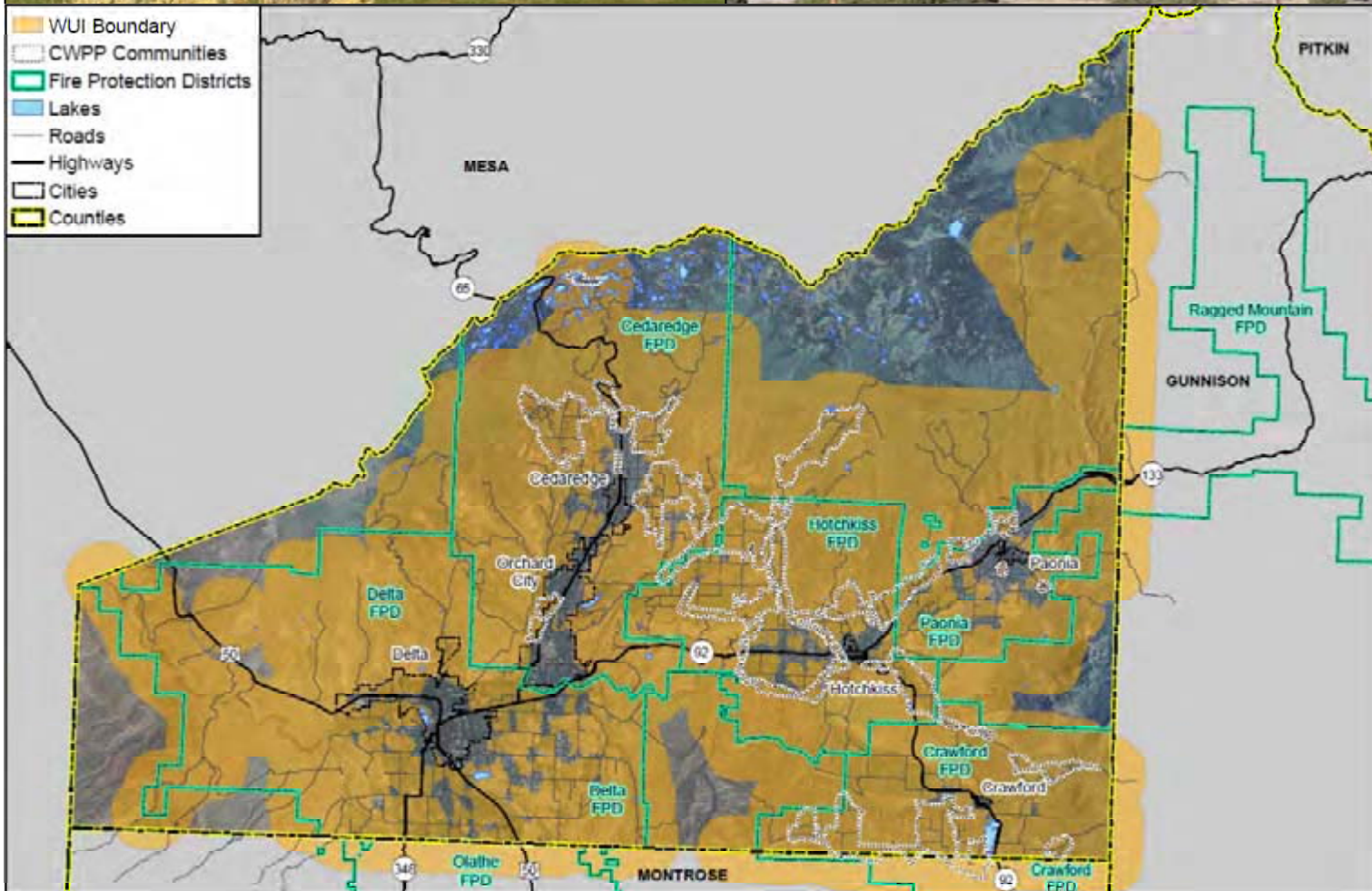


Delta County, Colorado

Community Wildfire Protection Plan



DELTA COUNTY, COLORADO COMMUNITY WILDFIRE PROTECTION PLAN

June 2011

Prepared by Delta County

In Coordination with the Delta County Core Stakeholder Group

With Professional Planning Assistance from

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DELTA COUNTY COMMUNITY WILDFIRE PROTECTION PLAN

Final, June 2011

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EXECUTIVE SUMMARY

This document provides a comprehensive, scientifically based analysis of wildfire related hazards and risks in the Wildland Urban Interface (WUI) areas of Delta County, Colorado. The analysis is delivered in the form of a Community Wildfire Protection Plan (CWPP), and strives to follow the standards for CWPPs that have been established by the Healthy Forests Restoration Act (HFRA) and the Colorado State Forest Service (CSFS). The plan presents the results of a county-level fire behavior analysis in conjunction with community-level analyses of wildfire risk. From this analysis recommendations have been generated to aid stakeholders and residents in preventing and/or reducing the threat of wildfire to community values in the study area. This report complements local agreements and existing plans for wildfire protection to aid in implementing a seamless, coordinated effort in determining appropriate fire management actions in the study area. The Delta County CWPP is a guiding document that will facilitate the implementation of future mitigation efforts.

This CWPP strives to meet the requirements of HFRA by:

Identifying and prioritizing fuels reduction opportunities across the landscape

See Communities Ignitability Analysis Recommendations section of the main document

Addressing structural ignitability

See Communities Ignitability Analysis Recommendations section of the main document and Home Construction mitigation recommendations and CSFS no. 6.302 *Creating Wildfire Defensible Zones* insert in *Appendix A*

Addressing local preparedness and firefighting capabilities

See Local Preparedness and Fire Protection District Capabilities section of the main document

Collaborating with stakeholders

See *Appendix B*

The Delta County CWPP is the result of an area-wide fire protection planning effort that includes extensive field data, review, and compilation of existing documents. It also includes a scientific analysis of the fire behavior potential of the study area (based on fuels, topography, and historical weather conditions), and collaboration with officials from several agencies including: the Cedaredge Fire Protection District, West Region Wildfire Council, Crawford Fire Protection District, Delta Fire Protection District, Hotchkiss Fire Protection District, Paonia Fire Protection District, Colorado State Forest Service, Montrose Interagency Fire Management Unit (MIFMU), Delta County Office of Emergency Management, US Forest Service, Colorado Division of Emergency Management, and representatives from local communities and the public.

This CWPP provides a comprehensive assessment of the wildfire hazards and risks in the study area. Its goal is to reduce hazards through increased education about wildfires, hazardous fuels reduction, and improved levels of fire suppression response. Detailed recommendations for specific actions are included herein. It is important to note that the Delta County CWPP is a working document and needs to be updated annually and/or after a major “event” such as wildfire, fuels treatment projects, flood, insect infestation, or significant new home development.

DISCLAIMER

Recommendations in this document are not prescriptive but are intended to assist in the identification of possible solutions or mitigation actions to reduce the impact of wildfire on values at risk. The views and conclusions in this document are those of the authors and should not be interpreted as representing the opinions or policies of any governmental entity or fire agency, signatory companies, Delta County, or the US Government. The methodology used is proprietary and as such may not match with other existing hazard and risk ratings. In the event the language of this document conflicts with any regulatory documents, policies, or local laws, this document does not supersede any regulatory documents, local laws, or policies.

TAKE HOME MESSAGE

The CWPP and associated appendices provide an overview of the values at risk on which a significant wildfire would have an impact. These areas include: life safety, homes and property values, infrastructure, recreation and lifestyle, and environmental resources.

Recommendations in the report address seven broad categories, including: defensible space, home construction, landscaping/fuels, preparedness planning, infrastructure, public education, and water source supply. While many of the recommendations are general in nature, specific recommendations regarding landscape scale fuel treatments and evacuation routes are included in the Community Ignitability Analysis Recommendations section of the report. General recommendations are provided for all communities within the study area; however, additional fuel reduction recommendations are provided for 23 CWPP communities. Fuel modification recommendations included creating or improving defensible space for all 23 communities, evacuation plans for eight of the communities, fuelbreaks for eight of the communities, and roadside thinning for one community. Additional recommendations regarding evacuation include maintaining primary egress routes, providing a secondary egress road, and educating residents on where their best evacuation routes are located. Recommendations in this CWPP should be brought to the local community involved with the project to ensure that the project is valuable and viable for the area. Additional fuels reduction projects are also encouraged, especially as previous recommendations are completed.

HOW TO USE THIS DOCUMENT

Because much of the information contained in the report is extensive and/or technical in nature, detailed discussions of certain elements are contained in the following appendices. In addition, please refer to page 156 of this document for a glossary defining technical terms.

Appendix A: General Recommendations

Recommendations for individual communities are found in the Community Ignitability Analysis Recommendations Section of this plan. The solutions outlined in Appendix A pertain to overall recommendations for the County and all fire protection districts. The appendix contains general defensible space guidelines and home ignitability mitigation actions that are applicable to all residents in the study area.

Appendix B: Project Collaboration

One of the main requirements of HFRA is to assure community participation. A summary of the collaborative process undertaken for this project are found in Appendix B.

Appendix C: Fire Behavior Potential Analysis Methodology

Appendix C describes the methodology used to evaluate and model the threat of fire behavior

potential represented by physical hazards such as fuels, weather, and topography to values at risk in the study area. A detailed description of each standardized, nationally recognized fuel model found in the study area is included.

While the graphics provide general information regarding the overall hazard and risk rating for specific communities, they are not adequate to describe fully the specific information that went towards forming the rating. At a minimum, it is necessary to review the individual community write-ups and recommendations, which include a discussion of community risks based on field observation and anticipated fire behavior. The rating alone may not capture the mitigation needs of the community. As an example, some communities may have a low or moderate rating, but may have a few specific areas that require attention. A full understanding can only be captured by reading the accompanying text, in addition to looking at the graphics.

A CWPP is a living document; it should change based on the needs of the communities as projects are completed or additional projects are added. It is recommended that the core stakeholder group involve the communities to identify projects and implement the CWPP.

INTRODUCTION

The Delta County CWPP is the result of a countywide planning effort that included extensive field data gathering, compilation of existing documents and GIS data, and scientifically based analyses and recommendations designed to reduce the threat of wildfire-related damages to values at risk. This document incorporates new and existing information relating to wildfire (i.e., 2005 Delta County Fire Plan, 2007 Hotchkiss CWPP, 2008 Delta County Multi-Hazard Mitigation Plan, 2010 Delta County Wildfire Annual Operating Plan), which will be valuable to citizens, policymakers, and public agencies in Delta County, Colorado. Participants in this project include the Montrose Interagency Fire Management Unit, Delta Fire Protection District, West Region Wildfire Council, Cedaredge Fire Protection District, Crawford Fire Protection District, Hotchkiss Fire Protection District, Paonia Fire Protection District, Bureau of Land Management, US Forest Service, Colorado State Forest Service, Colorado Division of Emergency Management, home owner associations (HOA), and homeowners. This document meets the requirements of the Healthy Forests Restoration Act (2003) and Colorado State Forest Service (CSFS) guidelines of 2009 for community fire planning.

The assessment portion of this document estimates the hazards and risks associated with wildland fire in proximity to the Wildland Urban Interface (WUI) area (WUI is defined in the Study Area Overview of this plan.) This information, in conjunction with identification of the values at risk, defines areas of special interest and allows for prioritization of mitigation efforts. From the analysis of this data, solutions and mitigation recommendations are offered that will aid homeowners, land managers, and other interested parties in developing short-term and long-term planning efforts.

Wildfire hazard data is derived both from the community Wildfire Hazard Rating system (WHR) and from the analysis of Fire Behavior Potential, which are extensive and/or technical in nature. Detailed findings and methodologies for these analyses are included in their entirety in appendices rather than the main report text. This approach is designed to make the plan more readable, while establishing a reference source for those interested in the technical elements of the Delta County wildfire hazard and risk assessment.

As previously mentioned, a CWPP is a “living document” that is only useful if it is updated annually. The current stakeholder organizations listed in Table 1 will be primarily responsible for compiling and printing updates to the master copy, with the data being supplied by the fire chiefs or interested community leaders (e.g., HOA presidents, town managers).

For the purposes of this report the following definitions apply:

Risk is considered to be the likelihood of an ignition occurrence. This is primarily determined by the fire history of the area.

Hazard is the combination of the WHR ratings of the CWPP communities and the analysis of Fire Behavior Potential, as modeled from the fuels, weather, and topography of the study area. Hazard attempts to quantify the severity of undesirable fire outcomes to the values at risk.

Values at Risk are the intrinsic values identified by citizens as being important to the way of life in the study area (e.g., life safety, property conservation, access to recreation, cultural sites, and wildlife habitat).

This document has the following primary purposes:

1. Provide a comprehensive, scientifically based analysis of wildfire related hazards and risks in the WUI areas of Delta County.
2. Using the results of the analysis, generate recommendations designed to prevent and/or reduce the damage associated with wildfire to WUI values in the study area.
3. Create a CWPP document which conforms to the standards for CWPPs established by HFRA and the CSFS Minimum Standards.

THE NATIONAL FIRE PLAN AND THE HEALTHY FORESTS RESTORATION ACT

In 2000, more than eight million acres burned across the United States, marking one of the most devastating wildfire seasons in American history. One high profile incident, the Cerro Grande fire at Los Alamos, NM, destroyed more than 235 structures and threatened the Department of Energy's nuclear research facility.

Two reports addressing federal wildland fire management were initiated after the 2000 fire season. The first report, prepared by a federal interagency group, was titled "Review and Update of the 1995 Federal Wildland Fire Management Policy" (2001). This report concluded, among other points, that the condition of America's forests had continued to deteriorate.

The second report, titled "Managing the Impacts of Wildfire on Communities and the Environment: A Report to the President in Response to the Wildfires of 2000," was issued by the Bureau of Land Management (BLM) and the United States Department of Agriculture Forest Service (USFS). It became known as the National Fire Plan (NFP). This report, and the ensuing Congressional appropriations, ultimately required actions to:

- Respond to severe fires.
- Reduce the impacts of fire on rural communities and the environment.
- Ensure sufficient firefighting resources.

Congress increased its specific appropriations to accomplish these goals. In 2002, there was another severe season: more than 1,200 homes were destroyed and over seven million acres burned. In response to public pressure, Congress and the Bush administration continued to designate funds specifically for actionable items such as preparedness and suppression. That same year, the Bush administration announced the Healthy Forests Initiative, which enhanced measures to restore forest and rangeland health and reduce the risk of catastrophic wildfires. In 2003, the Healthy Forests Restoration Act was signed into law.

Through this piece of legislation, Congress continues to appropriate specific funding to address five main subcategories through the NFP: preparedness, suppression, reduction of hazardous fuels, burned-area rehabilitation, and state and local assistance to firefighters. The general concepts of the NFP blend well with the established need for community wildfire protection in the study area. The spirit of the HFRA and NFP is reflected in the Delta County CWPP.

This CWPP strives to meet the requirements of HFRA by:

1. Identifying and prioritizing fuels reduction opportunities across the landscape.
2. Addressing structural ignitability.
3. Assessing community fire suppression capabilities.
4. Collaborating with stakeholders.

GOALS AND OBJECTIVES

Goals for this project include the following:

1. Enhance life safety for residents and responders.
2. Mitigate undesirable fire outcomes to property and infrastructure.
3. Mitigate undesirable fire outcomes to the environment, watersheds, and quality of life.

To accomplish these goals, the following objectives have been identified:

1. Establish an approximate level of risk (the likelihood of a significant wildfire event in the study area).
2. Provide a scientific analysis of the fire behavior potential of the study area.
3. Group values at risk into “communities” based on relatively similar geographic and hazard factors.
4. Identify and quantify factors that limit (mitigate) undesirable fire effects on the values at risk (hazard levels).
5. Recommend specific actions that will reduce hazards to the values at risk.

Other Desired Outcomes

1. Promote community awareness: Quantifying the community's hazards and risk from wildfire will facilitate public awareness and assist in creating public action to mitigate the defined hazards.
2. Improve wildfire prevention through education: community awareness, combined with education, will help to reduce the risk of unplanned human ignitions. This type of education can also limit injury, property loss, and even unnecessary death.
3. Facilitate and prioritize appropriate hazardous fuel reductions: Organizing and prioritizing hazard mitigation actions will provide stakeholders with the tools and understanding to ensure that they are valuable and viable for the local community.
4. Promote improved levels of response: The identification of specific community planning areas and their associated hazard and risk rating, will improve the focus and accuracy of preplanning and facilitate the implementation of cross-boundary, multi-jurisdictional projects.

COLLABORATION: COMMUNITY AND AGENCIES

The development of this plan has been a collaborative process with officials from several agencies including the Cedaredge Fire Protection District, Crawford Fire Protection District, Delta Fire Protection District, Hotchkiss Fire Protection District, Paonia Fire Protection District, Colorado State Forest Service (CSFS), Montrose Interagency Fire Management Unit (MIFMU), Delta County Office of Emergency Management, US Forest Service, Colorado Division of Emergency Management, West Region Wildfire Council and representatives from local communities and other concerned citizens. The Delta County Office of Emergency Management took the lead on the plan's development in 2010, with professional planning assistance from Anchor Point Group and AMEC Earth & Environmental. The names of representatives for the core stakeholder team involved in the development of the Delta County CWPP are included in Table 1 along with their organizations and various current and future roles and responsibilities. Details on the collaborative process can be referenced in **Appendix B, Project Collaboration**, including a description of the meetings and process used to involve stakeholders and engage the public during the development of this plan.

Table 1. Delta County CWPP Development Team

Name	Organization	Roles / Responsibilities
Rob Fiedler, Emergency Manager Fred McKee, Sheriff	Delta County	Primary point of contact and decision making, emergency response.
Jason Cooley, Station Manager	Delta Fire Protection District	Community risk and value approval, development of community protection priorities, and prioritization of fuel treatment project areas and methods. Provided previous fuels treatment data.
James McArtor, Fire Chief	Crawford Fire Protection District	
Doug Fritz, Fire Chief	Hotchkiss Fire Protection District	
Adam Suppes, Fire Chief	Delta Fire Protection District	
Mike Byers, Fire Chief	Paonia Fire Protection District	
Kevin Walker, Fire Chief	Cedaredge Fire Protection District	
Chris Barth, Fire Mitigation & Education Specialist Dana Carter, Fuels FMO Michael Davis, Aviation and Operations FMO	Montrose Interagency Fire Management Unit	Fire trend data, fire occurrence data, existing and planned fuels treatment data and public outreach and education.

Name	Organization	Roles / Responsibilities
Barbara Sharrow, Field Office Manager Ken Holsinger, Fuels Specialist	Bureau of Land Management (BLM) – Uncompahgre Field Office	Participation in plan collaboration and review.
Levi Broyles, District Ranger	US Forest Service – Paonia Ranger District	Participation in plan collaboration and review.
Connie Clementson, District Ranger	US Forest Service – Grand Valley Ranger District	Participation in plan collaboration and review.
Steve Ellis, Regional FMO	Colorado State Forest Service (CSFS)	Participation in plan collaboration and review.
Kelly Rogers, District Forester	CSFS – Grand Junction District	Past and planned fuels treatment data, public outreach and education, participation in plan collaboration and review.
Steve Denney, West Region Field Manager	Colorado Division of Emergency Management	Participation in plan collaboration and review.
Lilia Colter	West Region Wildfire Council	Community outreach and education, participation in plan collaboration and review.
Rodrigo Moraga Kerry Webster Chris White Mark McLean Matt Lloyd	Anchor Point Group	Development of the CWPP document. Scientific analysis of fire behavior, community hazard and risk. Development of hazard mitigation actions and priorities. Establishment of fuels treatment project areas and methods.
Jeff Brislawn Mack Chambers Hillary King Crystal Gerrity	AMEC Earth and Environmental	Development of the CWPP document, community outreach and stakeholder engagement.
Wildfire Mitigation Advocates - Various citizens	Public representative of CWPP community	Review and comment on draft plan; posting of flyers for public meetings; liaison between community and fire protection districts, county, state and federal representatives during future plan implementation.

RELATIONSHIP WITH OTHER PLANNING EFFORTS

The Delta County CWPP builds upon and is related to other planning efforts in the community, including:

- 2010 Delta County Wildfire Annual Operating Plan
- 2008 Delta County Multi-Hazard Mitigation Plan
- 2007 Hotchkiss Community Wildfire Protection Plan, reviewed in 2011
- 2005 Delta County Fire Plan

The Delta County CWPP should be considered an umbrella document in relationship to local level CWPPs. The 2011 Delta County CWPP does not supersede the local CWPPs previously identified. It is intended to complement these earlier planning efforts in order to help Delta County communities determine the most appropriate and effective courses of action for wildland fire mitigation. One difference in the County CWPP is that it analyzes wildfire risk across the entire County using a consistent methodology. Local-level plans may include additional detail on risk, such as individual structure or parcel-level assessments, which is beyond the scope of this county-level plan.

STUDY AREA OVERVIEW

The study area includes all of Delta County (County). Delta County is located in central-western Colorado and is bordered by Gunnison County to the east, Montrose County to the south, and Mesa County to the northwest. The total land area of the County is 1,149 square miles, with 631 square miles of this area being federally owned and managed by the Grand Mesa, Uncompahgre, and Gunnison National Forest and the Uncompahgre Field Office (BLM). Land stewardship in the County is shown in Figure 1. According to the 2010 U.S. census, the population of Delta County was estimated at 30,952 people, nearly a 10% increase since the 2000 census population of 27,834. In 2010, there were an estimated 14,572 housing units. Primary east-west transportation routes include Colorado State Highways 50 and 92. State Highway 133 runs through the northeast corner. Highway 65 connects Cedaredge to Orchard City.

What is now Delta County was originally part of the Uncompahgre Reservation (Reservation). The Reservation was opened to settlers in 1881. George A. Crawford, founder of Grand Junction, secured the townsite at the confluence of the Gunnison and Uncompahgre rivers where the Uncompahgre Town and Improvement Company (later Delta) was established. In 1883, a portion of Gunnison County was partitioned off to create Delta County. The City of Delta was established as the seat of county government. Settlers in the area quickly established an agricultural community focused on cattle ranching, produce, and fruit orchards. Forestry and coal mining were also important industries in the development of Delta County.

Delta County is classified as having a semiarid climate characterized by sunshine more than 300 days of the year, frequent winds, and low humidity. Elevation ranges from 4,758 feet to 11,396 feet above sea level. Temperatures range from the average high of 74° F in July and the average low of 26° F in January. Average rainfall is 7.7 inches per year, and average annual snowfall is 16 inches per year. Local vegetation includes sagebrush, Gambel oak, and pinyon-juniper woodlands. Pinyon-juniper woodlands on the southern exposures of the Grand Mesa are one of the primary areas with the potential for large fires. Cheatgrass (*Bromus tectorum*), also known as downy brome, grows rampant throughout the study area. Cheatgrass is an aggressive, invasive weed and is highly flammable, increasing Delta County's overall wildfire risk. Sage, which is highly flammable given the plant's natural oils, is also present throughout Delta County. Another invasive species called tamarisk grows along creek corridors in some areas of the County. Tamarisk, with its long tap roots, is highly adapted to exploit water resources to the detriment of other vegetation. As plant species in the area dry out, wildfire risk is increased.

Per HFRA regulations, there is a requirement to explicitly define the WUI for the study area. According to the National Wildfire Coordinating Group (NWCG), the WUI is, "the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel." This is a very broad definition, and has been refined for use by land managers and scientists alike. For the purposes of this CWPP, this broad definition applies, but a more specific methodology was developed to create a consistent layer representing the WUI that could be portrayed on a map. The GIS methodology is described below.

Defining the Wildland Urban Interface (WUI) is an important aspect of the CWPP development process. In Delta County, the WUI was determined using a 1.5 mile buffer surrounding all private lands within the county that are at risk from wildfire. Some areas, including those within

the municipal boundaries of Delta and Cedaredge, as well as farmland areas, are not included because they were not determined to be threatened by wildland fire. This buffer extends on to non-private land areas, including state and federal jurisdictions. The WUI boundary in these areas is useful for determining effective locations of fire mitigation projects.

Simply put, the WUI is where people and values exist. Tourists and residents alike are drawn to these areas for their natural beauty and abundance of recreational opportunities. And unlike the past, where development was concentrated first in mining camps and ranches, and then later in small towns, homes now occur throughout all of the nonfederal portions of Delta County. Anyone who has ever seen the smoke column or drifting embers from a nearby fire will quickly realize that any real safety can only come from reducing the threat of wildfire in these WUI areas, which is this plan's primary purpose.

For the purposes of this project, 23 individual communities were defined within the study area (Figure 2). This map can be referenced in an 11 x 17 format in Appendix D. In Figure 3, these communities are shown within the boundaries of the Wildland Urban Interface. According to the 2008 Delta County Multi-Hazard Mitigation Plan, the August 2001 *Federal Register* identified the communities of Cedaredge, Crawford, Hotchkiss, Lazear, and Paonia as belonging to the list of 'Urban Wildland Interface communities within the vicinity of federal lands that are at high risk from wildfire.' After evaluating each of the units, many were found to be heterogeneous and as a result were broken down further. The community sheets are organized by the fire protection districts under which they fall, and the subunit descriptions are found within the larger unit. Although the communities may not fill the entire larger planning unit, the whole unit is still considered to be a Wildland Urban Interface. For purposes of this project, 23 distinct communities were identified, representing the most densely populated areas in the study area. Each community exhibits certain dominant hazards from a wildfire perspective. Fuels, topography, structural flammability, availability of water for fire suppression, egress and navigational difficulties, as well as other natural and manmade hazards, are considered in the overall hazard ranking of these communities.

Construction type, condition, age, the fuel loading of the structure/contents and position were considered contributing factors in making homes more susceptible to ignition, even under moderate burning conditions. The likelihood of rapid fire growth and spread in these communities was examined. This was based on areas with steep topography, fast-burning or flashy fuel components, and other topographic features that contribute to channeling winds and the promotion of extreme fire behavior.

The community-level assessment identified all of the 23 communities in the study area to be at very high or high risk. In these communities, a parcel-level analysis should be implemented as soon as possible to ensure the ongoing safety of residents and survivability of structures.

The methodology for this assessment uses the WHR community hazard rating system that was developed specifically to evaluate communities within the WUI for their relative wildfire hazard. The WHR model combines physical infrastructure such as structure density and roads, and fire behavior components like fuels and topography, with the field experience and knowledge of wildland fire experts.

In addition to these 23 communities, five "areas of special interest" (ASI) have been identified: the Cedar Hill communications tower, water treatment plants, Crawford State Park, the Gunnison River corridor, and the Grand Mesa Christian Association camp. Although these areas may not include residences, they contain critical infrastructure, buildings, and/or other structures that necessitate serious attention from a fire mitigation standpoint.

Figure 1. Delta County Land Stewardship

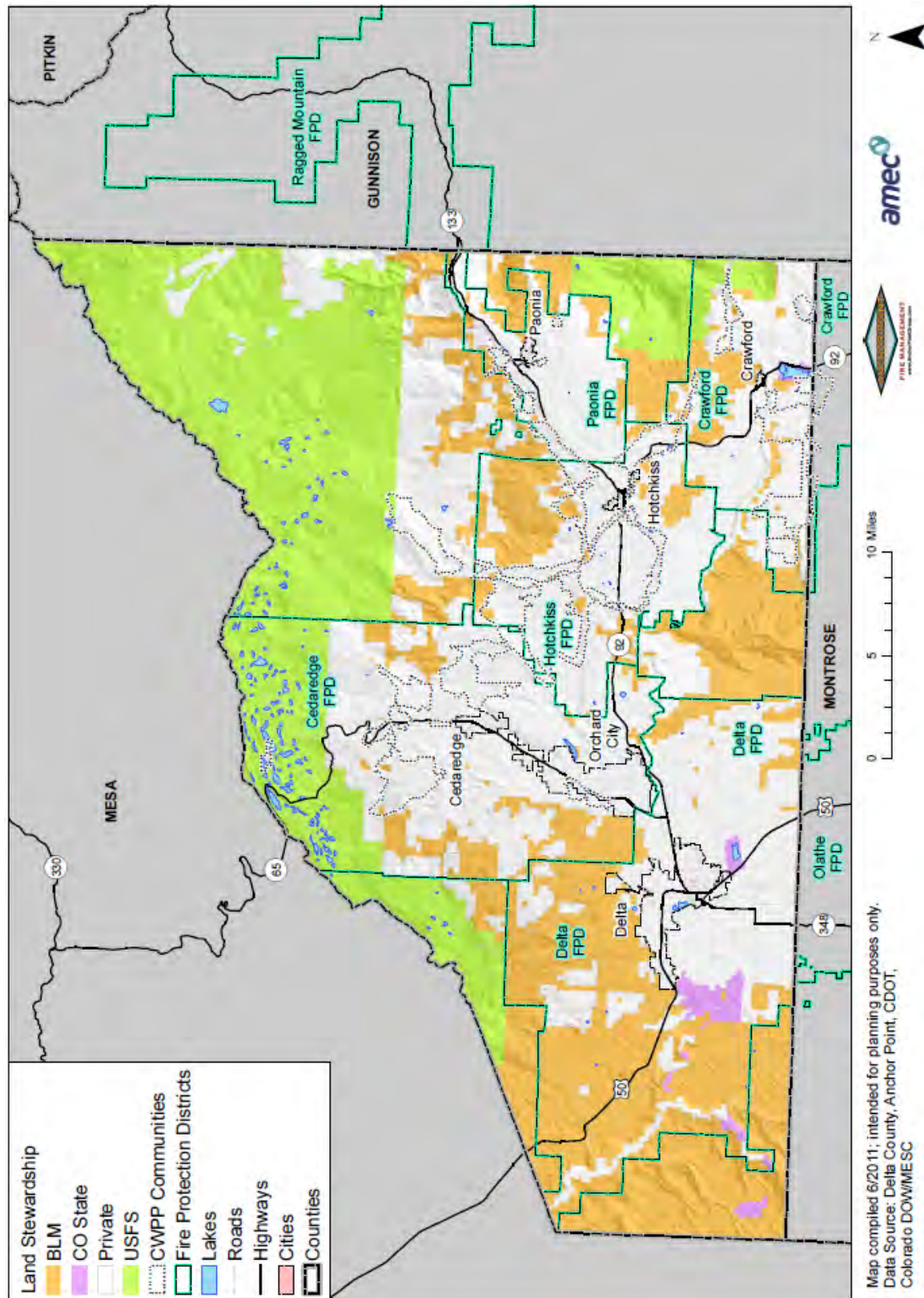


Figure 2. Delta County CWPP Communities

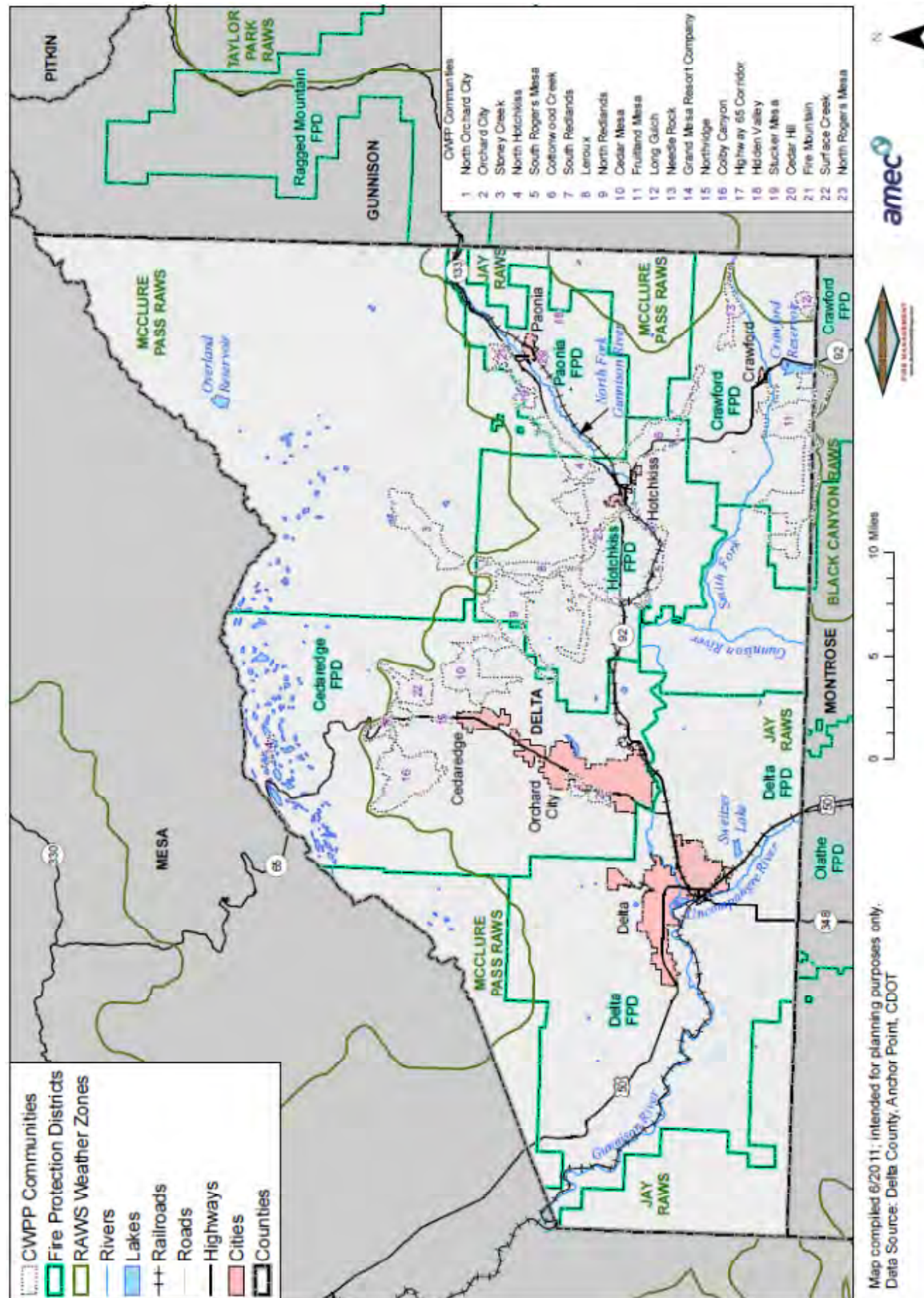
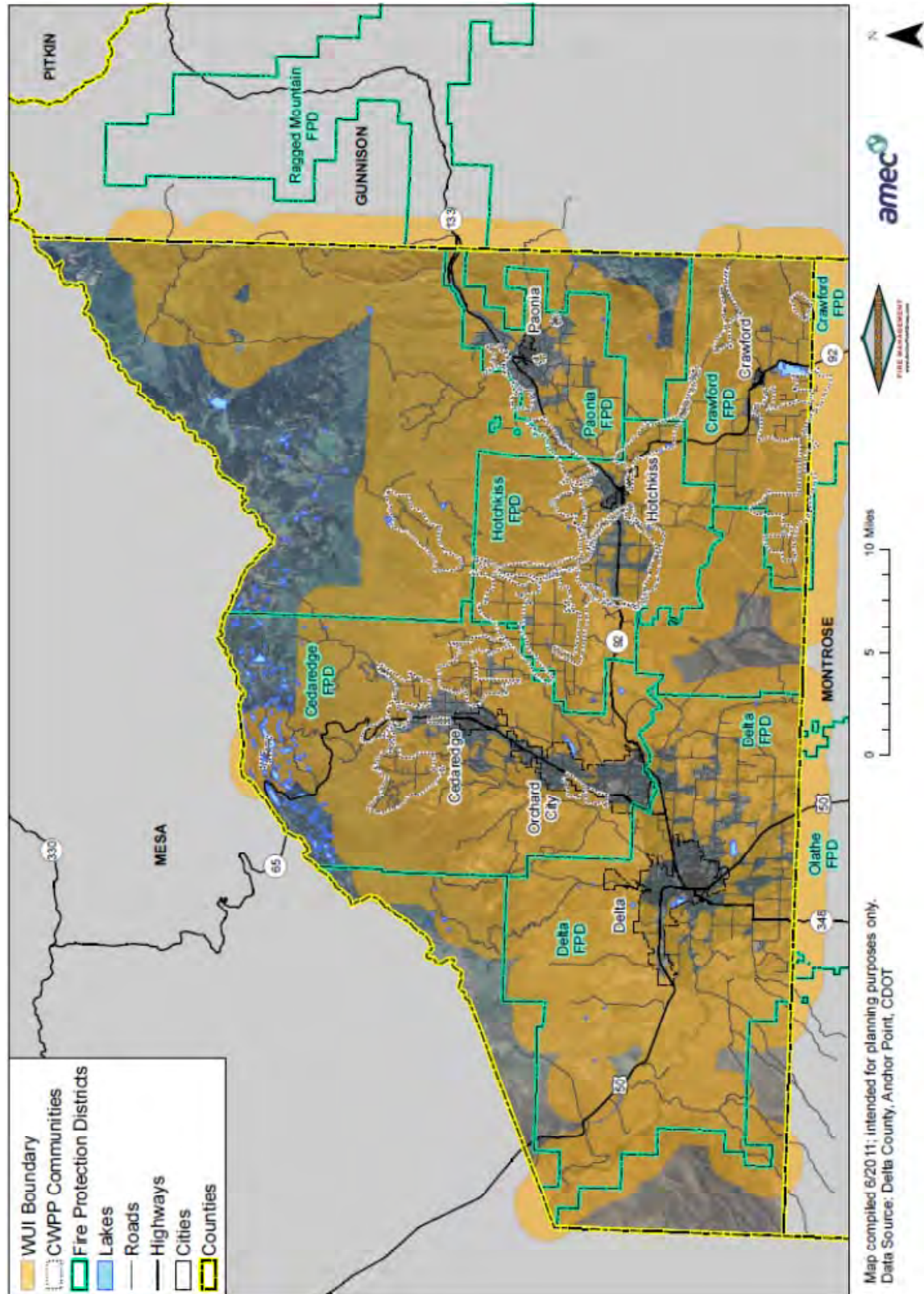


Figure 3. Delta County Wildland Urban Interface Boundary



VALUES AT RISK

Most of the study area is vulnerable to some form of natural disturbance, and wildland fire is one of the primary concerns for officials and residents. Recent national disaster events and Colorado's wildland fire history have focused local and state governments on the need to mitigate such events where possible, and to prepare to cope with them when they are unavoidable.

Individuals live in Delta County for a variety of reasons. Based on a public survey conducted during the development of this plan (Appendix B), residents value the area's clean water and air, natural beauty, access to public lands, wildlife, and recreational opportunities. Protecting these assets also aids in preserving property values, another value to residents.

LIFE SAFETY AND HOMES

Most of Delta County is part of the Wildland Urban Interface, and wildland fires are a regular occurrence for the County's residents. The main concern to residents in the county (according to the survey in Appendix B) is their personal safety, as well as the loss of their homes. The majority of homes within the study area have roofs constructed of fire resistant materials such as asphalt, but decks and siding are often made of combustible materials.

Some communities have already begun to address their wildland fire risk, and as a result have fire protection plans already in place. These include:

- The five Delta County fire protection districts, including the Delta FPD, Paonia FPD, Cedaredge FPD, Hotchkiss FPD, and Crawford FPD. The five FPDs are covered by the 2010 Delta County Wildfire Annual Operating Plan (AOP), which details procedures and agreements to address the wildland fire threat in Delta County.
- All areas that fall within the Hotchkiss Fire Protection District, per the 2007 Hotchkiss CWPP. At the time the Hotchkiss CWPP was written, the plan covered more than 4,000 people, 1,000 homes, and 115 square miles of private land.

COMMERCE AND INFRASTRUCTURE

ECONOMIC VALUES

Additionally, the effect of wildland fires on employment can impact a study area's economy. Some of the largest employers in Delta County, such as the Delta County School District and the City of Delta, are at risk to wildfire (Table 2). If employees of these agencies and other businesses were out of work for either the short term or the long term due to wildland fires, Delta County's economy would be impacted. Furthermore, agriculture and tourism are important components of Delta County's economy. Wildland fires can have a direct impact on agricultural lands and scenery, adversely affecting the ability of local residents to earn a living from these industries. Delta County's scenic beauty is a main draw for tourism, so the County could suffer a decline in revenue from tourists not visiting the area due to wildfires.

CRITICAL INFRASTRUCTURE

Critical infrastructure in Delta County includes public safety and government buildings, physical infrastructure, water supply systems, wastewater treatment, power infrastructure, and schools. In the 2008 Delta County Multi-Hazard Mitigation plan, GIS analysis was performed to determine which, if any, critical facilities were located in areas vulnerable to wildfire. The list of all critical facilities in the county was obtained from the Delta County GIS department and the Hazard Mitigation Planning Committee involved in the 2008 Delta County Multi-Hazard Mitigation Plan.

According to the results of the wildland fire vulnerability study performed for the 2008 Delta County Multi-Hazard Mitigation Plan, there are 64 community assets or critical facilities and 17 dams located in high or very high wildfire risk areas. All six incorporated communities have critical facilities or community assets at risk to wildland fire, including Cedaredge, Crawford, Hotchkiss, Orchard City, Paonia, and Delta. Table 2 lists the critical facilities and community assets vulnerable to wildland fire in Delta County.

Table 2. Community Assets Located in High and Very High Wildfire Risk Areas

Cedaredge	Delta
Cedaredge City Hall	City of Delta Administration Building
Cedaredge Elementary School	City of Delta Chamber of Commerce
Cedaredge Fire Protection District	City of Delta Parks Department
Cedaredge High School	City of Delta Police Department
Cedaredge Police Department	City of Delta Shop
Cedaredge Post Office	Delta County Courthouse
Cedaredge Public Library	Delta County Health Department
Cedaredge Public Works/Shop	Delta Housing Authority
Vision Home & Community Program	Delta Municipal Light & Power
Crawford	Delta Post Office
Crawford Elementary School	Delta Public Library
Hotchkiss	Garnet Mesa Elementary School
Delta County Fair Grounds Heritage Hall	Tri-River CSU Extension
Hotchkiss Fire Protection District	U.S. Forest Service Supervisor's Office
Hotchkiss K-8 School	USDA Service Center
Hotchkiss Police Department	Vision Home and Community Program
Hotchkiss Post Office	Work Release Center
Hotchkiss Public Library	Delta County (unincorporated)
Hotchkiss Town Hall	2200 Road Bridge
Hotchkiss Town Shop	Black Bridge Road Bridge
Orchard City	Decommissioned Waste Water Treatment
Eckert Post Office	Delta County School Administration
Orchard City Town Hall	Escalante Canyon Road Bridge
Paonia	Hwy 133 Bridge at Bowie
Decommissioned Waste Water Facility	Hwy 92 Bridge at Austin
Paonia Elementary School	Lamborn Valley Vison School
Paonia Fire Protection District	North Fork Airport Office & Hangars
Paonia High School	Road & Bridge District #2 Shop
Paonia Junior High School	Road & Bridge District #3 Shop
Paonia Post Office	Road & Bridge District #3 Shop
Paonia Public Library	Road & Bridge District #4 Lemoine Pit
Samuel Wade Road Bridge	Volunteer Park Concessions
US Forest Service Paonia Ranger District	Volunteer Park Utility Shed
	Waste Water Treatment Facility
	Water Treatment Facility
	Water Treatment Facility

In addition, the power line infrastructure in Delta County traverses areas susceptible to wildfire. Wildfires in these areas can damage power lines, leading to power outages during times when power is needed most. Power lines can also be sources of wildfire ignitions when knocked down by wind or other means. For these reasons, power line infrastructure has been included on the map in the Areas of Special Interest Section discussed later in this plan. Power lines can also be sources of wildfire ignitions when knocked down by wind or other means. For these reasons, power line infrastructure has been included on the map in the Areas of Special Interest Section discussed later in this plan.

ENVIRONMENTAL RESOURCES

Delta County's natural resources are of concern to its residents, according to the survey. The County's natural resources are one of the main reasons why residents live in the area. Residents also noted a concern for wildfire damage to the watershed or water supply.

NATURAL RESOURCES

Taking action to prevent catastrophic wildfire in these areas is critical for maintaining biodiversity, ecosystem function, and watershed health. Many ecosystems in North America have evolved with fire as a natural and necessary contributor to habitat vitality and renewal. Many plant species in naturally fire-affected environments require fire to germinate. Fire suppression can lead to the build-up of inflammable debris and the creation of less frequent but much larger and destructive wildfires. Thus natural and prescribed fire can benefit the ecosystem. However, wildfire can damage plant and animal life by fragmenting and reducing habitat. Reduced habitat decreases foraging area and limits protection for ground animals, thereby increasing vulnerability to predators. Preventing catastrophic wildfires is in the best interest of native vegetation, animals, and humans.

Natural resources potentially at risk to wildfire in Delta County include wetlands, endangered species, and imperiled natural plant communities. Endangered species and imperiled natural plant communities within the study area are identified within the 2008 Delta County Multi-Hazard Mitigation Plan. Impacts of wildfires on wetlands can include soil degradation, increased soil erosion, changes in vegetation composition, loss of vegetation, destruction of animal habitats and death of animals, increased weed invasion, and degradation of water quality.

CURRENT RISK SITUATION

This section examines the current wildland fire risk in Delta County based on wildfire history and past or planned fire treatments conducted by numerous agencies. The fire history discussed here is based on the most accurate information available. However, it is important to note the limitations of the available data. Fire history data in national databases such as the National Fire Incident Reporting System (NFIRS) is highly subject to reporting from local fire departments and fire protection districts. Historical fire incidents may be captured in dispatch records with local or state agencies but not be reported to NFIRS. Therefore, NFIRS data is somewhat biased towards wildland fires that occur on federal lands rather than private lands. Nevertheless, this is currently the most complete source of wildland fire history data available for reference in the Delta County CWPP.

Most fires in Delta County are small (less than 100 acres) and never make it onto the lists of large fires. However, small fires can present a threat to life, safety, and property. This is based on the availability of fuel, both vegetative and man-made; the direct Wildland Urban Interface of subdivisions bordering fuel beds; as well as community infrastructure, including access/egress routes.

Most of the study area for the Delta County CWPP is at high or very high risk from wildfires. This assessment is based on an analysis of the following factors:

- Within Delta County, the communities of Cedaredge, Crawford, Hotchkiss, Lazear, and Paonia are listed as belonging to the 2001 *Federal Register's* list of 'urban wildland interface communities within the vicinity of federal lands that are at high risk from wildfire' (2008 Delta County Multi-Hazard Mitigation Plan).
- Some of the larger fires in Delta County are summarized below.
 - A wildland fire on February 15, 2006 ignited in Montrose County and spread into Delta County. Between 600 and 1,200 acres were burned, but fortunately, no structures were damaged.
 - The 2004 McGruder Fire burned 2,806 acres and cost an estimated \$640,000 for firefighting efforts.
 - The 1997 Cory Fire ignited in Orchard City. Two homes were burned and several others were threatened by the blaze. A hazardous materials facility was partially destroyed. The fire cost an estimated \$500,000 dollars.
 - The 1994 Wake Fire ignited from a lightning strike and burned over 2,500 acres. Three homes were lost and several others were damaged. Approximately 50 homes in the area were evacuated. Additionally, 1.5 miles of power lines and several radio towers were lost in the fire.
 - The 1987 Redlands Mesa Fire was ignited from a trash fire and burned over 418 acres. No structures were lost. However, over 50 homes were evacuated.

An analysis of past wildfire ignitions was performed during the development of this CWPP, the results are presented in Figure 4. Between 1999 and 2008, a total of 141 ignitions were reported in Delta County. In total, 117 of the ignitions were caused by lightning. As shown in Figure 5, most of these fires occurred in the southeastern portion of the county, particularly along the corridor between Paonia and Hotchkiss.

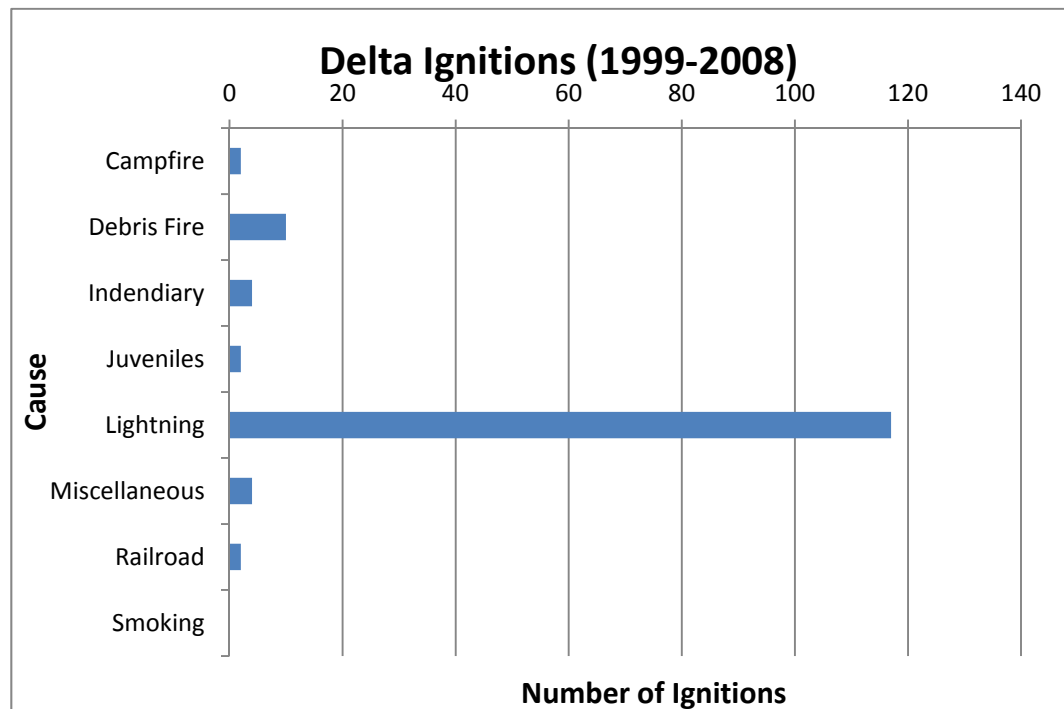
Additional fire history data was obtained from the National Fire Incident Reporting System (NFIRS). The results of this data are displayed in Table 3 and Figures 4 and 5. Although the NFIRS data is the most accurate wildland fire history information currently available, it is important to note that this data is subject to certain limitations as discussed in the beginning of this section.

Table 3. Delta County Reported Wildfire Ignitions by Cause: 1999-2008

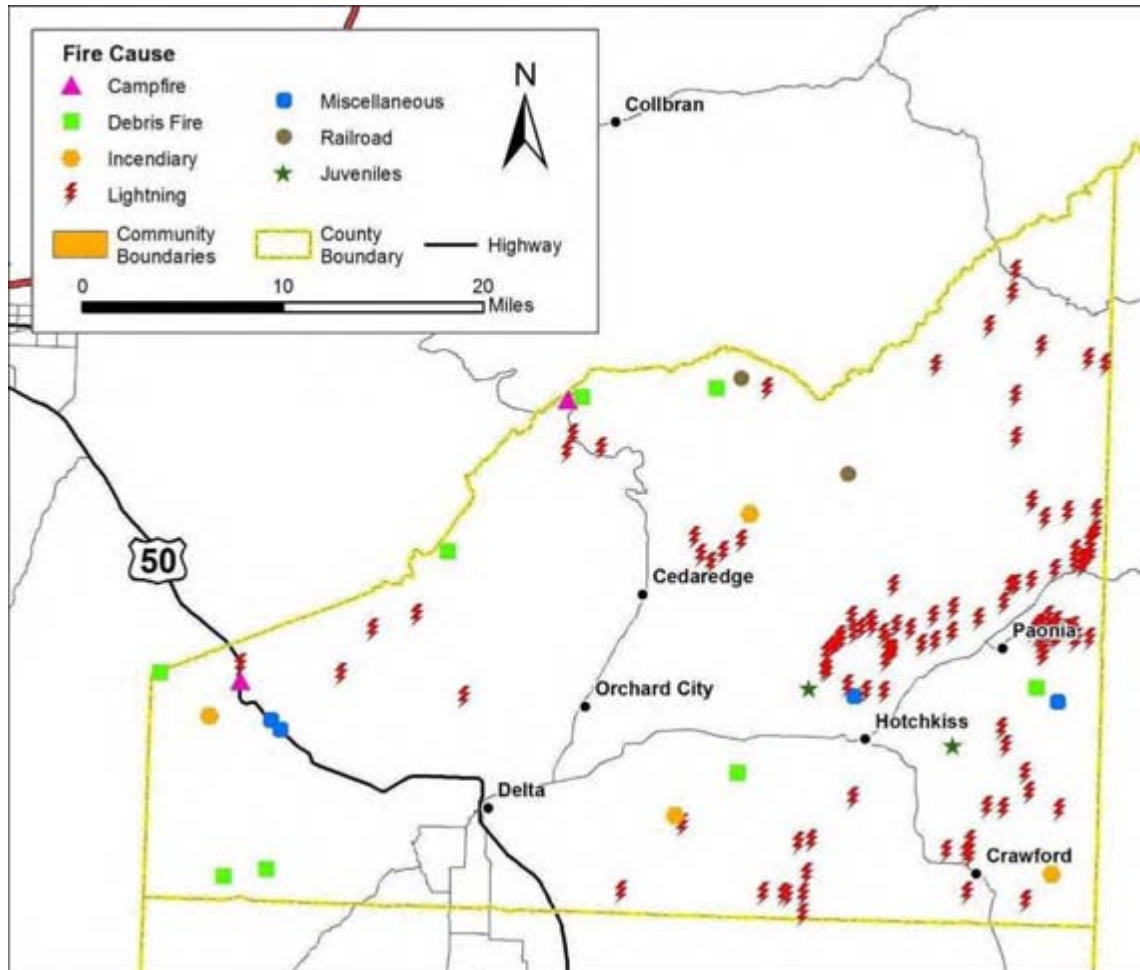
Ignition Cause	Number of Reported Ignitions
Campfire	2
Debris Fire	10
Incendiary	4
Juveniles	2
Lightning	117
Miscellaneous	4
Railroad	2
Smoking	0
TOTAL	141

Source: NIFRS

Figure 4. Delta County Wildfire Ignitions by Cause: 1999-2008



Source: NIFRS

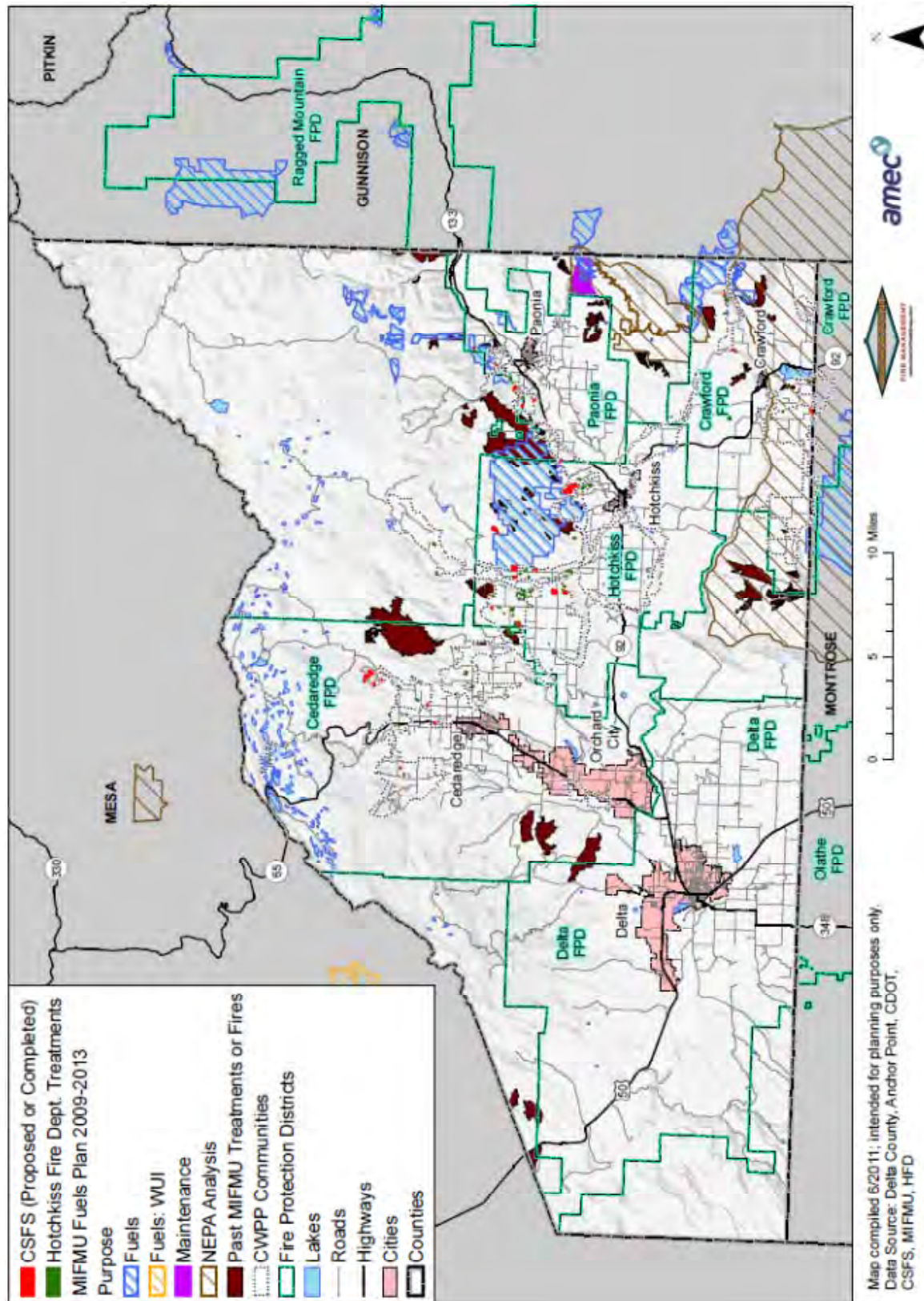
Figure 5. Delta County Reported Ignitions: 1999-2008

Source: NIFRS

EXISTING AND ONGOING FUELS TREATMENTS EFFORTS

The Montrose Interagency Fire Management Unit (MIFMU), USFS, and BLM, have performed fuels treatments within Delta County to alleviate the high level of wildfire risk. In addition, fuels treatments and defensible space efforts have been undertaken by the Colorado State Forest Service, Hotchkiss Fire, and homeowners. A snapshot of these efforts and planned treatments as of late 2010 is captured in Figure 6. This map can be referenced in an 11 x 17 format in Appendix D. The MIFMU Fuels Plan layer shown on the map differentiates between various fuels treatment categories intended for internal use. For the purposes of this CWPP they are all planned or in-process fuels treatment efforts. The NEPA category is where there has been environmental analysis completed in compliance with the National Environmental Policy Act which may allow for fuels work to be done there. In addition past fires, prescribed burns and areas of maintenance are shown on the map. Delta County and the individual communities within the study area can supplement these efforts with their own wildland fire mitigation treatments, which are detailed in the Community Ignitability Analysis Recommendations section of this plan. The existing or planned treatments from these other agencies are also represented on the community level maps as reference for existing fuels mitigation activity that may be occurring in or adjacent to a community.

Figure 6. Other Agency Treatments

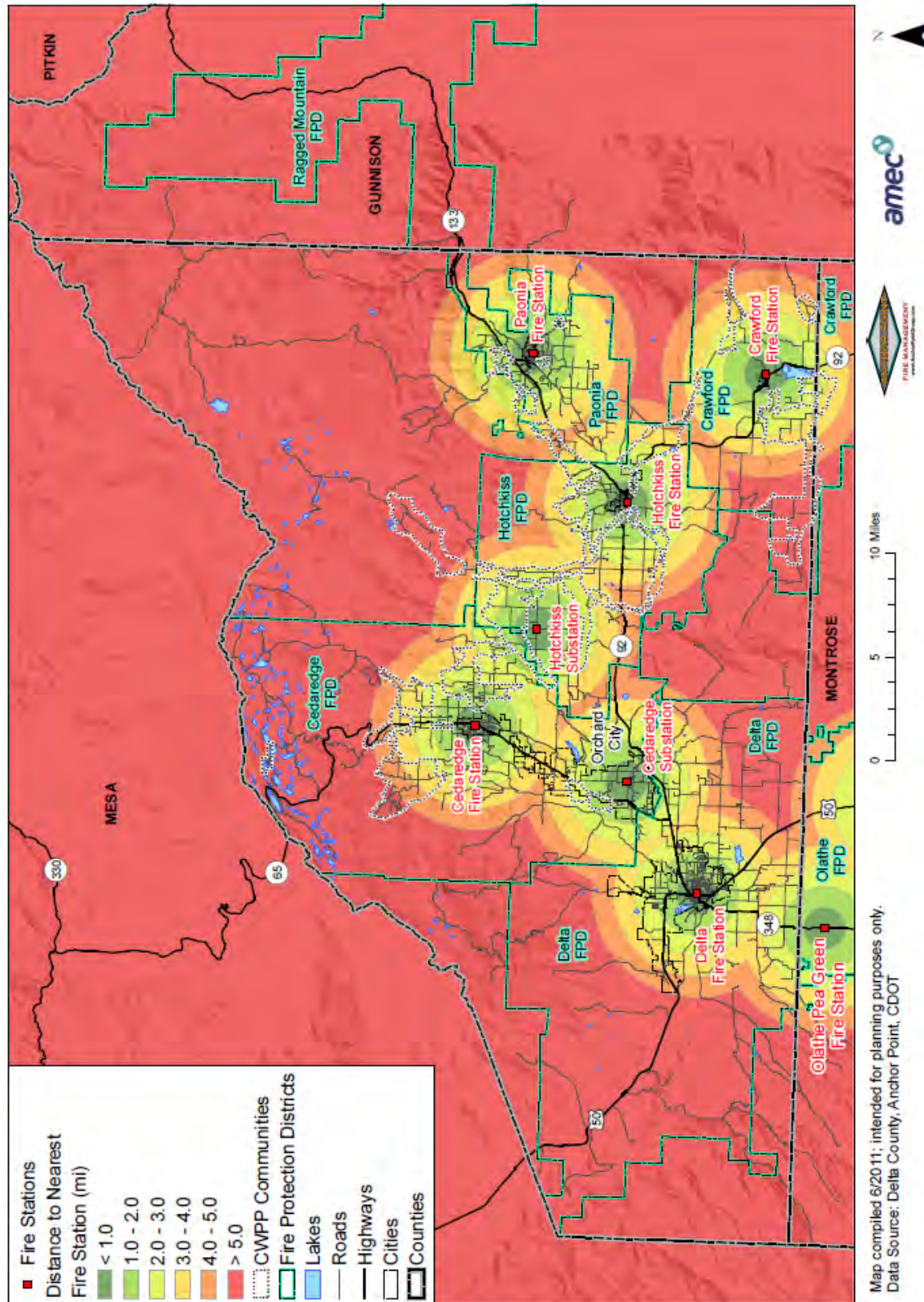


LOCAL PREPAREDNESS AND FIRE PROTECTION DISTRICT CAPABILITIES

The Delta County CWPP study area encompasses five Fire Protection Districts: the Delta Fire Protection District, Cedaredge Fire Protection District, Crawford Fire Protection District, Hotchkiss Fire Protection District, and the Paonia Fire Protection District. Figure 7 shows the locations of fire stations assigned to these five fire protection districts and their proximity to communities within Delta County. The following section describes the results of capabilities assessment conducted during the development of the CWPP. Capabilities were assessed through a feedback form that included firefighter safety, personal protective equipment (PPE), communications, training, firefighting equipment, and water supply. Recommendations for improvements in these capabilities were made by Anchor Point Group based on results from the feedback forms and discussions with fire protection district representatives. The recommendations were assigned a relative level of priority based on the desire to protect life safety, property conservation, and fire control. Adjustments in prioritization may be made based on funding opportunities and/or more specific needs of each individual district.

