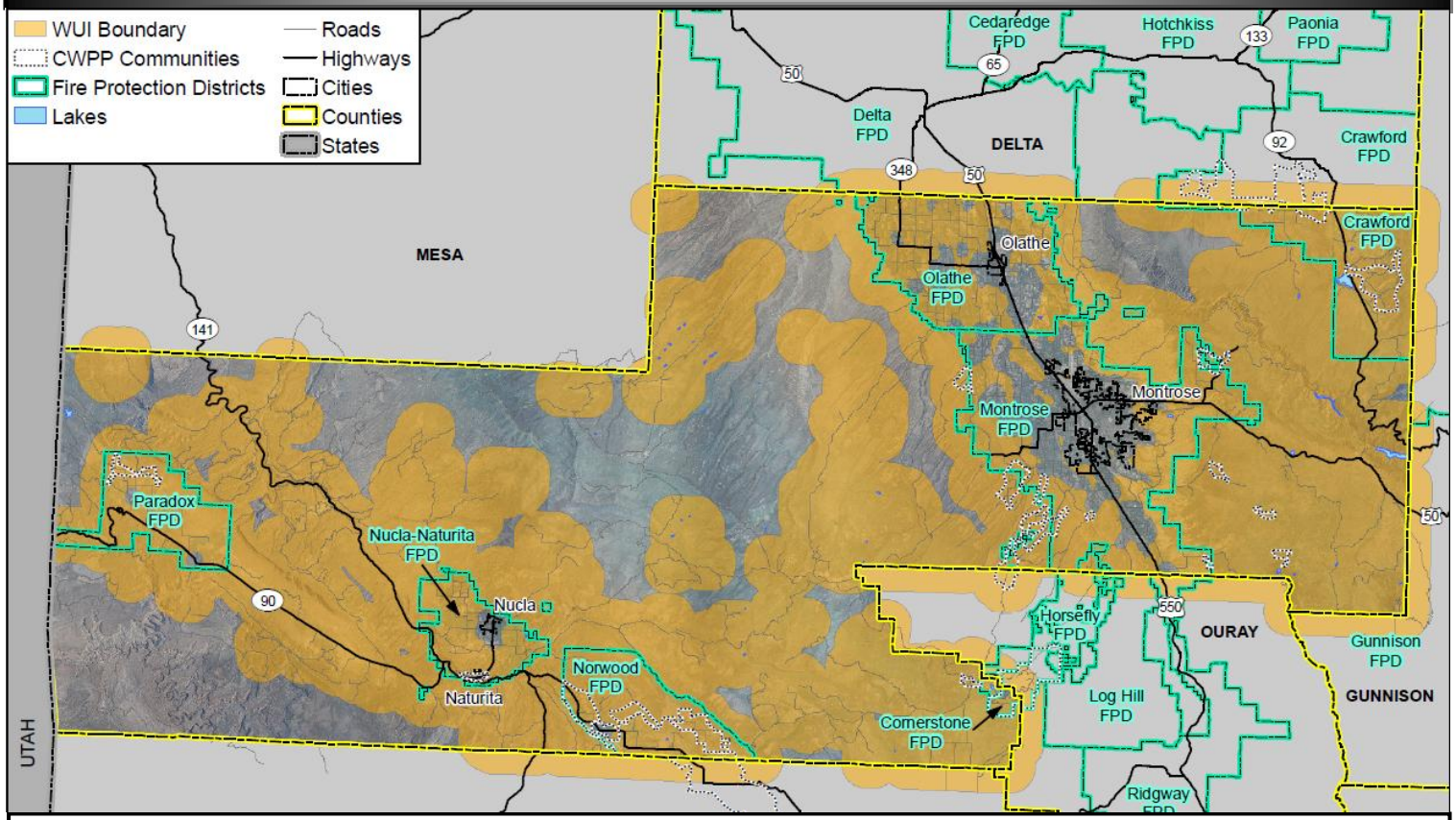
Montrose County, Colorado

Community Wildfire Protection Plan



FIRE MANAGEMENT

amec

Montrose County Colorado

June 2011

MONTROSE COUNTY, COLORADO
COMMUNITY WILDFIRE PROTECTION PLAN
June 2011

Prepared by Montrose County
In Coordination with the Montrose County Core Stakeholder Group

With Professional Planning Assistance from

Anchor Point Group
Boulder, CO

AMEC Earth & Environmental
Boulder, CO

SIGNATURE PAGE

The following entities participated in the development of this plan and mutually agree on its contents.

_____	_____
County Sheriff	Date
_____	_____
County Emergency Manager	Date
_____	_____
Log Hill Mesa Fire Protection District	Date
_____	_____
Montrose Fire Protection District	Date
_____	_____
Nucla/Naturita Fire Protection District	Date
_____	_____
Olathe Fire Protection District	Date
_____	_____
Paradox Fire Protection District	Date
_____	_____
Horsefly Volunteer Fire Association	Date
_____	_____
Norwood Fire Protection District	Date
_____	_____
Colorado State Forest Service District Forester	Date
_____	_____
Montrose Interagency Fire Management Unit	Date
_____	_____
West Region Wildfire Council	Date
_____	_____
Crawford Fire Protection District	Date
_____	_____
Cornerstone Metropolitan District	Date

MONTROSE 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 Montrose 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 Montrose 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 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 Montrose County CWPP is the result of an area-wide fire protection planning effort that includes extensive field data, review and compilation of existing documents, 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 Montrose Fire Protection District, Nucla/Naturita Fire Protection District, Olathe Fire Protection District, Paradox Fire Protection District, Horsefly Volunteer Fire Association, Cornerstone Metropolitan District, Norwood Fire Protection District, Crawford Fire Protection District, Log Hill Mesa Fire Protection District, West Region Wildfire Council (WRWC), Colorado State Forest Service (CSFS), Montrose Interagency Fire Management Unit (MIFMU), Montrose County Office of Emergency Management, United States Forest Service (USFS), Bureau of Land Management (BLM), Colorado Division of Emergency Management (CDEM), 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 Montrose County CWPP is a working document, and, as such, will need to be updated annually, and/or after a major ~~-e~~vent" such as wildfire, fuels treatment projects, flood, insect infestation, or even 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, Montrose 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, including the top priority recommendation of defensible space; however, additional fuel reduction recommendations are provided for three CWPP communities. In all, two fuelbreaks, one evacuation route improvement and one roadside thinning were recommended for three of the communities. 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 154 of this document for a glossary defining technical terms.

Appendix A: *General Recommendations*
Recommendations for individual communities are found on the community write-up page in the main report. The solutions outlined in Appendix A pertain to overall recommendations for the County and all fire protection districts. Appendix A 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 the Healthy Forests Restoration Act (HFRA) is to assure community participation. A summary of the collaborative process undertaken for this project are found here.

Appendix C: *Fire Behavior Potential Analysis Methodology*
Appendix C describes 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 fire behavior potential. 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 fully describe 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 Montrose County CWPP is the result of a community-wide planning effort that included extensive field data gathering, compilation of existing documents and Geographic Information System (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 Montrose County Fire Plan, 2008 Montrose County Multi-Hazard Mitigation Plan, and the 2010 Montrose County Wildfire Annual Operating Plan), which will be valuable to citizens, policymakers, and public agencies in Montrose County, Colorado. Participants in this project include the Montrose Interagency Fire Management Unit, Montrose Fire Protection District, Nucla/Naturita Fire Protection District, Olathe Fire Protection District, Paradox Fire Protection District, Horsefly Volunteer Fire Association, Cornerstone Metropolitan District, Norwood Fire Protection District, Crawford Fire Protection District, Log Hill Mesa Fire Protection District, West Region Wildfire Council, Bureau of Land Management, United States Forest Service, Colorado State Forest Service, Colorado Division of Emergency Management, Home Owner Associations (HOAs), and homeowners. This document meets the requirements of the Healthy Forests Restoration Act (2003) and Colorado State Forest Service 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 Wildland Urban Interface (WUI) areas. 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 Montrose County wildfire hazard and risk assessment.

As previously stated, this CWPP is a ~~li~~ving document" that is only useful if it is updated annually. The current stakeholder organizations included 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 Montrose 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 CSFS.

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, New Mexico, 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 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 (HFRA) was signed into law.

Through this piece of legislation Congress continues to appropriate specific funding to address five main sub-categories 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 Montrose County Community Wildfire Protection Plan (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 ~~c~~communities" that represent relatively similar 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 pre-planning 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 Montrose Fire Protection District, Nucla/Naturita Fire Protection District, Olathe Fire Protection District, Paradox Fire Protection District, Horsefly Volunteer Fire Protection District, Cornerstone Metropolitan District, Norwood Fire Protection District, Crawford Fire Protection District, Log Hill Mesa Fire Protection District, Colorado State Forest Service, Montrose Interagency Fire Management Unit (MIFMU), Montrose County Office of Emergency Management, US Forest Service, Colorado Division of Emergency Management, West Region Wildfire Council and representatives from local communities and the public. The Montrose 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 Montrose County CWPP are included in Table 1 along with their organizations and various roles and responsibilities, both currently and in the future. 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. Montrose County CWPP Development Team

Name	Organization	Roles / Responsibilities
Ike Holland, Emergency Manager Rick Dunlap, Sheriff Greg Thornton	Montrose County	Primary point of contact and decision making, emergency response.
Tad Rowan, Fire Chief	Montrose 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.
Dan Quigley, Fire Chief	Horsefly Volunteer Fire Association	
Jack Lee, Fire Chief	Paradox Fire Protection District	
Kyle St. Jean, Fire Chief	Olathe Fire Protection District	
Lloyd Church, Fire Chief	Nucla/Naturita Fire Protection District	
Ted Mueller, Fire Chief	Norwood 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 – Uncompahgre Field Office	Participation in plan collaboration and review.
Brian St. George, Field Office Manager	Bureau of Land Management – Gunnison 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.
Judy Shutza, District Ranger	US Forest Service Norwood Ranger District	Participation in plan collaboration and review.
Tammy Randall-Parker, District Ranger	US Forest Service – Ouray Ranger District	Participation in plan collaboration and review.
Steve Ellis, Southwest Regional FMO	Colorado State Forest Service	Participation in plan collaboration and review.
Jodi Rist, District Forester	Colorado State Forest Service	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.
Connie Rudd Ross Oxford	National Park Service	Participation in plan collaboration and review.

Name	Organization	Roles / Responsibilities
James McArtor, Fire Chief, Crawford FPD Jennifer Dinsmore Sue Mcintosh Warren Petersen, Horsefly I and II	Other interested organizations/ San Miguel and Hinsdale counties	Participation in plan collaboration and review.
Rodrigo Moraga Kerry Webster Chris White Mark McLean	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 & Environmental	Development of the CWPP document, community outreach and stakeholder engagement.
Community Wildfire Mitigation Advocates	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 Montrose County CWPP builds upon and is related to other planning efforts in the community, including:

- 2010 Montrose County Wildfire Annual Operating Plan
- 2008 Montrose County Pre-Disaster Hazard Mitigation Plan
- 2005 Montrose County Fire Plan
- Countywide GIS structure inventory

The Montrose County CWPP should be considered an umbrella document in relationship to local- level CWPPs. The 2011 Montrose County CWPP does not supersede local CWPPs. It is intended to complement these planning efforts in order to help Montrose 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 Montrose County. Montrose County is located in western Colorado on the border of Colorado and Utah. The county is bordered by Mesa and Delta Counties to the north, Gunnison County to the east, San Miguel and Ouray Counties to the south, and the State of Utah to the west. The total land area of the County is 2,247 square miles, with 1,573 square miles of this area being federally owned and managed by the Bureau of Land Management, United States Forest Service, National Park Service, and the Colorado Division of Wildlife. Some of these federally managed areas include Uncompahgre Field Office, Grand Mesa, Uncompahgre, and Gunnison National Forest, and Black Canyon of the Gunnison National Park. Land stewardship in the County is shown below in Figure 1. According to the U.S. census, the population of Montrose County in 2010 was estimated at 41,276 people, a 23.46 percent increase since the 2000 census population of 33,432. In 2010, there were an estimated 18,250 housing units. Primary north-south transportation routes include Colorado State Highway 141 and US Highway 550. The primary east-west transportation routes include Colorado State Highway 90 and US Highway 50.

What is now Montrose County was originally part of the Uncompahgre Reservation. The Reservation was opened to settlers in 1881. The City of Montrose, originally named Pomona, was incorporated in May of 1882. The location of Montrose provided a link between the mountain towns of Ouray, Silverton, and Telluride, along with providing connections to west end communities (communities located in the western half of Montrose County). Mining in the western region of Montrose County during the 1880s helped develop west end communities such as the towns of Bedrock, Nucla, Naturita, Paradox, and Uravan. One noted Montrose entrepreneur, Dave Wood, built a road over the Uncompahgre Plateau down to Telluride to capitalize on the delivery and transfer of supplies between the mountain towns. The road is still used today; however, it is only open during the summer months. In 1883, a portion of Gunnison County was partitioned off to create Montrose County. As the agricultural community of Montrose grew the need for water increased. In the early 1900s federal funding was obtained to construct the Gunnison Tunnel to divert water from the nearby Gunnison River in the Black Canyon. In 1909, the tunnel was completed and President William Howard Taft cut the inaugural ribbon for the first flow of water from the Gunnison River to Montrose County farms. Settlers in the area quickly established an agricultural community focused on cattle ranching, produce, and fruit orchards. By the end of the 1920s Montrose was an established community. Forestry and coal mining were also important industries in the development of Montrose County.

Montrose County is classified as having a semiarid climate, with sunshine on over 274 days of the year, frequent winds, and minimal humidity. Elevation ranges from 4,700 feet to 11,453 feet above sea level. Temperatures range from the average high of 83° F in July and the average low of 20° F in January. Average rainfall for the County is 11.18 inches per year, and average annual snowfall is 19.51 inches.

Per HFRA regulations, there is a requirement to explicitly define the WUI for the study area. According to the National Wildland Course Guide (NWCG), the WUI is, ~~t~~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 Montrose County, the WUI was determined using a 1.5 mile buffer surrounding all private lands within the county boundary that are at risk from wildland fire. Some areas, including those within the town limits of Montrose, Olathe and Nucla, as well as farmland areas, are not included because they were not determined to be threatened by wildfire. Specifically, the WUI boundary within Montrose County is concentrated around the main highway areas, and does not include large sections of federal land in the central and western region of the county.

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 ranches and mining camps, and then later in small towns, homes now occur throughout all of the nonfederal portions of Montrose 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, 22 individual communities were defined within the study area, identified in Figure 2. This map can also 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. The August 2001 *Federal Register* identified the communities of Bostwick Park, Dave Wood, Deer Mesa, Fruitland Mesa, Horsefly, Naturita, Norwood, Paradox, Redvale, and Shavano Valley 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 Wildland Urban Interface. For the purposes of this project, 22 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 hazards both natural and manmade, are considered in the overall hazard ranking of these communities.

Construction type, condition, age, the fuel loading of the structure/contents, and position are contributing factors in making homes more susceptible to ignition under even moderate burning conditions. There is also a likelihood of rapid fire growth and spread in these areas due to 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 has identified all of the 22 communities in the study area to be at extreme, very high, high, moderate, or low risk. In extreme, very high, and high risk communities, a parcel-level analysis should be implemented as soon as possible to ensure the ongoing safety of residents and survivability of structures. In moderate level communities a parcel-level analysis should be implemented if a significant number of homes have no defensible space, have ineffective defensible space, or have a significant number of hazards near the homes.

The methodology for this assessment uses the Community Wildfire Hazard Risk (WHR) rating system that was developed specifically to evaluate communities within the Wildland Urban

Interface (WUI) areas 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 22 communities, six ~~a~~reas of special interest" (ASI) have been identified: Black Canyon of the Gunnison National Park, Curecanti National Recreational Area, the Uncompahgre River Corridor, Buckeye Reservoir, the Nucla Station and the San Miguel River Corridor (refer to the Areas of Special Interest section). 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. Montrose County Land Stewardship

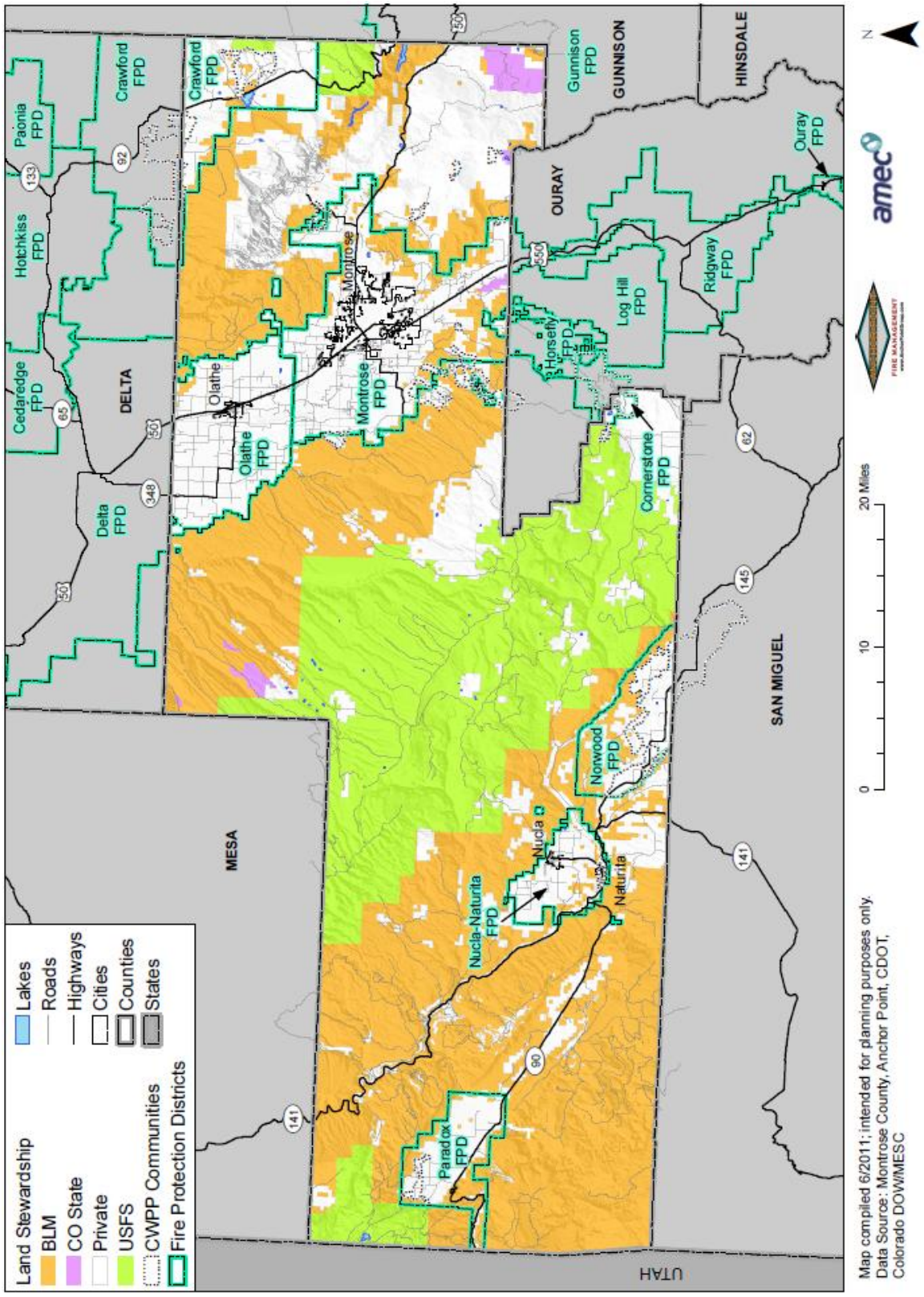


Figure 2. Montrose County CWPP Communities

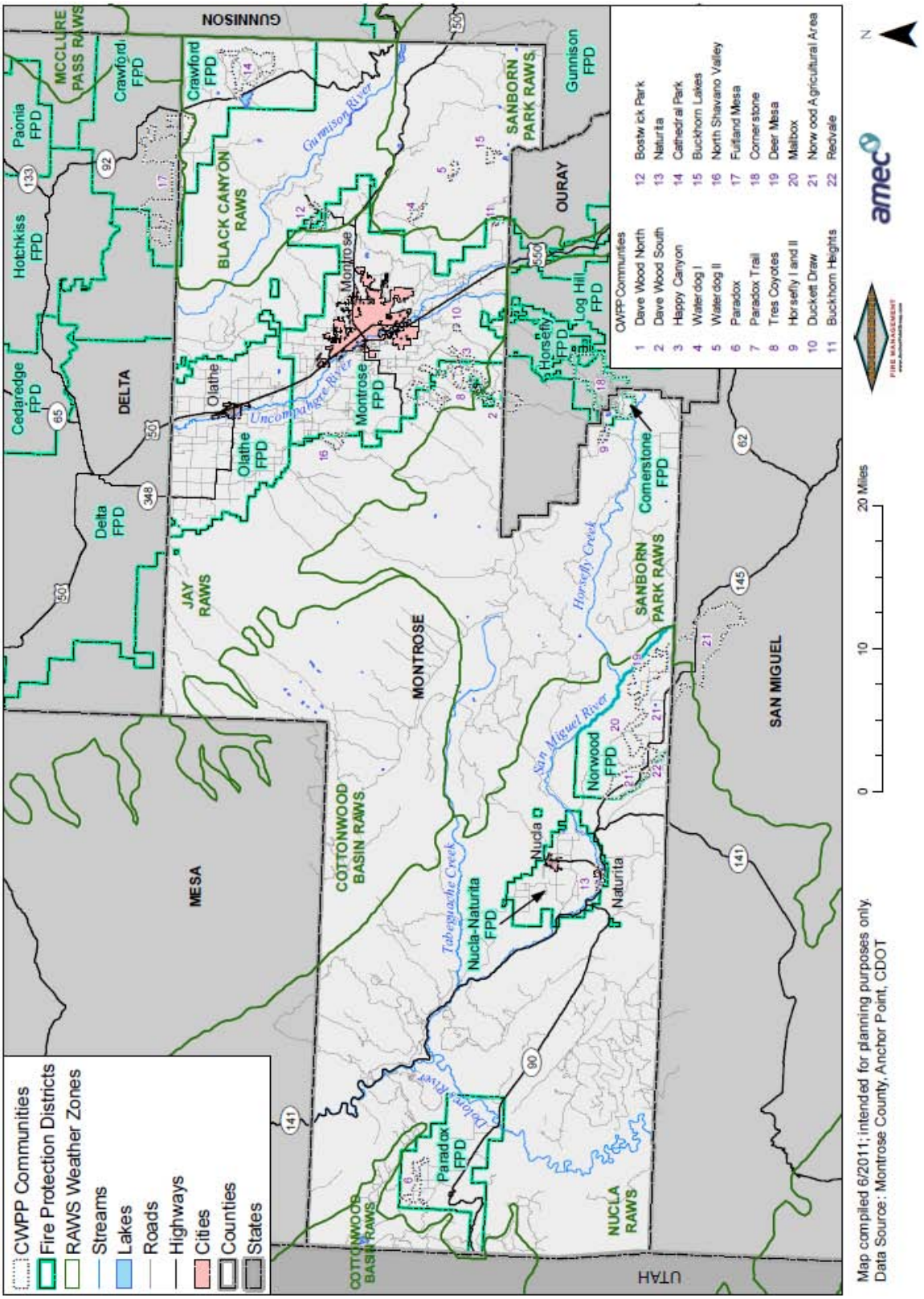
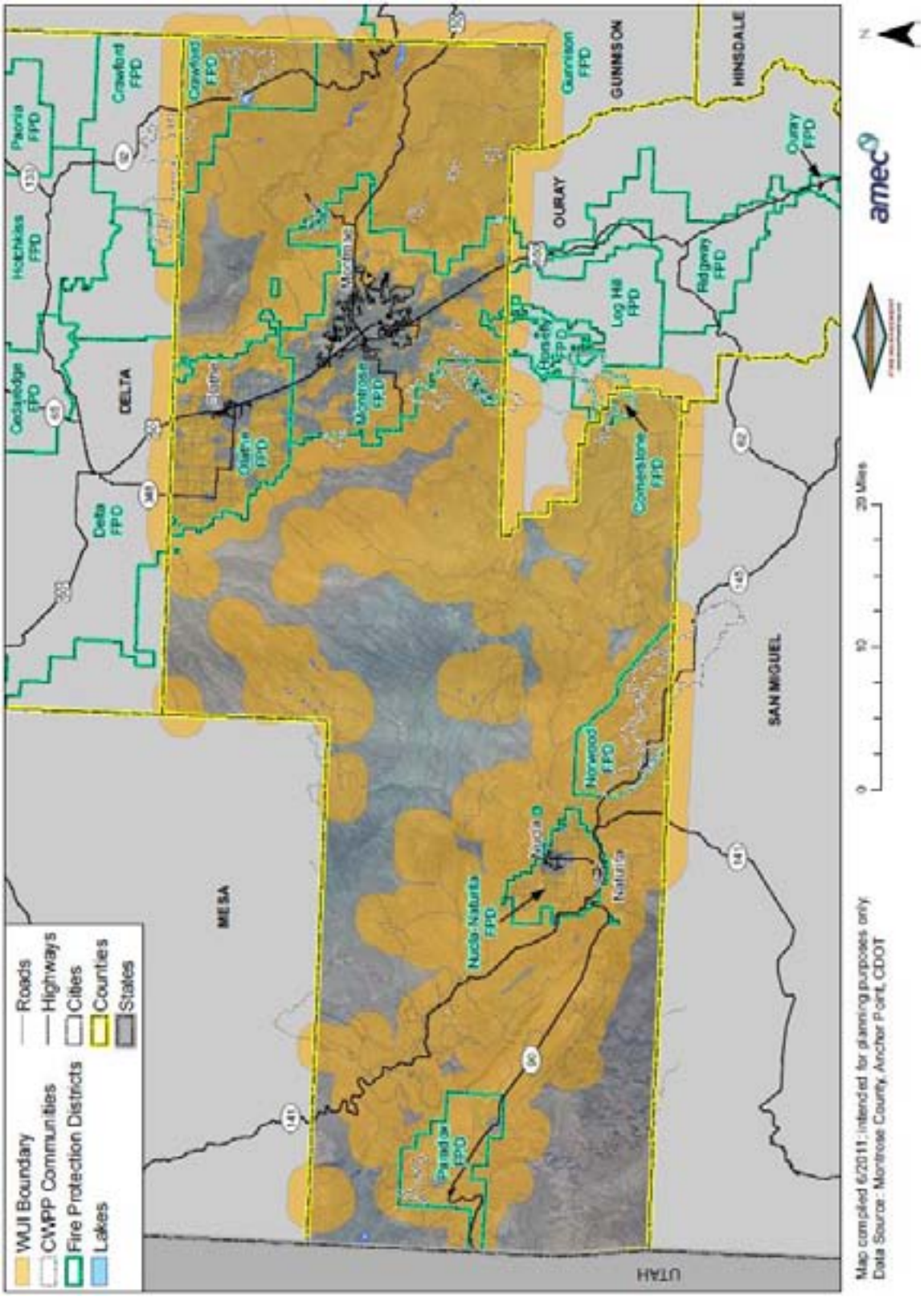


Figure 3. Montrose County Wildland Urban Interface Boundary



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. This is a situation that officials and residents are highly aware of. Recent national disaster events and Colorado's wildland fire history have increased focused attention at both local and state government levels on the need to mitigate such events where possible, and to prepare to cope with them when they are unavoidable.

Individuals live in Montrose County for a variety of reasons, including the area's natural beauty, access to public lands, clean water and air, and recreational opportunities presented by adjacent public lands. Protecting these assets also aids in preserving property values, another value to residents.

LIFE SAFETY AND HOMES

Most of Montrose 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 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 metal, 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 several Montrose County fire protection districts (FPD), including the Olathe FPD, Montrose FPD, Horsefly Fire Association, Norwood FPD, Nucla/Naturita FPD, and the Paradox FPD. These FPDs are covered by the 2010 Montrose County Wildfire Annual Operating Plan (AOP), which details procedures and agreements to address the wildland fire threat in Montrose County.

COMMERCE AND INFRASTRUCTURE

Economic Values

The 2008 Montrose County Multi-Hazard Mitigation plan identifies several communities and their values at risk to wildland fires. Overall, the Multi-Hazard Plan estimates that Montrose County has a value of $498,134,825 of commercial property at risk and a value of $2,342,787,330 in real property at risk to wildland fire. This does not include state assessed or exempt properties. Economic values at risk to wildfire go beyond property values and include displaced people and animals, damaged infrastructure and roads, and even damage to historical or culturally significant sites. Additionally, the effect of wildland fires on employment can impact an area's economy. Fires could impact major employers in the county, possibly leaving people without work in either the short term or the long term. Wildfires can mar the landscape in addition to placing people in danger, affecting the tourism sector of Montrose County's economy. Agricultural lands, which are an important part of Montrose County's economy, are also susceptible to wildfire. Wildland fire impacts on agriculture could adversely affect the ability on Montrose County's residents to earn a living from this industry.

Critical Infrastructure

Montrose County has a mix of private and public lands. Tourism on these lands plays an important role in the economy and character of the county. The East Portal Road of the Black Canyon of Gunnison National Park is located in Montrose County. Wildland fires in the vicinity of

the East Portal Road could affect ingress and egress in the area, directly impacting tourism or even evacuation in the event of a wildfire.

Aside from the obvious negative impacts to tourism from wildfire, there is additional infrastructure within the community that could be adversely affected. Crystal Dam is located east of Montrose, in the southeastern region of Black Canyon, on the Gunnison River. The dam was constructed during 1972 and 1977, and is part of the Colorado River Storage Project. The 323-foot high double curvature arch dam retains water from the Gunnison River in the Crystal Reservoir. The reservoir has a total capacity of 25,236 acre-feet of water and normally carries an active capacity of 12,891 acre-feet covering a surface area of 301 acres. A power plant harvesting energy from the dam was completed in 1978 and has the capacity to generate 28,000 kilowatts from a single 39,000-horsepower hydraulic turbine (http://www.usbr.gov/projects/Facility.jsp?fac_Name=Crystal+Dam).

There are several communications towers in Montrose County vulnerable to wildland fire, including Storm King communications tower, Waterdog communications tower, and Sunset Mesa communications tower. In addition to communications towers, the power line infrastructure in Montrose 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.

ENVIRONMENTAL RESOURCES

Natural Resources and Watershed Concerns

The boundaries of Montrose County include portions of six watersheds, including the Upper Gunnison, Lower Gunnison, Uncompahgre, Upper Dolores, Lower Dolores and San Miguel (http://cfpub.epa.gov/surf/county.cfm?fips_code=08085). Indirect impacts to watershed ecosystems associated with wildfire include the use of retardants and soil damage from fire apparatus. 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.

Plants and animals are also an important part of biodiversity and the proper functioning of an ecosystem. Flora and fauna are susceptible to wildfire, and this is especially concerning in regards to endangered or threatened plant and animal species. Endangered species and plants in Montrose County include the Black-footed Ferret, Bonytail, Clay-loving Wild Buckwheat, Colorado Pikeminnow, Humpback Chub, and Razorback Sucker. Threatened species include the Canada Lynx, Colorado Hookless Cactus, and Mexican Spotted Owl (http://ecos.fws.gov/tess_public/countySearch!speciesByCountyReport.action?fips=08085).

CURRENT RISK SITUATION

This section examines the current wildland fire risk in Montrose County based on wildfire history and past or planned fire treatments conducted by a multitude of 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 protection districts 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 Montrose County CWPP.

Most fires in Montrose County are small (less than 100 acres) and never make it onto the lists of large fires. However, even 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 Montrose County CWPP is at high or very high risk from wildfires; however, two communities in southern Montrose County near the San Miguel County line are at extreme risk from wildfires. This assessment is based on an analysis of the following factors:

- The Montrose County communities of Bostwick Park, Dave Wood, Deer Mesa, Fruitland Mesa, Horsefly, Naturita, Norwood, Paradox, Redvale, and North Shavano Valley 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".
- According to the 2005 Montrose County Fire Plan, the fire protection districts in Montrose County responded to 768 fires between 2000 and 2005.
- Some of the larger fires in Montrose County as listed below;
    - 1990, Horsefly Creek Fire caused by lightning ignition burned 3,676 acres
    - 1994, North Fork Fire caused by lightning ignition burned 436 acres
    - 1994, Wray Fire caused by lightning ignition burned 1,631 acres
    - 1996, Telephone Fire caused by lightning ignition burned 1,314 acres
    - 1996, Warner Fire caused by lightning ignition burned 847 acres
    - 1999, Braimer Fire caused by lightning ignition burned 1,664 acres
    - 2001, Carpenter Fire caused by lightning ignition burned 231 acres
    - 2002, Bucktail Fire caused by lightning ignition burned 2,244 acres
    - 2002, Forty Seven Fire caused by lightning ignition burned 1,409 acres
    - 2003, Crystal Creek Fire caused by human ignition burned 298 acres
    - 2003, Spring Gulch Fire caused by human ignition burned 242 acres
    - 2004, Campbell Fire caused by lightning ignition burned 4,187 acres
    - 2005, Naturita Ridge Fire caused by lightning ignition burned 479 acres
    - 2005, Craig Draw Fire caused by lightning ignition burned 550 acres
    - 2006, Dry Creek Fire from human causes burned 230 acres
    - 2007, Section 28 Fire caused by lightning ignition burned 118 acres

- 2007, Red Canyon fire caused by lightning ignition burned 207 acres
- 2008, Albin Draw fire caused by lightning ignition burned 424 acres

Roughly half of the wildland fires in Montrose County are identified as naturally ignited in the 2005 Montrose County Fire Plan. Between 1999 -2008, a total of 720 ignitions were reported in Montrose County. Of the 720 reported ignitions, 568 were caused by lightning and 152 resulted from human activities.

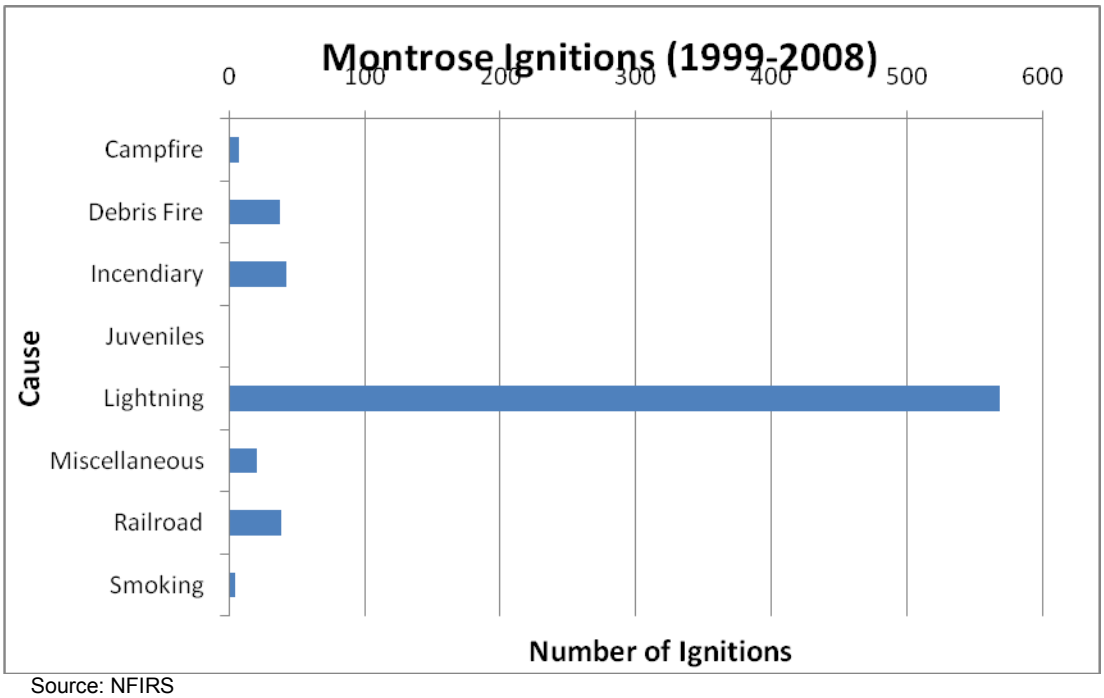
Additional fire history data was obtained from the National Fire Incident Reporting System (NFIRS). The results of this data are displayed below in Table 2, Figures 4 and 5. The NFIRS data is the most accurate wildland fire history information currently available, but it is important to note that this data is subject to certain limitations as discussed in the disclaimer at the beginning of this section. Based on Figure 4, most of the fires ignited by lightning occurred in the southwestern portion of the County, particularly around the towns of Nucla and Naturita. The majority of human influenced fires were primarily concentrated around the City of Montrose (See Figure 5).

