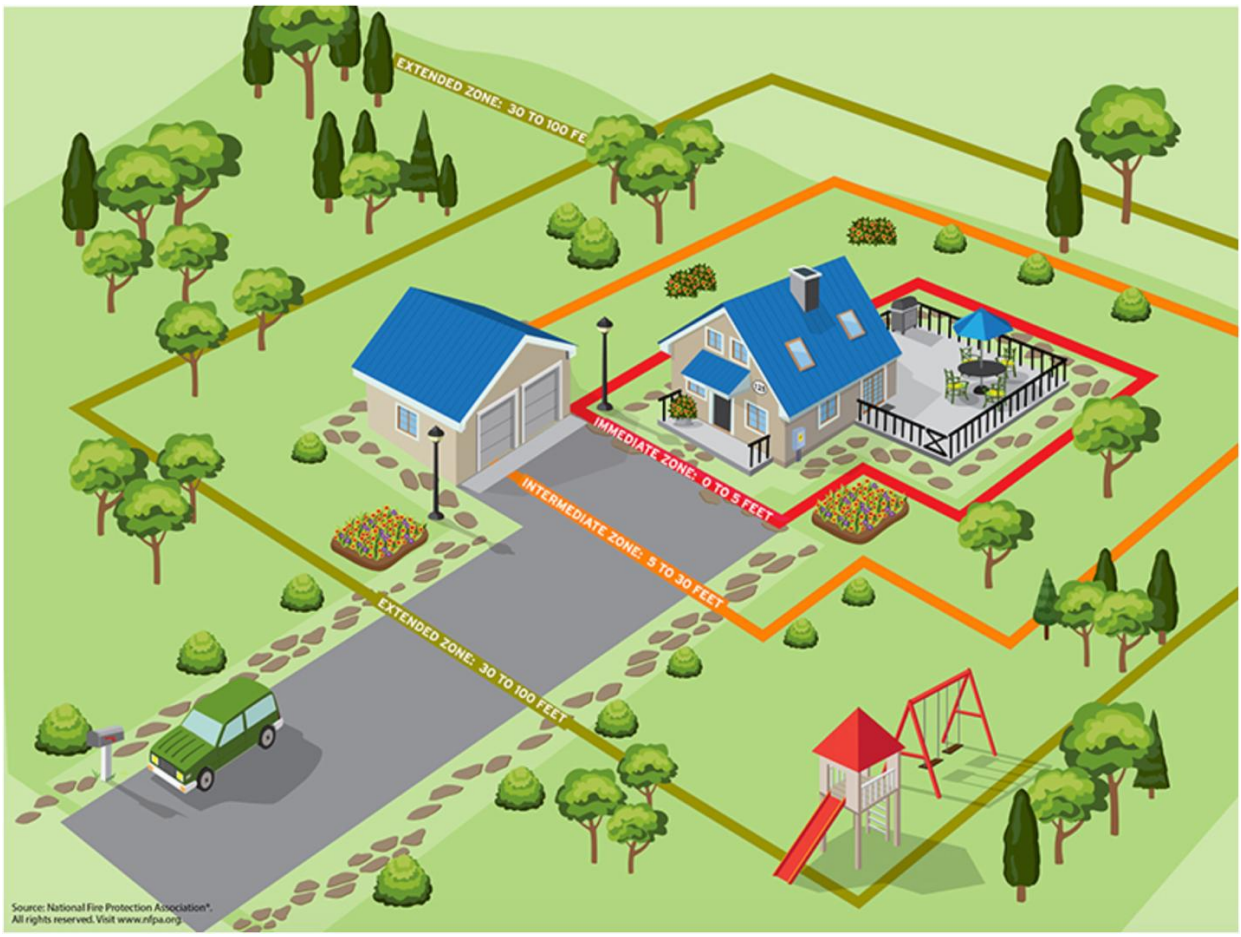


Figure 18) Depiction of the Home Ignition Zone (HIZ). The HIZ consists of three different zones (Immediate Zone, Intermediate Zone, and Extended Zone) around a home in which specific actions can be taken to reduce ignition potential.

Intermediate Zone

5-30’ from the furthest exterior point of the home. Landscaping/hardscaping- employing careful landscaping or creating breaks that can help influence and decrease fire behavior (Figure 19).

- Clear vegetation from under large stationary propane tanks.

- Create fuel breaks with driveways, walkways/paths, patios, and decks.
- Keep lawns and native grasses mowed to a height of four inches.
- Remove ladder fuels (vegetation under trees) so a surface fire cannot reach the crowns. Prune trees up to six to ten feet from the ground; for shorter trees do not exceed 1/3 of the overall tree height.
- Space trees to have a minimum of eighteen feet between crowns with the distance increasing with the percentage of slope.
- Tree placement should be planned to ensure the mature canopy is no closer than ten feet to the edge of the structure.
- Tree and shrubs in this zone should be limited to small clusters of a few each to break up the continuity of the vegetation across the landscape.