In the public survey in Appendix B, 61 percent of the respondents strongly agreed that fire responders in Delta County are well equipped to deal with a wildland fire incident and capable of mounting an effective response. The other 32 percent somewhat agreed and 6 percent had no opinion. Figure 7 shows the locations of fire stations associated with the fire protection districts that provide emergency services to Delta County and their proximity to the CWPP communities within the county.

Figure 7. Delta County Fire Station Proximity Map



DELTA FIRE PROTECTION DISTRICT



TRAINING

The Delta County Fire Protection District (FPD) is composed of 28 – 30 members. The fire protection district rarely responds to wildland fire calls, generally providing mutual aid for structure protection instead. Therefore, not all fire department members take the S-130/190 class. Additional wildland fire courses are not currently offered by the Delta FPD, although the FPD would likely pay for their members to take wildland fire training courses. A regular training program is scheduled twice a month. The Delta FPD members do not take the pack test or fire refresher annually.

PPE

Delta FPD members have brush gear that is approximately three years old. They do not have fire-line packs or shelters.

COMMUNICATIONS

The FPD uses VHF and 800 MHz radios and has seven handheld units. All trucks are equipped with mobile radios.

EQUIPMENT

The Delta FPD has three Type 6 engines and two tenders with two wheel drive.

WATER SUPPLY

Good quality, reliable hydrants are present in Delta, and there are ditches throughout the City of Delta. Flow rates for the hydrants are not tested frequently. Tri-County is the domestic water provider, but the County must pay fees if they use the water.

Recommendations

Firefighter Safety – PRIORITY 1

- Continue to work towards having enough VHF radios for all personnel in all apparatus that respond to wildland fires.
- Ensure that all personnel are trained in use and programming of VHF radios.
- Obtain Nomex pants and shirts and wildland boots for all fire protection district members.
- Procure new generation shelters on every vehicle that responds to any wildland call.
- Obtain packs with new shelters for FPD volunteers.

Training – PRIORITY 2

- Officers should familiarize themselves and their crews with fire protection plans within their response area.

Water Supply – PRIORITY 3

- Maintain and test hydrants systems annually, especially in areas where water supply is inconsistent.
- When possible, install additional hydrants in areas with limited water availability.

CEDAREEDGE FIRE PROTECTION DISTRICT



TRAINING

The Cedaredge Fire Protection District (FPD) has 25 active members along with four cadets. At least 90 percent of the members take the S-130/190 course. Members take additional wildland fire training courses when they have the time. Most members of the fire protection district are red carded. Regular trainings are held twice a month during the summer and once a month during the winter.

PPE

The Cedaredge FPD provides Nomex pants and shirts, wildland boots, helmets, fire-line packs, and shelters. The shelters are new generation and were recently obtained with a grant. Additionally, a grant was obtained to buy new packs to fit the new shelters.

COMMUNICATIONS

Both 800 MHz and VHF radios are used by the Cedaredge FPD. Every member and every apparatus has VHF radios. Additionally, 800 MHz radios are on most apparatus. The FPD has eight handheld 800 MHz radios.

EQUIPMENT

The Cedaredge FPD has a Type 1, Type 2, and Type 4 engine at the substation in Orchard City. The fire protection district also has a CRRF agreement with the Colorado State Forest Service for equipment, including a 1982 GMC 100 GPM 750 gallon truck. Other available equipment includes one 1982 Mack 2500 gallon tender; a 2009 International 350 GPM 1000 gallon truck; a 1977 American La France 1500 GPM 500 gallon Type 2; a 2000 American La France 1750 GPM 1000 gallon Type 2; a 2004 American La France 350 GPM 2500 gallon Type 4; a 2004 American La France 1500 GPM 1000 gallon Type 2; and a CSFS 1977 Dodge 200 gallon Type 6. Two new Type 6 engines are on order.

WATER SUPPLY

Water sources present a substantial problem for the Cedaredge FPD. The lack and unreliable nature of most water sources typically forces the fire protection district to do tender shuttles for water. Hydrants are not common and in various states of quality depending on how well the individual townships maintain them. Flow rates fluctuate and are typically unreliable. A new line went in along a seven mile stretch of road, though not in a very populated area. The hydrants,

including new installations, are mapped. Ditches are usually available. There are two 1000 gallon cisterns in Colby Canyon, but have a history of not working correctly.

Recommendations

Firefighter Safety – PRIORITY 1

- Continue to work towards having enough VHF radios for all personnel in all apparatus that respond to wildland fires.
- Ensure that all personnel are trained in the use and programming of VHF radios.
- Purchase additional PPE including Nomex pants and shirts and new generation fire shelters.

Training – PRIORITY 2

- Officers should familiarize themselves and their crews with fire protection plans within their response area.
- Obtain grant funding to support the need for, and interest in, additional training for district members.

Water Supply – PRIORITY 3

- Maintain and test hydrants systems annually, especially in areas where water supply is inconsistent.
- When possible, install additional hydrants in areas with limited water availability.

CRAWFORD FIRE PROTECTION DISTRICT**TRAINING**

The Crawford Fire Protection District (FPD) is composed of six to seven active members. Wildland fire training includes a scheduled training program on the second and fourth Wednesday of every month during the fire season. Some members of the fire protection district take the pack test annually.

PPE

Crawford Fire Protection District PPE includes line gear and wildland boots which are provided by the FPD. Some helmets, packs, and shelters are available. The shelters are new generation.

COMMUNICATIONS

Both 800 MHz and VHF radios are used by the Crawford FPD. All trucks are equipped with radios, but more handheld units are needed.

EQUIPMENT

The Crawford FPD has one Type 5 500 gallon, four wheel drive fire engine with a floating pump; a 1989 Pierce structure engine with a 1500 GPM pump and a 750 gallon tank; a 1993 2700 gallon tender with two 2000 gallon porta-tanks; a 1983 750 gallon engine; a CSFS 1100 gallon tender with foam; and a 2004 Ford F550 Type 5 480 gallon truck with a 300 gallon pond, 10 gallons of foam and a floating pump.

WATER SUPPLY

Water supply sources include Crawford Reservoir and some hydrants which are not mapped. The flow rates of the hydrants are unknown. The Crawford FPD flushes the hydrants periodically.

Recommendations**Firefighter Safety – PRIORITY 1**

- Continue to work towards having enough VHF radios for all personnel in all apparatus that respond to wildland fires.
- Ensure that all personnel are trained in the use and programming of VHF radios.
- Purchase additional PPE including Nomex pants and shirts and new generation fire shelters.

Training – PRIORITY 2

- Officers should familiarize themselves and their crews with fire protection plans within their response area.
- Additional recommended wildland fire courses for all interested firefighters include S-215 Fire Operations in the Urban Interface, S-290 Intermediate Fire Behavior, and I-200 and I-300 Basic and Intermediate Incident Command System. It is preferential and recommended that these courses be taken in a classroom setting under the direction of skilled and knowledgeable instructors. A list of available times and dates for these courses can be found at <http://www.nationalfiretraining.net>. However, S-290 is also available online at www.meted.ucar.edu. Click on 'Fire Weather' under topics. Registration is required but is free of cost.
- Obtain grant funding to support the need for, and interest in, additional training for district members.

Water Supply – PRIORITY 3

- Maintain and test hydrants systems annually, especially in areas where water supply is inconsistent.
- Map hydrants and make the information available on apparatus
- When possible, install additional hydrants in areas with limited water availability.

HOTCHKISS FIRE PROTECTION DISTRICT**TRAINING**

Thirty-three individuals are actively involved in the Hotchkiss Fire Protection District (FPD). Approximately 80 percent of the members have taken the S-130/190 course. Most new district members take the course, but some are prevented from doing so due to family and work time constraints. The fire protection district spends about six months out of the year on wildland fire training, sending volunteers to the fire academy when it is nearby, and to Fire Camp for classes. All training is paid for by the fire protection district, which is emphasizing advanced classes and certifications for Engine Boss. One individual is currently certified as Engine Boss, and the fire protection district hopes to have several more qualified for this position soon. All members take the annual refresher course and most are red carded. Regular trainings are held twice a month. ICS classes are held for everyone in the area. Many trainings are done in-house, but the fire district encourages outside training including swift water rescue; hazmat operations; EMS, in which nearly 80 percent of the district is certified; interface firefighting; S-290; ICS-300, 400, 700 and 800; and others. Additionally, since 2007 the Hotchkiss FPD has conducted yearly large-scale wildland fire exercises in the fire protection district in accordance with its CWPP.

PPE

The Hotchkiss FPD provides a complete wildland firefighter PPE ensemble except for boots, which must be supplied by the individual firefighters. In the past, the district has provided a stipend for their members to purchase boots. Helmets, fire-line packs and shelters are provided. All shelters are new generation. Packs are engine/dozer style, suitable for the PFD's operations.

COMMUNICATIONS

The district uses 800 MHz and VHF radios. All firefighters, except those in the probationary period, have VHF and GPS radios. Officers also have 800 MHz radios.

EQUIPMENT

The Hotchkiss FPD has one Type 6x, one Type 4x, one Type 4, and one Type 2 tender. The Type 4 is scheduled to be replaced by a Type 3x CAFS in late spring 2011. Additionally, the FPD has a Type 1x that can pump and roll. The Type 1x is set up for structure protection and has enough wildland fire gear to work on brush fires. The engines have a number of foam appliances for use in structure protection. The district also has two 6x ATVs with pumps and tanks. Each apparatus and officer's car has a community pre-plan map. These maps have color-coded ratings of individual structures, roads, and driveways based on the inventory of

residences initially taken in 2007. This inventory was updated in late 2008 and sporadically since that time.

WATER SUPPLY

Water sources available to the Hotchkiss FPD include hydrants, irrigation, ponds, and streams. No cisterns in the area are considered useable. The water supply is based on a fair distribution network. The district has mapped hydrants with their flow potentials. Flow rates, which are not tested annually, vary from 2000 GPM to 150 GPM.

Recommendations

Firefighter Safety – PRIORITY 1

- Update radios to P25 compliant.
- Ensure that all personnel are trained in the use and programming of VHF radios.
- The district needs five more self-contained breathing apparatuses (SCBAs) for the new CAFS truck.
- Continue updating PPE, with structural PPE being the biggest concern over the next few years.

Training – PRIORITY 2

- Officers should familiarize themselves and their crews with fire protection plans within their response area.
- Additional recommended wildland fire courses for all interested firefighters include S-215 Fire Operations in the Urban Interface, S-290 Intermediate Fire Behavior, and I-200 and I-300 Basic and Intermediate Incident Command System. It is preferential and recommended that these courses be taken in a classroom setting under the direction of skilled and knowledgeable instructors. A list of available times and dates for these courses can be found at <http://www.nationalfiretraining.net>. However, S-290 is also available online at www.meted.ucar.edu. Click on 'Fire Weather' under topics. Registration is required but is free of cost.
- Obtain grant funding to support the need for, and interest in, additional training for district members.

Water Supply – PRIORITY 3

- Maintain and test hydrants systems annually, especially in areas where water supply is inconsistent.
- When possible, install additional hydrants in areas with limited water availability.

PAONIA FIRE PROTECTION DISTRICT



TRAINING

The Paonia Fire Protection District (FPD) consists of 26 volunteer firefighters and three cadets. Not all members have taken S-130/190, but members have expressed interest in doing so. Other wildland training courses are not offered by the district at this time. Members do not take the pack test or fire refresher course annually. Regular trainings are held twice a month on the second and fourth Wednesdays.

PPE

The Paonia FPD provides a full ensemble of PPE to its firefighters. This includes Nomex pants and shirts, wildland boots, helmets, fire-line packs, and shelters. Shelters are new generation.

COMMUNICATIONS

The district uses both 800 MHz and VHF radios.

EQUIPMENT

The Paonia FPD has two Type 3 engines, two Type 6 engines, a 2100 gallon tender, a 1400 gallon tender, and a 4000 gallon tender.

WATER SUPPLY

Water sources available to the Paonia FPD include mapped hydrants, ponds, and streams. Flow rates are tested on a rotating basis. Depending on the hydrant, flow rates range from 200 GPM to 1200 GPM.

Recommendations

Firefighter Safety – PRIORITY 1

- Provide VHF radios for all personnel in all apparatus that respond to wildland fires.
- Ensure that all personnel are trained in the use and programming of VHF radios.
- Obtain new PPE and wildland gear for district members.

Training – PRIORITY 2

- Officers should familiarize themselves and their crews with fire protection plans within their response area.

- Obtain grant funding to support the need for, and interest in, additional training for district members.

Water Supply – PRIORITY 3

- Maintain and test hydrants systems annually, especially in areas where water supply is inconsistent.
- When possible, install additional hydrants in areas with limited water availability.

COMMUNITY IGNITABILITY ANALYSIS RECOMMENDATIONS

PURPOSE

The purpose of this section is to examine the communities in greater detail. Of the 23 CWPP communities defined in the Delta County study area, none were found to represent an extreme hazard. Eight were rated as very high hazard, and the remaining 15 were rated as high hazard (Table 4Error! Reference source not found.). It is important to remember these communities are rated relative to what is customary for this specific type of interface. While adhering to proven methodology, an attempt is made to approach each community as a unique entity with its own characteristics, so that the most accurate, safe, and useful assessments possible are provided.

COMMUNITY ASSESSMENT METHODOLOGY

The community level methodology for this assessment uses a Wildfire Hazard Rating (WHR) that was developed specifically to evaluate communities within the Wildland Urban Interface (WUI) for their relative wildfire hazard.¹ The WHR model combines physical infrastructure such as structure density and roads, and fire behavior components like fuels and topography, with the field experience and knowledge of wildland fire experts. It has been proven and refined by use in rating thousands of neighborhoods throughout the United States. Much of NFPA 1144 has been integrated into this methodology to ensure compatibility with national standards. Additionally, aspects of NFPA 1142 regarding water supply for rural and suburban firefighting are included in the assessments by looking at proximity and capacity of the water supply. The fire modeling in combination with the expertise of the field personnel are what create a more robust rating system than NFPA 1144 or NFPA 1142 on their own.

Defined communities are the primary focus of this CWPP. The definition of a community, for the purposes of a CWPP, has been refined by Anchor Point Group over the last ten years while producing these plans. In doing so, state and federal requirements/definitions have been taken into consideration. The Colorado State Forest Service requires that each community have representation during the planning process. This representation can be a fire protection district official, HOA leader, or an involved community member. Because each community has to have representation, it must be a cohesive enough unit to support a single representative. Thus, a community should be a single geographic area that shares similar infrastructure, vegetation, topography, and as a result, similar recommendation needs. Lot/parcel sizes should be small enough that actions taken by individual residents will likely have an effect on their neighbor's fire risk, and may motivate further action. Close proximity is an easy way to encourage collaboration. Communities are focused on groups of homes with similar needs, while other values at risk are captured under the areas of special interest.

Initial community boundaries were drawn on table maps during the first stakeholder meeting associated with this planning effort. At this meeting, local fire protection district representatives and the sheriff identified values at risk from wildfire. In the following weeks, Anchor Point staff

¹ White, C. "Community Wildfire Hazard Rating From" *Wildfire Hazard Mitigation and Response Plan*, Colorado State Forest Service, 1986. Ft. Collins, CO.

met one-on-one with FPD personnel, the sheriff, and state and federal employees to better define the boundaries and identify the potential hazards and risks to the WUI. Actual boundaries were drawn on topographical maps and with the aid of Google Earth, often using topography and fuels to delineate boundaries. The WHR surveys filled out during field tours combine physical infrastructure, such as structure density and roads, and fire behavior components, such as fuels and topography, with the field experience and knowledge of wildland fire experts.

Areas of special interest (ASIs) are places within the CWPP study area which are at risk from wildfire but have a social or economic value that is not based on residential development. Unlike communities, ASIs are not given hazard ratings. Frequent candidates for ASIs include recreation areas, such as parks, ski areas, and defined open space. Guest ranches, church camps, RV parks, and other large acreage recreational camps that have a large but temporary population are typically included in a list of ASIs that have similar mitigation and fire protection needs. Also included is critical infrastructure such as communications arrays. ASIs are identified separately from communities because of their size and/or focus on recreation areas and infrastructure over residences. ASIs and communities address specific sections of the study area; parts of the study area that do not meet either criterion, but are still within the Wildland Urban Interface are defined as rural planning areas. ASIs are discussed in more detail later in this plan.

The rural planning areas (RPAs) cover every part of the defined Wildland Urban Interface that is not included in a community or an Area of Special Interest but are still at risk from wildfire. An RPA is not analyzed in the same way as a community, nor are recommendations given beyond standard “FireWise” practices. The RPA analysis differentiates and essentially prioritizes different areas of the defined wildland urban interface based on potential fire behavior. These rural areas may claim “umbrella coverage” of the countywide CWPP. Therefore, projects within an RPA will be eligible for wildfire mitigation grants. The RPA is broken into priority zones ranked from A to D. Within this matrix, A is the highest priority, while B and C are at progressively lower risk from fire, and D represents areas with the least wildfire risk. This prioritization is separate from the ratings given to communities and are designed to aid in project management outside of defined communities. Delta County RPAs are shown in Figure 9. This map may be referenced in an 11 x 17 format in Appendix D.

For purposes of this plan, the CWPP community boundaries can also serve as planning unit boundaries; the community boundaries align well with areas that have similar requirements in terms of needed fuel reduction projects. Within these planning units, there are acute, well-defined projects described and presented graphically. However, additional, larger landscape-scale projects in and out of the boundaries should also be considered. Identifying larger projects in the surrounding influence zones will be meaningful for obtaining grants to help fund all of the projects, especially the small acreage projects. Although large fuelbreaks are not always as effective for individual home protection as defensible space, they can act as anchor points for suppression activities to begin if carried out correctly. Backburn or burn-out operations can begin at a fuelbreak, and they are also useful places for tankers to drop retardant or water. An overarching recommendation that can be made throughout the Delta County study area includes completing treatment along the roads. A few specific planning units and roads were identified in the plan as crucial due to the fuel loading and quantity of travel. However, all roads within the study area boundaries are viable options for fuels treatments, as they are used for ingress and egress.

Each community section includes a table with wildfire mitigation recommendations that were based on the community and fire behavior analyses. Not every community has specific fuels projects identified. These communities include Colby Canyon, Grand Mesa Resort, Hwy 65 Corridor, North Orchard City, Fruitland Mesa, Needle Rock, Cottonwood Creek, South Redlands, North Rogers Mesa, Stucker Mesa, Hidden Valley, and Cedar Hill. Defensible space is determined to be the greatest benefit for the least cost for landowners and is recommended for every community. This does not mean that a larger, landscape-scale project within the community/planning area could not be beneficial for the area, but it was not identified as the most important step in protecting life safety and values at risk. In many cases large landscape-scale projects are already in progress in adjacent federal lands.

Many knowledgeable and experienced fire management professionals were queried about specific environmental and infrastructure factors, as well as wildfire behavior and hazards. Weightings within the model were based on the results of these queries. The model was designed to be applicable throughout the western United States.

The model was developed from the perspective of performing structural triage, also known as prioritizing, on a threatened community in the path of an advancing wildfire with moderate fire behavior. The WHR survey and fuel model ground truthing are accomplished by field surveyors with WUI fire experience.

For the purposes of the CWPP, the 23 communities identified in this study were examined in more detail. In the community descriptions which follow, the headings correspond to the various Delta County fire protection districts, while the subheadings numbered below correspond to the individual CWPP communities within the fire protection districts. The individual communities are organized primarily by risk level from very high hazard to high hazard, and then alphabetically within their hazard rating. The location and hazard rating of these communities are shown in Figure 8. This map can be referenced in an 11 x 17 format in Appendix D.

The rating system assigns a hazard rating based on five categories: topographic position, fuels and fire behavior, construction and infrastructure, suppression factors, and other factors, including frequent lightning, railroads, campfires, etc.

It is important to note that every hazard rating does not necessarily occur in every geographic region. There are some areas without low hazard communities, just as there are some areas without extreme communities. The rankings are also related to what is customary for the area. For example, a high hazard area on the plains of Kansas may not look like a high hazard area in the Rocky Mountains. The system creates a relative ranking of community hazards in relation to the other communities in the study area. It is designed to be used by experienced wildland firefighters who have a familiarity with structural triage operations and fire behavior in the interface.

Table 4. Community Hazard Ratings

<u>Community Name</u>	<u>Fire Protection District</u>	<u>Hazard Rating</u>
Cottonwood Creek	Hotchkiss	High
Cedar Hill	Paonia	High
Fruitland Mesa	Crawford	High
Grand Mesa Resort Company	Cedaredge	High
Hidden Valley	Paonia	High
Highway 65 Corridor	Cedaredge	High
Needle Rock	Crawford	High
North Hotchkiss	Hotchkiss	High
North Orchard City	Cedaredge	High
North Rogers Mesa	Hotchkiss	High
Northridge	Cedaredge	High
Orchard City	Cedaredge	High
South Redlands	Hotchkiss	High
South Rogers Mesa	Hotchkiss	High
Stoney Creek	Non-districted	High
Cedar Mesa	Cedaredge	Very High
Colby Canyon	Cedaredge	Very High
Fire Mountain	Paonia	Very High
Leroux	Hotchkiss	Very High
Long Gulch	Crawford	Very High
North Redlands	Hotchkiss	Very High
Stucker Mesa	Paonia	Very High
Surface Creek	Cedaredge	Very High

Figure 8. Delta County CWPP Communities and Hazard Rating

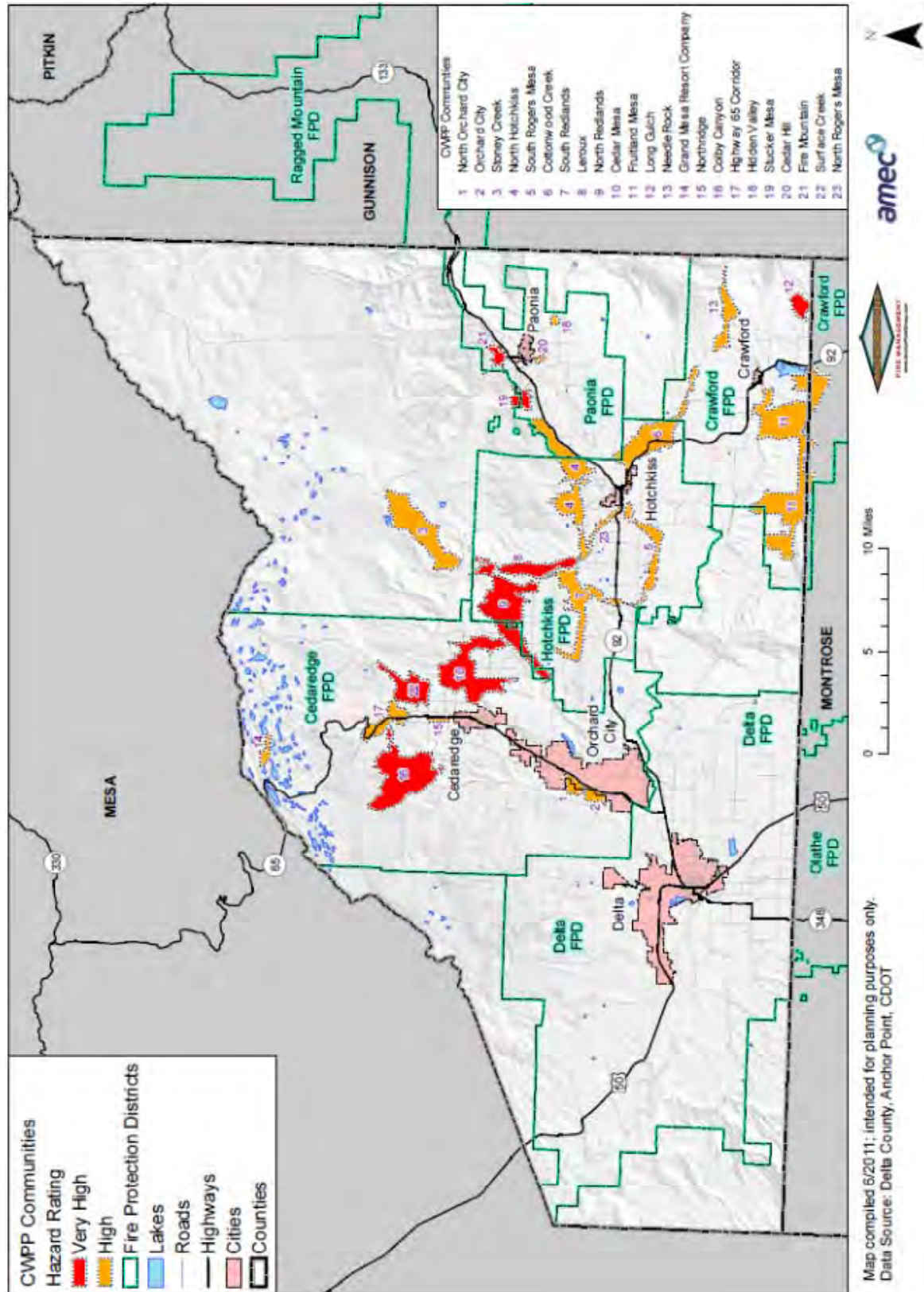
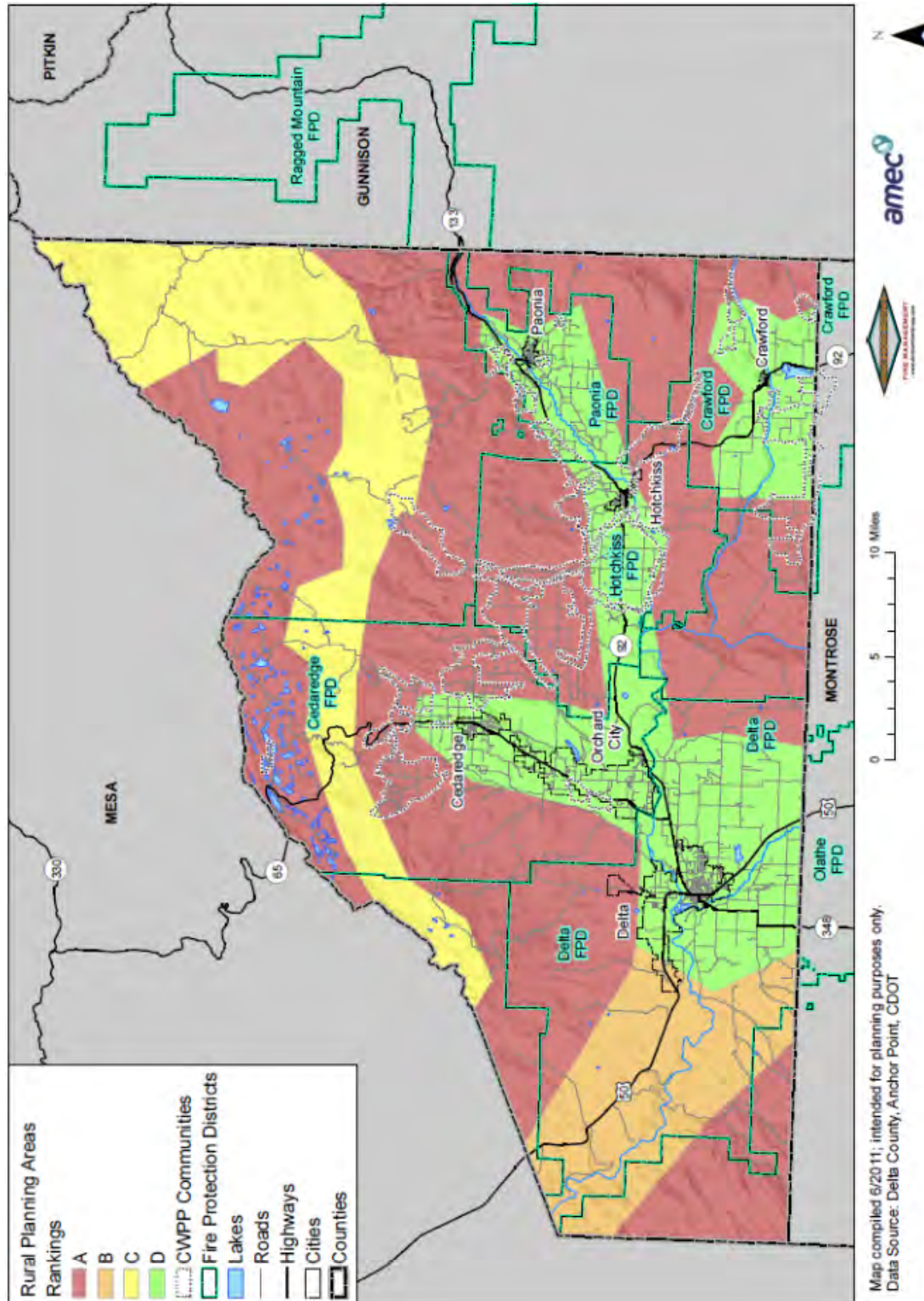


Figure 9. Delta County Rural Planning Areas



CEDAREGE FIRE PROTECTION DISTRICT

Eight CWPP communities were identified within the Cedaredge FPD. These communities are and their hazard ratings are identified in the Table 5 and Figures 10 and 11. Each community's ignitability analysis recommendations are discussed in the following pages.

Table 5. Cedaredge Fire Protection District Community Hazard Ratings

Very High	High
Cedar Mesa Colby Canyon Surface Creek	Grand Mesa Resort Company Highway 65 Corridor North Orchard City Northridge Orchard City

Figure 10. Cedaredge Fire Protection District Communities

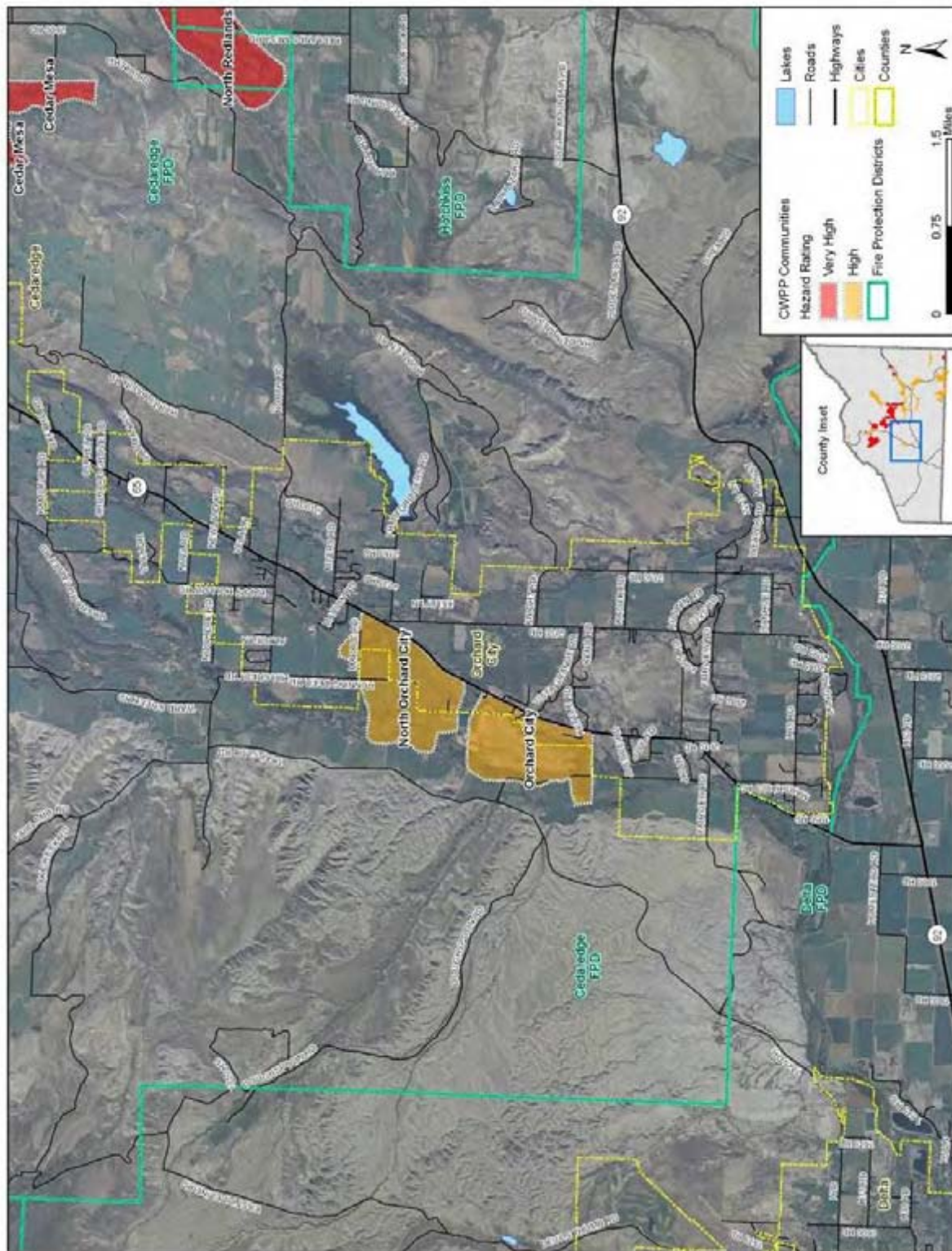
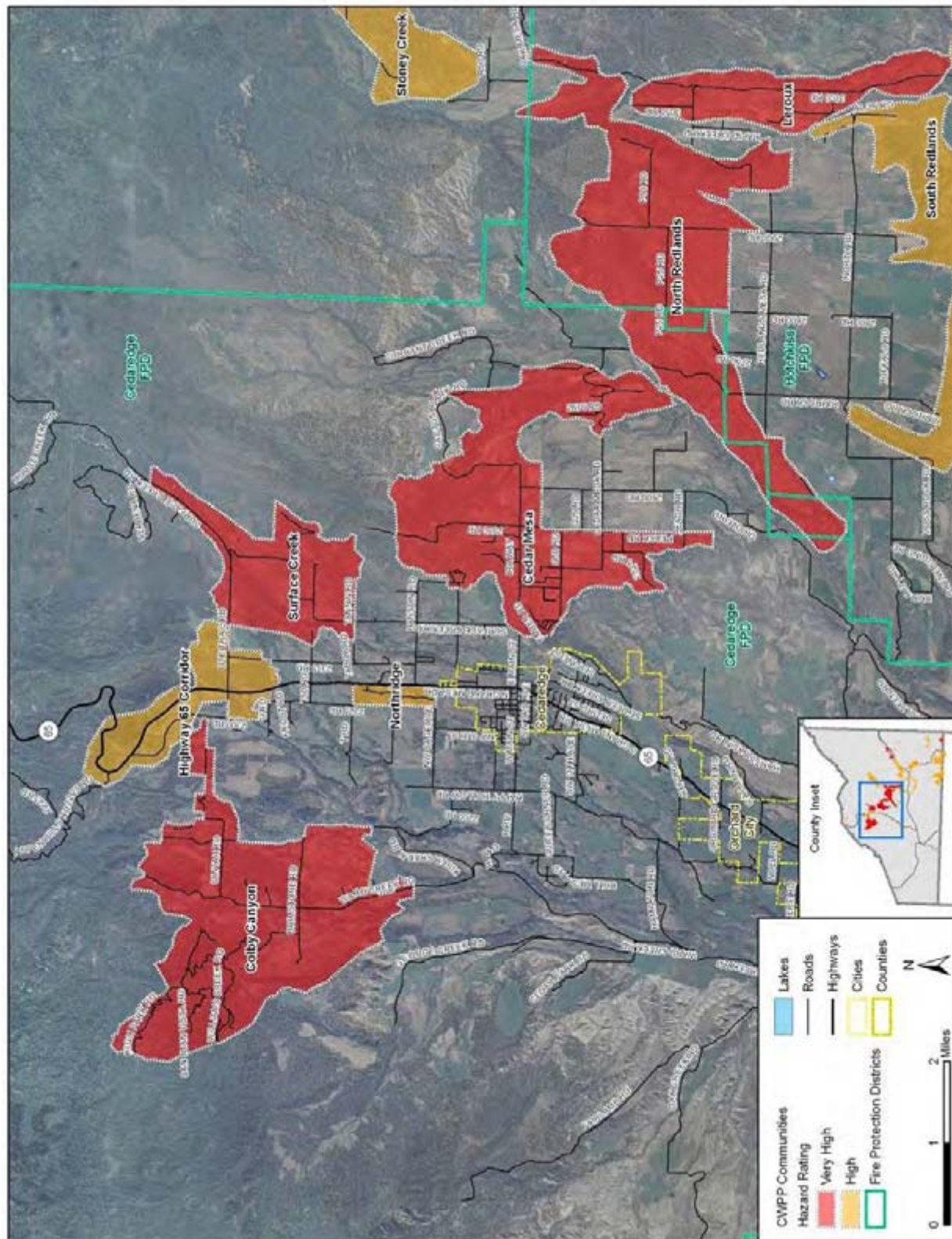


Figure 11. Cedaredge Fire Protection District CWPP Communities



1. Cedar Mesa



Hazard Rating: Very High

Cedar Mesa, shown in Figures 11 and 12, is one of the very high hazard areas in the Delta County WUI, and it recently experienced a wildfire that destroyed several homes. The community has multiple ingress and egress routes, though some of the side roads are only one way in and out. Roads are paved and range from 20 – 24 feet in width. Street signage is reflective and consistent throughout the community, helping to ease firefighters' response in the event of a wildfire. The topography of the area is largely flat as it lies on top of a mesa, although steep sides and chimneys add to the wildfire risk. Homes are built near the steep sides of the mesa and directly above chimneys and significantly affect the likelihood that firefighters would be able to save these structures from wildfire. Roofs are primarily fire resistant, but decks and siding are made of combustible materials. Defensible space is minimal, and adequate turnaround areas are not available to all homes. Utilities are located above ground, and many homes have propane tanks. There is no water supply in the area, greatly complicating wildfire response. High winds and lightning exacerbate the community's hazard rating. Cedar Mesa is in close proximity to Cedaredge, which will reduce response times to the area.

The fuels in Cedar Mesa are divided between open grass- and shrub-dominated areas found throughout the community and dense thickets of pinyon-juniper. These forested areas surround most of the community including steep sides of the mesa and the many small drainages that run throughout. Recent fires have occurred within, and adjacent to, the community. Generally, high fire weather conditions generate rates of spread potentially between 80-90 chains/hour and flame lengths between four and eight feet. In areas of pinyon-juniper, longer flame lengths, higher fire-line intensities and the potential for active crown fire behavior is possible. Increased wind speeds, higher temperatures, and lower relative humidity will lead to extreme rates of spread, and flame lengths over 11 feet, thus requiring aerial support for suppression. The Town of Cedaredge lies right below the steep sides of community and could be a potential source for ignitions.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders

and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 12. Cedar Mesa Fuels Treatment Recommendations

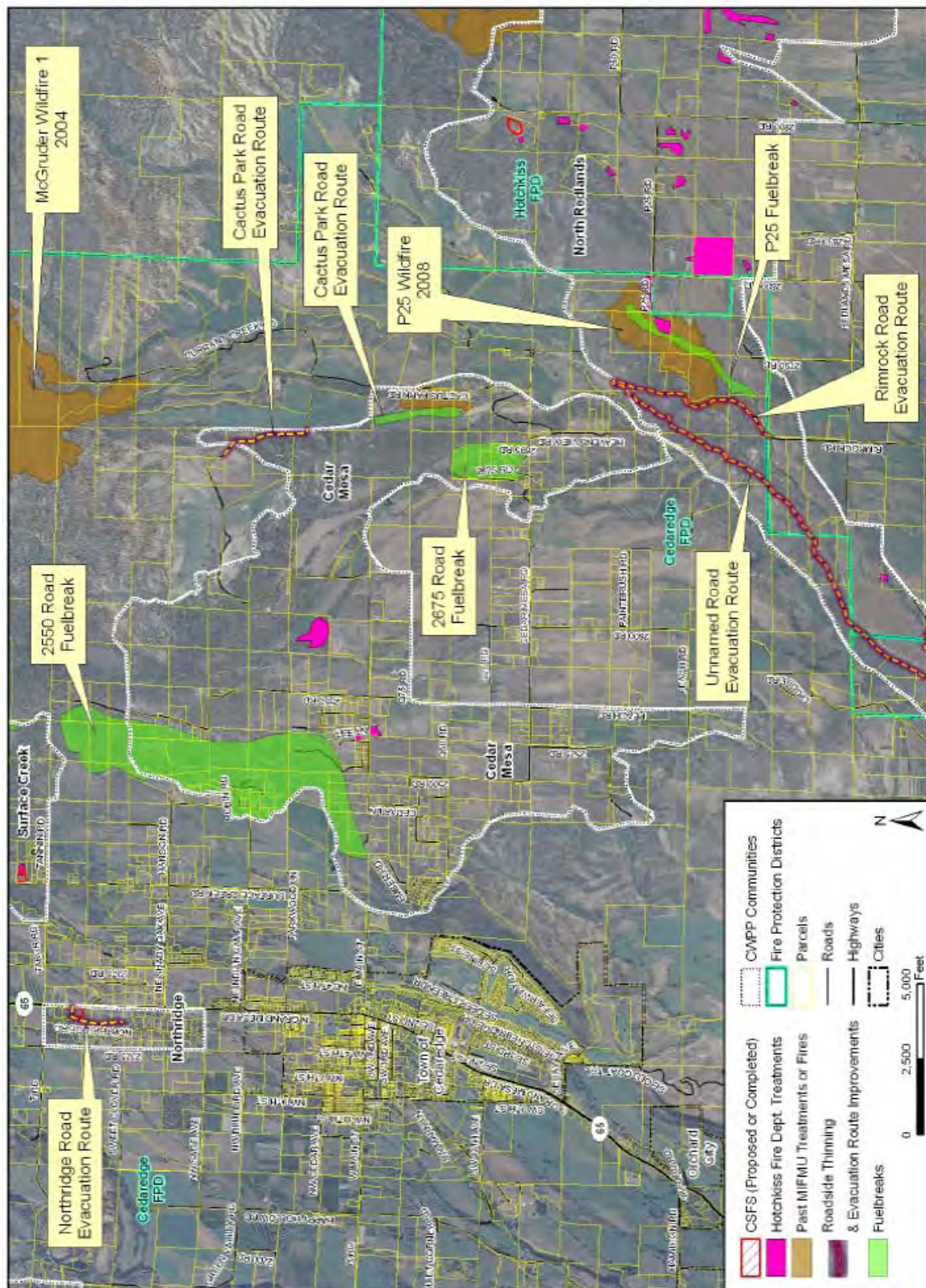


Table 6. Cedar Mesa Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Cactus Park Road Evacuation Route	2	Cactus Park Road already exists, but travels through thick areas of pinyon-juniper. Thinning along the road will allow for safer egress for residents and ingress for firefighters.	Mechanical treatments where viable; hand treatments in steep sections and where access is poor	23
Landscaping/Fuels	3	See Appendix A	See Appendix A	n/a
Home Construction	4	See Appendix A	See Appendix A	n/a
Preparedness Planning	5	See Appendix A	See Appendix A	n/a
Infrastructure	6	See Appendix A	See Appendix A	n/a
Cactus Park Road Fuelbreak	7	This steep hillside, leading directly to homes should be managed to reduce the risk of extreme fire behavior.	Mechanical treatments where viable; hand treatments in steep sections and where access is poor	18
2675 Road Fuelbreak	8	The fuels between 2675 and 2695 Roads are some of the thickest in the community. This, in combination with the numerous homes makes this area a high priority fuelbreak.	Mechanical treatments where viable; hand treatments in steep sections and near homes; mowing	63
2550 Road Fuelbreak	9	The entire west facing hillside on the north west end of the community is extremely dense with pinyon-juniper. A fuelbreak on this hillside can reduce the risk of extreme fire behavior.	Mechanical treatments where viable; hand treatments in steep sections and near homes	455

* Mechanical treatments include hydro-axe, roller chop, or brush hog

** Acreages are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

2. Colby Canyon



Hazard Rating: Very High

Colby Canyon is a very high risk community northwest of Cedaredge (Figure 13). Colby Canyon has multiple ingress and egress routes, primarily of well maintained dirt and 20 feet wide. Most of the side roads that provide access and egress to houses are one way in and out, which could hinder fire response and evacuation efforts. Street signs in Colby Canyon are consistent throughout the community and made of reflective metal. The Colby Canyon area is mostly forested and grasslands with some agricultural lands. The Colby Canyon topography places the community at increased risk of wildfire, with rolling flat areas that run into steep hillsides and ravines scattered throughout the area. Homes are built mid-slope on steep hills near steep, heavily vegetated ravines. Decks and siding are constructed of a mixture of materials, but most roofs are made of metal and offer high fire resistance. Defensible space is lacking. Many driveways are long and narrow, leaving homes with inadequate space for turnarounds. However, there are many fields in the area that could potentially serve as safety zones. Utilities are all above ground. Colby Domestic Water Company has a treatment plant at the top of Ward Creek Road, north of Uintah. This is an extremely high risk area at the top of Colby Canyon. There is a treatment plant and 100,000 gallon storage tank. Like many other CWPP communities in Delta County, a lack of water will seriously challenge firefighting operations in Colby Canyon. There are some individual cisterns in the community, but overall water sources are lacking. Firefighting operations could be further hindered by the distance from the Cedaredge fire station and where there are poorly-maintained roads in parts of the community. High winds in the area contribute to Colby Canyons' very high risk rating. Lightning presents a major threat as an ignition source and has caused many small fires adjacent to Colby Canyon. Agricultural burning is another potential ignition source for this community.

The fuels in the Colby Canyon community are divided between dense stands of pinyon-juniper and more open areas dominated by grass and shrubs, as well as some small sections of irrigated fields. The western and northern sections of the community are where the most significant fire risk occurs due to steep slopes covered with contiguous pinyon-juniper forest. Throughout the remainder of the community is where most of the values at risk are located. These areas are considered at risk to wildfire due to a combination of light, flashy fuels, a network of rolling hills and drainages, and the presence of a number of pinyon-juniper stringers. Flame lengths greater than 11 feet are possible in the northern section of the community. Rates of spread over 80 chains/hr in the southern section could make fire suppression efforts difficult.

under high severity weather conditions. Lightning strikes on the ridges above the community, or a human-caused ignition down in the lower levels, could spread fire throughout the community and beyond.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 13. Colby Canyon Fuels Treatment Recommendations

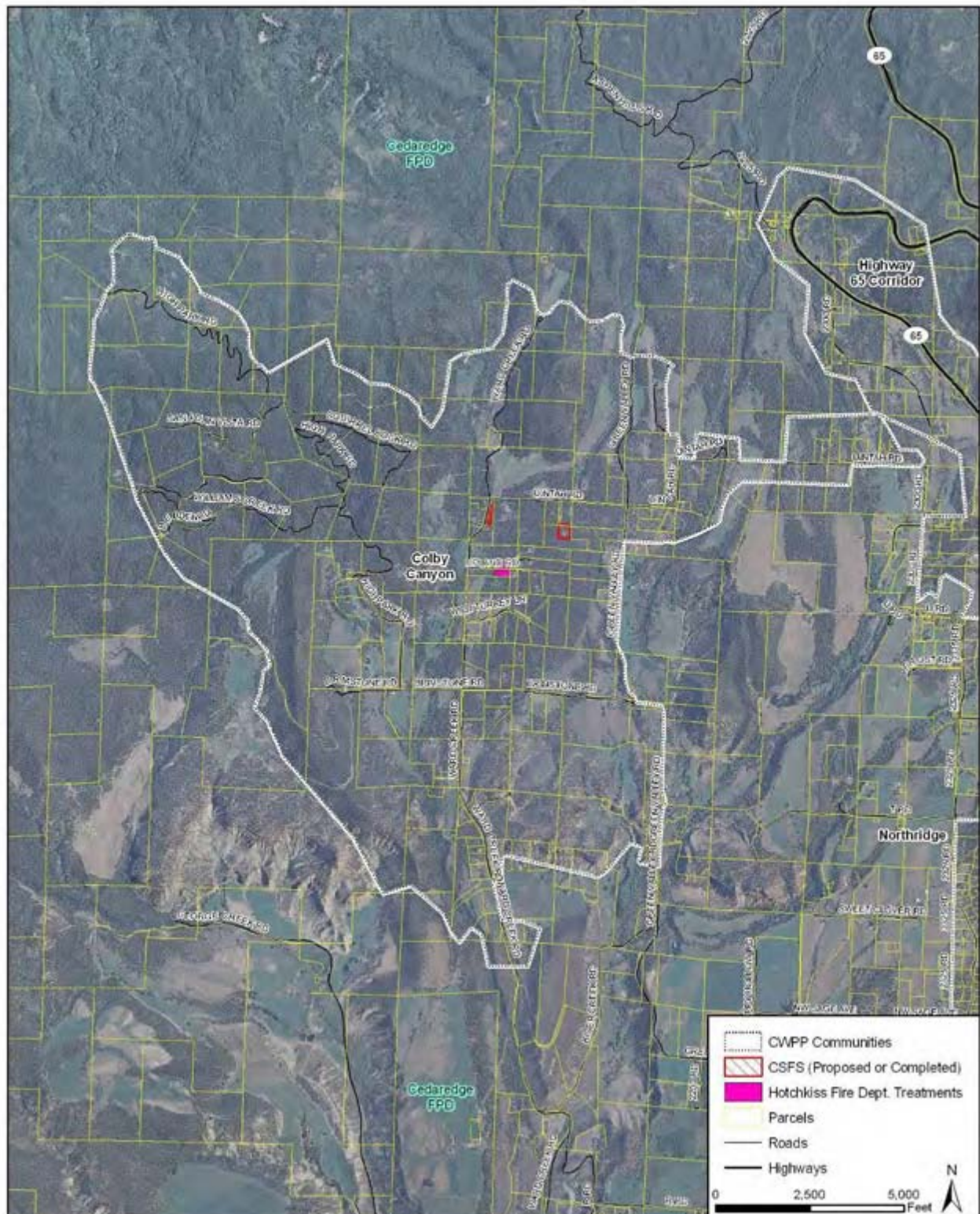


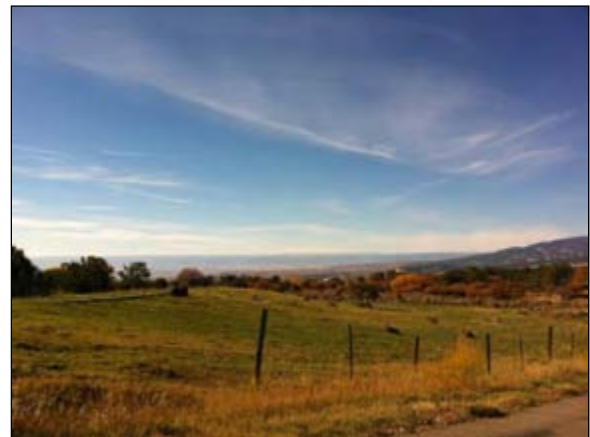
Table 7. Colby Canyon Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Extended Defensible Space	2	Extended defensible space is recommended for homes located in dangerous topography (above ravines and natural chimneys, mid-slope on steep slopes, on ridge tops or summits) with heavy vegetation loads near or below the home.	Hand felling and limbing; mowing; mechanical treatments in flat areas	Variable, depends on topography
Landscaping/Fuels	3	See Appendix A	See Appendix A	n/a
Home Construction	4	See Appendix A	See Appendix A	n/a
Infrastructure	5	See Appendix A	See Appendix A	n/a
Preparedness Planning	6	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

** Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

3. Surface Creek



Hazard Rating: Very High

The Surface Creek community is east of Highway 65 on mostly flat terrain with some rolling hills, similar to many other communities in Delta County (Figure 14). Some Surface Creek homes are built adjacent to a drainage that runs through the middle of the community. Most roofs offer high fire resistance, but decks and siding are made of combustible materials. There are multiple access roads into and out of the community, but side roads are one way in and one way out. Most roads are paved and roughly 20 to 24 feet wide. Signage and addressing in Surface Creek are reflective and consistent. Surface Creek homes have varying levels of defensible space. Some structures have a natural buffer area due to grass and natural clearing of vegetation while others have no defensible space at all. Some homes have started working on defensible space, but the work done thus far does not provide adequate mitigation against wildfires. Fuels were found behind homes along Ute Trail, increasing their fire risk. The lack of water supply and the long distance to the Cedaredge fire station further exacerbate the wildfire hazard in Surface Creek. Other significant factors include high winds and agricultural burning in the area, which could act as an ignition source. Utilities in the area are all located above ground.

The fuels in the Surface Creek community are divided between dense stands of pinyon-juniper and more open areas dominated by grasses and shrubs. Open areas with light, flashy fuels can expect increased rates of spread, while forested areas will see higher flame lengths and fire-line intensities. Flame lengths over 11 feet are possible in these forested areas, especially in the main drainage area and on the steeper eastern section. Rates of spread easily exceeding 60 chains/hr are also possible under high severity weather conditions. Containment of a fire under these conditions could prove difficult and may be beyond the capabilities of hand crews, engine crews, and dozers; necessitating the use of aircraft. Most of the homes are located in the pinyon-juniper areas where containment will be more difficult due to heavy fuel loadings.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this

plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 14. Surface Creek Fuels Treatment Recommendations

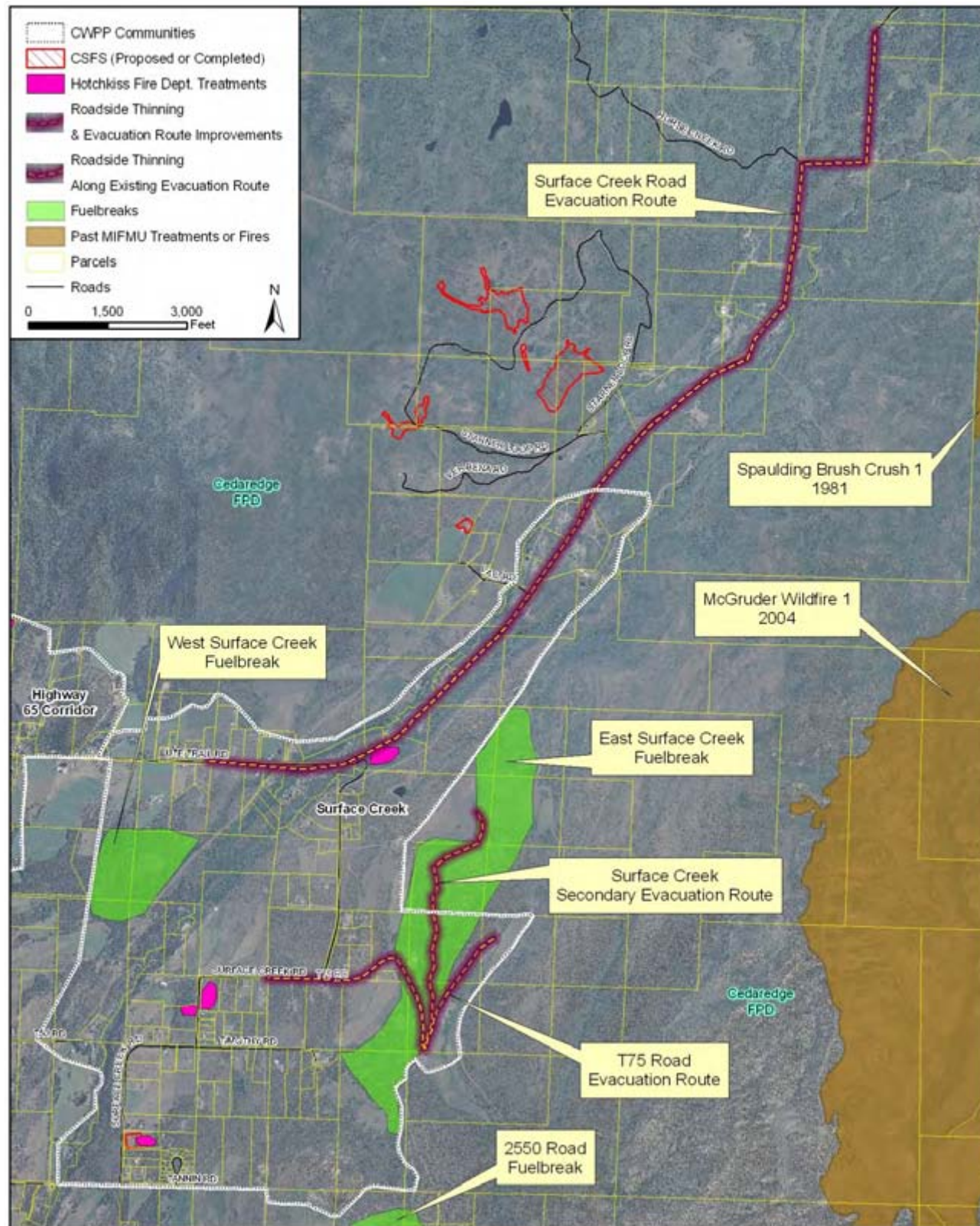


Table 8. Surface Creek Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Home Construction	2	See Appendix A	See Appendix A	n/a
Landscaping/Fuels	3	See Appendix A	See Appendix A	n/a
Surface Creek Road Evacuation Route	4	Surface Creek Road, while adequate in width, has the potential to experience extreme fire behavior, including long flame lengths and fast rates of spread. Because it is the main access to the community, reducing the fuels along the road will provide safer egress and access.	Hand felling and limbing near homes and on steep slopes; mowing; some mechanical treatments where applicable	147
T75 Road Evacuation Route	5	The T75 Road begins in agricultural fields, but quickly travels through extremely dense stands of pinyon-juniper, up the middle of the slope, ending at the top. Fire behavior is likely to be extreme and thinning and limbing will provide reduced fire behavior and safer evacuation.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	48
Surface Creek Secondary Evacuation Route	6	Because there is only one way in and out of the community, improvement of a secondary egress road is recommended. With adequate fuels mitigation and road improvement, this road can be an additional way out for residents and access point for firefighters.	Mechanical treatments in flat areas; hand felling and limbing on steep slopes; mowing	37
Preparedness Planning	7	See Appendix A	See Appendix A	n/a
West Surface Creek Fuelbreak	8	High tree density in the drainage along 2480 Lane is very dense, but the slopes make working there difficult. The fuelbreak recommended, therefore, is on the west side of	Mechanical treatments where viable; hand treatments in steep sections and where	56

Name	Priority	Description	Methods*	Acres**
		the drainage and can help reduce the change of a fire spreading from the agricultural areas and getting into the thicker canyon fuels.	access is poor	
East Surface Creek Fuelbreak	9	The west facing hillside in the eastern part of the community has thick stands of pinyon-juniper. A few homes are either mid-slope or at the top of the hill, not to mention values-at-risk to the west. By thinning the vegetation in conjunction with the 2550 Road Fuelbreak, the risk of embering, active crown fire and structure loss can be reduced.	Mechanical treatments where viable; hand treatments in steep sections and where access is poor	200
Infrastructure	10	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

4. Grand Mesa Resort Company



Hazard Rating: High

This community lies atop the Grand Mesa east of Highway 65 (Figure 15). The Grand Mesa Resort is similar in name to the Grand Mesa Christian Association area of special interest (see areas of special interest section), but they are two separate entities. There is only one way in and one way out of Grand Mesa Resort Company. Fortunately this main road is in good condition, but side roads are poorly maintained. Not all driveways have adequate turnaround space. This area is heavily forested and is built next to a lake. The community comprises 307 acres in total with 272 building sites. The community is 85 percent built out. Roofs are highly fire resistant while decks and siding vary in combustibility. Ignition sources in the community include lightning, campfire pits, and recreationists from the nearby Forest Service lands and campgrounds. High winds in the area could potentially increase fire risk and severity. This community's fire hazard is complicated by a number of factors. Trees in the area have insect and disease issues such as spruce and fir beetles. Critical infrastructure in Grand Mesa includes the water treatment plant and a gas station/convenience store. The residential population in Grand Mesa is seasonal; people are mostly present on weekends and during the summer. Utilities are located above ground. Response time to this community would be very long. Cedaredge FPD would respond, but the fire station is 45 to 60 minutes or more away from Grand Mesa. Water could be drafted from local ponds to fight fires in the community.

The area around Grand Mesa Resort Company does not have a significant history of fire. The community is at a higher elevation, so fire return intervals are in the hundreds of years. Old spruce and fir stands are separated by grass and forb-filled meadows. While the area could experience extreme fire behavior, it would most likely be following drought, combined with high temperatures, low relative humidity, high winds, and an ignition source. The majority of the time, the probability of a fire in and around the community is low. The network of lakes in and around the community act as natural water sources and fire breaks, though a large wildfire could easily move around them. A variety of ignition sources exist within the community, including community fire pits, lightning, and nearby recreation areas, but again, extreme weather conditions would have to persist and align with an ignition for a fire to occur and spread.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of

the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 15. Grand Mesa Resort Company Fuels Treatment Recommendations



Table 9. Grand Mesa Resort Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Preparedness Planning	3	See Appendix A	See Appendix A	n/a
Infrastructure	4	See Appendix A	See Appendix A	n/a
Home Construction	5	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

5. Highway 65 Corridor



Hazard Rating: High

This area encompasses residences that are located along the stretch of Highway 65 north of Cedaredge and, broadly, between Colby Canyon and Surface Creek (Figure 16). The multiple access/egress routes are paved and 20 to 24 feet wide, although the main highway itself is wider than 24 feet. The area is mostly forested, rolling hills interspersed with agricultural land. General residence location is not an issue in this community, but homes here have no defensible space. Roofs on homes in this area are highly fire resistant, but decks and siding vary in terms of fire resistance. Additionally, not all driveways provide sufficient space for turnarounds. Like most other Delta County communities, utilities along the Highway 65 Corridor are located above ground, increasing the risk that they could be damaged in the event of a wildland fire. No water sources are available for firefighting efforts in the immediate area. High winds are another complicating factor in this area. Response times should be relatively quick given the community's proximity to Cedaredge and comparative ease of access since it is located along a main highway. Street signage is fire resistant and consistent throughout the community.