Table 2. Montrose County Reported Wildfire Ignitions by Cause: 1999-2008

Ignition Cause	Number of Reported Ignitions
Campfire	7
Debris Fire	38
Incendiary	42
Juveniles	0
Lightning	568
Miscellaneous	21
Railroad	39
Smoking	5
TOTAL	720

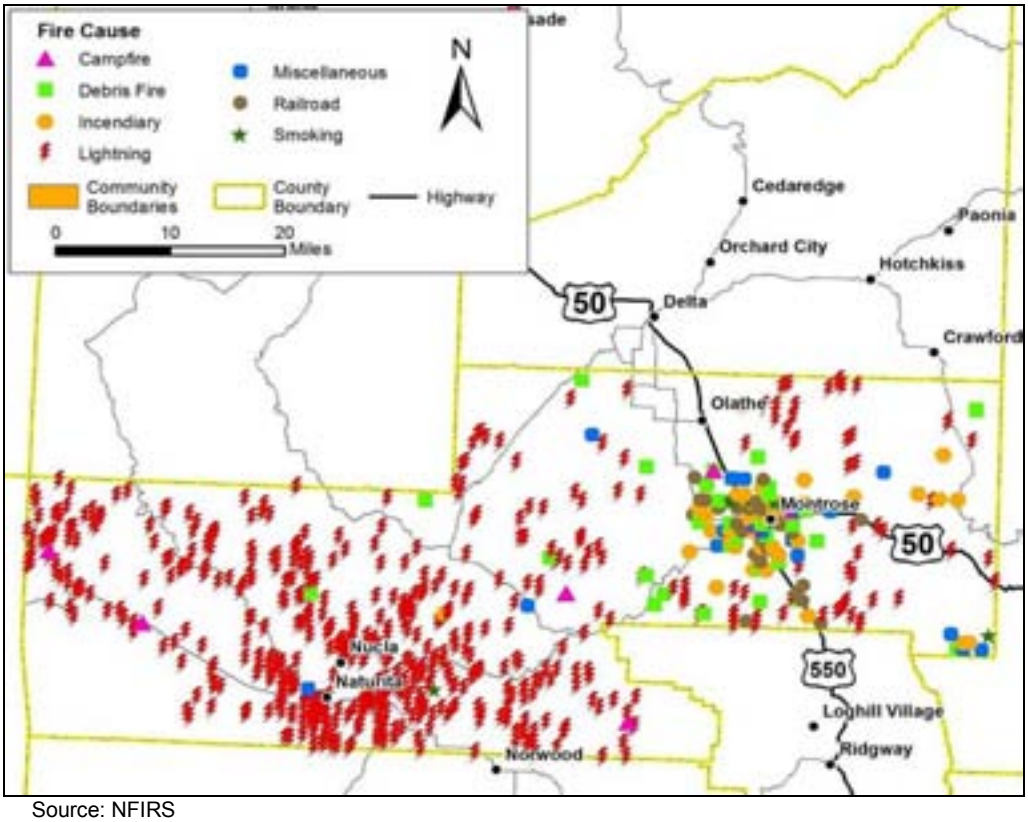
Source: NIFRS

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



Source: NFIRS

Figure 5. Montrose County Reported Ignitions: 1999-2008

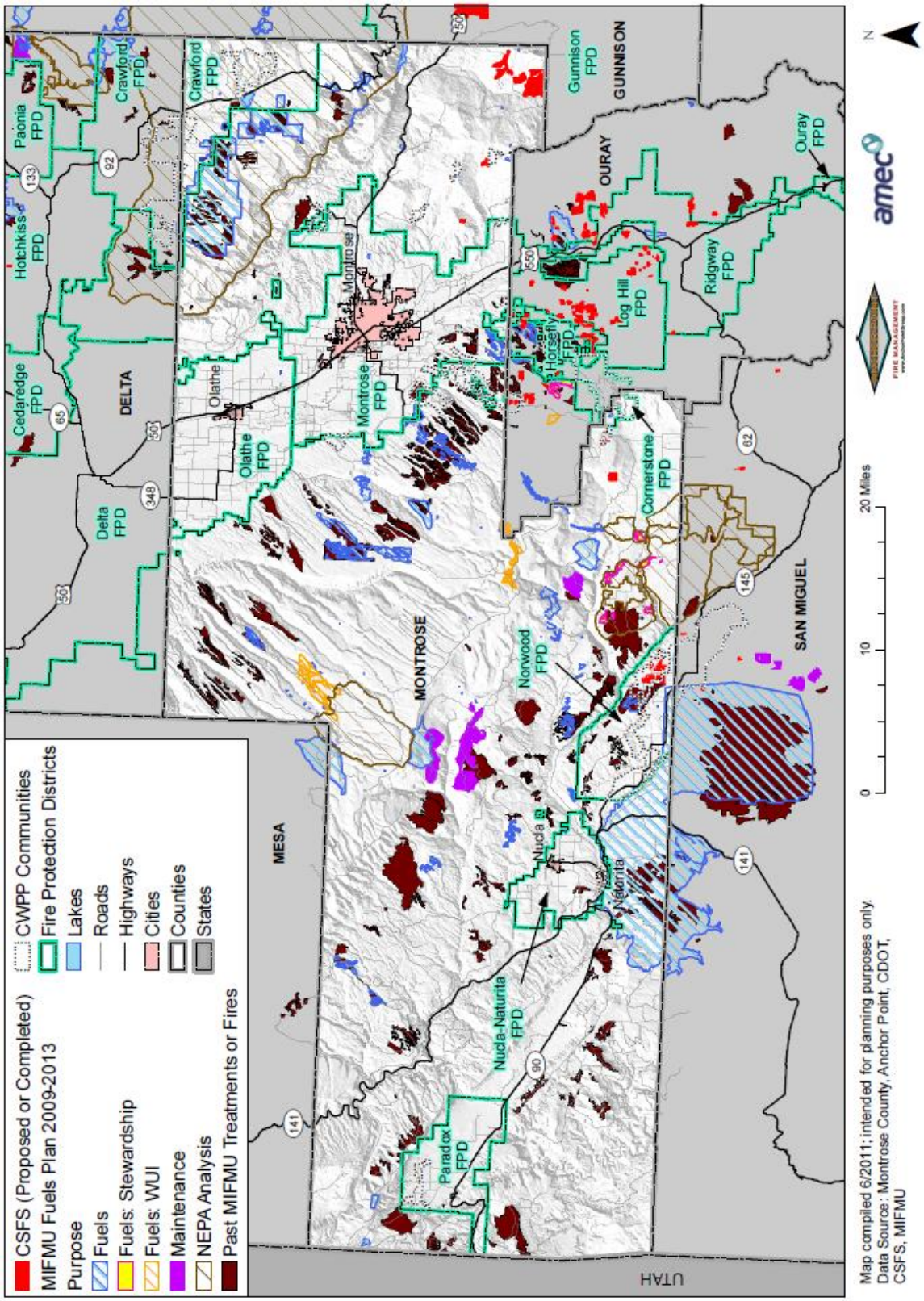


Source: NFIRS

Existing and Ongoing Fuels Treatments Efforts

The Montrose Interagency Fire Management Unit (MIFMU), a combined effort of the USFS and BLM, has performed numerous fuels treatments within Montrose 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 and individuals in the County. A snapshot of these efforts and planned treatments as of late 2010 is captured in Figure 6. This map can also 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. Montrose 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. Montrose County Other Agency Treatments

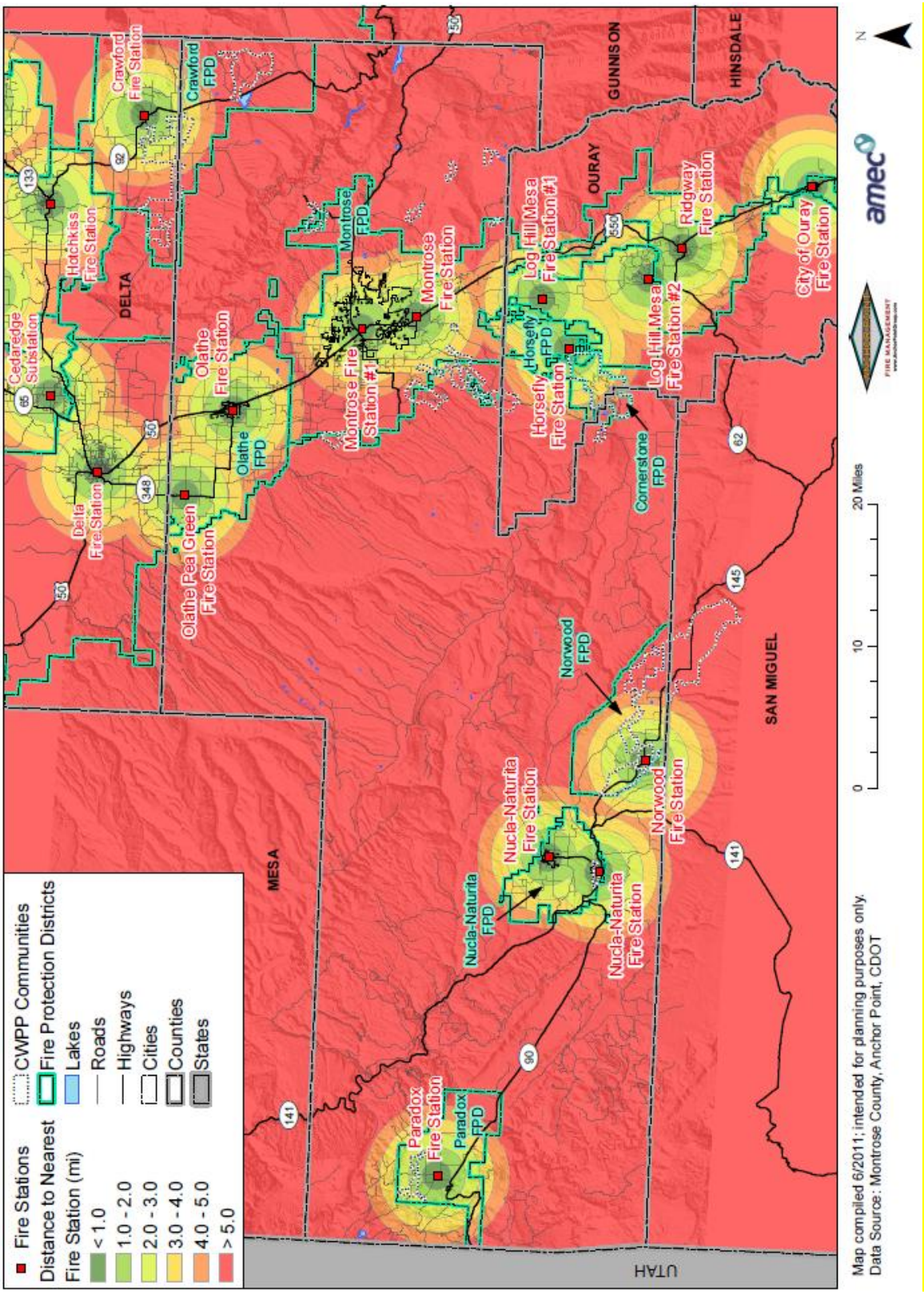


LOCAL PREPAREDNESS AND FIRE PROTECTION DISTRICT CAPABILITIES

The Montrose County CWPP study area encompasses nine fire protection districts: the Montrose Fire Protection District, Nucla/Naturita Fire Protection District, Olathe Fire Protection District, Paradox Fire Protection District, Horsefly Volunteer Fire Association, Cornerstone Metropolitan District, Norwood Fire Protection District, Crawford Fire Protection District, and the Log Hill Mesa Fire Protection District. Five of these fire protection districts are based in neighboring counties. However, their associated fire protection district ranges overlap into Montrose County and would serve as the first responding district to Montrose County wildfires and communities located within or near these overlapping fire protection districts. These five overlapping districts include the Horsefly Volunteer Fire Association, Cornerstone Metropolitan District, and Log Hill Mesa Fire Protection District (all three based in Ouray County), the Norwood Fire Protection District based in San Miguel County, and the Crawford Fire Protection District based in Delta County. These five overlapping districts and fire protection districts are included in this CWPP and the discussions that follow. 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 analysis of the 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.

Figure 7 shows the locations of fire stations assigned to the nine fire protection districts that provide emergency services to Montrose County and their proximity to the CWPP communities within the county.

Figure 7. Montrose County Fire Station Proximity Map



MONTROSE FIRE PROTECTION DISTRICT

Training

The Montrose Fire Protection District (FPD) is composed of 55 members. All district members have taken the S-130/190 introductory wildland fire course. Additional wildland fire courses are also currently offered by the Montrose FPD and are currently paid by the district. A regular training program is conducted on duty for FPD members and scheduled monthly for volunteer and reserve members. Furthermore, the Montrose FPD members take the pack test and fire refresher annually.

Personal Protective Equipment (PPE)

Montrose FPD provides Nomex pants and shirts, wildland boots, helmets, fireline packs, and new generation shelters.

Communications

The district uses both very high frequency (VHF) and 800 megahertz (MHz) radios, and the district has 18 mobile units and 55 handheld units. All trucks are equipped with radios in their apparatus.

Equipment

The Montrose FPD has three Type 6 engines, two 1,000-gallon Type 1 engines, and one 3,500-gallon tender.

Water Supply

Water availability is variable within the area; however, a minimum of 500 gallon per minute (gpm) is available in areas with newer subdivisions. Both hydrants and ponds are present and serve as water sources within the area. Flow rates for hydrants are not tested annually; however, flow rates vary from 100-500 gpm and are dependent on the hydrant location.

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.
- Continue to work towards having enough Nomex pants and shirts and wildland boots for all 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, interest in, and compensation for additional training for district members and volunteer members.
- 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.

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.

NUCLA/NATURITA FIRE PROTECTION DISTRICT

Training

The Nucla/Naturita FPD has 22 active members. Of the 22 FPD members, two members are red carded and are also on the Sherriff's posse, and two are junior members. Longest response time from the Nucla/Naturita FPD is 15 minutes from the time a call is put in. Not all of the district members take the S-130/190 introductory wildland fire course; however, members are allowed to take the courses if they request the training. Budget is available for additional wildland fire training courses; however, currently no additional training is provided by the district. The Nucla/Naturita FPD members do not take the pack test or fire refresher annually unless the member wishes to be red carded; therefore, currently only two members take the pack test and fire refresher annually. Regular trainings are held every fourth Monday of the month.

PPE

The Nucla/Naturita FPD provides Nomex pants and shirts, helmets, and fireline packs. Members must purchase their own wildland boots. The district does not have shelters.

Communications

The Nucla/Naturita FPD has both 800 MHz and VHF radios; however, the 800 MHz radios are not used. Every member and every apparatus has VHF radios.

Equipment

The Nucla/Naturita FPD is equipped with a total of five engines and one tender. The Nucla facility has two engines (unknown type) and one 2,300-gallon tender with a 300-400 gpm output. The Naturita facility has one Type 6 engine and two additional engines (unknown types).

Water Supply

Water availability is limited to a pond located at Western Fuels. Hydrants are present throughout the area with the exception of 3rd Avenue; 6-7 homes are located on 3rd Avenue and are located two miles from the nearest hydrant. The Town of Naturita tests flow rates of the hydrants annually. Individual home cisterns are present, but these private cisterns do not provide marked volumes for capacity.

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.
- Purchase additional PPE including Nomex pants and shirts, helmets, firepacks, and new generation fire shelters.
- Procure new generation shelters on every vehicle that responds to any wildland call.
- Obtain wildland boots, firepacks with new shelters for all district members.

Training – PRIORITY 2

- Work with the BLM to attend trainings or put on more trainings for the west side of the county.
- Officers should familiarize themselves and their crews with fire protection plans within their response area.
- Obtain grant funding to support the need for, interest in, and compensation of additional training for district members and volunteer members.
- 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.

Equipment – PRIORITY 3

- Use National Wildfire Coordinating Group (NWCG) definitions to determine the ‗type' of all apparatus. Provide this information to the Colorado State Forest Service (CSFS).
- Obtain grant funding to support the need for a Type 6 Brush Truck at the Naturita FPD facility.

Water Supply – PRIORITY 4

- 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.

OLATHE FIRE PROTECTION DISTRICT

Training

The Olathe FPD is composed of 21 active members. Approximately 10-12 district members have taken the S-130/190 introductory wildland fire course; senior district members are not required to take the introductory course. Additional pumping and drafting training courses are also currently offered by the Olathe FPD. A regular training program is conducted monthly and district members conduct work capacity tests and physical agility tests at their own discretion.

PPE

Olathe FPD provides Nomex pants and shirts, and wildland boots. Four fireline packs, with shelters are available; however, shelters are not new generation and are not available in the trucks. Olathe FPD has received additional grant funding to support the acquisition of additional wildland packs, helmets, Nomex pants and shirts, etc. The Olathe FPD was also able to acquire new generation fire shelters for their apparatus.

Communications

Both 800 MHz and VHF radios are used by the Olathe FPD; district members use 800 MHz handhelds and trucks are equipped with both VHF and 800 MHz radios. All trucks are equipped with radios, but more handheld units are needed for district members.

Equipment

The Olathe FPD has one 250-gallon Type 6 engine with two porta-pumps, one 200 to 250-gallon Type 6 engine, and a 2,000-gallon tender with power take off (PTO) system. Additionally, the Olathe FPD substation has one engine (type unknown), one brush truck (type unknown), and one trailer equipped with a 250 gallon tank. Olathe FPD has received additional grant funding to support the acquisition of additional hose, fittings, and saw for the substation facility.

Water Supply

Water supply sources include hydrants, ponds, canals, and ditches that Olathe FPD is allowed to use from private land owners. Old hydrants are mapped but present thread issues. All hydrants are tested for flow rates annually. Cisterns are present but are not used; therefore, volumes are not marked on the cisterns.

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.

Training – PRIORITY 2

- Officers should familiarize themselves and their crews with fire protection plans within their response area.
- Encourage or require all district members to take the S-130/190 introductory wildland fire course. 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, if district members are unable to attend these courses in the recommended classroom setting, they are also offered online by NWCG at http://training.nwcg.gov/courses/s130.html.
- Obtain grant funding to support the need for an interest in additional training for district members.
- 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.

Equipment – PRIORITY 3

- Use NWCG definitions to determine the ‗type' of all apparatus. Provide this information to the CSFS.
- Obtain grant funding to support the need for two Type 6, 4-door brush trucks and porta-pumps.

Water Supply – PRIORITY 4

- 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.
- Work on obtaining hoses with threads that are consistent with hydrants, apparatus, and other fire districts in the county.
- Ensure volume is marked on all cisterns

PARADOX FIRE PROTECTION DISTRICT

Training

The Paradox FPD is composed of 15-18 members; staff is dependent on the time of year. In addition to the district members, the sheriff's office also has a volunteer posse with equipment to support the Paradox FPD. Not all district members have taken the S-130/190 introductory wildland fire course. Additional wildland fire courses are currently offered by the Paradox FPD and are currently paid by the district. A regular training program is conducted monthly and is an in-house structured training class that is state certified. Pack test and fire refresher training is not taken annually by all members.

PPE

The Paradox FPD provides some Nomex pants and shirts, helmets, and wildland boots for district members. Fireline packs are also provided. However, shelters are currently not available.

Communications

The district uses both 800 MHz and VHF radios. The Paradox FPD currently has an undetermined number of radios in use.

Equipment

The Paradox FPD has one 150-gallon Type 6 engine that is currently inoperable. The Paradox FPD is in need of a new Type 6 engine.

Water Supply

Water sources available to the Paradox FPD are scarce and have not been identified on a map. The available types of water sources include the creek, ditches, rivers, and the water company. There are no hydrants available. Holding tanks, large springs, and irrigation pivots are present but these are supported by gravity flow which is undesirable for trucks. Volumes are not marked on existing cisterns.

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.
- Attend wildland fire trainings put on by the BLM.
- Have new generation shelters available on wildland response apparatus.
- Work with the CSFS to get CSFS equipment at the station.
- Use Volunteer Fire Assistance (VFA) and Rural Fire Assistance (RFA) money to purchase new generation shelters.
- Purchase additional PPE including Nomex pants and shirts and wildland boots. Acquire new generation fire shelters for the apparatus.

Training – PRIORITY 2

- Officers should familiarize themselves and their crews with fire protection plans within their response area.
- Encourage or require all district members to take the S-130/190 introductory wildland fire course. 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, if district members are unable to attend these courses in the recommended classroom setting, they are also offered online by NWCG at http://training.nwcg.gov/courses/s130.html.
- Obtain grant funding to support the need for an interest in additional training for district members.
- 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.

Equipment – PRIORITY 3

- Purchase a new Type 6 engine.
- Use NWCG definitions to determine the ‗type' of all apparatus. Provide this information to the CSFS.
- Obtain grant funding to support the need for a new brushtruck or a new 1 ton 4WD truck.

Water Supply – PRIORITY 4

- When possible, install additional hydrants in areas with limited water availability.
- Mark volumes on cisterns.

HORSEFLY VOLUNTEER FIRE ASSOCIATION

Training

For an all-donation fire association, the Horsefly Volunteer Fire Association (VFA) has done a commendable job in wildland fire training. All firefighters are required to take the S-130/190 introductory wildland fire course, and a few have also taken S-131 Firefighter Type 1. Other wildland courses are also offered to firefighters, and are paid for by federal grants. All firefighters are required to take the annual fire refresher (RT-130) in order to be allowed on fires. While the work capacity test is not required, typically 5-7 members take it each year. District trainings occur bi-monthly during fire season, which is typically May to September, and sometimes include a live-fire exercise for one of the trainings each year. An in-house sawyer class is also offered annually to all district members. Hazmat training is also offered, and the association is working on structure fire training.

PPE

Most personal PPE is provided to firefighters. This includes Nomex pants and shirts, fire pack, and new-generation fire shelters. Boots are not provided at this time.

Communications

Currently, the association has 10 VHF radios for captains, and an additional 10 VHF radios in vehicles. There is also one 800 MHz radio for the Chief.

Equipment

The Horsefly Volunteer Fire Association has two Type 3 engines, three 180-gallon Type 6/7 engines, and one 180-gallon water trailer at its Mariposa station (Station 1). Additionally, the Association has one Type 4 engine at the Cornerstone station.

Water Supply

The availability and location of water resources is a critical problem throughout most of the fire association area. While there are scattered flushing hydrants along Government Springs Road and within Cornerstone, many other areas serviced by the VFA lack adequate water supplies. Some homes have cisterns available, and there are seasonal ponds available in some areas, but they require time and effort be spent in the process of drafting water from them. Moreover, shuttle trips will need to be setup to bring water back to the fire area, which takes personnel and apparatus away from the firefighting effort. See the individual community/planning area write-ups for details on water supply within the community/planning area.

Recommendations

Firefighter Safety – PRIORITY 1

- Continue to work on finishing the completion to Station 1. This might include locating grant money for interior improvements, a water storage tank, and a radio repeater system.
- Work on acquiring 800 MHz compatible radios for use when communicating with adjacent districts.
- Improve communications between the district, adjacent districts, the sheriff's office and Montrose Interagency Fire Management Unit.
- Work on securing additional equipment and PPE.

Training – PRIORITY 2

- Officers should familiarize themselves and their crews with fire protection plans within their response area.
- Continue to work on structure fire training, as well a medical training.
- 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.
- Consider requiring all firefighters who are involved in wildland firefighting to take one level of the Work Capacity Test annually.
- Encourage Type 3 Incident Management Team participation.
- Encourage personnel to seek higher qualifications and participate in out-of-district fire assignments.
- Encourage and work on providing training opportunities with adjacent districts.

Water Supply – PRIORITY 3

- Any hydrants in the district should be inspected, tested, and serviced on an annual basis.
- Locate and map all water resources in the district. This should also include the amount or flow rate of water available at each source.
- Consider incorporation into becoming an actual fire protection district.
- Apparatus should be equipped with portable water storage, and engine checks (including drafting tests) should be performed monthly.
- When possible, install additional hydrants in areas with limited water availability.

CORNERSTONE METROPOLITAN DISTRICT

The Town of Cornerstone in Ouray County is a metropolitan district with a designated fire protection district that overlaps into Montrose County. Although the Town of Cornerstone has a designated fire protection district, the town currently lacks an established fire district and emergency medical response team. Therefore, for the time being, the Horsefly Volunteer Fire Association provides the Cornerstone Metropolitan District with an emergency response fire engine and covers their needs as far as wildfire response services.

NORWOOD FIRE PROTECTION DISTRICT

The Norwood FPD serves both San Miguel County and Montrose County within the Norwood Fire Protection District. The district has three stations; the main station is located in Norwood in San Miguel County just south of the Montrose County line, Station 2 is located in Redvale in Montrose County, and Station 3 is located in Drycreek in San Miguel County. The Redvale station is the closest responding district to the four Norwood communities of Deer Mesa, Mailbox, Redvale, and the Norwood Agricultural area; therefore, data presented in this CWPP on the Norwood FPD focuses on details for the Redvale Station.

Training

The Norwood FPD Redvale Station is composed of volunteer members. Norwood FPD trains at least 2 times per month. The training subject depends on needs and season. Members are encouraged to attend additional off site training. Among Norwood FPD personnel, 21 members have completed the S-130/190 introductory wildland fire course, with all of them taking the annual refresher. 10 firefighters are red carded. Of the 31 total members, 18 are EMTs. Two of the 18 EMTs are paramedics and seven are EMT - I's. Regarding fire qualifications, Norwood FPD has eight FF1s, 12 FF2s and one Engine Boss.

PPE

All Norwood FPD members have a full complement of PPE, including Nomex pants, Nomex shirts, boots, helmets, packs and shelters.

Communications

All members are issued VHF radios and all vehicles are equipped with both VHF and 800 MHz radios.

Equipment

The Norwood FPD Station 1 has one utility vehicle, ambulances, a 1,000 gallon engine, a 750 gallon engine, and a 2,000 gallon tender. Additionally, Station 1 has a Type6I Wildland Engine (E-7) that was relocated from the Redvale Station (Station 2), The Redvale Station has a new 2,250 gallon Type 3 tactical tender, a new ambulance, and a Type 4 1,000 gallon 6x6 Wildland Engine (E-3). Station 3 in Dry Creek has one Type 4 engine.

Water Supply

The municipality of Redvale is serviced by a hydrant network. However, the hydrants in Redvale are not well identified, marked, or maintained. The rest of the district in Montrose County only has hydrants for flushing purposes. Fire flow is currently unknown to the Fire District.

Recommendations

The following recommendations were identified from the San Miguel CWPP for the Norwood FPD.

Firefighter Safety – PRIORITY 1

- Provide minimum wildland PPE for all firefighters, including Nomex pants and shirts, helmets, shelters, packs, etc. (See the NFPA Standard 1977 for requirements)
- Ensure that the current fire operations personnel rehabilitation system is sufficient. At a minimum each district should have drinking water and MREs (meals ready to eat) to support their personnel for 24-48 hours.

Training – PRIORITY 2

- Encourage or require I-100 [basic Incident Command System (ICS)] for all firefighters and I-200 (Intermediate ICS) for all fire officers. NIMS courses could satisfy these recommendations.
- Encourage or require all district members to take the S-130/190 introductory wildland fire course. 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, if district members are unable to attend these courses in the recommended classroom setting, they are also offered online by NWCG at http://training.nwcg.gov/courses/s130.html. It is recommended that the course be tailored to Norwood and primarily focus on grass and pinyon-juniper fire fighting with a heavy emphasis on safety and plains-type weather.
- 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.
- Organize and facilitate table-top or sand-table wildfire exercises with other county agencies attending.
- Organize and facilitate an annual wildfire interface training exercise within the communities outlined in this CWPP. Encourage multi-agency participation.
- Encourage personnel to participate in out-of-district training opportunities.

Equipment – PRIORITY 3

- Ensure that all wildfire apparatus have the ability to discharge Class A firefighting foam. Foam is a proven agent which enhances the effectiveness of water, especially when applied to thick grass. Most Fire Protection Districts currently use this and can be a source of information and training for others.
- Develop an equipment maintenance and replacement plan.

- Task an individual with ~~t~~type converting" all district apparatus (e.g., brush truck = Type 6 engine). The typing scheme should follow the NIMS model. This will help to serve future Homeland Security requirements. San Miguel and Montrose Counties should be consulted as they may already be faced with this issue.

Water Supply – PRIORITY 4

- Expand current hydrant network to include all areas of the water district.
- Upgrade existing infrastructure throughout the district for standardized hydrant water delivery throughout the district.
- Create new year-round water storage resources in the district such as ponds, cisterns, and tanks.
- A secondary means of retrieving water from the storage tanks in the event of a power outage should be considered. Some communities currently have a couple of different means. No matter the means, it is recommended that all elevated water tanks be able to flow water without the electric pumping system.
    - Piping allowing the water to flow freely via gravity pressure from the tanks.
    - Piping connections that allow the fire apparatus to ~~p~~pull" the water out via a drafting operation.
- Ensure that hydrants are operational. Redvale hydrants should be tested annually and the results of these tests should be provided to the Fire District. Hydrants need to remain obstruction-free, well identified, and visible.
- All available water sources should be marked by Global Positioning System (GPS) and posted on a map for incoming suppression resources. This should be updated as needed to maintain an up-to-date list.

CRAWFORD FIRE PROTECTION DISTRICT

Training
The Crawford Fire Protection District 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. Some members of the Fire Protection District work capacity 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 Fire Protection District has one Type 5 500 gallon, 4 WD 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 annually.

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.
- 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.
- Encourage or require all district members to take the S-130/190 introductory wildland fire course. 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, if district members are unable to attend these courses in the recommended classroom setting, they are also offered online by NWCG at http://training.nwcg.gov/courses/s130.html.
- Obtain grant funding to support the need for an interest in additional training for district members.
- 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.

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.

LOG HILL MESA FIRE PROTECTION DISTRICT

The Log Hill Mesa Fire Protection District is located in Ouray County; however, they are the closest responding district to several Montrose County communities in the southeastern region of the County, and therefore, have been included in the Montrose CWPP.

Training

The Log Hill Mesa Fire Protection District goes through a relatively rigorous training program for a volunteer fire protection district. All firefighters are required to take the S-130/190 introductory wildland fire course within two years of joining. Other wildland courses are also offered to district members, including those taught at the state-wide fire academies and the Colorado Firecamp. All firefighters are required to take one of two fitness tests offered each year, which includes the standardized pack test. District trainings occur bimonthly on the first Wednesday and second Saturday of each month, and include a wildfire component during the typical fire season months. An in-house sawyer class is also offered annually to all district members.

PPE

All personal PPE is provided to firefighters. This includes Nomex pants and shirts, fire pack, boots, and new-generation fire shelter.

Communications

All firefighters are equipped with portable VHF radios, which are compatible with federal and state agencies. The chief and assistant chief also have portable 800 MHz radios. All fire apparatus is equipped with mobile VHF radios, and select vehicles also have mobile 800 MHz radios.

Equipment

The Log Hill Mesa FPD has several wildland fire trucks. At the Log Hill Village station (station 2), the district has one Type 3 engine with 750 gallons of storage and a 1,000 gpm pump; one Type 6 brush truck with 350 gallons of storage and a 150 gpm pump; one 3,000-gallon tender with a 500 gpm pump and a 3,000 gallon dump-tank; one 1,000-gallon tender with a 250 gpm pump; and one UTV with an 80-gallon tank and a 50 gpm pump. Additionally, the North Log Hill Mesa station (station 1) is equipped with one 40-gallon Type 1 engine with a 1,250 gpm pump; one 750-gallon Type 3 engine with a 1,000 gpm pump; one 350-gallon Type 6 brush truck with a 150 gpm pump; one 3,000-gallon tender with a 500 gpm pump and a 3,000 gallon dump-tank; and one utility terrain vehicle (UTV) with a 50 gallon tank and a 50 gpm pump.

Water Supply

The availability and location of water resources is an issue in some parts of the district. While there are adequate fire hydrants within most of the Log Hill Village/Fairway Pines community, many other areas serviced by the Log Hill Mesa Fire Protection District lack adequate water supplies. Scattered hydrants and cisterns are available in these areas but may not be reliable or known by all fire personnel. See the individual community/planning area write-ups for details on water supply within the community/planning area.

Recommendations

Firefighter Safety – PRIORITY 1

- Implement defensible space around Stations 1 and 2, and Dallas Creek Water.
- Improve communications between the district, adjacent districts, the sheriff's office and Montrose Interagency Fire Management Unit.

- Work on securing additional equipment and PPE, including potentially a thermal imaging camera.
- Continue work to improve both fire stations, including an emergency generator at Station 2 and an exhaust system at Station 1.
- Document all wildland fires into National Fire Incident Reporting System (NFIRS), which is available online at nfirs.fema.gov.

Training – PRIORITY 2

- 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.
- Consider requiring all firefighters who are involved in wildland firefighting to take one level of the Work Capacity Test annually.
- Encourage Type 3 Incident Management Team participation.
- Encourage personnel to seek higher qualifications and participate in out-of-district fire assignments.
- Encourage and work on providing training opportunities with adjacent districts.
- Officers should familiarize themselves and their crews with fire protection plans within their response area.
- Obtain grant funding to support the need for an interest in additional training for district members.

Water Supply – PRIORITY 3

- Any hydrants in the district should be inspected, tested, and serviced on an annual basis.
- Locate and map all water resources in the district. This should also include the amount or flow rate of water available at each source.
- Apparatus should be equipped with portable water storage, and engine checks including drafting tests should continue to be performed monthly.

COMMUNITY IGNITABILITY ANALYSIS RECOMMENDATIONS

PURPOSE

The purpose of this section is to examine the communities in greater detail. Of the 22 WUI communities defined in the Montrose County study area, only two were found to represent an extreme hazard: Deer Mesa and Mailbox. Six were rated as very high hazard, seven were rated as high hazard, five were rated as moderate hazard, and the remaining two were rated as low hazard (Table 3). 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 WHR rating system that was developed specifically to evaluate communities within the 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 the National Fire Protection Association (NFPA) 1144 Standard for Reducing Structure Ignition Hazards from Wildland Fire (NFPA 1144) has been integrated into this methodology to ensure compatibility with national standards. Additionally, aspects of NFPA 1142 Standard on Water Supplies for Suburban and Rural Fire Fighting (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 centerpiece of the CWPP. The definition of a community, for the purposes of a CWPP, has been refined by Anchor Point over the last 10 years while producing these plans. In doing so, State and Federal requirements/definitions have been taken into consideration. The CSFS requires that each community have representation during the planning process. This representation can be a fire protection district official, a Home Owners Association (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 areas of special interest.

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

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 met one-on-one with fire protection district 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. The WHR rating system has been proven and refined by use in rating thousands or neighborhoods throughout the United States.

Areas of special interest (ASIs) are places within the CWPP study area which have a 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 the size and a focus on recreation and infrastructure over residences. ASIs and communities evaluate 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.

The rural planning areas (RPAs) cover every part of county that is not included as a community or an Area of Special Interest but are still at risk from wildfire. A 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 a part of the county based on potential fire behavior. These rural areas may claim ―umbrella coverage" of the county-wide CWPP. Therefore, projects within a 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.

In Montrose County, places like Sanborn Park and Ute are examples of areas that should be eligible for mitigation funding, but due to the lack of housing density and parcel size, were not determined to be CWPP communities. These large areas consist of multiple parcels owned by only a small number of landowners. Currently, there are few homes built in these areas, but there is potential for these parcels to be subdivided and developed in the future. If this were to happen, additional analysis would be needed to determine recommendations to mitigate the wildfire hazard. However, even at this point, it is possible for places like Sanborn Park and Ute to develop their own specific CWPPs. It would be beneficial if the landowners in the area worked together to develop more explicit landscape scale fuels treatment projects and include them in a smaller scale CWPP document. As an alternative, since this plan is a working document, the CWPP can be revised to include specific recommendations for the new construction in the area at any point in the future. Montrose County RPAs are shown in Figure 9. This map can also be referenced in an 11 x 17 format in Appendix D.

For the 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 air drops of retardant or water. An overarching recommendation that can be made throughout the Montrose County study area includes completing treatment along the roads. A few specific planning units and roads were identified in the plan because they were identified as crucial because of 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 access and egress.

Each community section includes a table with wildfire mitigation recommendations that were based on the community and fire behavior analyses. Defensible space is determined to be the greatest benefit for the least cost for landowners and is recommended for every community. Not every community has specific landscape-scale fuel reduction projects identified including Cathedral Park, Buckhorn Lakes, Buckhorn Heights, Dave Wood North, Dave Wood South, Deer Mesa, Fruitland Mesa, Happy Canyon, Horsefly I and II, Mailbox, Naturita, Paradox, Paradox Trail, Tres Coyotes, Waterdog I and Waterdog II. 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, and wildfire behavior and hazards. Weightings within the model were established through 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.

As part of the Montrose County CWPP, 22 WUI areas were identified within the study area. The location and hazard rating of these communities are shown in Figure 8. This map is also shown in an 11 x 17 format in Appendix D. Three incorporated areas identified within the Montrose County are well established urban developments and are not prone to wildfires; therefore, the Cities of Montrose and Olathe, and the Town of Nucla are not included in the following community discussions.

In the community descriptions which follow, the headings correspond to the various Montrose County fire protection districts, while the subheadings numbered below correspond to the individual WUI communities within the fire protection districts. The individual communities are

organized primarily by risk level from extreme hazard to low hazard, and then alphabetically within their hazard rating.

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 with no low hazard communities, just as there are some areas with no 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 3. Community Hazard Ratings

Community Name	Fire Protection District	Hazard Rating
Norwood Agricultural Area	Norwood	Low
Redvale	Norwood	Low
Bostwick Park	Montrose	Moderate
Buckhorn Heights	Montrose	Moderate
Cornerstone	Horsefly	Moderate
Horsefly I and II	Outside District	Moderate
Waterdog II	Outside District	Moderate
Buckhorn Lakes	Outside District	High
Dave Wood North	Montrose	High
Dave Wood South	Montrose	High
Duckett Draw	Montrose	High
Fruitland Mesa	Crawford	High
Naturita	Nucla-Naturita	High
Waterdog I	Outside District	High
Cathedral Park	Crawford	Very High
Happy Canyon	Montrose	Very High
North Shavano Valley	Montrose	Very High
Paradox	Paradox	Very High
Paradox Trail	Montrose	Very High
Tres Coyotes	Montrose	Very High
Deer Mesa	Norwood	Extreme
Mailbox	Norwood	Extreme

Table 4. Areas of Special Interest

Areas of Special Interest
Black Canyon of the Gunnison National Park
Curecanti National Recreational Area
Uncompahgre River Corridor
Buckeye Reservoir
Nucla Station
San Miguel River Corridor

Figure 8. Montrose County CWPP Communities and Hazard Ratings

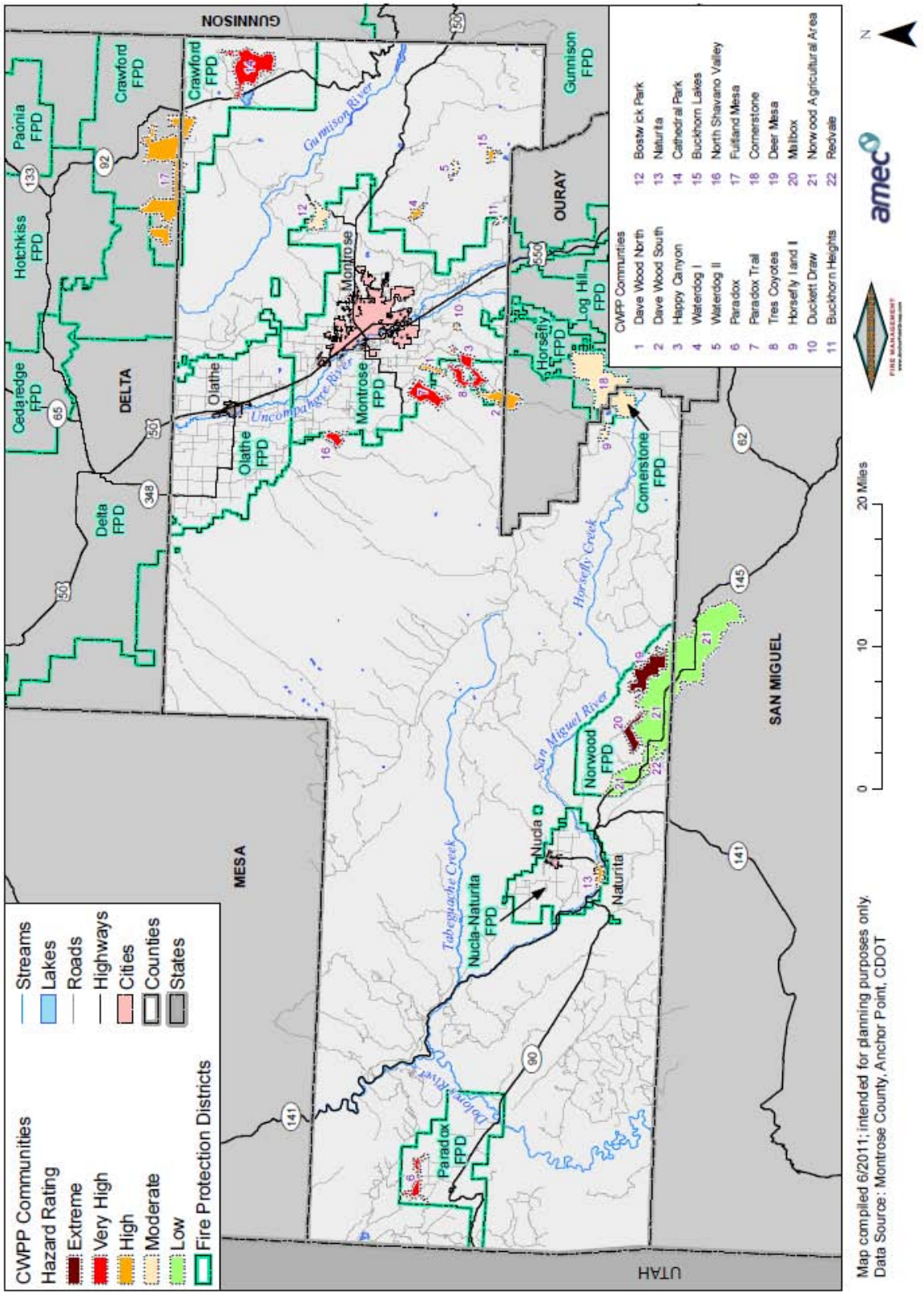
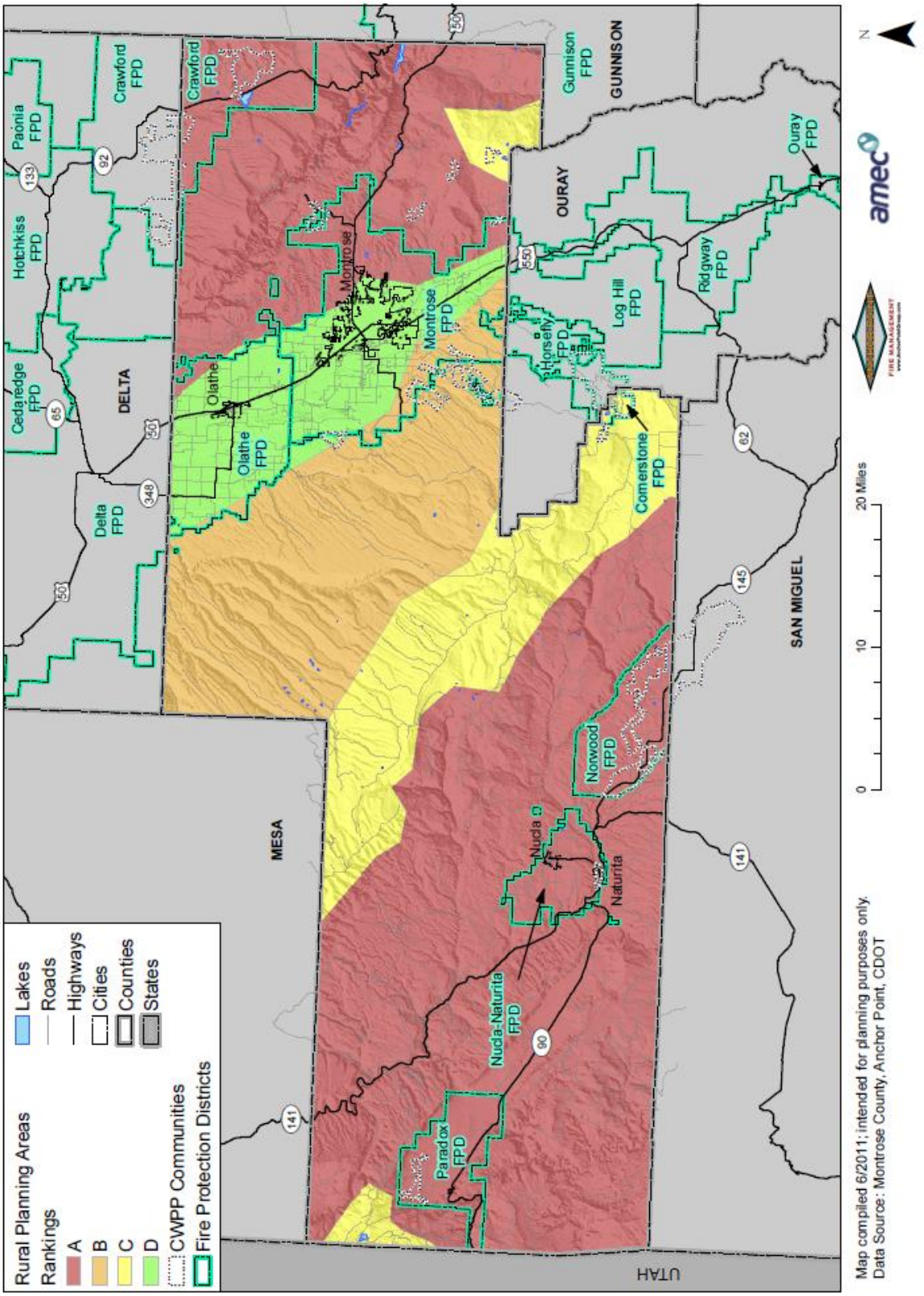


Figure 9. Montrose County Rural Planning Areas



MONTROSE FIRE PROTECTION DISTRICT

Nine CWPP communities were identified within the Montrose Fire Protection District. These communities and their hazard ratings are identified in Table 5 and shown in Figure 10 through Figure 14. Each community's ignitability analysis recommendations are discussed in the following pages.