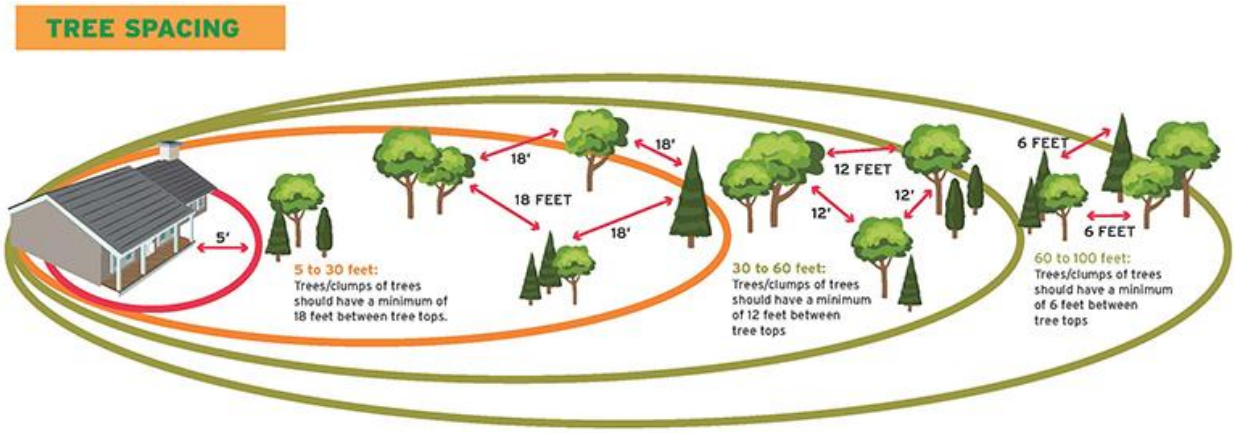


Figure 19) Recommeded tree spacing in each part of the Home Ignition Zone (HIZ). In general, spacing between individual trees or small groups of trees should increase the closer they are to the home or another structure.

30-100 feet, out to 200 feet. Landscaping – the goal here is not to eliminate fire but to interrupt fire's path and keep flames smaller and on the ground.

- Dispose of heavy accumulations of ground litter/debris.
- Remove dead plant and tree material.
- Remove small conifers growing between mature trees.
- Remove vegetation adjacent to storage sheds or other outbuildings within this area.
- Trees 30 to 60 feet from the home should have at least 12 feet between canopy tops.*
- Trees 60 to 100 feet from the home should have at least 6 feet between the canopy tops.*

**The distances listed for crown spacing are suggested based on NFPA 1144. However, the crown spacing needed to reduce/prevent crown fire potential could be significantly greater due to slope, the species of trees involved and other site specific conditions. Check with your local forestry professional to get advice on what is appropriate for your property.*

6.2.1.1 Oregon Defensible Space Recommendations

The Oregon State Fire Marshall's office posts guidance for creating and maintaining defensible space. They provide a sign-up for a defensible space site assessment, draft language for a defensible space code, and a defensible space checklist. Some of the recommendations posted on their website include tips, such as:

- Clear out dried leaves and pine needles from gutters, eaves, and around your chimney.
- Trim the lower branches of trees so they don't act as a ladder for fire to reach the treetops.
- Keep patios free of dry materials, like leaves or old wood, especially in the summer.
- Store firewood and leftover construction materials at least 30 feet away from your house.
- Trim bushes near your house so they don't touch the walls or siding.
- Clean leaves, needles, and debris off your roof and out of gutters regularly.
- Remove plants and bushes growing directly under the eaves of your house; leave at least a five-foot gap.
- Use 1/8-inch metal mesh to cover attic vents, soffit vents, and open spaces under decks and patios.
- Clear leaves, dead wood, mulch, and other debris from on, under, and around decks and fences.

The website also provides informational videos and downloadable infographics.[23]

6.2.2 Firefighter Access

The first consideration for firefighters in any situation during a wildfire is safety. Firefighters must be able to quickly and effectively attack a fire, but this is only possible if a site or home can be accessed safely. Firefighters use a variety of firefighting equipment such as engines, brush trucks, or tenders to protect homes from wildfire. These specialized vehicles require more space to turn around and higher clearances than regular pickup trucks.

Firefighters will first consider if accessing a home will put them at risk while attacking a fire. Criteria that are often considered include:

- Does the access road have proper clearance overhead?
- Is there adequate space on a property to turn a vehicle around?
- Is there more than one way out?
- Are there multiple structures down a road?
- Have suppression forces reviewed the area prior to the emergency?

[23] https://www.oregon.gov/osfm/wildfire/Pages/defensiblespace.aspx

As a homeowner, here are some points to consider when evaluating your home and whether emergency responders can access your property safely:

- **Navigation:** Make sure address numbers are clearly posted at the beginning of your driveway. It can be difficult for firefighters to find a specific home in rural areas, especially if they are attempting to find a home or property in the dark.
- **Defensible Space:** A home or property must have defensible space before firefighters commit to providing protection. This is, primarily, a safe area from which firefighters can monitor and fight wildfire.
- **Ingress and Egress:** Driveways and access roads must be large enough to accommodate larger emergency response vehicles. Roads must be clear of vegetation and, if possible, provide a space to turn vehicles around.
- **Utilities:** Consider posting signage for overhead utilities that may provide clearance issues for larger vehicles.

7 EMERGENCY SERVICE RESOURCES & CAPABILITIES

7.1 PROTECTION CAPABILITIES

Inventory of fire protection resources and inventory of various local fire resources can be found in Appendix B.