Fuels within the Highway 65 Corridor are primarily continuous shrubs and grasses with patches of thick pinyon and juniper. The thickest vegetation is located east of the highway, especially the southern knoll, north of U Road, as well as the area between the bend in the highway in the northern part of the community. Because of the highway, there is a greater risk of ignition within the community. People discarding cigarettes and catalytic converters pose a threat. In the areas with the highest fuel loading, the most intense fire behavior is predicted. Given moderate fire weather conditions, flame lengths are modeled to be between 4-8 feet, but with high percentile weather these values increase to 8 – 11 feet, and greater than 11 feet where the vegetation and topography align. The faster wind speeds associated with high weather scenarios will push fire quickly through the community at rates greater than 80 chains/hr on some of the slopes. To the west of, and along the highway, the fuels are agricultural fields; and as a result less intense and active fire behavior is expected.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A

concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 16. Highway 65 Corridor Fuels Treatment Recommendations

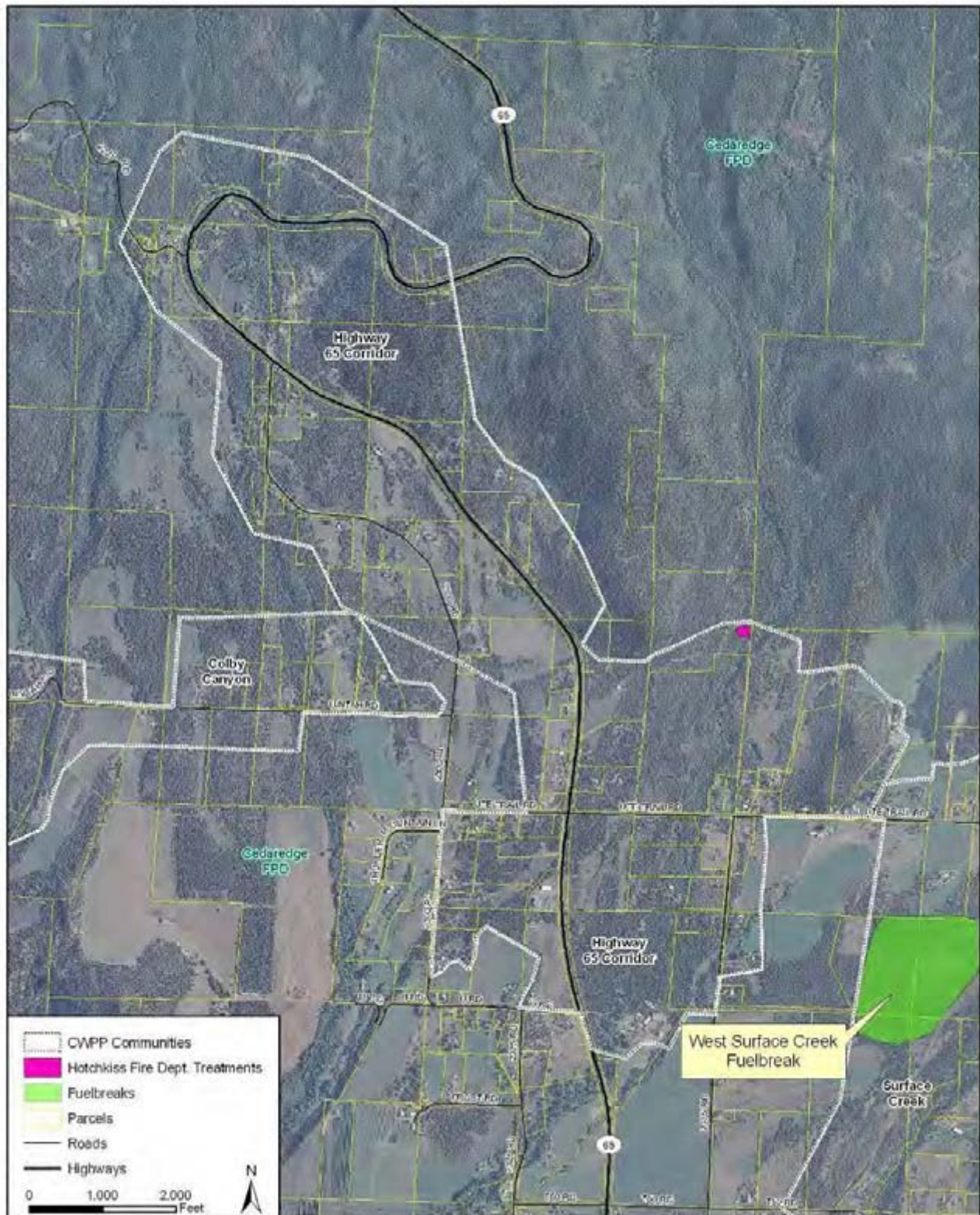


Table 10. Highway 65 Corridor Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home

* Mechanical treatments include hydro-axe, roller chop, or brush hog

**Acreages are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

6. North Orchard City



Hazard Rating: High

North Orchard City is primarily an industrial area with few houses (Figure 17). There are steep slopes in the western part of the community with pinyon-juniper forests, but for the most part, structures are on flat terrain surrounded by agricultural lands. Parcel sizes are roughly 40 acres or more, and housing density is low in North Orchard City. Industrial buildings are constructed of noncombustible materials, but residential structures may have combustible siding and decks. All utilities are above ground, and propane tanks are present on every property in the community. There are multiple ingress and egress routes into the community. Some of these roads are paved, including the main highway, but most routes within the community are dirt roads about 20 – 24 feet wide. Driveways and roads in North Orchard City provide enough room for tenders to turn around. Little water is available for wildfire response, but there are some hydrants in the community. Agricultural burning is the most common ignition source. Response from the FPD is generally good. There is a substation within Orchard City which aids response times.

Much of the vegetation in North Orchard City is agricultural fields with steep slopes bordering the west side, similar to Orchard City. The west facing slopes have thick stands of pinyon pine and juniper that are modeled to have extreme fire intensity given high percentile weather scenarios. Areas to the west of the community are entirely irrigated fields, so a fire origination within North Orchard City is unlikely to travel far and become a large fire. Flame lengths longer than 11 feet and extremely fast rates of spread are predicted during moderate and high fire percentile days in the timber fuels. Minimal or nonexistent fire behavior is predicted for the majority of the community, given the high percentage of irrigated land.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation

Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 17. North Orchard City Fuels Treatment Recommendations

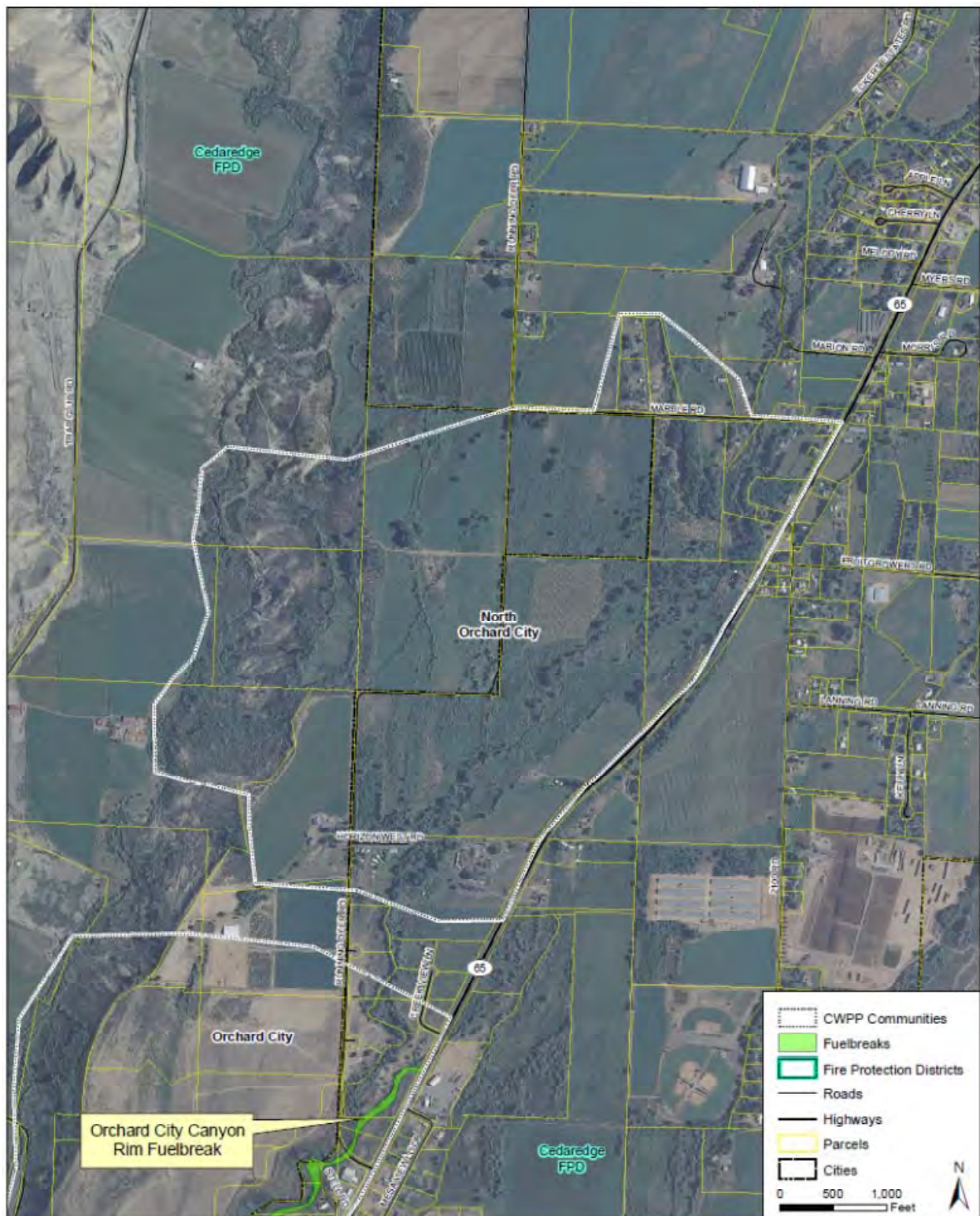


Table 11. North Orchard City Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
Preparedness Planning	4	See Appendix A	See Appendix A	n/a
Infrastructure	5	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog

**Defensible space distances will vary by property based on slope and fuels. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

7. Northridge



Hazard Rating: High

The Northridge community is found on the western side of Highway 65 just north of Cedaredge (Figure 18). The community's only ingress and egress routes are two one-way roads. Roads in Northridge are paved or well maintained dirt and are 20 – 24 feet wide. Street signs are made of reflective metal and are readily visible. Northridge topography is mostly flat with somewhat rolling hills, marked by a ravine that runs through the middle of the community. This area is forested with grass underneath. Most homes are located near the heavily vegetated ravine. Houses in Northridge have combustible siding and decks, with metal roofs. Some low limbing has been done in the area, but defensible space is lacking. Slash piles throughout the area present another threat to effective wildfire mitigation in Northridge. Utilities in the community are below ground. Water is available from hydrants, but these hydrants have been found to be unreliable. Fortunately, Northridge is right off of the highway and close to the Cedaredge FPD, so response times would be relatively quick. As in much of Delta County, high winds in the area can increase the risk of wildfire.

Surrounding the main drainage that runs through the center of the Northridge community is a dense stand of pinyon-juniper. Most of the values at risk are within or directly adjacent to this area. Beyond the forest are open shrub- and grass-dominated areas, where light, flashy fuels could cause fire to spread quickly into the pinyon-juniper. Within the pinyon-juniper, flames lengths could exceed 11 feet due to the alignment of heavy fuel loadings and the funneling of the Big Ditch drainage. Should this occur, fire suppression could be difficult for hand crews and engines. An ignition could come from Highway 65, which creates the eastern border of the community, or from one of the other roads surrounding its entirety. Rates of spread under moderate and high weather parameters could be fast, easily exceeding 80 chains/hr.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community

that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 18. Northridge Fuels Treatment Recommendations

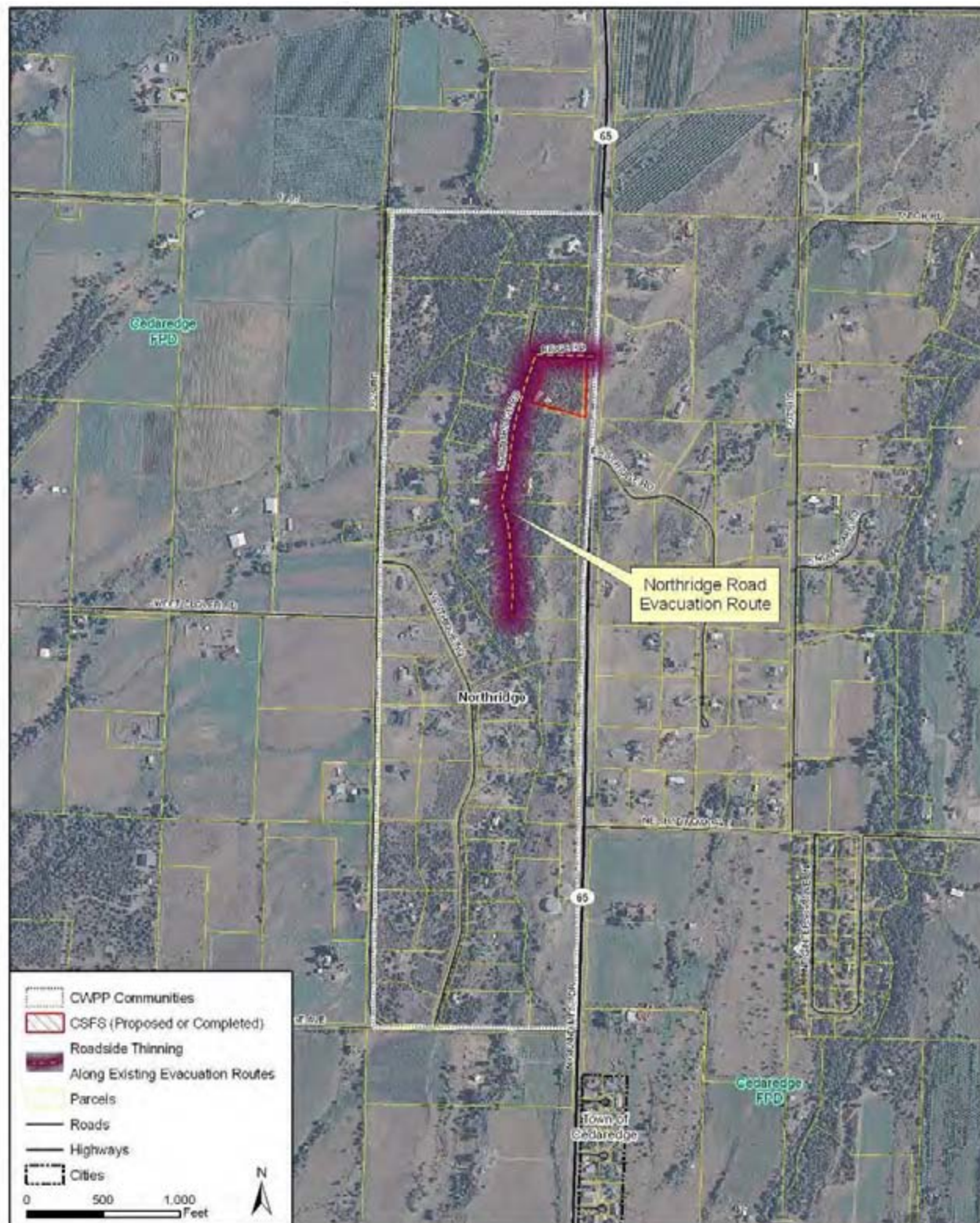


Table 12. Northridge Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
Northridge Road Evacuation Route	4	Northridge road is good condition, but the fuels on either side are very dense. Using Colorado State Forest Service guidelines, limb and thin the trees along the road to provide for safe ingress and egress.	Hand felling and limbing due to hazards present	16
Infrastructure	5	See Appendix A	See Appendix A	n/a
Preparedness Planning	6	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

8. Orchard City



Hazard Rating: High

The Orchard City topography is primarily flat agricultural land with steep slopes to the west (Figure 19). The western slopes are forested with pinyon-junipers. Some homes in the Orchard City community are in a dangerous location. Several are built on top of a plateau with steep, highly vegetated slopes below. Most parcels are around one acre in size with a few larger plots of roughly 40 acres. Roofs are constructed of asphalt and have high fire resistance, but siding and decks are made of combustible materials. Propane tanks are present on all properties, and utilities are located above ground. Given that most properties are on agricultural lands, agricultural burning tends to be the most common ignition source in Orchard City. There is only one way in and one way out for most homes in the community. These roads are mostly dirt and between 20 and 24 feet wide, but the main highway is paved. There is sufficient turnaround space for fire equipment, and street signage in the community is fire resistant and consistent. Water availability is low, with hydrants being one source. There is a FPD substation within Orchard City, so response times are typically quick.

The vegetation and topography in Orchard City is similar to that of North Orchard City. Much of the vegetation in Orchard City includes agricultural fields, but there are two areas of concern: the steep slopes that continue south from North Orchard City and steep slopes that rise from the river bottom. There are large fields between these two terrain features where fire behavior is greatly reduced. The west facing slopes have thick stands of pinyon-juniper that are modeled to have extreme fire intensity given high percentile weather scenarios. Flame lengths longer than 11 feet and extremely fast rates of spread are predicted during moderate and high fire percentile days in the timber fuels. The majority of the homes are situated on the canyon rims, directly above the most heavily vegetated slopes. Irrigated fields are predicted to have minimal or nonexistent fire behavior and are likely to reduce rates of spread and flame lengths if a fire were to reach these areas.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each

community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 19. Orchard City Fuels Treatment Recommendations

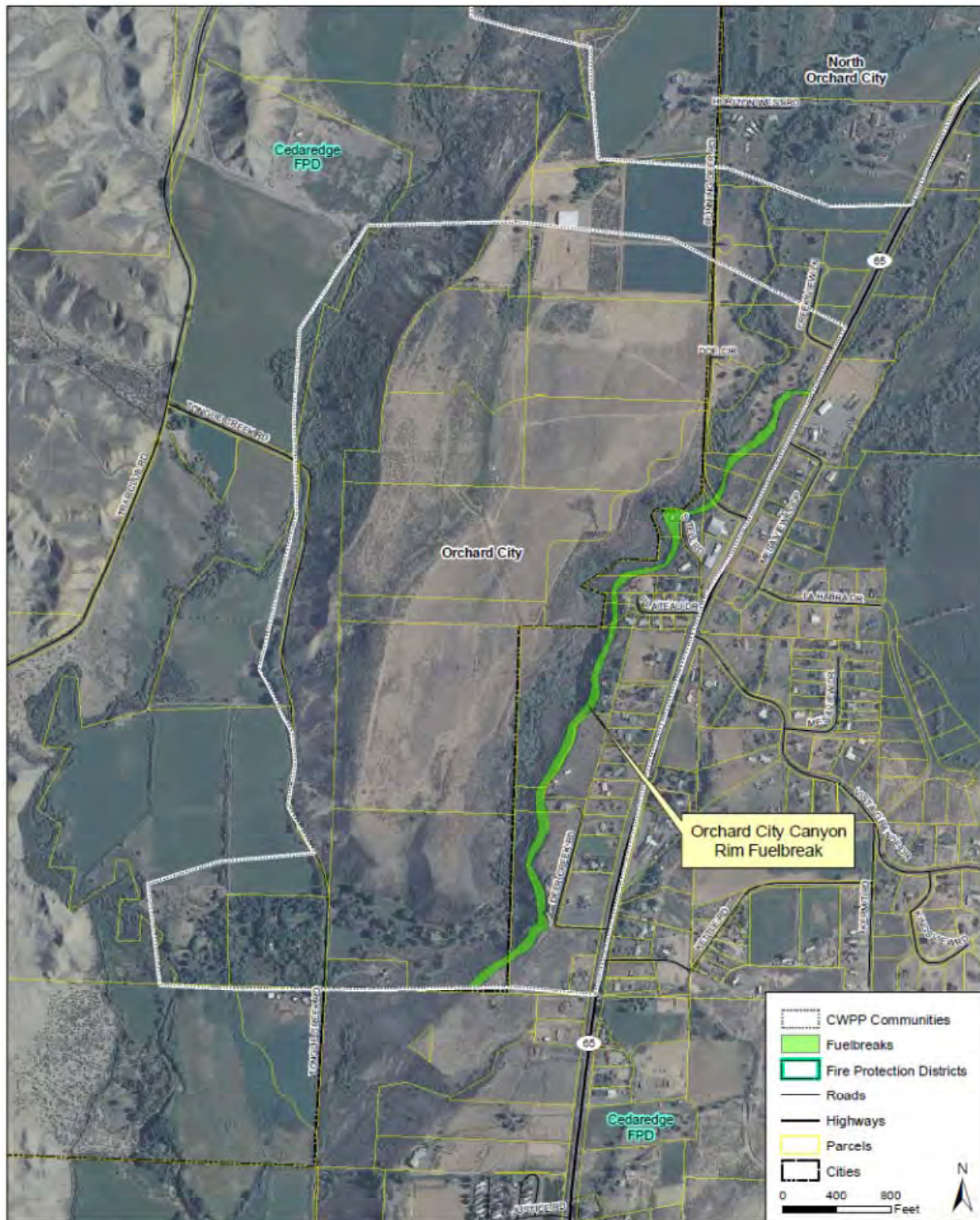


Table 13. Orchard City Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
Preparedness Planning	4	See Appendix A	See Appendix A	n/a
Infrastructure	5	See Appendix A	See Appendix A	n/a
Orchard City Canyon Rim Fuelbreak	6	Since the majority of the homes are located on top of the canyon rim, creating a fuelbreak behind the houses will be the most effective for protecting values-at-risk. A fuelbreak will diminish fire behavior if a fire started below these homes.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

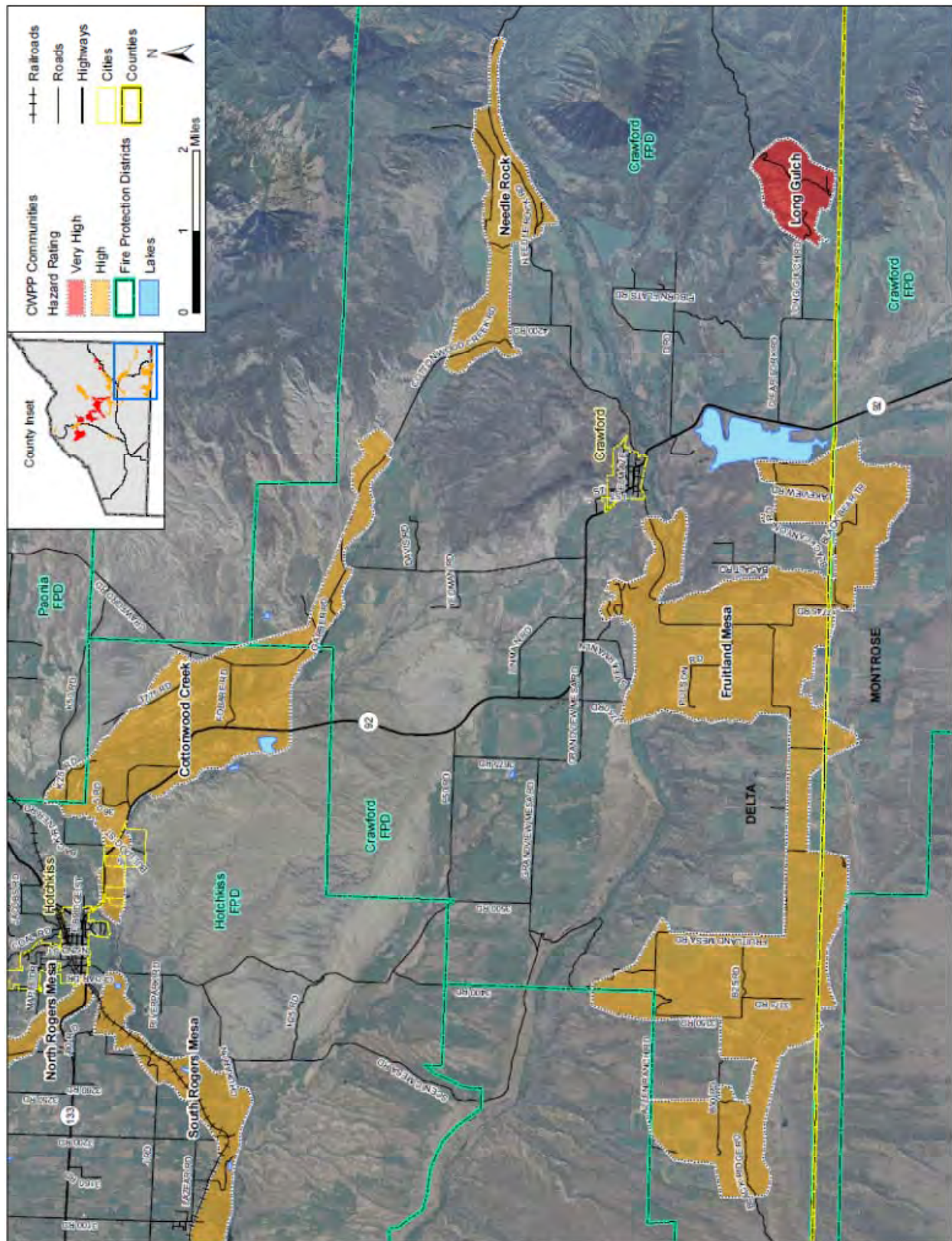
CRAWFORD FIRE PROTECTION DISTRICT

Three CWPP communities were identified within the Crawford FPD and are listed in the table below by their hazard rating. These communities are shown in Figure 20. Each community's ignitability analysis recommendations are discussed in the following pages.

Table 14. Crawford Fire Protection District CWPP Communities by Hazard Rating

Very High	High
Long Gulch	Fruitland Mesa Needle Rock

Figure 20. Crawford Fire Protection District CWPP Communities



9. Long Gulch



Hazard Rating: Very High

The Long Gulch community is located east of Crawford State Park along the Long Gulch Road (Figure 21). Long Gulch has multiple access roads of good quality. These roads are typically dirt and 20 to 24 feet wide. Street signage is made of reflective metal and is consistent throughout the community. In terms of topography, the community is located within a canyon with steep walls and ridges. Vegetation is a mix of forest and shrub. Homes are built mid-slope on steep slopes and above chimneys, increasing the risk of wildfire in the community. Roofs are fire resistance, but decks and siding are made of combustible materials. Homes in Long Gulch do not have defensible space around them. Utility lines are all above ground. There are no water sources within the community for use in firefighting, and the Crawford fire station is five miles away. Addressing in Long Gulch is clear, consistent, and easy to follow, making the community easier to navigate in the event of a wildfire. For the most part, driveways in the community lack adequate turnaround areas. This area is prone to high winds which exacerbate Long Gulch's risk of wildland fires.

Pinyon-juniper forest covers much of the Long Gulch community. This forest generally runs continuously up the steep sides of the valley where most of the community is located. Most of the community is steep, and many small, natural chimneys occur along the sides of the mesa. The majority of the values at risk occur within or adjacent to these chimneys. There are areas where the vegetation does not naturally run continuously uphill, but many strings of pinyon-juniper running straight uphill do exist. In these areas, rapid uphill rates of spread can be expected. The natural shape of the community will act to further uphill spread by preheating uphill and adjacent fuels, and by funneling winds. Below the community are irrigated fields, which could be a potential source of ignitions, especially if they are burned. Generally, under high severity fire conditions, rates of spread are expected to be around 60-80 chains/hr.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this

plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 21. Long Gulch Fuels Treatment Recommendations

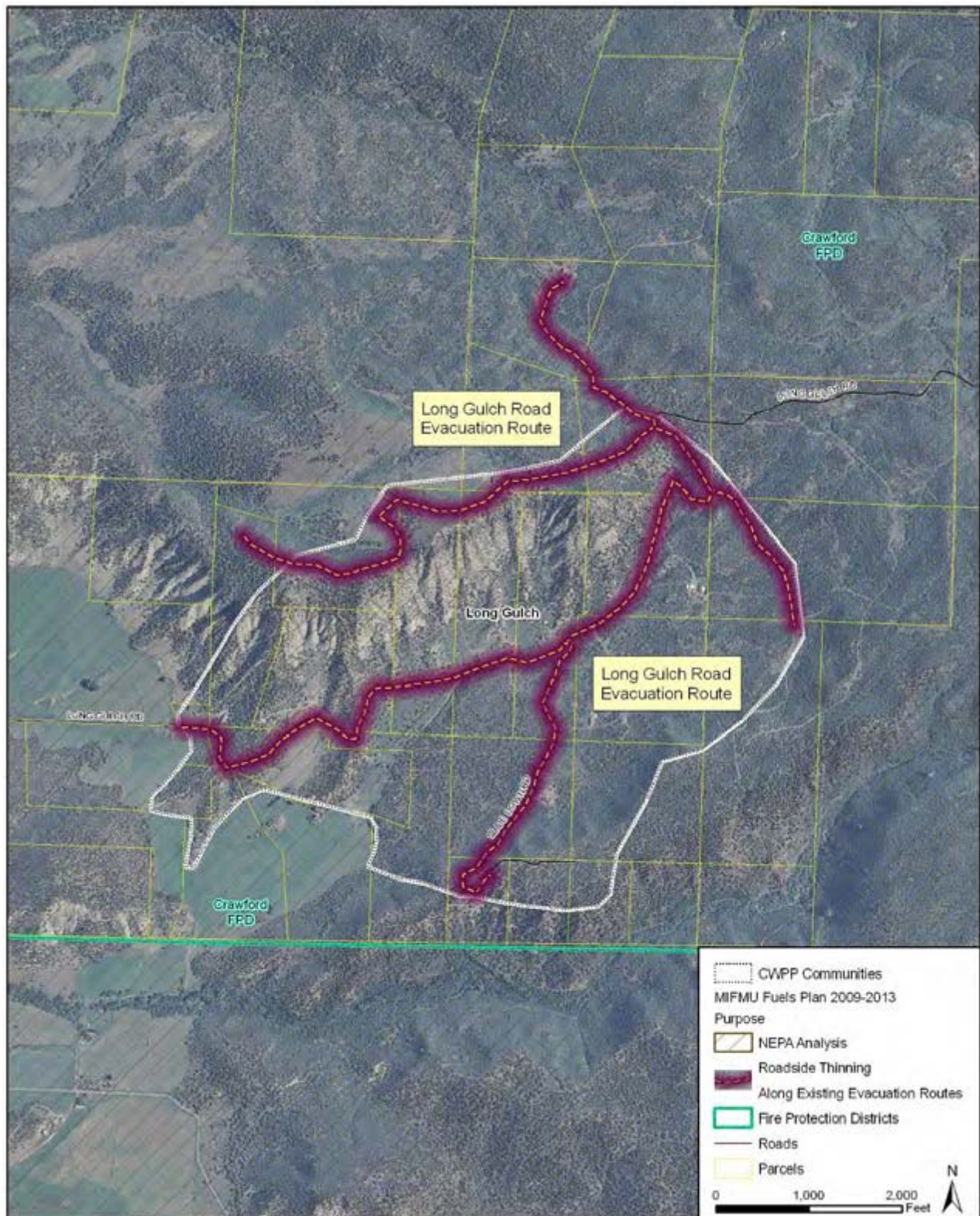


Table 15. Long Gulch Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
Long Gulch Road Evacuation Route	4	Long Gulch Road is narrow, is located along the middle of the slope, and has pinyon-juniper vegetation on either side. Thinning vegetation and creating additional turnarounds will greatly improve the ability for people to evacuate and fire crews to access the community.	Mechanical treatments where viable; hand treatments in steep sections and where access is poor	157
Infrastructure	5	See Appendix A	See Appendix A	n/a
Preparedness Planning	6	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

10. Fruitland Mesa



Hazard Rating: High

Fruitland Mesa covers a vast expanse southwest of the town of Crawford and west of Crawford State Park (Figure 22). There are multiple access roads into the community. For the most part, these roads are well maintained dirt, but many of the side roads are of poor quality. Street signage throughout Fruitland Mesa is reflective, consistent, and metal. The area is largely forested and interspersed by agricultural lands. Most of the community lies on top of a mesa, giving Fruitland Mesa a flat topography. There are some rolling hills with steep, heavily vegetated drainages. Some homes are built near these steep drainages and near the steep walls of the mesa. Most homes have fire resistance roofs, but decks and siding made of materials with varying levels of combustibility. To help mitigate the wildfire risk in the area, some homes have a natural defensible space due to clearing of vegetation near building envelopes and due to agricultural lands in the area. Most homes have trees adjacent to structures. Many homes in Fruitland Mesa lack adequate space for turnarounds due to the long and narrow driveways in the community. Utilities are all above ground. This includes many propane tanks that are surrounded by vegetation, adding to the wildfire risk in the area. Water supply could present a critical problem for firefighters given the scarcity of supply in the area and the distance of Fruitland Mesa from the fire station. Fruitland Mesa faces increased wildfire risk due to high winds and the threat of lightning. Agricultural burning presents another source of ignition in this community.

Within the expansive Fruitland Mesa community, dense sections of pinyon-juniper are separated by large sections of grassy meadows and irrigated fields. Pinyon-juniper stands are primarily located along the steep sides of the mesa and adjacent the network of drainages. These areas are capable of supporting extreme fire behavior due to the alignment of heavy fuel loadings and steep slopes. Under high severity weather conditions, rates of spread greater than 90 chains/hr are expected throughout the majority of the community. Flame lengths are not predicted to be greater than 11 feet, meaning that the majority of fire can likely be stopped with the use of hand crews and large equipment such as dozers. Recent fires have been experienced within, and adjacent to, the community. Possible sources of ignitions include lightning, burning agricultural fields, as well as a fire starting below the community and quickly spreading up the steep sides of the mesa.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 22. Fruitland Mesa Fuels Treatment Recommendations

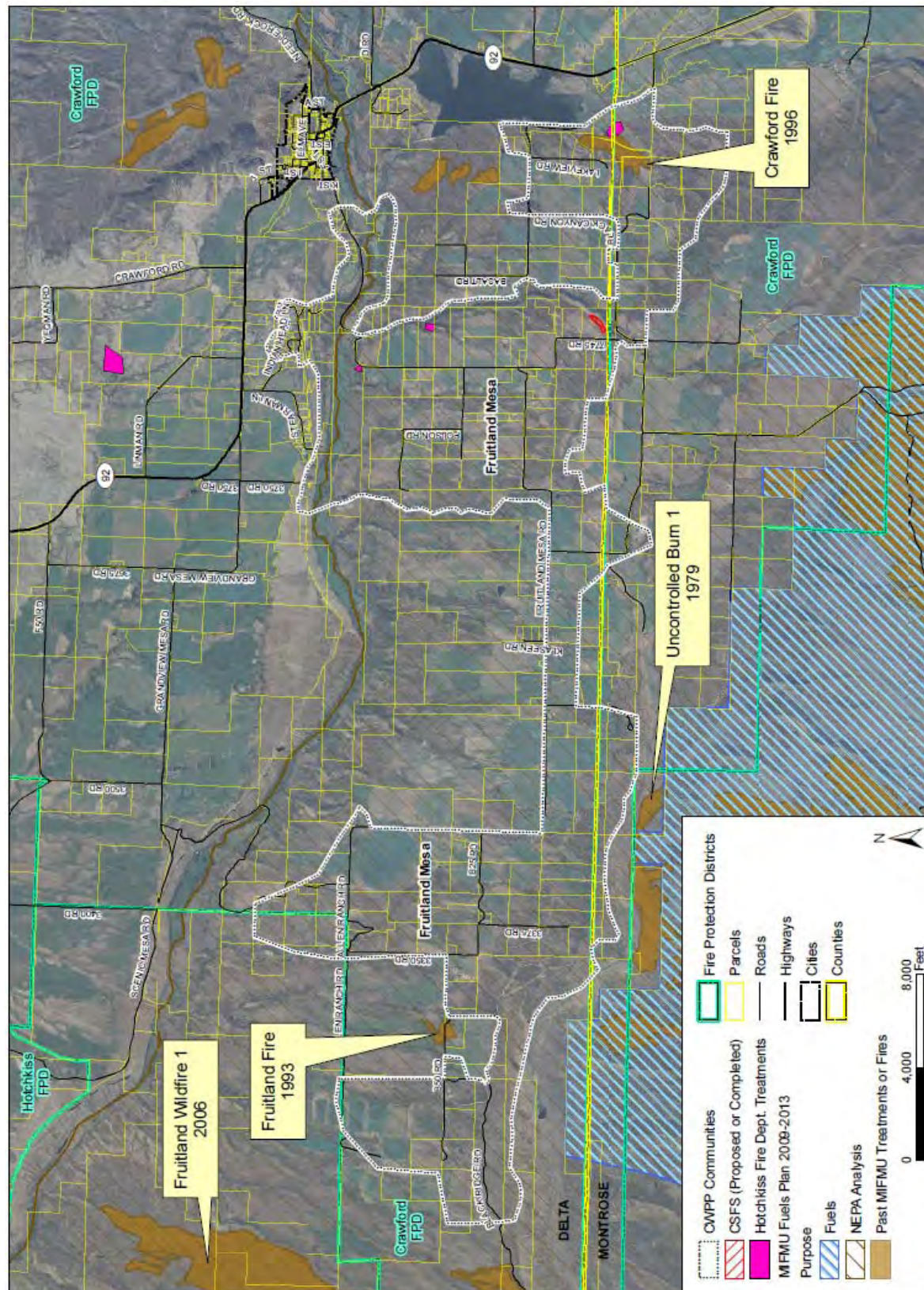


Table 16. Fruitland Mesa Fuel Treatment Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
Preparedness Planning	4	See Appendix A	See Appendix A	n/a
Infrastructure	5	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

11. Needle Rock



Hazard Rating: High

The Needle Rock community is found along both sides of Cottonwood Creek Road to the northeast of Crawford (Figure 23). Fuels in the community include grass, shrubs, and forest, although there is some agricultural land in the area as well. Utilities, including propane tanks, are located above ground. Multiple access and egress routes are primarily dirt roads of 20 to 24 feet in width, with a few paved roads in the community. Adequate turnaround space is mixed, depending on the specific driveway in question. The topography is generally flat throughout the community, and general house location is not an issue. The majority of homes lack defensible space, but a few have a natural buffer area. Homes in the Needle Rock community are primarily constructed of combustible materials with fire resistant roofs. High winds increase the wildland fire risk in the area, and no water sources are available for fighting fires. The community is located approximately three miles away from the Crawford fire station.

Needle Rock is dominated by the large, natural monolith found in the center of the community. Beyond that, most of the community is generally flat, aside from a number of small rolling hills and a network of drainages. Many of the homes within the community are located near the riparian area running along the southern boundary of the community and within the irrigated fields that run throughout. There are also a number of homes located within the pinyon-juniper forest surrounding the monolith in the western section of the community. Also in the western section, small drainages and dense vegetation will act to increase fire spread. Rates of spread under moderate and high weather parameters could be greater than 60 chains/hr. The irrigated fields could serve as natural firebreak if wet, though the light, flashy fuels could also quickly spread wildfire if dried out.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire

district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 23. Needle Rock Fuels Treatment Recommendations

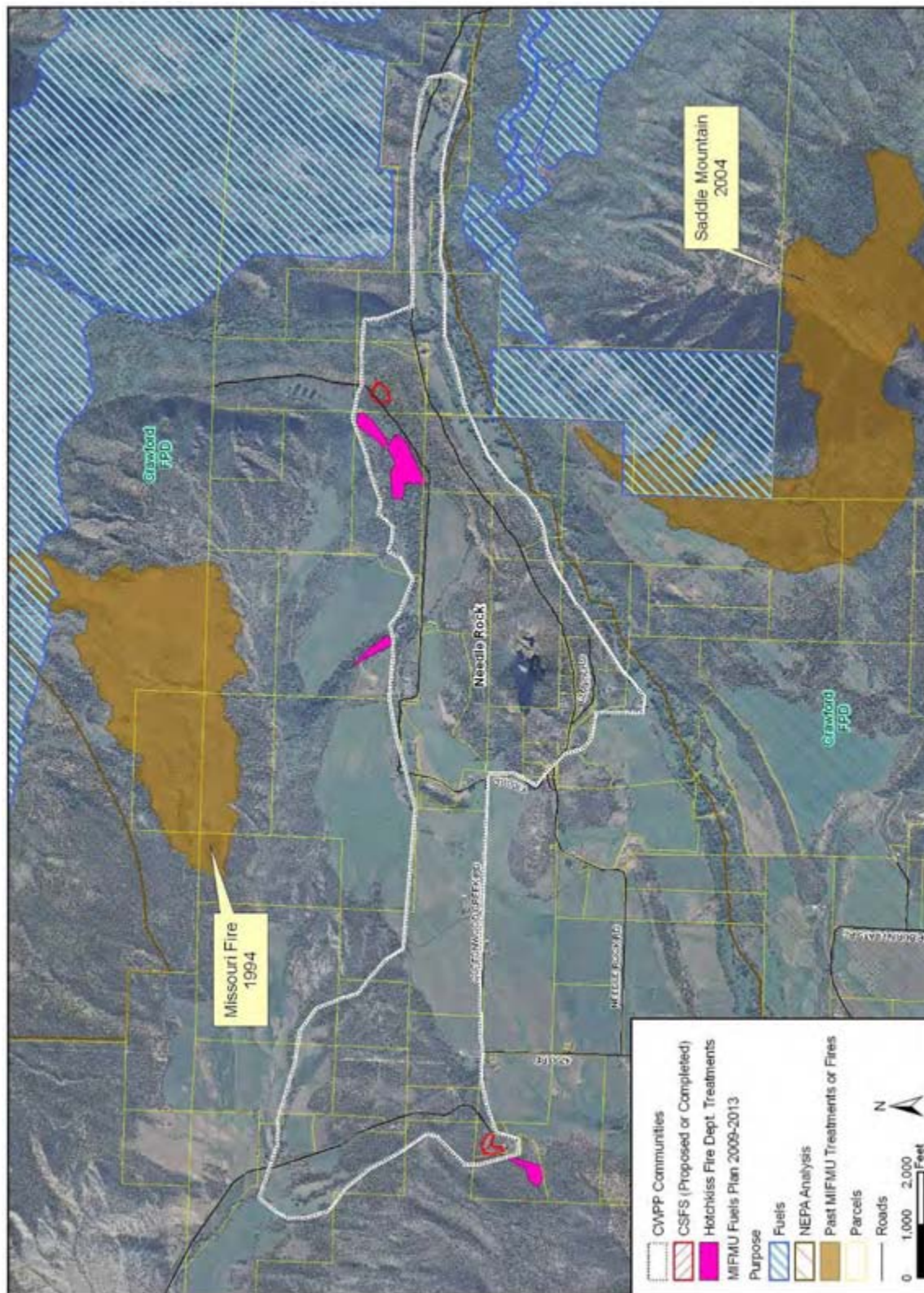


Table 17. Needle Rock Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
Infrastructure	4	See Appendix A	See Appendix A	n/a
Preparedness Planning	5	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

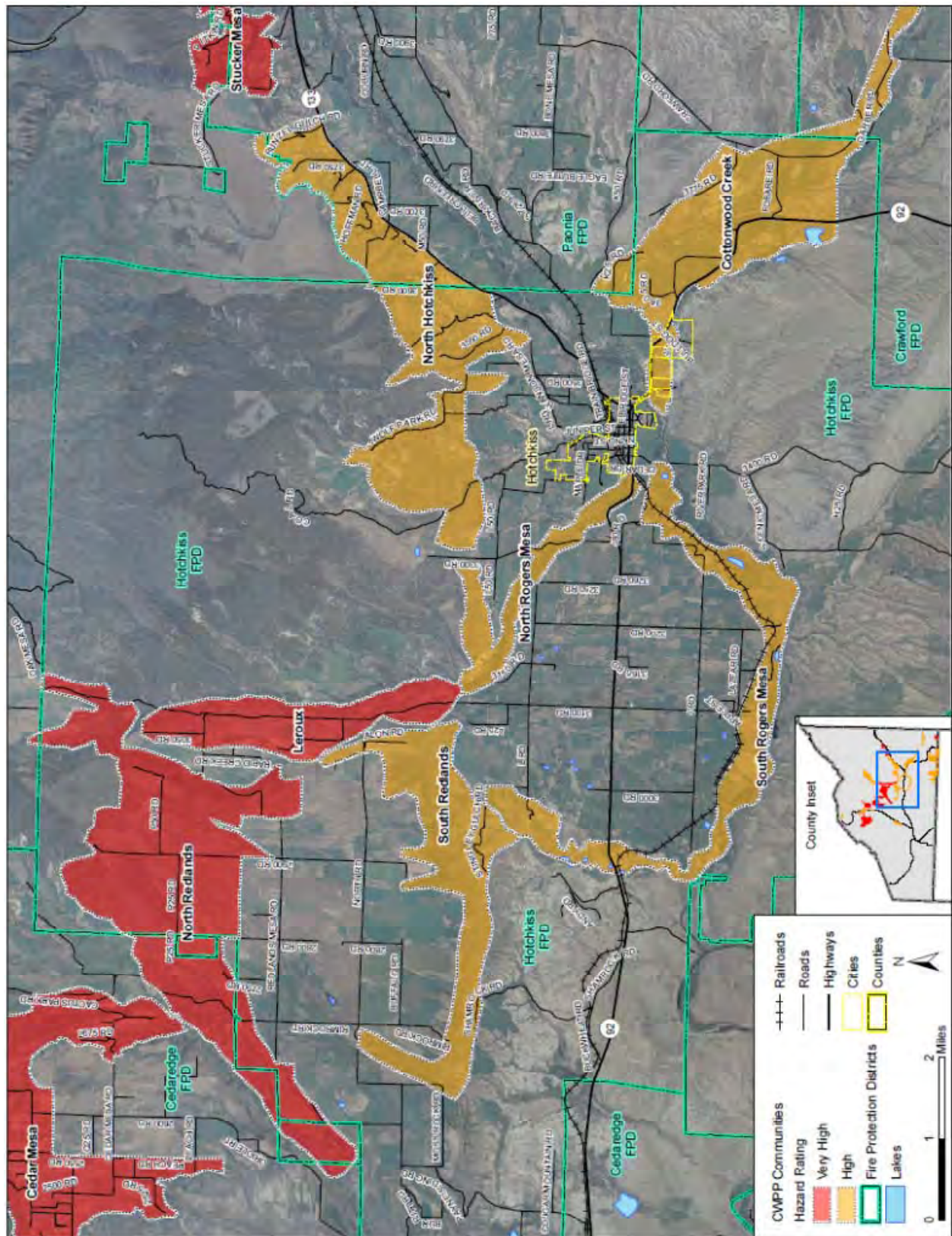
HOTCHKISS FIRE PROTECTION DISTRICT

Eight CWPP communities were identified within the Hotchkiss FPD and are listed in the table below by their hazard rating. These communities are shown in Figure 24. Each community's ignitability analysis recommendations are discussed in the following pages. These communities are also covered by the 2007 Hotchkiss Community Wildfire Protection Plan.

Table 18. Hotchkiss Fire Protection District CWPP Communities by Hazard Rating

Very High	High
Leroux North Redlands	Cottonwood Creek North Hotchkiss North Rogers Mesa South Redlands South Rogers Mesa Stoney Creek

Figure 24. Hotchkiss Fire Protection District CWPP Communities



12. Leroux



Hazard Rating: Very High

The community of Leroux is found between Stingley Gulch and Leroux Creek, northwest of Hotchkiss (Figure 25). There are multiple paved access and egress roads of 20 to 24 feet in width. Street signs are made of reflective metal and are consistent throughout the community. The area's topography is primarily flat with some rolling hills. A deep drainage runs along the eastern boundary with smaller drainages on the western boundary and throughout the rest of the community. The area is forested with shrubs and has riparian areas along Leroux Creek. Homes are located on steep slopes. Roofs are highly fire resistant, but decks and siding include a mix of materials of varied fire resistance. Homes are surrounded by full defensible space, and driveways provide adequate turnaround space. Fire danger is potentially exacerbated by the presence of above ground utilities, including propane tanks. High winds, agricultural burning, and campfire pits add to the fire risk. There is no water in the immediate area to support wildfire response. First responders will have to perform tender relays from the hydrants in town. Fortunately, Leroux is located in between the Redlands and Hotchkiss fire stations.

The fuels and potential fire behavior in Leroux is one of the places of greatest concern in Delta County. Some of the densest swaths of pinyon pine and juniper in the community are on the slopes below 3100 Road. Several homes are situated on the middle of the slope, and a wildfire initiating anywhere near these fuels is likely to have a significant impact on the structures. Fire behavior predictions for Leroux include areas of flame lengths greater than 11 feet, active crown fire, and fast rates of spread in the southern portion of this community, given high percentile weather conditions. The primary concern is in the southern part of the community, due to the high density of fuels and topography capable of producing extreme fire behavior, in combination with structures located mid-slope and atop of hills.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community

that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 25. Leroux Fuels Treatment Recommendations

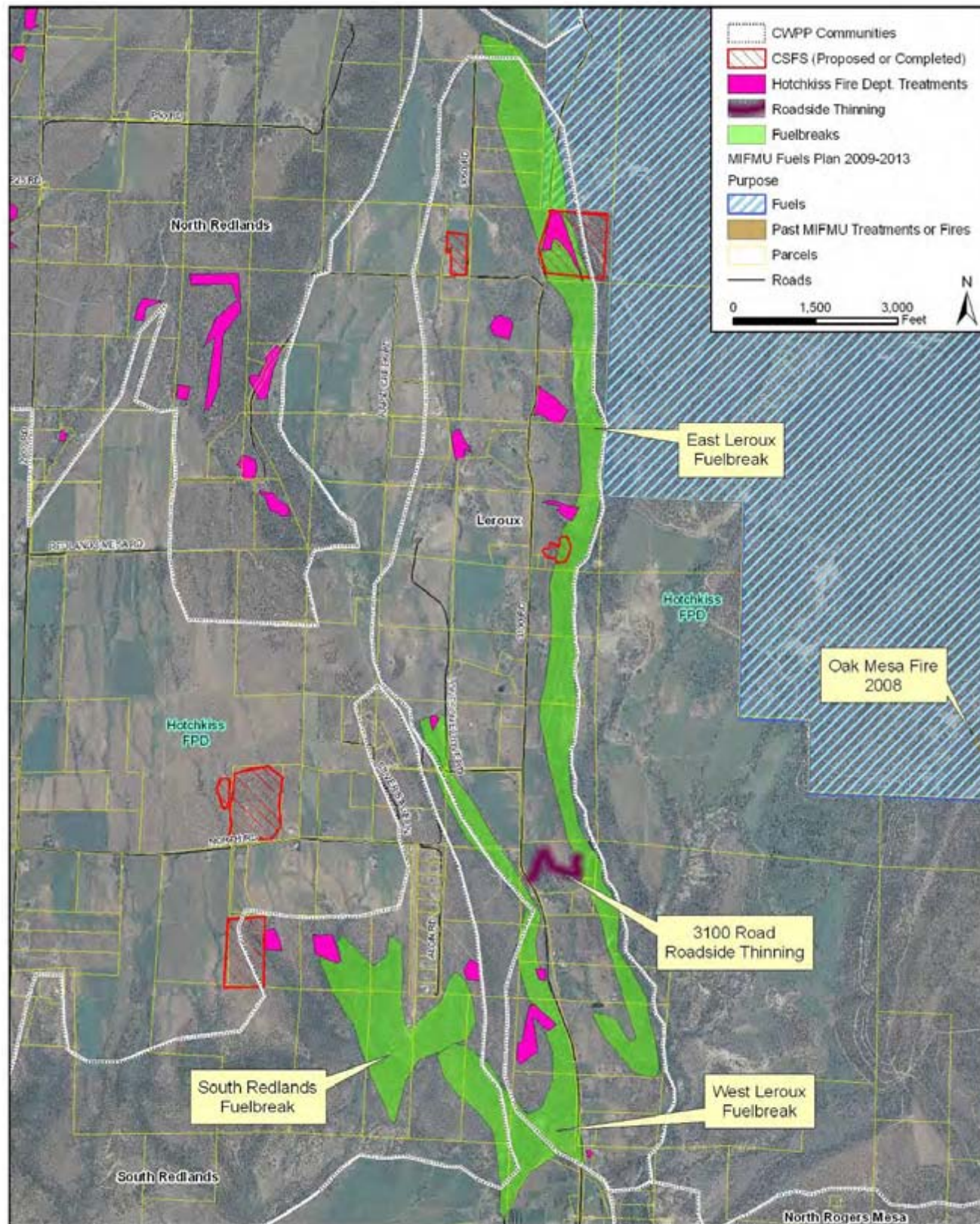


Table 19. Leroux Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Extended Defensible Space	2	Extended defensible space is recommended for homes located in dangerous topography (above ravines and natural chimneys, mid-slope on steep slopes, on ridge tops or summits) with heavy vegetation loads near or below the home.	Hand felling and limbing; mowing; mechanical treatments in flat areas	Variable, depends on topography
3100 Roadside Thinning***	3	This small road provides egress for several homes in the community. Trees should be thinned and grass should be mowed.	Hand felling and limbing along road; mowing	12
East and West Leroux Fuelbreaks	4	Steep, heavily vegetated hillsides are likely to funnel fire directly to homes. By breaking up the canopy cover, the risk of extreme fire behavior is reduced. Consult with the Colorado State Forest Service or BLM when beginning large-scale fuel reduction projects such as this.	Hand treatments on steeper slopes, mechanical treatments in flatter areas	East: 230 West: 97

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

***See Glossary for further explanation of roadside thinning projects.

13. North Redlands



Hazard Rating: Very High

Northwest of Hotchkiss, the North Redlands community is located on the Redlands Mesa (Figure 26). Wildfire response and evacuation is somewhat easier due to multiple access and egress routes along paved and well maintained dirt roads of 20 – 24 feet in width. Reflective metal street signage is consistent throughout the community. Vegetation in North Redlands is primarily forests and shrubs, but there are some abandoned agricultural lands in the area as well. Wildfire risk is increased by the North Redlands topography. A major ridge runs through the middle of the community with steep sides and drainages and a south facing aspect. Homes are built along these steep slopes, near the ravines, above chimneys and in saddles, greatly adding to the risk to homes, homeowners, and the firefighters who respond to wildfires in the area. Home construction overall provides mixed fire resistance, though roofing is typically highly fire resistant. Defensible space is adequate for most houses, and driveways generally provide adequate turnaround space. Utilities are all located above ground, and many people have propane tanks. Hydrants help supply water for wildfire response. The Hotchkiss FPD's substation located in North Redlands would provide wildland fire response to this community. Lightning and agricultural burning are potential ignition sources, and wildfires could be exacerbated by high winds in the area.

Like Rogers Mesa, North Redlands is a largely agricultural. The fields are located on top of the mesa, while steep, heavily vegetated west-facing slopes lead to the top of the mesa where homes sit on the rim. Fingers of continuous juniper and pinyon pine transect the community, running southeast and northwest. These fingers are thick with dense vegetation that leads directly to homes on the top of the ridge. It is in these drainages where longest flame lengths, highest intensity and fastest rates of spread are expected. The P25 Fire occurred within the community, along the west end. Multiple structures were threatened and a few were lost. Even with moderate weather conditions, rates of spread are modeled to be between 60-80 chains/hr and this increases to above 80 chains/hr with high percentile weather conditions. For the most part, flame lengths are predicted to be between 8-11 feet, allowing for suppression by heavy equipment. Areas of torching and active crowning are possible.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of

the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 26. North Redlands Fuels Treatment Recommendations

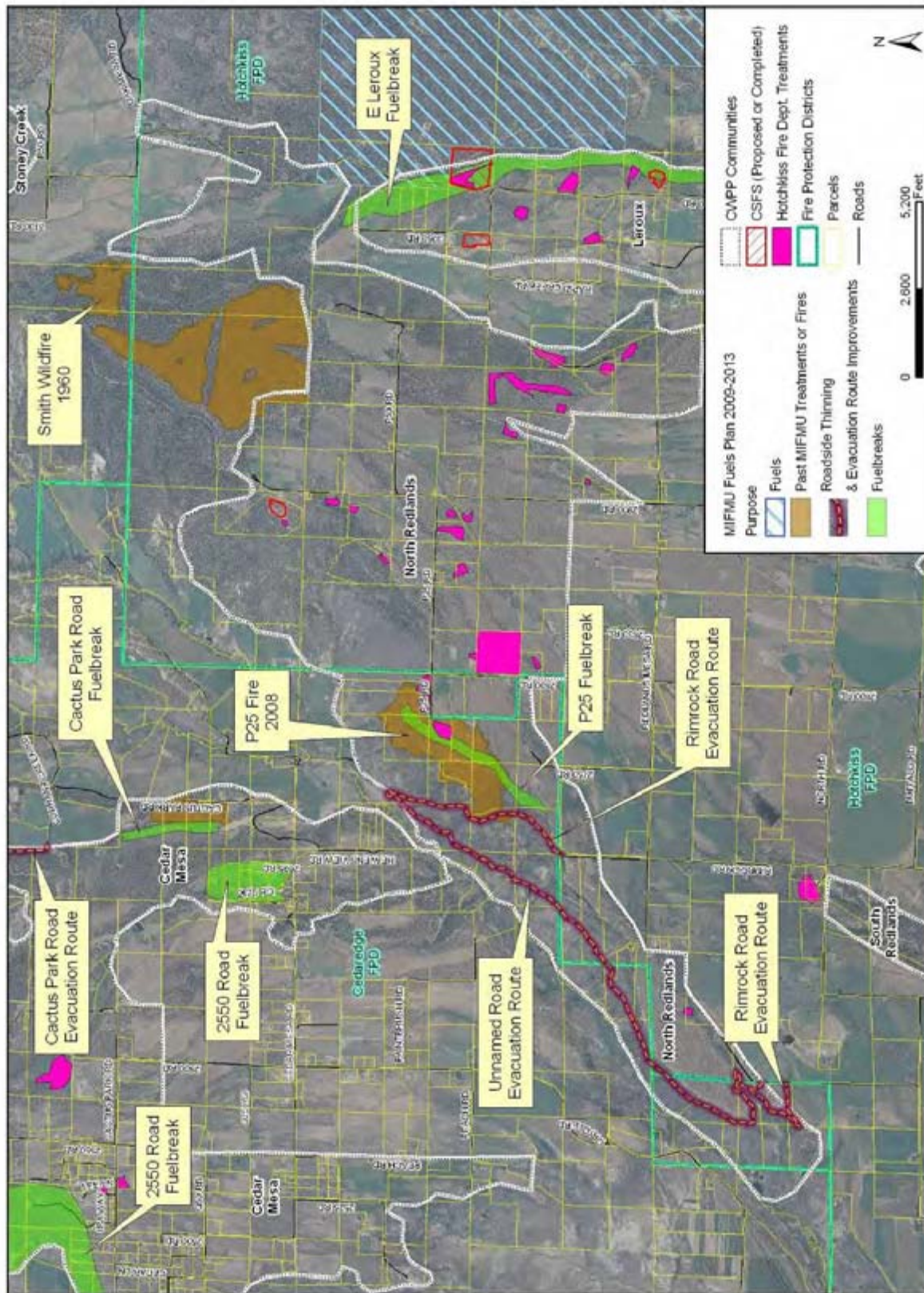


Table 20. North Redlands Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
Rimrock Road Evacuation Route - South	4	This southern part of Rimrock Road needs improvement and in addition, it is mid-slope and has dense vegetation below and above it. To provide for better access for firefighters and egress for residents, the vegetation should be thinned along the road, both up and downhill.	Hand felling and limbing; mowing; some mechanical treatment in flat areas where applicable	43
Rimrock Road Evacuation Route	5	Rimrock Road is in good condition, but it is mid-slope and has dense vegetation below and above it. To provide for better access for firefighters and egress for residents, the vegetation should be thinned along the road, both up and downhill.	Hand felling and limbing; mowing; some mechanical treatment in flat areas where applicable	22
Preparedness Planning	6	See Appendix A	See Appendix A	n/a
Infrastructure	7	See Appendix A	See Appendix A	n/a
Unnamed Road Evacuation Route	8	This mid-slope road may be useful in providing another point of access for firefighters and egress for residents. The vegetation should be treated uphill and downhill of the road, and the road should be improved so it is passable by a standard sedan.	Mostly hand felling and limbing due to slope; some mechanical treatment in flat areas where applicable	129

Name	Priority	Description	Methods*	Acres**
2900 Road Fuelbreak	9	This steep, heavily vegetated hillside is likely to funnel fire directly to homes. By breaking up the canopy cover, the risk of extreme fire behavior is reduced.	Mechanical treatments where viable; hand treatments in steep areas	173

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

14. Cottonwood Creek



Hazard Rating: High

Cottonwood Creek is located southeast of Hotchkiss and is bisected by Highway 92 (Figure 27). There are multiple ingress and egress routes in the community. Paved roads are greater than 24 feet in width. Topography is mostly flat with small drainages, ridges and hills found throughout the area. A major drainage is located along the western boundary of Cottonwood Creek. Vegetation is a mix of riparian flora, shrubs, and grass. Like many other communities discussed in the Delta County CWPP, Cottonwood Creek's wildfire hazard is increased by several factors including high winds, lightning, and agricultural burning. Some homes are built near ravines and atop chimneys, increasing their relative fire risk. There are no water sources for firefighting in the immediate area, so response crews would have to use tender relays from the hydrants in town. Response time from the Hotchkiss FPD would likely be short given Cottonwood Creek's proximity to town and well maintained roads. There is full defensible space around homes, and driveways offer adequate space for turnarounds which would aid in response and evacuation operations. Homes are constructed with fire resistance roofs, but decks and siding include a mix of materials.

Almost half of the Cottonwood Creek community is agricultural land, consisting of irrigated fields. The wildfire risk to the community is from the steep slopes on the northwest and southeast of Highway 92. Native pinyon-juniper stands are present on these hillsides. Flame lengths, in severe weather conditions, are modeled to be between 8-11 feet, allowing for suppression via heavy equipment. Some drainages may have flame lengths greater than 11 feet. In the presence of high winds and temperatures, and low humidity, fast rates of spread, greater than 80 chains/hr, are likely throughout the community where there are nonagricultural fuels.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community

that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 27. Cottonwood Creek Fuels Treatment Recommendations

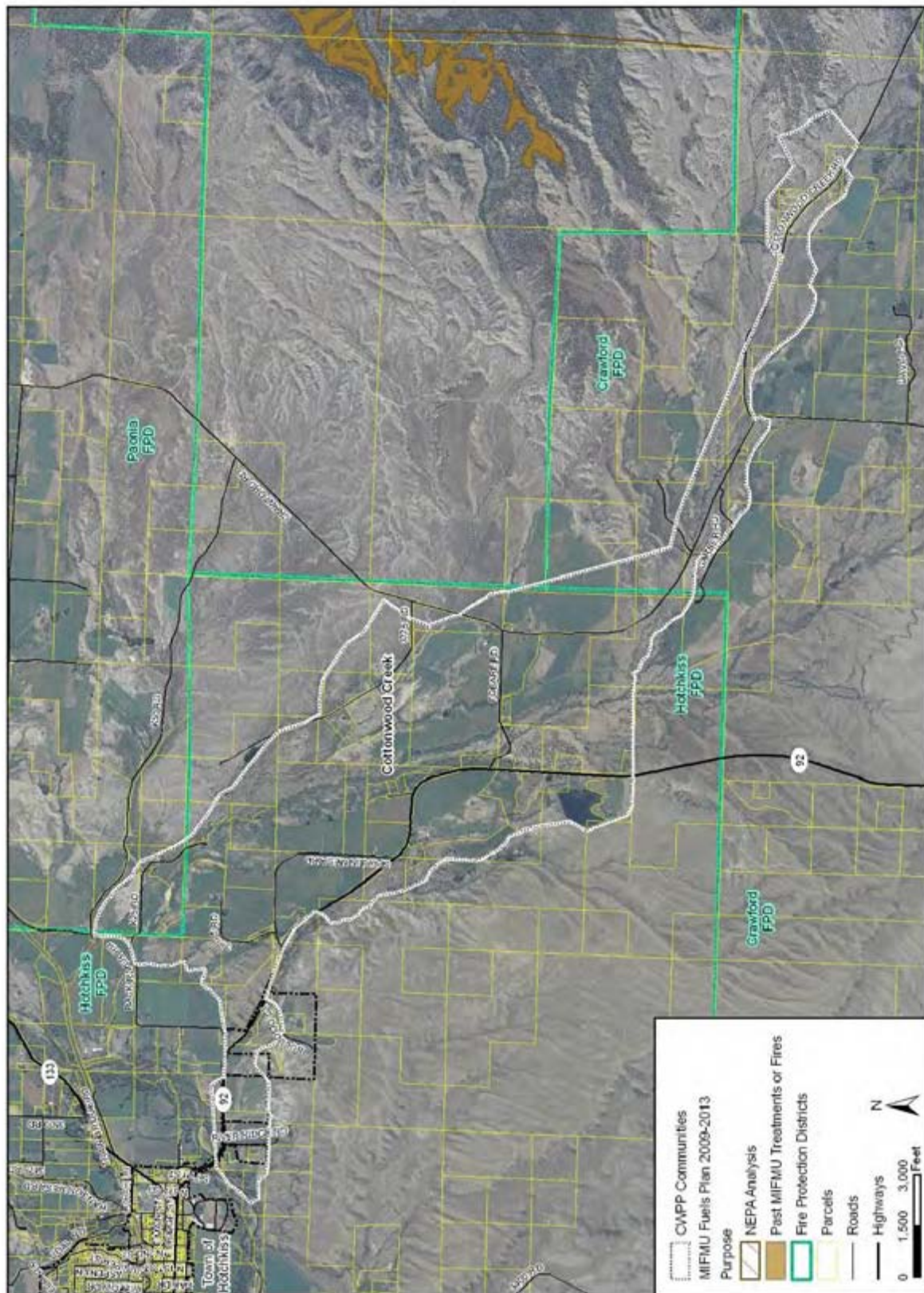


Table 21. Cottonwood Creek Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
Infrastructure	4	See Appendix A	See Appendix A	n/a
Preparedness Planning	5	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

15. North Hotchkiss



Hazard Rating: High

The North Hotchkiss area is hilly and mountainous with many steep ridges and drainages (Figure 28). Fuels in the area include forests and shrubs with adjacent and interspersed agricultural lands. House lots are large in this community. Home construction includes fire resistant roofs, but a mix of materials for decks and siding. Much work has been done in North Hotchkiss to improve defensible space, yet more should be encouraged. The Hotchkiss FPD has done two landscape fuels reductions projects in the area, and additional projects through the BLM are planned. High winds, lightning, and agricultural burning further contribute to wildfire risk in this community. Houses in the area use propane tanks and utilities are located above ground. There are multiple access and egress routes into North Hotchkiss. These include well maintained dirt roads that are roughly 20 to 24 feet wide. Driveways in the community offer good turnaround space, and street signage is fire resistant and consistent. FPD response times are very quick in North Hotchkiss given the community's proximity to the Hotchkiss fire station. There are no water sources in the community and the FPD would depend on tender relays from hydrants in Hotchkiss.