Table 5. Montrose Fire Protection District CWPP Communities by Hazard Rating

Very High	High	Moderate
Happy Canyon	Dave Wood North	Bostwick Park
North Shavano Valley	Dave Wood South	Buckhorn Heights
Paradox Trail	Duckett Draw	
Tres Coyotes		

Figure 10. Dave Wood South, Duckett Draw, Happy Canyon and Tres Coyotes CWPP Communities Overview

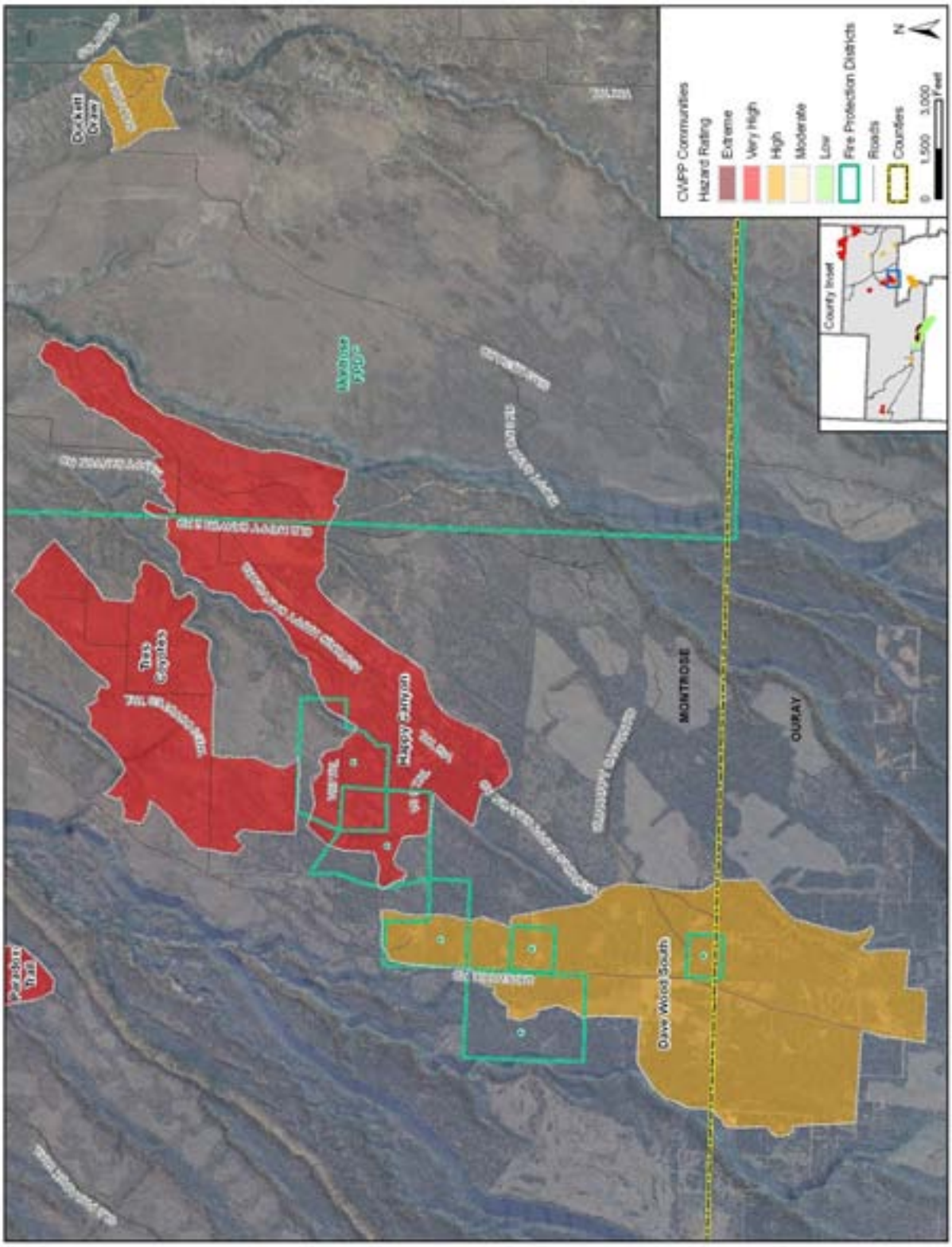


Figure 11. North Shavano Valley CWPP Community Overview

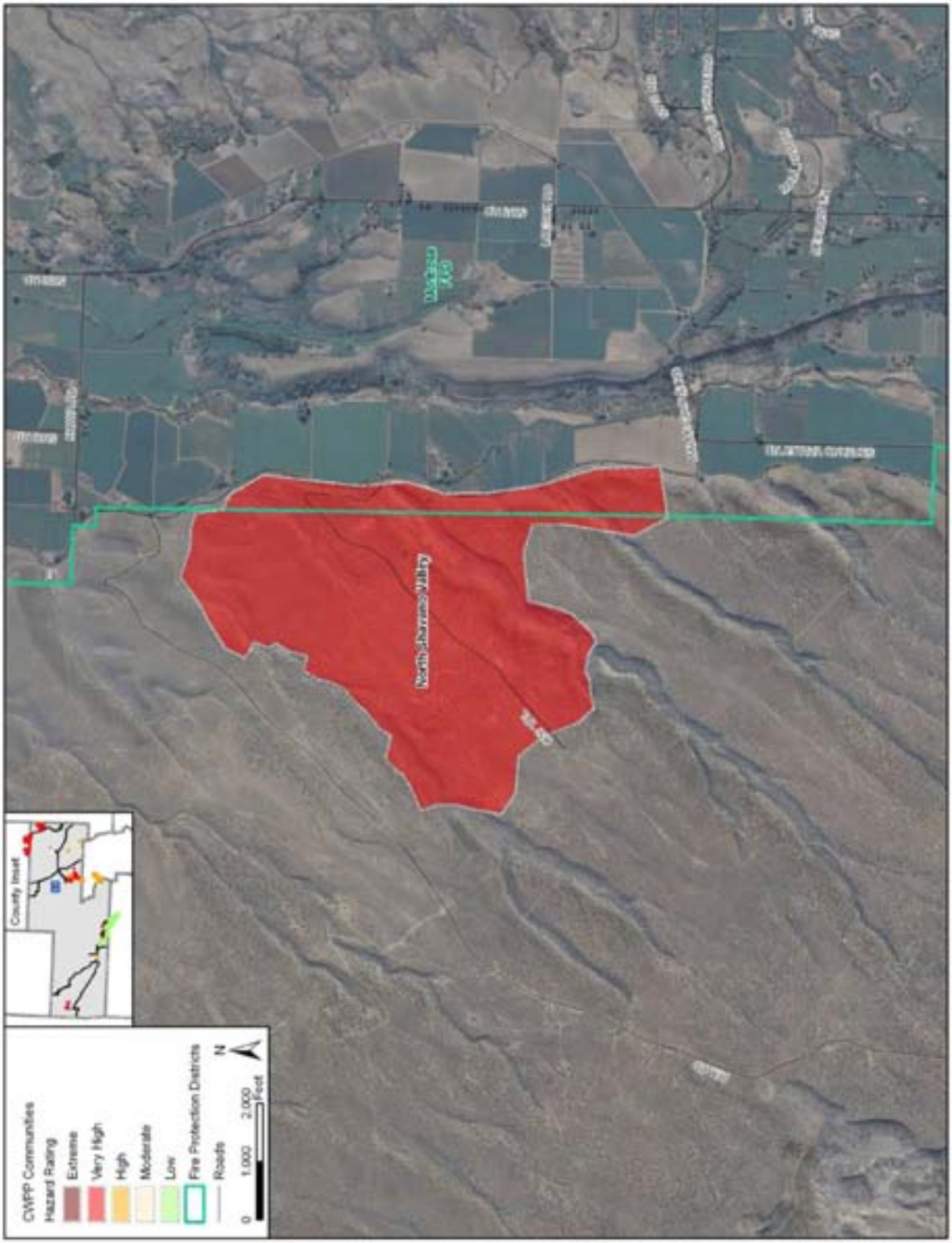


Figure 12. Paradox Trail and Dave Wood North CWPP Communities Overview

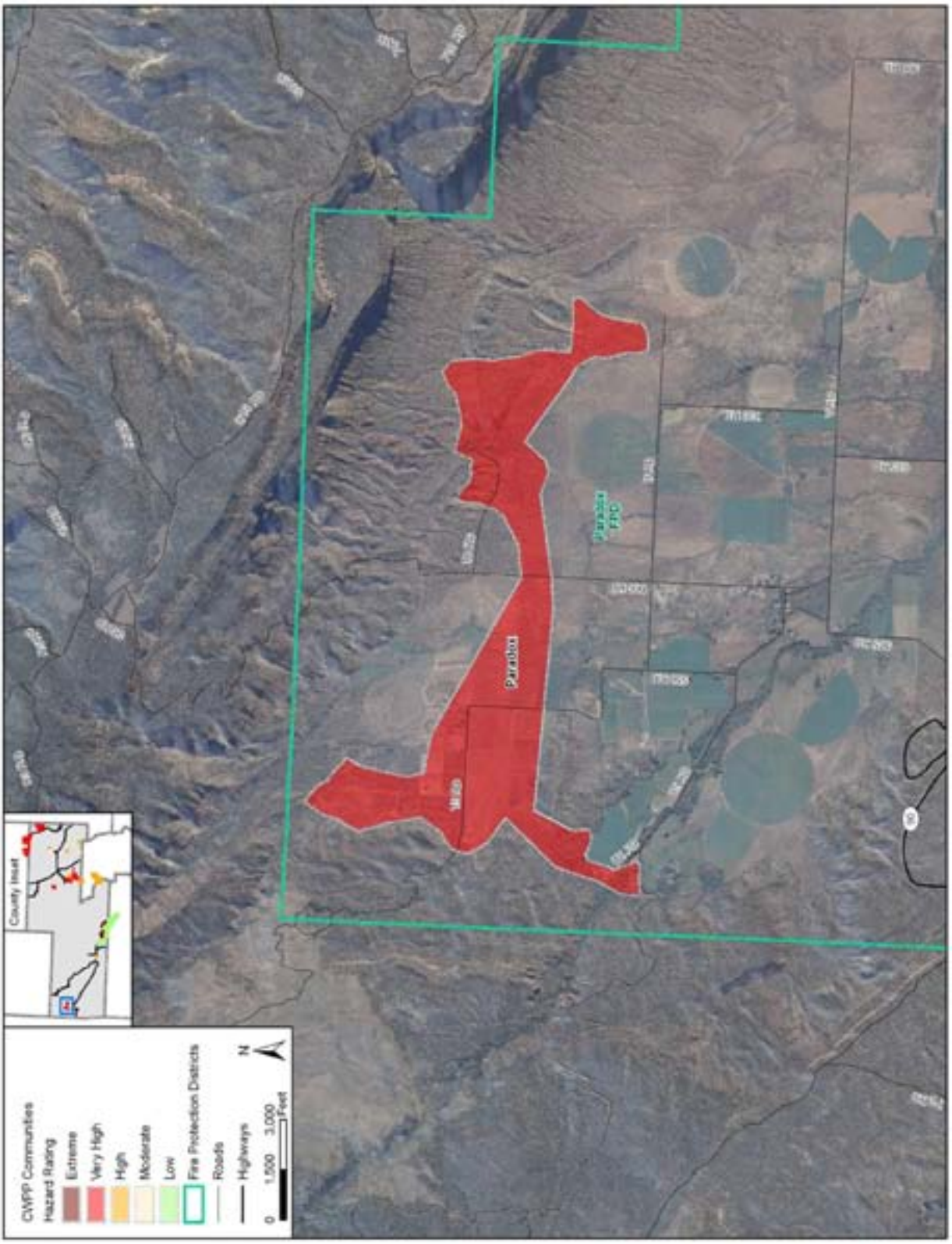


Figure 13. Bostwick Park CWPP Community Overview

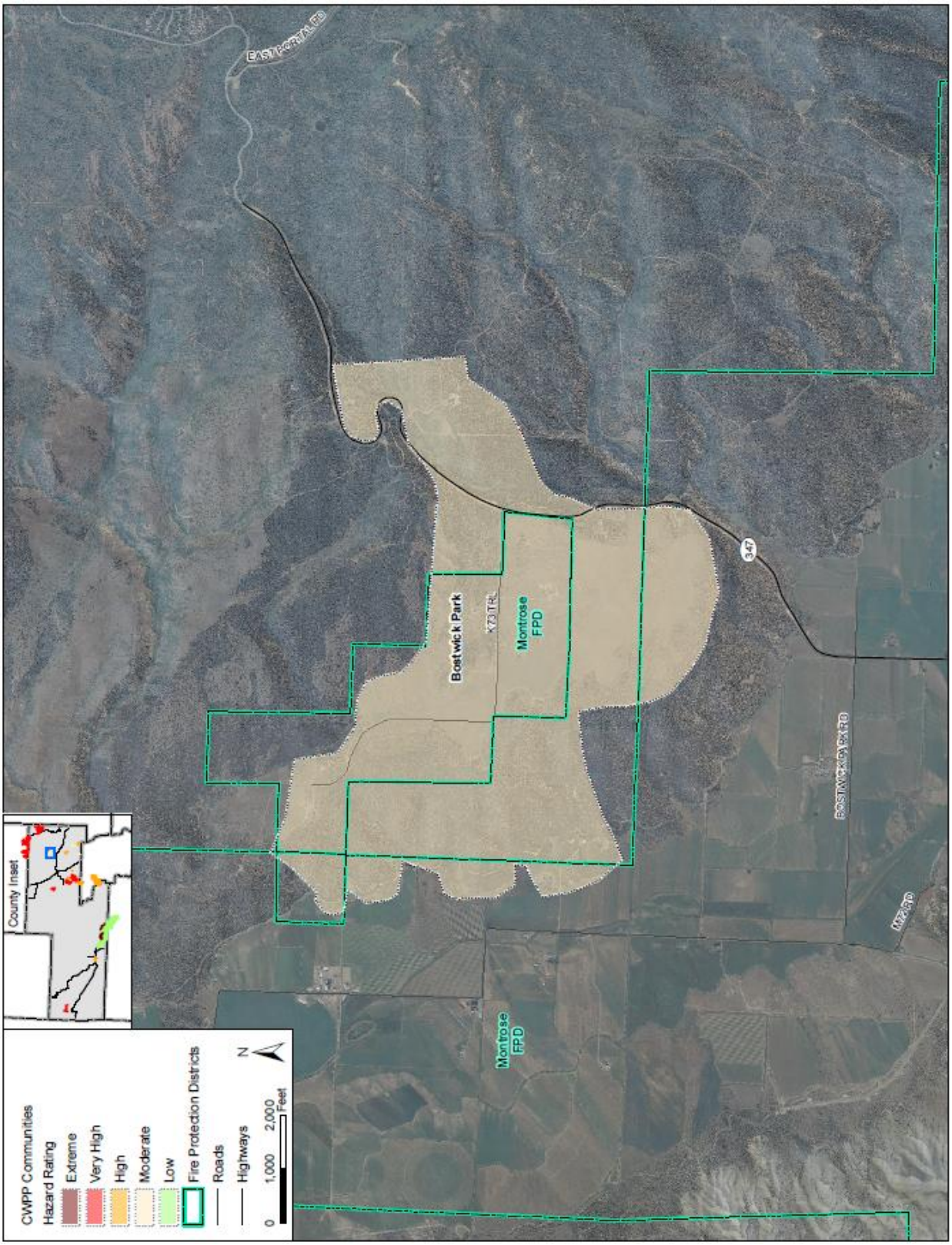
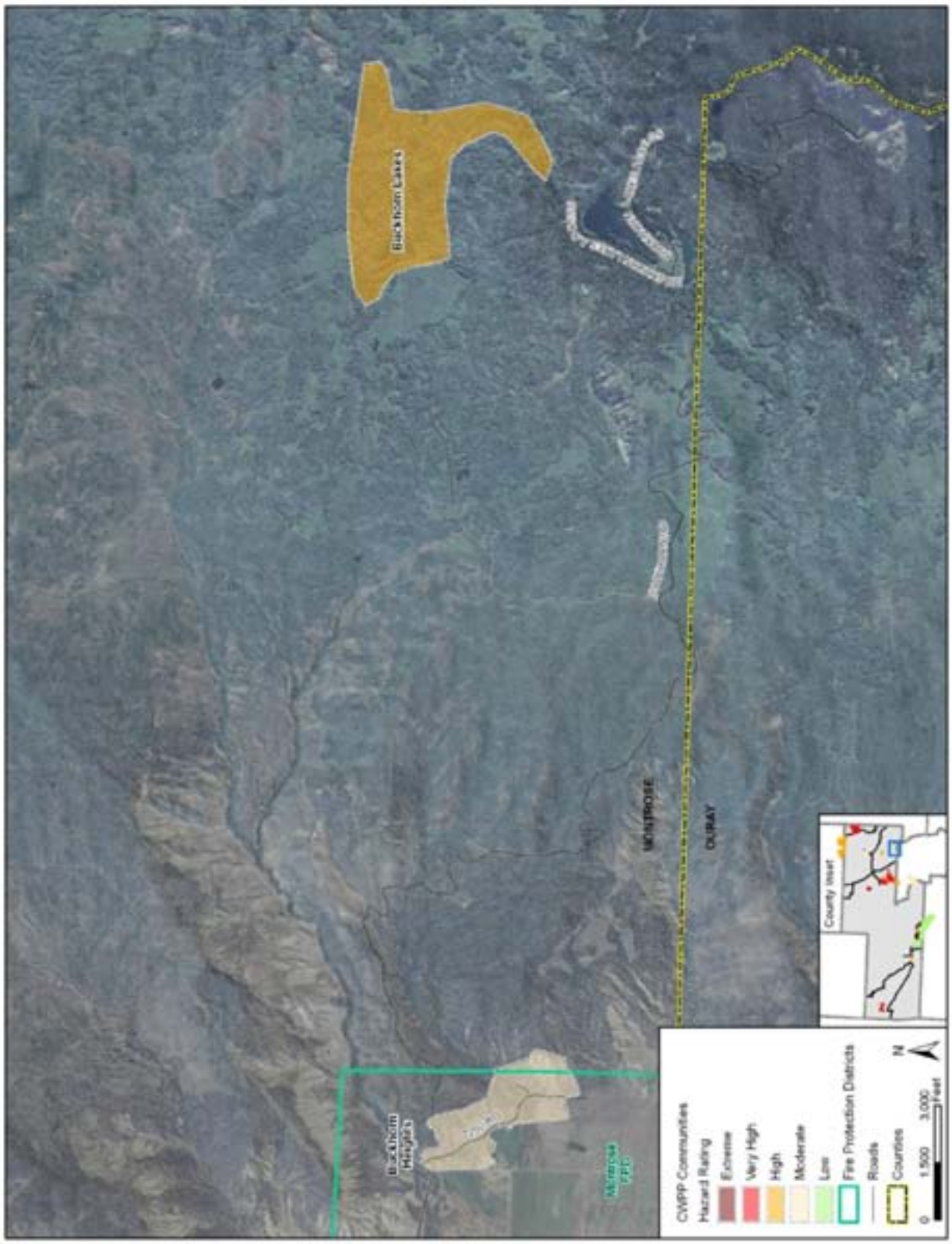


Figure 14. Buckhorn Heights and Buckhorn Lakes CWPP Communities Overview



1. Happy Canyon

Hazard Rating: Very High

Happy Canyon is located west of Hwy 550 and falls between the Tres Coyotes community to the east and the Dave Wood South community to the northwest, as shown in Figure 10. Happy Canyon is identified as a very high hazard area within the Montrose County WUI. The community currently consists of approximately 25 homes which a majority of these homes are located in the southern part of the community with large 40 acre or greater parcels located in the northern part of the community. The main ingress/egress access route from the City of Montrose to the community is off of Dave Wood Road. Old Happy Canyon Road is the main road from Dave Wood Road into the community. There are several additional access roads into the community as well but some only provide a direct ingress/egress route to individual properties and dead end within the property. Roadways within the community are well maintained dirt roads that are relatively flat with grades under 15 percent, only a few steep sections are present. Street signage is well marked and reflective throughout the community, helping to ease firefighters‘ response in the event of a wildfire. The topography of the area is relatively flat as it sits atop a mesa, steep canyons form the eastern and western boundaries of the community. Homes within the community have asphalt shingle roofs, highly resistant to fire, but siding and decking is constructed of combustible materials. Address numbering is present for homes; however, numbering is unreflective. A few of the homes within the community provide adequate defensible space; however, most homes have inadequate defensible space. Extended defensible space is needed for homes located on the canyon rims, especially when there is no roadway located behind the structures. Roads are well maintained with narrow driveways. However, adequate turnaround areas are available for fire apparatus to access homes. Utilities are located above ground and propane tanks are present. Water supply is not available for Happy Canyon; there are no hydrants or other water sources within the community. The majority of Happy Canyon is not within a local county fire protection district, only the northeastern portion of the community is located within the Montrose Fire Protection District.

The fuels in Happy Canyon consist mostly of dense areas of pinyon-juniper woodland, continuous sage shrubs, and native grasses. The top of the mesa is denuded of trees, but the drainages, especially east of the northern part of Old Happy Canyon Road have dense tree cover. More active fire behavior is predicted in these areas. The rates of spread in the community are expected to be greater than 80 chains per hour with high percentile weather

conditions, meaning high wind speeds, low temperatures, and low relative humidity. Flame lengths given moderate conditions are generally between four and eight feet, but are greater than 11 feet with increased wind speeds. Large fuels treatment projects to the south and west, including chainings and hydro axe projects serve to reduce fire behavior before a wildfire may enter the community. There have been hand-thinning projects within the community boundary in the Pinyon Hills area.

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.

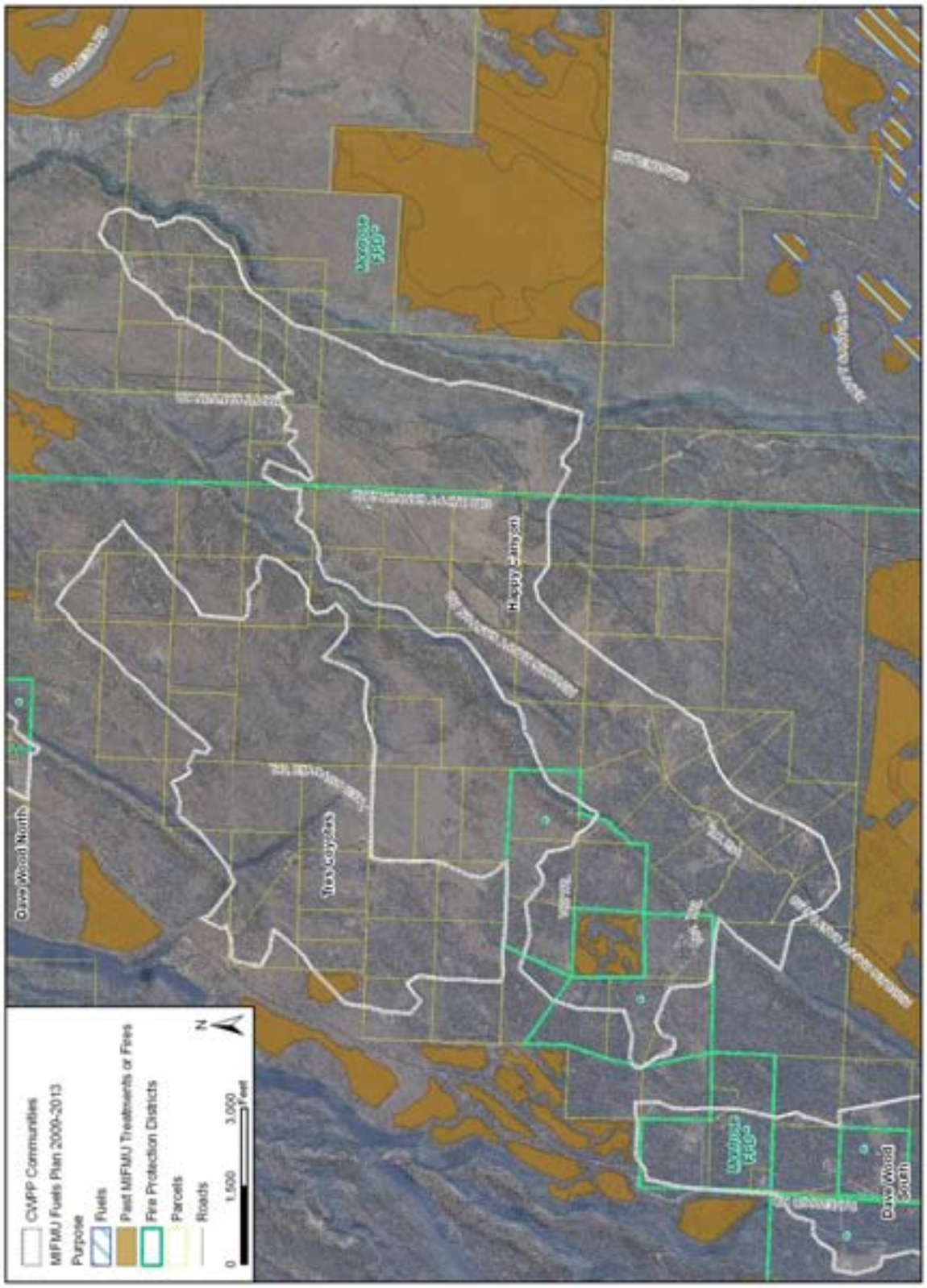
Table 6. Happy Canyon Fuels Treatment Recommendations

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
Infrastructure	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

***** 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.

Figure 15. Happy Canyon CWPP Community



2. North Shavano Valley

Hazard Rating: Very High

North Shavano Valley is located approximately 7.5 miles northwest of the City of Montrose and is located west of the Uncompahgre River, shown in Figure 11 (This map can also be referenced in an 11 x 17 format in Appendix D) and Figure 16. North Shavano Valley is identified as a very high hazard area within the Montrose County WUI. The community currently consists of approximately 16 homes located on 40 acre parcels. The main ingress/egress access route to the community is from Shavano Valley Road to K57 Trail; K57 provides one-way ingress/egress access. Roadways within the community are well maintained dirt roads approximately 20-24 feet wide. Street signage is present, reflective, and noncombustible throughout the community, helping to ease firefighters' response in the event of a wildfire. The topography of the area is mostly flat with steep slopes west of K57 Trail and along the northwest border of the community. House locations are generally located on flat areas but a few homes are located at the top of the steep slopes; houses within the community are not located mid-slope or on steep slopes. Homes within the community have asphalt shingle roofs, highly resistant to fire; however, siding materials are combustible. Address numbering is present for homes, but numbering is unreflective. Defensible space is not present for any homes within the community; however, because of the patchy shrub land vegetation type present defensible space is not as critical for this community. Driveways are narrow but provide adequate turnaround areas for fire apparatus to access homes. Utilities are located above ground, and propane tanks are present. Water supply is not available; there are no hydrants within the community. The majority of North Shavano Valley is not within a local county fire protection district, only the eastern most region of the community, which encompasses approximately eight homes, is located within the Montrose Fire Protection District.

The fuels in North Shavano Valley consist mostly of grasses, and patchy shrub land of sage, pinyon-juniper growth. Rates of spread under moderate weather conditions are fast, but the flame lengths are generally less than eight feet, meaning hand crews and large equipment are adequate for suppression activities. High percentile weather conditions include higher wind speeds, which increase rates of spread and flame lengths. The northern area in North Shavano Valley has flame lengths of greater than 11 feet predicted during high conditions. The most intense fire behavior is predicted to be in the drainages and on the steep slopes like those to the

west of K57 Trail. The community directly abuts agricultural properties; therefore burning may pose a potential risk to the North Shavano Valley 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.

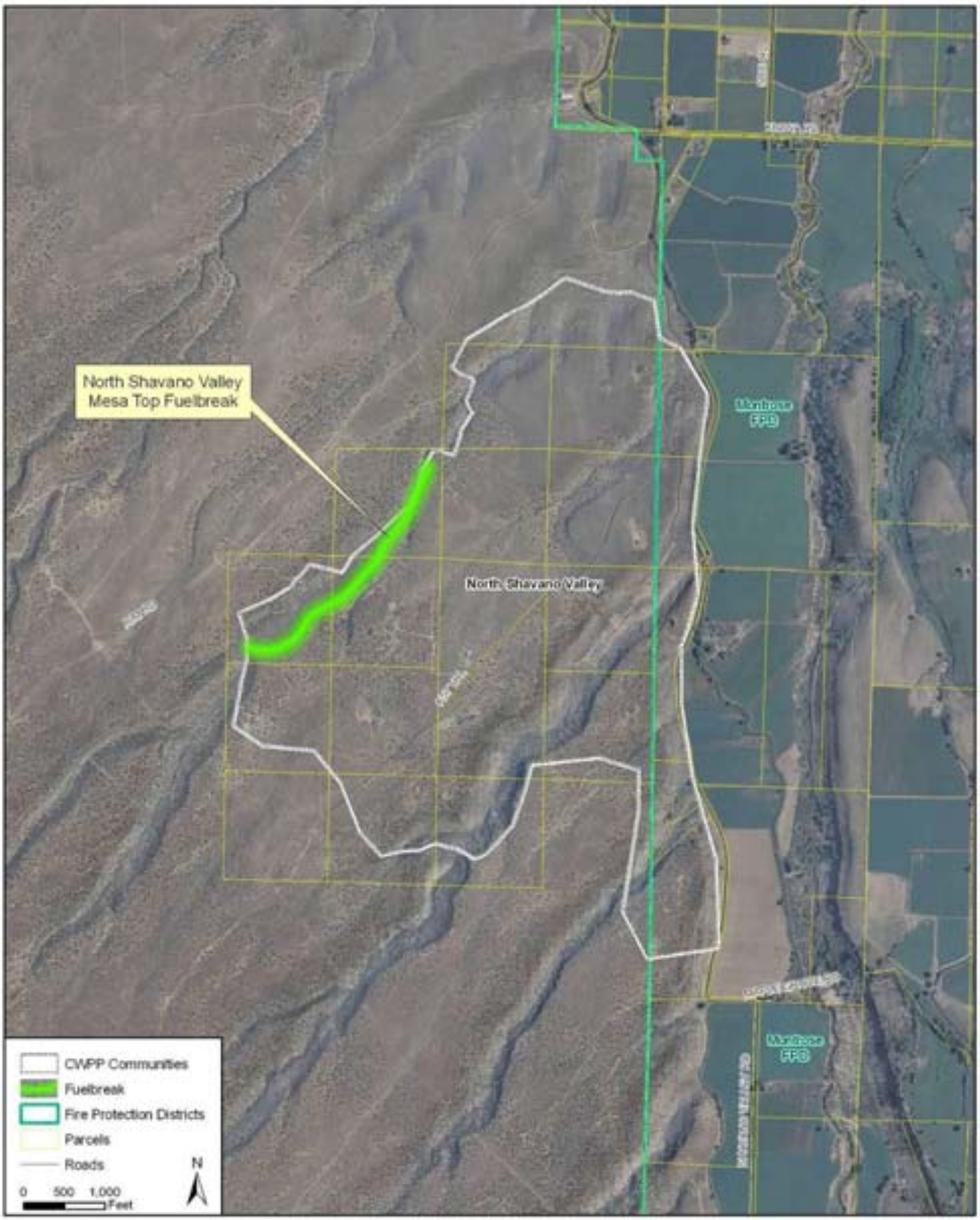
Table 7. North Shavano Valley Fuels Treatment Recommendations

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
Home Construction	2	See Appendix A	See Appendix A	n/a
Landscaping/Fuels	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
North Shavano Valley Mesa Top Fuelbreak	6	Although there are not many homes in the community, working along the top of this slope will protect the structures from an ignition starting to the west at the base of the hill.	Hand treatments in steep areas, mechanical treatments on top; mowing	24

***** 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.

Figure 16. North Shavano Valley Fuels Treatment Recommendations



3. Paradox Trail

Hazard Rating: Very High

Paradox Trail is located southwest of the City of Montrose, south of West Oak Grove Road (Hwy 90), shown in Figure 12 and Figure 17. The community lies west of Spring Creek, between the Lindsay and DeVinny Canyons. Paradox Trail is identified as a very high hazard area within the Montrose County WUI. The community currently consists of over 40 homes located on 40 acre parcels. There is a single main ingress/egress access route to the community from West Oak Grove Road (Hwy 90) by the P61 Trail. Roads to the community are paved but roadways within the community are well maintained dirt roads. Street signage is well marked, reflective, noncombustible, and consistent throughout the community, helping to ease firefighters' response in the event of a wildfire. The topography of the area is mainly flat, as the community is on top of a mesa, but steep canyon walls are located to the northwest and southeast borders of the community. House locations are generally located on the mesa top with a few homes located near the canyon rim. Homes within the community have asphalt shingle roofs, highly resistant to fire, but siding and decking material is comprised of combustible materials. Address numbering is present for homes, but numbering is unreflective. Defensible space is not present for any homes within the community. Many roads have 11 percent grades and driveways are steep and narrow providing inadequate turnaround areas for fire apparatus to access homes; Type 1 engines will not fit down most of the driveways within the community. Utilities are located above ground, and propane tanks are present at community homes. Additionally, overhead transmission lines are present within the community. There is no official water supply within the Paradox Trail community. However, the Montrose FPD can draft from a canal system, managed by the Uncompahgre Valley Water Users Association, which is located within the community and is in good condition. The majority of Paradox Trail is not within a local county fire protection district, only the north and northeastern corners of this community is located within the Montrose Fire Protection District. The Montrose FPD is more than five miles away from the community; however, the district has a full time staff which provides a better response time.

The fuels in Paradox Trail are almost entirely a combination of grass and grass/shrubs. The entire northern half of the county has been undergoing chaining, referred to as the ~~-~~Garrison Chaining" to remove smaller junipers and pinyon pines. The remaining vegetation consists mainly of grasses, which carry fire quickly, but with less intensity than shrubs or timber. There are irrigated fields to the east of Paradox Trail and many of the slopes around the community

are not heavily vegetated. Rates of spread under moderate and high weather parameters are fast, greater than 40 chains per hour. Some of the most significant fire behavior is likely to be in the drainage that runs northwest/southeast and bisects the community. The north facing slopes have denser vegetation of pinyon- juniper, which will produce longer flame lengths and greater fire intensity. Additional Montrose Interagency Fire Management Unit (MIFMU) treatments, including chaining, have been completed to the south of the community and act to reduce the risk of fire spreading into the community from the south.

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.

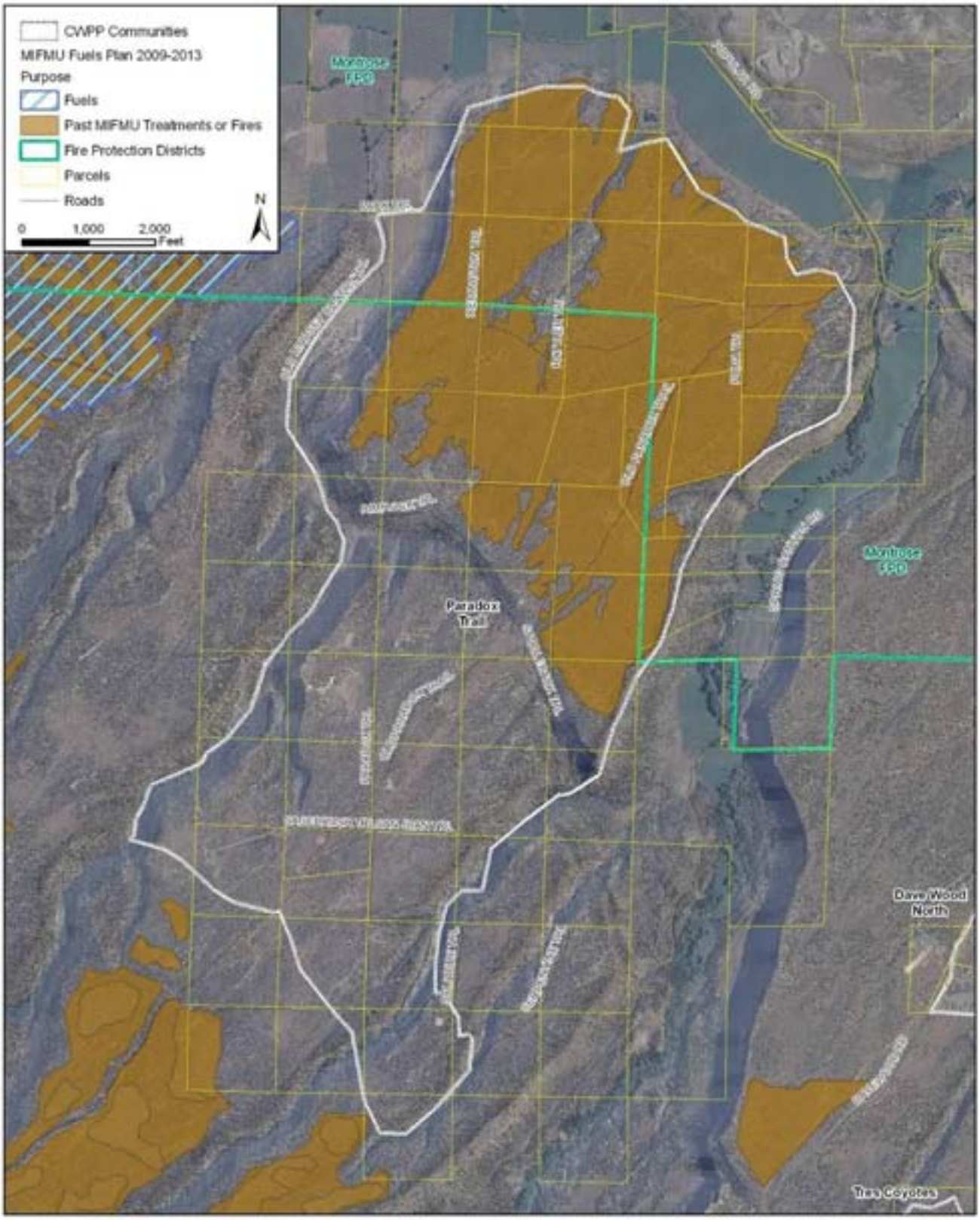
Table 8. Paradox Trail Fuels Treatment Recommendations

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
Home Construction	2	See Appendix A	See Appendix A	n/a
Landscaping/Fuels	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.