There are several agencies involved in wildland fire suppression that work together to provide protection across the interface areas of Umatilla County. Resources range from a strictly volunteer department with little training, to a department with some paid staff along with several trained volunteers, to federal and state agencies that hire paid, full-time seasonal firefighters. Fire vehicles range from 200-gallon engines to 5,000-gallon tenders.

Most of the local resources have at least some radios that are programmable to wildland fire frequencies. All emergency fire agencies (excluding WA-DNR and Walla Walla Fire District #4) participate and coordinate as members of the Umatilla/Morrow County Fire Defense Board, to work together for mutual aid activities. These agencies can utilize the Oregon State Fire Marshall frequency for command and tactical operations, a common radio communication frequency, as needed. Agencies have also agreed through mutual aid agreements in place, to allow other fire agencies to use their frequency as appropriate.

Each district or department faces unique challenges in dealing with wildland fires. Having to rely on volunteers for firefighting needs is a common struggle for several rural fire districts. Quick initial response can be impacted by limited resources, especially when firefighters must be pulled off their “regular” jobs. Wildland fires can occur in terrain that is rural, remote, and difficult to reach quickly. Roads may be in poor condition, private gates locked, and private bridges may be unable to accommodate heavier, firefighting vehicles. Ingress and egress issues are a constant problem in certain areas of the county. Appropriate wildland training is an ongoing challenge for districts that rely on volunteer forces; it demands a high level of commitment from those citizens to maintain current training standards. Having water sources available is also a concern. Pilot Rock RFD has added water tanks at strategic locations across their protection district to improve the available water supply. Others are working on improving access to water sources.

7.2 OVERVIEW OF FIRE PROTECTION

The BMF Project Area contains multiple fire jurisdictions with State and Forest Service protection covering most areas outside populated areas. The following districts and services fall within the BMF Project Area:

7.2.1 Milton-Freewater Rural Fire District

The Milton-Freewater Rural Protection District (MFRP) covers 325 square miles in Umatilla County including the areas of Blue Mountains, Cobb, Columbia River, Crockett, Ferndale, Greenwater Park, Snake River, Sunnyside, Walla Walla River & Walla Walla Valley. The MFRP offers the following services:

- **Fire Contracts:** Fire contracts are an essential part of protecting property and structures outside of city limits. These contracts are renewed each year to ensure that the necessary resources are available in case a fire emergency. By having a fire contract in place, property owners can have peace of mind knowing that their assets are protected and that firefighters will respond quickly to any potential threats. It is important to prioritize fire safety and to renew these contracts annually to maintain the highest level of protection.
- **FireMed:** FireMed Emergency Ground Ambulance Membership.
- **Ambulance Service:** Milton-Freewater Rural Fire Department & EMS is the sole ambulance service provider in the area. The city does not operate any ambulances, and MFRP is always on call to offer support to both city and rural residents in case of a 911 emergency.
- **Community Service:** Services include fire detector installation, property inspections, and emergency planning and preparedness trainings.

7.2.2 Pendleton Fire and Ambulance

Pendleton Fire Department (PFD), located in Umatilla County (Oregon) including the areas of Eastern Oregon Regional Airport, Green Meadows, McKay Creek, McKay Reservoir, Pendair Heights, Pilot Rock, Rieth, Riverside, Tutuilla, Ukiah & Umatilla River.

Pendleton Fire Department provides fire protection to the city of Pendleton as well as the Riverside Rural Fire Protection District, Lower McKay Creek Rural Fire Protection District, McKay Dam Rural Fire Protection District, Rieth Water District and several individual properties through contract agreements.

Pendleton Fire Department provides ALS ambulance service for the southeast portion of Umatilla County encompassing approximately 2000 square miles and including the communities of Pendleton, Rieth, Pilot Rock, and Ukiah.

7.2.3 Umatilla Tribal Fire Department

The Umatilla Tribal Fire Department (UTFD), located in Umatilla County (Oregon) includes the areas of Cayuse, Coonskin Creek, Gopher Flats, Kirkpatrick, Meacham, Mission, Moonshine Creek, Pendleton, Riverside, Spring Creek, Spring Mountain, Tutuilla, Umatilla River & Wildhorse.

Umatilla Tribal Fire Department has mutual-aid agreements with East Umatilla County Fire & Rescue & Pendleton Fire Department.

7.2.4 East Umatilla Fire and Rescue

The East Umatilla Fire and Rescue Department covers approximately 270 sq miles in the northern section of the project area. The district encompasses the cities of Adams, Athena, Helix, Weston, along with some of the surrounding rural communities.

The jurisdiction includes the East Umatilla County Ambulance Area Health District servicing 450 miles responding to approximately 450 service calls a year.

8 MONITORING AND EVALUATION

8.1 SCHEDULE

The maintenance for this plan will be directed by the Umatilla County Commissioners but coordinated and completed through the CWPP Steering Committee. The committee will reconvene annually to review and reevaluate:

- The plan, goals, and objectives
- Designated WUI boundaries and Communities-at-risk
- Strategy recommendations as various tasks/projects are accomplished and areas at-risk decline in hazard level
- Priorities for action items and progress
- Infrastructure changes in county including:
    - Population changes in WUI areas
    - Land use changes
    - Emergency services capacity levels
    - Computer software and data updates

A complete revision of the CWPP will be completed every five years by the Steering Committee and submitted to the County Commissioners for their approval. If during annual reviews or following some unforeseen condition that warrants a modification in this schedule, the committee may use their discretion to complete the review and revision as warranted.