Flat areas in the south of the community are irrigated fields, while the hillsides are densely covered with continuous pinyon pine, juniper, sage and native and invasive grasses. The vegetation is receptive to ignition, as seen by the 3,850 acres Wake Fire and the 42 acre Wolf Park Fire. The amount of development in North Hotchkiss contributes to a higher probability of ignition than in some of the other communities. The highest rates of spread, greatest intensity, and longest flame lengths are predicted in the western end of North Hotchkiss because the vegetation is most continuous and with fewer agricultural properties. Rates of spread could be greater than 80 chains/hr, flame lengths between 8-11 feet and individual tree torching should be expected given severe weather conditions. The groups of trees and shrubs on the eastern half of the community may also have similar fire behavior, but the fuels are patchy as a result of the dispersed agricultural land throughout the community.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders

and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 28. North Hotchkiss Fuels Treatment Recommendations

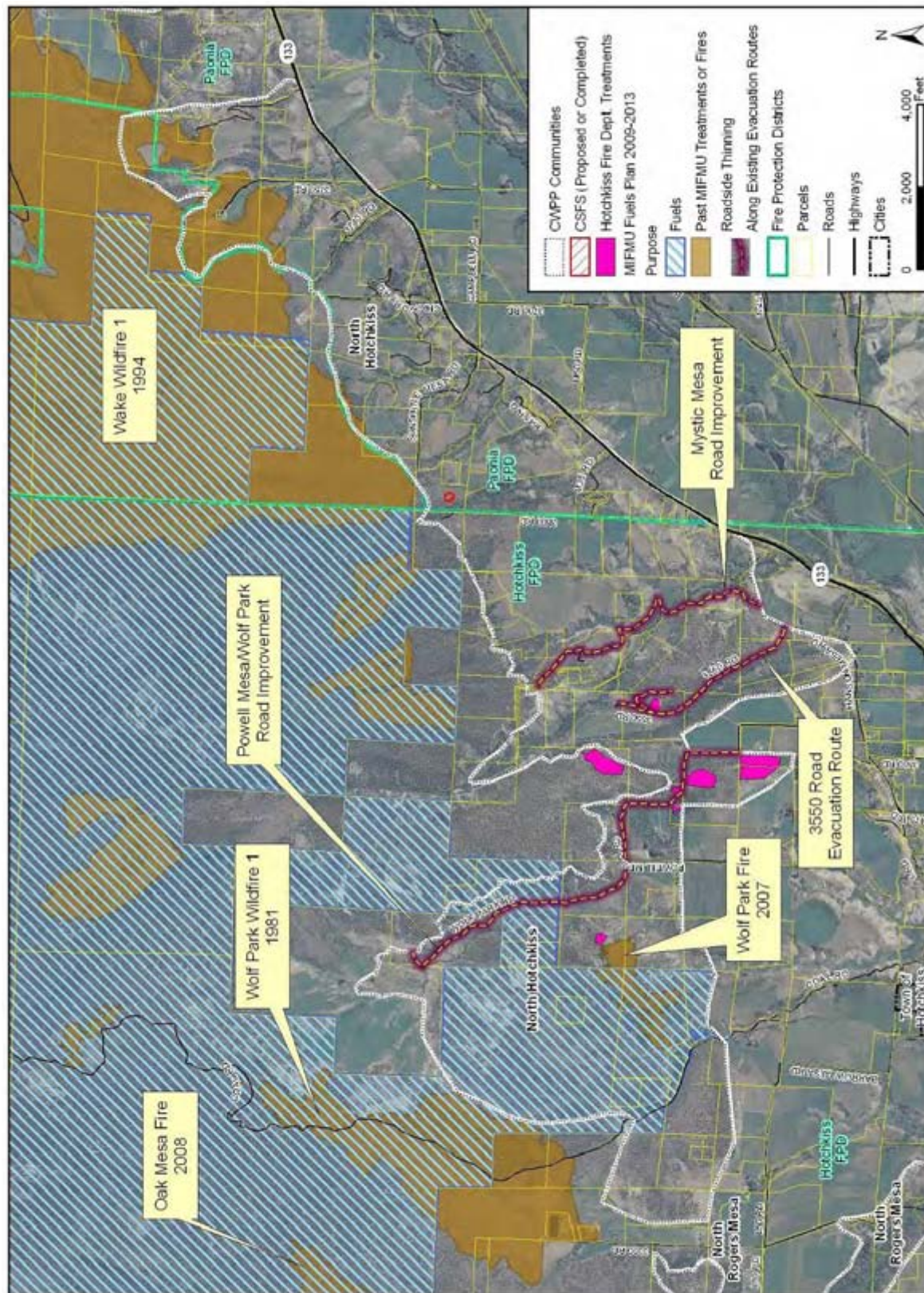


Table 22. North Hotchkiss Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Powell Mesa/Wolf Park Evacuation Route	2	Both Powell Mesa and Wolf Park Roads are critical for evacuation because of the numerous houses located along them. Limbing and thinning will create safer ingress and egress.	Mechanical treatments where viable; hand treatments in steep sections; mowing	82
Home Construction	3	See Appendix A	See Appendix A	n/a
Landscaping/Fuels	4	See Appendix A	See Appendix A	n/a
Mystic Mesa Road Evacuation Route	5	Mystic Mesa Road provides access for fire crews and egress for numerous residents. The road is mid-slope, going into the bottom of a drainage, and back up another hillside, mid-slope. To mitigate the dangerous topographical position, fuels should be treated along the side of the road.	Mechanical treatments where viable; hand treatments in steep sections; mowing	50
3550 Road Evacuation Route	6	The 3550 Road runs along the middle of the slope and is the primary egress for multiple residents. Thinning along the road will assist in evacuation, and it may also reduce fire spread to the top of the mesa.	Mechanical treatments where viable; hand treatments in steep sections; mowing	47
Preparedness Planning	7	See Appendix A	See Appendix A	n/a
Infrastructure	8	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

16. South Redlands



Hazard Rating: High

The South Redlands community is located northwest of Hotchkiss on Redlands Mesa (Figure 29). Fuels in the South Redlands community include forests and riparian flora, broken up by some agricultural lands. Cheatgrass is present in the area and increases overall wildland fire risk. Other significant risk factors are high winds, lightning, adjacent railroads and agricultural burning. Topography in the community also increases wildland fire risk; it is flat on top of the mesa, but the area is surrounded by steep cliff sides with many chimneys. Homes are built near these steep slopes, near ravines, above the chimneys, and in saddles. Most houses have full defensible space and adequate turnaround areas. Utilities are all located above ground, and some houses have propane tanks. Water is available from hydrants, and the community is near the Hotchkiss fire station and Redlands Mesa substation. South Redlands has multiple access/egress routes. These roads are paved and 20 to 24 feet in width.

Like Rogers Mesa, South Redlands is a largely agricultural. The fields are located on top of the mesa, while steep, heavily vegetated slopes lead to the top of the mesa where homes are situated on the rim. Vegetation is sparse on some slopes because they are too steep to support plant life. On the gentler slopes, thick juniper and shrubs are present. Many of the drainages that are thick with vegetation lead directly to homes on the top of the ridge. It is in these drainages where longest flame lengths, highest intensity and fastest rates of spread are expected. Embercast is capable of landing in gutters and in materials around structures, causing potential home ignition. Even under moderate conditions rates of spread are predicted to be greater than 80 chains/hr, especially on the western side. Flame lengths greater than 11 feet are probable, making suppression activities difficult.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire

district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 29. South Redlands Fuels Treatment Recommendations

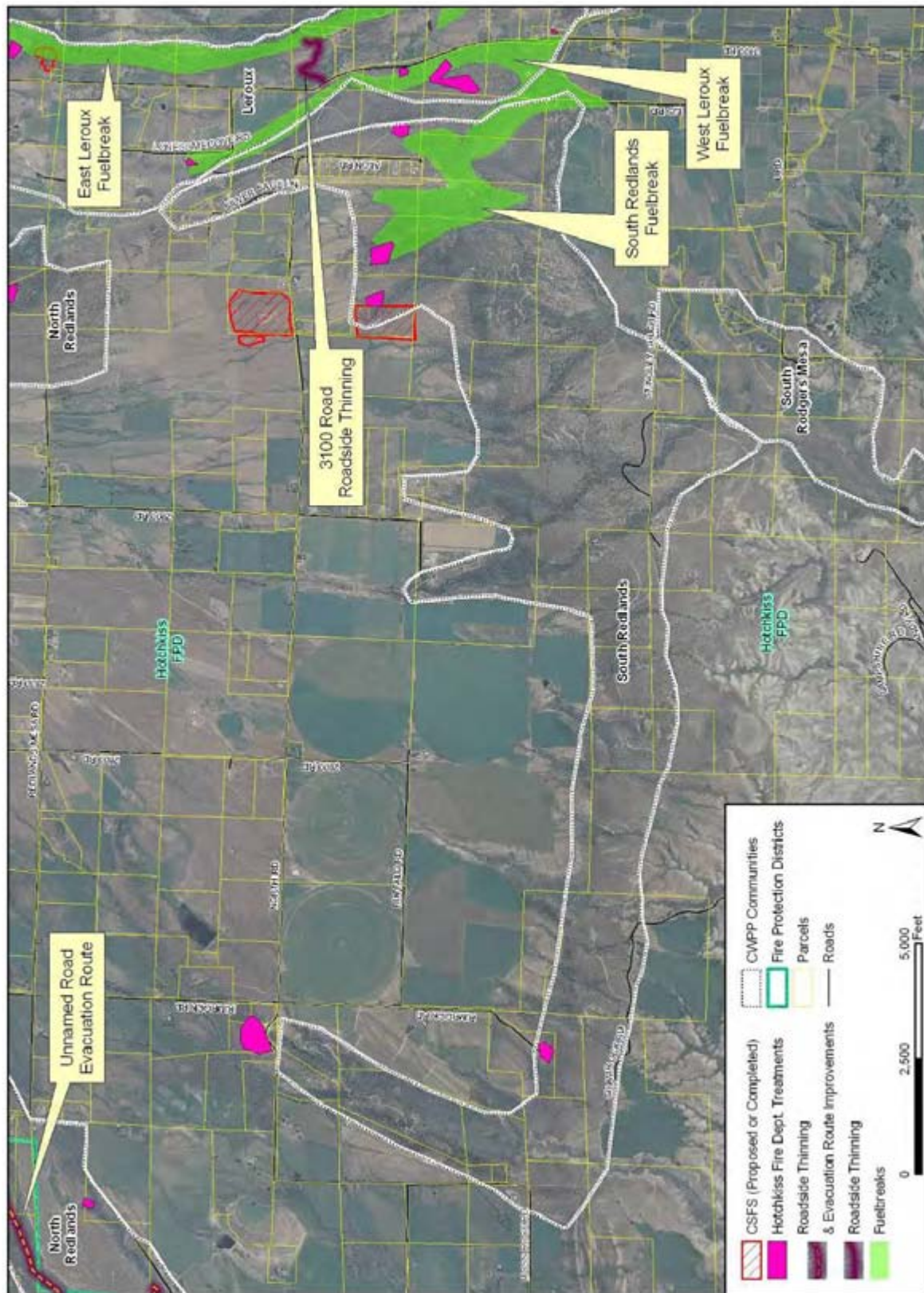


Table 23. South Redlands Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
Preparedness Planning	4	See Appendix A	See Appendix A	n/a
Infrastructure	5	See Appendix A	See Appendix A	n/a
South Redlands Fuelbreak	6	Because of the high number of structures along the road and the thick vegetation to the south west, a fuelbreak has been recommended. Thinning the forested areas will reduce the chance of crown fire, embercast, and the risk to homes. Consult with the Colorado State Forest Service or BLM when beginning large scale fuel reduction projects, such as this.	Mechanical treatments where viable; hand treatments in steep sections and where access is poor	91

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

17 and 18. North and South Rogers Mesa**North Rogers Mesa****South Rogers Mesa****Hazard Rating: High**

The North Rogers Mesa community includes a tract of land to the west of Hotchkiss (Figures 30 and 31). The majority of the community is flat, with drainages surrounding the outer boundary and steep drainages to the west. Vegetation in the area includes grass and minimal pinyon-juniper, but for the most part this is an agricultural area with alfalfa crops, vineyards, and orchards. Cheatgrass is a problem in the community. Some homes are built near vegetated ravines, but full defensible space is found throughout the community. Home construction includes fire resistance roofs, and a mix of materials for decks and siding. Driveways provide sufficient turnaround space, and there are multiple access/egress routes into the community along paved roads of at least 24 feet in width. Utilities are located above ground. Other significant factors that contribute to Rogers Mesa's risk include high winds, railroads adjacent to the south side of the mesa, and agricultural burning. There are no water sources in the community, so the FPD must rely on tender relays from the fire hydrants in town. For the most part, response times should be comparatively quick given the community's proximity to Hotchkiss, but this time will be longer for the western portions of Rogers Mesa.

Rogers Mesa is primarily an agricultural area. Wildfire risk on top of the mesa is generally low, but increases during the fall. The threat of wildland fire to South Rogers Mesa arises from the steep slopes and the potential impact to structures built on the top of the mesa. While some of the faces of the mesa are too steep to support vegetation, the ones with junipers, pinyon pines, sagebrush, and other vegetation are densely covered. Small topographic features are capable of funneling fire uphill directly to homes built on the rim. Long flame lengths will send embers up and over, potentially landing on roofs and decks. Rates of spread are predicted to be greater than 80 chains/hr in some of the drainages, leaving little time for fire resources to reach the structures. Because of the steep slopes, mitigation work is difficult in most places. Adequate home construction and defensible space are imperative to save structures.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 30. North Rogers Mesa Fuels Treatment Recommendations

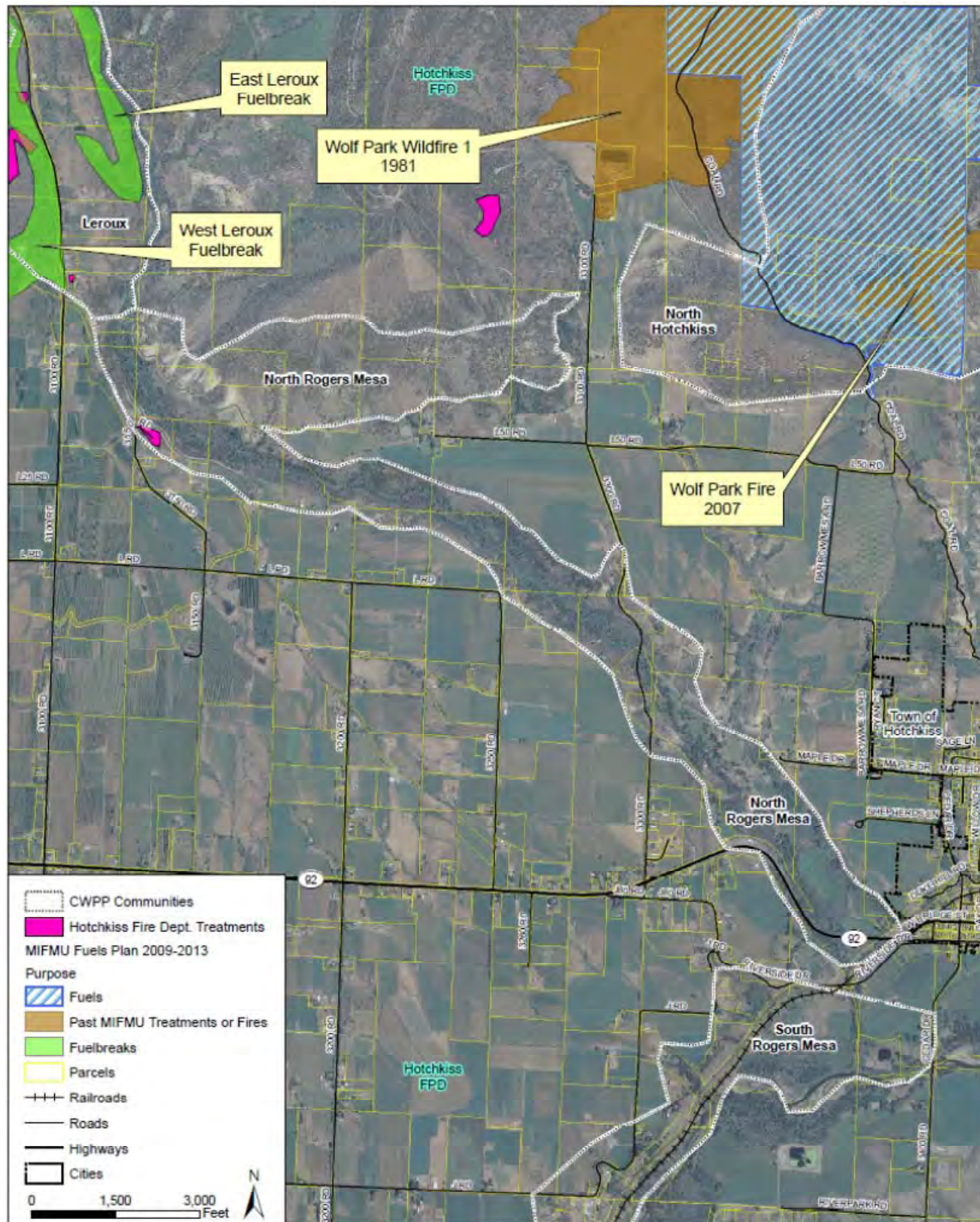


Table 24. North Rogers Mesa Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Preparedness Planning	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
Infrastructure	4	See Appendix A	See Appendix A	n/a
Landscaping/Fuels	5	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

Figure 31. South Rogers Mesa Fuels Treatment Recommendations

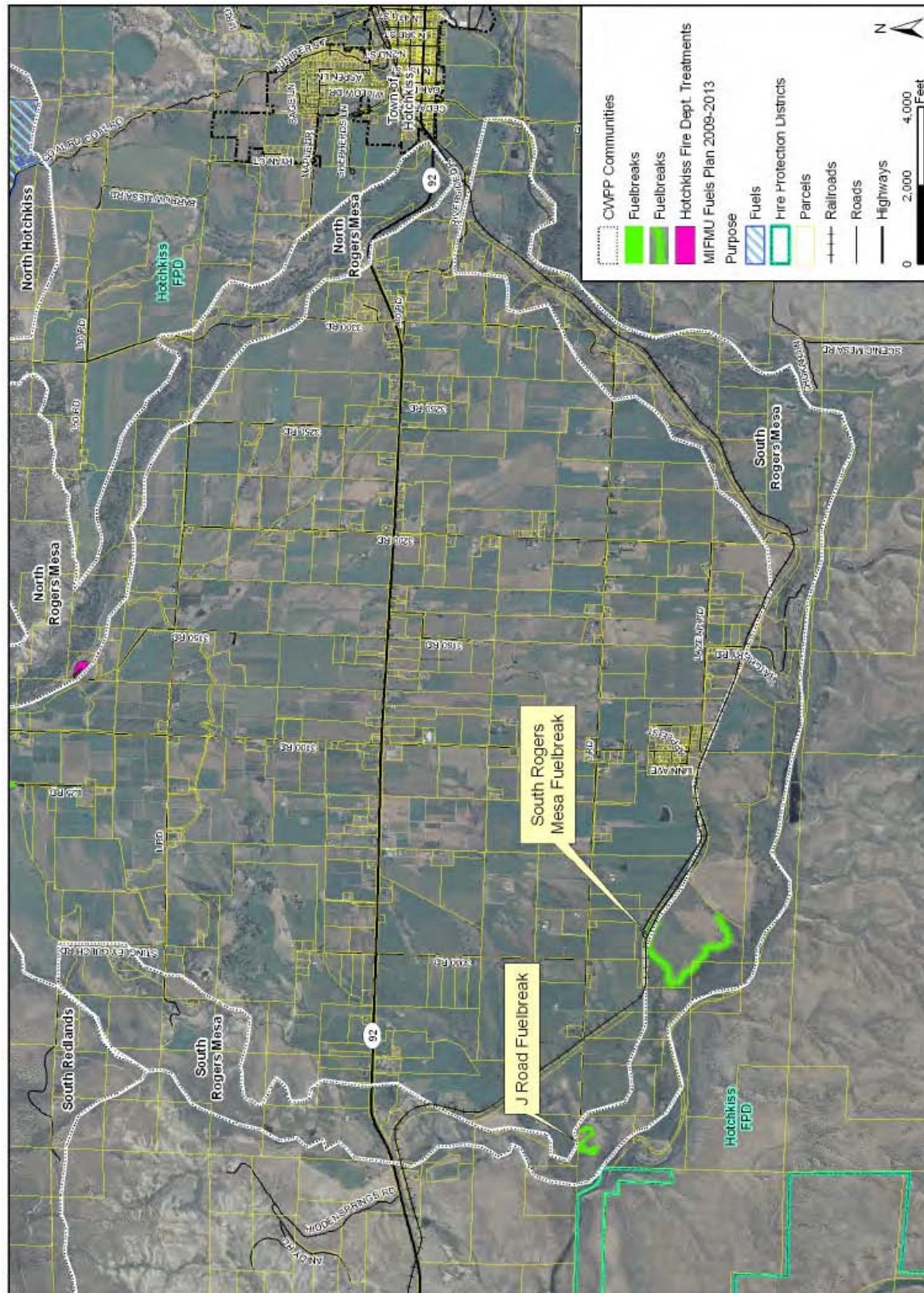


Table 25. South Rogers Mesa Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
Preparedness Planning	4	See Appendix A	See Appendix A	n/a
Infrastructure	5	See Appendix A	See Appendix A	n/a
South Rogers Mesa Fuelbreak	6	Thinning the trees along the top and onto the sides of the mesa provides additional protection for the homes on the mesa top. It will also limit fire spread into the agricultural area on the mesa top.	Hand felling and limbing near homes; mowing; mechanical treatments in flat areas	33
J Road Fuelbreak	7	The housing density in the community is low, but there are steep, heavily forested drainages that lead directly to homes. Densities need to be reduced to diminish the chances of extreme fire behavior.	Mostly hand felling and limbing due to slope; some mechanical treatment in flat areas where applicable	5

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

19. Stoney Creek



Hazard Rating: High

The community of Stoney Creek was built near the Patterson Reservoir, north of Hotchkiss (Figure 32). The area is forested, and the community is located in a valley with some steep slopes and ridges. There are homes built as the base of these steep slopes, and the community is completely lacking in defensible space. Home construction includes fire resistant roofs, but decks and siding include a mix of materials. Utilities are located above ground. Potential ignition sources and exacerbating factors include agricultural burning and high winds. One of the greatest challenges to firefighters in this community is travel and access. The community has multiple access routes and street signage is consistent in the area, but branches and side roads can be confusing. The roads are well maintained dirt but are quite narrow at less than 20 feet wide. Turnarounds are not available in Stoney Creek. No water is available for firefighting operations in the community. Stoney Creek does not belong to a fire protection district. Hotchkiss would be the nearest responding district, if needed.

Unlike many of the other communities within Delta County, Stoney Creek does not have as much irrigated agricultural land. More of the area is undeveloped, and the homes are scattered in the northern tip. The majority of the fuel consists of dense pinyon-juniper stands, primarily on the southwest aspects of the slopes in the southern tip of the community. The lower elevations of the community have a continuous shrub and grass layer with species like rabbit brush and sage. Large quantities of aspens grow at higher elevation in the northern part of the community. In general, flame lengths are not predicted to be over 11 feet, except in a few drainages. As a result, suppression activities are likely to be effective even without the use of aircraft. Fire spread in the shrubs and grasses given high percentile weather days is expected to be between 60-80 chains/hr, while in the northern two-thirds of the community, rates of spread are much lower (under 20 chains/hr). The difference is a result of various amounts of moisture and the variance in vegetation that results.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each

community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 32. Stoney Creek CWPP Community

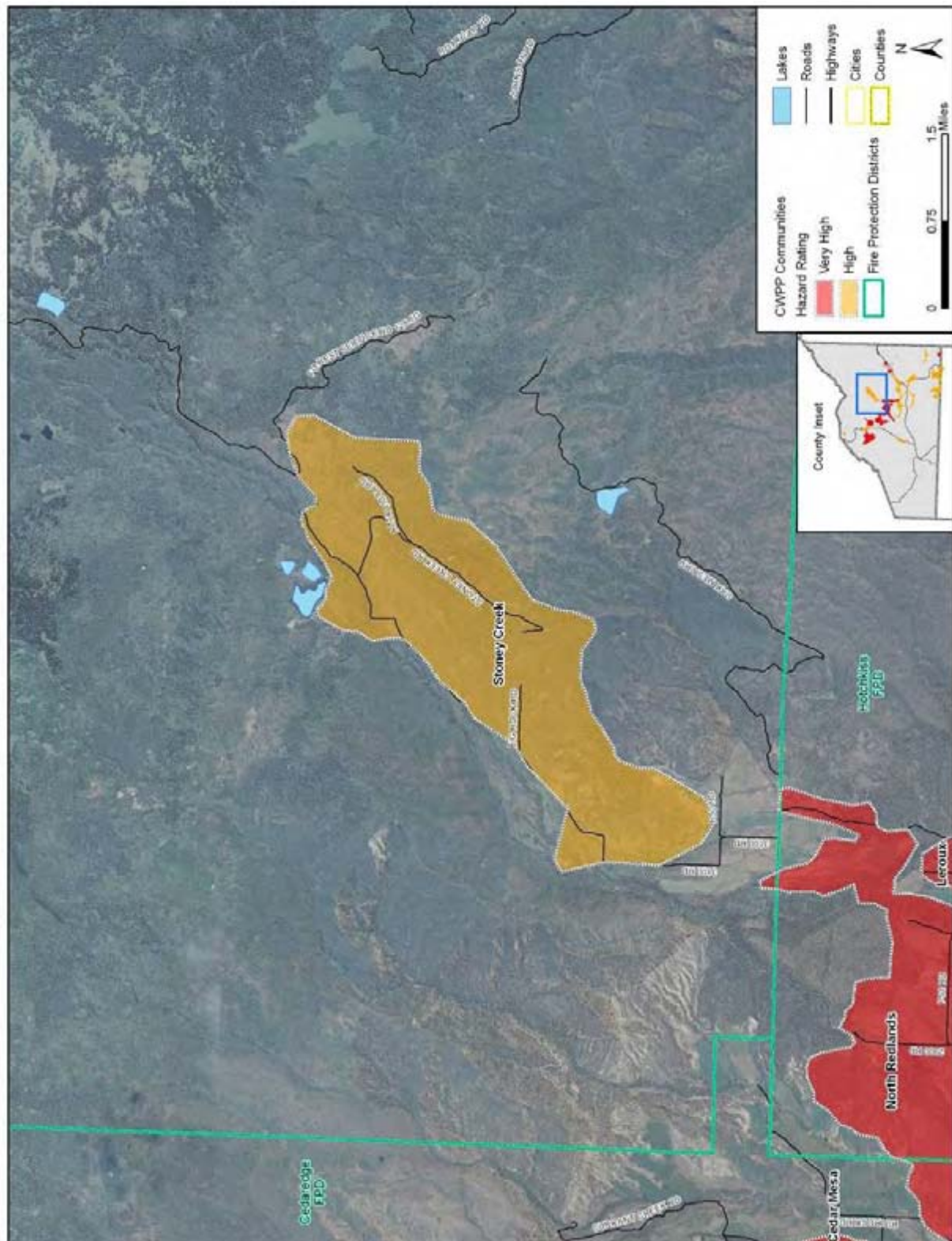


Figure 33. Stoney Creek Fuels Treatment Recommendations

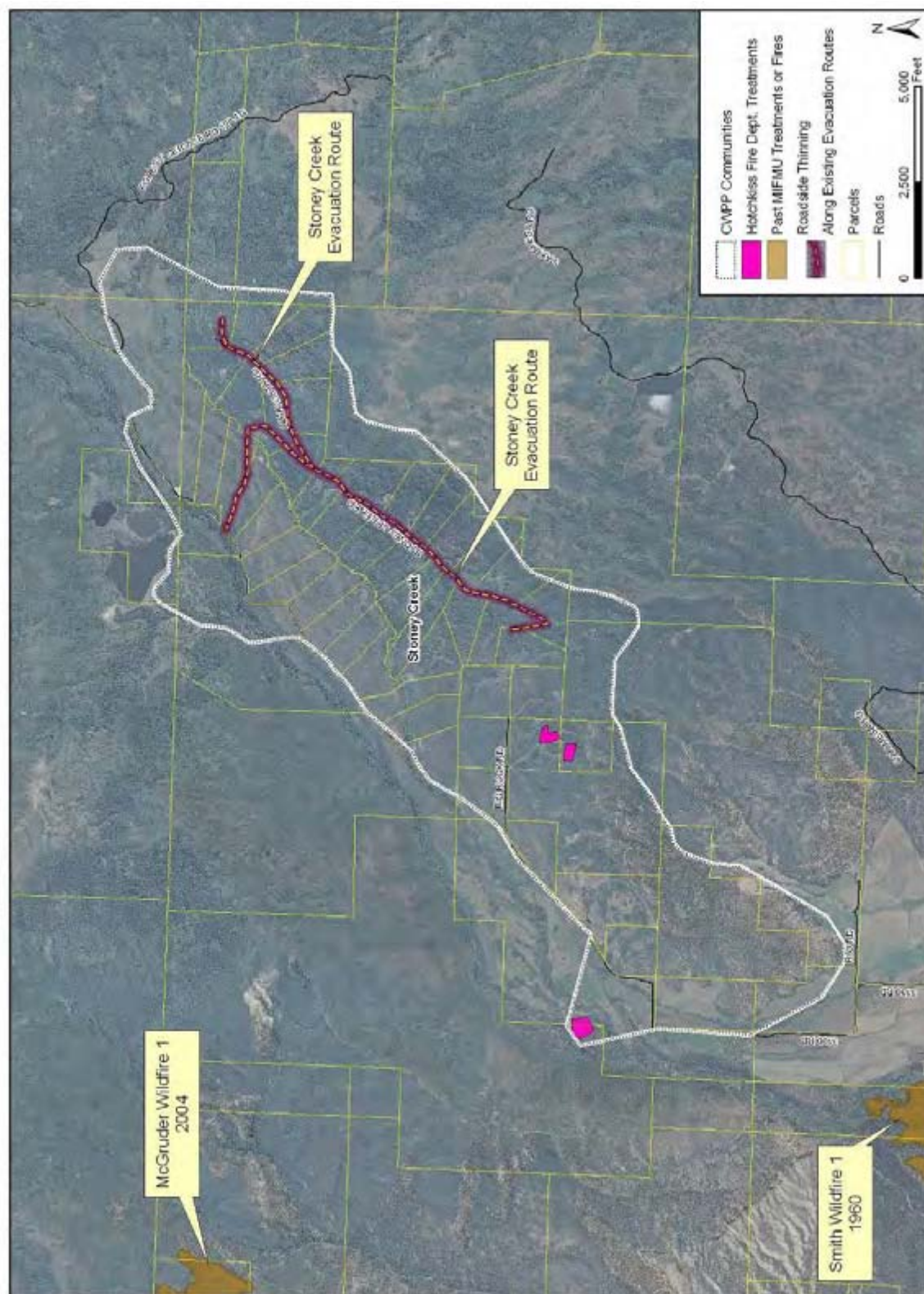


Table 26. Stoney Creek Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
Stoney Creek Evacuation Route	4	Since there is only one way in and out of Stoney Creek, it is imperative that vegetation along the road is maintained. Trees should be limbed and trimmed, and grasses should be mowed.	Mechanical treatments where viable; hand treatments in steep sections and where access is poor	128
Infrastructure	5	See Appendix A	See Appendix A	n/a
Preparedness Planning	6	See Appendix A	See Appendix A	n/a
Stoney Creek Secondary Evacuation Route	7	Resident should work together to create a secondary egress for their community. Exact location is yet to be determined.	Mechanical treatments where viable; hand treatments in steep sections and where access is poor	TBD, depends on placement

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

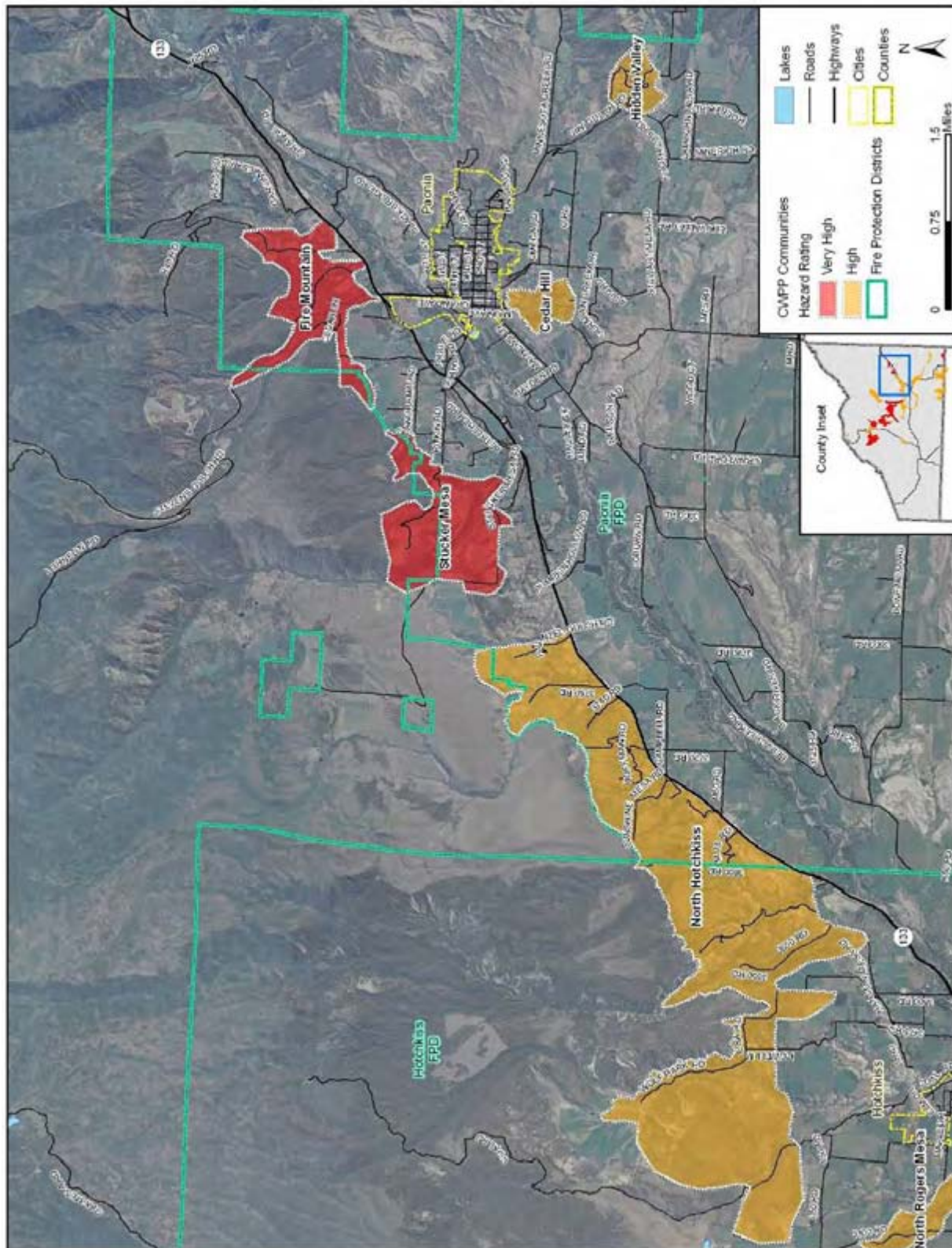
PAONIA FIRE PROTECTION DISTRICT

Four CWPP communities were identified within the Paonia FPD and are listed in the table below by their hazard rating. These communities are depicted in Figure 34. Each community's ignitability analysis recommendations are discussed in the following pages.

Table 27. Paonia Fire Protection District CWPP Communities by Hazard Rating

Very High	High
Fire Mountain Stucker Mesa	Hidden Valley Cedar Hill

Figure 34. Paonia Fire Protection District CWPP Communities



20. Fire Mountain



Hazard Rating: Very High

The Fire Mountain community is located north of Paonia, uphill from Highway 133 (Figure 35). Stevens Gulch Road and Fire Mountain Road serve as the two major ingress and egress routes. These two roads are two-way, but all side roads are only one way in or out. Roads in the community are paved and 20 to 24 feet wide. Street signage and addressing in Fire Mountain are consistent and readily visible. Topography in the Fire Mountain community is flat along Hwy 133 with a steadily increasing slope to the north. It has a south-facing aspect, and a large ravine runs through the middle of the community. This area is primarily forested and is adjacent to agricultural lands, vineyards, and orchards. Many homes are built above a steep, heavily vegetated drainage. Home construction varies in combustibility. For the most part roofs are fire resistant, although some homes have shake-shingle roofs. Decks and siding are also built of materials of varying combustibility. Most houses lack adequate defensible space and turnaround areas. Utilities are located above ground. There are no water sources available for fighting fires in the community, but the potential exists for firefighters to draft from the Fire Mountain canal. Fire Mountain is located in close proximity to the town of Paonia, reducing potential response times. High winds and lightning increase the risk of wildfire in this community.

The vast majority of the Fire Mountain community is covered with dense pinyon-juniper forest. High flame lengths, high fire-line intensities and the potential for crown fire are possible in many areas of the community, especially in the main drainage area that bisects the community. Many of the values at risk are located directly above this drainage and on the steep slopes of the hillside. Increased wind speeds, higher temperatures and lower relative humidity may lead to rates of spread over 60-80 chains/ hr, making containment difficult. An ignition from the agricultural lands or from the highway could send wildfire racing uphill through the community.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community.

that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 35. Fire Mountain Fuels Treatment Recommendations

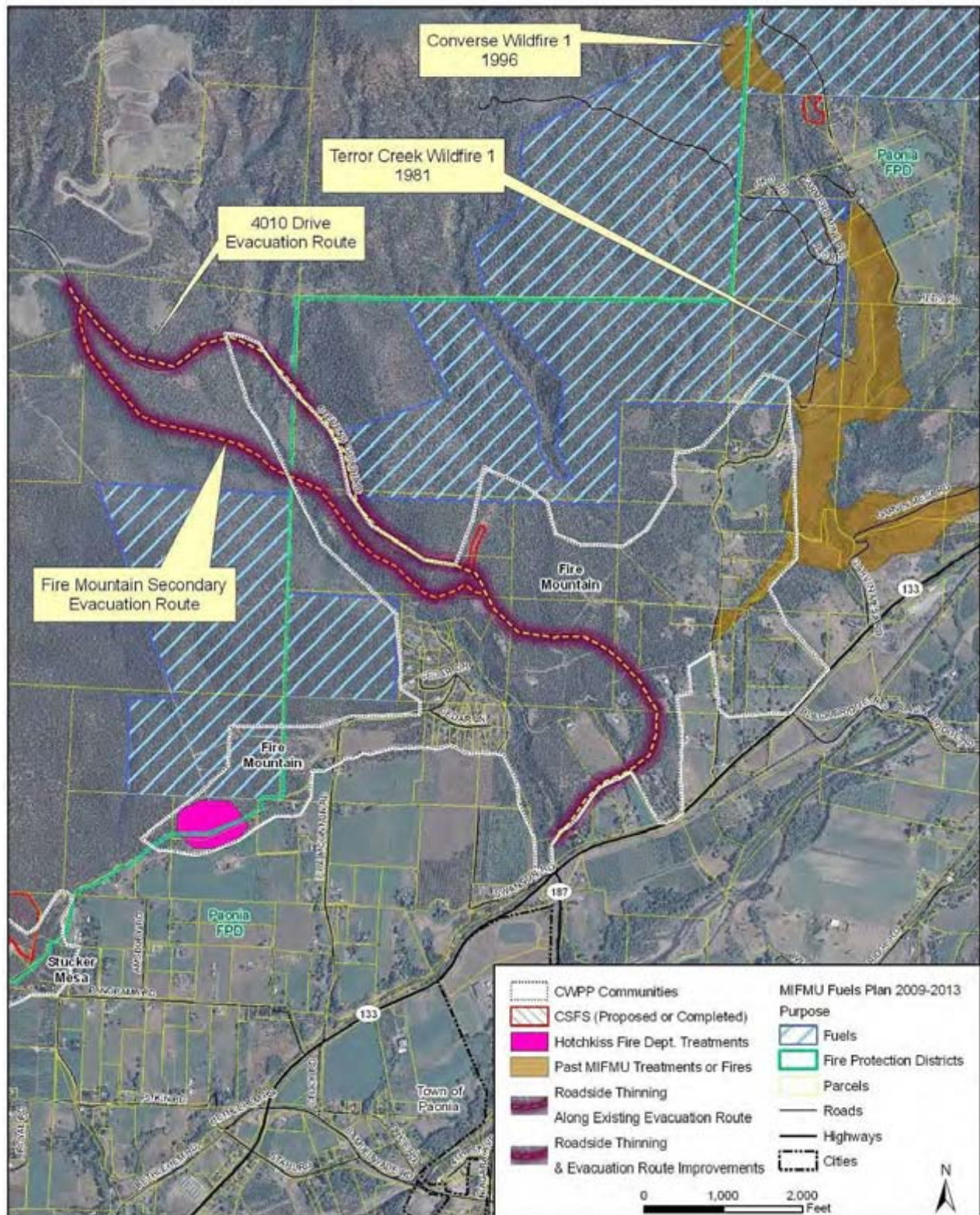


Table 28. Fire Mountain Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
4010 Drive Evacuation Route	4	4010 Drive is a main access point in the community. Because of its mid-slope topographic position and high density of pinyon-juniper, thinning is recommended to provide safe access and egress.	Mechanical treatments where viable; hand treatments in steep sections and where access is poor	87
Fire Mountain Secondary Evacuation Route	5	A second road forks from 4010 Drive within the community, and then meets back up with it outside of the community boundary to the north. Improving this road and reducing the fuels on either side will create a secondary egress and access point if 4010 Drive is compromised.	Mechanical treatments where viable; hand treatments in steep sections and where access is poor	48
Infrastructure	6	See Appendix A	See Appendix A	n/a
Preparedness Planning	7	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

21. Stucker Mesa



Hazard Rating: Very High

The Stucker Mesa community is located on steep juniper hillsides (Figure 36). Stucker Mesa has a southeast facing aspect, and a large drainage runs through the middle of the area. Vegetation is a mix of grass, shrub, and forest. Agricultural lands, vineyards, and orchards are interspersed and adjacent to the community. Homes are built in high-wildfire risk locations near steep valley walls and above chimneys. Residences in Stucker Mesa are built of materials with varying levels of fire resistance. Most homes lack defensible space, and many driveways do not allow for adequate turnaround space. Ingress and egress is provided by two main roads, Stucker Mesa Road and Pitkin Road, both of which are one way in and out. Access roads are all well maintained dirt of 20-24 feet wide. Street signage in the area is conducive to increased navigability for firefighting operations. Utilities are located above ground. A lack of water supply presents a significant challenge for firefighters, but they can potentially draft from the Fire Mountain Canal. Stucker Mesa is in close proximity to Paonia. Lightning and high winds are common in Stucker Mesa as in the rest of Delta County.

Stucker Mesa is divided between dense pinyon-juniper forest and more open, grass- and shrub-dominated areas. These light, flashy fuels will act to spread fire rapidly, potentially into the forested areas where containment is more difficult and fire severities higher. Rates of spread over 60 chains/hr are expected for the vast majority of the community. Flames lengths over 11 feet are possible in the main drainage running through the center of the community, and varying between four and 11 feet in other areas. The steep sides of the drainages running through the center and in other areas will further exacerbate fire spread, and many values at risk are present within or adjacent to these areas. An ignition could easily come from the agricultural areas below the community, as well as Highway 133, both of which could spread rapidly uphill into Stucker Mesa.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this

plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 36. Stucker Mesa Fuels Treatment Recommendations

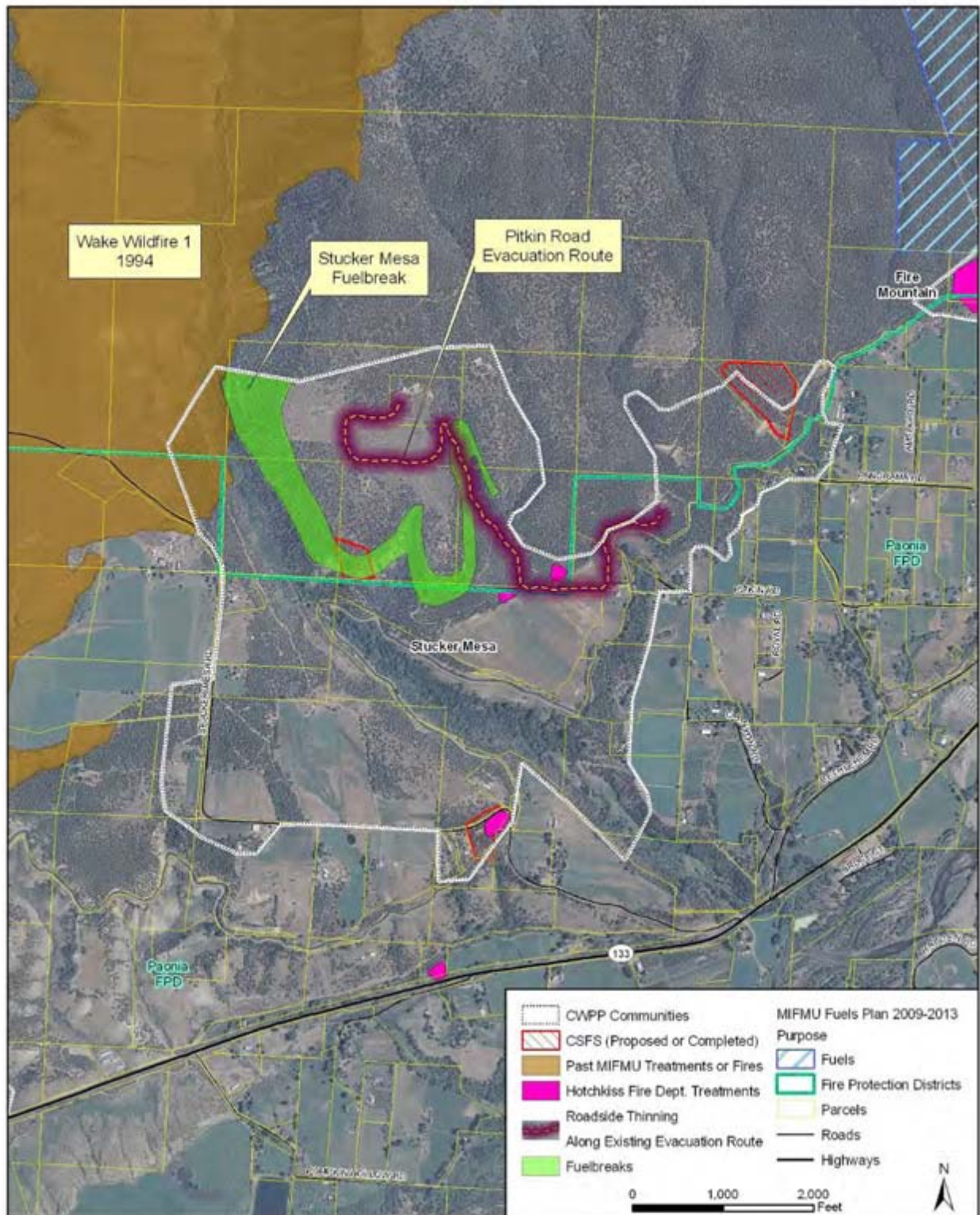


Table 29. Stucker Mesa Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Pitkin Road Evacuation Route	2	The mid-slope position of Pitkin Road, combined with the number of structures accessed from it, create the necessity for mitigation work. Particular attention should be paid to the uphill side of the road but downhill should also be treated. Safer access, egress, and less extreme fire behavior are all desired outcomes.	Mechanical treatments in flat areas; hand felling and limbing on steep slopes; mowing	47
Home Construction	3	See Appendix A	See Appendix A	n/a
Landscaping/Fuels	4	See Appendix A	See Appendix A	n/a
Preparedness Planning	5	See Appendix A	See Appendix A	n/a
Infrastructure	6	See Appendix A	See Appendix A	n/a
Stucker Mesa Fuelbreak	7	Steep slopes and high density pinyon-juniper around the north part of Stucker Mesa present a concern for life safety and values-at-risk. Mitigation on the slopes will reduce the chance for extreme fire behavior, including active crowning and fast rates of spread.	Mostly hand treatments due to slope; mechanical treatments where applicable	44

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

22. Hidden Valley



Hazard Rating: High

Hidden Valley is a community southeast of Paonia, off of Foothills Road and Dry Gulch Road (Figure 37). Hidden Valley is served by multiple access and egress routes which are paved and 20 to 24 feet in width. However, a steep winding road leads to the houses at the highest points in the community, which could complicate response and evacuation in the event of a wildfire. Fortunately, most driveways have adequate turnaround space. Vegetation in Hidden Valley is a mix of forested areas, grass, and shrubs. The topography in Hidden Valley increases wildland fire risk to residents and structures. The community is situated in a valley on side slopes and on top of the valley wall. Homes are located in ravines, at mid-slope and atop the valley wall with fuel below. Residents have started to help mitigate the fire risk in the area with defensible space. Most homes have an adequate wildfire defense buffer including manicured lawns, but more work could be done on upper areas. Utilities are underground, and water is available via hydrants. The fire station is roughly two miles away from the community. Homes in Hidden Valley have fire resistant roofs and decks and siding of varied combustibility. Street signs are made of reflective metal and are consistent throughout the community. Lightning is a significant factor when considering the wildland fire risk in Hidden Valley.

While most of the homes in the community are located in the lower valley area, other homes on the steep ridge and southern hill above the main populated area could be at a greater risk. An ignition off of Dry Gulch road or from the main area of the community could spread quickly uphill. The majority of the community is either covered with pinyon-juniper forest, or grass-shrub areas. Light, flashy fuels could produce rapid rates of spread. Rates of spread over 60 chains/hr are anticipated throughout most of the community under high severity weather conditions. Flames are not expected to exceed 11 feet for most of the community, though it is possible in areas of dense pinyon-juniper forest, especially on the main ridge northeast of the community.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. See the implementation table in the Conclusions and Next Steps Chapter of this

plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 37. Hidden Valley Fuels Treatment Recommendations



Table 30. Hidden Valley Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Preparedness Planning	3	See Appendix A	See Appendix A	n/a
Home Construction	4	See Appendix A	See Appendix A	n/a
Infrastructure	5	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

23. Cedar Hill



Hazard Rating: High

This community is located near the cemetery on Cedar Hill (aka P Hill) south of Paonia (Figure 38). There are multiple access routes in the Cedar Hill community, though some side roads into residential areas are only one way in or one way out. Main roads and some side roads are paved. For the most part, driveways have adequate turnaround space. The community is built around a steep hill, and some homes back up against the steep hillside, increasing their risk. High winds, the possibility of lightning, adjacent railroads, and no water sources increase wildland fire risk in Cedar Hill. For the most part, defensible space in the community is adequate, though some homes have no defensible space at all. Home construction consists of fire resistant roofs, with decks and siding using materials of variable combustibility. Critical infrastructure in this community includes a communications tower on top of the hill. This tower serves as a VHF repeater and cell tower and could seriously impact the success of firefighting operations if it were affected by a wildland fire event. Cedar Hill Cemetery is also located in Cedar Hill and has important community value. Utilities are underground, reducing their exposure. Cedar Hill is in close proximity to Paonia, so response times are short.

Due to its location on a surrounding a steep hill, an ignition from below could spread rapidly uphill affecting homes and infrastructure. An inadvertent spark from the railroad below the northeastern section or from the agricultural areas surrounding the community could spread rapidly. Most of the actual hill area is covered with dense pinyon-juniper forest, while the areas below where most of homes located are comprised mainly of light, flashy fuels like grass, shrubs, and agricultural land. Flame lengths on the hillside could exceed 11 feet under high severity weather conditions, though most of the area will only experience flame lengths between four and eight feet. Rates of spread could surpass 60 chains/hr. The small chimneys and steep slopes of the main hill will act to send fire rapidly uphill, with the potential to significantly affect the communication infrastructure on top.

The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made during the development of this countywide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each

community. See the implementation table in the Conclusions and Next Steps Chapter of this plan to determine if a local Wildfire Mitigation Advocate has been identified for the community that will assist with implementing recommended activities in coordination with the local fire district, State Forest Service, and federal land managers as appropriate. If no Wildfire Mitigation Advocate has been identified, the responsibility defaults to the fire chief of the community's respective fire district, or the sheriff if not located within a fire protection district. Contact information for Wildfire Mitigation Advocates is maintained by the WRWC.

Figure 38. Cedar Hill Fuels Treatment Recommendations

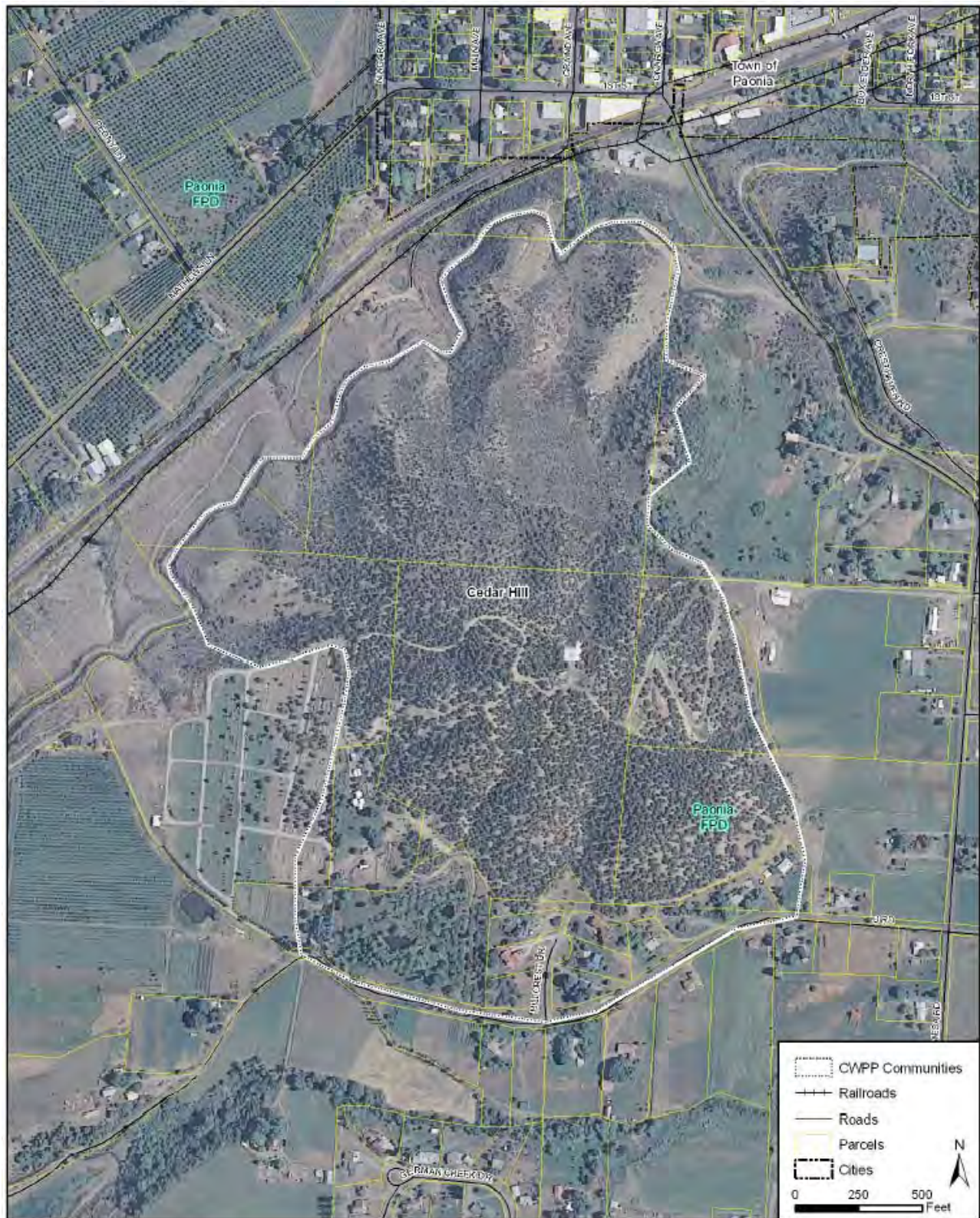


Table 31. Cedar Hill Fuels Reduction Recommendations

Name	Priority	Description	Methods*	Acres**
Defensible Space	1	Defensible space around individual homes. See CSFS 6.302 in Appendix A for details.	Hand felling and limbing near homes; mowing; some mechanical treatment further from homes	300' around the home
Landscaping/Fuels	2	See Appendix A	See Appendix A	n/a
Home Construction	3	See Appendix A	See Appendix A	n/a
Infrastructure	4	See Appendix A	See Appendix A	n/a
Preparedness Planning	5	See Appendix A	See Appendix A	n/a

* Mechanical treatments include hydro-axe, roller chop, or brush hog.

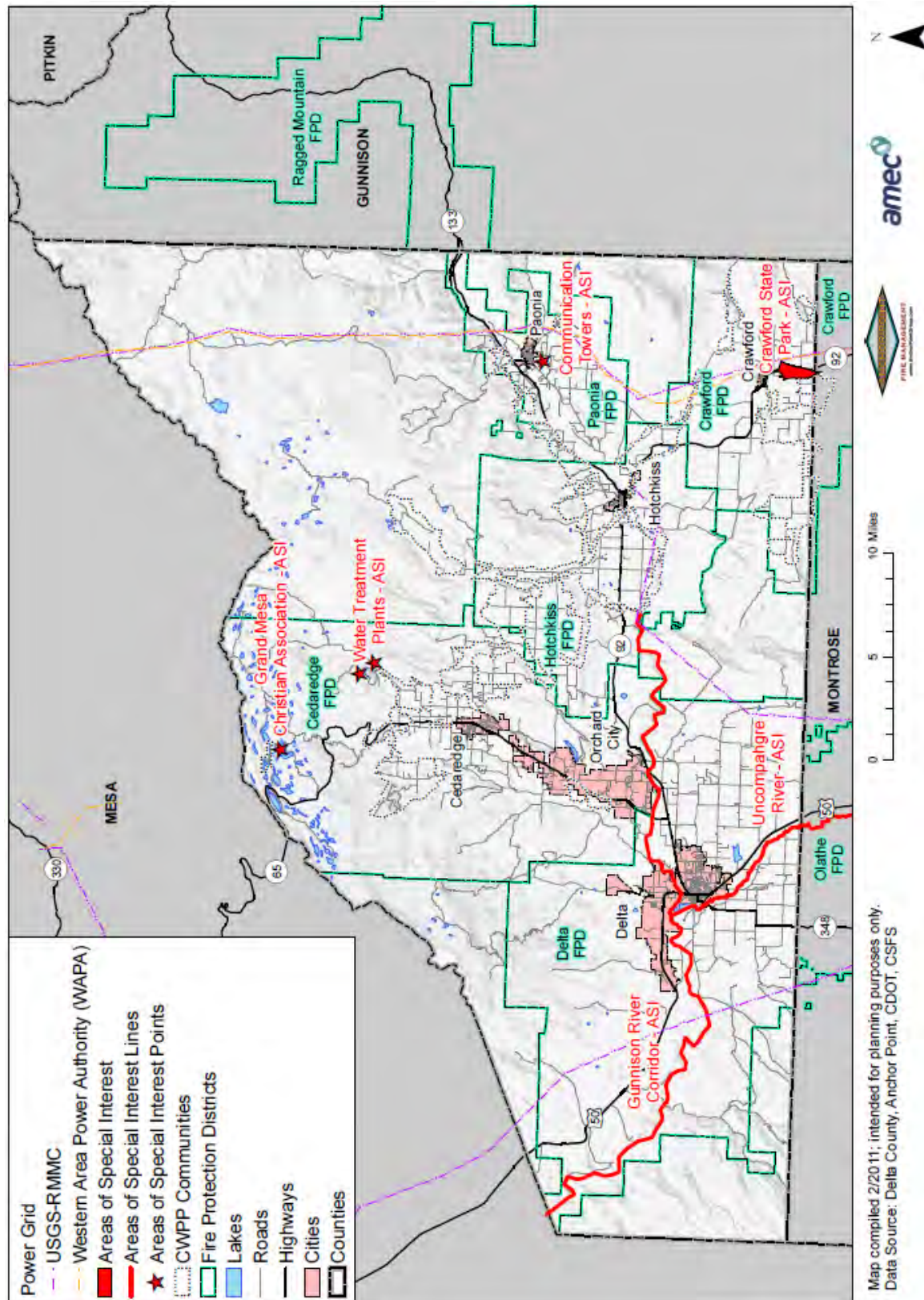
**Defensible space distances will vary by property based on slope and fuels. 300' includes all three zones. See CSFS 6.302 in Appendix A for more precise distances. Acreages for fuel treatments are estimated based on assumption of 150' treatments on either side of the road. Actual acres treated may vary once project is implemented.

AREAS OF SPECIAL INTEREST

Areas of special interest (ASIs) are places within the CWPP study area that could be threatened from wildfire and have a social or economic value that are not based on residential development. Unlike communities, ASIs are not given hazard ratings. Frequent candidates for ASIs include recreation areas, such as parks, reservoirs, ski areas, and defined open space. Guest ranches, church camps, RV parks and other large acreage recreational camps that have a significant, but temporary population are typically included as an ASI. Also included is some critical infrastructure, such as communication arrays. ASIs are identified separately from communities because of their size and/or focus on recreation areas and infrastructure over residences.

Sometimes there are specific fuels reduction recommendations that can help mitigate the fire risk to ASIs. Frequently, there are no significant recommendations for the ASIs, but they are still identified, as they are values at risk. Damage to these areas as a result of wildfire could impact the surrounding communities and areas. Figure 39 shows the location of the ASIs within the Delta County study area. This map may also be referenced in an 11 x 17 format in Appendix D.