Figure 17. Paradox Trail CWPP Community



4. Tres Coyotes


Hazard Rating: Very High

Tres Coyotes is located southwest of the City of Montrose, shown in Figure 18. The community lies south of the Dave Wood North community and northwest of the Happy Canyon community. Tres Coyotes is identified as a very high hazard area within the Montrose County WUI. The community currently consists of approximately 15 homes, most are located on 20-40 acre parcels but a few homes are on 80 acre lots. Multiple access points are available into the community. Main access to the community is from Dave Wood Road to Tres Coyotes Trail or V60 Trail. Most homes have multiple ingress/egress access; however, canyons present an issue for the community, because although there are multiple ways to access the community, the road conditions in these areas are not always good. For example, if improvements were made to the canyon road located between Sims Mesa Road and Dave Wood Road then FPD response times to the community would be improved. Dave Wood Road is paved and more than 24 feet wide. Roads within the community are well maintained and approximately 20-24 feet wide. Street signage is present and reflective; however the network of roads within the community can be confusing and may pose issues for firefighters‘ response in the event of a wildfire. The topography of the area is a combination of flat mesa tops with steep canyons and chimneys. House locations are generally located on the mesa top with a few homes located near the canyon rim. The steep canyon walls and chimneys can funnel wildfires. Homes on top of mesas have the potential to burn if a fire starts below them on the steep slopes. Homes within the community have both metal and asphalt shingle roofs, highly resistant to fire, but siding and decking material is comprised of combustible materials. Address numbering is not present on all homes and numbering that is present is unreflective. Defensible space is not present for any homes within the community. Driveways provide adequate turnaround areas for fire apparatus to access homes. Utilities are located above ground; propane is used within the community and individual tanks on community properties. Additionally, major overhead transmission lines are present within the community. There is no official water supply within the Tres Coyotes community. Lightning is a common occurrence on the mesa tops. The majority of Tres Coyotes is not within a local county fire protection district, only the southernmost tip of this community is located within the Montrose Fire Protection District. The nearest FPD is more than five miles away from the community; fire response comes from a paid district; however, response times can be long. Future development is expected to increase within the Tres Coyotes community.

The fuels in Tres Coyotes include a continuous layer of grass species and sporadic patches of pinyon, juniper, sage, and rabbit brush shrubs. The lack of continuous tree canopies limits the amount of active crown fire, but groups of trees torching is possible. Rates of spread across the community are fast even under moderate conditions due to the grass and shrub component. Flame lengths under moderate weather conditions are between 8 and 11 feet, and are predicted to be greater than 11 feet under high winds and temperatures. Rates of spread greater than 80 chains per hour can also be expected with high weather percentiles. The overall fireline intensity is not as great as it would be in timber fuels, so although direct hand line is not possible, it likely would be easier to suppress with heavy machinery.

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.

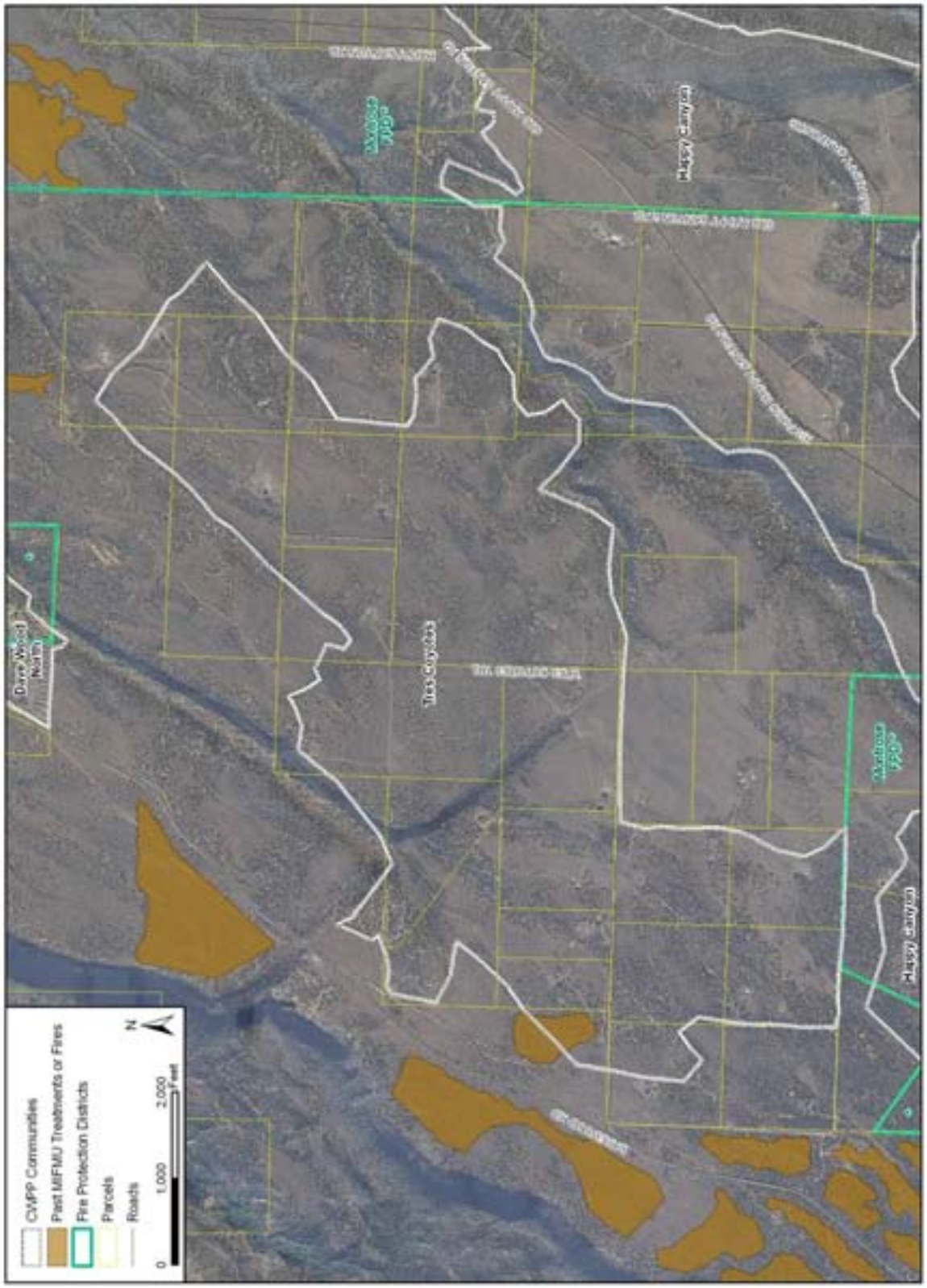
Table 9. Tres Coyotes Fuels Treatment Recommendations

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
Preparedness Planning	2	See Appendix A	See Appendix A	n/a
Infrastructure	3	See Appendix A	See Appendix A	n/a
Landscaping/Fuels	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. 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 18. Tres Coyotes CWPP Community



5. Duckett Draw

Hazard Rating: High

Duckett Draw is located approximately two miles west of Hwy 550 and approximately 3.25 miles north of Ouray County, shown in Figure 19. Duckett Draw is identified as a high hazard area within the Montrose County WUI. The community currently consists of approximately 10 homes located on 10 acre parcels. There is a single main ingress/egress access route to the community from Hwy 550; Solitude Road via Solar Road is the main entry into the community. Roadways within the community are well maintained and are approximately 20-24 feet in width with less than a 15 percent grade. Solitude Road is 30 feet wide. Street signage is well marked, reflective, noncombustible, and consistent throughout the community, helping to ease firefighters' response in the event of a wildfire. Homes within the community have both asphalt shingle roofs and metal roofs, both of which are highly resistant to fire. Siding is a combination of noncombustible and combustible building materials. Address numbering is present for homes; however, numbering is unreflective. Defensible space is present for some homes within the community. Adequate turnaround areas are located within the community and on driveways to allow for fire apparatus to access homes. Utilities are all located below ground. Water supply is available from hydrants that support a 500 gpm flow. In addition, the South Canal runs along the north end of the community, and there are several ponds within ½ mile of Duckett Draw that are full year-round. Annual agricultural burns to the north of the mesa increase the community's overall hazard rating. Duckett Draw is located within the Montrose Fire Protection District and fire response time from the Montrose FPD to this community is relatively short.

The fuels in Duckett Draw consist mostly of grasslands surrounded by agricultural fields and native vegetation. There are patches of pinyon, juniper, and sage. Trees are typically not taller than ten feet, and the surface fuels are patchy. Agricultural areas located west of the community also provide an additional ignition source as a result of farmers burning their fields and

equipment catching vegetation on fire. Another ignition source comes from a few residents who burn their ditches. Throughout the community, the primary fuel is a continuous grass layer. Because the community sits on a slope, fast rates of spread are expected. Under moderate weather conditions, rates of spread between 60-80 chains per hour are predicted. However, with greater wind speeds, spread rates will easily be above 80 chains per hour. Associated with the fast rates of spread are long flame lengths. Model runs with high percentile weather conditions show flame lengths greater than 11 feet which are too high for direct attack by hand crews.

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.

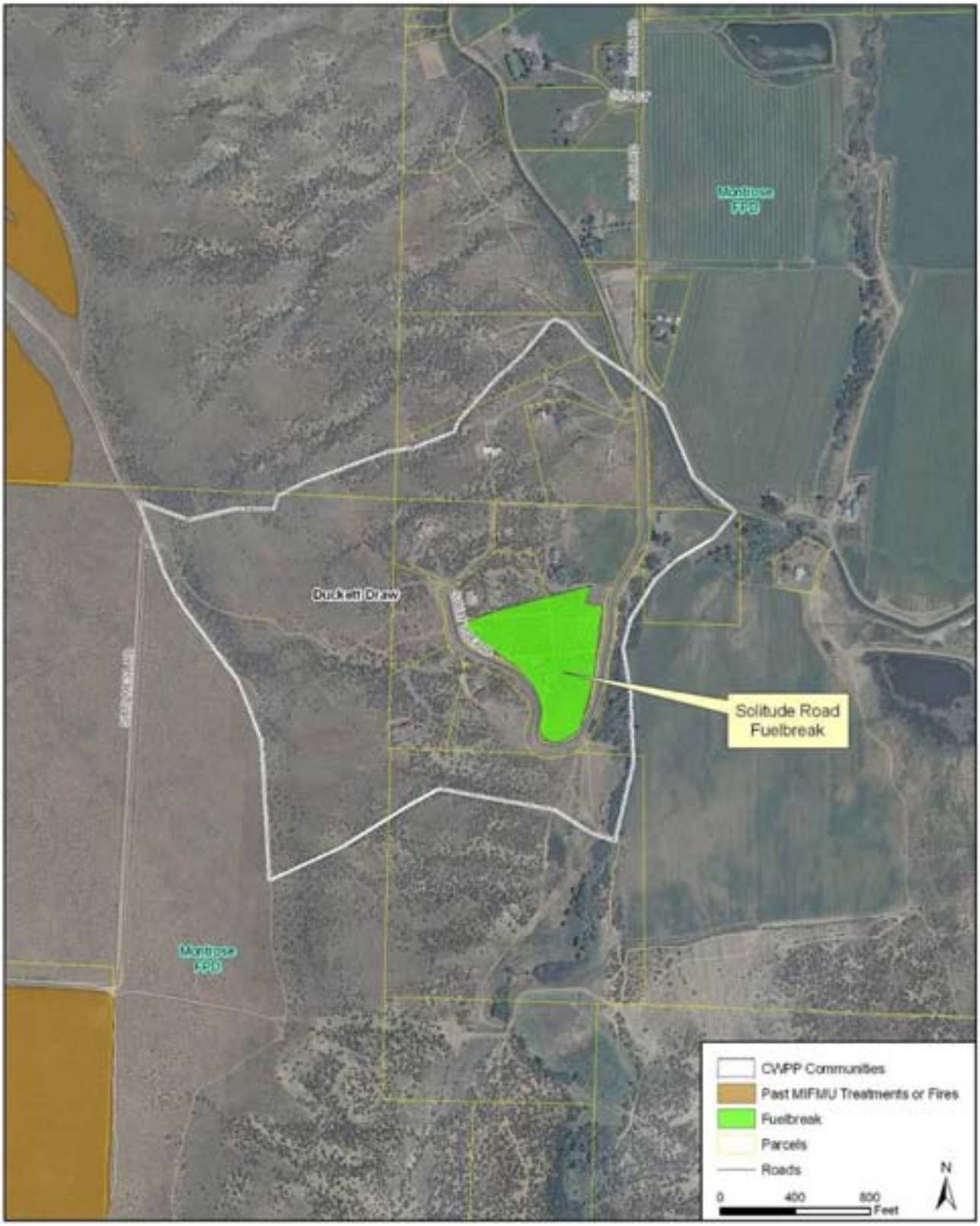
Table 10. Duckett Draw Fuels Treatment Recommendations

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
Solitude Road Fuelbreak	2	The pinyon-juniper and sage in this community can produce active fire behavior on the slope. This small fuelbreak within the community will help limit fire spread and potential impingement on homes.	Hand treatments in steep areas, mechanical treatments on top; mowing	7
Landscaping/Fuels	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
Home Construction	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. 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 19. Duckett Draw Fuels Treatment Recommendations



6. Dave Wood North


Hazard Rating: High
Dave Wood North is located south of Popular Road along Dave Wood Road which is north of Tres Coyotes and west of Allerton Draw, shown in Figure 20. The Dave Wood North community is identified as a very high hazard area within the Montrose County WUI. The community is comprised of 19 homes on 40-acre lots. The community is bisected by Dave Wood Road which serves as the main access to the community. The north section of Dave Wood Road is a paved road with small connecting roads and driveway access to homes. The south section of Dave Wood Road is unpaved. Street signage is reflective and present within the community, helping to ease firefighters' response in the event of a wildfire. The topography of the area is fairly flat within the community with hills in the eastern area, wet drainages to the western area, and Allerton Draw to the east of the community. Homes within the community are typically asphalt shingles, which are highly resistant to fire, where as decking and siding materials present consist of combustible materials. Address numbering is present for homes, but numbering is unreflective. Defensible space has been cleared around some homes within the community; however, defensible space is not present throughout. Driveways are long and provide adequate turnaround for fire apparatus. Additionally, several buildings, farm equipment, and livestock are present within the community. Utilities are all located above ground and propane tanks are present within in the community. Agricultural burning and combustible building materials increases the community's overall hazard rating. The entire community is within the Montrose Fire Protection District; however, fire response time from the staffed Montrose FPD is extended to get to the community.

The fuels in Dave Wood North consist mostly of patchy shrubs with pinyon, juniper, sage, and some cottonwood growth. Dave Wood North is an area with a high component of grass and shrubs. The fire behavior predicted is similar to many of the communities that are located along and off of Dave Wood Road. Moderate weather conditions generate rates of spread often between 40-60 chains per hour and flame lengths between four and eight feet. There is a heavier component of pinyon-juniper in the drainage that forms the east boundary of the community. Longer flame lengths, higher fireline intensity, and the potential for crown fire will be associated with these fuels. Increased wind speed, higher temperatures, and lower relative humidity will lead to extreme rates of spread, greater than 80 chains per hour and flame lengths longer than 11 feet, thus requiring aerial support for suppression. Sims Mesa, to the east of

Dave Wood North, has undergone plow and seed treatments with native grasses and forbs. Agricultural burning is a potential ignition source for the area.

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.

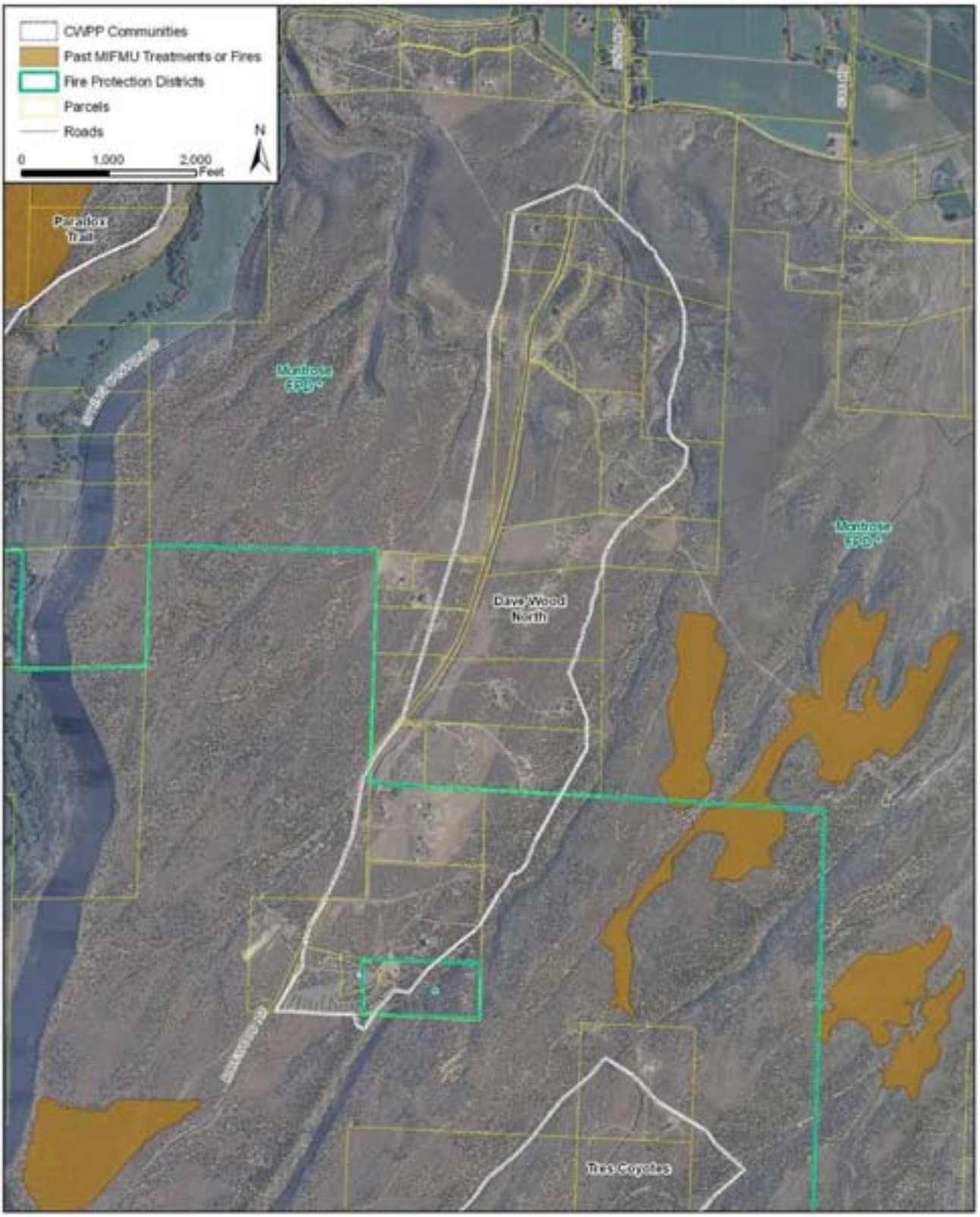
Table 11. Dave Wood North Fuels Treatment Recommendations

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. 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 20. Dave Wood North CWPP Community



7. Dave Wood South

Hazard Rating: High
Dave Wood South is located along Dave Wood Road in the southern part of Montrose County and extends into Ouray County, shown in Figure 10. The Dave Wood South community is located south of the Tres Coyotes community and southwest of the Happy Canyon community and is identified as a high hazard area within the Montrose County WUI. The Dave Wood South community has 25 homes on 40-acre lots. The community is bisected by Dave Wood Road which serves as the main access to the community. Dave Wood Road is an unpaved road with small connecting roads and driveway access to homes. Street signage is reflective and present within the community, helping to ease firefighters' response in the event of a wildfire. The topography of the area is generally flat within the community with steep canyons on the eastern and western sides of the community. Homes within the community are typically asphalt shingles, which are highly resistant to fire, whereas decking and siding materials present consist of combustible materials. Address numbering is present on homes, but numbering is unreflective. Defensible space has been cleared around some homes within the community; however, defensible space is not present throughout. Driveways are long and provide adequate turnaround for fire apparatus. Additionally, several buildings, farm equipment, and livestock are present within the community. Utilities are all located above ground and propane tanks are present within in the community. Agricultural burning and combustible building materials increases the community's overall hazard rating. The majority of Dave Wood South is not within a local county fire protection district; only pockets within the northern region of this community are located within the Montrose Fire Protection District. The southern region of the community extends south into Ouray County; however this region of the community also does not fall within any fire protection districts for Ouray County.

The fuels in Dave Wood South consist mostly of dense pinyon-juniper woodlands, leading to the potential for more active fire behavior. Flame lengths in the areas are predicted between four and eight feet, but with areas of flame lengths between 8-11 feet. Because there is greater fuel loading the fuels are not as flashy as grass, rates of spread are not predicted to be greater than 80 chains per hour even with high wind speeds and temperatures. The quantity of trees in the community leads to a higher probability of active crown fire throughout, but primarily east of Dave Wood Road. Suppression activities in the area are likely to be more difficult because of the potential for crown fire and the associated fireline intensity.

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.

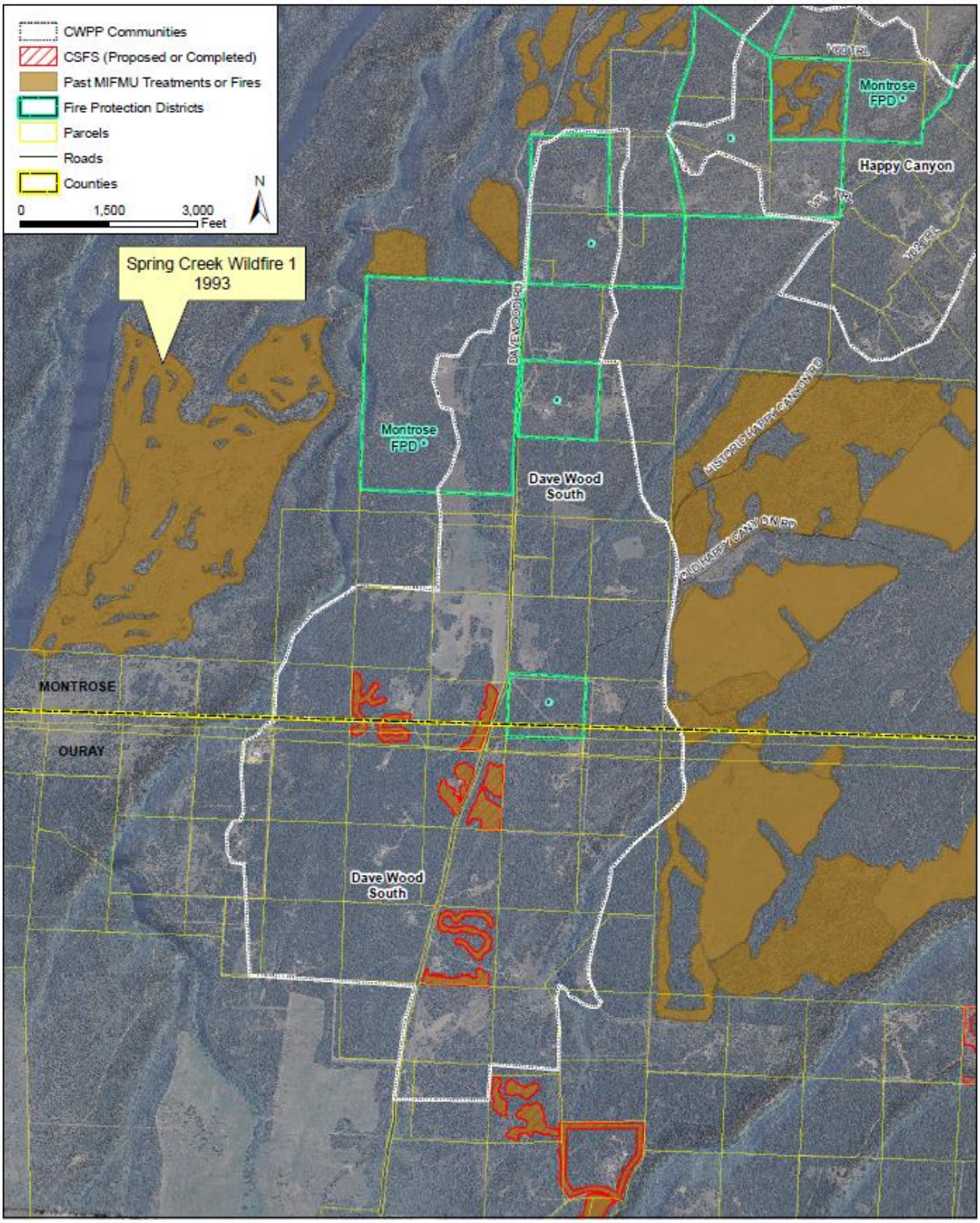
Table 12. Dave Wood South Fuels Treatment Recommendations

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. 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 21. Dave Wood South CWPP Community



8. Bostwick Park

Hazard Rating: Moderate

Bostwick Park is located in the northeast part of the county and southwest of the Black Canyon of the Gunnison, shown in Figure 22. Bostwick Park is one of the moderate hazard areas in the Montrose County WUI. The community consists of approximately 15 homes each constructed on a 40-acre lot. There is a single main ingress/egress access route to the community from Hwy 347; K-73 Trail is the main road into the community. There are some unimproved trails around the community that could provide for secondary ingress/egress access. The initial highway condition is good. Roads are dirt and approximately 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 slopes lead into the community the majority of the community itself is flat. The steep sides of the mesa add to the wildfire risk. A majority of homes within this community are built on the mesa plateau. A few homes are also located at the base of the mesa on the west side near the steep slopes. The steep slopes could funnel fire directly to some of these homes and directly affect the likelihood that firefighters would be able to save these structures from wildfire. Roofs consist of asphalt shingles and are highly resistant to fire, but decks and siding are made of combustible materials such as wood. Address numbering is present for homes, but numbering is unreflective. Defensible space around homes is minimal, but adequate turnaround areas are available to all homes. Homes located along the rim need additional work completed down slope. However, this is not necessary for all of the homes in the community. Utilities are located above ground, and many homes have propane tanks. There is no water supply in the area, which greatly complicates wildfire response. Utilities are all above ground including residential propane tanks. High winds and lightning exacerbate the community's hazard rating. Additionally, the majority of the Bostwick Park community is not within a local county fire protection district, only the western and southern portions of this community are located within the Montrose Fire Protection District.

The fuels in Bostwick Park are divided between open, grass-dominated areas found throughout the mesa plateau and shrub-dominated (pinyon-juniper) areas found along the slopes below. Bostwick Park has two distinct fuel types: the steep slopes that comprise the western border of the community have dense pinyon pine and juniper woodlands, while the top of the community consists of irrigated fields. The hills surrounding the community also have dense pinyon-juniper

fuels, which are capable of supporting extreme fire behavior. The Warner Fire just north of the community burned approximately 850 acres and has since been reseeded. The largest concern for the community stems from a human-caused fire starting below the homes and spreading quickly uphill from the west. Lightning-caused fires are more common on the higher mesa tops and ridges surrounding Bostwick Park. Under high severity weather conditions, rates of spread greater than 60 chains per hour 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 like dozers. Agricultural burning is a plausible ignition source for the area.

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.

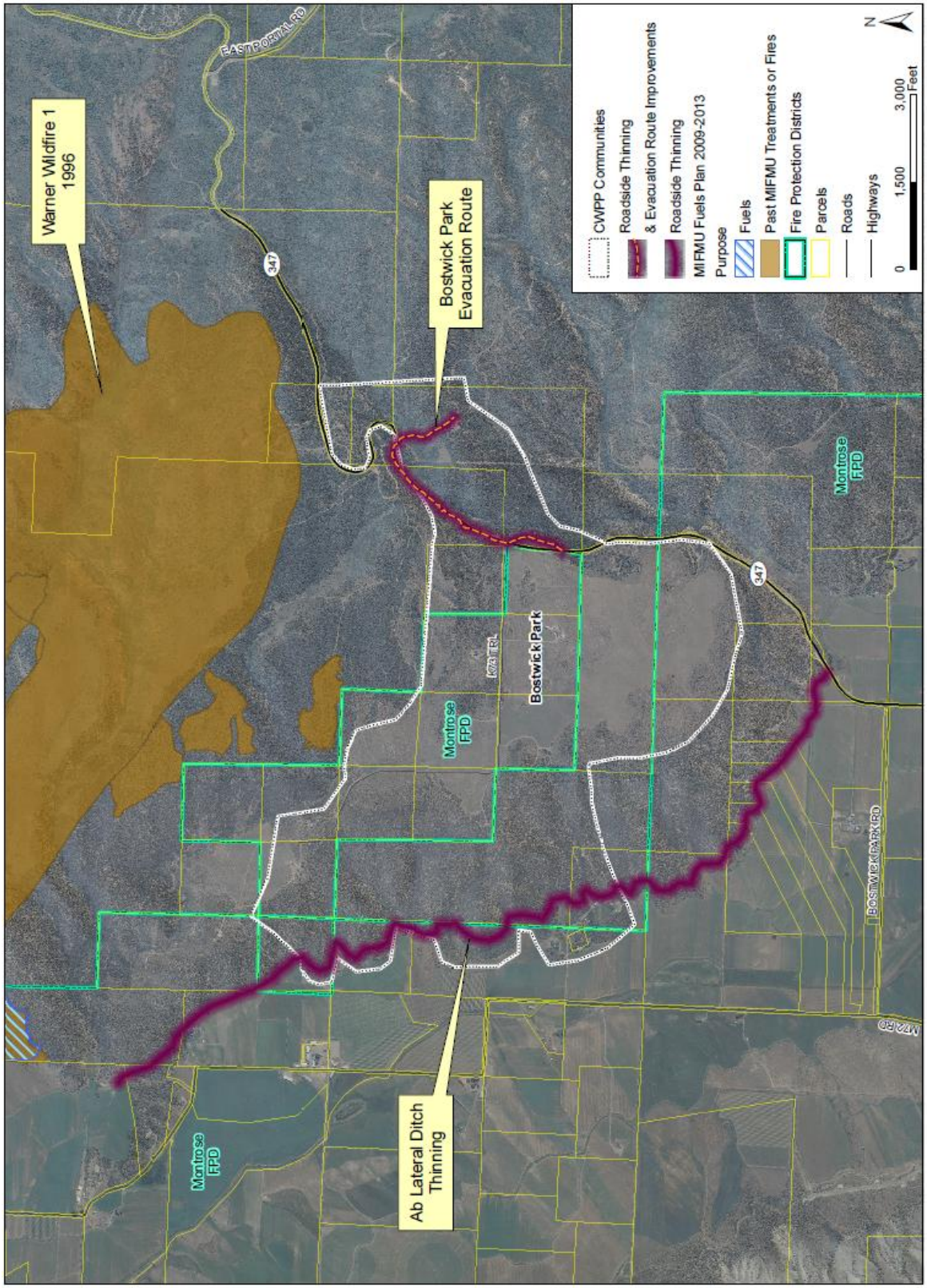
Table 13. Bostwick Park Fuels Treatment Recommendations

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
Bostwick Park Evacuation Route	4	The dense fuels along the road could limit the ability of residents to evacuate. Limbing and removing some of the vegetation will allow for safer egress.	Hand felling and limbing in most areas due to slope; mechanical treatments where applicable	36
Preparedness Planning	5	See Appendix A	See Appendix A	n/a
Infrastructure	6	See Appendix A	See Appendix A	n/a
Ab Lateral Ditch Thinning	7	Because ignitions are most likely in the agricultural areas to the west of the community, thinning along the ditch will limit the spread of fire to the top of the mesa.	Hand felling and limbing in many areas due to slope; mechanical treatments where applicable	121

***** 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.

Figure 22. Bostwick Park Fuels Treatment Recommendations



9. Buckhorn Heights

Hazard Rating: Moderate

Buckhorn Heights is located in the eastern part of the county, approximately 3 miles east of Hwy 550 and approximately half a mile north of the Ouray/Montrose County line, shown in Figure 23. Buckhorn Heights is another moderate hazard area within the Montrose County WUI. The community currently consists of approximately 10 homes; however, based on anticipated growth Buckhorn Heights is expected to increase to 23 homes within the community. Each home is constructed on a lot size between 1 acre and 10 acres. There is a single main ingress/egress access route to the community from Hwy 550; access to the community from the highway is via Buckhorn Road, the main road into the community. Within the community the roads are well maintained dirt roads. Street signage is well marked, reflective, noncombustible, and consistent throughout the community, helping to ease firefighters' response in the event of a wildfire. The topography of the area is flat to the west of the community with large hills on the eastern side. Homes within the community have metal roofs, highly resistant to fire, and siding is a combination of noncombustible stucco and wood siding. Address numbering is present for homes; however, numbering is unreflective. Fire resistant landscaping has been installed around newer structures within the community, however additional fire resistant landscaping should be installed throughout the community. Driveways and roads provide adequate turnaround areas to most homes. Utilities are located below ground and propane tanks are present. Water supply is available within Buckhorn Heights through hydrants providing 500 gpm flow rate and a water tank with an undetermined storage volume. Frequent lightning for the area increases the community's overall hazard rating. The entire community falls within the Montrose Fire Protection District. However, the Log Hill FPD is the closest mutual aid district to the Buckhorn community.

The fuels in Buckhorn Heights consist mostly of pinyon-juniper shrub land with interspersed oaks and grasses. The majority of the area to the west of the community is agricultural lands that are irrigated. While this increases the number of potential ignitions, it is unlikely that a fire will get established in the fields. However, if an ignition was close to the heavily vegetated slopes of Buckhorn Heights, it could spread uphill rapidly into the community. Light, flashy fuels like grass are likely to carry fire quickly through the community. The main road into the subdivision acts as a bit of a fire break, but it is not adequate to keep embers from igniting the hillside above the homes. Long flame lengths limit the ability of hand crews to contain a fire, and

extremely fast rates of spread could allow fire to reach the community before fire crews could arrive. Frequent lightning is a common ignition source for the area.

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.

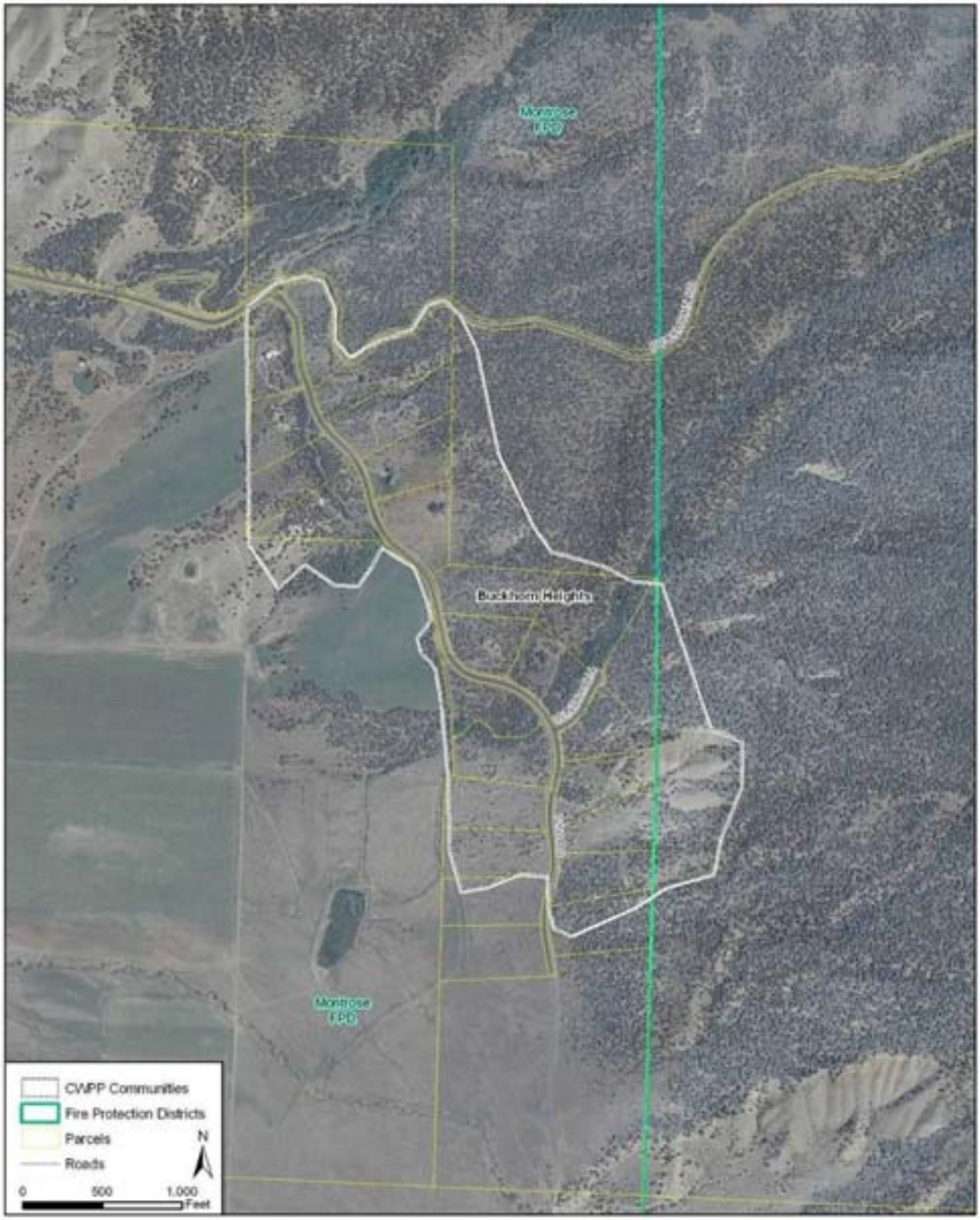
Table 14. Buckhorn Heights Fuels Treatment Recommendations

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
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. 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.