9 APPENDICES

9.1 APPENDIX B: SUPPRESSION RESOURCES

9.1.1 Firefighting Staff and Resources by Entity

BUREAU OF INDIAN AFFAIRS

- **Protection Areas:** Trust Lands
- **Suppression Services:** Wildland
- **Employees:** BIA (x4); CTUIR (x2)
- **Engines:**
  - Type-6 (x2) – 250 Gallons
  - Type-4 (x1) – 750 Gallons
- **Radios:** Yes

CITY OF MILTON-FREEWATER

- **Protection Areas:**
- **Suppression Services:**
- **Employees:**
- **Engines**
- **Radio:**

CITY OF PENDLETON

- **Protection Areas:**
- **Suppression Services:**
- **Employees:**
- **Engines**
- **Radio:**

CITY OF UKIAH

- **Protection Areas:**
- **Suppression Services:**
- **Employees:**
- **Engines**
- **Radio:**

CONFEDERATED TRIBES OF THE UMATILLA INDIAN RESERVATION (CTUIR)

- **Protection Areas:**

- **Suppression Services:**
- **Employees:**
- **Engines**
- **Radio:**

East Umatilla Rural Fire Protection District

- **Protection Areas:** Highway 204; Umatilla RV Rd.
- **Suppression Services:** Structural; Wildland
- **Employees:** Volunteers (X); Paid Staff (x1.5)
- **Engines:**
    - Type-1 (x3)
    - Brush: Type-6 (x4); Type-4 (x1)
    - Tender: Type-1 (x1); Type-2 (x1); Type-3 (x1)
- **Radios:** Yes – with ODF

Meacham Rural Fire District

- **Protection Areas:**
- **Suppression Services:** Structural; Wildland
- **Employees:**
- **Engines**
- **Radio:**

Milton-Freewater Rural Fire District

- **Protection Areas:** Foothills of Blue Mountains (E&SE)
- **Suppression Services:** Structural; Wildland
- **Employees:** Volunteers (x20); Paid Staff (x##)
- **Engines:**
    - Heavy Brush Type-4 (x4) – 1,000 Gallons
    - Light Brush Type-6 (x3) – 200 Gallons
    - Tender (x2) – 2,250 & 5,000 Gallons
- **Radio:** Yes

Oregon Department of Forestry (ODF)

- **Protection Areas:** Pendelton Unit – NEO Forest Protection
- **Suppression Services:** Wildland
- **Employees:** Permanent (x4); Seasonal (x12)
- **Engines:** Type-6 (x5) – 300 to 400 Gallons
- **Radio:** Yes

Pilot Rock Rural Fire District

- **Protection Areas:** City Limits; Surrounding 342 Mi^2
- **Suppression Services:** Structural; Wildland
- **Employees:** Volunteers (x20)
- **Engines:**
    - Type-1 (x1)
    - Type-1 (x1) – 1,000 Gallon CAFS
    - Type-2 (x1) – 900 Gallon CAFS
    - Type-3 (x1) – 350 Gallons, Class A Foam
    - Type-4 (x1) – 200 Gallons
    - Tender (x1) – 3,000 Gallons
- **Radio:** Yes – Red Net; White Net; Fire Net

USFS – Walla Wall Ranger District

- **Protection Areas:** Federal Forest
- **Suppression Services:** Wildland
- **Employees:** Summer (x50); Winter (x15)
- **Engines:**
    - Type-4 (x1)
    - Type-6 (x3)
    - Type-7 (x7) – Patrols
- **Radio:** Yes – Ready to be cloned

USFS – North Fork John Day Ranger District

- **Protection Areas:** Federal Forest
- **Suppression Services:** Wildland
- Employees:
- Engines
- Radio:

Walla Walla Fire District #4

- **Protection Areas:** Residents in Mill Creek area through individual contracts up to 2 miles into Oregon
- **Suppression Services:** Structural
- **Employees:** None
- **Engines:**
    - Type-6 (x6)
    - Tenders (x3) – 2,000 Gallons
- **Radio:** Command Vehicles can talk with WA DNR & USFS but not ODF

9.1.2 Additional Equipment by District

Milton-Freewater

- 1990 International S 4X4 90 GPM pump and 750-Gallon Water tank
- E-One Cyclone Hush 2000 GOM and 2000-Gallon water tank
- Acela 6X6 (Tactical Tender) 2500 Gallon Water tank
- Freightliner FL-70 Mercedes Benz 450 GPM pump, 1000-gallon water tank with foam (Foam Pro) and front remote nozzle
- Piece Arrow 1500 GPM pump and 750 gallon water tank
- 2013 Ford E-450 Super Duty/Horton
- Ford F 450 4x4 XLT
- Ford F 550 4x4 XLT Super Duty 500 gallon water tank and 12 gallons of foam and front remote nozzle
- 2006 Chevy C5500 4x4 DuraMaxx 250 GPM pump and 700 gallon water tank
- 1989 GMC White 6x6 3000 gallon water tank
- 2003 For F-350 4x4 Super Duty MedTec

Pendleton

- Engine 1
- Tower 1
- Rescue 1
- Medic 1
- Medic 3
- Medic 4
- Medic 5
- Brush 1
- Water Tender
- Truck 1
- Utility 2
- Engine 2
- Medic 2
- Brush 2
- Engine 2112
- ARFF 1
- ARFF 2