Figure 39. Delta County Areas of Special Interest



CEDAR HILL COMMUNICATIONS TOWER

On Cedar Hill, there is a cell tower that is also home to the VHF repeater. Because of the importance of the repeater for communications for emergencies, this area should be kept clear of vegetation. The access to the tower is via a narrow dirt road.

Recommendations

- Maintain road year-round to provide access.
- Thin vegetation along the side of the road to the tower.
- Remove and maintain clearing of all vegetation around the tower.

WATER TREATMENT PLANTS

There are two water treatment plants within Delta County that are at risk from wildfire. Access to these plants is off of Surface Creek Road, north of the Surface Creek community. The timber vegetation in near the treatment plants is denser and has less of an agricultural component than the areas to the south. A wildfire in the area could impact the amount of water available to the residents in the surrounding communities, not to mention the cost of replacing the equipment associated with the water treatment plants. According to a public comment on the draft plan Colby Domestic Water Company has a treatment plant at the top of Ward Creek Road, north of Uintah. There is a treatment plant and 100,000 gallon storage tank that is potentially at risk to wildfire.

Recommendations

- Clear all vegetation surrounding the treatment plant buildings and exposed mechanical equipment.
- Maintain road access to the treatment plants at all times. Accomplish this by grading the road and thinning vegetation along sides of the roads.
- Assess the risk at the Colby Canyon water treatment facility to determine fuels treatment options.

CRAWFORD STATE PARK

Crawford State Park is an area highly utilized during the summer months for recreational activities such as biking, boating, camping, fishing and jet skiing. Boat ramps, camp grounds and day-use picnic sites are all available at the park. Because of the high number of people utilizing the park, there is an increase in the probability of having an ignition. Camp fires, people smoking, children playing with matches, fire pits, and picnic grills are all increased sources of ignitions. A wildfire at the park could potentially impact water quality, aesthetics of the park, and ultimately the number of people visiting.

Recommendations

- Obtain fire danger signs so people visiting the state park are aware of the current fire danger.
- Incorporate wildfire awareness into public education presentations.
- Have fire safety pamphlets available for adults and Smokey Bear packets available for kids with information on how to be safe with fire.
- Consider putting fire restrictions into effect when in line with regional coordination/efforts and specific weather parameters are met.

GUNNISON RIVER CORRIDOR

The Gunnison River is a tributary of the Colorado River. It is approximately 180 miles long and travels approximately east-west through the county. The river is very important to the way of life in Delta since the county is heavily dependent on agriculture. The majority of fires that occur around the City of Delta are along the river bed in the dense willows, cottonwoods and tall grass. Wildfires along the river corridor often threaten homes that are next to the vegetation. In some places, there is enough continuous vegetation that the fire could spread out of the channel and to the homes on the plateau above. Fortunately, the fires typically stay within the river corridor and do not become very large. Suppression efforts on these fires is generally successful because the nature of such light, flashy fuels.

Recommendations

- Create new and maintain existing access points along the river so crews can get fire apparatus into areas for suppression.
- Mitigate/thin areas where fuels are continuous to structures on plateau.
- Create extended defensible space around homes within the river channel.
- Install stand pipes periodically so engines can draft and have water supply for wildland and structure fires.

GRAND MESA CHRISTIAN ASSOCIATION

The Grand Mesa Christian Association (not to be confused with the Grand Mesa Resort Company CWPP community) has a camp located on US Forest Service land through a Special Use Permit. Initially established in 1917, the camp has undergone many changes, including updating and building new structures to accommodate increased visitors. During the summer, the camp may host as many as 150 people, primarily children. There are no sessions held during the winter. The camp is situated at 10,000 feet, so the primary vegetation is Engelmann spruce and subalpine fir. Fire behavior associated with this forest type includes very infrequent, high severity stand-replacing fires. At this elevation, fires are very uncommon, and would require prolonged drought, high temperatures, high winds, and an ignition source to burn. Although the probability of all of these events lining up is low, the camp needs to have an adequate plan to evacuate campers and staff. While the buildings have non combustible roofs, it is unlikely that they would be able to withstand a fire of this intensity. The safest option is evacuation, which the camp discusses with campers. Since most of the campers are under the age of 16, or are dropped off by their parents, the numbers of individuals far out-number the amount vehicle space.

Recommendations

Several actions can be taken to reduce the threat to campers and staff. The most important step is education. At the beginning of each session, an information session should be held about the risks of open fires, how to properly extinguish campfires, what the current fire danger is and how to prevent wildfires. During times of high fire danger, campfires should not be allowed. Early evacuation is the best possible way to protect everyone at the camp. Because of the limited number of cars, it will take an extended period to vacate the premises. If possible, the camp should invest in large passenger vehicles for evacuation use. If this is not an option, there is the potential to work with homeowners at Grand Mesa Resort Company who could volunteer to help

take individuals down to Cedaredge or out of the area. Setting up a dedicated number of people each week, with back-up drivers would greatly help the person to vehicle ratio.

CONCLUSIONS AND NEXT STEPS

The Delta County Wildfire Protection Plan (CWPP) is a comprehensive analysis of wildfire-related hazards and risks in the Wildland Urban Interface (WUI) areas in Delta County, Colorado. This document follows the standards for CWPPs that have been established by the Healthy Forests Restoration Act and Colorado State Forest Service.

This plan, and its accompanying assessment of values at risk, demonstrates that Delta County has variable, but considerable, risk to wildfires across much of the county. Much can be done to reduce this risk before the next wildfire occurs.

The results of the analysis were used to determine a variety of wildfire mitigation strategies throughout the study area. These recommendations were initially made by Anchor Point Group, LLC, but have been vetted by the stakeholders and presented and reviewed in public meetings. Stakeholders and citizens can also use these results to guide in the decision making for additional fuel reduction projects. Recommendations focus on reducing the threat of wildfire to values within the study area. Additional recommendations are presented in Appendix A, and include defensible space, home construction, landscaping/fuels, preparedness planning, infrastructure, public education, and water source supply. Much of the plan's detailed discussion of certain elements, including technical aspects of the countywide fire behavior analysis, is contained in appendices, which are included after the main CWPP document.

Local agreements and existing plans were examined in order to create a coordinated fire management effort between all parties involved. Public land management, private landowners and resident concerns and comments were used to generate this document. The Delta County CWPP is a multi-year, guiding document that will facilitate the implementation of future mitigation efforts. The CWPP is a living document, meaning it changes and evolves through time. Consequently, it should be revisited at least annually to assess the relevance and progress on the given recommendations. There is no official way to amend or adapt a CWPP, but any changes must be collaborative and include stakeholder representation. This process is discussed further in the Plan Monitoring and Maintenance section that follows.

PROJECTS TO IMPLEMENT

This plan identifies mitigation recommendations or action items developed through various plan inputs and data collection and research. The following is a table of Fuel Modification Action Items identified by Anchor Point Group. This table gives a summary of all of the recommended fuels reduction projects for the Delta County study area. Each of these is depicted as a graphic within the recommendations section for the individual communities. The priority level should be used to assist in determining which fuels projects should be focused on and in what order they should be implemented. CWPP activities may be eligible for funding through state and federal grant programs, including the National Fire Plan or Title II/Title III funding.

Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include homeowner's association board members or citizens. A concerted effort was made by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates for each community during the development of this plan. If a Wildfire Mitigation Advocate has been identified it is indicated by a 'Y' in the table under the 'WMA Identified' column. A 'TBD' indicates that this is 'To Be Determined.' A contact list of the community Wildfire Mitigation Advocates is maintained by the West Region Wildfire Council's Community Wildfire Protection Plan Coordinator and on file with Delta County emergency

management. If a contact has not been identified additional follow-up will be needed and the responsibility defaults to the fire chief of the community's respective fire protection district, or the sheriff if not located within a fire protection district.

Table 32. Fuel Modification Action Items Summary Table

Community	Community Hazard Rating	Recommended Fuels Treatment Name	Priority (1 = highest, 7 = lowest)	Wildfire Mitigation Advocate Identified? (Y/TBD)
Cedar Mesa	Very High	Defensible Space	1	TBD
		Cactus Park Road Evacuation Route	2	
		Cactus Park Road Fuelbreak	3	
		2675 Road Fuelbreak	4	
		2550 Road Fuelbreak	5	
Colby Canyon	Very High	Defensible Space	1	Y
		Extended Defensible Space	2	
Cottonwood Creek	High	Defensible Space	1	Y
Fire Mountain	Very High	Defensible Space	1	Y
		Fire Mountain Secondary Evacuation Route	2	
		4010 Drive Evacuation Route	3	
Fruitland Mesa	High	Defensible Space	1	TBD
Grand Mesa Resort Company	High	Defensible Space	1	Y
Hidden Valley	High	Defensible Space	1	Y
Highway 65 Corridor	High	Defensible Space	1	TBD
Leroux	Very High	Defensible Space	1	Y
		Extended Defensible Space	2	
		3100 Roadside Thinning	3	

Community	Community Hazard Rating	Recommended Fuels Treatment Name	Priority (1 = highest, 7 = lowest)	Wildfire Mitigation Advocate Identified? (Y/TBD)
		East and West Leroux Fuelbreaks	4	
Long Gulch	Very High	Defensible Space	1	TBD
		Long Gulch Road Evacuation Route	2	
Needle Rock	High	Defensible Space	1	TBD
North Hotchkiss	High	Defensible Space	1	Y
		Powell Mesa/Wolf Park Evacuation Route	2	
		Mystic Mesa Road Evacuation Route	3	
		3550 Road Evacuation Route	4	
North Orchard City	High	Defensible Space	1	Y
North Redlands	Very High	Defensible Space	1	Y
		Rimrock Road Evacuation Route -South	2	
		Rimrock Road Evacuation Route	3	
		Unnamed Road Evacuation Route	4	
		2900 Road Fuelbreak	5	
North Rogers Mesa	High	Defensible Space	1	TBD
Northridge	High	Defensible Space	1	TBD
		Northridge Road Evacuation Route	2	
Orchard City	High	Defensible Space	1	TBD
		Orchard City Canyon Rim Fuelbreak	2	
Cedar Hill	High	Defensible Space	1	TBD

Community	Community Hazard Rating	Recommended Fuels Treatment Name	Priority (1 = highest, 7 = lowest)	Wildfire Mitigation Advocate Identified? (Y/TBD)
South Redlands	High	Defensible Space	1	TBD
		South Redlands Fuelbreak	2	
South Rogers Mesa	High	Defensible Space	1	TBD
		J Road Fuelbreak	2	
		South Rogers Mesa Fuelbreak	3	
Stoney Creek	High	Defensible Space	1	TBD
		Stoney Creek Evacuation Route	2	
		Stoney Creek Secondary Evacuation Route	3	
Stucker Mesa	Very High	Defensible Space	1	Y
		Pitkin Road Evacuation Route	2	
		Stucker Mesa Fuelbreak	3	
Surface Creek	Very High	Defensible Space	1	TBD
		Surface Creek Road Evacuation Route	2	
		T75 Road Evacuation Route	3	
		Surface Creek Secondary Evacuation Route	4	
		West Surface Creek Fuelbreak	5	
		East Surface Creek Fuelbreak	6	

These recommendations are not a prescription for the area, and any project to be undertaken should be done in conjunction with a trained forester. The projects detailed in the CWPP are not the only projects that are viable within the planning area; they are the most achievable for the communities. Landscape scale projects are excellent options as well, but often require multiple communities working with federal, state and county government. As support and community involvement grow through these smaller projects, the larger treatments become more obtainable. Additional projects at all scales should be considered by the core stakeholder group, especially as Delta County begins to complete the initial projects identified in the CWPP.

To facilitate implementation, each action item, such as fuel modification, public education, etc. can be populated into the provided worksheet on the next page to organize information on key issues, develop ideas for implementation, coordinate and partner organizations, generate a timeline, and plan goals addressed.

The West Region Wildfire Council (WRWC) combines federal, state, county and local representatives from Delta, Gunnison Hinsdale, Montrose, Ouray and San Miguel Counties. The WRWC strives to prepare counties, fire protection districts, communities and interagency fire management partners to plan for and mitigate the potential threats from wildland fire. By promoting wildfire preparation, prevention and mitigation education, the WRWC strives to better mitigate the threat of catastrophic wildland fire to communities and natural resources. The West Region Wildfire Council CWPP Coordinator helps to facilitate the implementation of hazard reduction recommendations outlined in this plan and other community specific CWPPs. Information regarding wildfire mitigation, funding opportunities, your community's Wildfire Mitigation Advocate and other services available through the West Region Wildfire Council can be obtained by contacting the Council's CWPP Coordinator. 102 Par Place Suite #1 Montrose, CO 81401. wrwc.lilia@gmail.com (970)249-9051 ext. 125

Action Item Worksheet**Proposed Action Item Identification:**

(Each action item includes a list of the key issues that the activity will address. Action items should be fact based and tied directly to issues or needs identified through the planning process.)

Proposed Action Title:

(Utilize the appropriate recommendation name or title in the CWPP.)

Rationale for Proposed Action Item:

(Utilize any justification or report language in the CWPP.)

Ideas for Implementation (Optional):

(Each action item includes ideas for implementation and potential resources. This information offers a transition from theory to practice. The ideas for implementation serve as a starting point for this plan. This component is dynamic in nature, as some ideas may not be feasible and new ideas may be added during the plan maintenance process. Report graphics can add value to this section.)

Coordinating Organization:**Internal Partners:**

(Internal partners are members of the CWPP advisory committee and may be able to assist in the implementation of action items by providing relevant resources to the coordinating organization.)

External Partners:

(External partner organizations can assist the coordinating organization in implementing the action items in various ways. Partners may include local, regional, state, or federal agencies, as well as local and regional public and private sector entities.)

Timeline:**Short Term (0-2 years)**

(Action items or activities that may be implemented with existing resources and authorities within one to two years.)

Long Term (2-4 or more years)

(Action items or activities that may require new or additional resources and/or authorities, and may take from one to five years to implement.)

If available, estimated cost:

FUNDING SOURCES

Often the biggest hurdle to overcome when trying to implement a CWPP or wildfire mitigation projects is funding. By having an official CWPP, a multitude of funding sources becomes available to complete the work outlined in the plan. Federal, national, state and county funds are available to begin treatments. The list below is not all-inclusive, but it provides many of the most commonly available sources. Links to more funding sources can be accessed from these sites. The Resources for Implementing CWPP Recommendations section on the pages that follow the Glossary have a more complete list.

http://www.firewise.org/usa/grant_funding_sources.htm

<http://csfs.colostate.edu/pages/funding.html>

<http://csfs.colostate.edu/pdfs/Landowner-Assistance-Programs-rev112610.pdf>

<http://rockymountainwildlandfire.info/grants.htm>

<http://www.anchorpointgroup.com/resources.html>

PLAN MONITORING AND MAINTENANCE

The Delta County 2011 CWPP should be considered a living document requiring regular maintenance, updates, and monitoring/evaluation of progress of recommended wildfire mitigation actions. The Delta County CWPP core group should revisit the plan annually to make evaluations and updates as progress, roadblocks, or changing circumstances are recognized. It is recommended that the document should also be formally updated every five years. Events or circumstances that may warrant updating the CWPP include, but are not limited to, progress on recommended fuels treatments and wildfire mitigation actions, progress on preparedness planning and community-level CWPP development, new housing/structural development in Delta County that may require identification of a new CWPP community, large-scale wildland fire events in the County, and/or changes in Wildfire Mitigation Advocates for the CWPP communities.

GLOSSARY

The following definitions apply to terms used in the Delta Community Wildfire Protection Plan.

1-hour time lag fuels: Grasses, litter and duff; <1/4 inch in diameter

10-hour time lag fuels: Twigs and small stems; 1/4 inch to 1 inch in diameter

100-hour time lag fuels: Branches; 1 to 3 inches in diameter

1000-hour time lag fuels: Large stems and branches; >3 inches in diameter

Active Crown Fire: This is a crown fire in which the entire fuel complex – all fuel strata – become involved, but the crowning phase remains dependent on heat released from the surface fuel strata for continued spread (also called a Running Crown Fire or Continuous Crown Fire).

Chain: A chain is a unit of measurement that equals 66 feet. It is normally used as the measure of the rate of spread of wildfires or as a production rate for wildland fire apparatus or crews (chains per hour).

Chimney: A steep and narrow drainage which has the potential to funnel winds and greatly increase fire behavior. Due to this increase, the tops of chimneys are especially hazardous areas.

Citizen Safety Zone: An area that can be used for protection by residents in the event that the main evacuation route is compromised. The area should be cleared of fuels and otherwise well maintained. It should be large enough for all residents of the area to survive an advancing wildfire without special equipment or training.

Crown Fire (Crowning): The movement of fire through the crowns of trees or shrubs; may or may not be independent of the surface fire.

Defensible Space: An area around a structure where fuels and vegetation are modified cleared or reduced to slow the spread of wildfire toward or from the structure. The design and distance of the defensible space is based on fuels, topography, and the design/materials used in the construction of the structure.

Energy Release Component: An index of how hot a fire could burn. ERC is directly related to the 24-hour, potential worst case, total available energy within the flaming front at the head of a fire.

Extended Defensible Space (also known as Zone 3): This is a defensible space area where treatment is continued beyond the minimum boundary. This zone focuses on forest management with fuels reduction being a secondary consideration.

Fine Fuels: Fuels that are less than 1/4-inch in diameter, such as grass, leaves, draped pine needles, fern, tree moss, and some kinds of slash which, when dry, ignite readily and are consumed rapidly.

Fire Behavior Potential: The expected severity of a wildland fire expressed as the rate of spread, the level of crown fire activity, and flame length. This is derived from fire behavior modeling programs using the following inputs: fuels, canopy cover, historical weather averages, elevation, slope, and aspect.

Fire Danger: In this document we do not use this as a technical term, due to various and nebulous meanings that have been historically applied.

Fire Hazard: Given an ignition, the likelihood and severity of Fire Outcomes (Fire Effects) that result in damage to people, property, and/or the environment. The hazard rating is derived from the Community Assessment and the Fire Behavior Potential.

Fire Mitigation: Any action designed to decrease the likelihood of an ignition, reduce Fire Behavior Potential, or to protect property from the impact of undesirable Fire Outcomes.

Fire Outcomes, AKA Fire Effects: This is a description of the expected effects of a wildfire on people, property and/or the environment, based on the Fire Behavior Potential and physical presence of values at risk. Outcomes can be desirable as well as undesirable.

Fire Risk: The probability that an ignition will occur in an area with potential for damaging effects to people, property, and/or the environment. Risk is based primarily on historical ignitions data.

FlamMap: A software package created by the Joint Fire Sciences Program, Rocky Mountain Research Station. The software uses mapped environmental data such as Elevation, Aspect, Slope, and Fuel Model, along with fuel moisture and wind information, to generate predicted fire behavior characteristics such as Flame Length, Crown Fire Activity, and Spread Rate.

Flame Length: The distance between the flame tip and the midpoint of the flame depth at the base of the flame (generally the ground surface)—an indicator of fire intensity.

Fuelbreak: A natural or constructed discontinuity in a fuel profile that is used to isolate, stop, or reduce the spread of fire. Fuelbreaks may also make retardant lines more effective and serve as control lines for fire suppression actions. Fuelbreaks in the WUI are designed to limit the spread and intensity of crown fire activity.

Incident Command System (ICS): ICS is a standardized all-hazards management approach that establishes common procedures for responding to and managing emergency incidents; establishes a common communications protocol; and enables a coordinated response among multiple agencies and/or jurisdictions.

National Fire Incident Reporting System (NFIRS): A national database of fire incident information created by the National Fire Data Center of the United States Fire Administration. NFIRS is designed to help State and local governments gather fire incident data to develop fire reporting and analysis capabilities and to help assess and address fire danger in the United States. State and local participation in NFIRS is voluntary.

Passive Crown Fire: A crown fire in which individual or small groups of trees torch out (candle), but solid flaming in the canopy fuels cannot be maintained except for short periods.

Roadside thinnings are broken down into three categories (roadside thinning, roadside thinning for evacuation, roadside thinning and evacuation route improvement). The purpose of breaking these down is to help with planning and implementation as well as to differentiate between the priorities of life safety and fire control. It also allows for better planning for grant funding based on the different costs and effort required to implement the various type of projects. These are described further below:

Roadside thinning: The primary purpose of this project is to increase the ability of firefighters to successfully use the existing road as a control line in the event of a fire.

Roadside thinning for evacuation route: This thinning is located along an existing road which is maintained at a level which can accommodate civilian and fire traffic. The purpose of the thinning is to reduce the fire impacts along that road. This allows the safe evacuation of civilians and safe access to firefighters, by mitigating the fire impacts, due to the maintenance of the road, improvement to the evacuation route itself is not necessary.

Roadside thinning and evacuation route improvement: This thinning is focused along an existing road, usually a Forest Service road, which is unmaintained or maintained to the level of a 4x4 trail. The recommendation is to thin the area along the road to reduce the impacts of fire and improve the quality of the road so that it is passable for all vehicles. This will improve life safety by adding a more broadly usable egress for civilians and an additional access for firefighters.

Shelter-in-Place Areas: A method of protecting the public from an advancing wildfire that involves instructing people to remain inside their homes or public buildings until the danger passes. This concept is new to wildfire in the United States, but not to hazardous materials incident response, where time, hazards, and sheer logistics often make evacuation impossible. This concept is the dominant modality for public protection from wildfires in Australia, where fast-moving, short-duration fires in light fuels make evacuation impractical. The success of this tactic depends on a detailed preplan that takes into account the construction type and materials of the building used, topography, depth and type of the fuel profile, as well as current and expected weather and fire behavior.

Stand Pipe: A fixed pipe attached to a water source located at an easily accessible point which allows firefighters to draft from the water source more efficiently.

Structural Triage: The process of identifying, sorting, and committing resources to a specific structure.

Surface Fire: A fire that burns in the surface litter, debris, and small vegetation on the ground.

Time lag: Time needed under specified conditions for a fuel particle to lose about 60% of the difference between its initial moisture content and its equilibrium moisture content.

Values at Risk: People, property, ecological elements, and other human and intrinsic values within the project area. Values at risk are identified by inhabitants as important to the way of life in the study area, and are particularly susceptible to damage from undesirable fire outcomes.

WHR (Community Wildfire Hazard Rating, AKA Community Assessment): A 140-point scale analysis designed to identify factors that increase the potential for and/or severity of undesirable fire outcomes in WUI communities.

WUI (Wildland Urban Interface): The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. This is sometimes referred to as Urban Wildland Interface, or UWI.

RECOMMENDED READING

Anderson, H. E., *Aids to Determining Fuel Models for Estimating Fire Behavior*, National Wildfire Coordinating Group, NFES 1574, April 1982.

At Home in the Woods – Lessons Learned in the Wildland/Urban Interface, FEMA, 2004.

Bachmann, A., and Allgower, B., *A Consistent Wildland Fire Risk Terminology is Needed!*, Fire Management Today (61, 4), USDA Forest Services, Washington, DC, Fall 2001.

Dennis, F.C., *Fuelbreak Guidelines for Forested Subdivisions*, Colorado State Forest Service, Colorado State University, 1983.

Developing a Cooperative Approach to Wildfire Protection, National Wildland Urban Interface Fire Protection Program.

Development Strategies in the Wildland/Urban Interface, International Association of Fire Chiefs and Western Fire Chiefs Association, Billings, Montana, July 1991.

Firefighter Safety in the Wildland/Urban Interface – A Video Series (VHS Video - 60 Minutes.), National Wildland/Urban Interface Fire Program, 2003.

Fires that Changed the Fire Service – Wildlands (VHS Video – 84 Minutes.), American Heat, March 2000.

FireSmart – Protecting Your Community from Wildfire, Partners in Protection, Edmonton, Alberta, Canada, May 1999.

Hirsch, K.G., Pinedo, M.M., and Greelee, J.M., *An International Collection of Wildland Urban Interface Resource Materials*, Information Report NOR-X-344, Canadian Forest Service – Northwest Region – Northern Forestry Centre, 1996.

Home Improvement: A Firewise Approach (VHS Video – 15 Minutes.), 2003.

Introducing Firewise Communities Workshops (VHS Video– 6 Minutes.), Firewise Communities, Quincy, MA.

Mangan, R. J., *Improving Firefighter Safety in the Wildland Urban Intermix*, FE02P16 – USDA Forest Service Technology and Development Program, Missoula, Montana, Feb. 2000.

National Wildland/Urban Interface Fire Protection Program Building a Fire wise Home (VHS Video – 20 Minutes.), Hearst-Argyle Television Productions, Needham, MA, Nov. 1997.

Langowski, P., *Fire and Fuels Analysis to Support Project Planning*, Nov. 2003.

Preparing a Community Wildfire Protection Plan – a Handbook for Wildland Urban Interface Communities, Sponsored by: Communities Committee, National Association of Counties, National Association of State Foresters, Society of American Foresters, Western Governors' Association, March 2004.

Queen, Phillip L., *Fighting Fire in the Wildland/Urban Interface*, Fire Publications, Inc., Bellflower, California, 1993.

Quincy, M.A., *Wildfire! Preventing Home Ignitions!* (VHS Video – 19 Mins.), Firewise Communities,

Slaughter, R. (ed.), *California's I-ZONE – Urban/Wildland Fire Prevention & Mitigation*, Sacramento, California, Jan. 1996.

Standard for Protection of Life and Property from Wildfire, NFPA 1144(02) (Formerly NFPA 299) National Fire Protection Association, Quincy, MA, 2002.

Southwest Community Wildfire Protection Plan Guide, Southwest Strategy, 2004.

Urban-Wildland Interface Code™, International Fire Code Institute, Whittier, California, Jan. 2000.

White, C., *Dry Hydrant Manual – A Guide for Developing Alternative Water Sources for Rural Fire Protection*, Developed for Summit County, Colorado.

Wildland/Urban Interface Fire Hazard Assessment Methodology, Developed by National Wildland/Urban Interface Fire Protection Program.

Wildland/Urban Interface Fire Policy Action Report, Western Governors' Association, Feb. 1996.

RESOURCES FOR IMPLEMENTING CWPP RECOMMENDATIONS

There are many sources of funds and technical assistance available for implementing the recommendations within the CWPP. Some available grants and websites where more information can be found are provided below.

- **West Region Wildfire Council (WRWC)**
 - Purpose: The West Region Wildfire Council supports interagency efforts to develop and implement plans to mitigate the threat of catastrophic wildland fire to communities and natural resources in Delta, Gunnison, Hinsdale, Montrose, Ouray and San Miguel counties. The WRWC promotes information sharing and collaboration between local communities and state and federal fire managers for fuels management, wildfire suppression, enhancing capability, planning and collaboration. The WRWC has "mini grants" to help provide seed money to implement wildfire mitigation projects.
 - More information: wrwc.lilia@gmail.com; 102 Par Place, Suite 1, Montrose, CO 81401; 970-249-9051 ext 125.
- **Colorado State Forest Service**
 - Purpose: to help homeowners and landowners promote healthy and sustainable forest conditions. One of the ways CSFS does this is by emphasizing action on state, private, and other non-federal lands, and providing technical and financial assistance to those that have demonstrated a willingness and/or commitment to effectively manage their property.
 - Tax exemption for wildfire mitigation work: Colorado landowners with property located in a Wildland Urban Interface area also may qualify to receive a tax exemption for the costs of wildfire mitigation work. As authorized by §39-22-104(4)(n), C.R.S., for income tax years 2009 through 2013 individuals, estates and trusts may subtract from federal taxable income 50 percent of the costs incurred in performing wildfire mitigation measures.
 - More information: <http://csfs.colostate.edu/pages/programs-home-land-owners.html>
 - <http://csfs.colostate.edu/pages/funding.html>
 - <http://csfs.colostate.edu/pdfs/Landowner-Assistance-Programs-rev112610.pdf>
 - For more information:
222 S. 6th Suite 416 Grand Junction, CO 81501
(970) 248-7325
- **Federal Emergency Management Agency (FEMA)**
 - **Assistance to Firefighters Grant Program**
 - Purpose: to improve firefighting operations, purchase firefighting vehicles, equipment and personal protective equipment, fund fire prevention programs, and establish wellness and fitness programs.
 - More information: <http://www.fema.gov/firegrants/>
 - **Hazard Mitigation Assistance Grant Program (HMGP)**
 - Purpose: The Hazard Mitigation Grant Program provides grants to states and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to

enable mitigation measures to be implemented during the immediate recovery from a disaster.

- <http://www.fema.gov/government/grant/hmgp/index.shtm>

- **Pre-Disaster Mitigation Grant Program (PDM)**

- Purpose: The Pre-Disaster Mitigation program provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.
- <http://www.fema.gov/government/grant/pdm/index.shtm>

- **Firehouse.com**

- Purpose: emergency services grants.
- More information: www.firehouse.com/funding/grants.html

- **Firewise Communities**

- Firewise is a multi-agency organization designed to increase homeowners', community leaders', developers', and others' education on the Wildland Urban Interface and the actions they can take to reduce fire risk to protect lives, property, and ecosystems. A summary of grant funding sources can be found on the Firewise website.
- http://www.firewise.org/usa/grant_funding_sources.htm

- **Homeland Security, Office for Domestic Preparedness**

- Purpose: to assist local, state, regional, or national organizations in addressing fire prevention and safety. The emphasis for these grants is the prevention of fire-related injuries to children.
- More information: <http://www.firegrantsupport.com/>

- **National Volunteer Fire Council**

- Purpose: to support volunteer Fire Protection Districts.
- More information: <http://www.nvfc.org/federal/funding.html>

- **Natural Resources Conservation Service (NRCS) Emergency Watershed Protection Program (EWP)**

- Purpose: The purpose of the Emergency Watershed Protection program is to undertake emergency measures, including the purchase of flood plain easements, for runoff retardation and soil erosion prevention to safeguard lives and property from floods, drought, and the products of erosion on any watershed whenever fire, flood or any other natural occurrence is causing or has caused a sudden impairment of the watershed.
- <http://www.nrcs.usda.gov/programs/ewp/>

- **USDA Community Facilities Grant Program**

- Purpose: to help rural communities. Funding is provided for fire stations.
- More information: www.rurdev.usda.gov/rhs/

- **US Forest Service, Economic Action Programs**

- Cooperative Forestry Assistance
- Purpose: to assist in the advancement of forest resources management, the control of insects and diseases affecting trees and forests, the improvement and maintenance of fish and wildlife habitat, and the planning and conduct of urban and community forestry programs.
- <http://www.fs.fed.us/spf/coop/>

- **Uncompahgre Partnership**

- Purpose: To develop a collaborative approach to improve the ecosystem health and natural functions of the landscape, using best available science, community input, and adaptive management.
- <http://www.upartnership.org/>

OTHER GRANTS AND INFORMATION SOURCES

Environmental Protection Agency Catalog of Federal Funding Sources for Watershed Protection
<http://cfpub.epa.gov/fedfund>

ESRI Grant Assistance program for (Geographic Information System) GIS users
<http://www.esri.com/grants>

The Fire Safe Council
<http://www.FireSafeCouncil.org>

Fire Regime Condition Class
<http://www.frcc.gov/>, July 2005.

FRAMES -- Fire Research and Management Exchange System,
<http://frames.nbii.gov>

Federal Grant opportunities search website
www.grants.gov

Interagency Wildland Fire Communications Group – Rocky Mountain Area
<http://www.rockymountainwildlandfire.info/grants.htm>

National Association of State Foresters
<http://stateforesters.org/>

National Database of State and Local Wildfire Hazard Mitigation Programs
<http://www.wildfireprograms.com>, January 2010.

National Fire Protection Association Standards
Standard for Protection of Life and Property from Wildfire, NFPA 1144
Standard for Protection of Life and Property from Wildfire, NFPA 299
http://www.nfpa.org/aboutthecodes/list_of_codes_and_standards.asp

APPENDIX A: GENERAL RECOMMENDATIONS

The following categories have been identified as areas that the County, its residents, and fire protection districts should focus on to mitigate wildfire impacts: defensible space, home construction, landscaping/fuels, preparedness planning, infrastructure, public education, and water source supply. Recommendations are provided for each category in the tables that follow. **To improve life safety and preserve property, every home in the study area should have compliant, effective defensible space.** Defensible space is THE MOST IMPORTANT action an individual can take to protect their home. Defensible space recommendations are discussed in a separate section following the summary tables.

All of the general recommendations are summarized in the following tables. Not every recommendation is applicable for every community, and as a result, local fire districts, land management agencies, stakeholders, and citizens should work together to determine the exact actions that need to be taken within individual communities. Implementation of the actions will be a shared responsibility in many cases and include individual homeowners, homeowners associations (HOA), County staff, fire protection districts (FPDs), and other stakeholders. Suggestions for an implementation lead are identified for each action. Coordination and collaboration with the West Region Wildfire Council (WRWC) is also encouraged for many of these activities. A summary table of all the specific fuels reduction recommendations within the county can be found in the Conclusions and Next Steps section in the main document.

Additional details on recommendations and issues specific to the recommended action items are discussed in text that follows the summary tables.

Table A1. Home Construction Recommendations

Action Items	Implementation Lead
Post reflective house numbers so that they are clearly visible from the main road. Reflective numbers should also be visible on the structure itself.	Individual homeowners
Discourage the use of combustible materials for decks, siding, and roofs, especially where homes are upslope from heavy vegetation.	Individual homeowners, HOAs, County
Maintain and clean spark arresters on chimneys.	Individual homeowners
Enclose under decks so firebrands do not fly under and collect.	Individual homeowners
Use glass skylights; plastic will melt and allow embers into the home.	Individual homeowners
Enclose eaves and soffits.	Individual homeowners
Use nonflammable fencing, such as metal, if fence is attached to the house.	Individual homeowners
Cover openings with 1/8" metal screen to block fire brands and embers from collecting under the home or deck.	Individual homeowners
Use rated roofing material. Replace any shake shingle roofs with noncombustible types.	Individual homeowners, HOAs, County
Use fire resistant building materials on exterior walls.	Individual homeowners
Eliminate any covenants or deed restrictions that require or endorse the use of flammable building materials such as shake shingle roofs.	HOAs, County
Consider countywide regulations related to new construction that will allow for more fire resistant homes and commercial buildings.	County

Table A2. Landscaping and Fuels Recommendations

Action Items	Implementation Lead
Consistently maintain defensible space, see CSFS 6.302.	Individual homeowners, HOAs
Clean roof and gutters at least twice a year, especially as vegetation begins to cure in the autumn.	Individual homeowners
Stack firewood uphill or on a side contour, at least 30 feet away from structures, outbuildings, and other infrastructure, such as propane tanks and power poles.	Individual homeowners, HOAs
Do not store combustibles or firewood under decks or downhill.	Individual homeowners, HOAs
When possible, maintain an irrigated greenbelt around the home. Be sure to mow grass regularly, especially along roads and fence lines.	Individual homeowners, HOAs
Trees and vegetation along driveways should be thinned as necessary to maintain a minimum 15' vertical and horizontal clearance for emergency vehicle access along driveways. This includes removing ladder fuels, which are low lying branches that allow a fire to climb from the ground into tree canopies.	Individual homeowners, HOAs
Focus on removing vegetation in drainages that intersect roads or are under bridges.	Individual homeowners, HOAs
Consider a block wall of nonflammable material around the perimeter of a yard.	Individual homeowners
Use pavers, rock, slate, grass or xeriscaping to break up the landscape and create a fuel break.	Individual homeowners
Use groupings of potted plants that include succulents and other drought and fire resistant vegetation.	Individual homeowners
Use faux brick and stone finishes and annuals and perennials with high moisture content.	Individual homeowners
Use grass and driveways as fuel breaks from the house.	Individual homeowners

Table A3. Preparedness Planning Recommendations

Action Items	Implementation Lead
Connect, and have available, a minimum of 50 feet of garden hose to extinguish small fires before they spread.	Individual homeowners
Consider achievement of nationally designated 'Firewise Community/USA' status for communities in this plan	Communities, County, FPDs
Have nearby evacuation centers for citizens and staging areas for fire resources. This is especially important in communities with single access and a high population density.	County, FPDs
Identify and pre-plan primary escape routes for all CWPP communities. Emergency management personnel should be included in the development of pre-plans for citizen evacuation. Re-evaluate and update these plans as necessary and include presentation and distribution of plan to residents.	County, FPDs
Educate citizens on the proper escape routes and evacuation centers to use in the event of an evacuation. This also applies to animal rescue.	County, FPDs
Identify areas where large animal evacuation is an issue and develop a plan for evacuation.	County, FPDs
Perform response drills to determine the timing and effectiveness of escape routes and fire resource staging areas.	County, state, FPDs
Ensure the existing reverse 911 system includes wildfire notifications.	County
Maintain or develop pre-attack/operational plans for the study area. The pre-attack plan assists fire agencies in developing strategies and tactics that will mitigate damage when incidents do occur.	County, FPDs
Conduct a parcel-level wildfire hazard analysis for all the homes in the study area, especially those with an extreme or very high rating.	County, FPDs
Create additional community level CWPP's, particularly those communities with a high or greater hazard rating.	County, FPDs

Table A4. Infrastructure Recommendations

Action Item	Implementation Lead
Ensure that every intersection and street name change has adequate, noncombustible reflective signage that is easily understood.	County, communities, HOAs
Develop a program of replacing worn or difficult to read street signs. Include specifications and input from County officials, developers, HOAs, and the fire protection districts.	County, HOAs, FPDs
Lot markers should be replaced with address markers as soon as a home has a certificate of occupancy.	County
Where dead end and private road markers occur, the addresses of homes beyond the marker should be clearly posted. This can be done with a group address marker, for example, "14391-14393 Wilderness Lane".	County, communities, HOAs
Provide adequate turnarounds for emergency equipment throughout all communities.	County, developers, FPDs, HOAs
Encourage fuels treatments on federal lands in power line corridors.	County, BLM, USFS, Utility companies
Encourage the placement of all utilities, including propane tanks and power lines, below ground.	County, communities, HOAs

Table A5. Public Education Recommendations

Action Item	Implementation Lead
Remain aware of current fire danger in the community.	All
Implement fire prevention, fire preparedness, defensible space, and hazard reduction recommendations for each community.	County, state, communities, HOAs, WRWC
Obtain “Smokey Bear” signs for use along entrances to communities to inform the public of the current fire danger and to promote fire prevention. Ensure that fire danger messages are kept up-to-date with Daily Fire Danger broadcast to maintain credibility and effectiveness.	County, state, FPDs, communities, HOAs
Create an evacuation plan that is presented and distributed to residents (see related action in Preparedness Planning category).	County, FPDs
Hold multiple meetings per year to educate residents on wildfire risk, defensible space, and evacuation.	County, CSFS, FPDs
Ask homeowner’s associations and other neighborhood groups to promote the development of defensible space and Firewise plantings.	HOAs, County, FPD
Provide citizens with the findings of this study including: <ul style="list-style-type: none"> • Levels of risk and hazard • Values of fuels reduction programs • Consequences of inaction for the entire community 	County, CSFS, FPDs
Create a Firewise Council or similar WUI citizen advisory committee to promote the message of shared responsibility. The Firewise Council should consist of local citizens and local FPDs and its primary goals should be: <ul style="list-style-type: none"> • Bringing the concerns of the residents to the prioritization of mitigation actions • Selecting demonstration sites • Assisting with grant applications and awards • Coordinate activities with West Region Wildfire Council 	Communities, HOAs, FPDs, WRWC
Make use of regional and local media and existing Firewise brochures to promote wildfire public education messages in the fire district.	County, state, FPDs
Maintain a current wildfire educational presentation explaining the concepts of defensible space and wildfire hazard mitigation. The information in this countywide CWPP should be incorporated into that presentation for the education of homeowners countywide. This could be promoted through informational gatherings sponsored by the fire department, homeowners associations, or neighborhood gatherings such as local festivals and school events. It should also be presented during times of extreme fire danger and other times of heightened awareness concerning wildfire.	County, CSFS, FPDs, WRWC

Table A6. Water Supply Recommendations

Action Item	Implementation Lead
Areas with no water or inadequate water supply should be evaluated to improve existing hydrants, establish a stored water supply, or use firefighting resources.	County, FPDs
Map existing hydrants, water sources, and their volume. Make this information available for emergency personnel in and out of the district.	County, FPDs
Make sure cisterns are well marked with their capacity and are kept clear of vegetation.	County, FPDs
Conduct annual testing for fire hydrant function and capacity.	County, FPDs
FPD trainings should focus on drafting operations frequently throughout the spring and summer to ensure apparatus can fill in the event of a wildfire.	FPDs
Work on obtaining contracts with landowners to gain legal permission to use ditches for suppression activities.	FPDs

DEFENSIBLE SPACE

Construction type, condition, age, fuel loading of the area, and building position are contributing factors in making homes more susceptible to ignition under even moderate burning conditions. As mentioned previously, defensible space is THE MOST IMPORTANT action an individual can do to protect their home. This is especially important for homes with wood roofs and homes located near any other topographic features that contribute to fire intensity such as chimneys and saddles. These recommendations are intended to give homeowners enough information to immediately begin making their home Firewise or improve existing home mitigation efforts. Defensible space needs to be maintained throughout the year. Because of differences in vegetation, topography, and construction materials, it is suggested that a trained individual be consulted before embarking on a defensible space project.

Because of the fire ecology of the vegetation and topography, an aggressive program of evaluating and implementing defensible space for all homes combined with adequate home construction, will do more to limit fire-related property damage than any other single recommendation in this report.

Homes and structures exist outside of the defined CWPP community boundaries in Delta County. The following defensible space guidelines apply to **all** structures that could be threatened by wildfire, whether or not they are part of a defined community. The guidelines are from Colorado State Forest Service fact sheet 6.302, which can also be referenced online at <http://csfs.colostate.edu/pages/defensible-space.html>.



Quick Facts...

Wildfire will find the weakest links in the defense measures you have taken on your property.

The primary determinants of a home's ability to survive wildfire are its roofing material and the quality of the "defensible space" surrounding it.

Even small steps to protect your home and property will make them more able to withstand fire.

Consider these measures for all areas of your property, not just the immediate vicinity of the house.



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NATURAL RESOURCES SERIES

FORESTRY

Creating Wildfire-Defensible Zones no. 6.302

by F.C. Dennis¹

Fire is capricious. It can find the weak link in your home's fire protection scheme and gain the upper hand because of a small, overlooked or seemingly inconsequential factor. While you may not be able to accomplish all measures below (and there are no guarantees), each will increase your home's, and possibly your family's, safety and survival during a wildfire.

Start with the easiest and least expensive actions. Begin your work closest to your house and move outward. Keep working on the more difficult items until you have completed your entire project.

Defensible Space

Two factors have emerged as the primary determinants of a home's ability to survive wildfire. These are the home's roofing material and the quality of the "defensible space" surrounding it.

Use fire-resistive materials (Class C or better rating), not wood or shake shingles, to roof homes in or near forests and grasslands. When your roof needs significant repairs or replacement, do so with a fire-resistant roofing material. Check with your county building department. Some counties now restrict wood roofs or require specific classifications of roofing material.

Defensible space is an area around a structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure. It also reduces the chance of a structure fire moving from the building to the surrounding forest. Defensible space provides *room for firefighters to do their jobs*. Your house is more likely to withstand a wildfire if grasses, brush, trees and other common forest fuels are managed to reduce a fire's intensity.

The measure of fuel hazard refers to its continuity, both horizontal (across the ground) and vertical (from the ground up into the vegetation crown). Fuels with a high degree of both vertical and horizontal continuity are the most hazardous, particularly when they occur on slopes. Heavier fuels (brush and trees) are more hazardous (i.e. produce a more intense fire) than light fuels such as grass.

Mitigation of wildfire hazards focuses on breaking up the continuity of horizontal and vertical fuels. Additional distance between fuels is required on slopes.

Creating an effective defensible space involves developing a series of management zones in which different treatment techniques are used. See Figure 1 for a general view of the relationships among these management zones. Develop defensible space around each building on your property. Include detached garages, storage buildings, barns and other structures in your plan.

The actual design and development of your defensible space depends on several factors: size and shape of buildings, materials used in their construction, the slope of the ground on which the structures are built, surrounding topography,

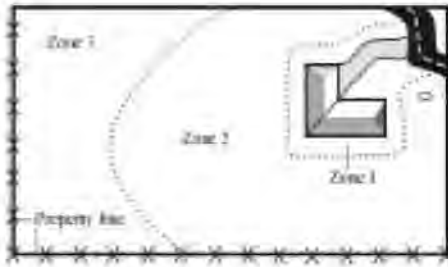


Figure 1: Forested property showing the three fire-defensible zones around a home or other structure.

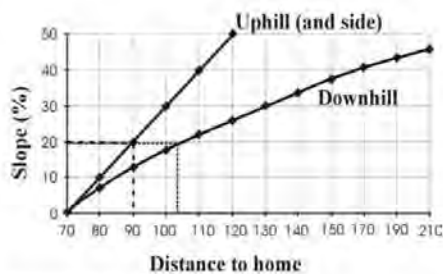


Figure 2: This chart indicates the *minimum recommended* dimensions for defensible space from the home to the outer edge of Zone 2. For example, if your home is situated on a 20 percent slope, the minimum defensible space dimensions would be 90 feet uphill and to the sides of the home and 104 feet downhill from the home.

and sizes and types of vegetation on your property. These factors all affect your design. You may want to request additional guidance from your local Colorado State Forest Service (CSFS) forester or fire department. (See the Special Recommendations section of this fact sheet for shrubs, lodgepole pine, Engelmann spruce, and aspen.)

Defensible Space Management Zones

Zone 1 is the area of maximum modification and treatment. It consists of an area of 15 feet around the structure in which all flammable vegetation is removed. This 15 feet is measured from the outside edge of the home's eaves and any attached structures, such as decks.

Zone 2 is an area of fuel reduction. It is a transitional area between Zones 1 and 3. The size of Zone 2 depends on the slope of the ground where the structure is built. Typically, the defensible space should extend *at least* 75 to 125 feet from the structure. See Figure 2 for the appropriate distance for your home's defensible space. Within this zone, the continuity and arrangement of vegetation is modified. Remove stressed, diseased, dead or dying trees and shrubs. Thin and prune the remaining larger trees and shrubs. Be sure to extend thinning along either side of your driveway all the way to your main access road. These actions help eliminate the continuous fuel surrounding a structure while enhancing homesite safety and the aesthetics of the property.

Zone 3 is an area of traditional forest management and is of no particular size. It extends from the edge of your defensible space to your property boundaries.

Prescriptions

Zone 1

The size of Zone 1 is 15 feet, measured from the edges of the structure. Within this zone, several specific treatments are recommended.

Plant nothing within 3 to 5 feet of the structure, particularly if the building is sided with wood, logs or other flammable materials. Decorative rock, for example, creates an attractive, easily maintained, nonflammable ground cover.

If the house has noncombustible siding, widely spaced foundation plantings of low growing shrubs or other "fire wise" plants are acceptable. Do not plant directly beneath windows or next to foundation vents. Be sure there are no areas of continuous grass adjacent to plantings in this area.

Frequently prune and maintain plants in this zone to ensure vigorous growth and a low growth habit. Remove dead branches, stems and leaves.

Do not store firewood or other combustible materials in this area. Enclose or screen decks with metal screening. Extend the gravel coverage under the decks. Do not use areas under decks for storage.

Ideally, remove all trees from Zone 1 to reduce fire hazards. If you do keep a tree, consider it part of the structure and extend the distance of the entire defensible space accordingly. Isolate the tree from any other surrounding trees. Prune it to at least 10 feet above the ground. Remove any branches that interfere with the roof or are within 10 feet of the chimney. Remove all "ladder fuels" from beneath the tree. Ladder fuels are vegetation with vertical continuity that allows fire to burn from ground level up into the branches and crowns of trees. Ladder fuels are potentially very hazardous but are easy to mitigate. No ladder fuels can be allowed under tree canopies. In all other areas, prune all branches of shrubs or trees up to a height of 10 feet above ground (or 1/2 the height, whichever is the least).

Zone 2

Zone 2 is an area of fuel reduction designed to reduce the intensity of any fire approaching your home. Follow these recommended management steps.

Thin trees and large shrubs so there is at least 10 feet between crowns. Crown separation is measured from the furthest branch of one tree to the nearest branch on the next tree (Figure 3). On steep slopes, allow more space between tree crowns. (See Figure 4 for *minimum recommended* spacing for trees on steep slopes.) Remove all ladder fuels from under these remaining trees. Carefully prune trees to a height of at least 10 feet.

Small clumps of 2 to 3 trees may be occasionally left in Zone 2. Leave more space between the crowns of these clumps and surrounding trees.

Because Zone 2 forms an aesthetic buffer and provides a transition between zones, it is necessary to blend the requirements for Zones 1 and 3. Thin the portions of Zone 3 adjacent to Zone 2 more heavily than the outer portions.

Isolated shrubs may remain, provided they are not under tree crowns. Prune and maintain these plants periodically to maintain vigorous growth. Remove dead stems from trees and shrubs annually. Where shrubs are the primary fuel in Zone 2, refer to the Special Recommendations section of this fact sheet.

Limit the number of dead trees (snags) retained in this area. Wildlife needs only one or two snags per acre. Be sure any snags left for wildlife cannot fall onto the house or block access roads or driveways.

Mow grasses (or remove them with a weed trimmer) as needed through the growing season to keep them low, a maximum of 6 to 8 inches. This is extremely critical in the fall when grasses dry out and cure or in the spring after the snow is gone but before the plants green up.

Stack firewood and woodpiles uphill or on the same elevation as the structure but at least 30 feet away. Clear and keep away flammable vegetation within 10 feet of these woodpiles. Do not stack wood against your house or on or under your deck, even in winter. Many homes have burned from a woodpile that ignited as the fire passed. Wildfires can burn at almost any time in Colorado.

Locate propane tanks at least 30 feet from any structures, preferably on the same elevation as the house. You don't want the LP container below your house — if it ignites, the fire would tend to burn uphill. On the other hand, if the tank is above your house and it develops a leak, LP gas will flow downhill into your home. Clear and keep away flammable vegetation within 10 feet of these tanks. Do not screen propane tanks with shrubs or vegetation.

Dispose of slash (limbs, branches and other woody debris) from your trees and shrubs through chipping or by piling and burning. Contact your local CSFS office or county sheriff's office for information about burning slash piles. If neither of these alternatives is possible, lop and scatter slash by cutting it into very small pieces and distributing it over the ground. Avoid heavy accumulations

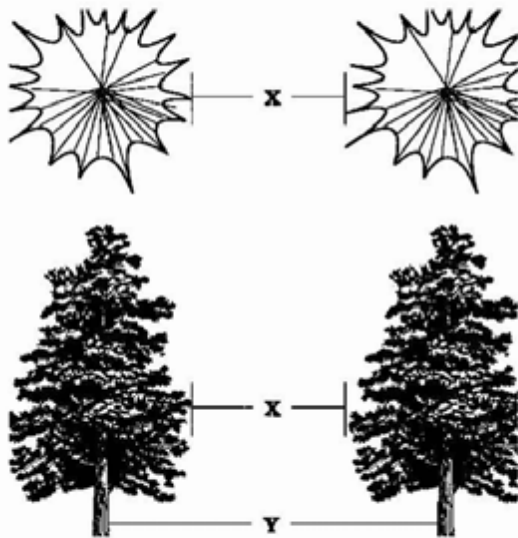


Figure 3: X = crown spacing; Y = stem spacing. Do not measure between stems for crown — measure between the edges of tree crowns.

% slope	Tree Crown Spacing	Brush and Shrub Clump Spacing
0 - 10 %	10'	2 1/2 x shrub height
11 - 20%	15'	3 x shrub height
21 - 40%	20'	4 x shrub height
> 40%	30'	6 x shrub height

Figure 4: Minimum tree crown and shrub clump spacing.

Tree Diameter (in inches)	Average Stem Spacing Between Trees (in feet)
3	10
4	11
5	12
6	13
7	14
8	15
9	16
10	17
11	19
12	21
13	23
14	24
15	26
16	28
17	29
18	31
19	33
20	35
21	36
22	38
23	40
24	42

Figure 5: Minimum tree spacing for Zone 3.

of slash. Lay it close to the ground to speed decomposition. If desired, no more than two or three small, widely spaced brush piles may be left for wildlife purposes. Locate these towards the outer portions of your defensible space.

Zone 3

This zone is of no specified size. It extends from the edge of your defensible space to your property lines. A gradual transition into this zone from defensible space standards to other management objectives you may have is suggested. Typical management objectives for areas surrounding homesites or subdivisions are: provide optimum recreational opportunities; enhance aesthetics; maintain tree health and vigor; provide barriers for wind, noise, dust and visual intrusions; support limited production of firewood, fence posts and other forest commodities; or grow Christmas trees or trees for transplanting.

Specific requirements will be dictated by your objectives for your land and the kinds of trees present. See Figure 5 for the *minimum* suggested spacing between "leave" trees. Forest management in Zone 3 is an opportunity for you to increase the health and growth rate of the forest in this zone. Keep in mind that root competition for available moisture limits tree growth and ultimately the health of the forest.

A high canopy forest reduces the chance of a surface fire climbing into the tops of the trees and might be a priority for you if this zone slopes steeply. The healthiest forest is one that has multiple ages, sizes, and species of trees where adequate growing room is maintained over time. Remember to consider the hazards of ladder fuels. Multiple sizes and ages of trees might increase the fire hazard from Zone 3 into Zone 2, particularly on steep slopes.

A greater number of wildlife trees can remain in Zone 3. Make sure that dead trees pose no threat to power lines or fire access roads.

While pruning generally is not necessary in Zone 3, it may be a good idea from the standpoint of personal safety to prune trees along trails and fire access roads. Or, if you prefer the aesthetics of a well-manicured forest, you might prune the entire area. In any case, pruning helps reduce ladder fuels within the tree stand, thus enhancing wildfire safety.

Mowing is not necessary in Zone 3.

Any approved method of slash treatment is acceptable for this zone, including piling and burning, chipping or lop-and-scatter.

Special Recommendations

Tree spacing guidelines do not apply to *mature* stands of aspen trees where the recommendations for ladder fuels have been complied with. In areas of aspen regeneration and young trees, the spacing guidelines should be followed.

Brush and shrubs

Brush and shrubs are woody plants, smaller than trees, often formed by a number of vertical or semi-upright branches arising close to the ground. Brush is smaller than shrubs and can be either woody or herbaceous vegetation.

On nearly level ground, minimum spacing recommendations between clumps of brush and/or shrubs is 2 1/2 times the height of the vegetation. Maximum diameter of clumps should be 2 times the height of the vegetation. As with tree crown spacing, all measurements are made from the edges of vegetation crowns (Figure 3).

For example: For shrubs 6 feet high, spacing between shrub clumps should be 15 feet or more apart (measured from the edges of the crowns of vegetation clumps). The diameter of shrub clumps should not exceed 12 feet (measured from the edges of the crowns). Branches should be pruned to a height of 3 feet.

Grasses

Keep dead, dry or curing grasses mowed to less than 6 inches. Defensible space size where grass is the predominant fuel can be reduced (Figure 5) when applying this practice.

Windthrow

In Colorado, certain locations and tree species, including lodgepole pine and Engelmann spruce, are especially susceptible to damage and uprooting by high winds (windthrow). If you see evidence of this problem in or near your forest, or have these tree species, consider the following adjustments to the defensible space guidelines. It is highly recommended that you contact a professional forester to help design your defensible space.

Adjustments: If your trees or homesite are susceptible to windthrow and the trees have never been thinned, use a stem spacing of diameter plus five instead of the guides listed in the Zone 3 section. Over time (every 3 to 5 years) *gradually* remove additional trees. The time between cutting cycles allows trees to “firm up” by expanding their root systems. Continue this periodic thinning until the desired spacing is reached.

Also consider leaving small clumps of trees and creating small openings on their lee side (opposite of the predominant wind direction). Again, a professional forester can help you design the best situation for your specific homesite and tree species. Remember, with species such as lodgepole pine and Engelmann spruce, the likelihood of a wildfire running through the tree tops or crowns (crowning) is closely related to the overabundance of fuels on the forest floor. Be sure to remove downed logs, branches and *excess* brush and needle buildup.

Maintaining Your Defensible Space

Your home is located in a forest that is dynamic, always changing. Trees and shrubs continue to grow, plants die or are damaged, new plants begin to grow, and plants drop their leaves and needles. Like other parts of your home, defensible space requires maintenance. Use the following checklist each year to determine if additional work or maintenance is necessary.

% slope	D-space size (uphill, downhill, sidehill)
0 - 20 %	30'
21 - 40%	50'
> 40%	70'

Figure 6: Minimum defensible space size for grass fuels.

Defensible Space and FireWise Annual Checklist

- ☐ Trees and shrubs are properly thinned and pruned within the defensible space. Slash from the thinning is disposed of.
- ☐ Roof and gutters are clear of debris.
- ☐ Branches overhanging the roof and chimney are removed.
- ☐ Chimney screens are in place and in good condition.
- ☐ Grass and weeds are mowed to a low height.
- ☐ An outdoor water supply is available, complete with a hose and nozzle that can reach all parts of the house.
- ☐ Fire extinguishers are checked and in working condition.
- ☐ The driveway is wide enough. The clearance of trees and branches is adequate for fire and emergency equipment. (Check with your local fire department.)
- ☐ Road signs and your name and house number are posted and easily visible.
- ☐ There is an easily accessible tool storage area with rakes, hoes, axes and shovels for use in case of fire.
- ☐ You have practiced family fire drills and your fire evacuation plan.
- ☐ Your escape routes, meeting points and other details are known and understood by all family members.
- ☐ Attic, roof, eaves and foundation vents are screened and in good condition.



FIREWISE is a multi-agency program that encourages the development of defensible space and the prevention of catastrophic wildfire.

Stilt foundations and decks are enclosed, screened or walled up.

- ☐ Trash and debris accumulations are removed from the defensible space.
- ☐ A checklist for fire safety needs inside the home also has been completed.

This is available from your local fire department.

References

Colorado State Forest Service, Colorado State University, Fort Collins, CO 80523-5060; (970) 491-6303:

- *FireWise Construction — Design and Materials*
- *Home Fire Protection in the Wildland Urban Interface*
- *Wildfire Protection in the Wildland Urban Interface*
- *Landowner Guide to Thinning*

Colorado State University Cooperative Extension, 115 General Services Bldg., Fort Collins, CO 80523-4061; (970) 491-6198; E-mail: resourcecenter@ucm.colostate.edu:

- 6.303, *Fire-Resistant Landscaping*
- 6.304, *Forest Home Fire Safety*
- 6.305, *FireWise Plant Materials*
- 6.306, *Grass Seed Mixes to Reduce Wildfire Hazard*
- 7.205, *Pruning Evergreens*
- 7.206, *Pruning Shrubs*
- 7.207, *Pruning Deciduous Trees*



This fact sheet was produced in cooperation with the Colorado State Forest Service.

*Wildfire Hazard Mitigation Coordinator,
Colorado State Forest Service.*

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ADDITIONAL BACKGROUND AND GUIDELINES ON GENERAL RECOMMENDATIONS

HOME CONSTRUCTION AND MITIGATION

Community responsibility for self protection from wildfire is essential. Educating homeowners is the first step in promoting shared responsibility. Part of the educational process is defining the hazard and risks both at the community-level and the individual parcel-level.

Communities in the study area were rated for hazard – that is, the likelihood and severity of fire outcomes (fire effects) that result in damage to people, property, and/or the environment. None of the communities reviewed in the community-level assessment were found to be an extreme hazard. However, all 23 communities were rated at very high or high hazard. Construction type, condition, age, the fuel loading of the structure/contents, and position are contributing factors in making homes more susceptible to ignition. Community hazard ratings are also influenced by factors related to the likelihood of rapid fire growth and spread due to fast burning or flashy fuel components, and other topographic features contributing to channeling winds and promotion of intense fire behavior. It is important to remember that these communities are rated relative to what is customary for interface in the Rocky Mountains and may bear little resemblance to similarly rated communities in other areas such as California chaparral or southern hardwood forests.

All of the communities, especially those with very high and high hazard ratings, should consider implementing a parcel-level analysis. Hotchkiss Fire Protection District has already completed this task for residences in their response area. This information should be updated every few years, especially if additional development occurs. Like many interface communities in the west, homes in Delta County are primarily found in clusters of development, often with relatively unbroken native fuel beds separating them. Even homes that are outside of a defined CWPP community will most likely have hazard levels similar to homes within nearby, evaluated communities. It will be important to prioritize parcel-level hazard surveys of these individual properties along with parcel-level surveys of the surrounding interface communities.

HOME CONSTRUCTION

All new construction within the study area should follow guidelines outlined in the Delta County Community Fire Plan (2005). Changes to existing structures should be done with the assistance of a fire department representative or Fire Protection Engineer, who will know which guidelines are appropriate for new or remodeled structures. Recommended alterations to a home may include: double pane windows, noncombustible siding, Class A roof materials, soffits, gable vents, etc.

General Home Construction Considerations:

- Enclose under decks so firebrands do not fly under and collect.
- Use glass skylights; plastic will melt and allow embers into the home.
- Enclose eaves and soffits.
- Use non-flammable fencing if attached to the house such as metal.
- Cover openings with 1/8" metal screen to block fire brands and embers from collecting under the home or deck.
- The roof is the most important element of the home. Use rated roofing material.

Building Materials

- Use rated roofing material. Roofing material with a Class A, B or C rating is fire resistant and will help keep the flame from spreading. Examples include:
 - Composition shingle
 - Metal
 - Clay
 - Cement tile
- Use fire-resistant building materials on exterior walls. Examples include:
 - Cement
 - Plaster
 - Stucco
 - Masonry (concrete, stone, brick or block)
- While vinyl is difficult to ignite, it can fall away or melt when exposed to extreme heat.
- Use double-paned or tempered glass. Double-pane glass can help reduce the risk of fracture or collapse during an extreme wildfire. Tempered glass is the most effective. For skylights, glass is a better choice than plastic or fiberglass.
- Enclose eaves, fascias, soffits and vents. 'Box' eaves, fascias, soffits and vents, or enclose them with metal screens. Vent openings should be covered with 1/8" metal screen.
- Protect overhangs and other attachments. Remove all vegetation and other fuels near overhangs and other attachments (room additions, bay windows, decks, porches, carports and fences). Box in the undersides of overhangs, decks and balconies with noncombustible or fire-resistant materials. Fences constructed of flammable materials like wood should not be attached directly to the house.
- Anything attached to the house (decks, porches, fences and outbuildings) should be considered part of the house. These act as fuel bridges, particularly if constructed from flammable materials.
- If a wood fence is attached to the house, separate the fence from the house with a masonry or metal barrier.
- Decks and elevated porches should be kept free of combustible materials and debris.
- Elevated wooden decks should not be located at the top of a hill. Consider a terrace.

Recommendations

- Conduct a parcel-level wildfire hazard analysis for all the homes in the study area, especially those with an extreme or very high rating. As mentioned above, Hotchkiss FPD has already completed parcel-level analysis for residents in their district. Completing this process will facilitate the following important fire management practices:
 - Establish a baseline hazard assessment for individual homes in CWPP communities
 - Educate the community through the presentation of the parcel-level Hazard-Risk Analysis at neighborhood public meetings
 - Identify defensible space needs and other effective mitigation techniques
 - Identify and facilitate "cross-boundary" projects
- Make community achievement of national Firewise status a priority
- Maintain pre-attack/operational plan for the study area. The pre-attack plan assists fire agencies in developing strategies and tactics that will mitigate damage when incidents do occur
- Ask homeowner's associations and other neighborhood groups to promote the development of defensible space and Firewise plantings.