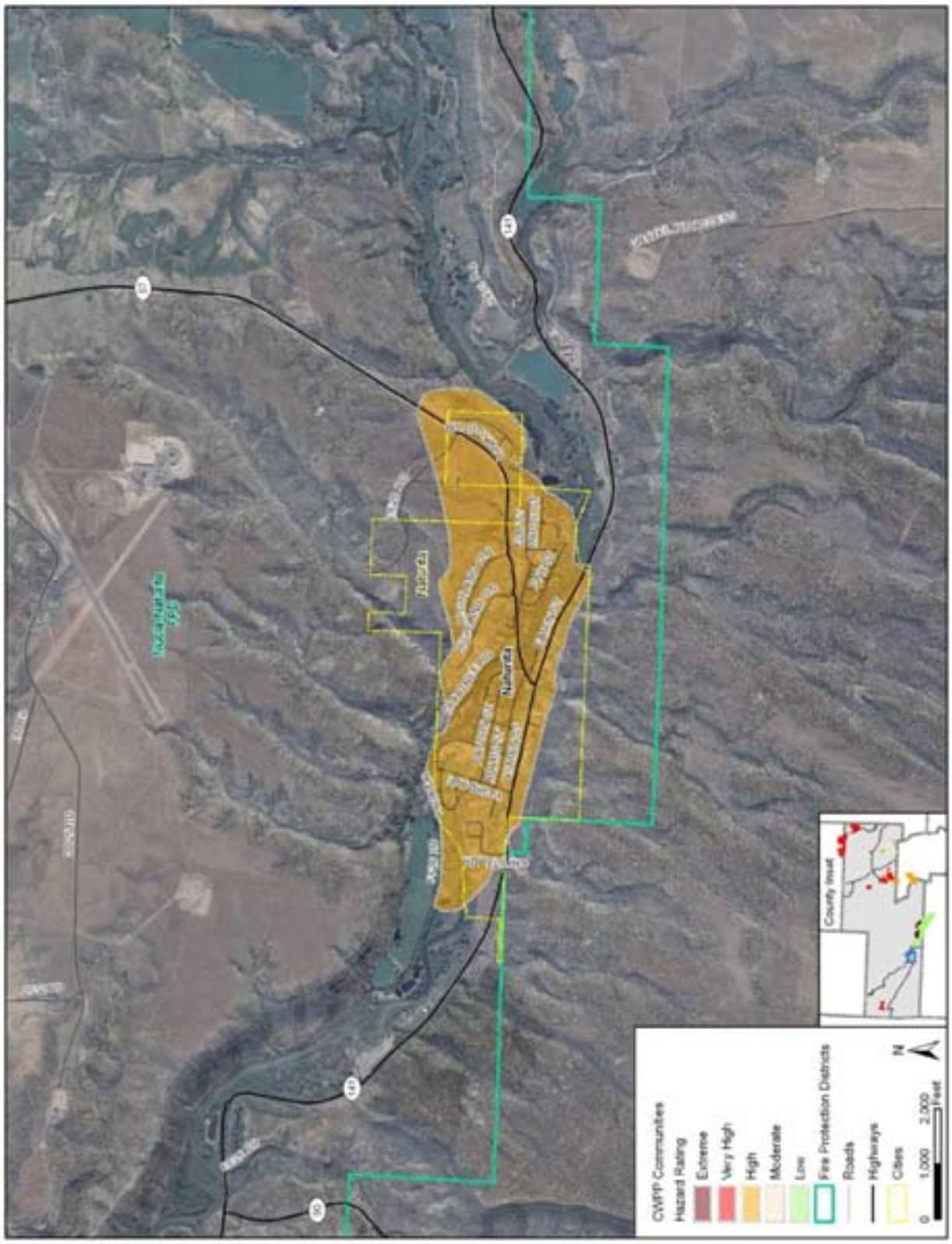
Figure 23. Buckhorn Heights CWPP Community



NUCLA-NATURITA FIRE PROTECTION DISTRICT

One CWPP Community, Naturita, was identified within the Nucla-Naturita Fire Protection District. Naturita is a high hazard community and is identified in Figure 24. Naturita's community ignitability analysis recommendation is discussed in the following pages.

Figure 24. Naturita CWPP Community Overview



10. Naturita

Hazard Rating: High

The Naturita community is located in the southwestern part of Montrose County and encompasses most of the Town of Naturita, shown in Figure 24. The community sits along the San Miguel River corridor. Naturita is more developed than most other communities within the Montrose County WUI and is identified as a high hazard area. The community currently consists of approximately 250 homes, several with additional outbuildings (i.e., stables, garages, sheds, barns). House located within the town are generally constructed on parcels less than an acre in size, however, homes located on the outskirts of the town are constructed on parcels between 1-40 acre lots. Two highways access the community, Hwy 90 and Hwy 97, and multiple access points are available throughout the community with a fairly extensive road network due to the more developed area and functions of the town. Most homes have multiple ingress/egress access; however, emergency access and evacuations could be an issue because of the high density and narrow roadways within the community. Roads within the community are paved with grades less than 15 percent; however, roads throughout the town are under 24 feet wide and do not provide adequate turnarounds in all areas. Street signage is present and reflective throughout the community, helping to ease firefighters‘ response in the event of a wildfire. The topography of the area is fairly flat. Overall the majority of the community sits in the bottom of the river corridor, the western region is primarily agricultural fields and steeper slopes and less riparian vegetation is present toward the eastern region of the community. Homes within the community commonly have asphalt shingle roofs, highly resistant to fire, but siding and decking material is comprised of combustible materials such as wood or vinyl. Address numbering is present on all homes but numbering is unreflective. Many homes within the community do not require defensible space; however, homes north of Hwy 97 require adequate defensible space because of the existing topography and vegetation within this area. It is recommended that homes abutting the river also have adequate defensible space. Additionally, it is recommended that old vehicles and other debris observed at many of the properties within the community are removed or stored away from building structures. Most driveways within the community, if long, provide adequate turnaround areas for fire apparatus to access homes. Utilities are located above ground and water supply is mainly by hydrants present throughout the town that provide greater than 500 gpm flows. Lightning is a common occurrence on the mesa tops and agricultural burning or ditch burning is usually common in the early spring season for areas

surrounding the community. The entire community falls within the Nucla-Naturita Fire Protection District and FPD response time is fairly quick when staff is available to respond.

The fuels in Naturita include woodland and shrub land species such as pinyon, juniper, cottonwoods, sage, and mixed grasses. Woodland species are found within the wetter riparian areas while the steep, arid hillsides that bound the community comprise mostly of shrubs and grasses. The majority of the values at risk are located along the riparian corridor. Fuels such as cottonwoods are found along the river corridor. Lightning is a common ignition source, especially south of Hwy 90. Because of the light flashy fuels, rates of spread are predicted to be very fast, especially when running uphill on the slopes north and south of Naturita. Flame lengths greater than 11 feet can be expected, especially if fire transitions into the juniper or pinyon pines. High winds are typically only an issue in the spring. Fire is most likely to start in town and spread outside of the designated community where the properties are more dispersed. Agricultural land is typically irrigated around the town of Nucla, thus a fire beginning in Naturita would not likely have a large impact on Nucla.

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.

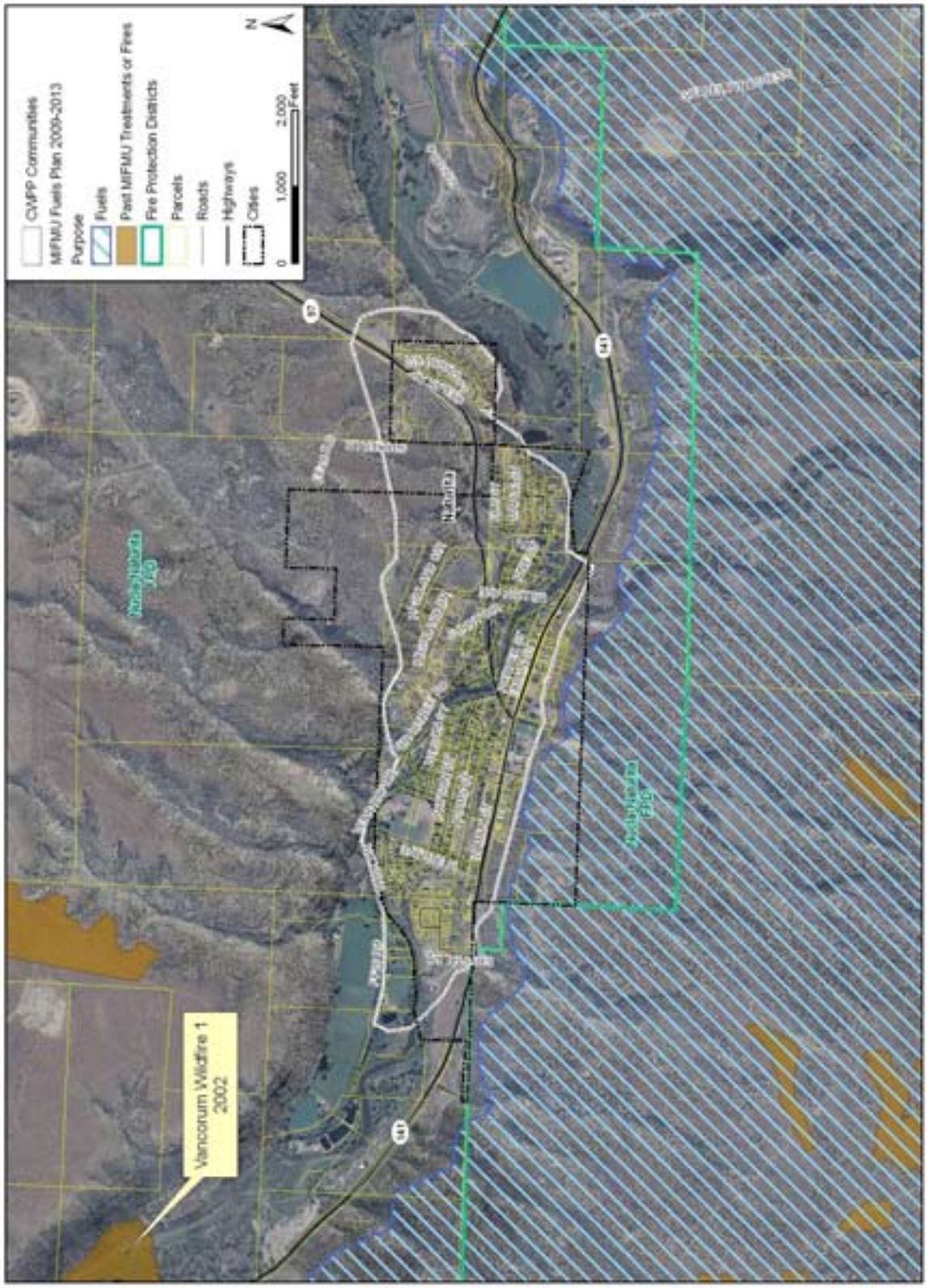
Table 15. Naturita Fuels Treatment Recommendations

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
Home Construction	2	See Appendix A	See Appendix A	n/a
Landscaping/Fuels	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.

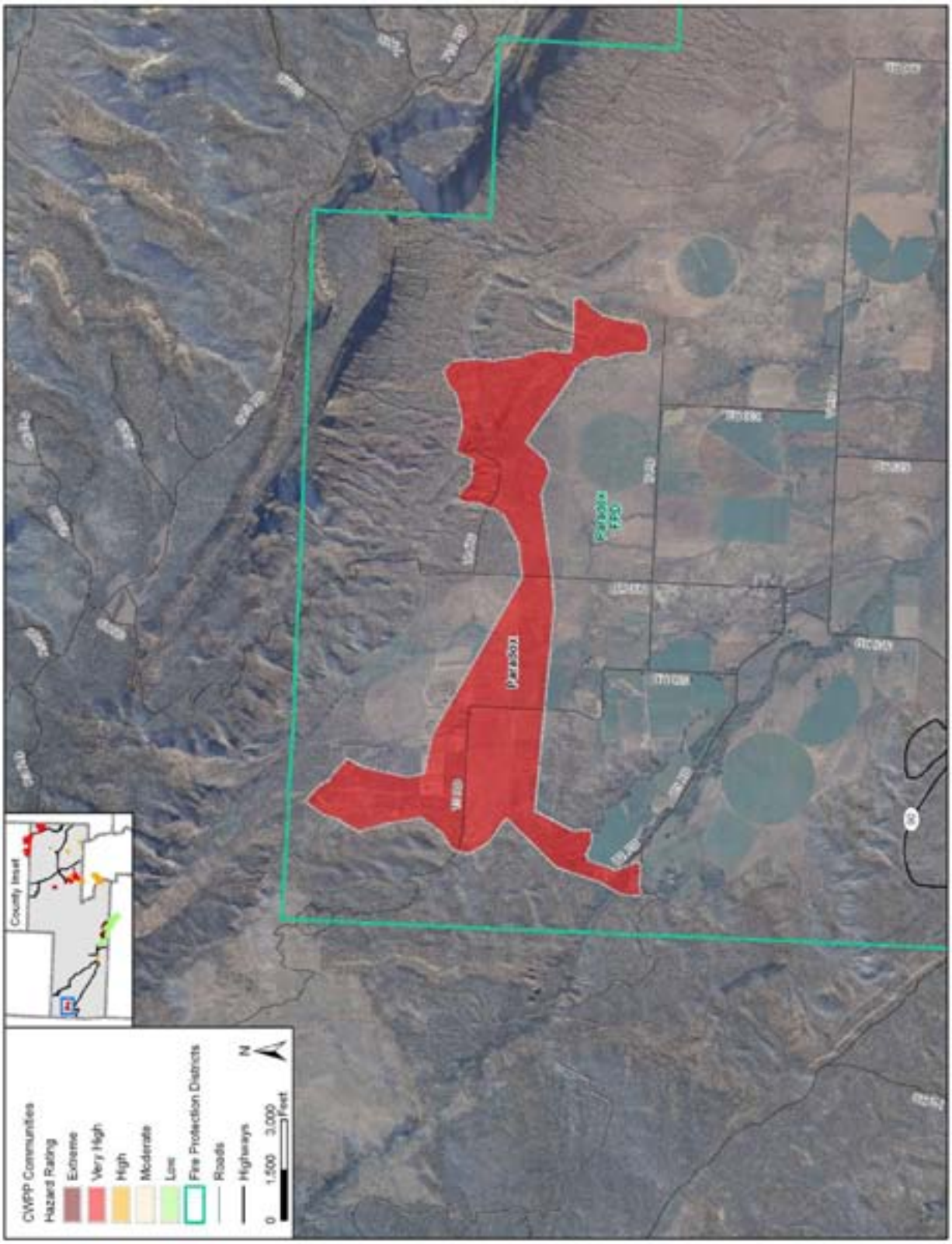
Figure 25. Naturita CWPP Community



PARADOX FIRE PROTECTION DISTRICT

One CWPP Community, Paradox, was identified with the Paradox Fire Protection District. Paradox is a very high hazard community and is identified in Figure 26. Paradox's community ignitability analysis recommendation is discussed in the following pages.

Figure 26. Paradox Fire Protection District CWPP Communities Overview



11. Paradox


Hazard Rating: Very High

The Paradox community is identified as the most western community within Montrose County. Paradox is located approximately 3.5 miles east of the Utah/Colorado border between Hwy 90 to the south and Hwy 141 to the north, shown in Figure 26. The community is identified as a very high hazard area within the Montrose County WUI. The community currently consists of approximately 25 homes located on 40 acre or larger parcels. The community population is between 200-230 people within the entire valley from Bedrock westward to Paradox. There are multiple ingress/egress access routes to the community from Hwy 90 and Hwy 141. Roadways within the community are well maintained and consist of both paved and dirt roads approximately 20-24 feet wide with generally less than 15 percent grades. A few unmaintained roads do exist within the community but the number of unmaintained roads is low. Street signage is well marked, reflective, and of noncombustible materials throughout the community, helping to ease firefighters‘ response in the event of a wildfire. The topography of the area is variable with a low, open valley region bordered by sloping hills. A majority of the community homes are located within the valley bottom which is dense with agricultural land. However, some houses within the community are located on mid-slope areas, especially in the north eastern region of the Paradox community. Homes within the community have both metal and asphalt shingled roofs, highly resistant to fire, and many homes have noncombustible siding such as stucco. However, there are still some homes within the community that do have combustible wood siding. Address numbering is present for homes. However, numbering is unreflective and difficult to understand for nonresidents and incoming resource personnel. For the most part, those living in the areas with greatest concern have defensible space established. The Paradox FPD is active in assisting residents to maintain defensible space by coming out to their properties to help with this. There is a large range in how much work has been done to establish adequate defensible space. Some driveways are very steep and narrow, making access difficult for firefighters and egress is difficult when resources are coming in. Home location is typically safe since most are in the valley bottom. However, some homes exist along the sloping hill sides and access is by narrow steep dirt roads. These homes along the sloping hill sides are surrounded by native vegetation which is more likely to support wildland fire. Furthermore, several properties within the community are not well maintained and present many unknown hazards that are associated with responding to these houses and nonpermanent structures. Old cars and miscellaneous debris (e.g., trash, scrap metal, fuel cans, etc.) are

scattered throughout these unmaintained properties and pose a risk to firefighters responding to the site. These unmaintained properties should be cleared of existing hazards or noted on map books for first responders. Utilities are located above ground with some areas off the grid and propane tanks are present on all properties. Water supply is limited within the community with the exception of an available 1.5 inch diameter stand pipe. Lightning is the main cause of fires along the Red Cliffs. Agricultural burning is a common ignition source within the community and vehicular activities are potential ignition sources from cars traveling the road or the occasional occurrence of large 18-wheeler crashes on the highway. The entire community is located within the local county fire protection district; however, the Paradox FPD often does not have enough staff to respond quickly to calls.

The fuels in Paradox consist almost entirely of agricultural growth in the lower areas with some cottonwoods present in riparian areas, the remaining areas of the community exhibit shrub land species such as junipers and pinyons. Much of the irrigated agricultural land does not pose the same risk to the community as the pinyon-juniper covered slopes surrounding Paradox. The structures built in the valley bottom do not have significant risk of damage or loss from wildfire. However, there are several homes that are on steeper slopes that have a higher component of wildland vegetation, including juniper and pinyon pines. Whether given moderate or high percentile weather conditions, fast rates of spread are expected through the grasses and shrubs, which are the most common fuel models. Flame lengths increase to greater than 11 feet on the slopes when higher wind speeds are present. Most frequently, it is the high cliffs above Paradox that experience the most wildfire as a result of lightning strikes. Because of the steepness of the cliffs and lack of vegetation, it is unlikely that a fire will back down into 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.

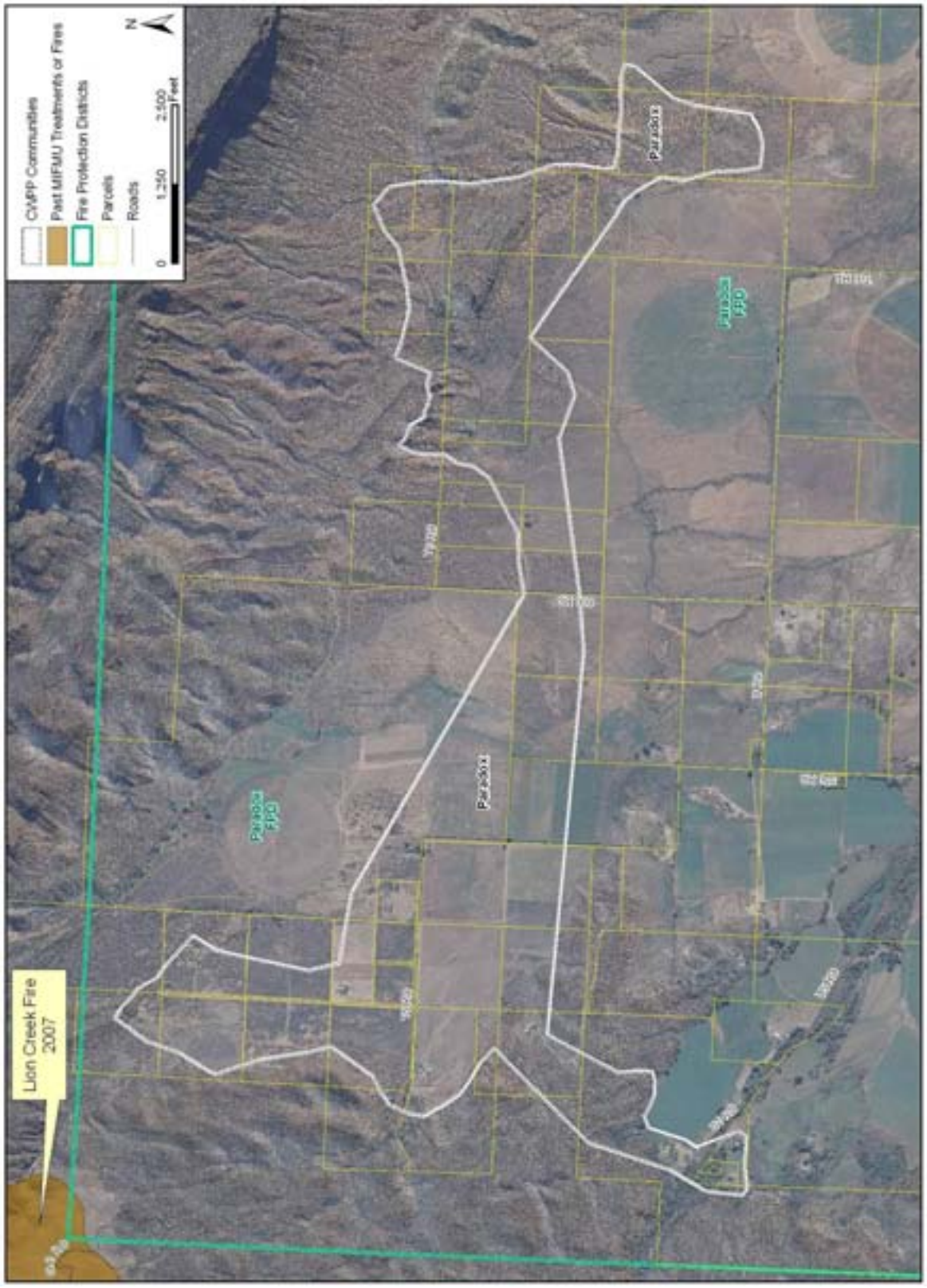
Table 16. Paradox Fuels Treatment Recommendations

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
Home Construction	2	See Appendix A	See Appendix A	n/a
Landscaping/Fuels	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.

Figure 27. Paradox CWPP Community



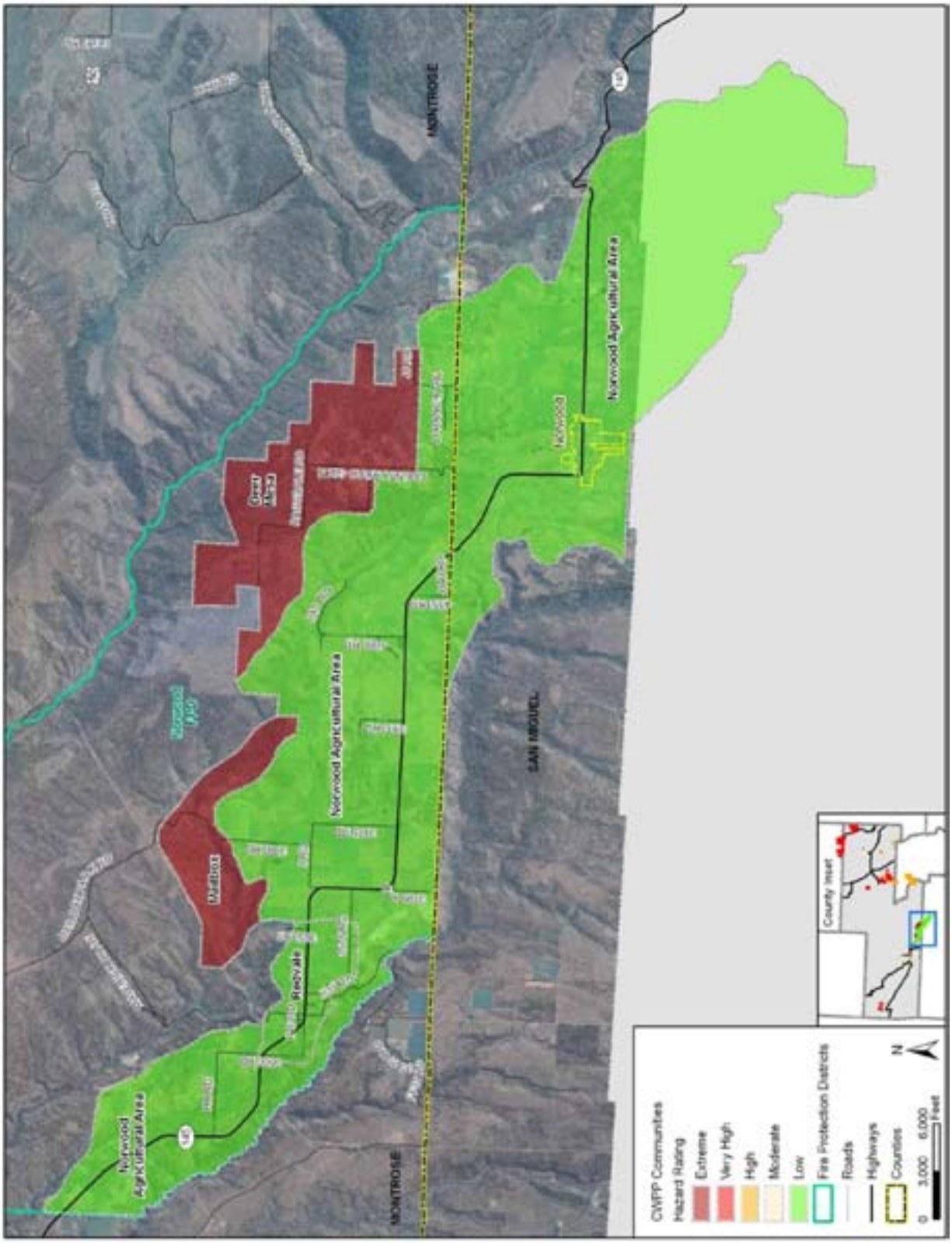
NORWOOD FIRE PROTECTION DISTRICT

The Norwood Fire Protection District is based in San Miguel County; however, the district crosses the county line and includes a portion of Montrose County southeast of the Nucla-Naturita Fire Protection District and south of the San Miguel River. There are four communities identified within Montrose County that fall within the Norwood Fire Protection District; Deer Mesa, Mailbox, Norwood Agricultural Area, and Redvale. These communities and their hazard ratings are identified in Table 17 and shown in Figure 28. The communities' ignitability analysis recommendations are discussed in the following pages. The community descriptions were obtained from the San Miguel County CWPP.

Table 17. Norwood Fire Protection District CWPP Communities

Extreme	Low
Deer Mesa Mailbox	Norwood Agricultural Area Redvale

Figure 28. Norwood Fire Protection District CWPP Communities



12. Deer Mesa

Hazard Rating: Extreme

The Deer Mesa community is located southeast of Naturita and north of the Montrose/San Miguel County line, shown in Figure 28. This community is made up of dispersed ranches on large acreages as well as home sites on small tracts. Ranches typically have several outbuildings and barns. Building construction is typical wood with mostly metal roofing. The roads are dirt and vary in quality. Primary access roads are adequate when entering the community, but they deteriorate in surface quality, width, and steepness as they move deeper into the community. Road signage is poor to nonexistent and several roads are 4WD only. There is virtually no individual home or ranch signage. Driveway access to homes can be very long through heavy mature/over mature pinyon-juniper. There is no water supply for the community, but small stock ponds on the south side of the community may offer some draft sources. Given the disbursed nature of the home and ranches in this community, a centralized water supply would be difficult.

The fuels in this community are primarily pinyon-juniper stands. The stands are mature and/or over mature, and have a high percentage of dead wood. This is a concern for firefighters because it increases the probability of ignition in these stands. The fire intensity can be moderate to extreme and there is potential for crown fire under windy conditions. This area has a high occurrence of lightning strikes and there is a history of fires in the area as well.

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.

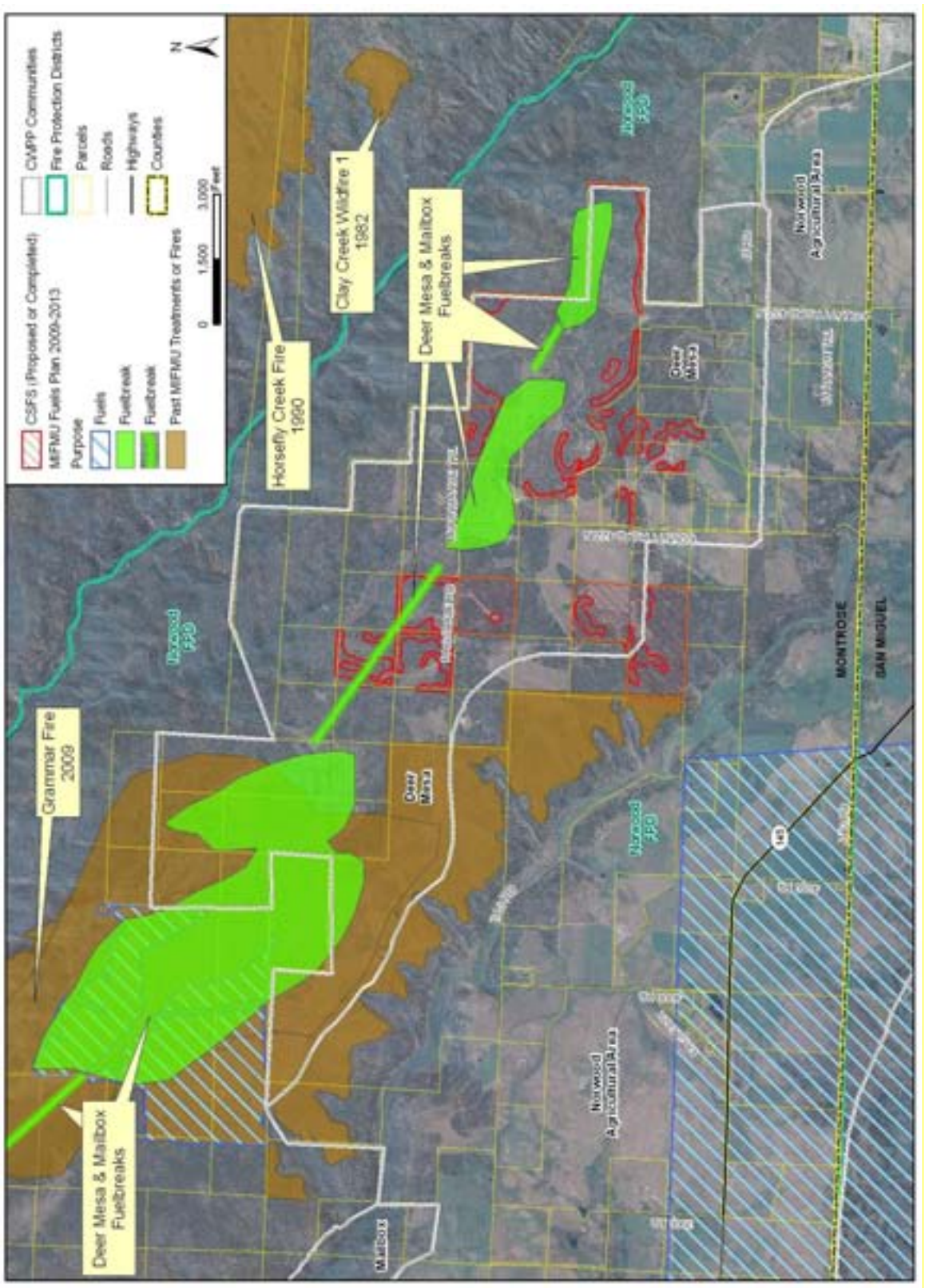
Table 18. Deer Mesa Fuels Treatment Recommendations

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
Deer Mesa/Mailbox Fuelbreak	4	Working in conjunction with existing projects, this fuelbreak will protect the community from federal lands and provide wildlife habitat.	Mowing, hand felling, mechanical treatments	
Preparedness Planning	5	See Appendix A	See Appendix A	n/a
Infrastructure	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. 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 29. Mailbox/Deer Mesa Fuels Treatment Recommendations



13. Mailbox

Hazard Rating: Extreme
The Mailbox community is located southeast of Naturita and north of the Montrose/San Miguel County line, shown in Figure 28Figure 28. This community is west of the Deer Mesa community and is made up of dispersed ranches on large acreages. Homesteads typically have several outbuildings and barns. Building construction is typical wood with mostly metal roofing. The roads are dirt and vary in quality. Primary access roads are adequate when entering the community; however, they deteriorate in surface quality, width and steepness as they move deeper into the community. Road signage is good but there is virtually no individual home or ranch complex signage. There is no water supply for the community, but the seasonal stream on the south west side of the community may offer some draft sources. Given the dispersed nature of the home and ranches in this community, a centralized water supply would be difficult.

The fuels in this community are primarily pinyon-juniper stands. The stands are mature and/or over mature, and have a high percentage of dead wood. This is a concern for firefighters because it increases the probability of ignition in these stands. The fire intensity can be moderate to extreme and there is potential for crown fire under windy conditions. This area has a high occurrence of lightning strikes. There is a history of fires in the area as well. The Norwood FPD has been conducting prescribed burns

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.

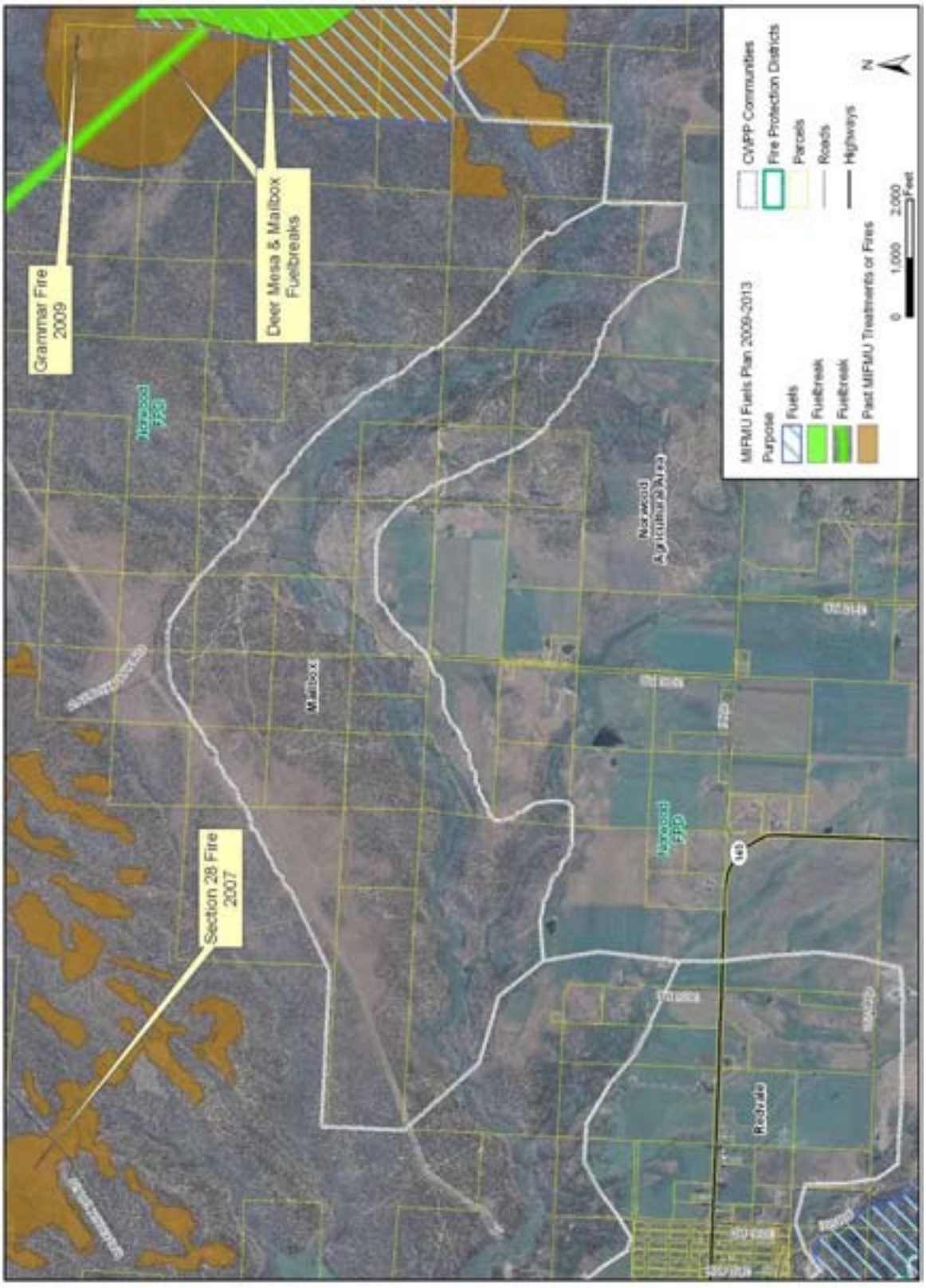
Table 19. Mailbox Fuels Treatment Recommendations

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
Mailbox/Deer Mesa Fuelbreak	4	Working in conjunction with existing projects, this fuelbreak will protect the community from federal lands and provide wildlife habitat.	Mowing, hand felling, mechanical treatments	
Preparedness Planning	5	See Appendix A	See Appendix A	n/a
Infrastructure	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. 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 30. Mailbox Fuels Treatment Recommendations



14. Norwood Agricultural Area

Hazard Rating: Low

The Norwood Agricultural area is located along the Montrose/San Miguel County line and crosses into both counties, shown in Figure 28. This is a large area encompassing the more populated agricultural areas surrounding Norwood. The area is populated by small to medium sized homes on moderate to large farms. Some small developments with residential size lots exist in the northwest area of the designated agricultural area. The dominant construction is wood siding with a mix of asphalt and metal roofs. Most of the homes are built adjacent to agricultural land, but some are in close proximity to large ravines and pockets of brush and or timber. Most of the homes and buildings have defensible space but many need mowing or weed whacking adjacent to structures to prevent grass fire ignitions of structures. Access is adequate with the exception of a few enclaves of homes built on dead end roads. Some homes do not have any address markers and of those that do, most are low visibility and nonreflective. There is no water supply for fire suppression outside the town of Norwood. Several water towers are available in the area, but no fire protection district connections exist. There are overhead power lines and propane tanks (some overgrown with vegetation) which may be a hazard to firefighters.

Fuels are generally agricultural vegetation, however Conservation Reserve Program (CRP) lands and cured or neglected crop lands may have heavy fuel component mixed with woody fuels. The stringers of pinyon-juniper stands have plentiful ladder fuels and significant surface loads of dead and down materials.

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.

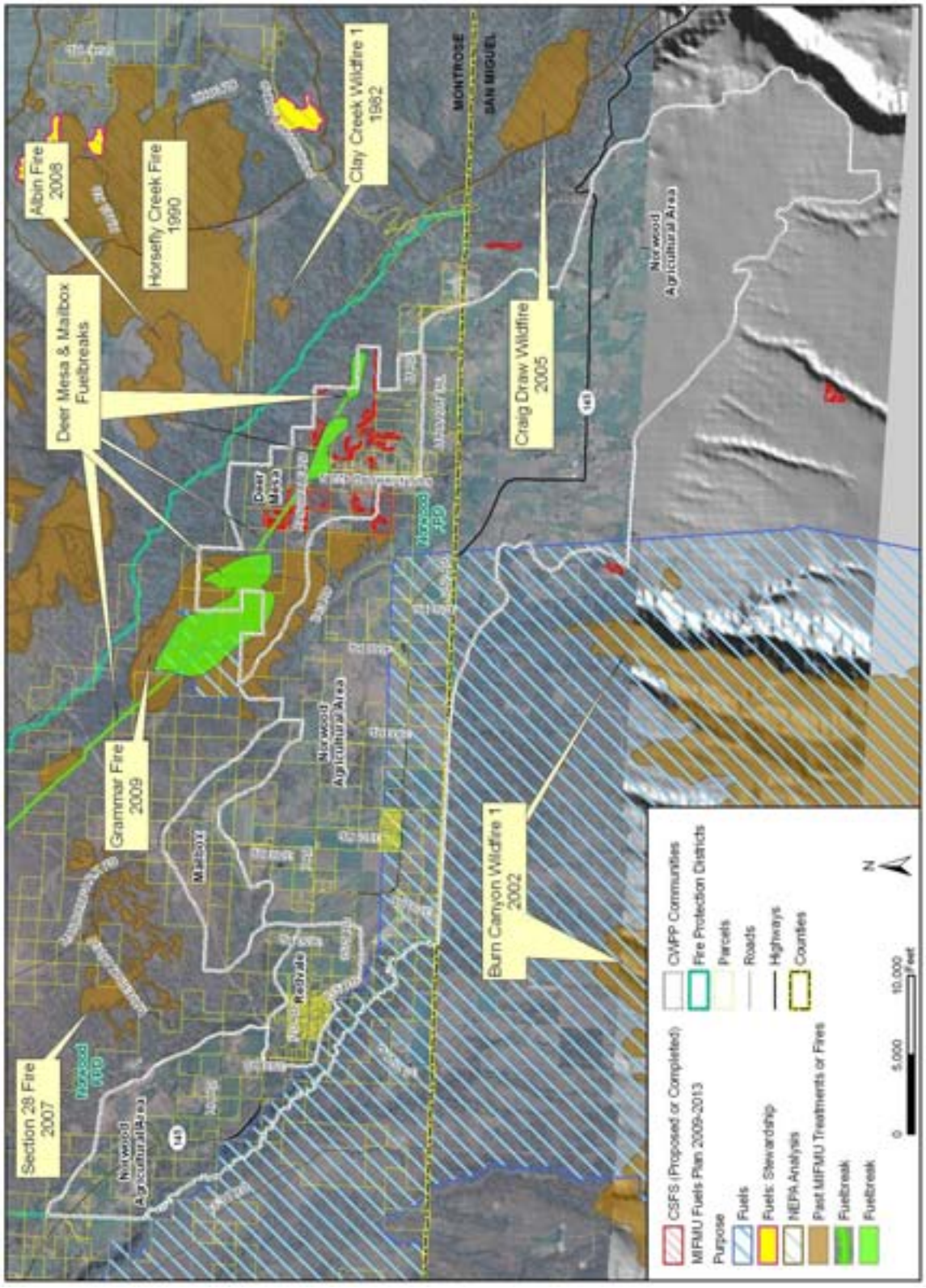
Table 20. Norwood Agricultural Area Fuels Treatment Recommendations

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
Infrastructure	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
Roadway Mowing	6	Reducing fuels around homes is important, especially near CRP sections and fallow fields.	Mowing	Variable

***** 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.

Figure 31. Norwood Agricultural Area Fuels Treatment Recommendations



15. Redvale

Hazard Rating: Low
The Redvale community is located within the Norwood Agricultural area on the north side of the Montrose/San Miguel County line, shown in Figure 28. Redvale is in Montrose County and home to the Redvale fire station (Norwood FPD). This is a community of approximately 100 people built along Hwy145. Most of the structures are residential or agricultural and built on small to moderate size lots. The dominant construction type is older wood siding with asphalt or metal roofs. Flammable yard clutter is a hazard at some homes. Most homes do not have address markers and those that do have wooden, nonreflective markers. Access is adequate with a paved road system. There are hydrants for fire suppression, although the capacity and maintenance of the system is unknown.