Pilot Rock

- 7 Fire Engines and Tenders
- 2 Medic Units

East Umatilla

- Spartan Metro Star EMFD:
- Engine 11
- Brush 11
- Brush 12

CTUIR

- Engine 49
- Medic 42

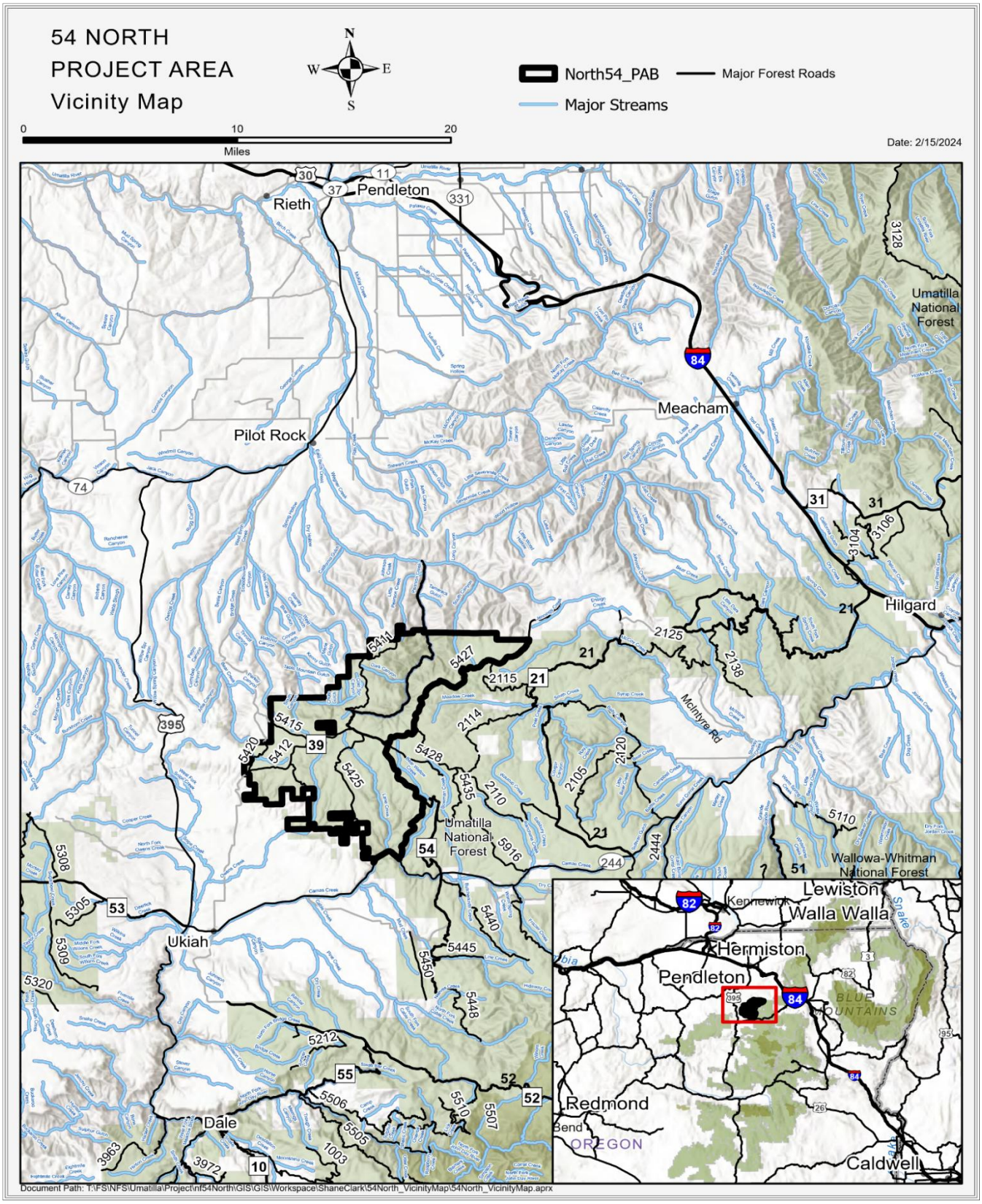
- Command 41
- Ladder 49
- Medic 41
- Brush 41, Brush, 42 Brush, 43
- Tender 41
- Hazmat 41