- Eliminate any covenants or deed restrictions that require or endorse the use of flammable building materials such as shake roofs. Specific publications that address these issues can be found at: www.firewise.org.

INFRASTRUCTURE

Road Signs and Home Addresses

The majority of the streets within the county are adequately labeled with reflective signage. There are still a few places where signs are missing or it is unclear which road is which. Delta County has worked extensively on home addresses; this effort includes changing existing addresses and adding addresses (even for outbuildings). White numbers on red backgrounds have been posted for all structures and are visible from main roads. While not reflective, they are fairly visible at night. The new addresses and markers are an improvement for emergency response. In addition, Orchard City is in the process of installing 1,600 reflective white-on-green address markers. Proper reflective signage is a critical operational need. Knowing at a glance the difference between a road and a driveway (and which houses are on the driveway) cuts down response time by reducing navigation errors. This is especially true for out-of-district responders who do not have the opportunity to train on access issues specific to the response area. The value of the time saved, especially at night and in difficult conditions, cannot be overstated: it can make the difference between lives saved and lost.

However, by giving every outbuilding an address, there is additional confusion when determining how many residences are accessed from each driveway, especially when the driveways are long and structures cannot be seen. The new addresses are an improvement overall, and unless they become a consistent detriment to life safety, there is no reason to redo this work.

Recommendations

- Ensure that every intersection and street name change should have adequate, reflective signage.
- Develop a program of replacing worn or difficult to read street signs. Include specifications and input from County officials, developers, HOAs, and the fire protection districts.
- Lot markers should be replaced with address markers as soon as a home has a certificate of occupancy.
- Where dead end and private road markers occur, the addresses of homes beyond the marker should be clearly posted. This can be done with a group address marker, for example, "14391-14393 Wilderness Lane"

PREPAREDNESS PLANNING

In order to reduce potential conflicts between evacuating citizens and incoming responders, it is desirable to have nearby evacuation centers for citizens and staging areas for fire resources. This is especially important in communities with single access and a high population density. Evacuation centers should include heated buildings with facilities large enough to handle the population. Schools and churches are usually ideal for this purpose. Fire staging areas should contain large safety zones, easy access and turnarounds for large apparatus, a significant fuel break between the fire and the escape route, topography conducive to radio communications, and access to water. Golf courses and large irrigated meadows may make good safety zones for firefighting forces. Local responders are encouraged to pre-plan the use of potential staging areas with property owners.

- Identify and pre-plan primary escape routes for all CWPP communities. Emergency management personnel should be included in the development of pre-plans for citizen evacuation. Re-evaluate and update these plans as necessary.
- Educate citizens on the proper escape routes and evacuation centers to use in the event of an evacuation. This also applies to animal rescue.
- Ensure the existing reverse 911 system includes wildfire notifications.
- Perform response drills to determine the timing and effectiveness of escape routes and fire resource staging areas.

PUBLIC EDUCATION

There is likely to be a varied understanding among property owners of the hazards associated with the threat of a wildfire. An approach to wildfire education that emphasizes safety and hazard mitigation on an individual property level should be undertaken, in addition to fire department efforts at risk reduction.

Recommendations

- Provide communities and homeowners fire prevention educational materials through personal contact. Fire prevention and wildfire hazard mitigation education should be an ongoing effort.
- Implement fire prevention, fire preparedness, defensible space, and hazard reduction recommendations for each community.
- Obtain “Smokey Bear” signs for use along entrances to communities to inform the public of the current fire danger and to promote fire prevention. Ensure that fire danger messages are kept up-to-date with Daily Fire Danger broadcast to maintain credibility and effectiveness.
- Create an evacuation plan that is presented and distributed to residents.
- Hold multiple meetings per year to educate residents on wildfire risk, defensible space, and evacuation.

Use these web sites for a list of public education materials and for general homeowner education:

<http://csfs.colostate.edu/pages/wf-protection.html>

http://www.fs.fed.us/fire/links/links_prevention.html

<http://www.or.blm.gov/nwfire/docs/Livingwithfire.pdf>

<http://www.firewise.org>

<http://www.SouthwestColoradoFires.org>

<http://www.blm.gov/nifc/st/en/prog/fire.1.html>

<http://www.safeco.com/insurance-101/disaster-preparedness/wildfire>

- Provide citizens with the findings of this study including:
 - Levels of risk and hazard.
 - Values of fuels reduction programs.
 - Consequences of inaction for the entire community.
- Create a Firewise Council or similar WUI citizen advisory committee to promote the message of shared responsibility. Too often, advice from government agencies can be construed as self serving. Consequently, citizens may resist acting on this information. The Firewise Council should consist of local citizens and members of the local FPD and its primary goals should be:
 - Bringing the concerns of the residents to the prioritization of mitigation actions.
 - Selecting demonstration sites.
 - Assisting with grant applications and awards.
 - Make use of regional and local media to promote wildfire public education messages in the fire district.
 - Coordinate with West Region Wildfire Council
- Maintain a current wildfire educational presentation explaining the concepts of defensible space and wildfire hazard mitigation. The information in this countywide CWPP should be incorporated into that presentation for the education of homeowners countywide. This could be promoted through informational gatherings sponsored by the fire department, homeowners associations or neighborhood gatherings such as local festivals, and school events. It should also be presented during times of extreme fire danger and other times of heightened awareness concerning wildfire.

WATER SUPPLY

Water is a critical fire suppression issue in the study area, as it is in many communities in Colorado. While the municipal cities in the county have an adequate hydrant network, many of the communities identified do not. Flow rates are not adequate in all areas for large-scale suppression activities and hydrants are not tested annually.

RECOMMENDATIONS

- Areas with no water or inadequate water supply should be evaluated to improve existing hydrants, establish a stored water supply, or use firefighting resources.
- Map existing hydrants, water sources and their volume. Make this information available for emergency personnel in and out of the district.
- Make sure cisterns are well marked with their capacity and are kept clear of vegetation.
- Conduct annual testing for fire hydrant function and capacity.
- FPD trainings should focus on drafting operations frequently throughout the spring and summer to ensure apparatus can fill in the event of a wildfire.

APPENDIX B: PROJECT COLLABORATION EFFORT

THE NEED FOR A CWPP

In response to the Healthy Forests Restoration Act (HFRA), and in an effort to create incentives, Congress directed interface communities to prepare a Community Wildfire Protection Plan (CWPP). Once completed, a CWPP provides statutory incentives for the federal agencies to consider the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects. CWPPs can take a variety of forms based on the needs of the people involved in their development. CWPPs may address issues such as wildfire response, hazard mitigation, community preparedness, structure protection, or all of the above. Colorado Senate Bill 09-001 provided revised minimum standards and guidelines for the development of CWPPs in Colorado. The minimum requirements for a CWPP specify that collaboration between local and state government representatives, in consultation with federal agencies and other interested parties. The plan must exhibit diverse collaboration with an emphasis on involvement of community members/representatives. This appendix describes and documents the process used to collaborate between the core planning group, stakeholders, and community representatives during the development of this plan.

PROJECT FUNDING AND COORDINATION

Delta County used grants and Title III funding to complete a community-wide hazard and risk assessment and the resultant Delta County CWPP. The funding allowed the County to develop the plan with professional planning assistance from Anchor Point Group and AMEC Earth & Environmental.

Future community education and private landowner assistance will be coordinated through the West Region Wildfire Council in concert with the Colorado State Forest Service (CSFS), Delta County, Montrose Interagency Fire Management Unit, and the fire protection districts. These groups will continue to identify funding for the implementation of mitigation projects.

INTER-AGENCY COLLABORATION

ROLES AND RESPONSIBILITIES

To be successful, wildfire mitigation in the interface must be a community-based, collaborative effort. Stakeholders and Delta County will have the greatest responsibility for implementing the recommended mitigation projects. The CSFS and the US Forest Service (USFS)/Bureau of Land Management (BLM) are valuable participants in addressing cross-boundary projects throughout the area.

Nearly all of the recommendations from this report affect private land or access roads to private land. There are also mitigation recommendations for individual structures, which are the responsibility of the homeowner. Homeowners will, however, need a Wildfire Mitigation Advocate to help them implement these recommendations. The best defensible space will be created with oversight and expert advice from the fire district and/or government forestry personnel. One-on-one dialog will continue to build the relationship with community members. This level of involvement will allow agencies to keep track of the progress and update this plan to reflect the latest modifications at the community level.

THE COLLABORATIVE PROCESS

CORE TEAM

The formation of an operating group (a core team) is the initial step in developing a CWPP. The operating group should represent local governments, local fire authorities, and the state agency(ies) responsible for forest management. Members of the core team then engage local representatives in the CWPP development process to share and exchange perspectives, priorities, and other pertinent information relevant to the CWPP planning process and development of the final CWPP report.

Numerous federal, State, local, and private agencies (stakeholders) participated in this CWPP. These stakeholders included:

- Delta County Sheriff's Office
- Delta County Commissioners
- Montrose Interagency Fire Management Unit
- Delta Fire Protection District
- Cedaredge Fire Protection District
- Crawford Fire Protection District
- Hotchkiss Fire Protection District
- Paonia Fire Protection District
- BLM
- USFS
- CSFS
- Colorado Division of Emergency Management
- Delta County residents
- West Region Wildfire Council
- Anchor Point Group
- AMEC Earth and Environmental

COLLABORATION TOOLS

Development of the Delta County CWPP was conducted through an online project collaboration tool known as Basecamp. Basecamp provided a homogeneous means for the sharing of information, data files, mapping, and imagery resources within the core team and provided an open forum for project communications amongst a diverse team of local representatives, fire authorities, forest management, and plan coordinators. Use of the Basecamp tool ensured on-time and on-scale project management and team collaboration in the final development of the Delta County CWPP.

STAKEHOLDER AND PUBLIC INVOLVEMENT

The true collaborative process was initiated through a stakeholder meeting held on August 26, 2010 and the Delta Sheriff's Office. The purpose of the meetings was to outline the approach to the project and bring all past, current, and future efforts and needs to the table. The primary focus was on the identification and delineation of CWPP communities, areas of concern, and values at risk. Best practices and anticipated "roadblocks" were identified.

Following the stakeholder meeting was a series of individual meetings between Anchor Point Group staff and County and fire district representatives during the field assessment of identified communities. The Basecamp online collaboration tool was used throughout the project to present the results, share documents, share and finalize community boundaries, and discuss

any issues or concerns going into the draft CWPP report. In addition, the planning effort was an agenda item on the West Region Wildfire Council regular meetings held every other month, which included conference call participation with the plan's consultants.

An extensive as well as targeted public and community outreach effort took place during the development of this plan. An effort was made to identify and request a Wildfire Mitigation Advocate (WMA), for each identified CWPP community within Delta County. The stakeholder group provided input on suggested WMAs. These suggested WMAs were contacted by phone by the West Region Wildfire Council Community Wildfire Protection Plan Coordinator as well as by mail and targeted emails. A public survey also solicited interested individuals that would like to become WMAs. The role of the WMA is to:

- Act as a community liaison and maintain a working relationship with their fire chief, federal, state and county representatives
- Become educated, and educate others on the importance of being Firewise
- Know how to leverage the technical expertise and financial assistance of partners to reach the goals of their community
- Spread the word of available grant funds to the people in their community
- Help their community connect with the resources necessary to accomplish the mitigation recommendations outlined for their community

Those interested in becoming a Wildfire Mitigation Advocate (WMA) returned a form to the West Region Wildfire Council Community Wildfire Protection Plan Coordinator indicating such. The WMA may be contacted in the future by entities such as the WRWC, CSFS, County emergency management, fire chiefs, Home Owner's Association (HOA) presidents and others that may offer assistance to guide them along in the implementation efforts.

The WMA served as the primary contact resource for the core team in notifying the communities, distributing wildfire information, and soliciting feedback from members of the communities. Notices of public meetings and information pamphlets were mailed to the WMAs for distribution to members of the Delta County communities. The community collaboration efforts conducted through the WMAs allowed for the solicitation of resident involvement by a community peer (i.e., the WMA) in the effort to increase wildfire knowledge and public involvement. These WMAs will be important for future implementation of this plan. A contact list of the community WMAs is maintained by the West Region Wildfire Council Community Wildfire Protection Plan Coordinator and on file with County emergency management.

In addition to the community collaboration efforts, a public meeting was also held to advertise the planning effort and get direct input and feedback from county residents. The meeting agenda included the following items:

- Overview of the Delta County CWPP planning process
- Fire behavior analysis and communities at risk
- Recommended loss reduction strategies and fuels treatments
- Ongoing Fire Management/Mitigation Efforts/Funding sources

Representatives from the local fire districts, Montrose Interagency Fire Management Unit (MIFMU), Bureau of Land Management (BLM), US Forest Service (USFS), Colorado State Forest Service, spoke about fire management efforts and funding sources. The West Region Wildfire Council CWPP Coordinator discussed how residents can provide feedback and stays

involved. The meeting had an open forum for comments, questions and answers and a drawing to reward those who took the time to participate. The second half of the meeting was an open house where drafts of the community descriptions, recommendations and associated maps were made available for review and markup. Comments and changes to maps or fuels treatment recommendations were collected and were incorporated into the final document where appropriate. In general the meetings indicated that there was support for the plan and its recommendations and interest in convening community meetings to start the process of implementation.

Listed below is a summary of the meeting dates and locations and the number of people in attendance at the meetings:

- Cedaredge Fire Station - February 23, 2011. 44 people attended.

Meeting announcements and sign in rosters are provided at the end of this appendix. The following are photos taken during the meetings.

Photos from the public meeting at the Cedaredge Fire Station on February 23, 2011



A concerted effort was made to obtain additional public comments on the plan before it was finalized. The plan was posted on the County website and in hardcopy format at the Delta and Hotchkiss libraries and advertised through County press releases. In addition, an effort was made to engage representatives from the CWPP communities in the draft plan review process. The West Region Wildfire Council CWPP Coordinator emailed the identified WMAs a copy of

their community's section for review and comment. Hardcopies were mailed to some communities' WMA where an email address was not available. Comments were solicited during a minimum three week review period. Comments were recorded and shared with the stakeholder group and incorporated into the document where appropriate. Table B1 provides a list of comments received and the corresponding responses given during the plan review period.

Table B1. Delta County Public Review: Comments and Responses

Commenter	Subject	Comment	Response
Dawn Sudmeier - Colby Canyon HOA president	Risk to water treatment plant	Colby Domestic Water Company has a treatment plant at the top of Ward Creek Road, north of Uintah. Obviously this is an extremely high risk area at the top of Colby Canyon. There is a treatment plant and 100,000 gallon storage tank. I'm the President of the Board. The operator is Francis Winston.	Noted in the community description and added to discussion of water treatment plans in the Area of Special Interest section. Added recommendation for further risk assessment.
Dawn Sudmeier - Colby Canyon HOA president	Colby Canyon section	Everything else looked fine in the Colby Canyon section.	
Robert Kiser, Paonia resident	Community name change	Change name from 'P Hill' to 'Cedar Hill'	Made change in plan

Comments on the draft plan were also solicited from the core group by the plan's consultants. An initial draft of the plan was posted on Basecamp for review and comment. A second, more complete draft was developed for public review and additional stakeholder input. This draft was reviewed by the County, local fire authorities, West Region Wildfire Council CWPP Coordinator, the Colorado State Forest Service District Forester, and the Montrose Interagency Fire Management Unit (BLM and USFS). Feedback on the draft was captured in email and on Basecamp, and on marked-up hardcopies. Hotchkiss fire in particular provided additional local insight and GIS data of existing fuel treatments to improve the plan. This feedback, in addition to the public feedback, was integrated into a third draft. Following the core group's review this final CWPP was created.

PUBLIC SURVEYS

In addition to the public meetings, a resident survey was also provided through the Zoomerang Survey website to assist the core team in identifying local values and understanding the general attitude residents have about hazards and risks of wildfire within their communities. This online resource was made available to the public and was launched on February 1, 2011 and was closed on April 5, 2011. Hardcopies of the survey were also made available at the public meetings. The survey consisted of 28 questions inquiring on topics such as, but not limited to; importance values for the area, concerns for wildfire risk, concerns on wildfire damage to various resources, overall feeling of safety, evacuation awareness, wildfire awareness,

preferences on fuel treatments and defensible space, and overall concerns in addressing a wildfire occurrence. Thirty-one people completed the survey during that time. Results were used in the development of this plan, particularly to inform the values at risk section, and are detailed below. The results were also summarized in an Excel spreadsheet and shared with the core group on Basecamp.

The graphics below provide a visual summary of the respondents' answers to the posted survey. Additional planning process documentation follows the survey results.

Some of the quotes from the survey included:

"Thank you for your concern! This questionnaire made me think about safety."

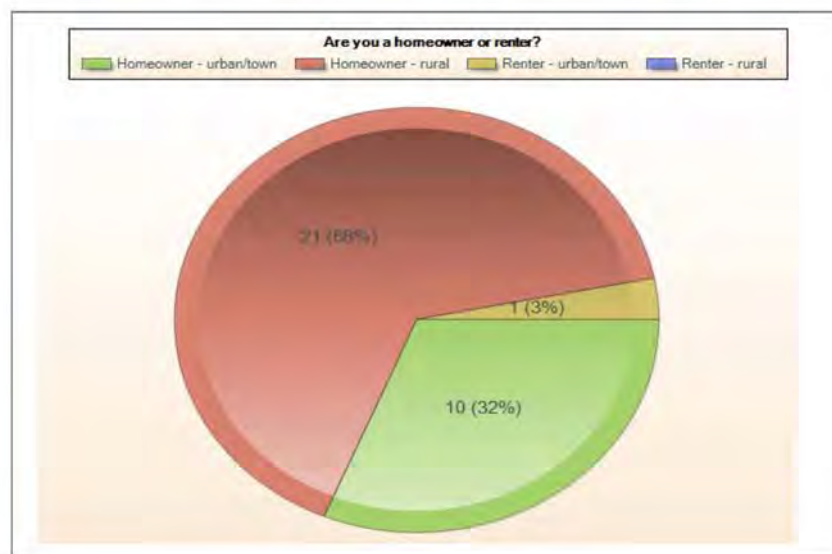
"Thanks for all your effort and hard work!!"

Some of the concerns listed included:

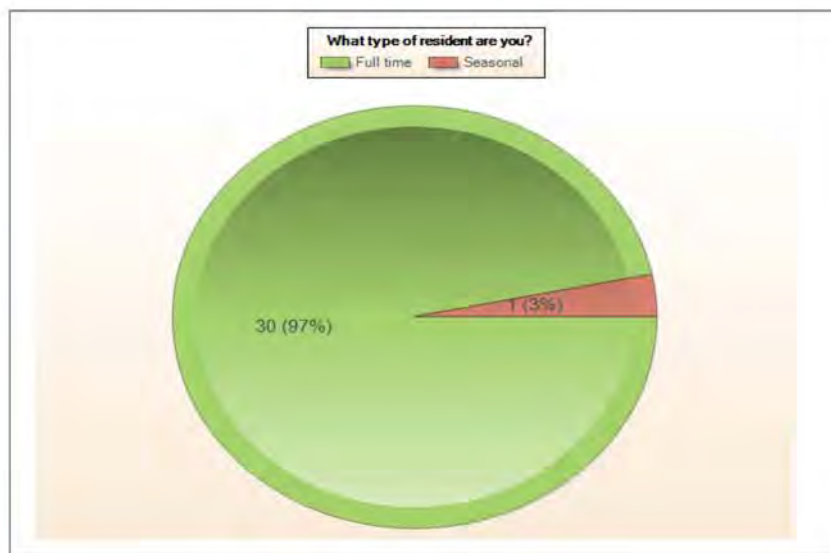
- "Impacts to the local economy – 10"
- "High burning activities in the spring"

Those that listed "Concerned" in the answer to the How safe do you feel from wildland fire lived in Rogers Mesa, Redlands Mesa, Stucker Mesa, and Hotchkiss area.

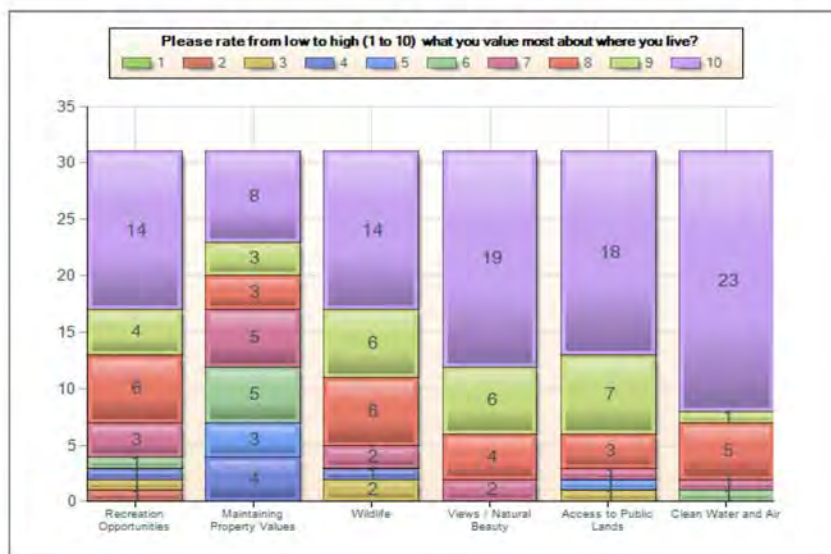
DeltaCounty Community Wildfire Protection Plan Resident Survey: Are you a homeowner or renter?



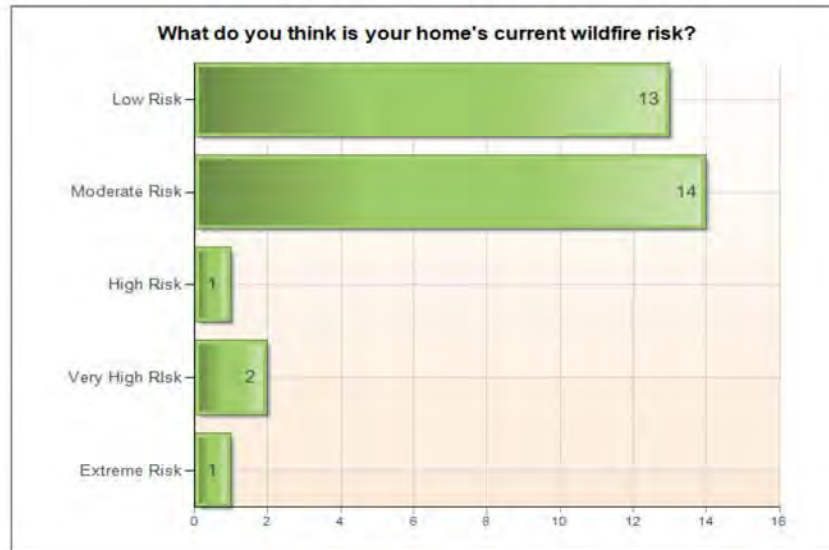
DeltaCounty Community Wildfire Protection Plan Resident Survey: What type of resident are you?



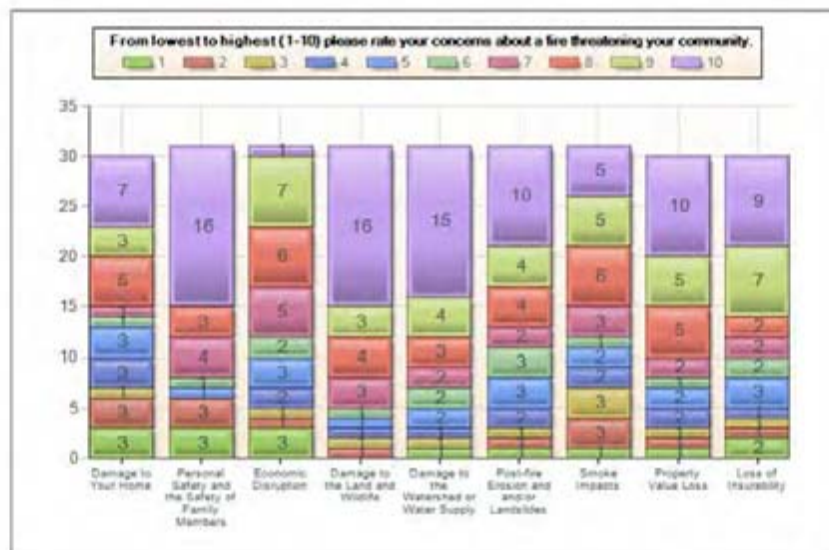
DeltaCounty Community Wildfire Protection Plan Resident Survey: Please rate from low to high (1 to 10) what you value most about where you live?



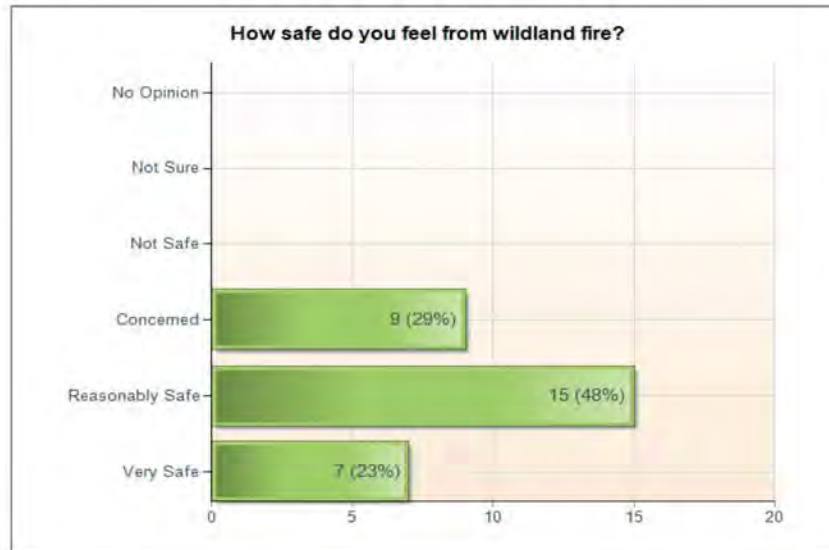
DeltaCounty Community Wildfire Protection Plan Resident Survey: What do you think is your home's current wildfire risk?



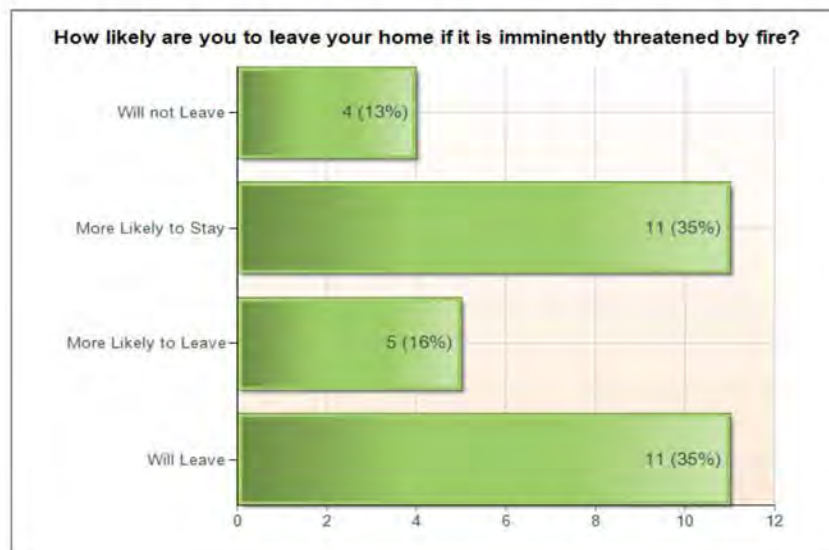
DeltaCounty Community Wildfire Protection Plan Resident Survey: From lowest to highest (1-10) please rate your concerns about a fire threatening your community.



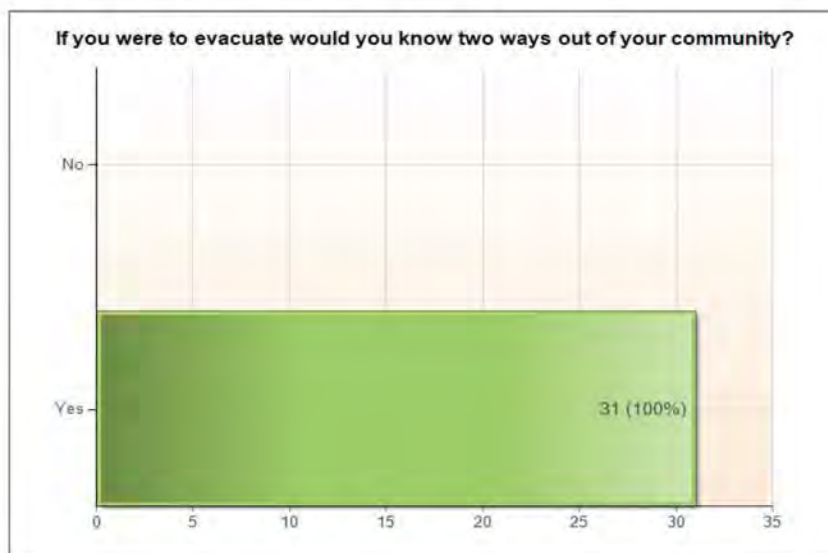
DeltaCounty Community Wildfire Protection Plan Resident Survey: How safe do you feel from wildland fire?



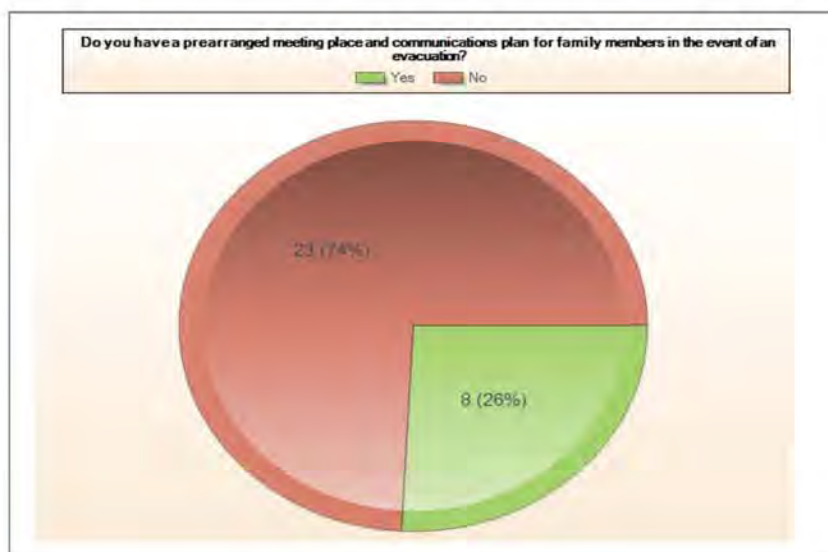
DeltaCounty Community Wildfire Protection Plan Resident Survey: How likely are you to leave your home if it is imminently threatened by fire?



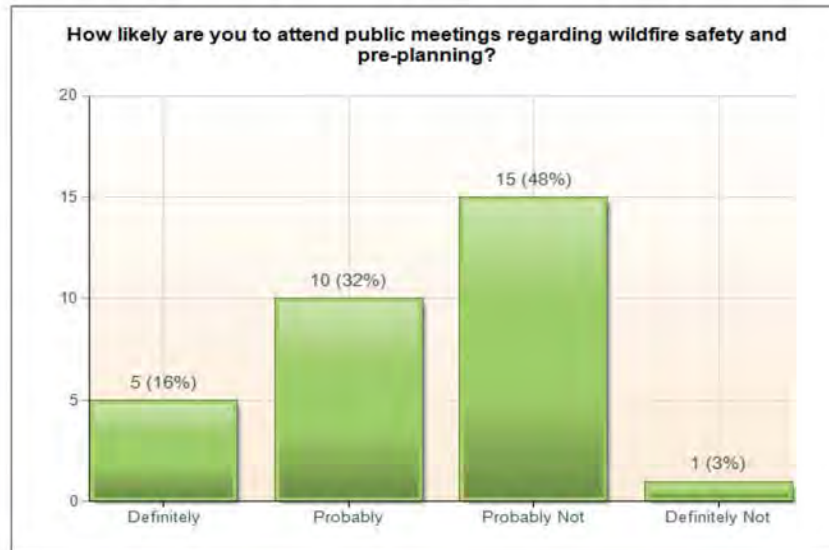
DeltaCounty Community Wildfire Protection Plan Resident Survey: If you were to evacuate would you know two ways out of your community?



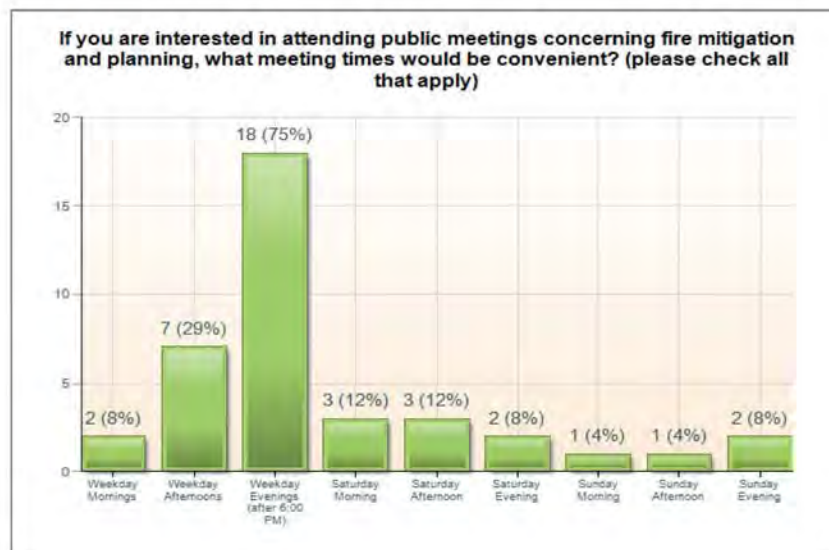
DeltaCounty Community Wildfire Protection Plan Resident Survey: Do you have a prearranged meeting place and communications plan for family members in the event of an evacuation?



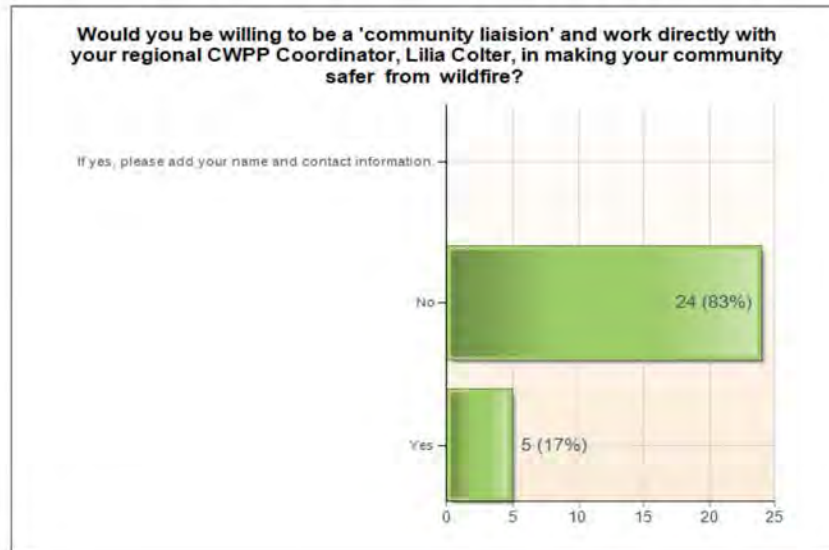
DeltaCounty Community Wildfire Protection Plan Resident Survey: How likely are you to attend public meetings regarding wildfire safety and pre-planning?



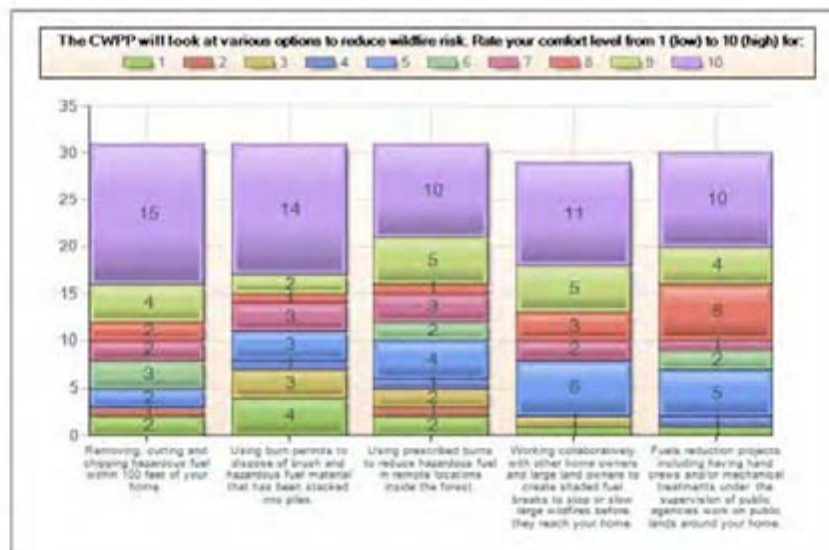
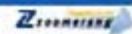
DeltaCounty Community Wildfire Protection Plan Resident Survey: If you are interested in attending public meetings concerning fire mitigation and planning, what ...



DeltaCounty Community Wildfire Protection Plan Resident Survey: Would you be willing to be a 'community liaison' and work directly with your regional CWPP Coordinator, Lilla Colter, in making your community safer from wildfire?
Coord ...

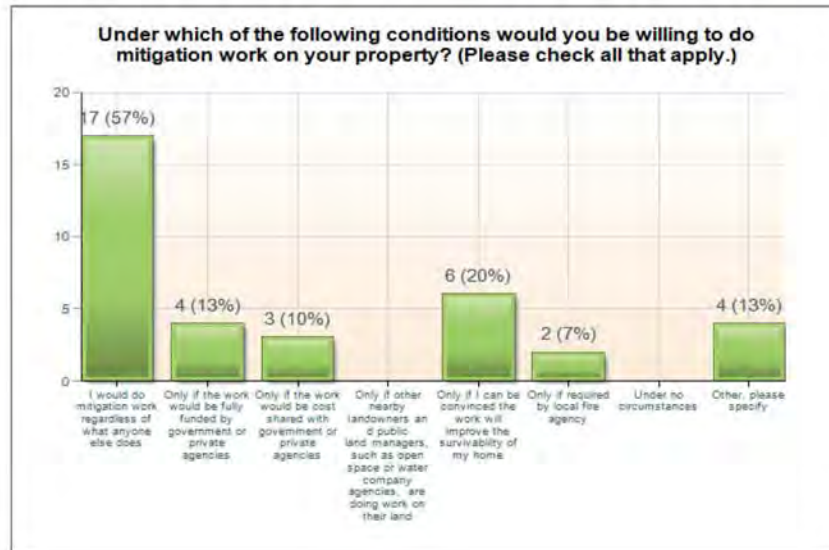


DeltaCounty Community Wildfire Protection Plan Resident Survey: The CWPP will look at various options to reduce wildfire risk. Rate your comfort level from 1 (lo ...

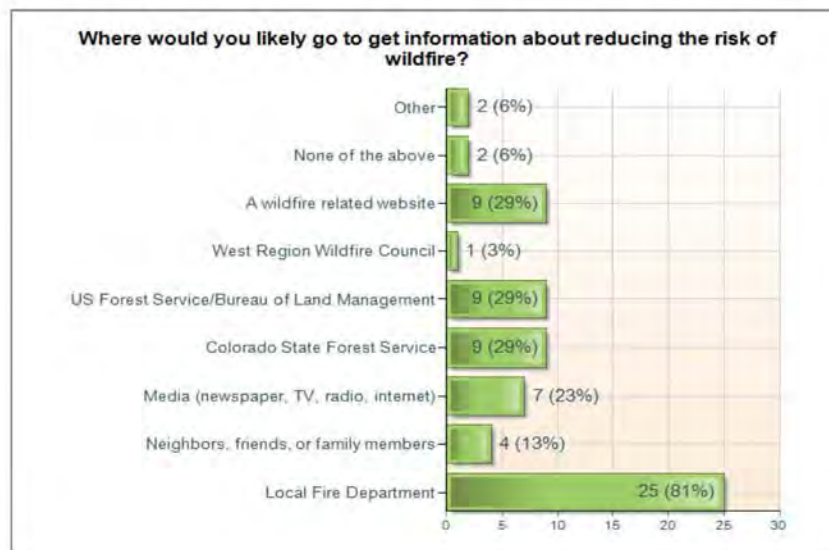


DeltaCounty Community Wildfire Protection Plan Resident Survey: Under which of the following conditions would you be willing to do mitigation work on your proper

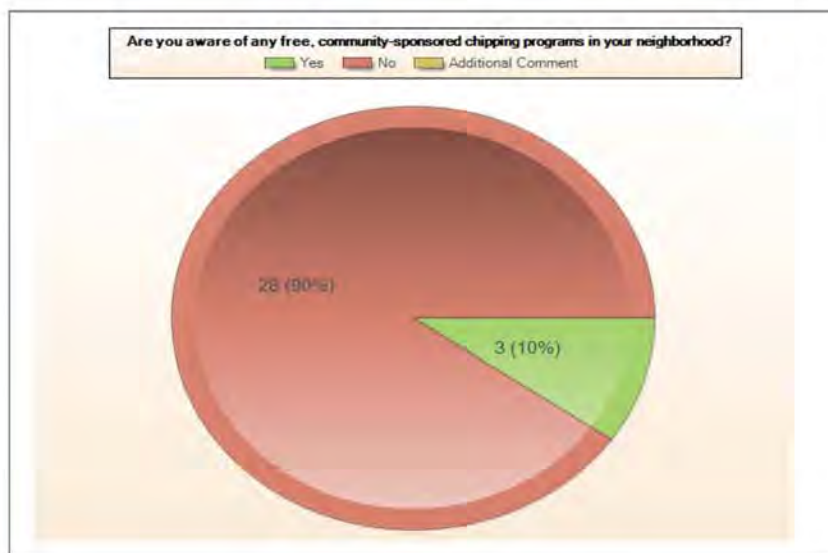
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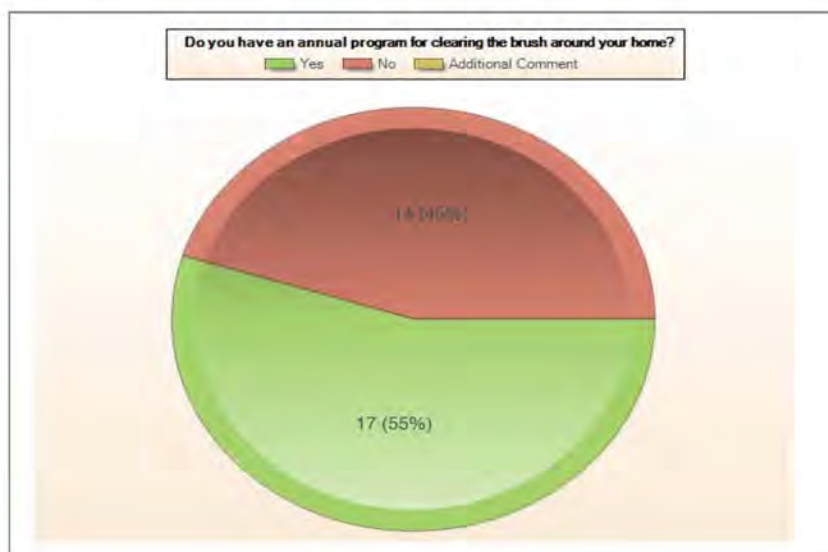
DeltaCounty Community Wildfire Protection Plan Resident Survey: Where would you likely go to get information about reducing the risk of wildfire?



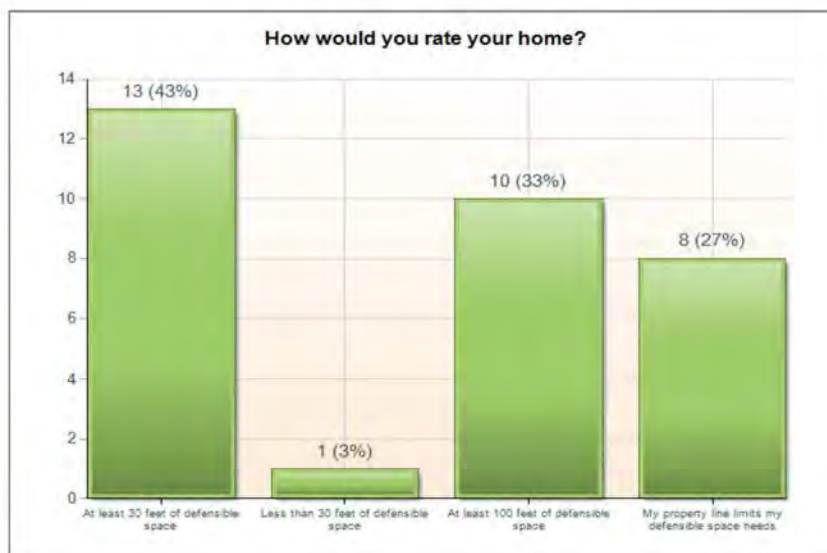
DeltaCounty Community Wildfire Protection Plan Resident Survey: Are you aware of any free, community-sponsored chipping programs in your neighborhood?



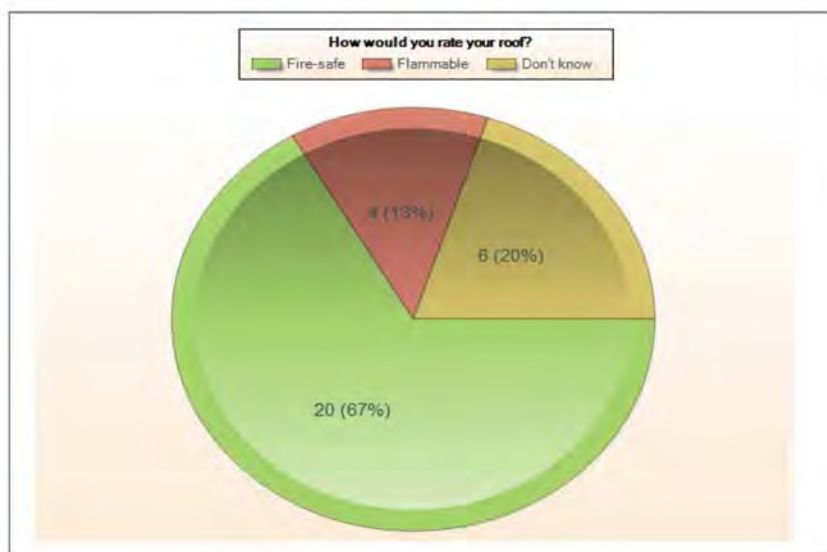
DeltaCounty Community Wildfire Protection Plan Resident Survey: Do you have an annual program for clearing the brush around your home?



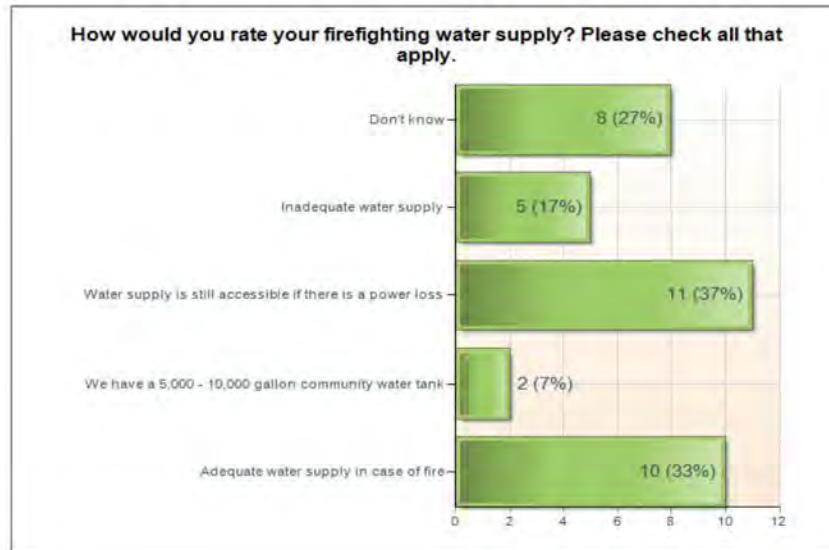
DeltaCounty Community Wildfire Protection Plan Resident Survey: How would you rate your home?



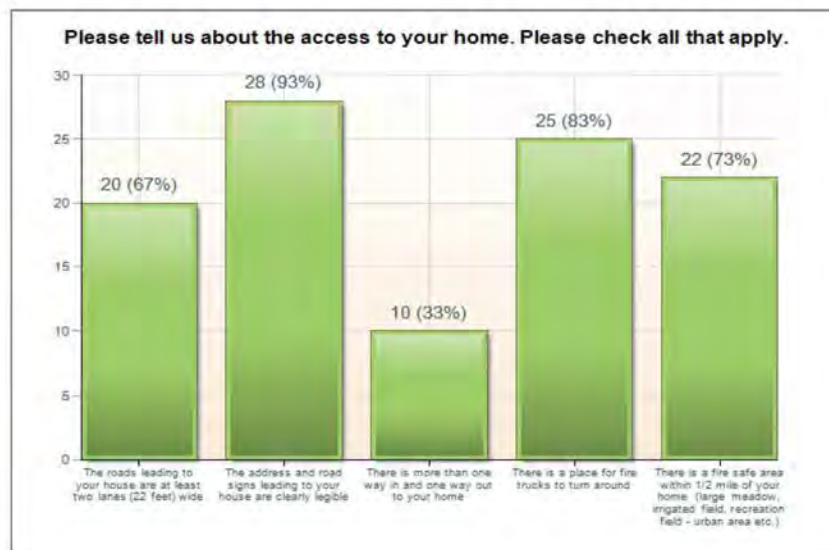
DeltaCounty Community Wildfire Protection Plan Resident Survey: How would you rate your roof?



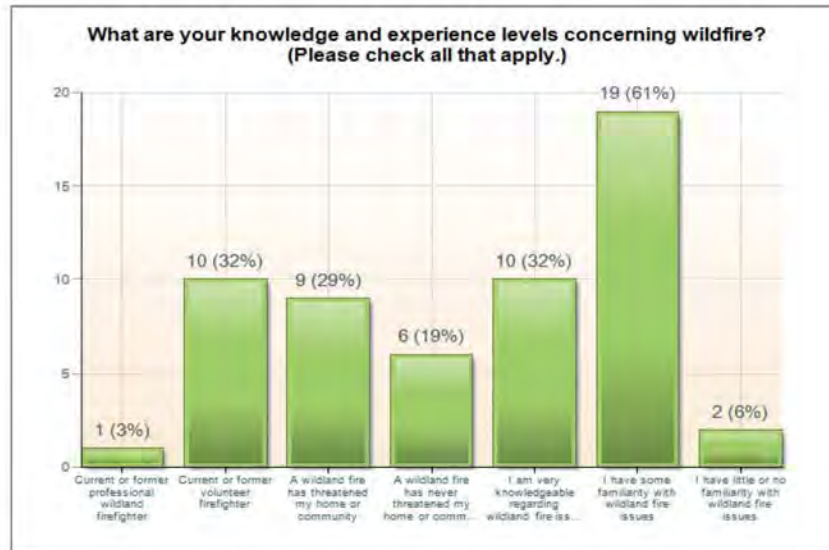
DeltaCounty Community Wildfire Protection Plan Resident Survey: How would you rate your firefighting water supply? Please check all that apply.



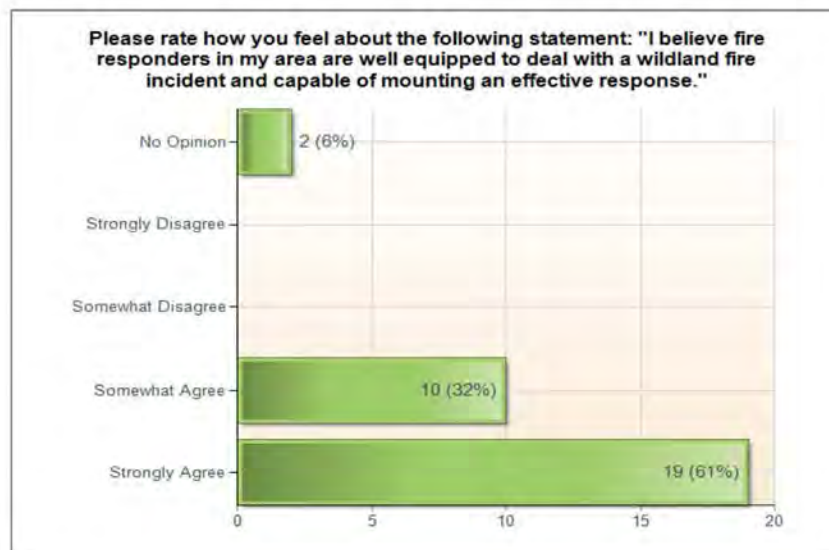
DeltaCounty Community Wildfire Protection Plan Resident Survey: Please tell us about the access to your home. Please check all that apply.



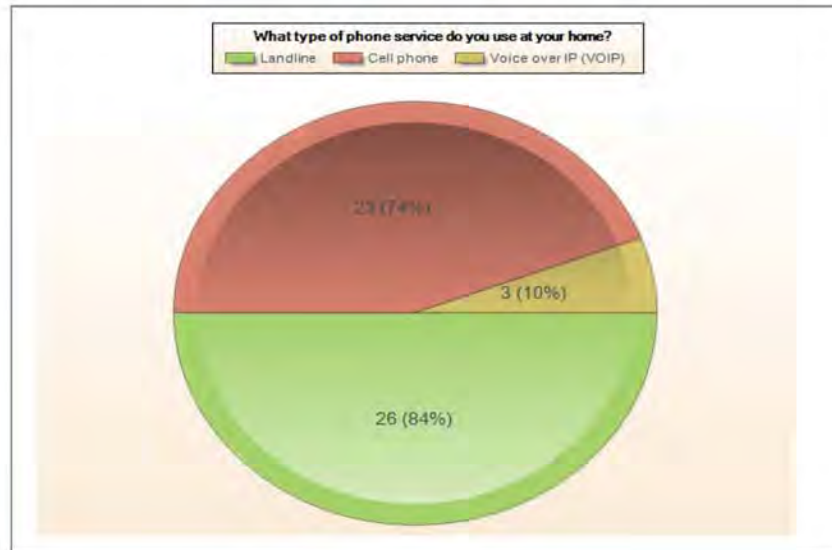
DeltaCounty Community Wildfire Protection Plan Resident Survey: What are your knowledge and experience levels concerning wildfire? (Please check all that apply.)



DeltaCounty Community Wildfire Protection Plan Resident Survey: Please rate how you feel about the following statement: "I believe fire responders in my area are ...



DeltaCounty Community Wildfire Protection Plan Resident Survey: What type of phone service do you use at your home?



ADDITIONAL PLANNING PROCESS DOCUMENTATION**Letter of invitation to public meetings sent to at least one Wildfire Mitigation Advocate within each CWPP community**

DELTA COUNTY, COLORADO
EMERGENCY PREPAREDNESS DEPARTMENT

Rob Fiedler, Director

P.O. Box 172 • Delta • Colorado • 81416-0172

Phone: (970) 874-2004 Fax: (970) 874-2021

www.deltagov.com

February 4, 2011

Dear Delta County resident,

Anchor Point Group, AMEC, and the West Region Wildfire Council would like to invite you to attend a public meeting on behalf of Delta County to learn about your Community Wildfire Protection Plan (CWPP).

A CWPP enables the community to participate in planning how it will reduce the risk of wildfire. A CWPP identifies strategic sites for fuel reduction projects across the landscape and jurisdictional boundaries. Further, the CWPP process is effective for improving coordination and communication between emergency response agencies and the community. Spending an adequate amount of time developing a CWPP can help clarify and refine priorities to protect life, property, infrastructure, and valued resources. This process can lead communities through critical discussions about private and public land management, as well as identifying opportunities for wildfire mitigation within the wildland urban interface.

Once completed, the CWPP can improve access to funding sources for wildfire mitigation on both public and private lands. *Federal financial assistance for hazardous fuel reduction projects on non-federal lands is available through state and federal partners for wildland urban interface communities identified in CWPPs.*

Delta County Community Wildfire Protection Plan Meeting:

Wednesday, February 23rd

Cedaredge Fire Station

7:00 PM

208 South Grand Mesa Drive

Cedaredge, CO 81413

The purpose of the meetings will be to raise awareness of the planning efforts, engage interested citizens, present hazard and risk assessment results, and get input and feedback on preliminary mitigation recommendations.

The Delta County Community Wildfire Protection Plan meetings will be a combination of presentation and open house. The presentation will be facilitated by Anchor Point Group and AMEC and last approximately 30 minutes. Representatives from Delta County, the West Region Wildfire Council, the Colorado State Forest Service, the Bureau of Land Management, and US Forest Service will be in attendance to give an overview of their wildfire programs and mitigation efforts. After the presentations there will be a general Q&A session (approximately 30 minutes); followed by an open house.

To date, the development of the Delta County CWPP has relied on the collaboration of local fire districts, county, state, and federal government representatives, and the West Region Wildfire Council working with Anchor Point Group and AMEC as the wildfire management consultants. ***Your participation to the development of the CWPP at this point is critical to the long term success of the plan.*** The West Region Wildfire Council will be also asking for assistance with an ongoing effort to inform and educate others in the community of the risks of wildfire.

Thank you for your interest in the safety of your community. We look forward to your attendance at one of the upcoming public meetings.



Letter soliciting participation as a community wildfire mitigation advocate (WMA)**Be Your Community's Wildfire Advocate**

The success of Community Wildfire Protection Plan (CWPP) will ultimately be determined by the ability of both the public and community stakeholders to implement the recommendations in order to mitigate wildfire risk and protect life, property, infrastructure, and resources. The West Region Wildfire Council is dedicated to working with the public and our regional partners to implement recommendations to make our communities safer in the event of a wildfire.

The mission of the West Region Wildfire Council is to support interagency efforts to develop and implement plans to better mitigate the threat of catastrophic wildland fire to communities and natural resources in the Colorado counties of Delta, Gunnison, Hinsdale, Montrose, Ouray and San Miguel. This is accomplished by encouraging the exchange of information and collaboration between local communities and state and federal fire managers for fuels management, wildfire suppression, enhancing capability, planning and collaboration.

To support the CWPP and the collaborating agencies, the West Region Wildfire Council is interested in working with individuals in each community to:

- act as a community liaison and maintain a working relationship with their fire chief, federal, state and county representatives
- become educated, and educate others on the importance of being Firewise
- know how to leverage the technical expertise and financial assistance of partners to reach the goals of their community
- spread the word of available grant funds to the people in their community
- help their community connect with the resources necessary to accomplish the mitigation recommendations outlined for their community

If you would be interested in representing your community and its efforts to mitigate the threat of wildfire, please fill out the information below and return to:

**West Region Wildfire Council
102 Par Place, Suite 1
Montrose, CO 81401**

NAME: _____
ADDRESS: _____
CITY: _____ STATE: _____ ZIP: _____
COMMUNITY NAME: _____
PHONE: _____
EMAIL: _____

Or email Lilia Colter, West Region Wildfire Council CWPP Coordinator at: wrrwc.lilia@gmail.com

West Region Wildfire Council
102 Par Place, Suite 1, Montrose, Colorado 81401
Phone: (970) 249-9051 ext. 125 • Email: wrrwc.lilia@gmail.com

Advertisement for press release

FOR IMMEDIATE RELEASE:

2-11-2011

CONTACT: Delta County Emergency Management

Public invited to Community Wildfire Protection Plan Meetings

Please join neighbors and friends 7:00pm **Wednesday, February 23rd at the Cedaredge Fire Station, 205 South Grand Mesa Drive**, for a meeting to discuss the County's draft Community Wildfire Protection Plan. The meeting is an opportunity for the public and stakeholders to provide feedback on what will become the *Delta County Community Wildfire Protection Plan*. The meeting will present an overview of the County's communities at risk to wildfire along with prospective hazard reduction and fuels treatment measures intended to reduce the wildfire risk to people, structures, and community values. County staff and Federal and State partners will be present to discuss planned risk reduction measures and provide information on what you can do to reduce your risk from wildfires.

There will be an opportunity to win a Stihl chain saw and other great door prizes. Cookies and refreshments will be provided.

Feedback on wildfire-related concerns can also be provided through an on-line survey: <http://www.zoomerang.com/Survey/WEB22BTQ3E9QVB/>

For more information, please contact:

Lilia Colter, West Region Wildfire Council CWPP Coordinator
wrrwc.lilia@gmail.com, 970-249-9051 ext 125

Flyer for public meeting in Cedaredge**Community Wildfire Protection Plan****PUBLIC MEETING NOTICE**

DATE: Wednesday, February 23rd
TIME: 7:00 PM
LOCATION: Cedaredge Fire Station: 205 South Grand Mesa Drive Cedaredge, CO 81413

Please join us on either date to discuss Delta County's draft Community Wildfire Protection Plan. The meeting is an opportunity for the public and stakeholders to provide feedback on what will become the *Delta County Community Wildfire Protection Plan*. The meeting will present an overview of the county's communities at risk from wildfire, along with prospective hazard reduction and fuels treatment projects intended to reduce the risk to people, structures, and community values. County staff and federal and state partners will be present to discuss planned risk reduction measures and provide information on how you can reduce your risk from wildfires. The plan is being prepared with consultant assistance from Anchor Point and AMEC.