The fuels in the community vary from landscaped lawns to agricultural crop lands. There is little potential for crown fire and the fire intensity is moderate to low. The grass lands are a concern because it is easily ignited and moves rapidly with the wind.

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.

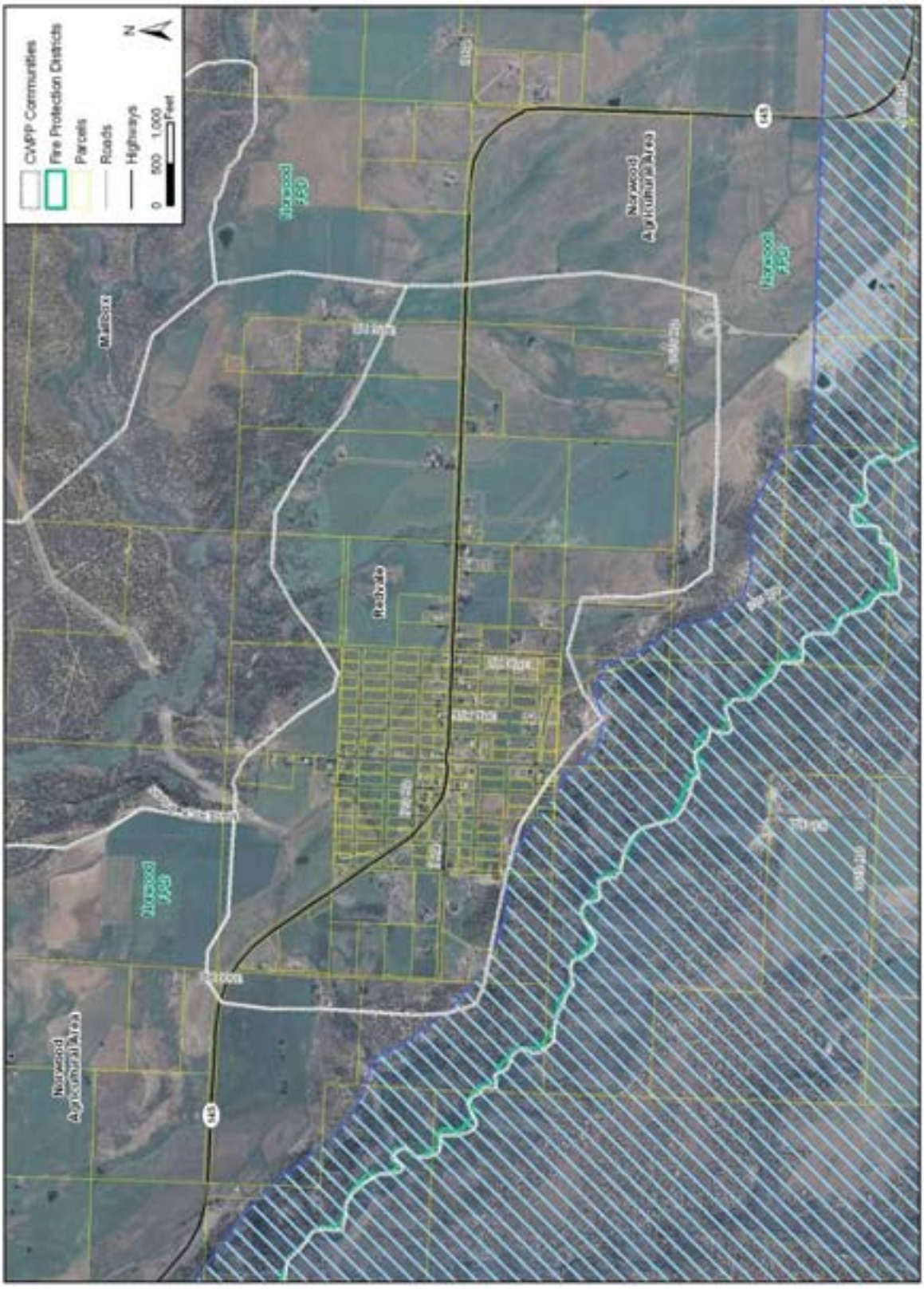
Table 21. Redvale Fuels Treatment Recommendations

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. 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 32. Redvale CWPP Community



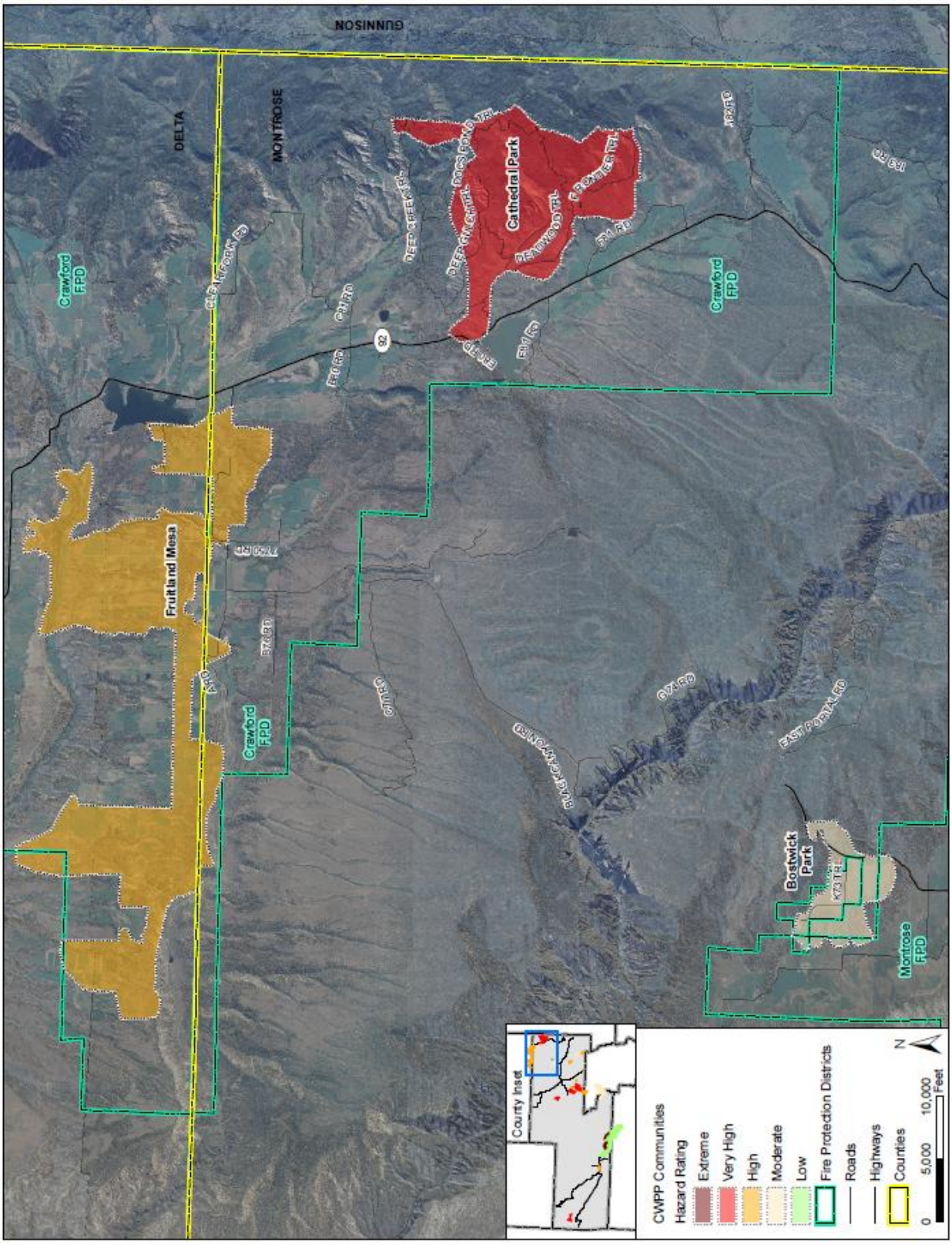
CRAWFORD FIRE PROTECTION DISTRICT

Two CWPP Communities were identified within the Crawford Fire Protection District. These communities and their hazard ratings are identified in Table 22 and shown in Figure 33. Each community's ignitability analysis recommendations are discussed in the following pages.

Table 22. Crawford Fire Protection District CWPP Communities

Very High	High
Cathedral Park	Fruitland Mesa

Figure 33. Cathedral Park & Fruitland Mesa CWPP Communities Overview



16. Cathedral Park

Hazard Rating: Very High

Cathedral Park is the furthest northeast community located in the northeastern part of the county, approximately half a mile west of Gunnison County, shown in Figure 33. Cathedral Park is east of Hwy 92 and is identified as a very high hazard area within the Montrose County WUI. The community currently consists of approximately 40 homes located on 40 acre parcels. Access to the Cathedral Park community from Hwy 92 is from the E8080 Trail and serves as the community's main access road. E8080 Trail presents several forks in the road that may prove confusing or complicate the overall access to the area. Additionally, there are multiple ingress/egress routes to and from the community; however, all routes are narrow dirt roads that present a network of dirt roads that is confusing and could present an issue for evacuation and access. Within the community roads are not paved and are less than 20 feet wide. Community roads are mostly mid-slope roads and some present steep portions that may challenge access for fire apparatus. Roads have been constructed at the top of steep slopes in the northern area of the community; the northern slopes exhibit dense vegetation and provide many places where flames can be funneled to the roadway above. The topography of the area is variable with sleep slopes in the northern part of the community, drainage areas in the eastern part, and a relatively flatter part in the western area. Many homes are located within the middle of slope regions or at the tops of ridges; both places present dangerous locations for perspective wildfires. Homes within the community are typically asphalt shingles, which are highly resistant to fire, where as decking and siding materials present consist of combustible materials. Defensible space has been done for homes within the community. Some homes have been cleared well around the structure, but many are still lacking adequate vegetation removal to reduce potential fire damage to structures. Many driveways are long and narrow and provide difficult access. Additionally, steep drives are also present and few driveways provide adequate turnarounds for large fire apparatus. Utilities are all located above ground and propane tanks are present for each home in the community. The community does not have hydrants within the area to provide

an emergency water supply to residences. Agricultural burning and combustible building materials increases the community's overall hazard rating. Cathedral Park is not within a local county fire protection district; Crawford FPD is the closest responding FPD and is located in Delta County. The fire response time from Crawford FPD takes up to 45 minutes to get to the community. Additionally, roads are difficult to travel and can hinder overall response times.

The fuels in Cathedral Park consist mostly of shrub land vegetation with pinyon-juniper, and sage growth. Patches of agricultural land are present through the community and limited vegetation is present on the southern slopes. There are a variety of fuel types in Cathedral Park, ranging from native grasses, continuous shrub cover, thick pinyon-juniper woodlands, and even some timber on the eastern edge. The fire behavior under moderate conditions is predicted to allow for fairly easy control. Rates of spread are typically under 40 chains per hour, except on some of the steeper slopes and flame lengths are less than 8 feet. Suppression activities within the community become more difficult given high percentile weather model runs. With the higher temperatures and wind speeds rates of spread increase to greater than 80 chains per hour throughout most of the community and flame lengths increase to 8-11 feet. The eastern border of the Cathedral Park is not expected to have rates of spread as fast except on the slopes. Agricultural burning is a potential ignition source for the area.

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.

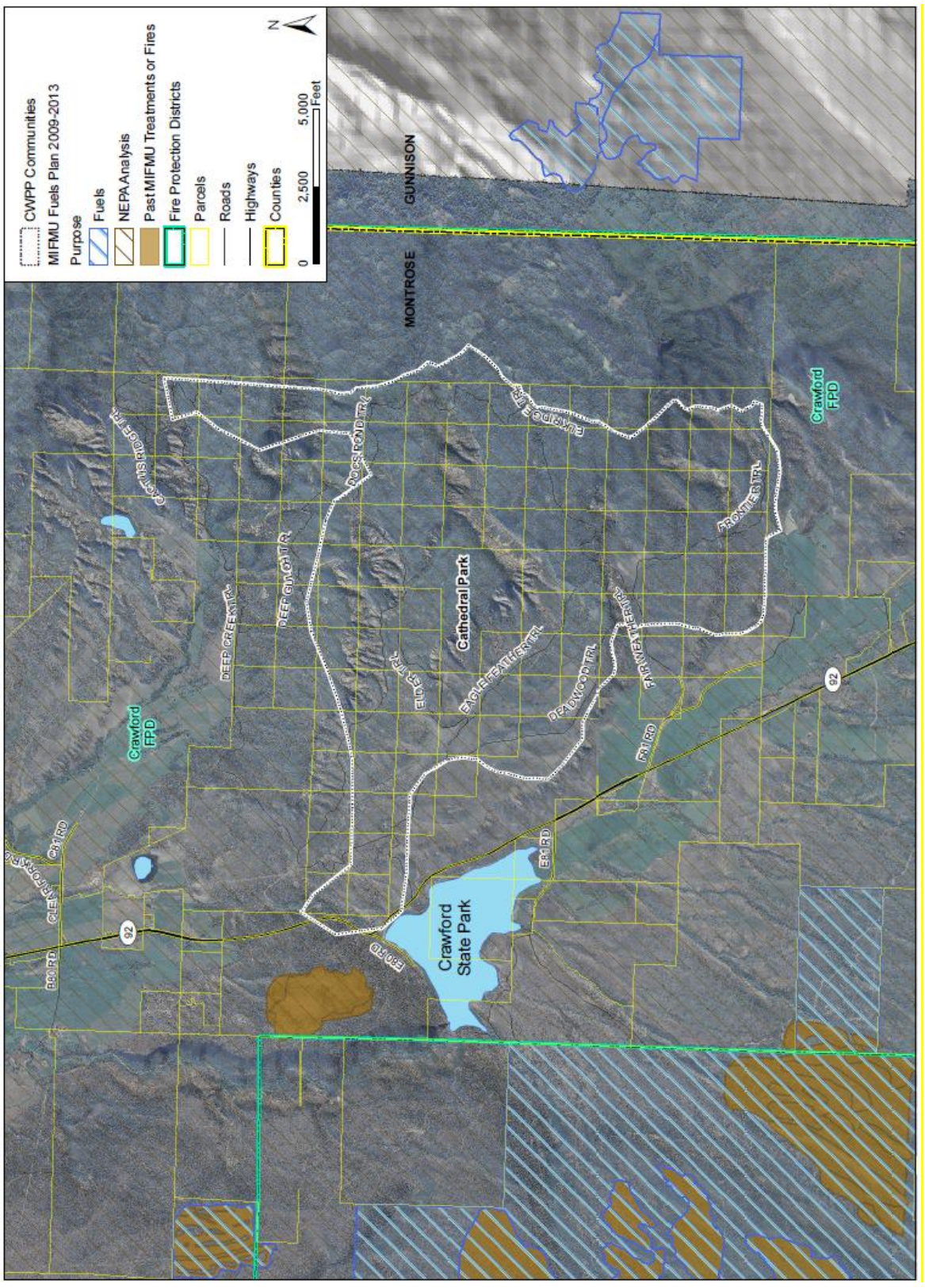
Table 23. Cathedral Park Fuels Treatment Recommendations

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
Infrastructure	3	See Appendix A	See Appendix A	n/a
Preparedness Planning	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. 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 34. Cathedral Park CWPP Community



17. Fruitland Mesa

Hazard Rating: High

Fruitland Mesa is located mostly within Delta County with a portion of the community overlapping into Montrose County in the northeastern region, as shown in Figure 33. This community covers a vast expanse of area southwest of the town of Crawford in Delta County and is located west of Crawford State Park. 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 roofs with high fire resistance with decks and siding made of materials with varying levels of combustibility. 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 lack trees in any defensible space. 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 much danger 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 high risk community.

Within the expansive Fruitland Mesa community, dense sections of pinyon-juniper are separated by large sections of grassy meadows and irrigated fields. Along the steep sides of the mesa and adjacent the network of drainages that run throughout the community is where most of the pinyon-juniper occurs. 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 per hour 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, and lightning ignitions are possible. Other possible sources of ignitions include the burning of agricultural

fields, as well as a start beginning below the community and quickly spreading up the steep sides of the mesa.

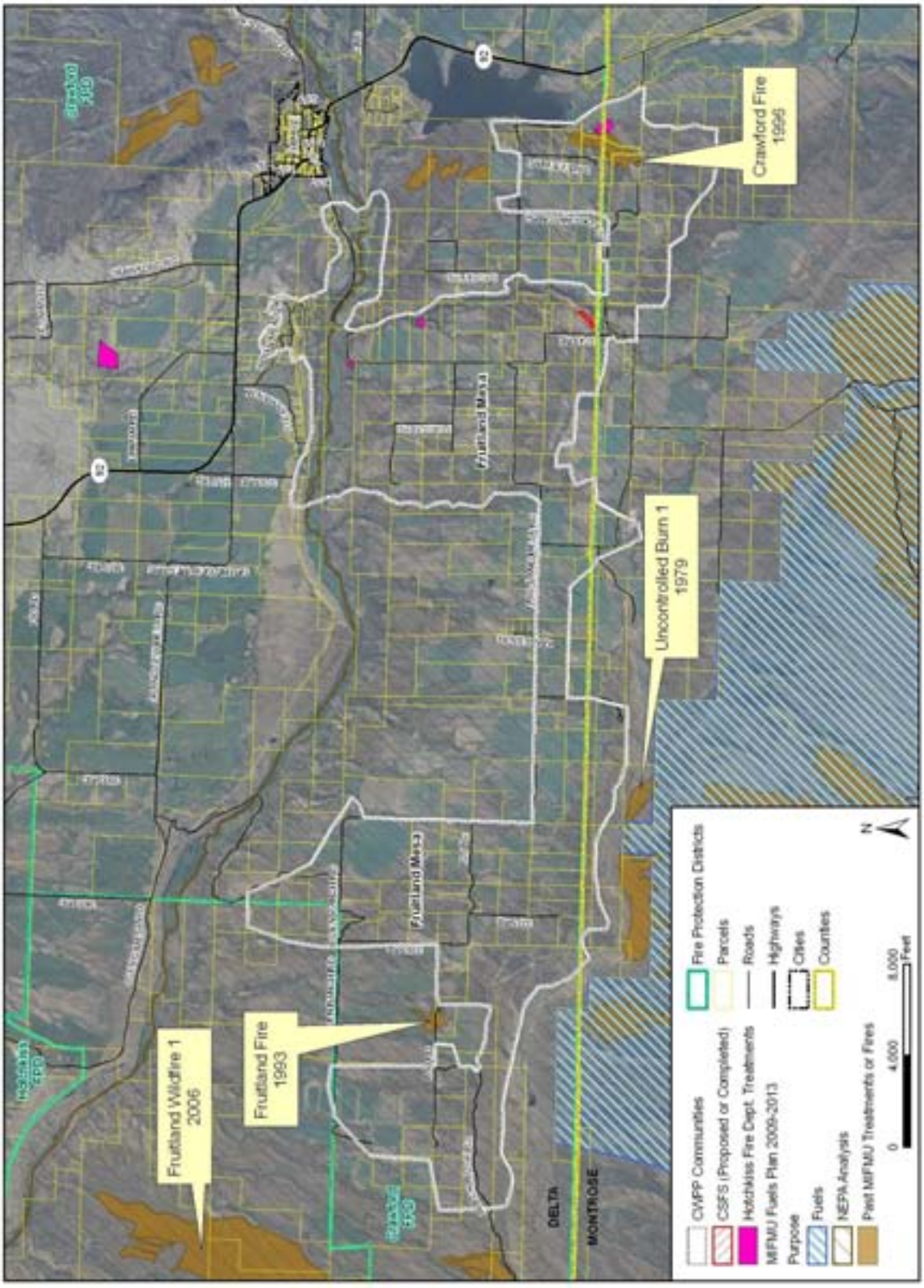
The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include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

Table 24. Fruitland Mesa Fuels 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.

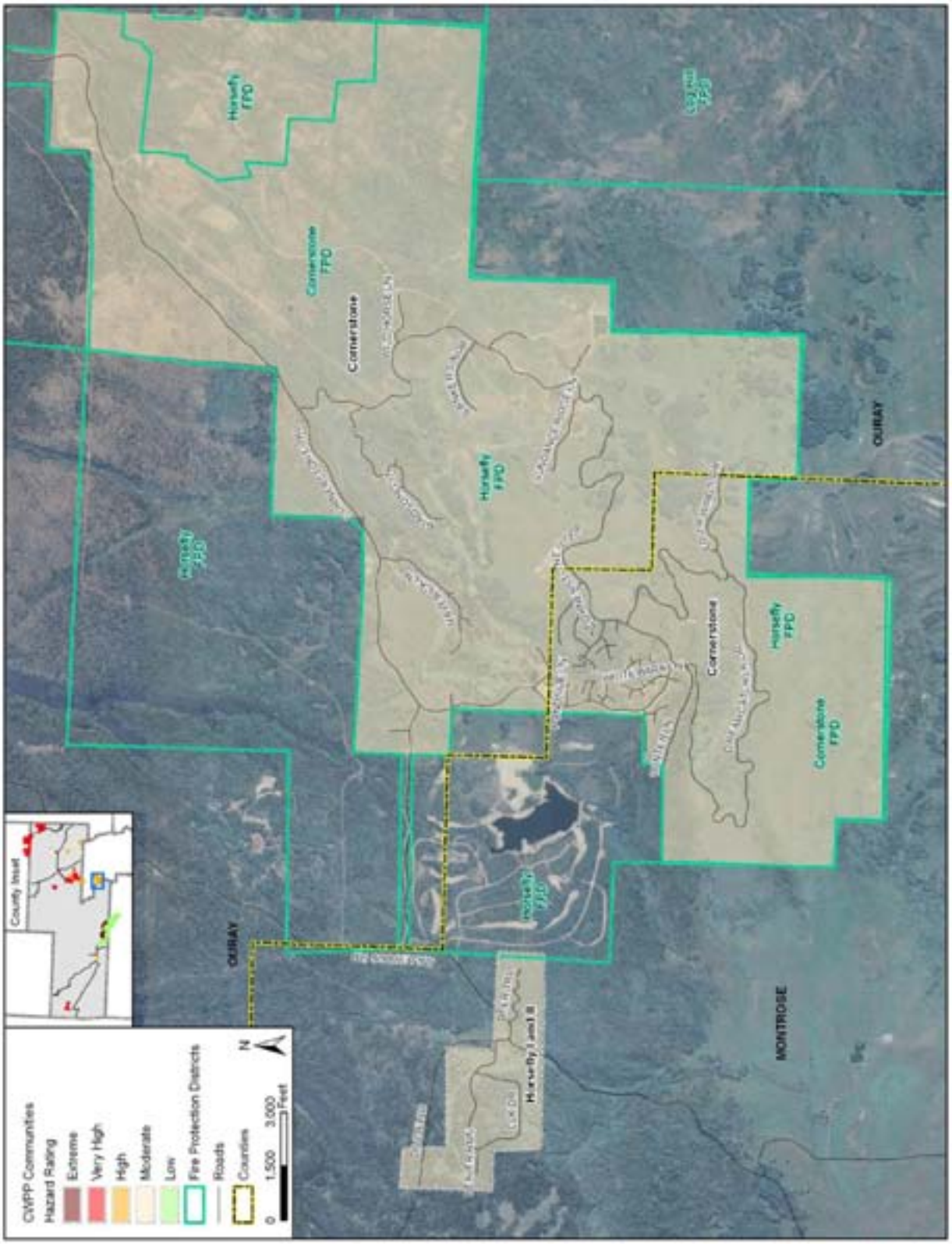
Figure 35. Fruitland Mesa CWPP Community



HORSEFLY VOLUNTEER FIRE ASSOCIATION

One CWPP Community, Cornerstone, was identified within the Horsefly Volunteer Fire Association boundaries. Cornerstone is a moderate hazard community and is identified in Figure 36. The community's ignitability analysis recommendations are discussed in the following pages.

Figure 36. Horsefly Volunteer Fire Association CWPP Communities Overview



18. Cornerstone

Hazard Rating: Moderate

The Cornerstone community is based in the northwestern region of Ouray County but overlaps into southern Montrose County, shown in Figure 36. This community is a metropolitan district located at the end of the Government Springs Road. The main access road is paved, and a dirt USFS road can serve as egress. Other roads throughout the community are paved. Street signs are metal and noncombustible but are nonreflective. Addressing is also nonreflective but is made from combustible materials. Topography in the area is mostly flat but includes some rolling hills. The community is split between Ouray and Montrose Counties, though most of the current and proposed development is located in Ouray County. Lots have been platted, but most of the community has yet to be developed. While there are high fire-resistant metal roofs present on some homes, others have shake shingle, which is flammable to falling embers. Siding and deck construction is a mix of metal and other noncombustible materials and combustible materials. Defensible space has been minimally implemented around most current homes, though most occur in aspen stands. There are adequate turnarounds in most areas. All homes currently constructed and planned in the future are required to have sprinkler systems. Of the total community size of 6,000 acres, approximately half is considered open space and will not be developed in the future. Water for firefighting is available via hydrants. The community has its own fire truck, though it is currently not staffed. Technically, Cornerstone is a part of Horsefly VFA's district. High winds and lightning increase the wildland fire danger in this community.

There are a variety of fuel types present in the Cornerstone community. Open, shrub-dominated areas surround large stands of aspen. The majority of homes and infrastructure occur in these areas. Also present, are areas of contiguous ponderosa pine and stands of pinyon-juniper intermixed with Gambel oak. Rates of spread can be expected to be higher in the drainages present throughout the community. Fast moving crown fire behavior can be expected in areas of pinyon-juniper that have consist fuels between trees during high wind events. In these areas, high fireline intensities can also expected, though the vast majority of the community can expect low to moderate fireline intensities. Rates of spread vary greatly throughout the community, and are expected to be between 20-60 chains per hour. Flame lengths are estimated at four to eight feet.

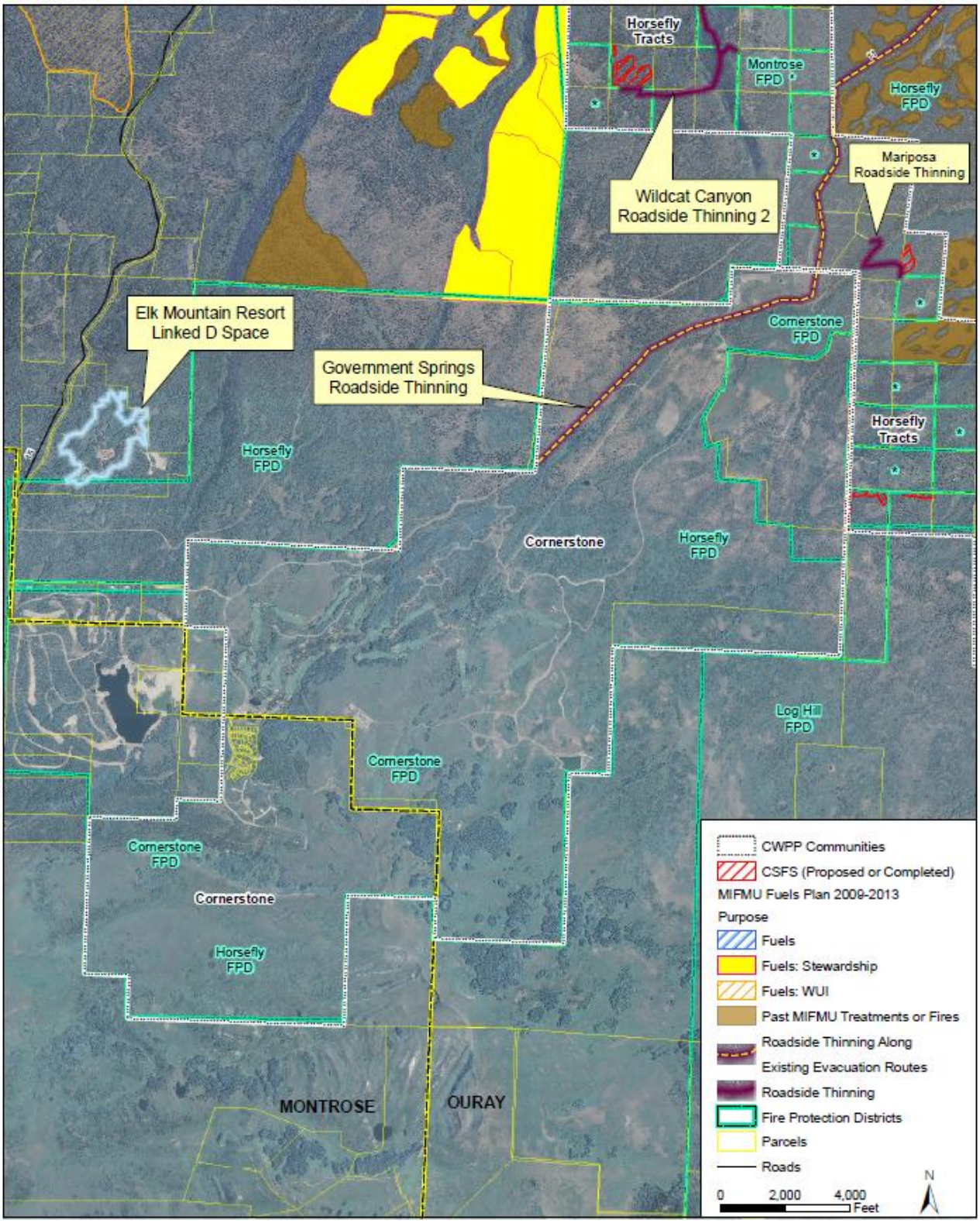
The following recommendations are suggested to minimize the wildfire risk within the community. They are represented in both a table and a map (where appropriate) that follows. Recommendations in this plan must be supported by stakeholders, including representatives of the community that may include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

Table 25. Cornerstone Fuels 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
Government Springs Roadside Thinning (Ouray County)***	6	Areas of thick vegetation along Government Springs Road should be thinned to a distance of at least 50 feet from the edge of the road. This will aid in the egress of residents by reducing heat intensity and smoke	Mechanical treatment; hand-felling and limbing in some areas due to slope	Total of 259, which includes portion treated within the Horsefly community

***** 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.
***Not in Montrose County. See Glossary for further explanation of roadside thinning projects.

Figure 37. Cornerstone Fuel Treatment Recommendations



COMMUNITIES OUTSIDE OF A DESIGNATED FIRE PROTECTION DISTRICT

Five CWPP Communities were identified outside of any fire protection districts within Montrose County, including Buckhorn Lakes, Waterdog I, Waterdog II, Horsefly I, and Horsefly II. These communities' hazard ratings are identified in Table 26, Figures 38 and 39. Each community's ignitability analysis recommendations are discussed in the following pages.

Table 26. CWPP Communities Outside of a Designated Fire Protection District

High	Moderate
Buckhorn Lakes Waterdog I	Horsefly I Horsefly II Waterdog II

Figure 38. Buckhorn Lakes CWPP Community Overview

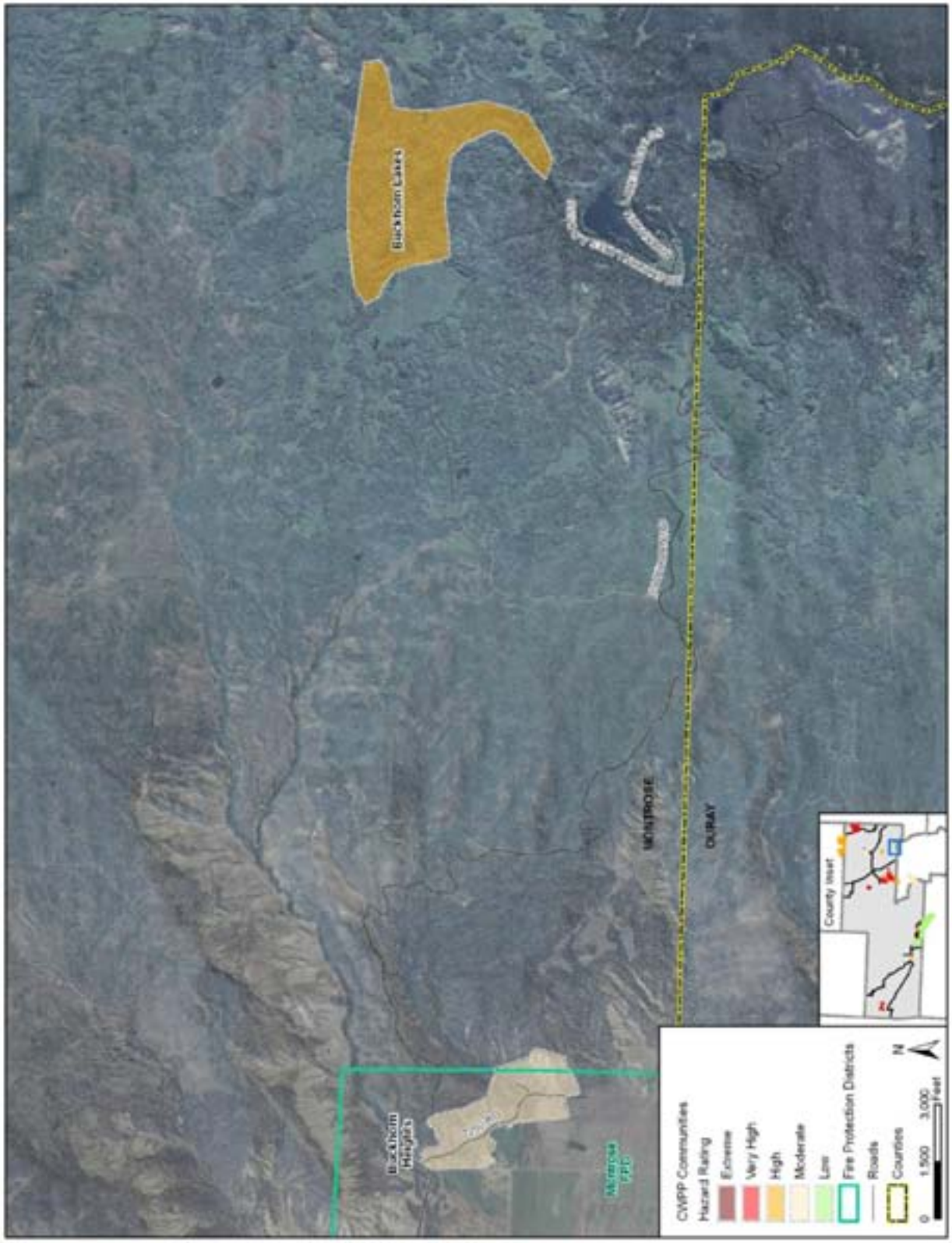
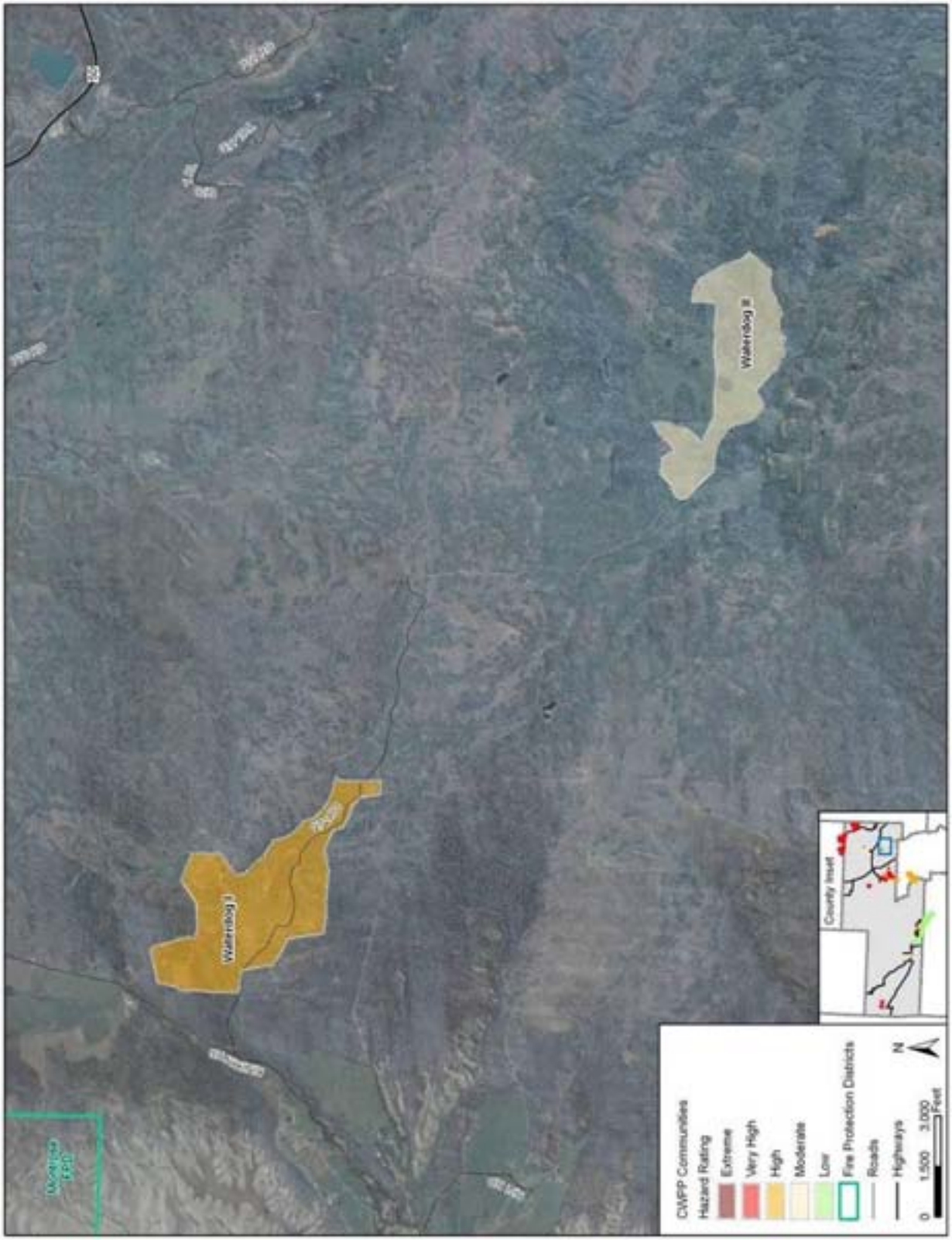


Figure 39. Waterdog I & II CWPP Communities Overview



19. Buckhorn Lakes

Source: www.dcasler.com © 2010

Hazard Rating: High

Buckhorn Lakes is located in the southeast corner of the county, north of Buckhorn Lakes Park just north of the northeastern corner of Ouray County, shown in Figure 38. Buckhorn Lakes lies approximately 10 miles south of the City of Montrose off of US 550 and is one of the high hazard areas within the Montrose County WUI. The community currently consists of approximately 10 homes located on 40 acre parcels. Access to the Buckhorn Lakes community from US 550 is off of the Buckhorn Road; however, entry to the community is through a series of unnamed roads that is confusing and complicates the overall access to the area. Within the community, dirt roads are less than 20 feet wide. The topography of the area is variable with rolling hills and several drainage ways throughout. Overall the area presents a higher elevation from many other Montrose County communities. House locations are generally located on flat, mid-slope areas and are not located on ridge tops or in lower-elevation saddles. Defensible space is not present for any homes within the community. Roads are in poor condition and long driveways provide inadequate turnaround areas for fire apparatus to access homes. Utilities are located above ground and propane tanks are present. Water supply is available from the Buckhorn Lakes; there are no hydrants within the community. Frequent lightning along the ridge line increases the community's overall hazard rating. Buckhorn Lakes is not within a local county fire protection district. The Montrose Fire Protection District is approximately is approximately 3.8 miles to the west of the community; however the Log Hill Mesa FPD is the closest mutual aid district and is located in Ouray County. Overall response times to the community are long.