9.1.3 District Coverage and Staffing

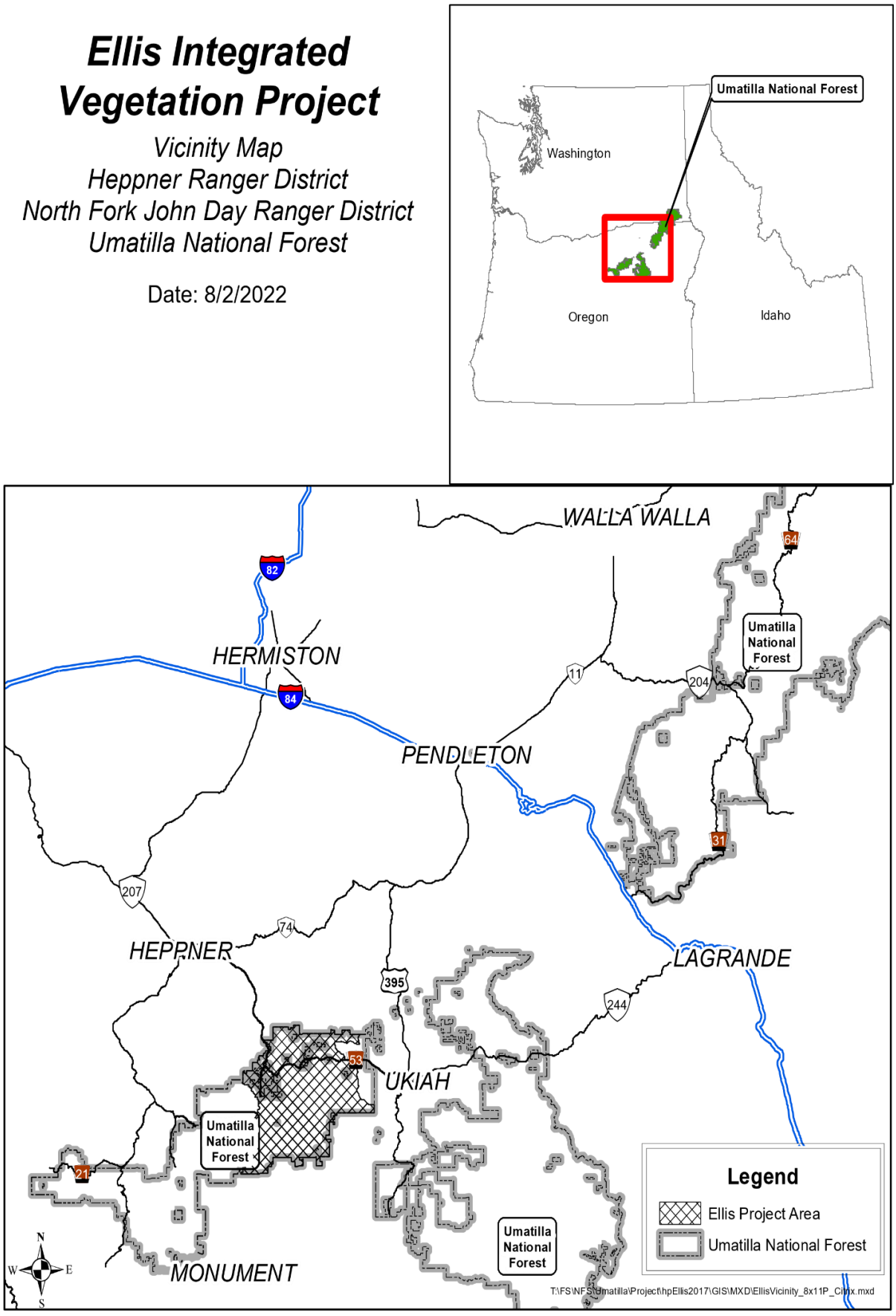
District Name	Area Covered	Staffing
Milton Freewater	325 sq miles	21 Volunteers and a Chief
Pendleton	1280 sq miles	21 career and 40 reserve
Pilot Rock	348 sq Miles	21 Volunteers
East Umatilla	270 sq miles	23 Staff members
Umatilla Tribal	270 sq miles	7 career and 25 volunteers