Chance to win a Stihl chainsaw and other great door prizes!!
Cookies and refreshments will be provided

We want your feedback! Take our online survey at:
<http://www.zoomerang.com/Survey/WEB228TC3E9QVB/>

For more information, please contact:

Lilia Colter, West Region Wildfire Council, lwrc_lilia@email.com 970-249-9051 x125
 Jeff Brislawn, AMEC Earth and Environmental, jeff.brislawn@amec.com 303-443-7839

PARTNERS:

- Delta County
- West Region Wildfire Council
- Cedaredge, Crawford, Delta, Hotchkiss & Paonia Fire Protection Districts



Public meeting rosters

Delta County Community Wildfire Protection Plan Public Meeting						Woman like more info Y/N
Name	Community Designation	Email	Phone Number	Address		
1 CRAIG WARREN	U.S.F.S. G.I.	cdwarren@ss.fed.us	970 863-5230	8777 CROSSLAND BLVD G.I.D., COLO 81506		—
2 WAYNE MEISAN	C&F O		856-3567	CEMAREDOCE		
3 TONYA THOMAS			856-8090	1100 235th Cedarvale U 81413		Y
4 Robin Melan	C.V.F.D		361-8816	440 NE Indian Camp Rd Cedarvale Co 81413		
5 KAREN WILKINSON	Ced Fire		201 6591	80 Box 947 Cedarvale CO 81413		Y
6 Dave DAPKUS	C&F		856-4611	24774 Hwy 204 Cedarvale, CO 81413		
7 Dutch Poirer	S.M. GRANDHUSA RESORT COM.		856 6004	1270 SE Duane Creek Cedarvale		—
8 Keith Stillings	Cedarvale Fire		216-8635	17647 Surface Creek Rd Cedarvale		
9 Bruce Hovde	Delta County	bhovde@delta-county.com	874-2112			
10 Karen Brooks	Private HIDDEN VALLEY	kbrooks@tts.net	527-5334	13445 Rugged Mtn Dr Cedarvale		N
11 Doug Wist	CEARADORE FIRE		234-7164	23063 Hamstead Rd Cedarvale		
12 Bill Palmer	DELTA SHERIFF OFFICE		874-2000	555 PALMER ST Cedarvale CO 81416		
13 Doug Fortz	HFD		872-3311	P.O. Box 522 Cedarvale		
14 Urien Croud	Cedarvale Fire		856-3449	645 N. Grand road Cedarvale		
15 Nate Hopkins	Cedarvale Fire		856-3471	18038 George C Rd Cedarvale		
16 Dave Brubaker	Paronia		527-5825	17367 Farmhouse Union Rd Paronia		
17 Steve Wolcott	Paronia Sheriff HESA	swolcott@paronia.com	527-4586	P.O. Box 6, Paronia, 81428		
18						
19						
20						
21						

Delta County Community Wildfire Protection Plan Public Meeting						word file	more info Y/Y
Name	Community Designation	Email	Phone Number	Address			
1. Rob Finner	Delta O.E.M.	fiedler@deltacounty.com	874-2004	555 Palmer Delta CO 81416			
2. Robert Kincaid	Roanoke Fire	R.Kincaid@roanokefire.com	527-3476	P.O. Box 915 Roanoke			
3. Kevin Walker	Cedarvale Fire Dept	Firewalker27@fids.net	254-2867	1230 W. Main Cedarvale			
4. Frank Lohmeyer	DCI		874-4421				
5. Kelly Rogers	CSFS	Kelly.rogers@coloradostate.edu	970-248-7325	CSFS G.I.T.			
6. Jerry Reed	Geo. F.R.E.	jwreed@skybeam.com	970-589-6901	P.O. Box 986 Cedarvale			
7. John McHugh	CFD	JMCHUGH@DELTA.SCHOOLS.COM	234-4438	21091 QUIET CONWAY Cedarvale			
8. James Nelson	Carroll Fire	Root Lip-2006@jpl.com	970-239-9905	119 Hwy 92 Crawford CO			
9. Tom Lander	CFD	T601@aol.com	970-250-6572	8760 MARSHALL RD, CORY			
10. Tim Lander	HFD		970-234-3235	10704 N. 31st Col			
11. Tim Feller	CFD		970-324-0107	Cedarvale CO			
12. Steven D. Ellis	CSFS	Steven.ellis@coloradostate.edu	970-239-9905	102 7th Pl. 100 Main			
13. Steve Schroeder	Hobbs Fire	K1@k1@tts.net	970-366-0017	2349 500th St Delta CO 81416			NO
14. Jackie Daphus	Cedarvale	j.daphus@gotisky.com	970-640-4907	24774 Ragsdale Rd 81416			N
15. Ruth Porter	Cedarvale	jack@tts.net	970-856-1000	1270 SE Deer Creek Dr 81416			NO
16. Sharon Burnett	Cedarvale		856-3904	18101 25th St			Yes
17. Lisa Linder	Cedarvale		856-7274	1748 S. KILLMAN Cedarvale			yes
18. Mike Shaw	Cedarvale		701 4440	445 Cedarvale CA			yes
19. Steve Hansen	Cedarvale		856-3843	256 SW 8th Cir Cedarvale			yes
20. Kelly Brooks	Roanoke	KTBROOKS7@Gmail.com	527-5334	13645 CONCORD ST DE			yes
21. Tim Mackley	Grand Jct	JAM.MACKLEY@MEDICALSOCIETY.COM	970-4794	687 30 Rd, Grand Jct, 80047			Yes

Delta County Community Wildfire Protection Plan Public Meeting					write this note into Y/N
Name	Community Representation	Email	Phone Number	Address	
1. Don McGraw	Holbrook		872-2145	24505 Redwood Street	
2. John Coker	Delta Fire		874-9635		
3. Lerdy Garcia			886-2113	Cedarvale	
4. Carl Townsend	Cedarvale-Canyon		399-7563	20374 Wood Creek Rd.	
5. Ruth Townsend	Cedarvale-Canyon		399-7563	" "	
6. Thompson	Cedarvale		883-3263		
7.					
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Letter soliciting comments on final plan



Dear Delta County Resident,

Delta County is in the final stages of completing their Community Wildfire Protection Plan (CWPP). The plan details the nature of the wildfire hazard within the county and includes specific information on communities at risk. The plan also details wildfire risk reduction recommendations for each defined community.

The county along with the planning contractors are looking to area specific residents to provide feedback and comments on their specific community's section in the plan. Enclosed you will find:

- Wildfire Hazard Rating and brief community description
- General and or specific fuels reduction recommendations
- A map of your community outlining fuels reduction recommendations (when appropriate)

We encourage you to review your community's section of the plan and make comments and suggestions. The public review period is an essential part to ensuring the success of this plan.

Please direct any comments or suggestions to Jeff Brislawn, one of the consultants contracted though the county to complete the plan. Comments will be accepted by phone, fax, email or can be mailed in directly to AMEC Earth & Environmental through April 13th.

Jeff Brislawn
AMEC Earth & Environmental, Inc.
1002 Walnut St, Suite 200 Boulder, CO 80302
Phone: 303.443.7839
Fax: 303.442.0616
jeff.brislawn@amec.com

The entire plan is also available for review on the Delta County website. There are also hard copies of the plan available at:

Delta Public Library
211 West 6th
Delta, CO 81416
970-874-9630

Hotchkiss Public Library
149 East Main
Hotchkiss, CO 81419
970-872-4153

As a reminder, the online survey will be available through April 1st. The survey can be found at:
<http://www.zoomerang.com/Survey/WEB22BNTNH4932/>

If you would like to be involved in helping your community implement the recommendations in the plan or would like information on grant opportunities or becoming your community's Wildfire Advocate, please contact Lilia Colter with the West Region Wildfire Council.

We look forward to hearing from you,

Lilia Colter
West Region Wildfire Council
CWPP Coordinator

West Region Wildfire Council

102 Par Place, Suite 1, Montrose, Colorado 81401
Phone: (970) 249-9051 ext. 125 • Email: wrrwc.lilia@gmail.com

Newspaper article on planning process

Plan details Delta County's wildfire risk | Delta County Independent - Microsoft Internet Explorer

Address: <http://www.deltacountyindependent.com/component/content/article/19988.html>

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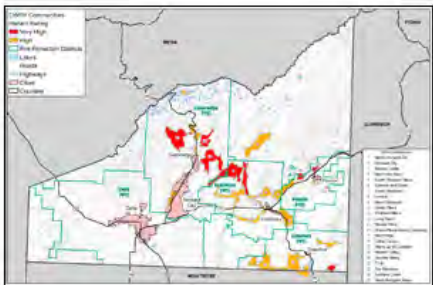
Plan details Delta County's wildfire risk

Written by Hank Lohmeyer
Wednesday, 02 March 2011 00:00

Living on the edge of a wild, natural landscape can be a soul-stirring experience. But in terms of potential risks to life and property from a wildland fire event, it can be a life on the edge of danger.

Delta County is partnering with state and federal lands management agencies and local fire districts to reduce the risk from wildland fires. The county and other agencies also want to partner with local property owners who live in areas known as the "wildland urban interface."

The results of an ongoing study of wildland fire risks in specific areas of Delta County were unveiled last week at a public meeting in Cedaredge. The study's findings will be posted on the county website beginning March 7 for public comment. People interested in doing what they can to protect their own property, or who want to band together with neighbors or homeowners associations to learn about area-wide fire mitigation measures are being asked to comment on the study at the county's website.



There is also a hot link on the site to a survey questionnaire that fire managers are asking people to complete.

The 70-page document has been created by two consultant firms in conjunction with the county, Colorado State Forest Service, BLM, USFS, the six-county West Region Fire Council, and local fire departments.

The Countywide Wildfire Protection Plan (CWPP) takes a comprehensive look at wildland fire risks across the county. It assesses multiple factors that can play into fire risk, fire severity, and fire response. Fuels type, geography, evacuation routes and road conditions, available fire fighting equipment and its location, are all elements considered along with other technical fire fighting and wildfire dynamics criteria. The study includes protocols for public notification, information on available

Delta County's wildfire risk assessment is detailed in a 70-page draft report scheduled to be posted on the county website March 7. Fire and other emergency response officials are asking the public to weigh in with their comments about the report online.

Discussions not available on <http://www.deltacountyindependent.com/>

Done Internet

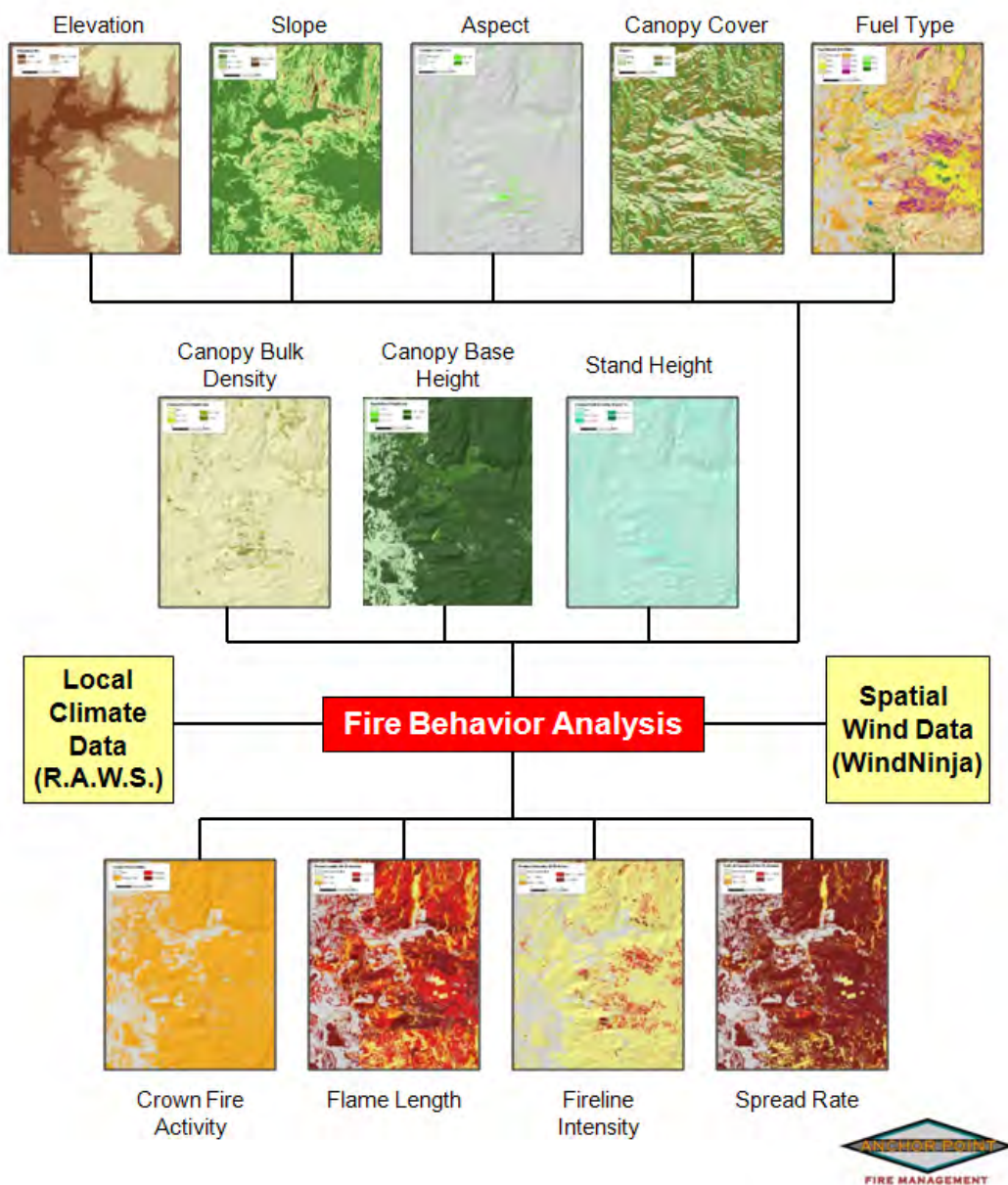
APPENDIX C: FIRE BEHAVIOR TECHNICAL REFERENCE

FIRE BEHAVIOR POTENTIAL ANALYSIS METHODOLOGY

PURPOSE

The purpose of this document is to describe the methodology used to evaluate the threat represented by physical hazards such as fuels, weather, and topography to values at risk in the study area, by modeling their effects on potential fire behavior potential.

Figure C1. Flow Chart for Fire Behavior Modeling Process



The fire behavior potential analysis graphically reports the probable range of spread rate, flame length, and crown fire potential for the analysis area, based upon a set of inputs significant to fire behavior. The model inputs include aspect, slope, elevation, canopy cover, fuel type, canopy bulk density, canopy base height, stand height, and climate data. The model outputs are determined using FlamMap, which combines surface fire predictions with the potential for crown fire development.²

Modeling Limitations and Discussion

This evaluation is a prediction of likely fire behavior, given a standardized set of conditions and a single point source ignition at every point. It does not consider cumulative impacts of increased fire intensity over time and space. The model does not calculate the probability that a wildfire will occur. It assumes an ignition occurrence for every 30m x 30m cell. These calculations may be conservative (under-predict) compared to observed fire behavior.

Weather conditions are extremely variable and all possible combinations cannot be accounted for. These outputs are best used for pre-planning and not as a stand-alone product for tactical planning. Whenever possible, fire behavior calculations should be done with actual weather observations during the fire. The most current Energy Release Component (ERC) values should also be calculated and distributed during the fire season to be used as a guideline for fire behavior potential.

Anchor Point Group's fire behavior modeling process for surface fire draws heavily from the BEHAVE fire behavior prediction and fuel modeling system.³ BEHAVE is a nationally recognized set of calculations used to estimate a surface fire's intensity and rate of spread given certain topographical, fuels, and weather conditions.

The BEHAVE modeling system has been used for a variety of applications, including predictions of current fires, prescribed fire planning, fuel hazard assessment, initial attack dispatch, and fire prevention planning and training. Predictions of wildland surface fire behavior are made for a single point in time and space, given user-defined fuels, weather, and topography. Requested values depend on the modeling choices made by the user.

Assumptions of BEHAVE:

- Fire is predicted at the flaming front (fire behavior is not modeled for the time after the flaming front of the fire has passed)
- Fire is free burning (uncontrolled by suppression efforts)
- Behavior is heavily weighted towards the fine fuels (grasses and small-diameter wood)
- Fuels are continuous and uniform
- Fires are considered to be surface fires (crown fire activity is modeled separately)

BEHAVE makes calculations at a single point. In order to make calculations for an entire landscape (important for pre-planning the effects of a wildfire at the community, district, or

² Mark Finney, Stuart Brittain and Rob Seli. The Joint Fire Sciences Program of the Rocky Mountain Research Station (USDA Forest Service, Missoula, Montana), the Bureau of Land Management and Systems for Environmental Management (Missoula, Montana).

³ Patricia L. Andrews, producer and designer, Collin D. Bevins, programmer and designer, The Joint Fire Sciences Program of the Rocky Mountain Research Station (USDA Forest Service, Missoula, Montana) and Systems for Environmental Management (Missoula, Montana).

county scale), fire behavior is modeled using FlamMap which models surface fire predictions and the potential for crown fire development.⁴

Assumptions of FlamMap:

- Each calculation in a given area is independent of calculations in any other area. Fire is not modeled dynamically across the landscape but statically as a series of individual calculations.
- Weather inputs such as wind and fuel moistures do not change over time
- Fire behavior modeling calculations are performed in a series of uniform squares (or “pixels”) across the landscape. These pixels determine the level of detail and nothing smaller than a pixel (30m x 30m in this case) is included in the modeling.

Crown fire activity, rate of spread, and flame length are derived from the fire behavior predictions. A limitation of FlamMap is that crown fire is not calculated for shrub models. The best method of determining the probability of crown fire in shrubs (Pinyon/Juniper woodlands are modeled as shrubs) is to look at the flame length outputs and assume that if the flame length is greater than ½ the height of the plant, it will likely torch and/or crown. The following maps graphically display the outputs of FlamMap for both moderate and high weather conditions.

This model can be conceptually overlaid with the Community Wildfire Hazard Ratings (WHR) or other values at risk identification to generate current and future “areas of concern,” which are useful for prioritizing mitigation actions. This is sometimes referred to as a “values layer.” One possibility is to overlay the fire behavior potential maps with the community hazard map. This will allow for a general evaluation of the effects of the predicted fire behavior in areas of high hazard value (that is, areas where there are concentrations of residences and other man-made values). However, one should remember that the minimum mapping unit used for fire behavior modeling is one acre; therefore, fine-scale fire behavior and effects are not considered in the model. The fire behavior prediction maps are best used for pre-planning and not as a stand-alone product for tactical planning. If this information is used for tactical planning, fire behavior calculations should be done with actual weather observations during the fire event. For greatest accuracy, the most current ERC values should be calculated and distributed during the fire season to be used as a guideline for fire behavior potential.

⁴ Van Wagner, C.E. 1977. Conditions for the start and spread of a crown fire. Canadian Journal of Forest Research. 7: 23-24.

FlamMap

Anchor Point Group used FlamMap to evaluate the potential fire conditions in the fire behavior study area. The study area encompasses approximately 735,360 acres (1,149 square miles).

The study area is broken down into grid cells 30m x 30m, each of which fire behavior is predicted based on input fuel, weather and topographic information. For the FlamMap run, data from the Landfire Rapid Refresh Program were used for surface fuels, aspect, slope, elevation and canopy closure, canopy base height (CBH), and canopy bulk density (CBD). Because of the coarse resolution, changes to the landscape since the data collection, and inaccuracies in mapping of the Landfire data, fuel model customization was required for several areas within the study area. Based on field observations, appropriate fuel models were chosen and hand digitized to create a more accurate fuels layer that was then used by FlamMap.

The final set of input data for the FlamMap model consist of reference weather and fuel moisture information summarized from a Remote Automated Weather Station (RAWS) site. Due to the size of the county, the variation in elevation and topography several RAWS were used. See the section below for details on RAWS information.

FIRE BEHAVIOR INPUTS

The major factors influencing fire behavior are topography (aspect, slope, and elevation), weather, and fuels (type and coverage). The following pages contain a brief explanation of each.

Reference Weather Used in the Fire Behavior Potential Evaluation

As stated above, climate and fuel moisture inputs for FlamMap were created by using data collected from several RAWS.

The moderate condition class (16th to 89th percentile, sorted by ERC) was calculated for each variable (1 hour, 10 hour, and 100 hour fuel moisture and 20-foot wind speed) using Fire Family Plus. This weather condition class most closely represents an average fire season day.

A second set of weather conditions were calculated to capture a high fire day (in terms of fuel moistures and wind speed). Values in the data set that were in the 90th percentile (sorted by ERC) or greater class were used to calculate the high condition class.

Wind speeds in RAWS data sets consist of 10-minute averages. During this 10-minute average, conditions are likely to be experienced that may exhibit substantially faster wind speeds than those represented by the 10-minute average. These faster wind speeds could have a profound impact on the ability of a fire to transition from a surface fire to a crown fire.

Dead Fuel Moisture

Dead fuel moisture responds solely to ambient environmental conditions and is critical in determining fire potential. Dead fuel moistures are classed by timelag. A fuel's timelag is proportional to its diameter and is loosely defined as the time it takes a fuel particle to reach two-thirds of its way to equilibrium with its local environment. Dead fuels in the National Fire Danger Rating System (NFDRS) fall into four classes: 1, 10, 100, and 1000 hour.⁵

Live Fuel Moisture

Live fuel moisture is the amount of water in a fuel, expressed as a percent of the oven-dry weight of that fuel. Fuel moisture between 300% and 30% is considered live. Anything below 30% is considered dead fuel. Fuel moistures can exceed 100% because the living cells can expand beyond their normal size to hold more water when available.

⁵ U.S. National Fire Danger Rating System Overview: INT-GTR-367 - FIRES: Fire Information Retrieval and Evaluation System - a Program for Fire Danger Rating Analysis

Figure C2. Delta County RAWS Sites

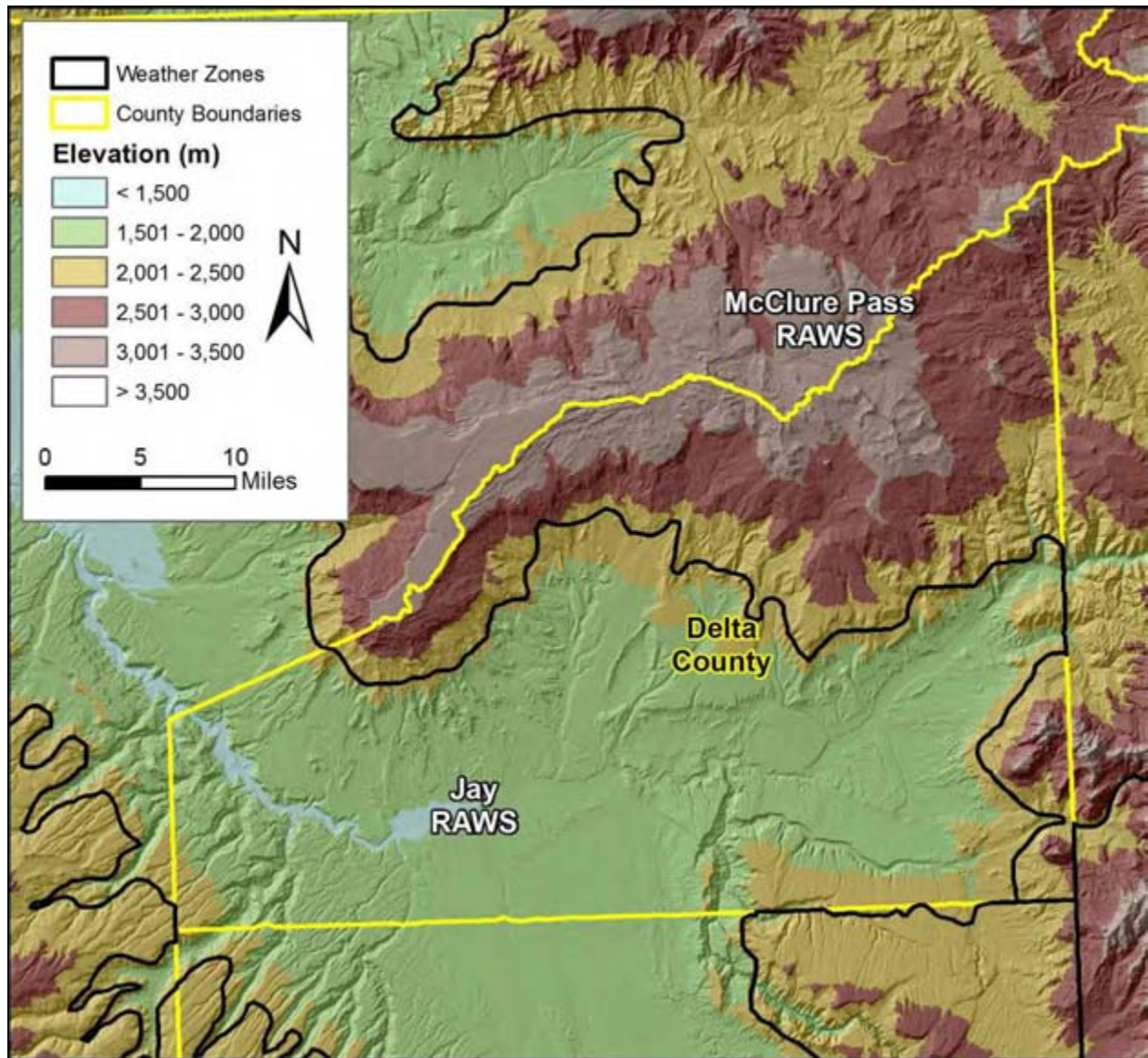


Table C1. Delta County RAWS Information

Delta County	Weather Condition	Jay	McClure Pass
Elevation (ft)		6,257	8,980
Latitude		38.85	39.13
Longitude		-107.73	-107.28
Years Included		2000 - 2009	1985 - 2009
Fire Season		May 1 - October 31	May 15 - September 30
Wind Direction		Always upslope	Always upslope
Wind Speed (mph)	Moderate	11	9
	High	29	20
1-hour Fuel Moisture	Moderate	4	6
	High	3	4
10-hour Fuel Moisture	Moderate	5	8
	High	3	5
100-hour Fuel Moisture	Moderate	8	10
	High	6	7
Herbaceous Fuel Moisture	Moderate	30	42
	High	30	45
Woody Fuel Moisture	Moderate	77	90
	High	70	82

Fuel Models and Fire Behavior

In the context of fire behavior modeling, “fuel models” are a set of numbers that describe fuels in terms that the fire behavior modeling equations can use directly. There are seven characteristics used to categorize fuel models:

- Fuel Loading
- Size and Shape
- Compactness
- Horizontal Continuity
- Vertical Arrangement
- Moisture Content
- Chemical Content

Unless otherwise noted, fuel model descriptions are taken from Scott and Burgan's *Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model*, a national standard guide to fuel modeling.⁶ **For specific information about the fuel models' affects on the landscape of each community see the discussions in the Community Ignitability Analysis Recommendations section of the main plan.**

6 Scott, J.H. and R. Burgan. 2005. *Standard Fire Behavior Fuel Models: A Comprehensive Set for Use with Rothermel's Surface Fire Spread Model*, United States Department of Agriculture Forest Service, RMRS-GTR-153.

In *Standard Fire Behavior Fuel Models*, Scott and Burgan describe 40 fuel models in the following six groups: Non-Burnable (NB), Grass (GR), Grass/Shrub (GS), Shrub (SH), Timber Understory (TU), and Timber Litter (TL). The study area is represented primarily by the following fuel models (FM):

Table C2. Fuel Models Found in the Study Area

Grass Fuel Models	Shrub Fuel Models	Timber Fuel Models	Non-Burnable
FM101 (GR1)	FM142 (SH2)	FM161 (TU1)	NB3 (93) Agricultural
FM102 (GR2)		FM165 (TU5)	NB9 (99) Bare Ground
*FM121 (GS1)			
FM122 (GS2)			

* Some fuel models may exist, but not in quantities (less than 5% on the landscape) sufficient to significantly influence fire behavior across the landscape.

FUEL GROUP DESCRIPTIONS AND COMPARISONS

Grass Fuel Type Models (GR)

The primary carrier of fire in the GR fuel models is grass. Grass fuels can vary from heavily grazed grass stubble or sparse natural grass to dense grass more than 6 feet tall. Fire behavior varies from moderate spread rate and low flame length in the sparse grass to extreme spread rate and flame length in the tall grass models.

All GR fuel models are dynamic, meaning that their live herbaceous fuel load shifts from live to dead as a function of live herbaceous moisture content. The effect of live herbaceous moisture content on spread rate and intensity is strong.

Grass-Shrub Fuel Type Models (GS)

The primary carrier of fire in the GS fuel models is the combination of grasses and shrubs; both components are important in determining fire behavior.

All GS fuel models are dynamic, meaning that their live herbaceous fuel load shifts from live to dead as a function of live herbaceous moisture content. The effect of live herbaceous moisture content on spread rate and intensity is strong and depends on the relative amount of grass and shrub load in the fuel model.

Shrub Fuel Type Models (SH)

The primary carrier of fire in the SH fuel models is live and dead shrub twigs and foliage in combination with dead and down shrub litter. A small amount of herbaceous fuel may be present, especially in SH1 and SH9, which are dynamic models (their live herbaceous fuel load shifts from live to dead as a function of live herbaceous moisture content). The effect of live herbaceous moisture content on spread rate and flame length can be strong in those dynamic SH models.

Timber-Understory Fuel Type Models (TU)

The primary carrier of fire in the TU fuel models is forest litter in combination with herbaceous or shrub fuels. TU1 and TU3 contain live herbaceous load and are dynamic, meaning that their live herbaceous fuel load is allocated between live and dead as a function of live herbaceous moisture content. The effect of live herbaceous moisture content on spread rate and intensity is strong and depends on the relative amount of grass and shrub load in the fuel model.

Timber Litter Fuel Type Models (TL)

The primary carrier of fire in the TL fuel models is dead and down woody fuel. Live fuel, if present, has little effect on fire behavior.

Comparison of Fuel Models in the Study Area

The following graphs show the predicted fire behavior according to fuel type given the same weather and fuel moisture inputs.

Figure C3. Flame Length Outputs for Delta County Fuel Models

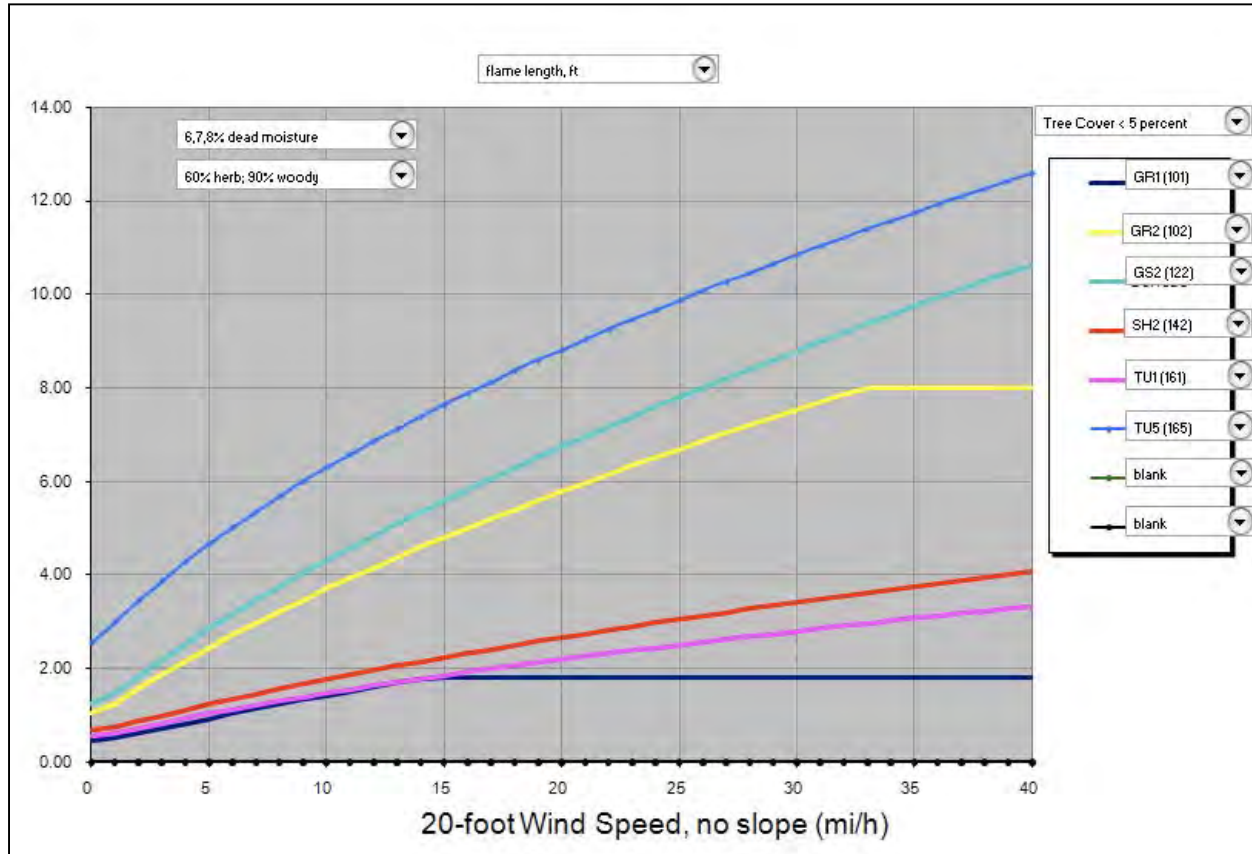
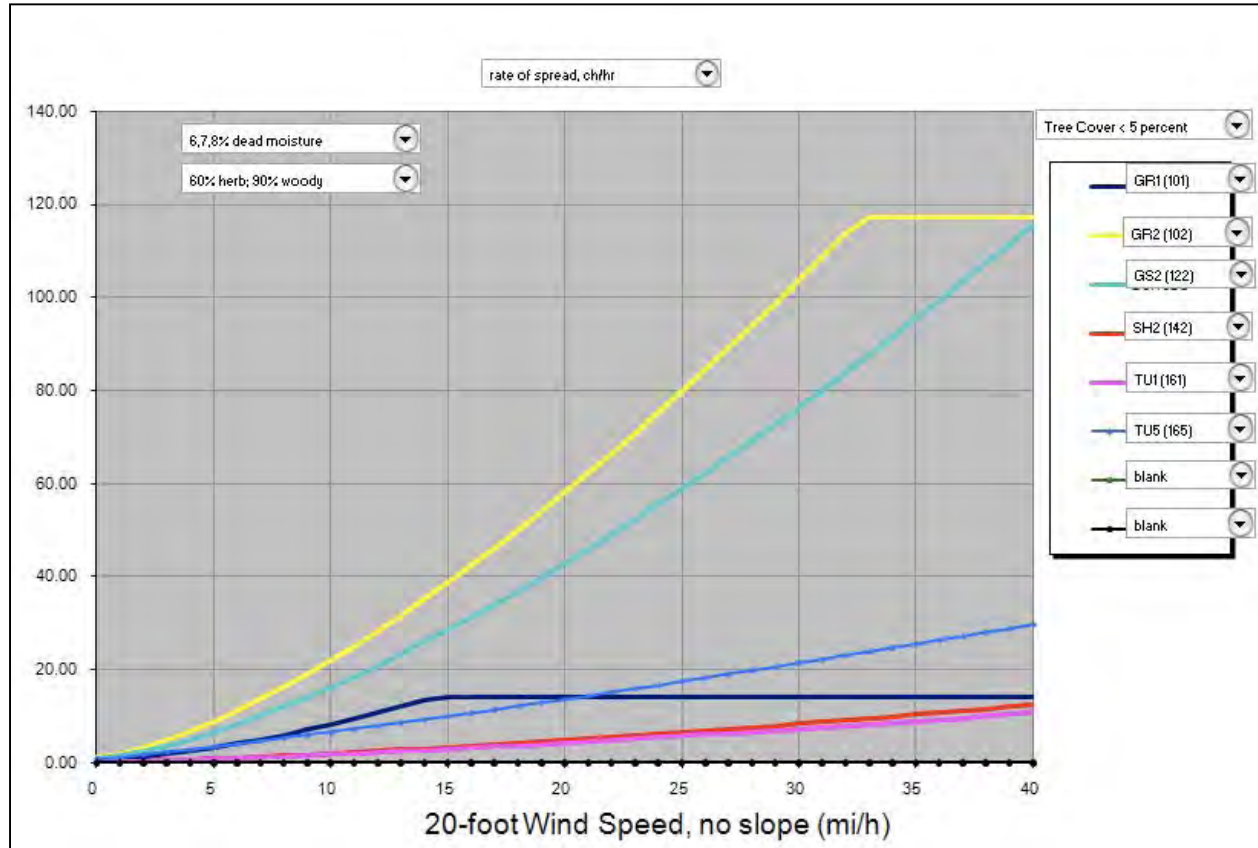


Figure C4. Rate of Spread Outputs for Delta County Fuel Models



FIRE BEHAVIOR OUTPUTS

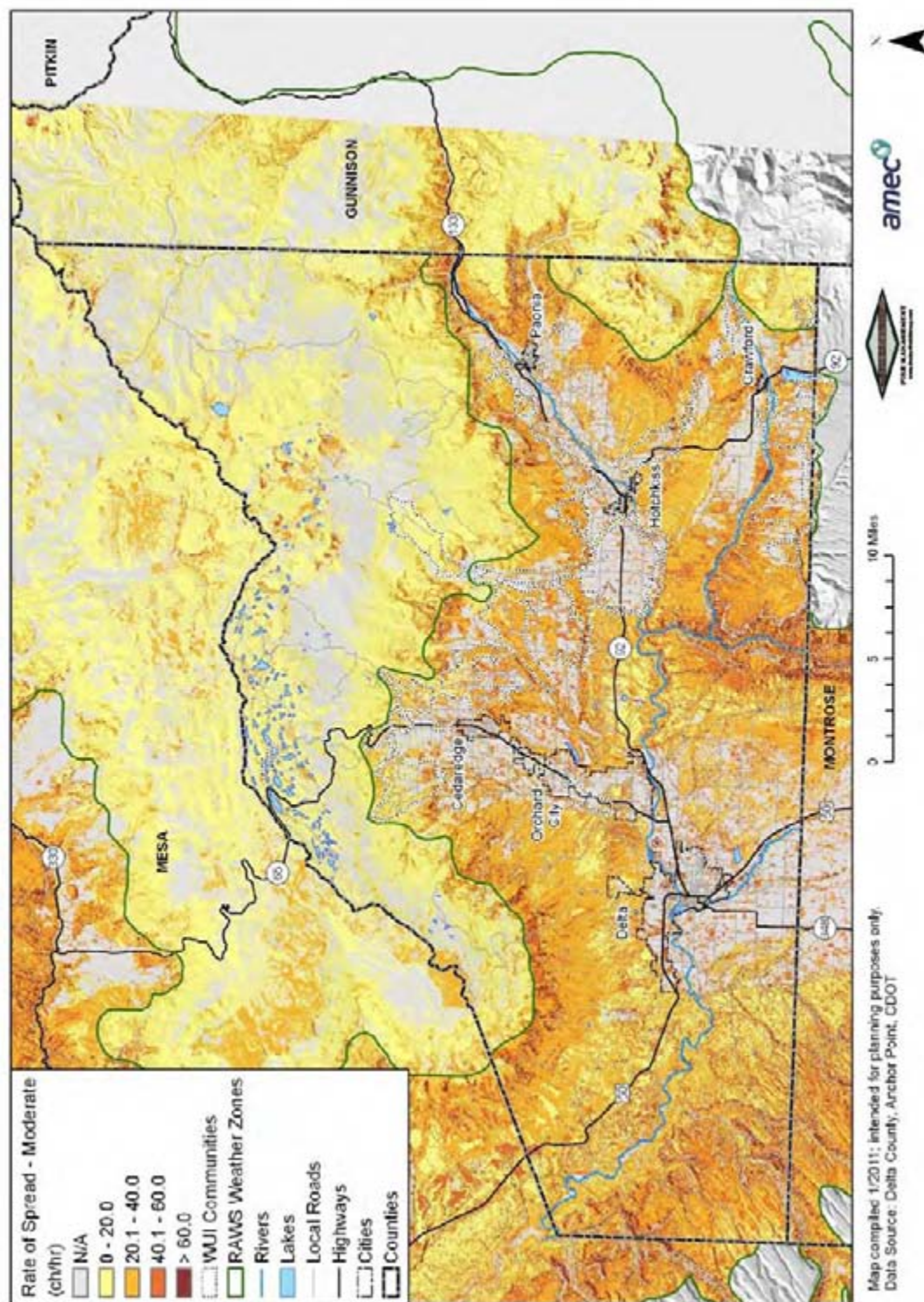
Rate of Spread

Rate of Spread (ROS) values are generated by FlamMap and are classified into four categories based on standard ranges: 0 to 20 ch/h (chains/hour), 20.1 to 40 ch/h, 40.1 to 60 ch/h, and greater than 60 ch/h. A chain is a logging measurement that is equal to 66 feet. One mile equals 80 chains. 1 ch/h equals approximately 1 foot/minute or 80 chains per hour equals 1 mile per hour (MPH).

*It should be noted that a high rate of spread is not necessarily severe. Fire will move very quickly across grass fields but may not cause any major damage to the soil.

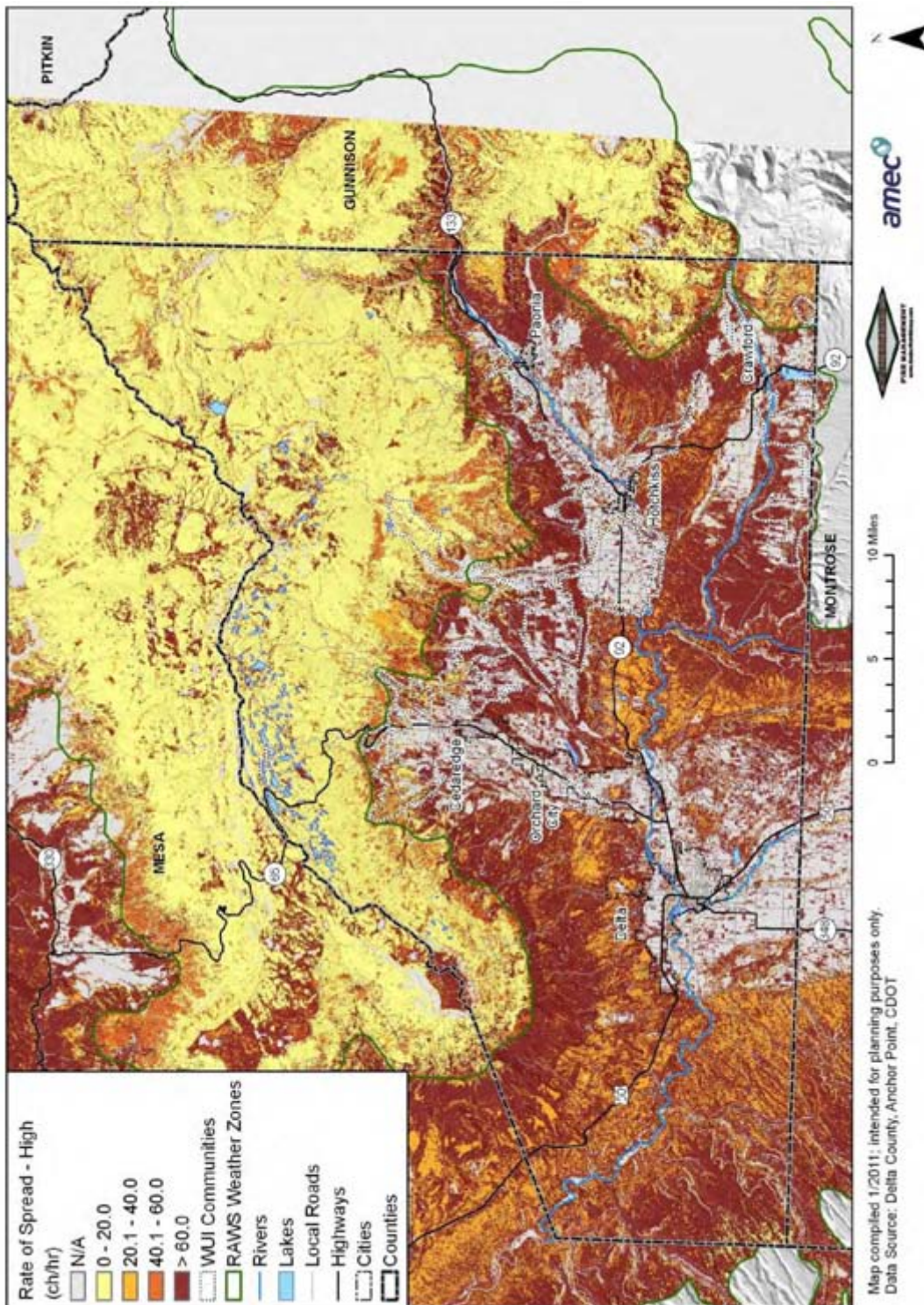
Figure C6 may be referenced in an 11 x 17 format in Appendix D.

Figure C5. Predicted Rate of Spread Under Moderate Weather Conditions



Rate of spread in chains/hour
(1 chain=66 ft) (80 chains/hr = 1 MPH)

Figure C6. Predicted Rate of Spread Under High Weather Conditions



Rate of spread in chains/hour
(1 chain=66 ft) (80 chains/hr = 1 MPH)

Flame Length

Flame length values are generated by the FlamMap model were classified into four categories based on standard ranges: 0.1 to 4.0 feet, 4.1 to 8.0 feet, 8.1 to 11.0 feet, and greater than 11.0 feet.

The legend boxes display flame length in ranges which are meaningful to firefighters. The flame lengths are a direct measure of how intense the fire is burning. Flame lengths of four feet and less are deemed low enough intensity to be suitable for direct attack by hand crews, and therefore represent the best chances of direct extinguishment and control. Flame lengths of less than eight feet are suitable for direct attack by equipment such as bulldozers and tractor plows. Flame lengths of eight to 11 feet are usually attacked by indirect methods and aircraft. In conditions where flame lengths exceed 11 feet, the most effective tactics are fuel consumption ahead of the fire by burnouts or mechanical methods. It should be noted that much higher flame lengths of 60-100 feet or more were modeled on steeper slopes with heavy fuel loads.

Figure C8 may be referenced in an 11 x 17 format in Appendix D.

Figure C7. Predicted Flame Lengths Under Moderate Weather Conditions

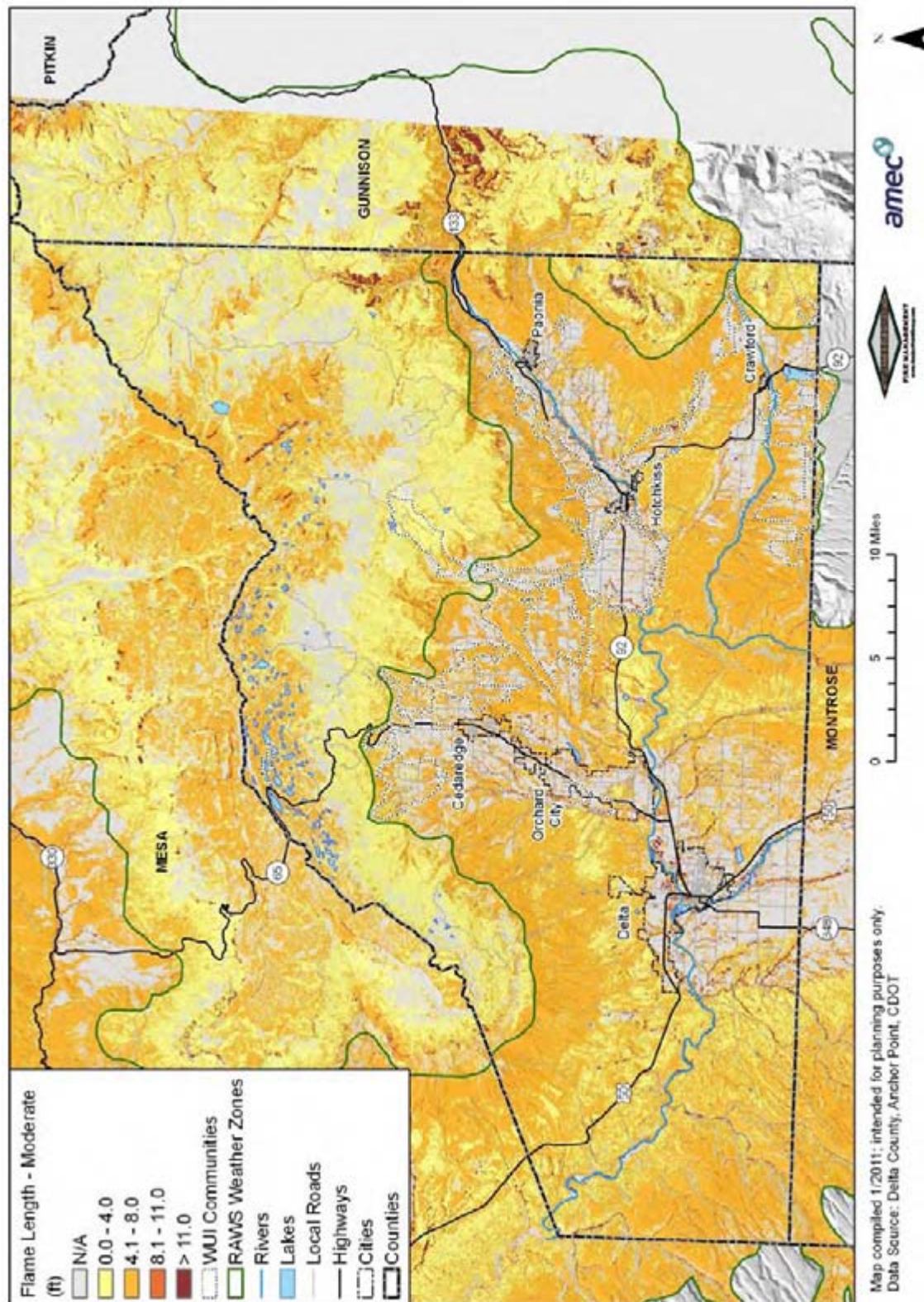
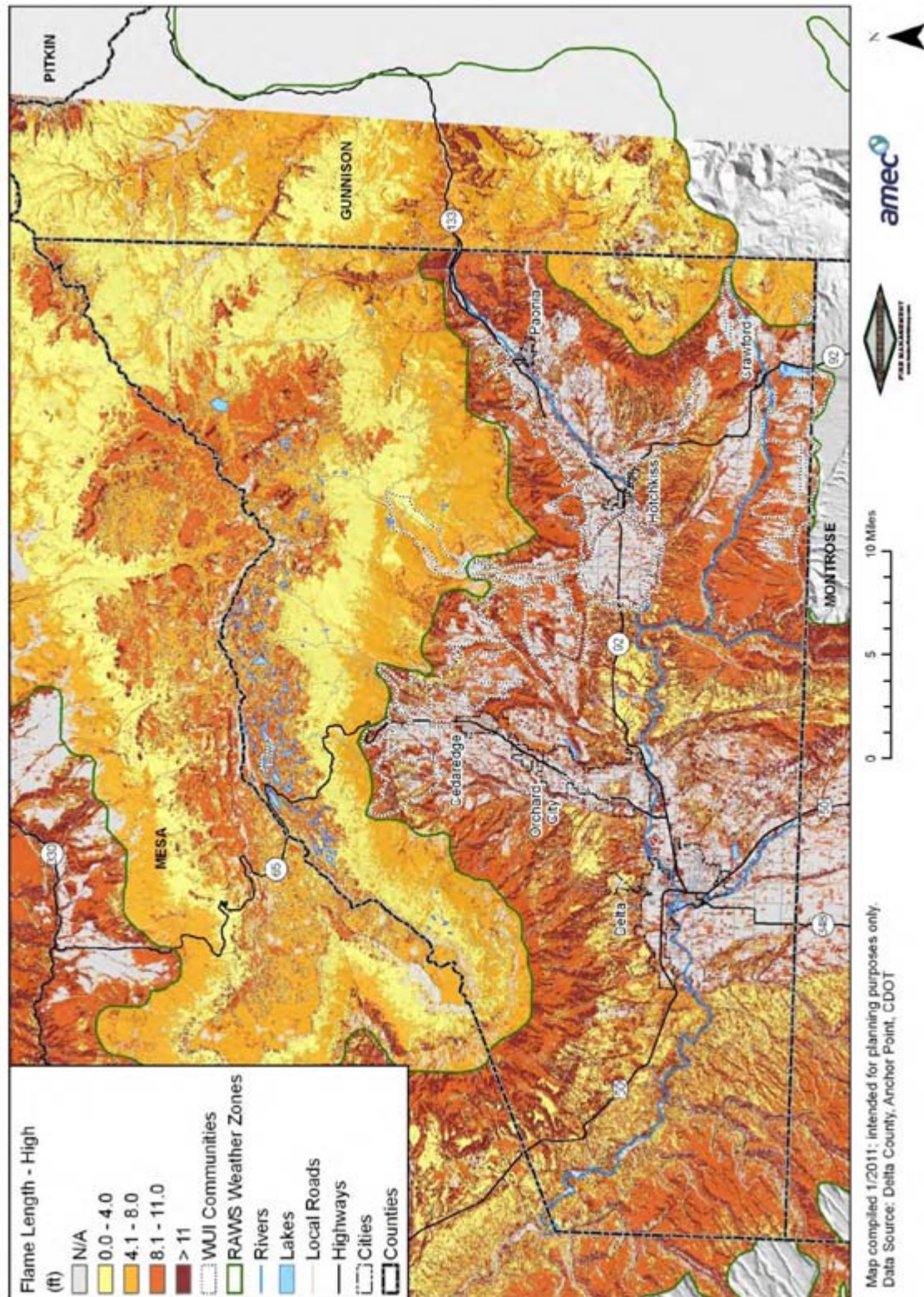


Figure C8. Predicted Flame Lengths Under High Weather Conditions



Crown Fire

Crown fire activity values are generated by the FlamMap model and classified into four categories based on standard ranges: Active, Torching, Surface, and Not Applicable. In the surface fire category, little or no tree torching will be expected. During passive crown fire activity, isolated torching of trees or groups of trees will be observed and canopy runs will be limited to short distances. During active crown fire activity, sustained runs through the canopy will be observed that may be independent of surface fire activity. Only Crown fire under High fire weather conditions is included. Under moderate conditions no crowning occurred in the study area fuels. The model does not capture embercast in front of the main fire, which is likely if trees are torching and/or crowning. These embers can cause spot fires that will leapfrog in front of the main fire and then be filled in by the main fire front. Massive fire growth can occur rapidly under these conditions.

Figures C9 and C11 may be referenced in an 11 x 17 format in Appendix D.

Figure C9. Predicted Crown Fire Activity Under High Weather Conditions

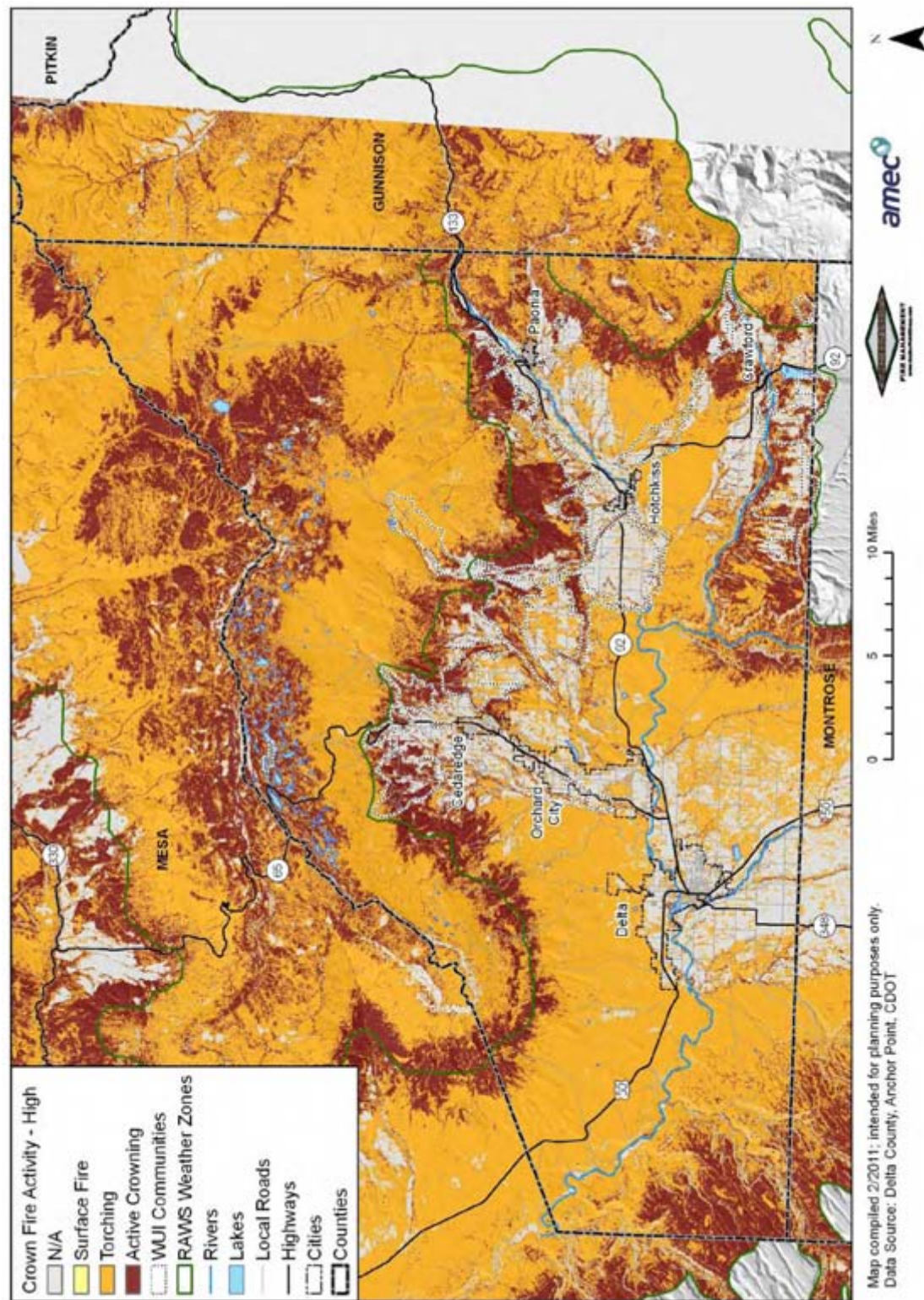


Figure C10. Fireline Intensity Under Moderate Weather Conditions

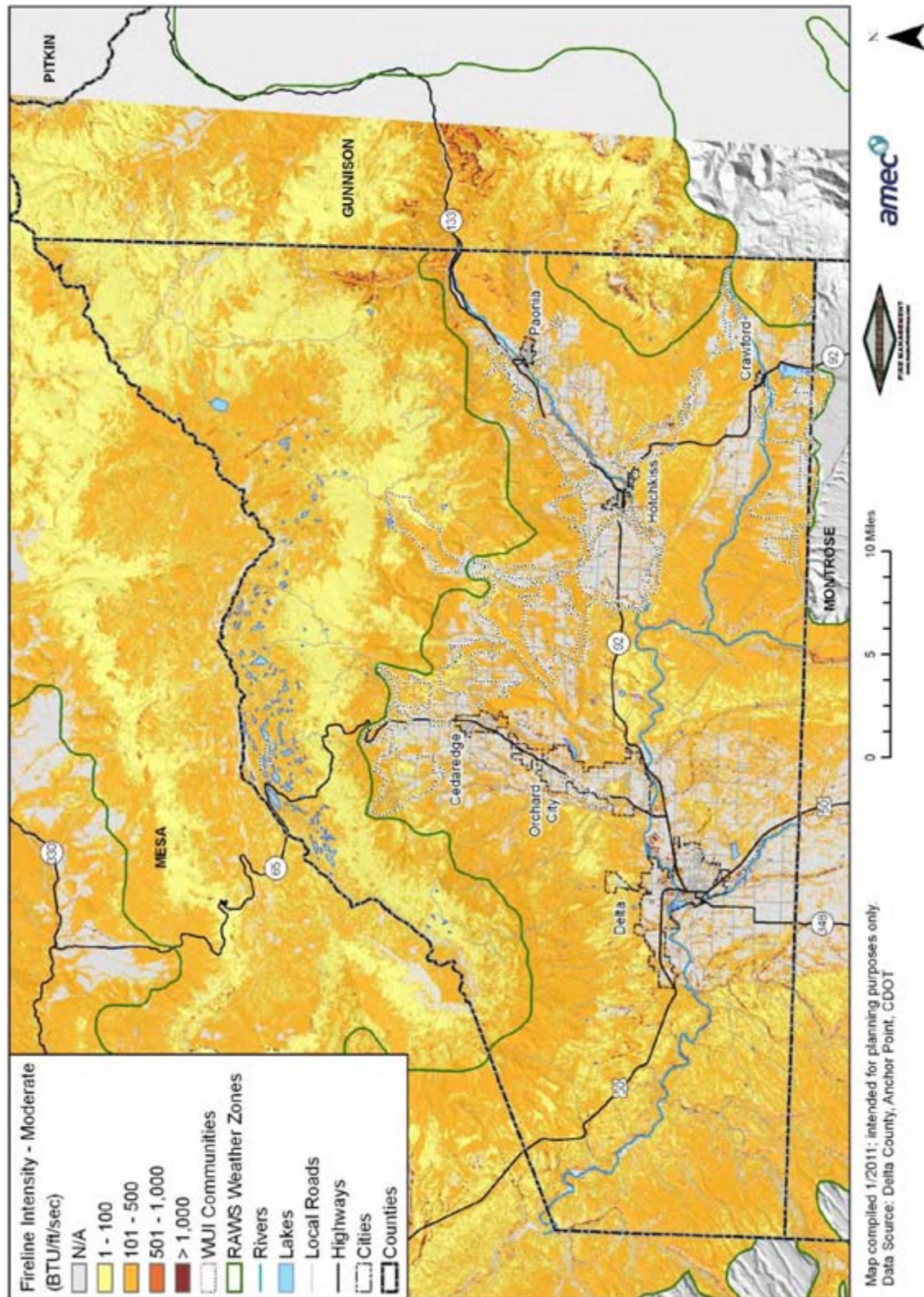
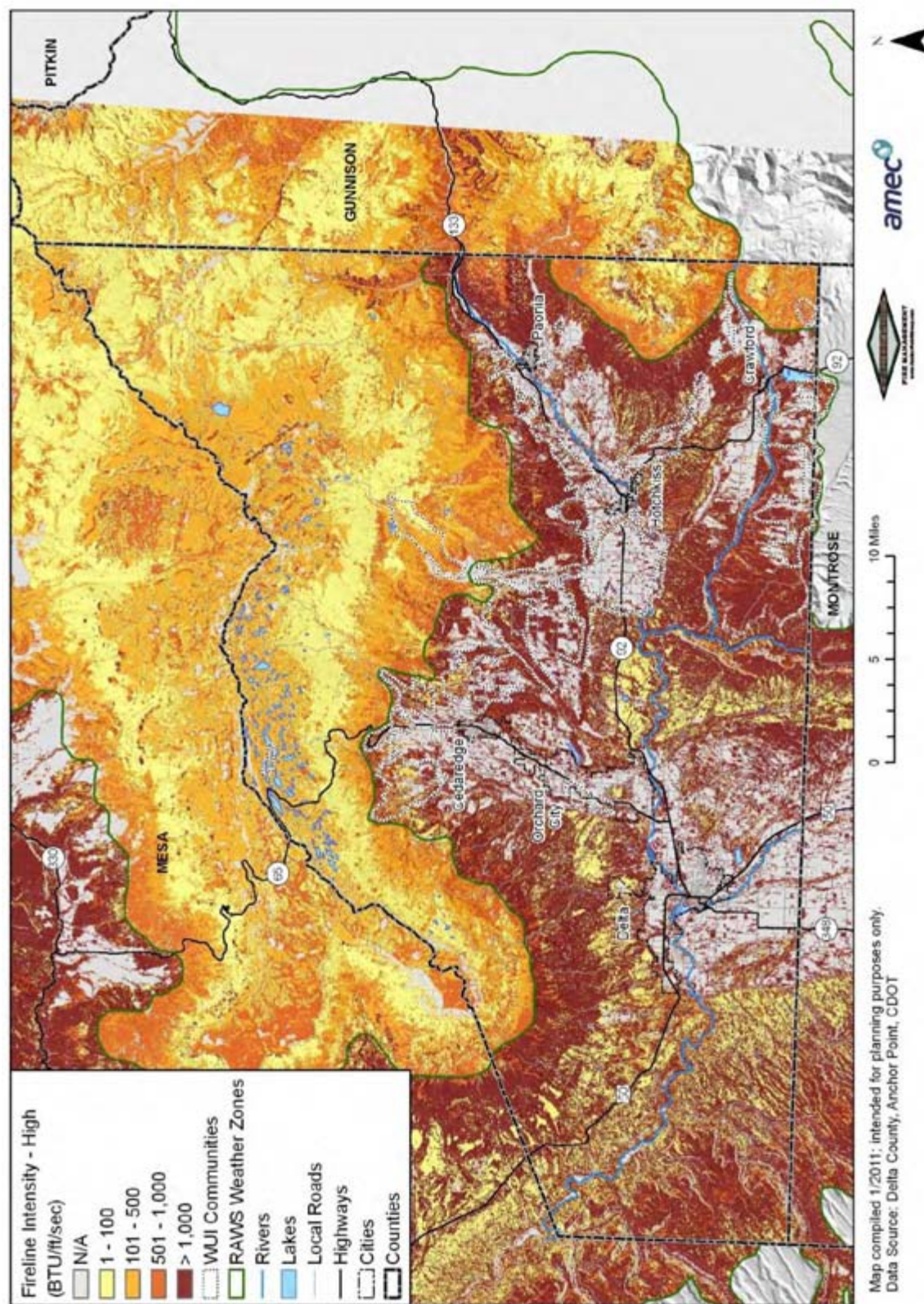