The fuels in Buckhorn Lakes consist mostly of forestland with interspersed shrub- and grassland areas. Buckhorn Lakes does not have a significant history of fire. The community is at a higher elevation, so the vegetation has less pinyon pine and juniper. Spruce, aspen, and fir are more common in this wetter climate. 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. However, if a wildfire were to be ignited in the area it would be very dangerous and the fire intensity would likely be high. The steeper slopes to the south of the community may experience more intense fire behavior, as well as the lower elevations

surrounding Buckhorn Lakes. Vegetation at lower elevations has a grass and shrub component, which is predicted to have faster rates of spread than the timber fuels within the community. Frequent lightning along the ridgeline is a potential ignition source for the area. Additionally, recreationists at Buckhorn Lakes are also potential ignition sources.

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.

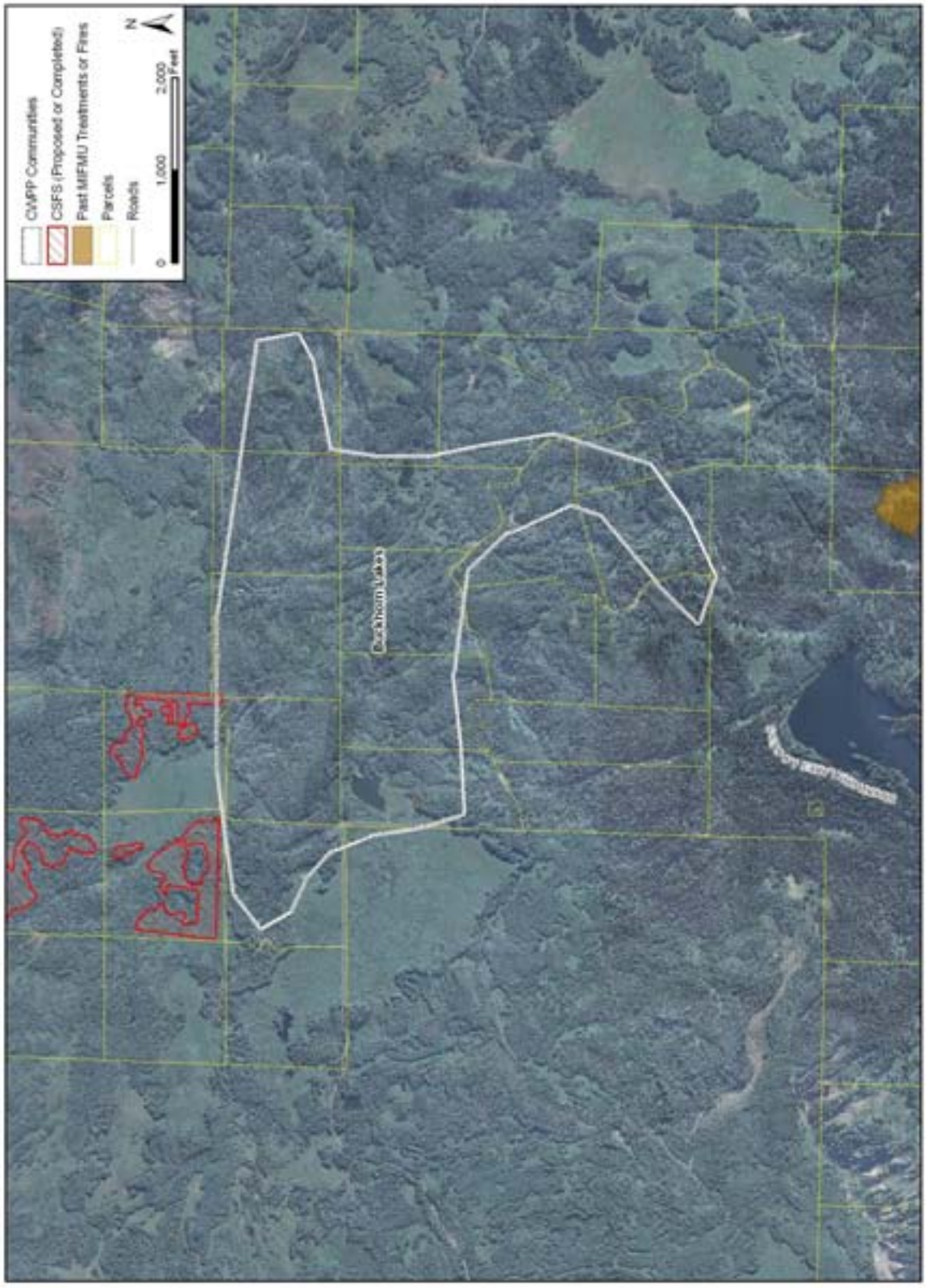
Table 27. Buckhorn Lakes Fuels Treatment Recommendations

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. 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 40. Buckhorn Lakes CWPP Community



20. Waterdog I

Hazard Rating: High

The Waterdog I community is located southeast of the City of Montrose, south of Hwy 50, shown in Figure 39. The community is identified as a high hazard area within the Montrose County WUI. The community currently consists of approximately six homes located on 40-acre lots. Only a portion of the population for this community consists of year round residents. Ingress/egress access to the community is from Kinikin Road to Q72 Road. Roadways within the community are well maintained and consist of dirt roads approximately 20-24 feet wide with generally less than 15 percent grades. Street signage present is reflective and of noncombustible materials, helping to ease firefighters' response in the event of a wildfire. However, most signage within the community is missing. The topography of the area is variable with an east/west running valley with large hills and steep slopes throughout. Roads within the community are mostly on north/south running alignments. A majority of the community homes are located off of Q72 Road at the end of long driveways and are situated in mid-slope areas. Homes within the community have asphalt shingled roofs, highly resistant to fire; however, siding and decking is combustible wood materials. Address numbering is present for homes, but numbering is unreflective. There is no established defensible space within this community. Driveways are long and provide inadequate turnarounds areas but adequate turnaround space is available along the roads. Utilities are located above ground and propane tanks are present. There are no hydrants or other consistent water supply available within the community. Agricultural burning on Shinn Park, located at the top of the mesa, is a common ignition source within the community. The community is not located within a local county fire protection district. The Montrose Fire Protection District is located west of the community, approximately 0.8 miles, and serves as the nearest fire protection district to the community for fire response. Response times to this community are unknown but short response times would be unlikely.

Within Waterdog I, the majority of the fuels are shrubs and grasses, including sage, rabbit brush, and native grass species. The fire behavior in the community under moderate weather conditions is predicted to have flame lengths between four and eight feet. Rates of spread between 0-12 chains per hour are expected. With higher wind speeds, lower relative humidity and higher temperatures, flame lengths through the community will increase to 8-11 feet, with areas greater than 11 feet. Individual tree torching and small runs of active crowning are predicted. The steeper slopes, combined with areas of thicker pinyon-juniper can cause ember-cast, which is more likely to result in structure loss than direct flame impingement.

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.

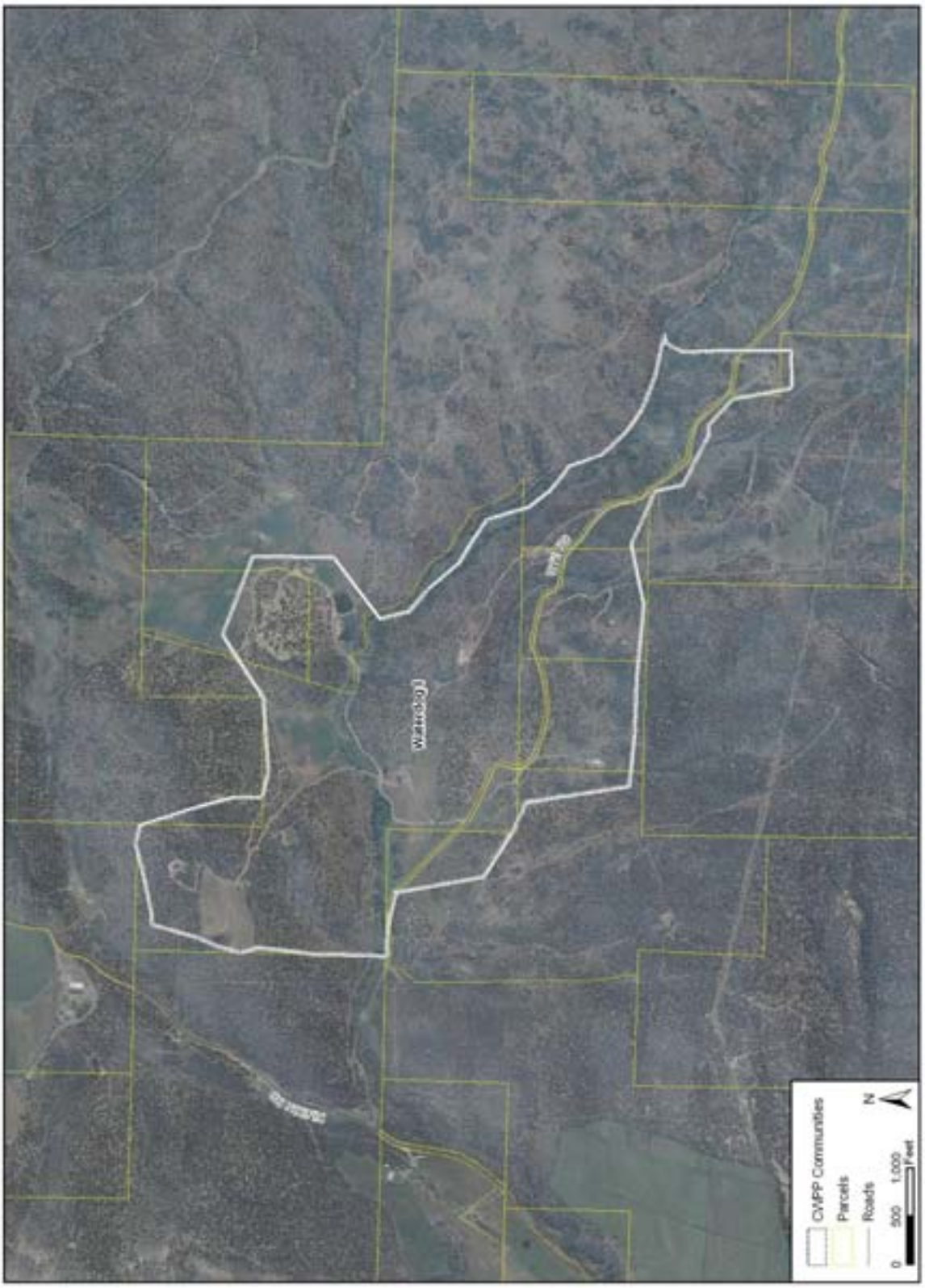
Table 28. Waterdog I Fuels Treatment Recommendations

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. 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 41. Waterdog I CWPP Community



21. Horsefly I and II

Hazard Rating: Moderate

The Horsefly I and II communities are located in the southern finger of the county and are west of the Montrose/Ouray county line, shown in Figure 42. The communities are separated by Divide Road with Horsefly I located on the west side of the road and Horsefly II located on the east side of Divide Road. Both Horsefly I and II are identified as moderate hazard areas within the Montrose County WUI. The communities sustain a summer-only population (i.e., no year-round residents) that currently consists of approximately 27 homes on five-acre lots of which several houses are empty; a single HOA covers both communities. There are two ways to get to the communities by either Dave Wood Road or by Divide Road; both roadways pass through Ouray County. However, there is only a single ingress/egress access road once in the communities. Roadways within the community are well maintained dirt roads, less than 20 feet wide and are generally flat. The HOA is responsible for maintaining roads within the community. Street signage is rustic, often consisting of combustible wood signs that are nonreflective. The topography of the area is flat since it is located on the top of a plateau. Homes within the community are within the forested areas with little slope changes around the structures. The homes consist mostly of fairly small cabins with combustible timber or wood siding and asphalt shingled roofs or metal roofs which highly resistant to fire. Address numbering varies greatly with the community, none of which is reflective and not all addresses are visible. Very few residences have established defensible space within this community. Additionally, there are undeveloped forested lots that lack any defensible space and increase the potential risk to adjacent parcels that have been developed with homes. Driveways are narrow but adequate turnarounds areas are available. Utilities are located above ground, and propane tanks are present. Wood is often stored near homes, which presents an increase in fire risk to the structure. There is no water supply available for fire suppression. There is no evidence of large fires on the plateau; however, frequent lightning in the area increases the community‘s overall hazard rating. The Horsefly I and II communities are also located in close proximity to the Uncompahgre National Forest, and depending on the time of year, hunters in the area could be potential ignition sources as a result of camp fires and ammunitions. The communities are not located within a local county fire protection district. The eastern boundary of the communities borders the southwestern boundary of the Horsefly FPD in Ouray County and is located 0.8 miles southeast of the Cornerstone FPD. The Log Hill FPD is the closest mutual aid district.

The high elevation and greater quantities of precipitation changes the vegetation component to this community. There is no sage, pinyon-juniper, or rabbit brush. Instead, there are more aspen trees, Engelmann spruce, and some subalpine fir. Some trees have been impacted by spruce beetle hits and therefore dead trees can be observed within the area. The tree species present are indicative of higher fuel moistures and greater annual precipitation. Fire in this forest type is infrequent, and when it occurs, it is usually following prolonged drought. Stand-replacing events occur every several hundred years. This explains the lack of long flame lengths and slow rates of spread with moderate and high weather scenarios. Rates of spread under 20 chains per hour and flame lengths less than four feet are predicted for both situations. As stated earlier, it requires extreme weather conditions and prolonged drought to get a fire to transition into the tree crowns. In this scenario, flame lengths hundreds of feet high are possible. Planning for this situation is unrealistic, as it would require clear-cutting of fuels to mitigate.

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.

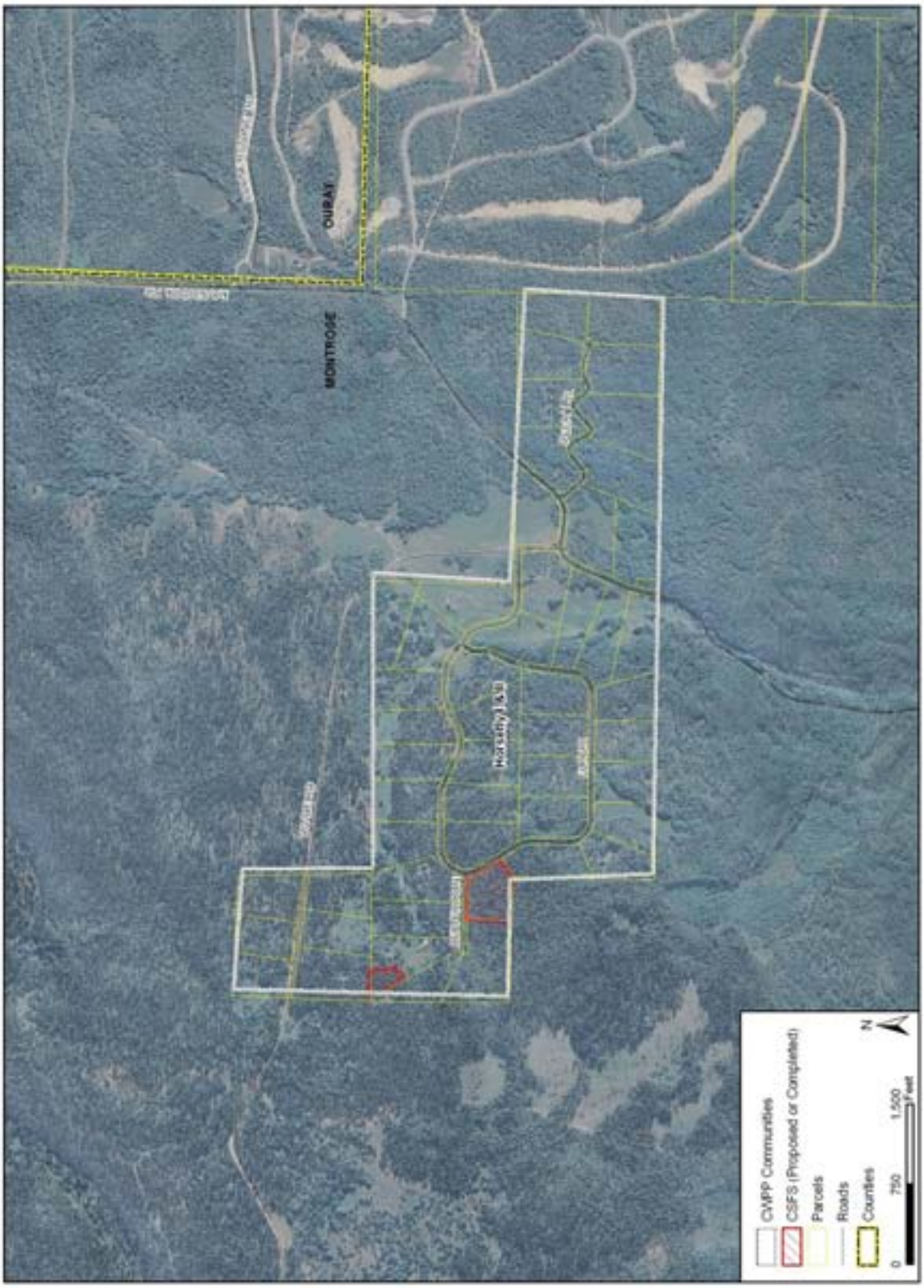
Table 29. Horsefly I and II Fuels Treatment Recommendations

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
Preparedness Planning	2	See Appendix A	See Appendix A	n/a
Landscaping/Fuels	3	See Appendix A	See Appendix A	n/a
Vacant Lot Thinning	4	Lots without structures should have dead and downed material removed. Stands should be managed for forest health.	Hand felling	Variable
Infrastructure	5	See Appendix A	See Appendix A	n/a
Home Construction	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. 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 42. Horsefly I and II CWPP Communities



22. Waterdog II

Hazard Rating: Moderate
The Waterdog II community is located southeast of the City of Montrose, south of Hwy 50 and southeast of the Waterdog I community, shown in Figure 39. The community is identified as a moderate hazard area within the Montrose County WUI. The community currently sustains a partial year-round population (i.e., some seasonal residents) with approximately 12 homes located on 40-acre lots. Access to the community is from Kinikin Road to Q72 Road. The main ingress/egress access route through Q72 Road is approximately 1.3 miles south of the Waterdog I community and access to the Waterdog II community by Q72 is through a series of unnamed dirt roads. Within the community there are multiple ways in and out with a secondary egress route that leads to P77 Road, however, this secondary route is quite longer in distance. Roadways within the community are well maintained and consist of dirt roads with generally less than 15 percent grades. Street signage present is reflective and of noncombustible materials, helping to ease firefighters' response in the event of a wildfire, however, most signage within the community is missing. The topography of the area is variable with higher slopes along the southern and eastern edges of the community; the northern area of the community has less topographic features. The main community road is in the valley area with a majority of the community homes are located off this main road. Most of the homes are with the low valley area but there are a few homes located on the ridge. Homes within the community have asphalt shingled roofs, highly resistant to fire, however, siding and decking is combustible wood materials. Address numbering is present for homes, but numbering is unreflective. There is no established defensible space within this community. Driveways are long and provide inadequate turnarounds areas but adequate turnaround space is available along the roads. Utilities are located above ground, and propane tanks are present. There are no hydrants or other consistent water supply available within the community. The community is not located within a local county fire protection district. The Montrose Fire Protection District is located west of the community, approximately 3.4 miles, and serves as the nearest fire protection district to the community for fire response. Response times to this community are unknown but short response times would be unlikely.

Waterdog II is at a higher elevation than many of the communities in Montrose County. As a result, the high elevation and greater quantities of precipitation changes the vegetation component to this community. Instead of large quantities of shrubs, pinyon-juniper woodlands and grasses, there are higher quantities of deciduous trees like cottonwoods and aspen. Higher fuel moisture content and generally lower temperatures create an area that is less likely to experience extreme fire behavior. Both moderate and high percentile weather scenarios result in rates of spread less than 20 chains per hour. Flame lengths will typically be less than four feet for most places in the community, under both weather scenarios. There are areas that are predicted to produce flame lengths between four and eight feet, and the north facing slope on the south end of the community may experience some crowning.

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.

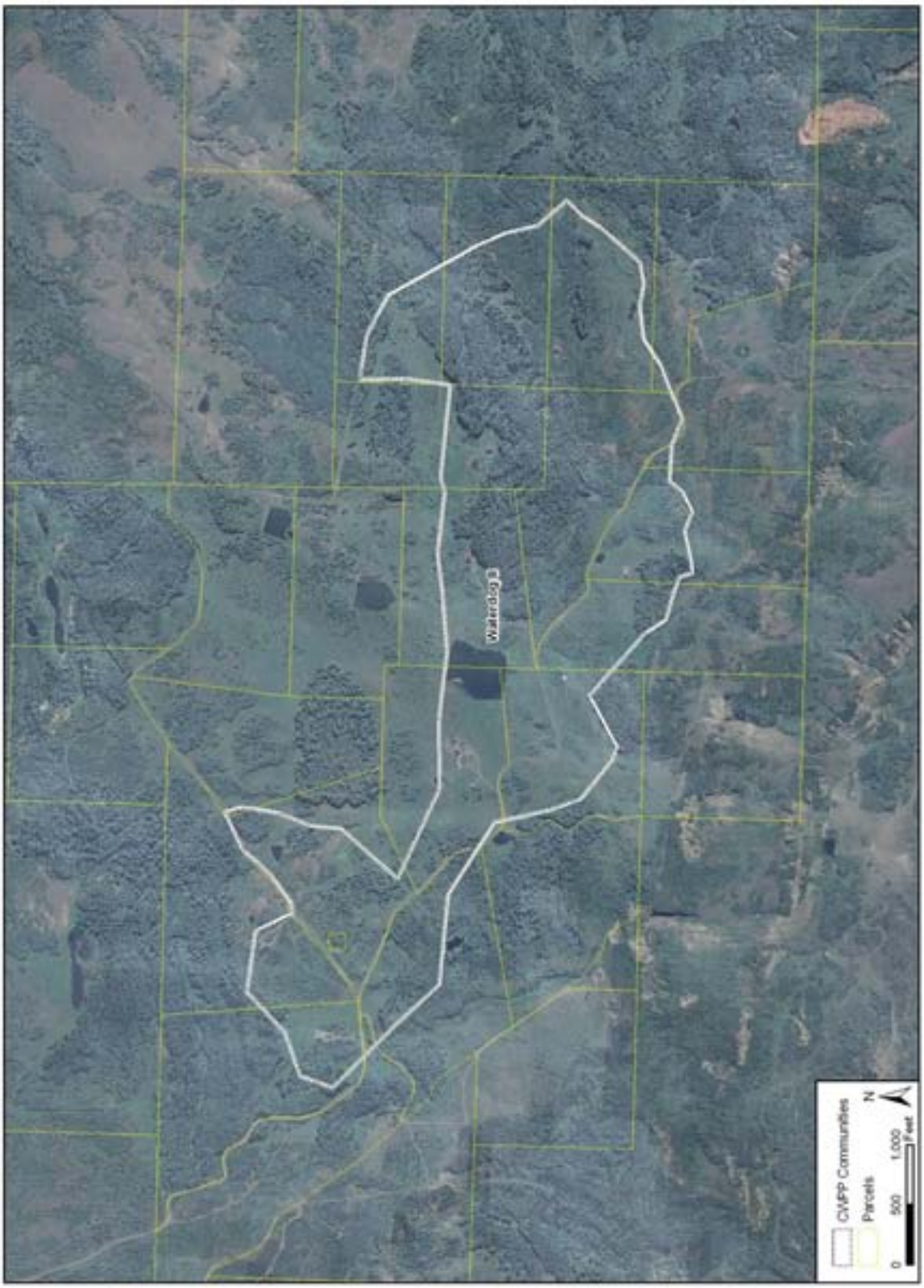
Table 30. Waterdog II Fuels Treatment Recommendations

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. 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 43. Waterdog II CWPP Community



OLATHE FIRE PROTECTION DISTRICT

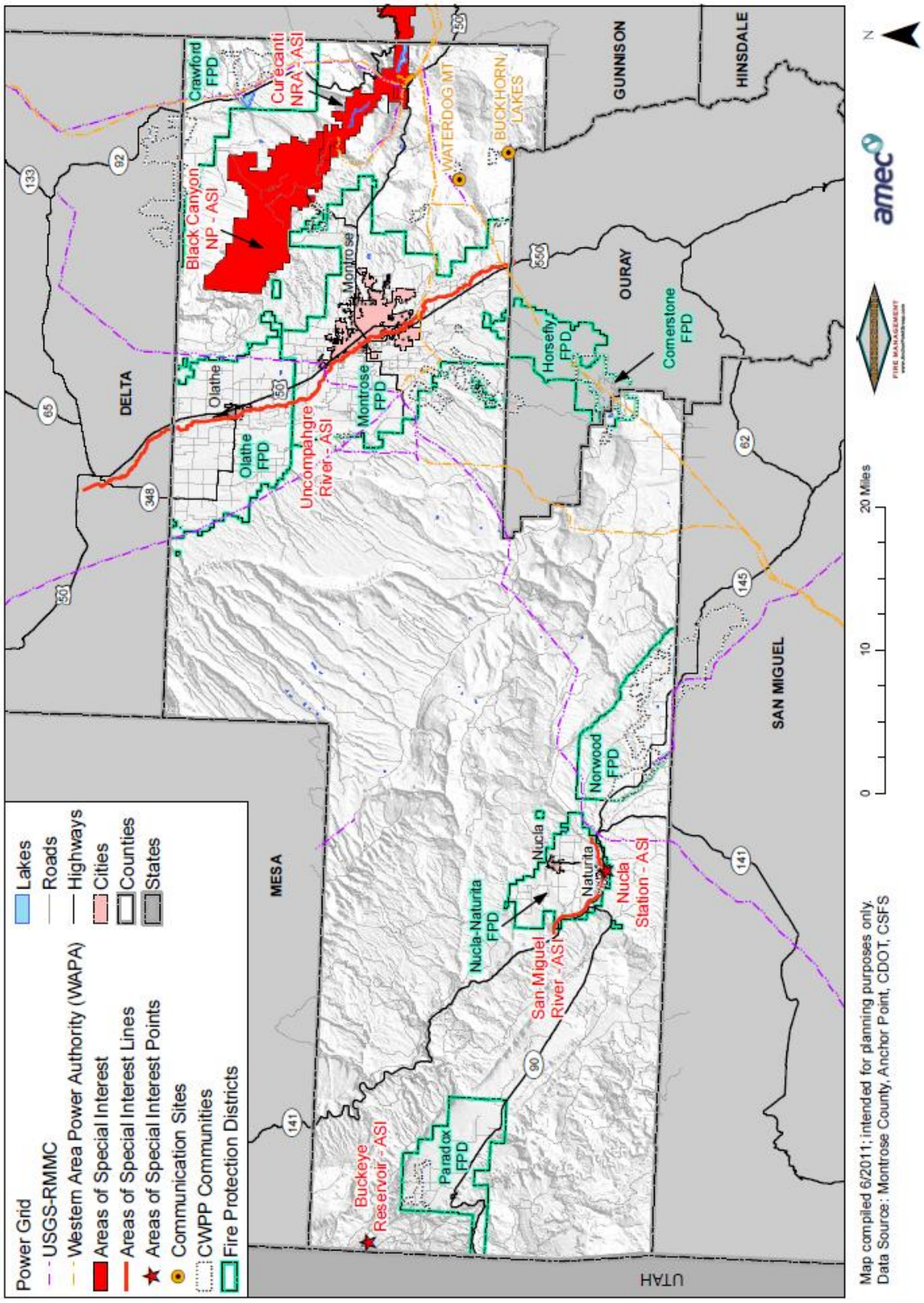
The Olathe Fire Protection District is located in the northern region of Montrose County between the Montrose Fire Protection District and the Montrose/Delta County line. The Olathe Fire Protection District includes the Town of Olathe. There are no CWPP communities identified within Montrose County that fall within the Olathe Fire Protection District.

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 which is 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 the size and a focus on recreation 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 44 shows the location of the ASIs within the Montrose County study area. This map may also be found in an 11 x 17 format in Appendix D. ASIs identified for Montrose County include Black Canyon of the Gunnison National Park, Curecanti National Recreational Area, the Uncompahgre River Corridor, the San Miguel River Corridor, Buckeye Reservoir, and the Nucla power generation station. These six ASIs are discussed further below.

Figure 44. Montrose County Areas of Special Interest



Black Canyon of the Gunnison National Park

One of the most beautiful sights in Colorado, the Black Canyon of the Gunnison, was formed by the Gunnison River. The park does not pose a risk of wildfire from the perspective of potential fire behavior; most of the areas of high visitation lack significant fuel to sustain a fire. The larger risk stems from the sheer numbers of people visiting the National Park and the problems of evacuation given a fire outside of the Black Canyon. There is a significant fuel bed away from the canyon itself but still within the park boundary. Fire from outside the park has plenty of fuel to travel through in order to reach the visitor heavy areas in the park. The heavy use on the park spreads a high potential for ignition sources throughout the park as people move through the park.

Recommendations

- Mitigation around the campground to minimize the potential of accidental ignitions from the campground.
- Mitigation around the visitor center to create a safety zone and possible evacuation site for visitors in event of a fire.

Curecanti National Recreation Area (CNRA)

http://www.nps.gov/cure/index.htm

CNRA is formed by three reservoirs, Blue Mesa, Morrow Point, and East Portal. The recreation area represents one of the largest tourist centers within Montrose and Gunnison Counties. The recreation area is bounded by both private and federal land and is bisected by Hwy 50. Vegetation within the recreation center varies greatly. It includes riparian species, shrub lands and timber, such as ponderosa pine and aspen. Camping is one of the primary forms of recreation in CNRA. There are several potential ignition sources due to the high volume of recreationists and numerous campfire rings in the campgrounds. The high amount of use combined with the value of the reservoirs means that fire prevention and response is a high priority for agency personnel.

Recommendations

- Mitigation work has been conducted at many of the campgrounds in the recreation area and should be completed for all of them.
- Using modeled fire behavior; create evacuation plans for all campgrounds and tourist areas in the CNRA. Conduct trainings with employees to assist with these plans.
- Post ~~–~~Fire Danger" signs at the entrances to CNRA. Have information available on fire safety at kiosks and campgrounds.
- Maintain enforcement of all campfire policies, including areas of restricted burning, and seasonal fire restrictions.
- Provide S130/190 training for all Park Rangers working at CNRA.

Uncompahgre River Corridor

The Uncompahgre River is a tributary of the Gunnison River. It is approximately 75 miles long and travels north/south through the county. The river is very important to the way of life in Montrose County since the county is heavily dependent on agriculture and the river is used for irrigating fields. Small fires occur in the county along the river corridor in the dense willows, cottonwoods and tall grass. Wildfires along the river corridor often threaten homes that are

tucked in next to the vegetation. Large agricultural fields are typically found on either side of the river, so the chance of a wildfire getting large is low. 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.
- 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.

Buckeye Reservoir

Buckeye Reservoir Recreation Area is located 10 miles north of Paradox, CO. It has recently been updated by the USFS Manti-La Sal National Forest. Always a popular camping area, the recreation area underwent a major transformation during the spring, summer, and fall of 2010. New designated campgrounds have been created. Group sites, picnic sites, new roads, a boat ramp, fences, and roadways were other additions that were completed. Ponderosa pines are the most common forest type surrounding the reservoir and the Moab-Monticello Ranger District has been thinning the forest to reduce the wildfire risk, especially given the high use of the area.

Recommendations

- Maintain thinning in forested areas to reduce the risk of wildfire.
- Post fire danger signs that are visible to visitors when coming to the reservoir.
- Patrol the area for unauthorized burning, especially during burn bans.
- Provide educational material for visitors about the dangers and risk of wildfire.

Nucla Station

http://www.tristategt.org/aboutus/baseload-resources.cfm

The Nucla Station employs 50 individuals and is operated by Tri-State Generation and Transmission Association. It is the world‘s first utility-scale power plant to use atmospheric circulating fluidized –bed combustion and is capable of producing 100 megawatts of electricity. The coal used for the power plant is located five miles south from New Horizon Mine. 1,600 tons of coal are delivered daily via tractor-trailer truck.

The plant itself is not at great risk from wildfire because of the construction materials, but the large piles of coal surrounding the plant could be at risk. A fire in the pinyon-juniper woodlands on the slope behind the plant and on the mesa top above the plant could produce embers, capable of igniting the coal. A fire of this type would be extremely difficult to control and would likely be beyond the capacity of local fire protection district capabilities.

Recommendations

- Thin vegetation behind the Nucla Station and on the top of the mesa to reduce the probability of a successful ignition.
- Develop an evacuation plan for employees working at the station to reduce confusion and increase life-safety.

San Miguel River Corridor

http://www.blm.gov/wo/st/en/res/Education_in_BLM/Learning_Landscapes/For_Travelers/go/close_to_home/san_miguel.html

A tributary of the Dolores River, the San Miguel River is approximately 90 miles long. The river is located in the furthest southwest part of the county and flows through Naturita. The river hosts a variety of animal and plant species that depend on the water for survival. The BLM and Nature Conservancy have determined the area to be a special management area. The San Miguel River Corridor is an area of special interest because of its ecological importance rather than the hazard it present to the community.

Recommendations

- Provide information on the river, the ecology, and fire safety for recreationalists.

CONCLUSIONS AND NEXT STEPS

The Montrose County Wildfire Protection Plan (CWPP) is a comprehensive analysis of wildfire-related hazards and risks in the Wildland Urban Interface (WUI) areas in Montrose 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 demonstrate that Montrose 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 Montrose 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 Montrose County study area. Each of these is depicted as a graphic within the recommendations section for the individual communities, where applicable. 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 during the development of this County wide plan by the stakeholders and West Region Wildfire Council to identify Wildfire Mitigation Advocates within each community. If a Wildfire Mitigation Advocate has been identified it is indicated by a _Ÿ 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 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 district, or the sheriff if not located within a fire protection district.

Table 31. 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)
Bostwick Park	Moderate	Defensible Space Bostwick Park Evacuation Route Ab Lateral Ditch Thinning	1 4 7	Y
Buckhorn Heights	Moderate	Defensible Space	1	TBD
Buckhorn Lakes	High	Defensible Space	1	Y
Cathedral Park	Very High	Defensible Space	1	TBD
Cornerstone	Moderate	Defensible Space	1	Y
Dave Wood North	High	Defensible Space	1	TBD
Dave Wood South	High	Defensible Space	1	Y
Deer Mesa	Extreme	Defensible Space Deer Mesa/Mailbox Fuelbreak	1 4	Y
Duckett Draw	High	Defensible Space Solitude Road Fuelbreak	1 2	TBD
Fruitland Mesa	High	Defensible Space	1	TBD
Happy Canyon	Very High	Defensible Space	1	TBD
Horsefly I and II	Moderate	Defensible Space	1	Y
Mailbox	Extreme	Defensible Space Deer Mesa/Mailbox Fuelbreak	1	TBD
Naturita	High	Defensible Space	1	TBD
North Shavano Valley	Very High	Defensible Space North Shavano Valley Mesa Top Fuelbreak	1 6	TBD
Norwood Agricultural Area	Low	Defensible Space Roadway Mowing	1 6	TBD

Community	Community Hazard Rating	Recommended Fuels Treatment Name	Priority (1 = highest, 7 = lowest)	Wildfire Mitigation Advocate Identified? (Y/TBD)
Paradox	Very High	Defensible Space	1	Y
Paradox Trail	Very High	Defensible Space	1	TBD
Redvale	Low	Defensible Space	1	Y
Tres Coyotes	Very High	Defensible Space	1	TBD
Waterdog I	High	Defensible Space	1	TBD
Waterdog II	Moderate	Defensible Space	1	TBD

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 Montrose 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 identify 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 be not feasible and new ideas may be added during the plan maintenance process. Report graphics can add value to this section.)

Coordinating Organization:	
Internal Partners:	**External 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 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:		**If available, estimated cost:**
Short Term (0-2 years)	Long Term (2-4 or more years)	
(Action items or activities that may be implemented with existing resources and authorities within one to two 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.)	

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 Montrose County 2011 CWPP should be considered a living document, requiring regular maintenance, updates, and monitoring/evaluation of progress of recommended wildfire mitigation actions. The Montrose 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 Montrose 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 Montrose 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.

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

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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.

- **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
- **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/federalfunding.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/
- **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.
- **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

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
Utilize the parcel-level wildfire hazard analysis for all the homes in the County for continued wildfire management and public education purposes.	County, FPDs
Create additional community level CWPP's, particularly those communities with a high or greater hazard rating. Utilize the county-wide GIS structure inventory to assist in the development of the plans.	County, FPDs

Table A4. Infrastructure Recommendations

Action Item	Implementation Lead
Improve the road between Sims Mesa and Dave Wood Road to allow better access/egress	County, communities, HOA
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
Require call-in to County Emergency Management to burn slash piles	County
Enforce burn bans and fine those who violate them	County
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: • 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: • 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 Montrose 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.

NATURAL RESOURCES SERIES

FORESTRY

Creating Wildfire-Defensible Zones no. 6.302

by F.C. Dennis [1]

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.

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,

Colorado State University Cooperative Extension

Putting Knowledge to Work

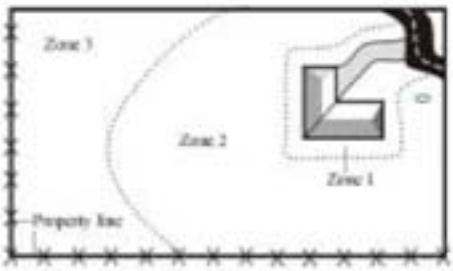


Figure 1: Forested property showing the three fire-defensible zones around a home or other structure.

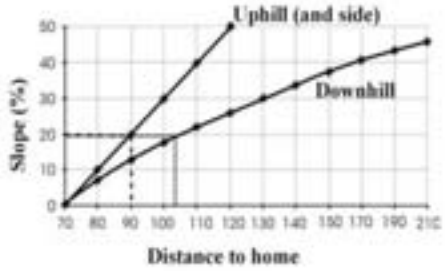


Figure 2: This chart indicates the *minimum recommended* dimensions for defensible space from the home to the outer edge of Zone 2. For example, if your home is situated on a 20 percent slope, the minimum defensible space dimensions would be 90 feet uphill and to the sides of the home and 104 feet downhill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

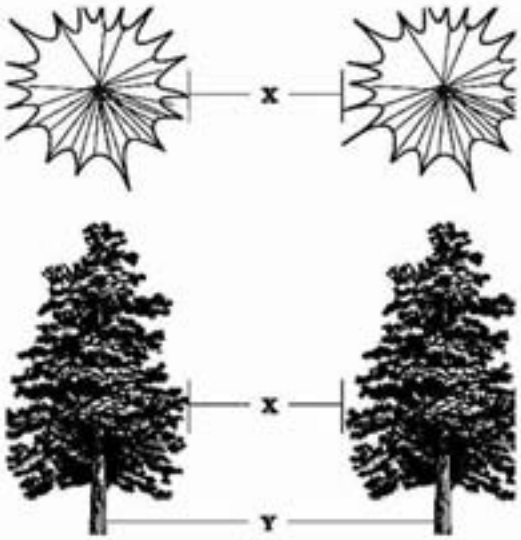


Figure 3: X = crown spacing; Y = stem spacing. Do not measure between stems for crown — measure between the edges of tree crowns.