9.2 APPENDIX C: PROJECT MAPS

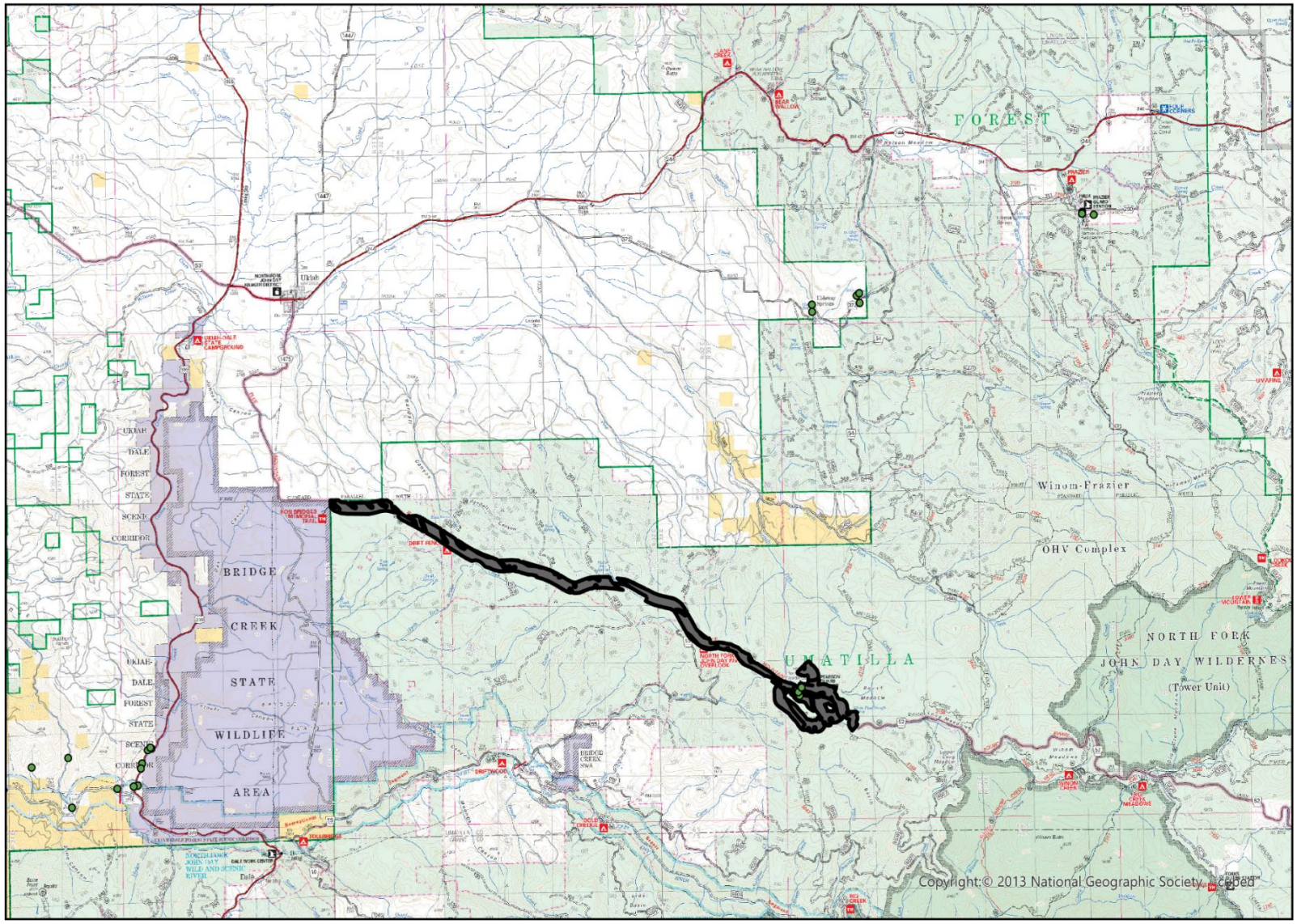
9.2.1 54 North Project Area



9.2.2 Ellis Integrated Vegetation Project



9.2.3 P52 Fuel Break



Legend

- structures
- P52_FuelBreak

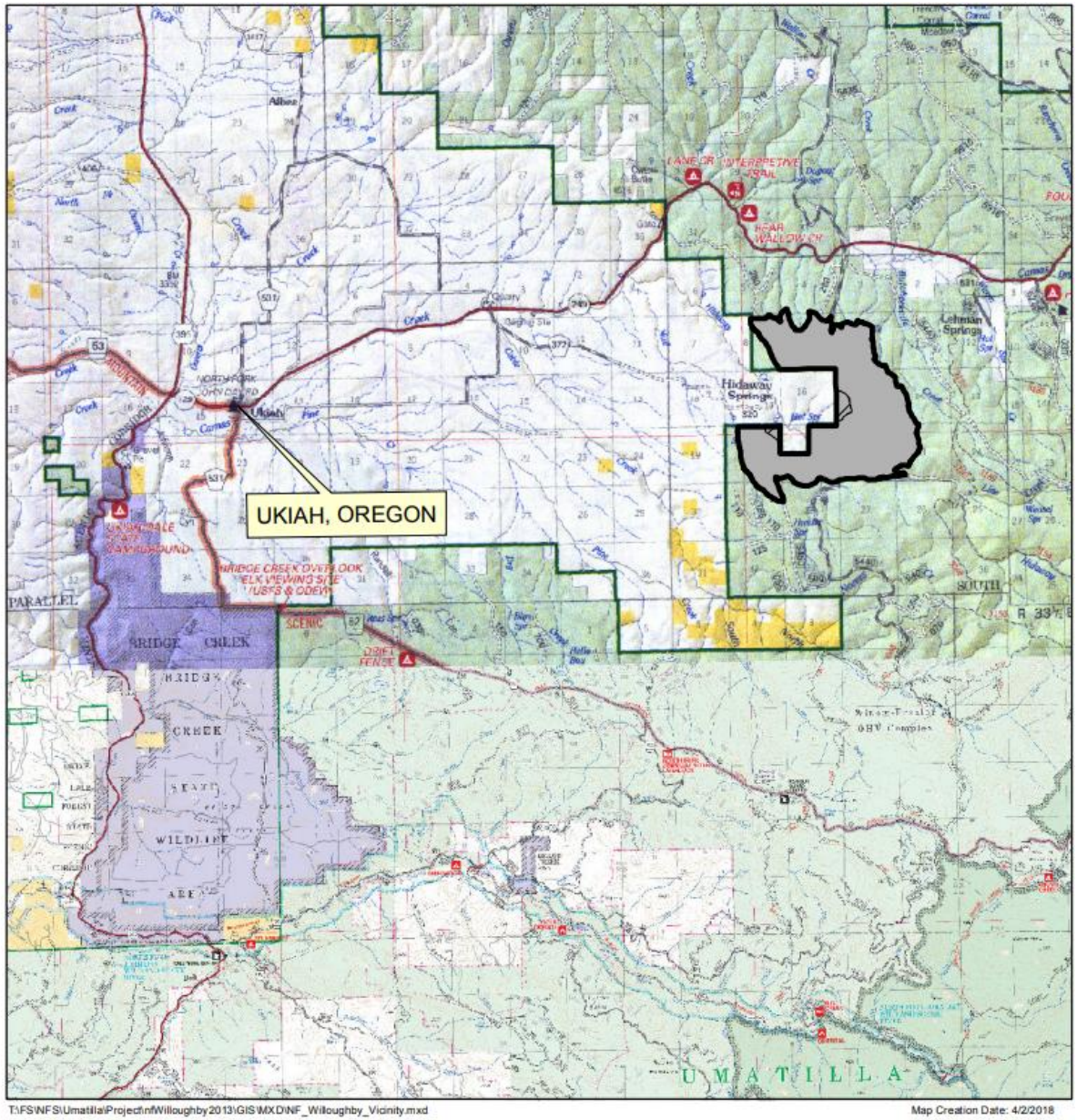
0 0.75 1.5 3 4.5 6 Miles

N W E S

9.2.4 Willoughby Urban Interface Protection Project

Willoughby Urban Interface Protection Project

Vicinity Map
March 30, 2018



Legend

- Project Area
- Low Intensity Zone (LIZ)
- Ember Reduction Zone (ERZ)