Figure C11. Fireline Intensity Under High Weather Conditions



ADDITIONAL FIRE BEHAVIOR INPUT MAPS

Figure C12. Delta County Slope

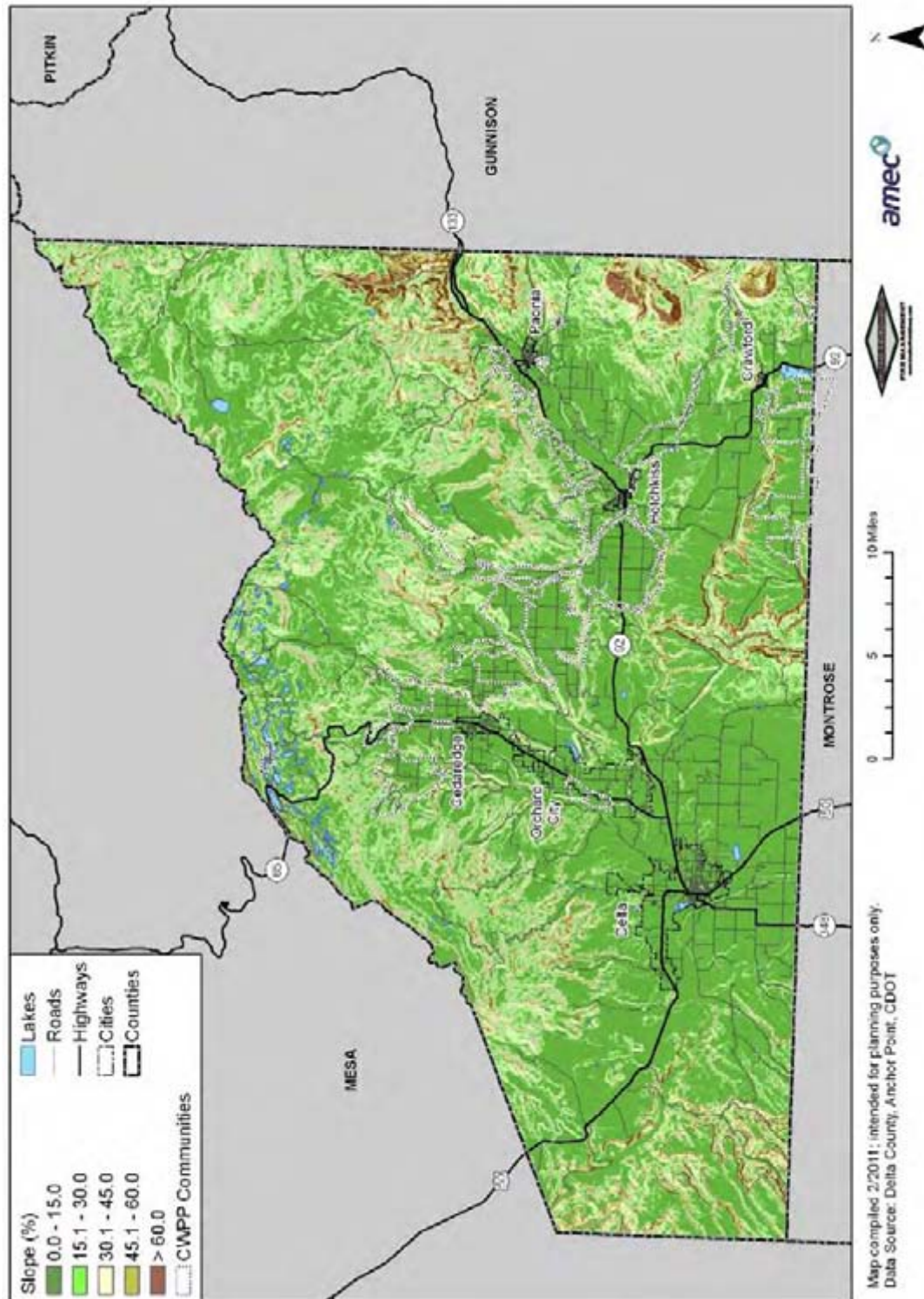


Figure C13. Delta County Aspect

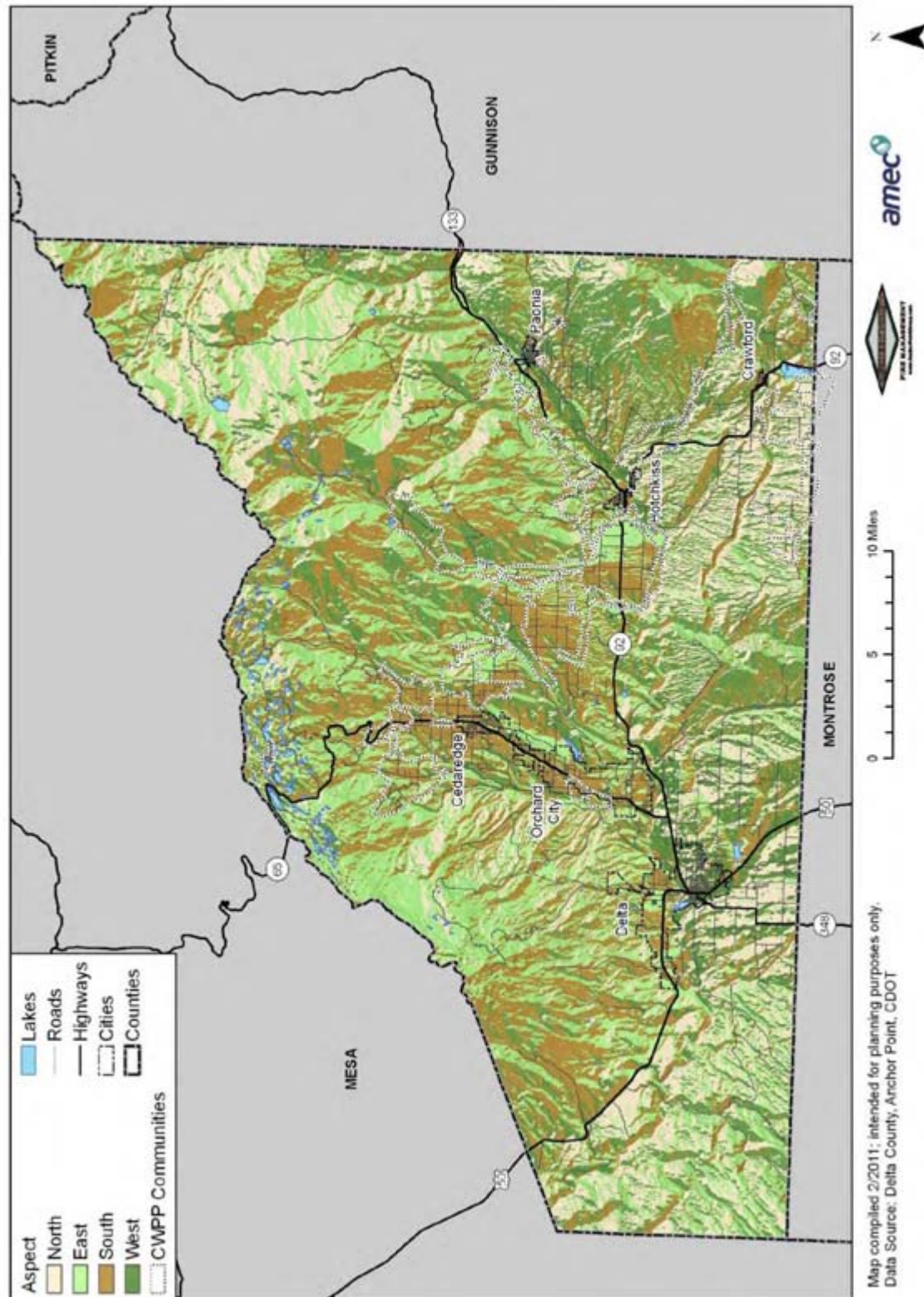


Figure C14. Delta County Elevation

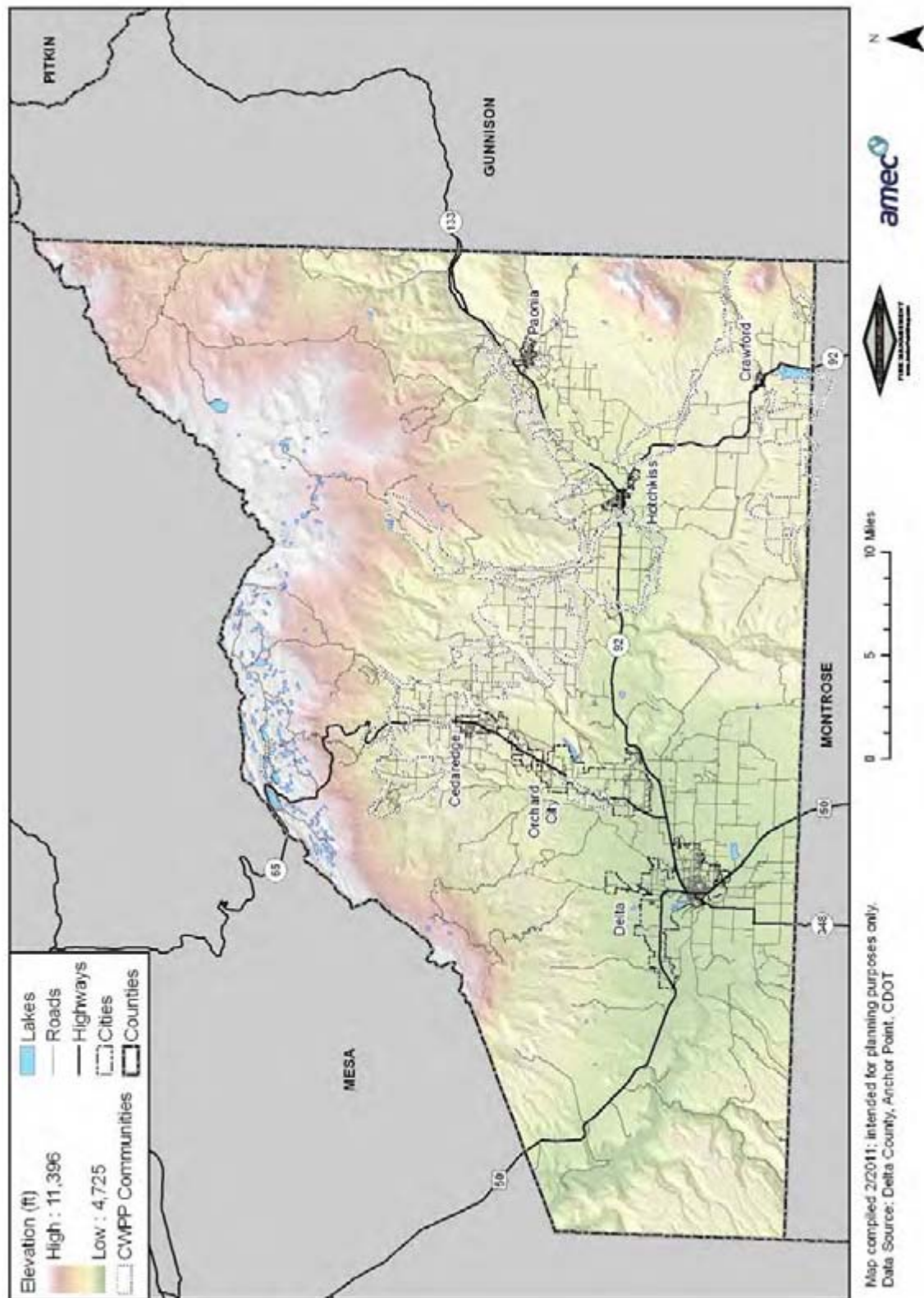


Figure C15. Stand Height

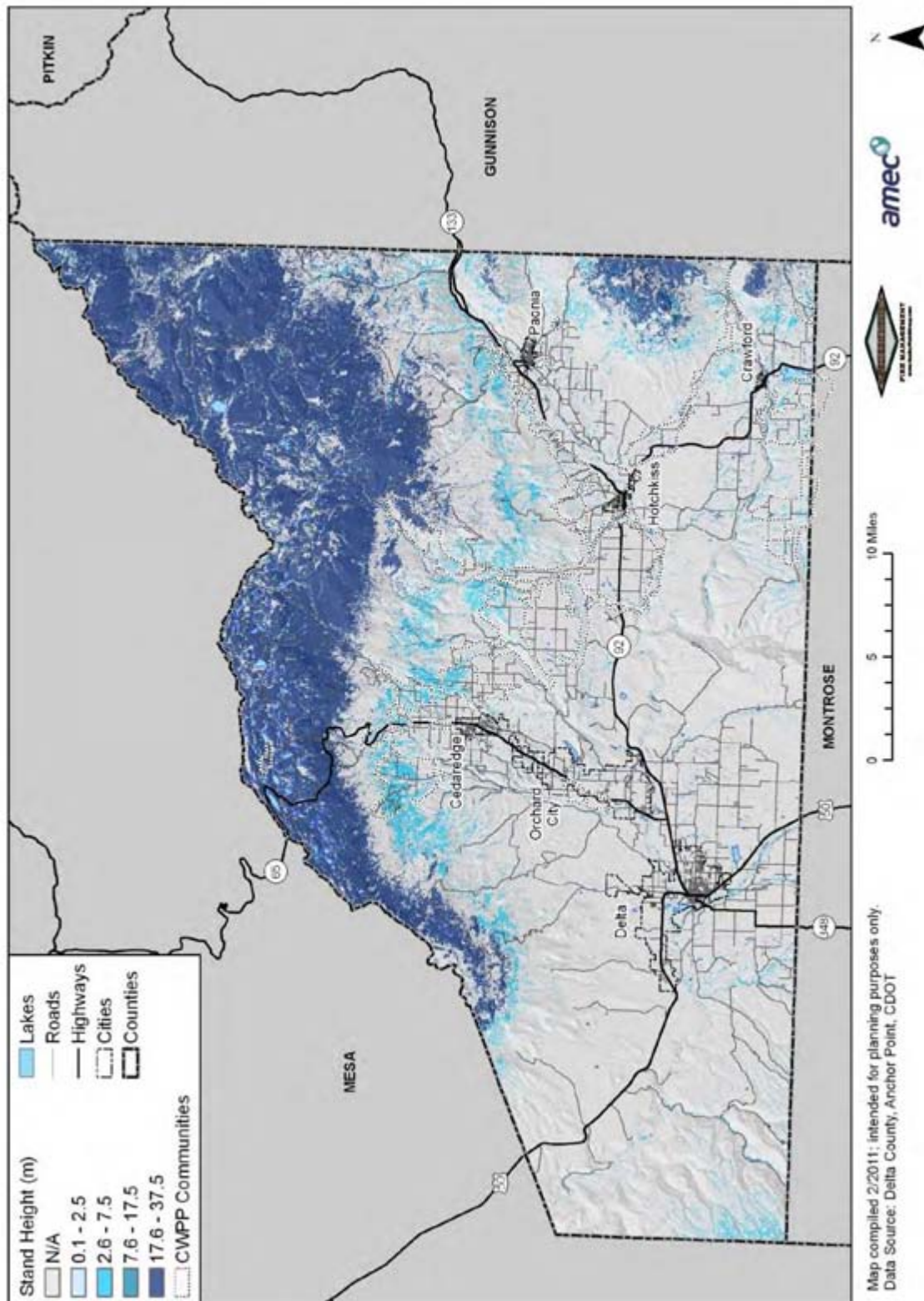


Figure C16. Fuel Model

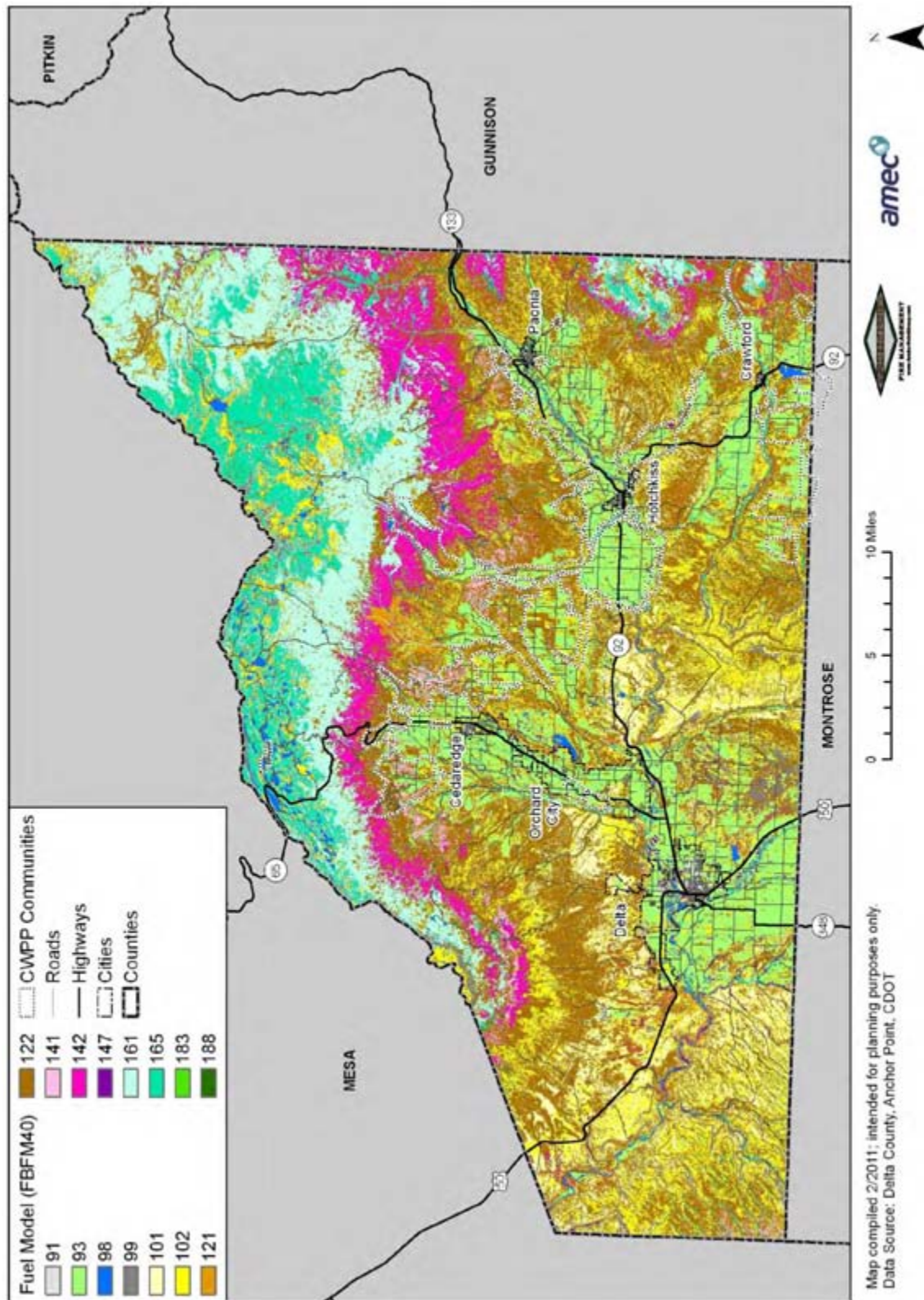


Figure C17. Canopy Base Height

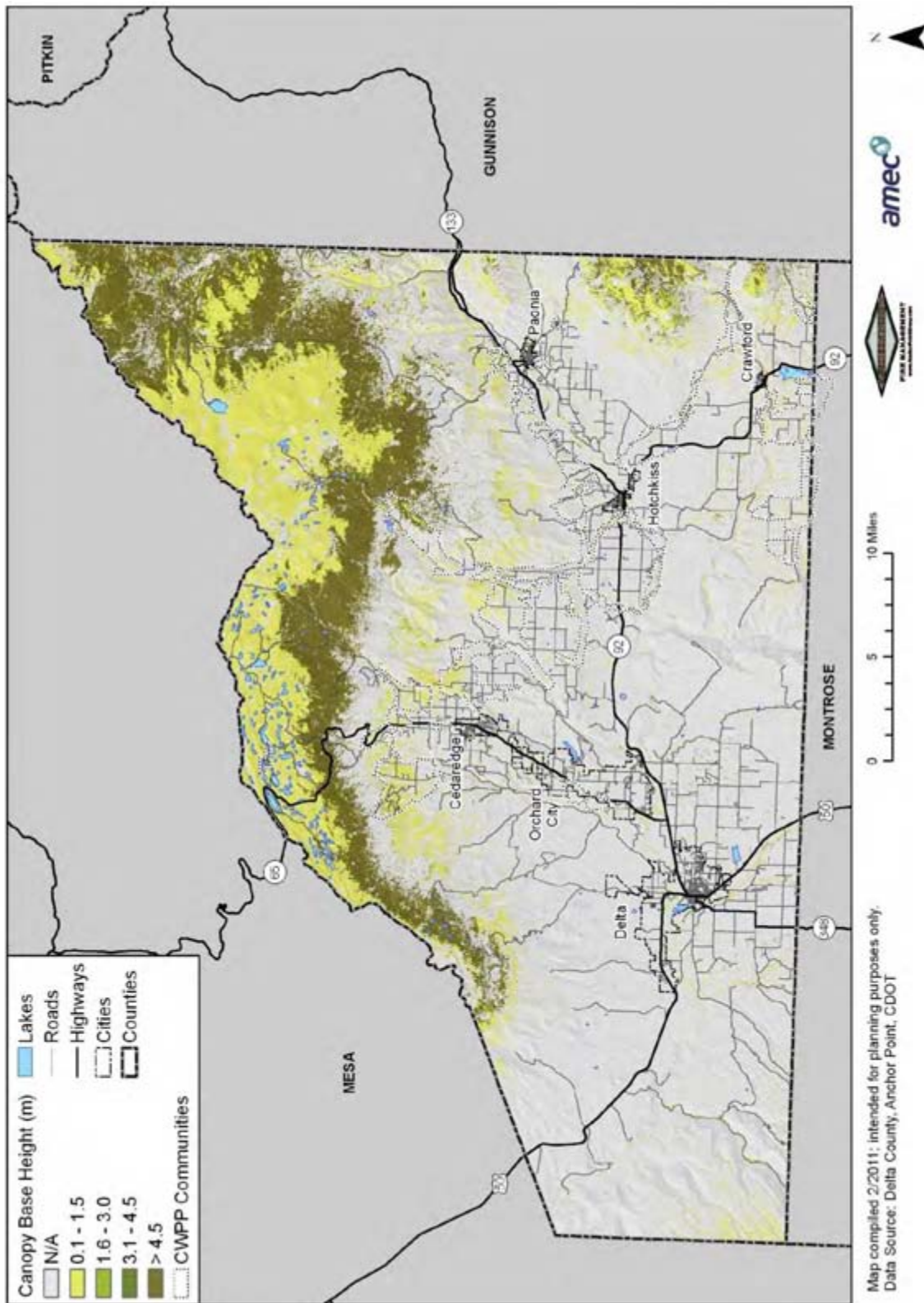


Figure C18. Canopy Bulk Density

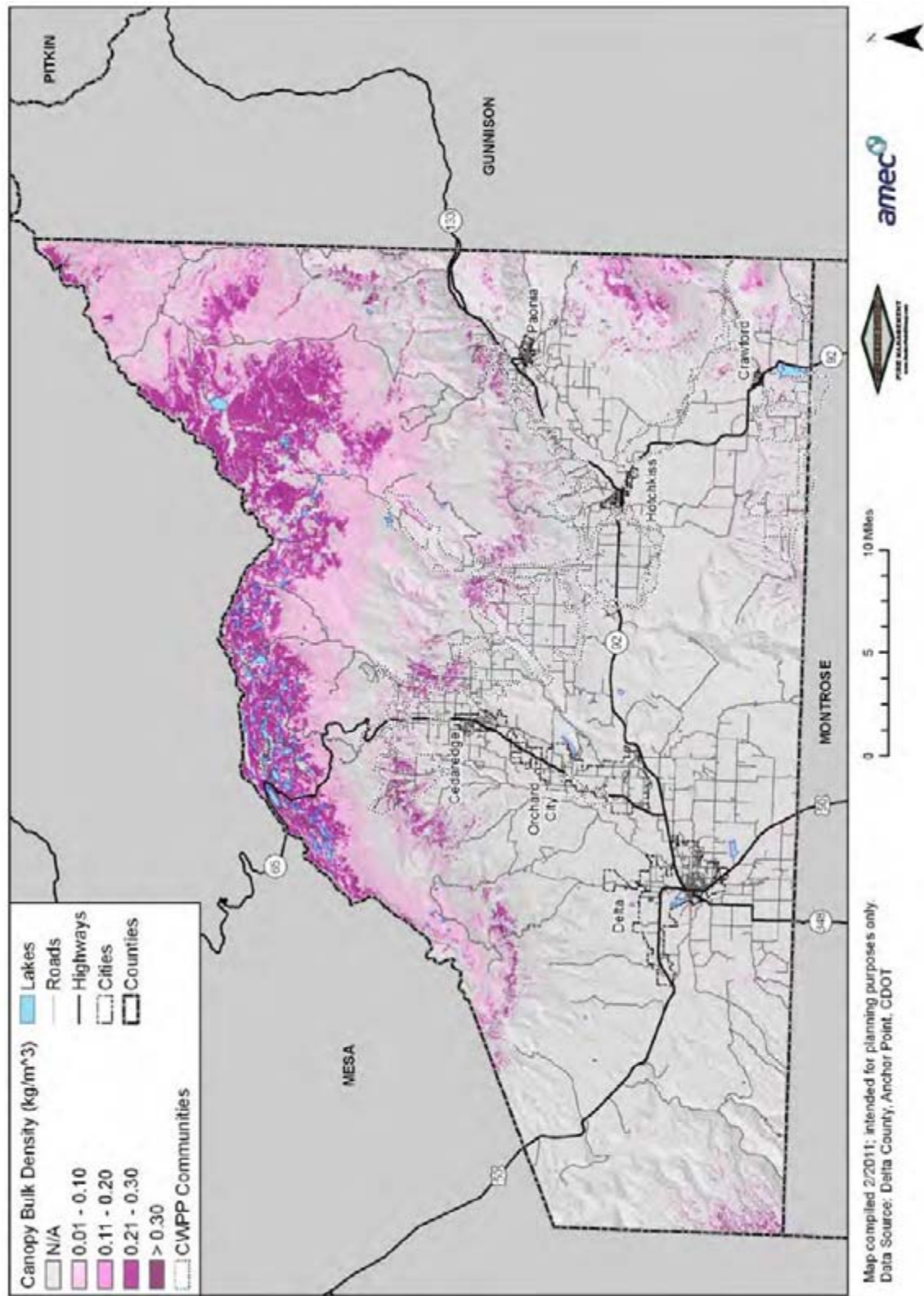
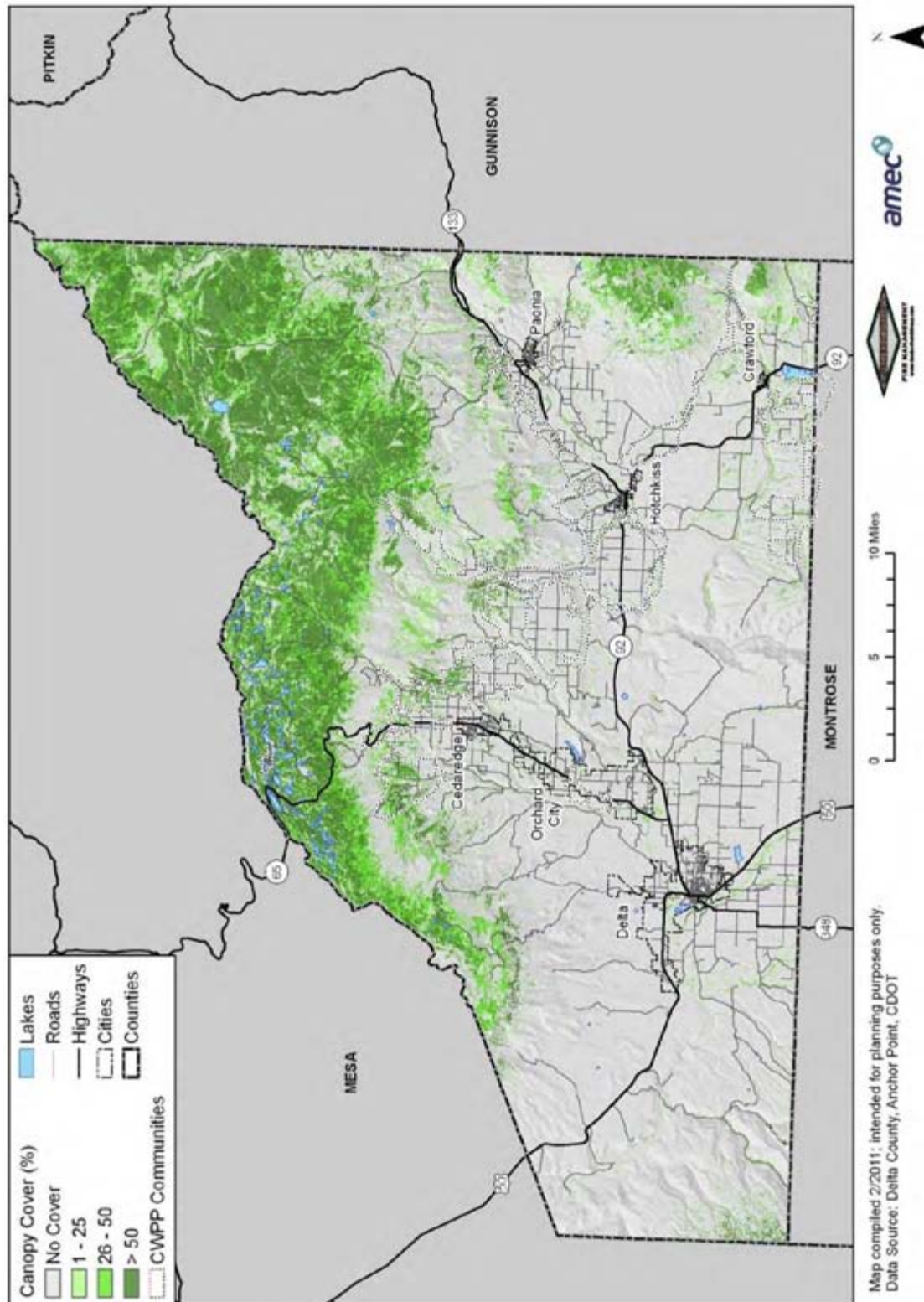


Figure C19. Canopy Cover



APPENDIX D: 11 X 17 MAPS

The following maps have been enlarged to 11 x 17:

- County CWPP Communities (figure 2)
- Other Agency Treatments (figure 6)
- County CWPP Communities and Hazard Rating (figure 8)
- County Rural Planning Areas (figure 9)
- Areas of Special Interest Map (figure 39)
- Predicted Rate of Spread Under High Weather Conditions (figure C6)
- Predicted Flame Lengths Under High Weather Conditions (figure C8)
- Predicted Crown Fire Activity Under High Weather Conditions (figure C9)
- Fireline Intensity Under High Weather Conditions (figure C11)

Legend:

- CWPP Communities
- Fire Protection Districts
- RAWS Weather Zones
- Rivers
- Lakes
- Railroads
- Roads
- Highways
- Cities
- Counties

CWPP Communities:

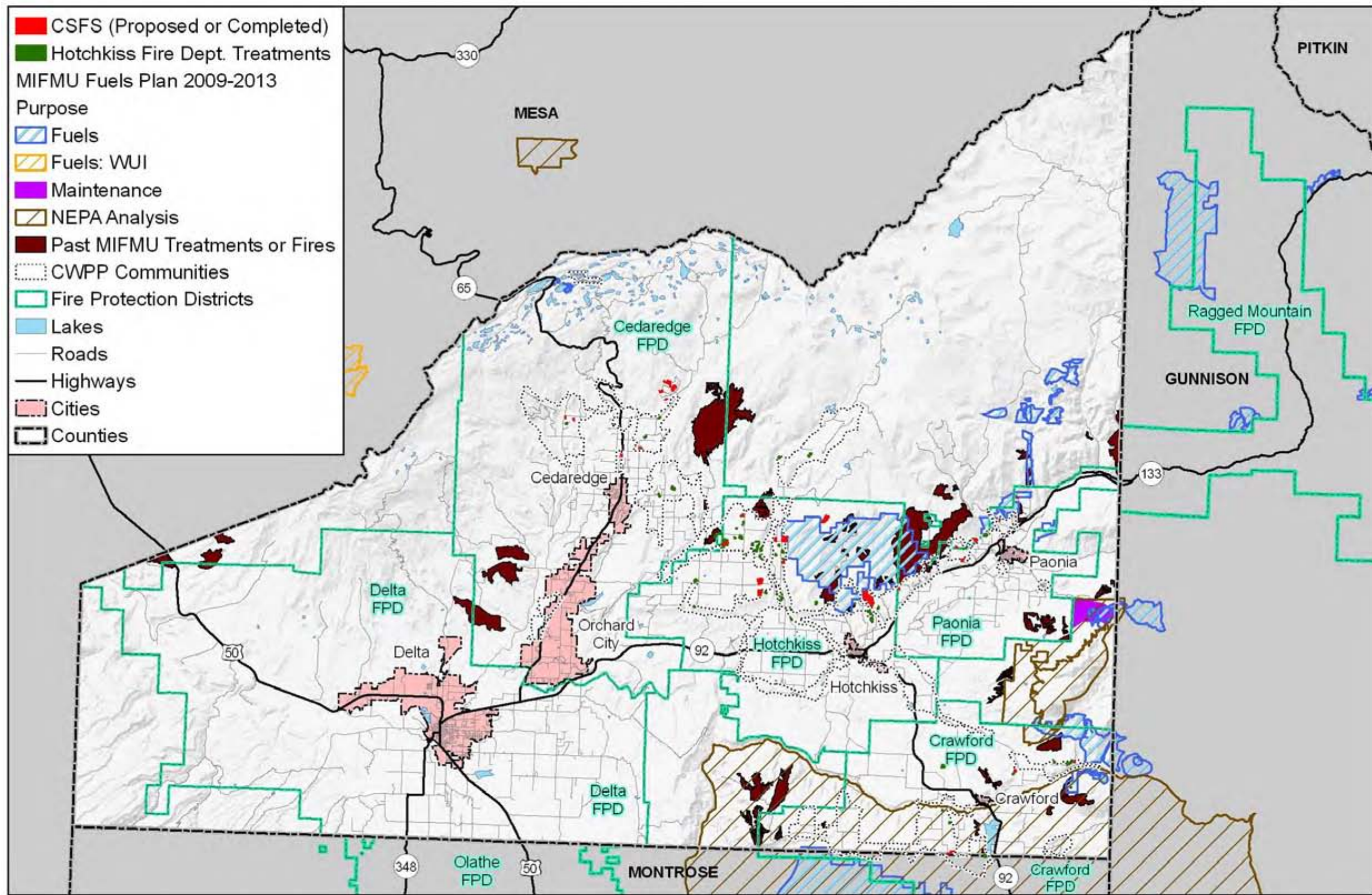
- 1 North Orchard City
- 2 Orchard City
- 3 Stoney Creek
- 4 North Hotchkiss
- 5 South Rogers Mesa
- 6 Cottonwood Creek
- 7 South Redlands
- 8 Leroux
- 9 North Redlands
- 10 Cedar Mesa
- 11 Fruitland Mesa
- 12 Long Gulch
- 13 Needle Rock
- 14 Grand Mesa Resort Company
- 15 Northridge
- 16 Colby Canyon
- 17 Highway 65 Corridor
- 18 Hidden Valley
- 19 Stucker Mesa
- 20 Cedar Hill
- 21 Fire Mountain
- 22 Surface Creek
- 23 North Rogers Mesa



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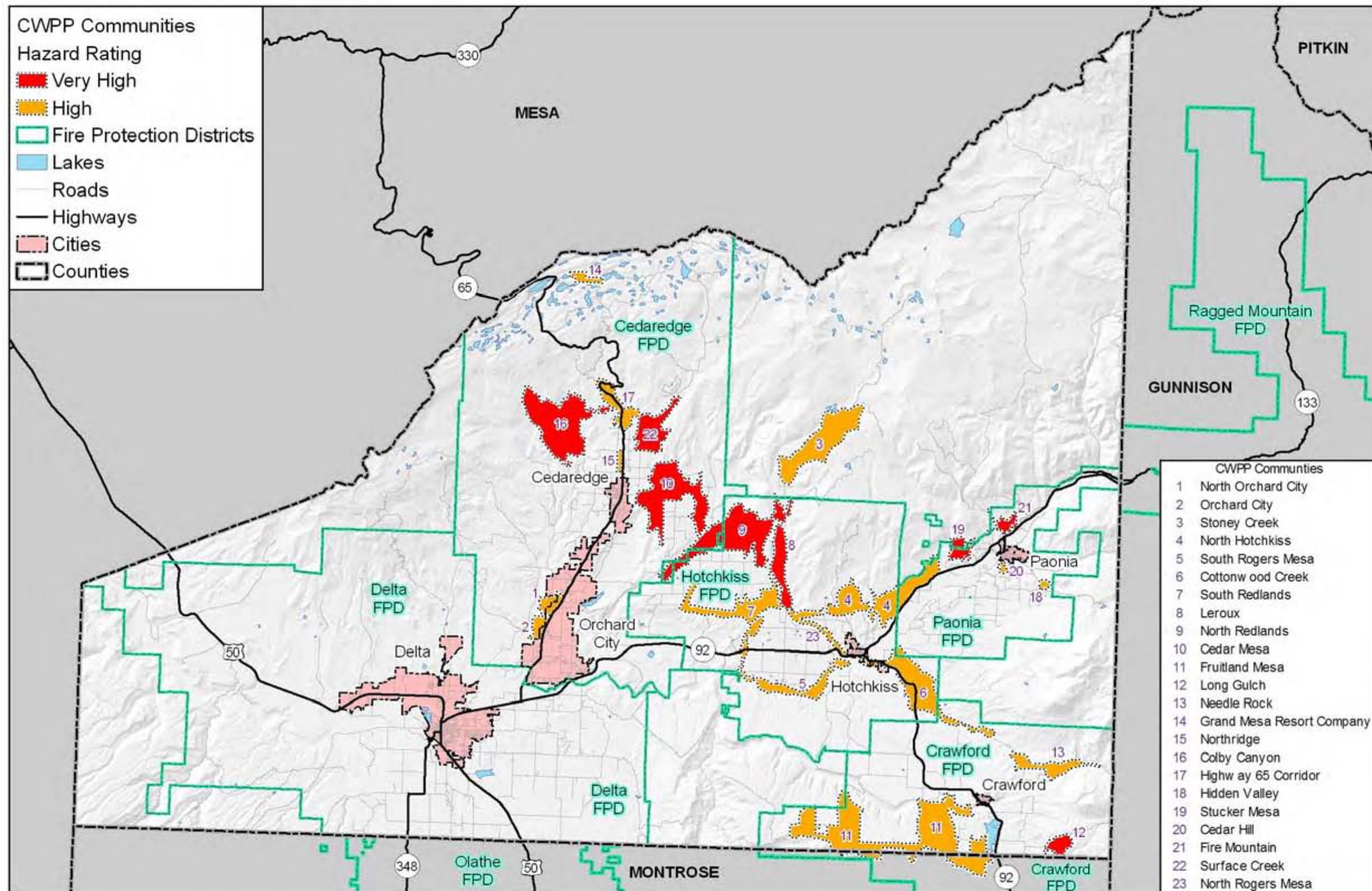


Delta County Other Agency Treatments



Map compiled 6/2011; intended for planning purposes only.
 Data Source: Delta County, Anchor Point, CDOT,
 CSFS, MIFMU, HFD

Delta County CWPP Communities and Hazard Ratings

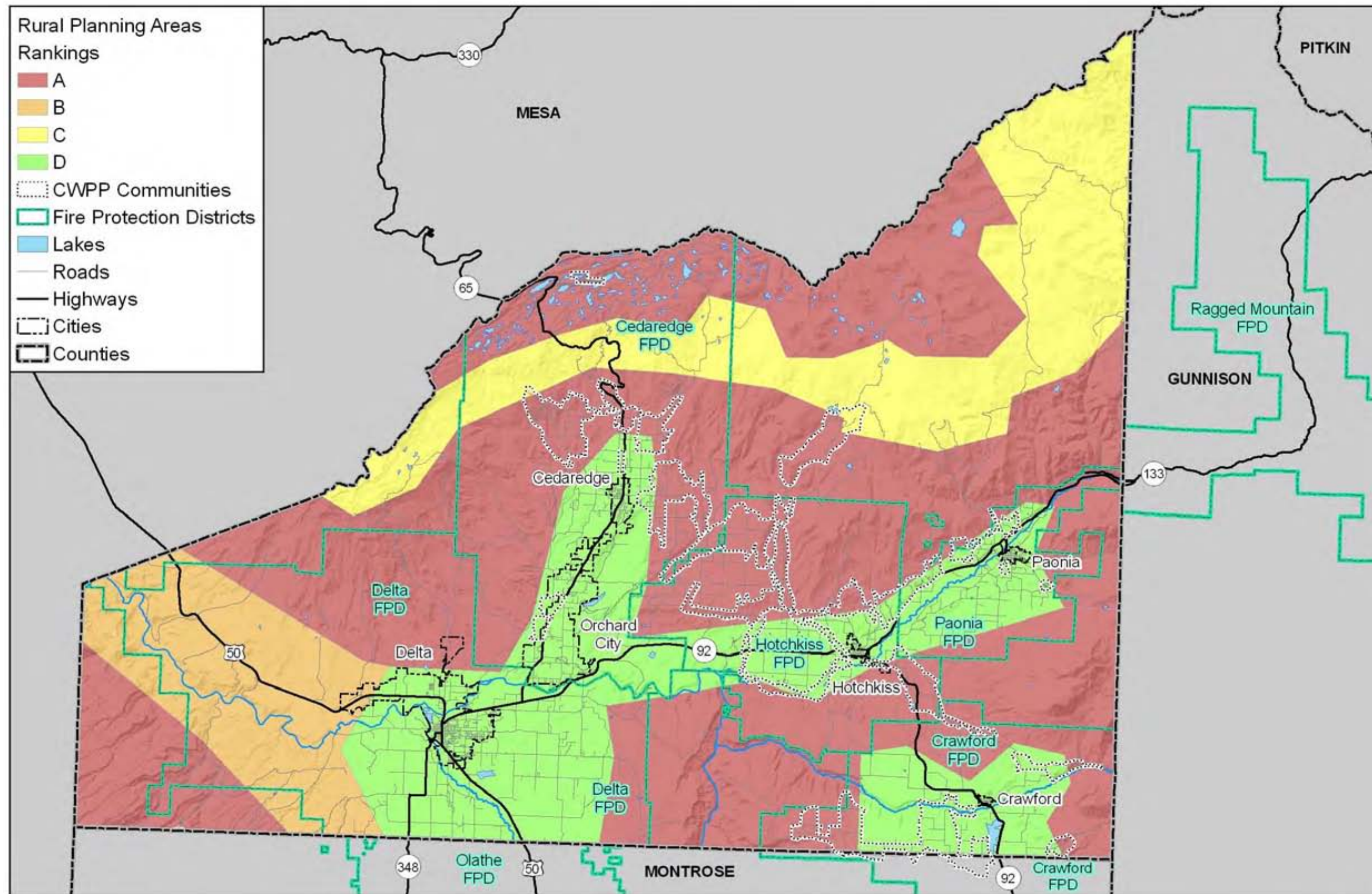


Map compiled 6/2011; intended for planning purposes only.
Data Source: Delta County, Anchor Point, CDOT

0 5 10 Miles



Delta County Rural Planning Areas



Map compiled 6/2011; intended for planning purposes only.
Data Source: Delta County, Anchor Point, CDOT

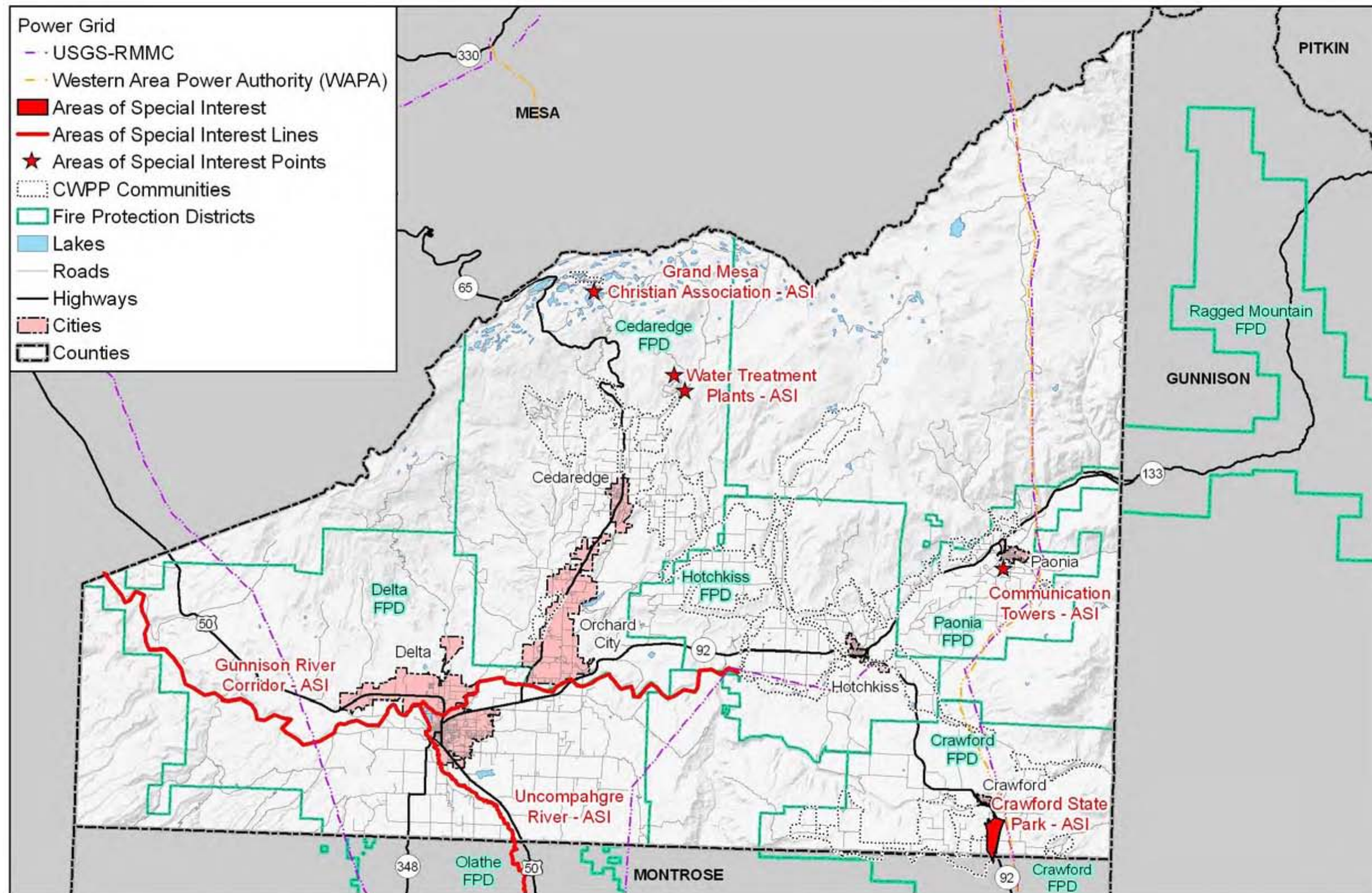
0 5 10 Miles



amec

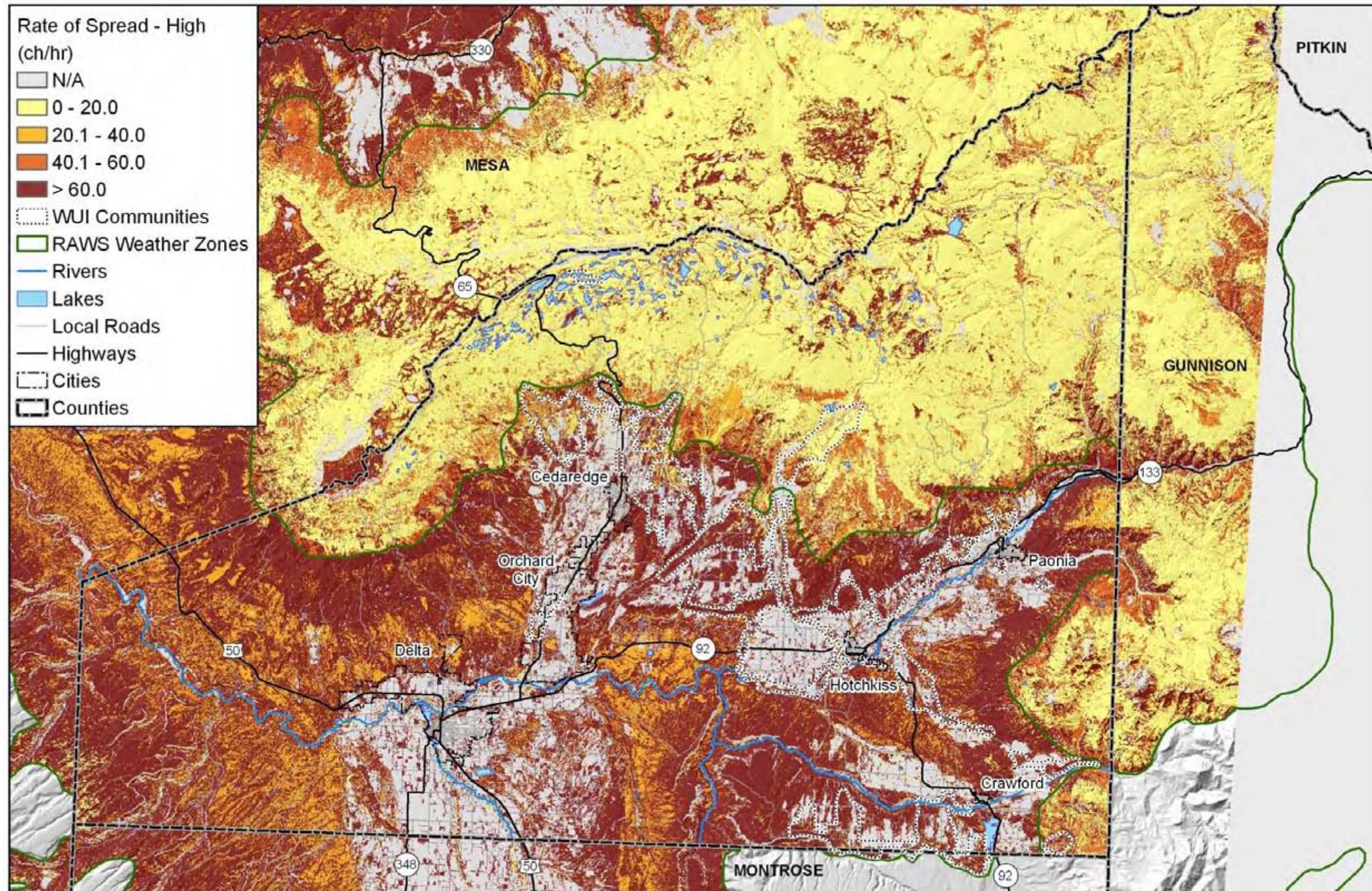


Delta County Areas of Special Interest



Map compiled 2/2011; intended for planning purposes only.
Data Source: Delta County, Anchor Point, CDOT, CSFS

Delta County Rate of Spread - High Weather Conditions

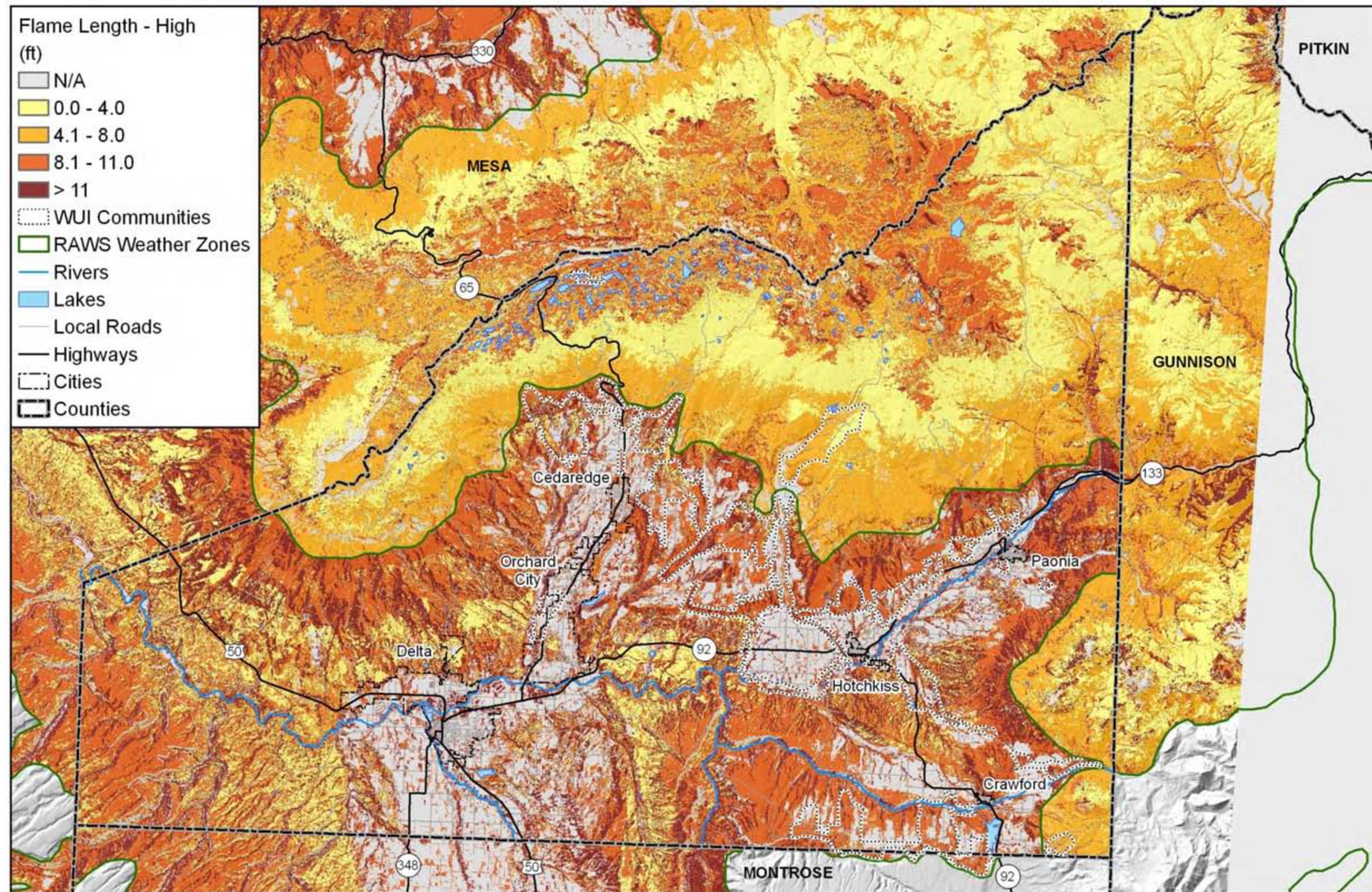


Map compiled 1/2011; intended for planning purposes only.
Data Source: Delta County, Anchor Point, CDOT

0 5 10 Miles



Delta County Flame Length - High Weather Conditions

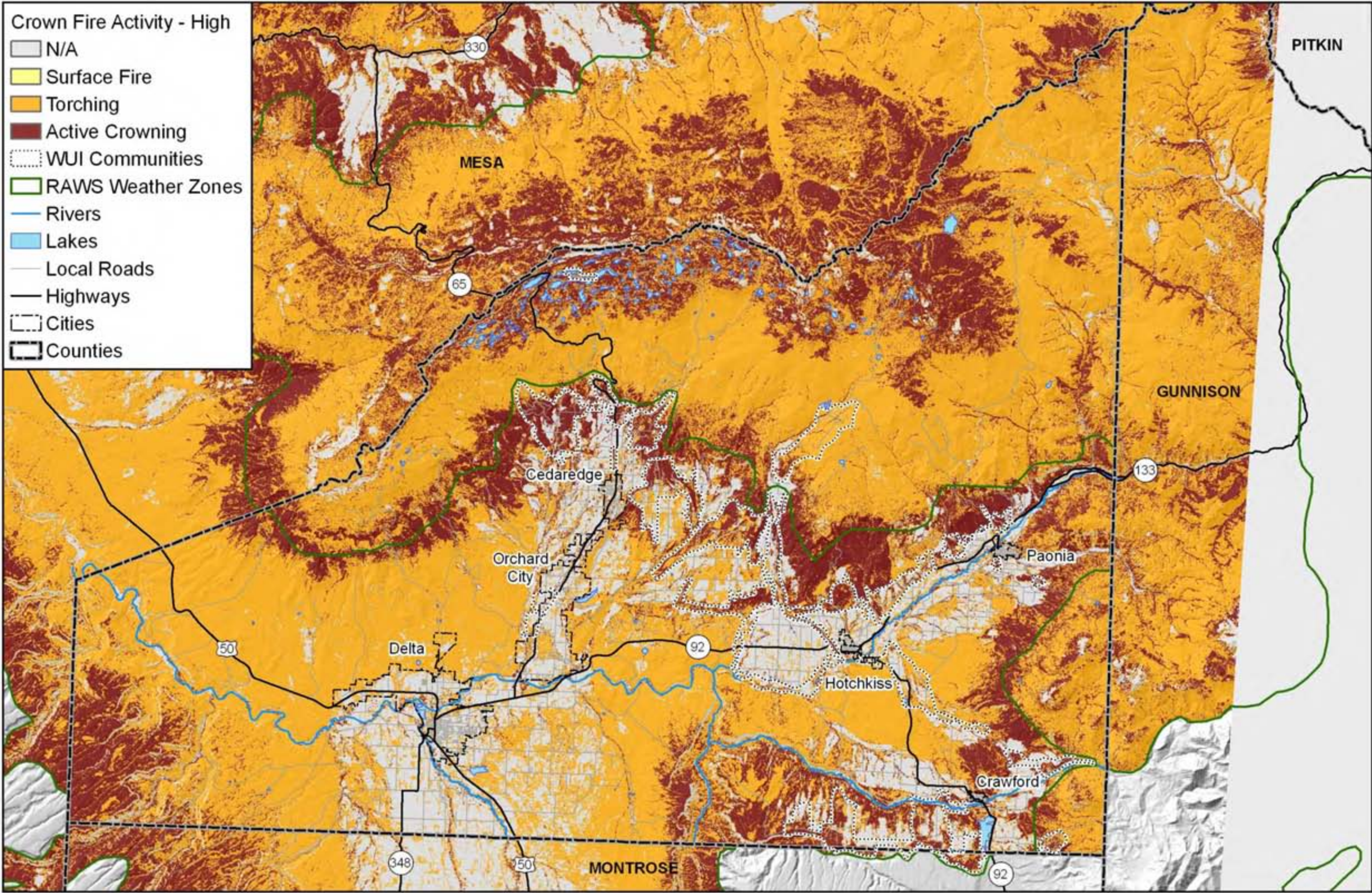


Map compiled 1/2011; intended for planning purposes only.
Data Source: Delta County, Anchor Point, CDOT

0 5 10 Miles



Delta County Crown Fire - High Weather Conditions



Map compiled 2/2011; intended for planning purposes only.
Data Source: Delta County, Anchor Point, CDOT

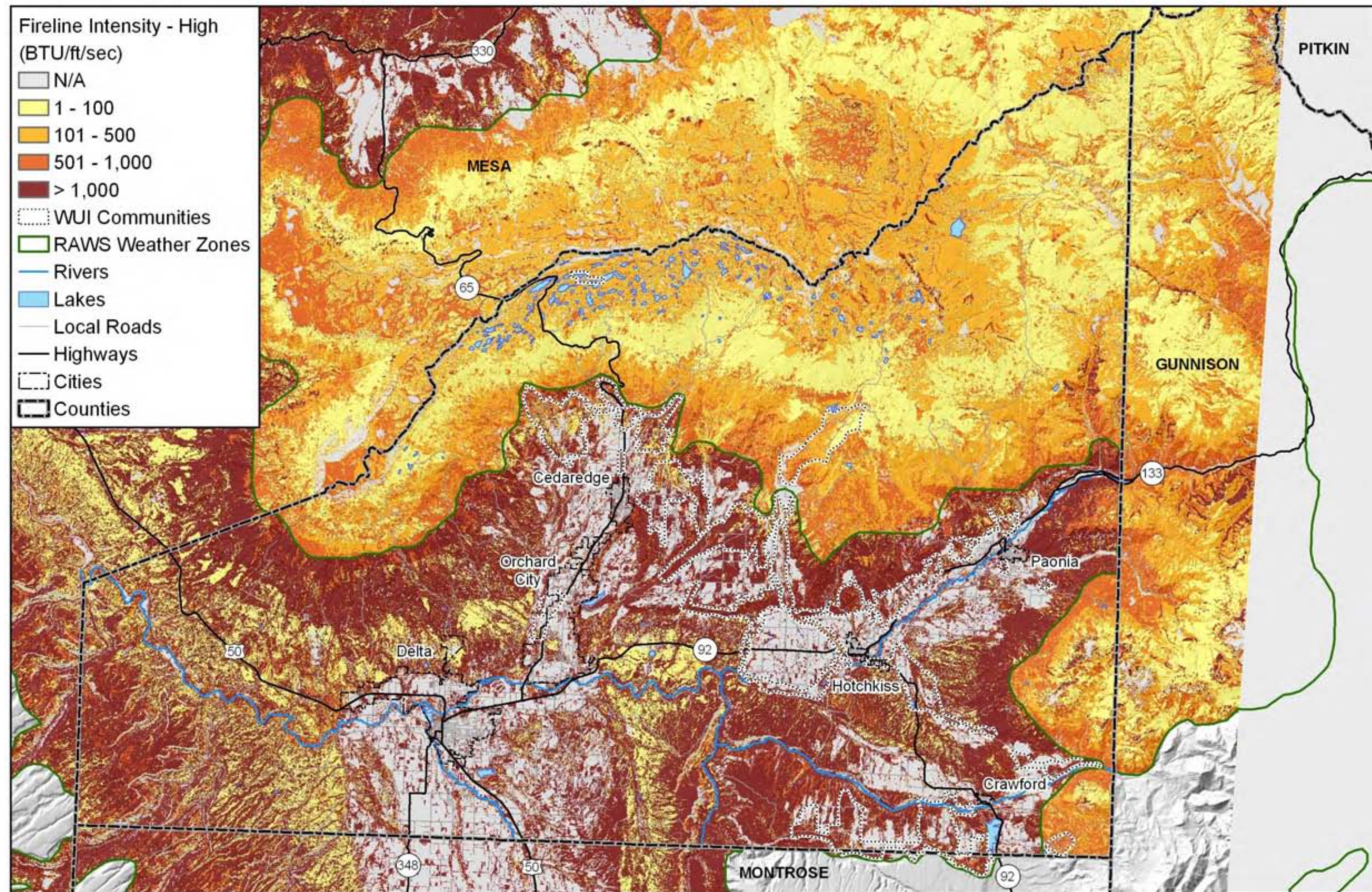
0 5 10 Miles



amec



Delta County Fireline Intensity - High Weather Conditions



Map compiled 1/2011; intended for planning purposes only.
Data Source: Delta County, Anchor Point, CDOT

0 5 10 Miles