Township 5 South, Range 33 East,
Willamette Meridian

N
W E
S

0 1.25 2.5 5 Miles

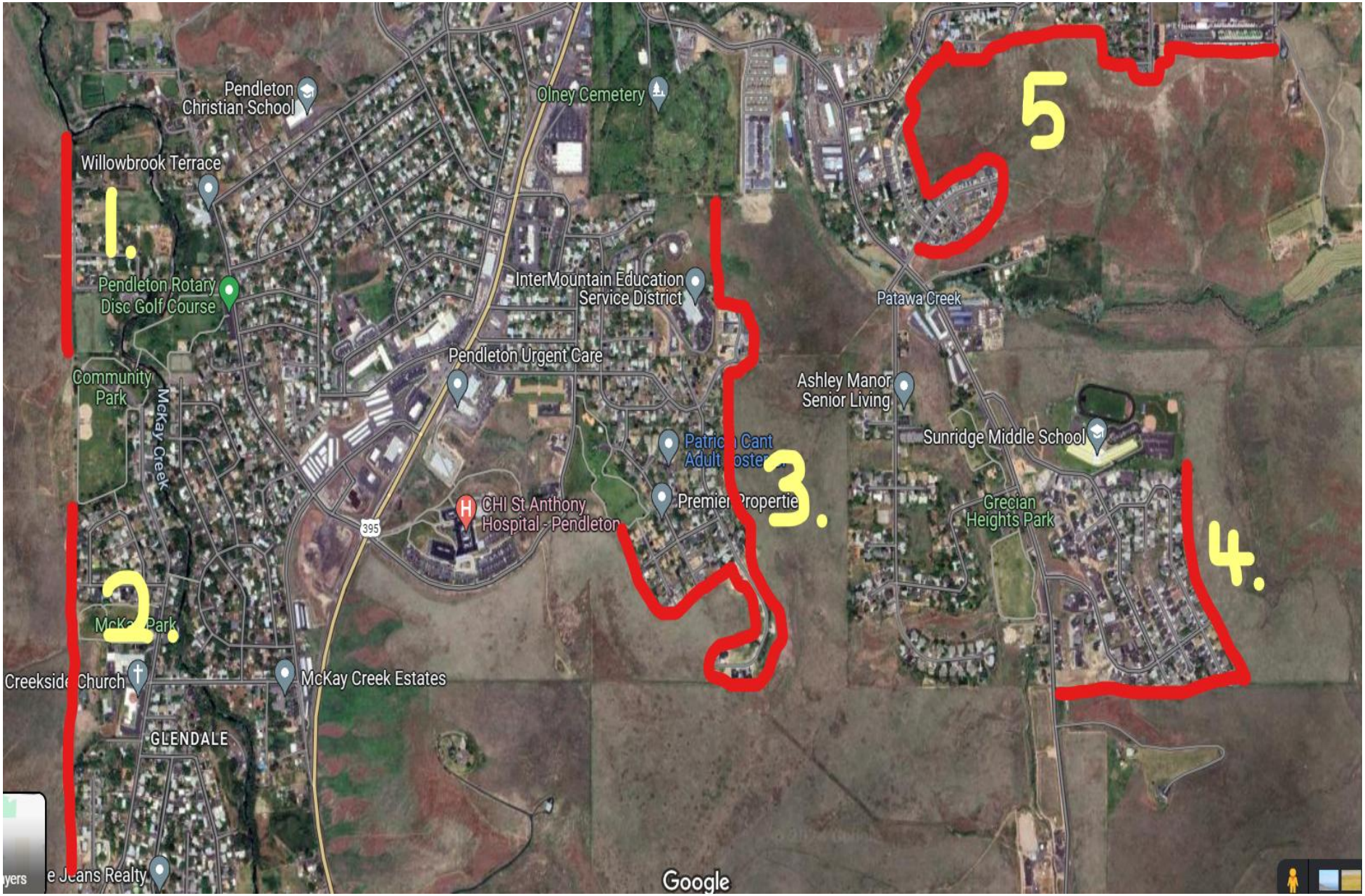
NAD 1983 Oregon Washington Albers
Projection: Albers
Datum: North American 1983

T:\FS\NFS\Umatilla\Project\nf\Willoughby2013\GIS\MXD\NF_Willoughby_Vicinity.mxd

Map Creation Date: 4/2/2018

9.2.5 Pendleton Fire Department Targeted Grazing Project Area Map

9.2.6 Pendelton Fire Department Targeted Mowing Location Map



9.3 APPENDIX D: PUBLIC OUTREACH AND FEEDBACK