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

% 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.

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*

FIREWISE Community Fire Prevention Partnership ©1999 CSFS

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

Colorado State FOREST SERVICE

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

Wildfire Hazard Mitigation Coordinator, Colorado State Forest Service.

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. Out of the 22 communities included in this study, Deer Mesa and Mailbox communities were rated extreme and the remaining 20 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 extreme, very high and high hazard ratings, should consider implementing a parcel-level analysis. Montrose County began this process and has point data and individual home assessments for much of the county. Like many interface communities in the west, homes in Montrose County are often 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 near-by 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. Montrose is also unique in the number of communities comprised of large lots, greater than 40 acres. By being defined as a community, there are large-scale projects that may benefit multiple homes, but in all, home mitigation and construction are the most cost effective steps landowners can take to protect their property from wildfire.

HOME CONSTRUCTION

All new construction within the study area should follow guidelines outlined in the most up-to-date Montrose County Fire Plan. 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

- Utilize the parcel-level wildfire hazard analysis for all the homes in the study area. As mentioned above, the County has already completed parcel-level analysis for most homes. 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. 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

Montrose County used county funds and Title III funds to complete a community-wide hazard and risk assessment and the resultant Montrose County CWPP. The funding allowed the County to develop the plan with professional planning assistance from Anchor Point Group and AMEC Earth and 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), Montrose County, Montrose Interagency Fire Management Unit, and the fire protection districts. These groups will continue to identify funding and technical assistance 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 Montrose 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 within their community 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) was the initial step in developing this CWPP. The operating group included representation from local governments, local fire authorities, community members, and the state and federal agency(ies) responsible for forest management. Members of the core team, West Region Wildfire Council, and the plan's consultants then engaged 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:

- Montrose County Sheriff's Office
- Montrose County Commissioners
- Montrose Interagency Fire Management Unit
- Montrose Fire Protection District
- Nucla/Naturita Fire Protection District
- Olathe Fire Protection District
- Paradox Fire Protection District
- Norwood Fire Protection District
- Crawford Fire Protection District
- Horsefly Volunteer Fire Association
- Bureau of Land Management
- United States Forest Service
- Colorado State Forest Service
- Colorado Division of Emergency Management
- Montrose County residents
- West Region Wildfire Council
- Anchor Point Group
- AMEC Earth and Environmental

Collaboration Tools

Development of the Montrose 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 promoted on-time and on-scale project management and team collaboration in the final development of the Montrose County CWPP.

Stakeholder and Public Involvement

The true collaborative process was initiated through a stakeholder meeting held on August 25, 2010 at the Montrose County Fairgrounds. 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 for a wildfire mitigation advocate (WMA), for each identified CWPP community within Montrose 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 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 Montrose 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 the level of understanding and overall 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 stay involved. Each 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. Overall the following values were expressed by the residents and were common themes at the public meetings:

- "Don‘t put every fire out, it‘s okay to let some burn"
- "Encourage roller chopping"
- Discussion regarding the complexity of fire suppression and agency control when fires cross multiple jurisdictions/land ownership.

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

- Montrose East public meeting held at Montrose County fairgrounds - March 8, 2011. 19 people attended.
- Montrose West public meeting held at Nucla High School - March 10, 2011. 8 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 Montrose County Fairgrounds on March 8, 2011

Photos from the public meeting held at Nucla High School on March 10, 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 Montrose and Naturita 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. Montrose County Public Review: Comments and Responses

Commenter	Subject	Comment	Response
Montrose County resident, John Maskie Jr.	Responsibilities	The fire plan needs to define exactly what each homeowner or homeowner's association's responsibility is to protect their property from wild fires. Also It needs to spell out who Is the responsible authority. The plan should involve government agencies responsibility, including county, state and federal.	Responsibilities are listed in the Conclusions and Next Steps chapter and are listed more explicitly with the general recommendations in the revised Appendix A.
Duckett Draw resident, Barb Bernhardt	Duckett Draw community description / rating	8 items regarding hazard rating, access roads, defensible space, clarification of home location, limited agriculture burns in area, fuels description.	Hazard rating changed to high from very high; incorporated comments into community description.

The following is a comment received from a Duckett Draw resident: "*Primary concern is about neighbors who burn during fire bans. One did a few years ago. It was also a red-flag day. It got away from him of course. That was before the south fire station existed, and miraculously the fire station crew from downtown was on-the scene before I noticed the smoke billowing down the hill toward my house and had a chance to call. Thankfully the landowner had enough sense to call in right away. He was, however, not ticketed for violating the ban, which I wasn't pleased about. So . . . the fire plan ought to indicate that there will be no overlooking the seriousness of fire bans and individuals who choose to ignore them will indeed be penalized. Just my two-cents worth. . .*"

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. This feedback, in addition to the public feedback, was integrated into a third draft. Following the core group's review this fourth and final CWPP was created.

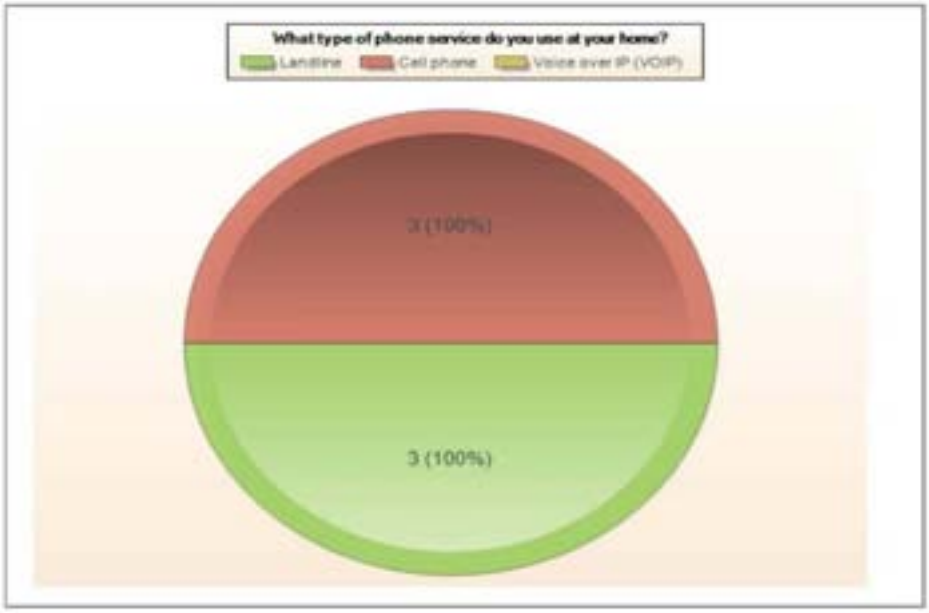
Public Surveys

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

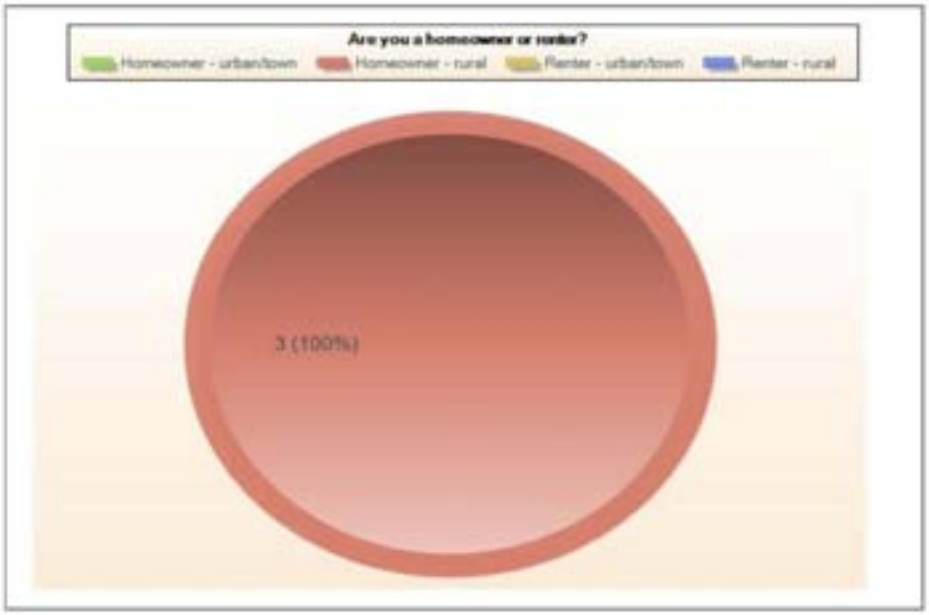
resource was made available to the public and was launched on February 1, 2011 and was closed on April 13, 2011. Hardcopies of the survey were also made available at the public meetings. The survey consisted of 28 questions inquiring on topics such as, but not limited to; importance values for the area, 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. Three people visited the survey site 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. Unfortunately the low number of respondents to the survey did not yield statistically significant results. Additional planning process documentation follows the survey results.

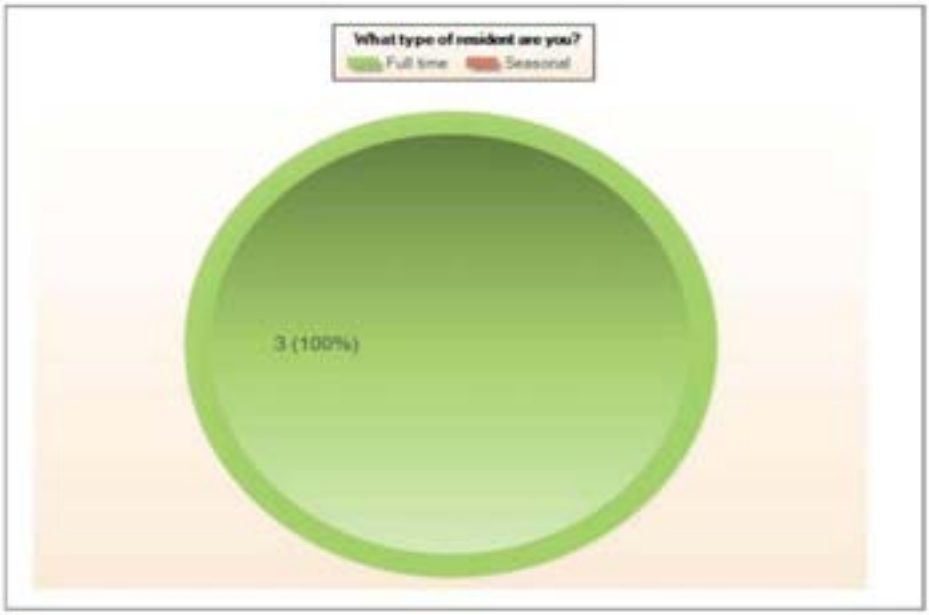
MontroseCounty Community Wildfire Protection Plan Resident Survey: What type of phone service do you use at your home?



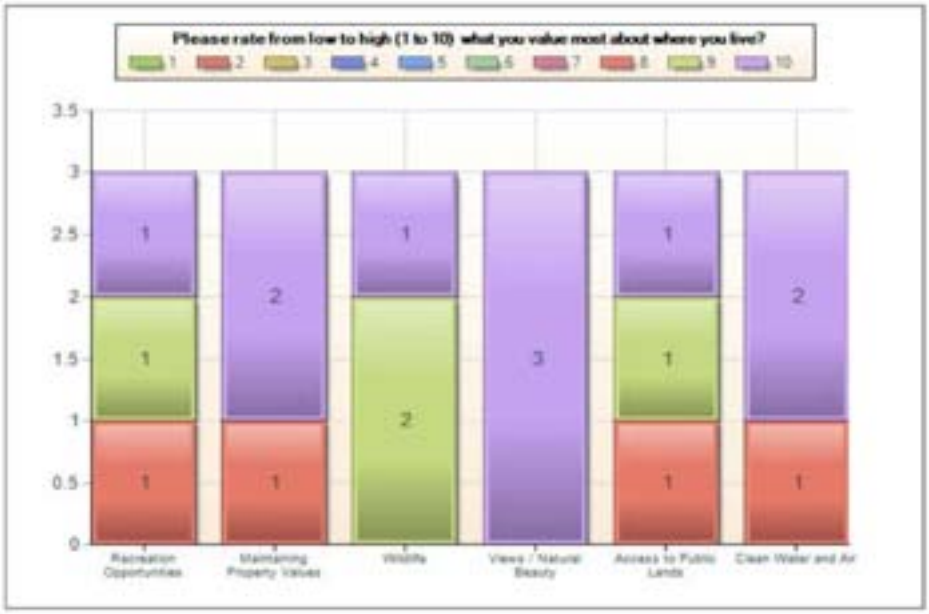
MontroseCounty Community Wildfire Protection Plan Resident Survey: Are you a homeowner or renter?



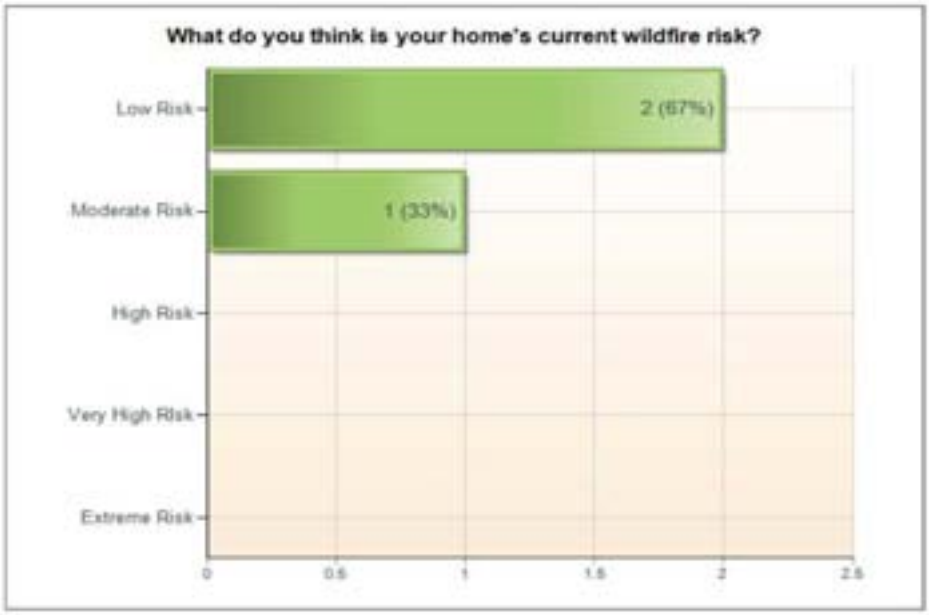
MontroseCounty Community Wildfire Protection Plan Resident Survey: What type of resident are you?



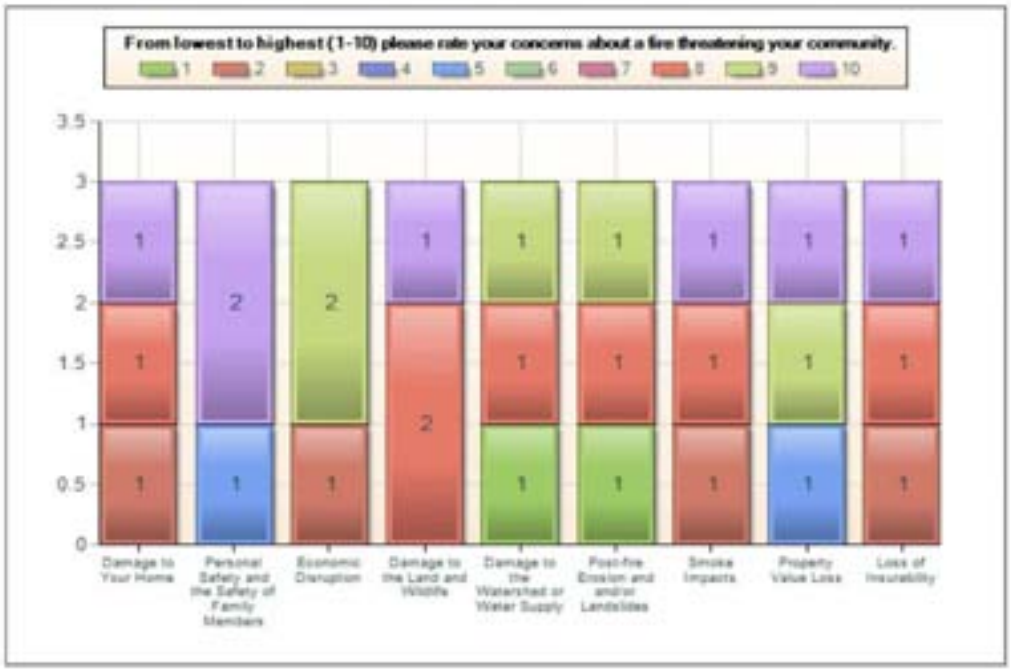
MontroseCounty Community Wildfire Protection Plan Resident Survey: Please rate from low to high (1 to 10) what you value most about where you live?



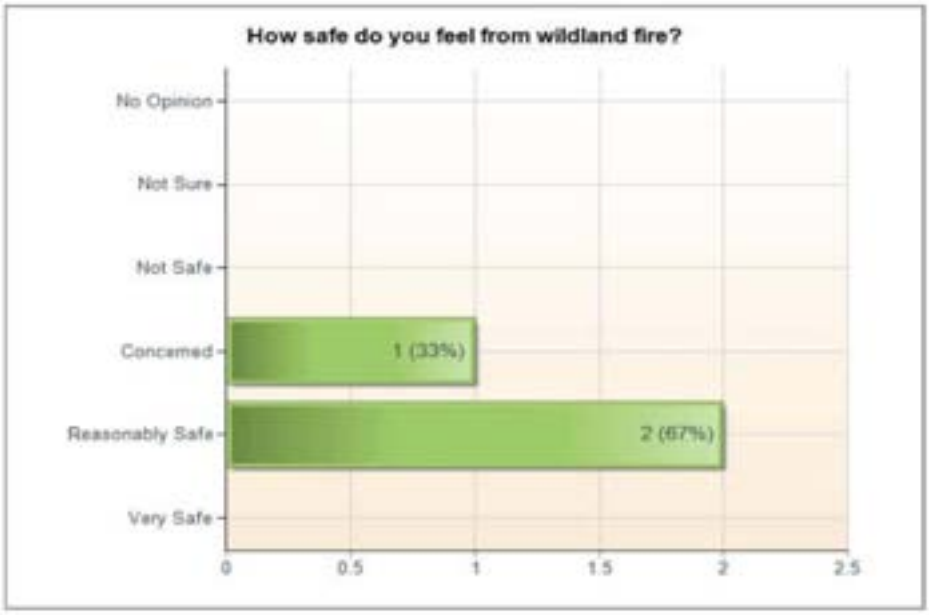
MontroseCounty Community Wildfire Protection Plan Resident Survey: What do you think is your home's current wildfire risk?



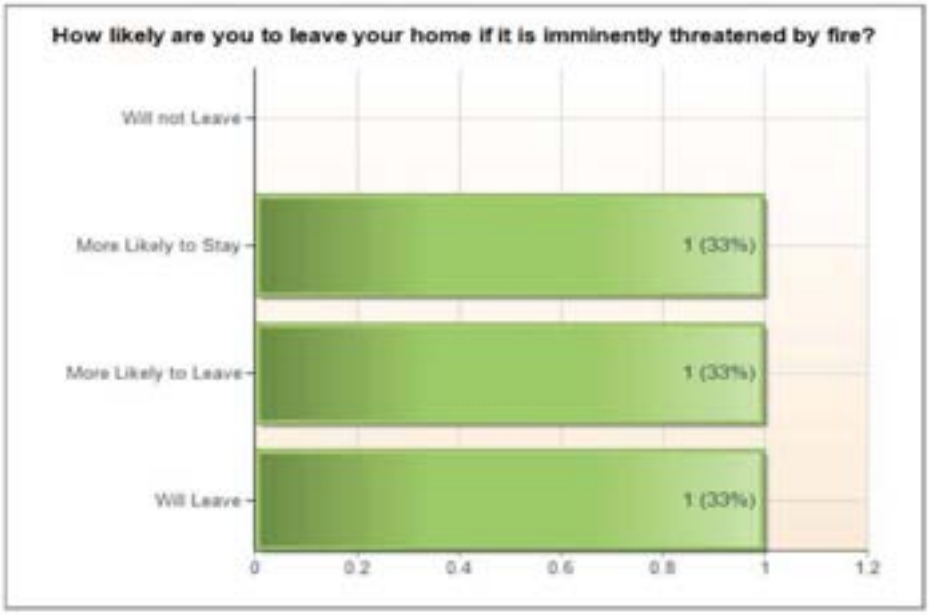
MontroseCounty Community Wildfire Protection Plan Resident Survey: From lowest to highest (1-10) please rate your concerns about a fire threatening your community.



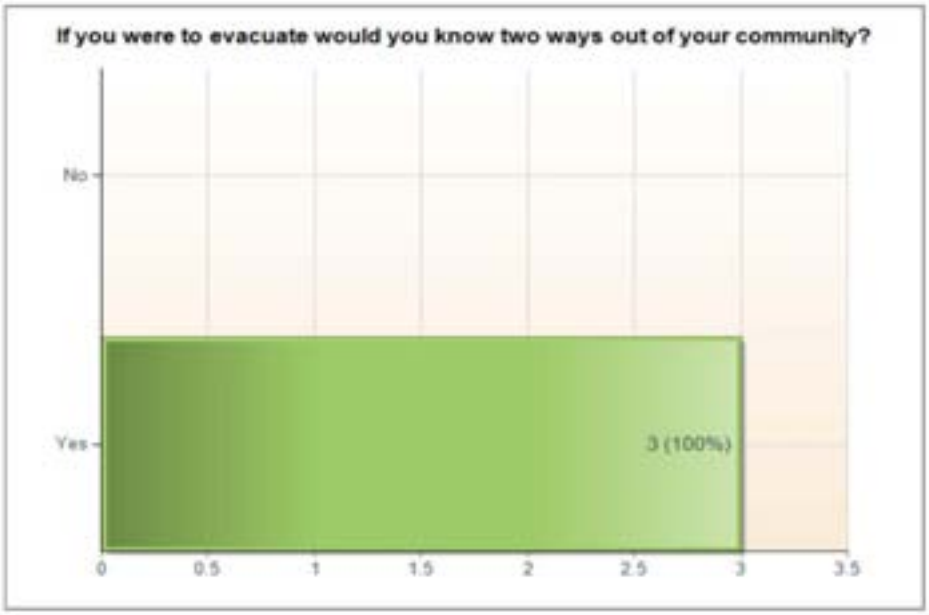
MontroseCounty Community Wildfire Protection Plan Resident Survey: How safe do you feel from wildland fire?



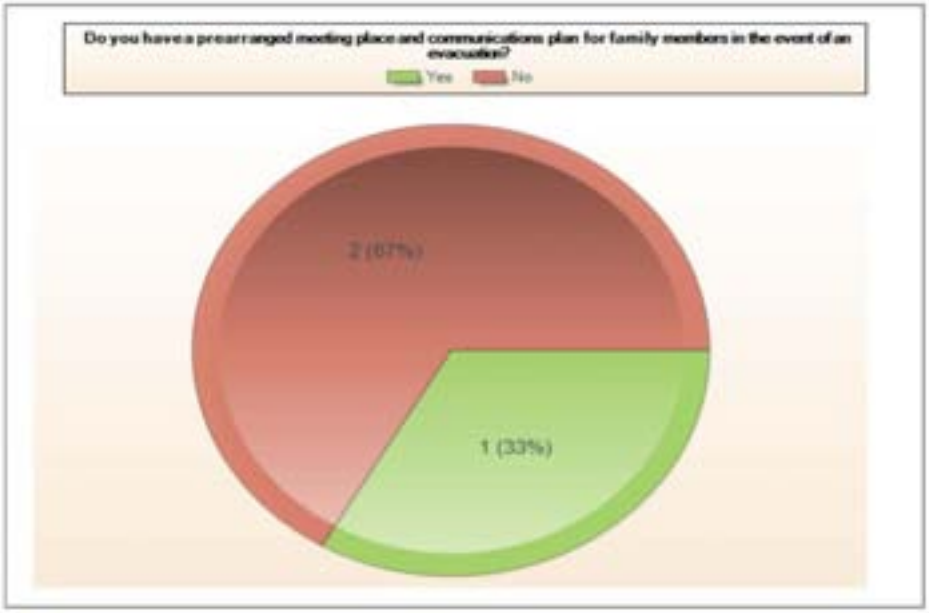
MontroseCounty Community Wildfire Protection Plan Resident Survey: How likely are you to leave your home if it is imminently threatened by fire?



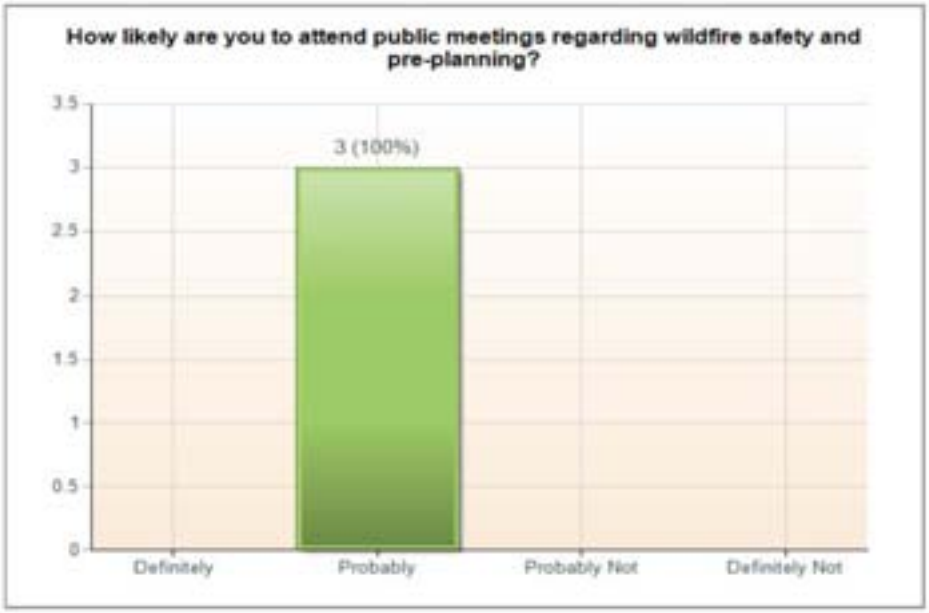
MontroseCounty Community Wildfire Protection Plan Resident Survey: If you were to evacuate would you know two ways out of your community?



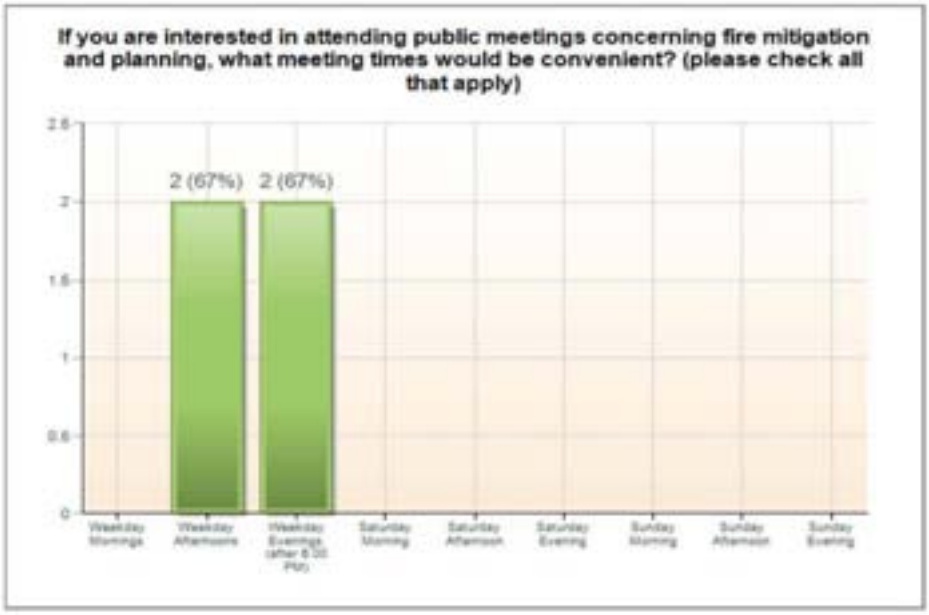
MontroseCounty Community Wildfire Protection Plan Resident Survey: Do you have a prearranged meeting place and communications plan for family members in the event o ...



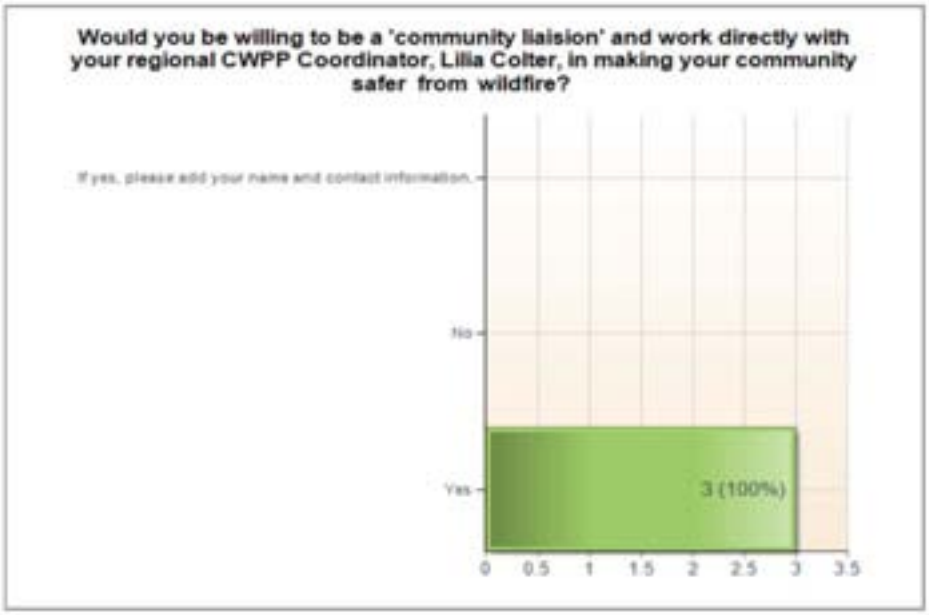
MontroseCounty Community Wildfire Protection Plan Resident Survey: How likely are you to attend public meetings regarding wildfire safety and pre-planning?



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

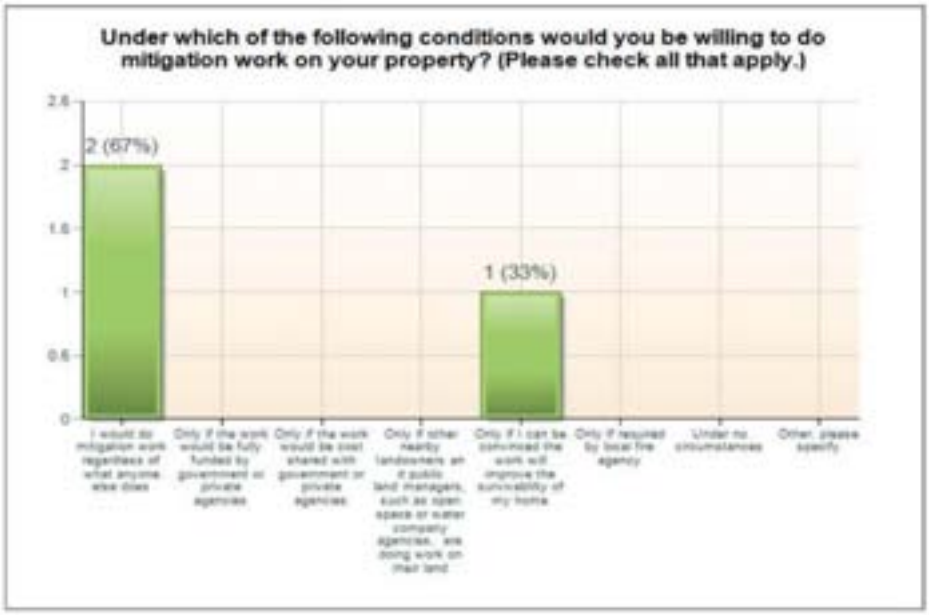


MontroseCounty Community Wildfire Protection Plan Resident Survey: Would you be willing to be a 'community liaision' and work directly with your regional CWPP Coord ...

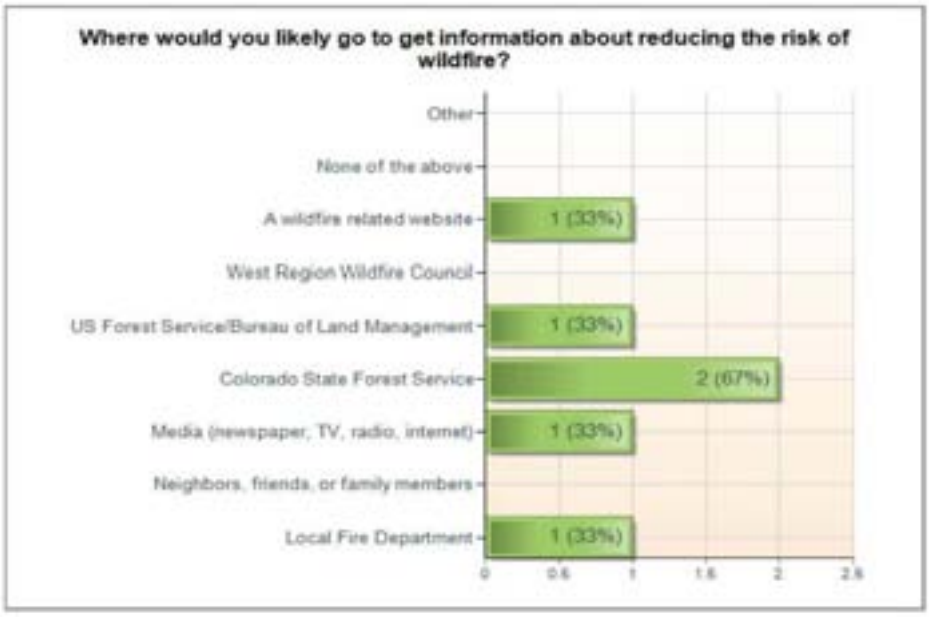


MontroseCounty Community Wildfire Protection Plan Resident Survey: The CWPP will look at various options to reduce wildfire risk. Rate your comfort level from 1 (lo ...

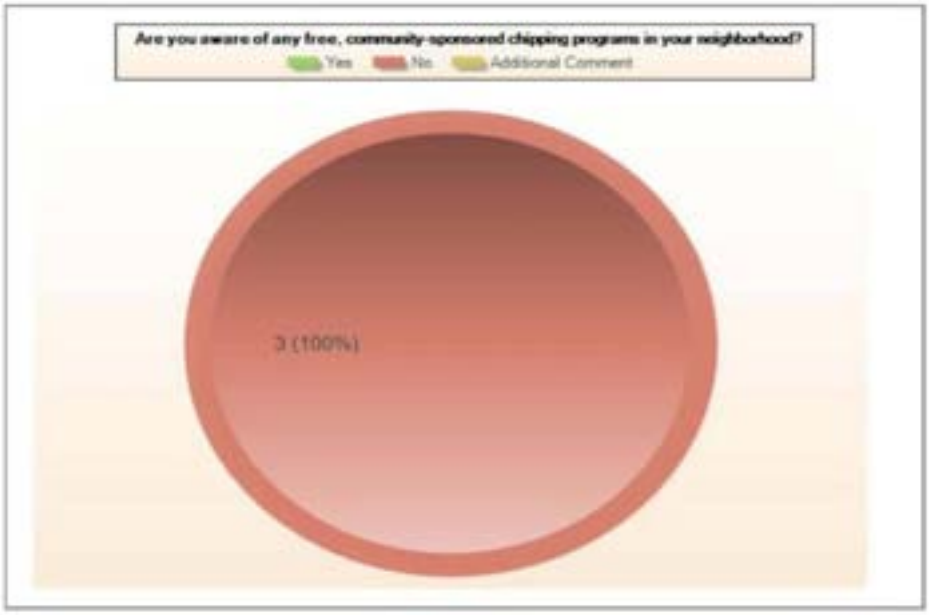
MontroseCounty Community Wildfire Protection Plan Resident Survey: Under which of the following conditions would you be willing to do mitigation work on your proper ...



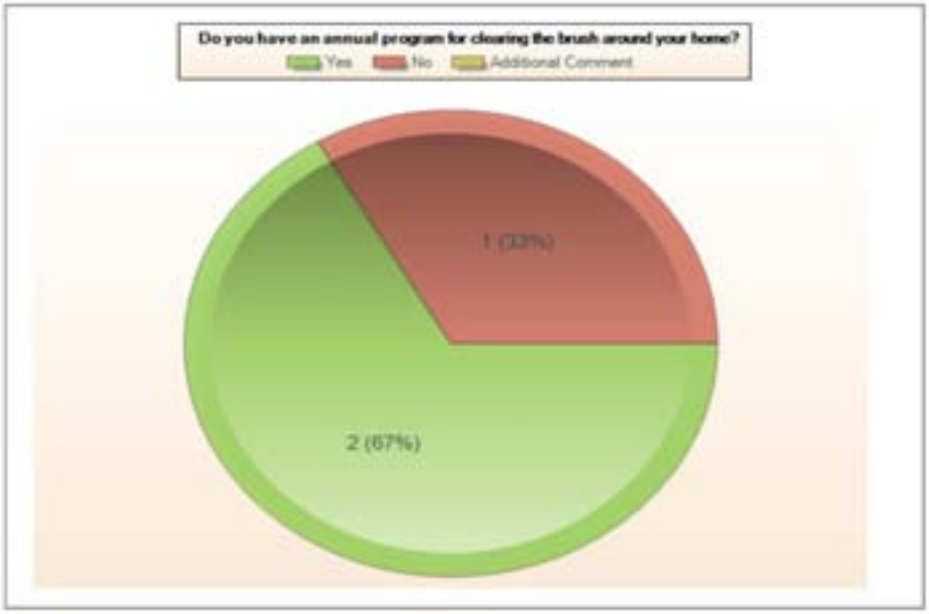
MontroseCounty Community Wildfire Protection Plan Resident Survey: Where would you likely go to get information about reducing the risk of wildfire?



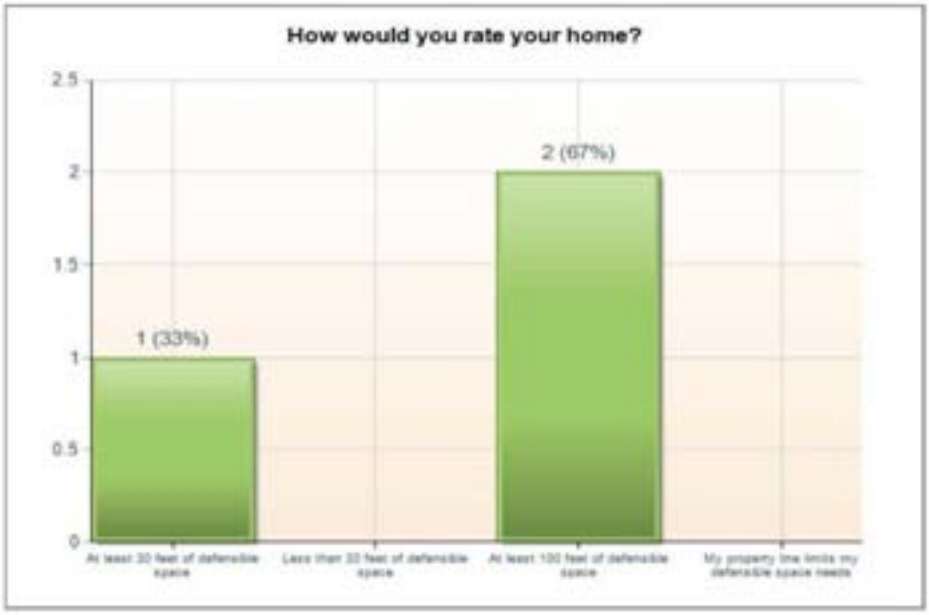
MontroseCounty Community Wildfire Protection Plan Resident Survey: Are you aware of any free, community-sponsored chipping programs in your neighborhood?



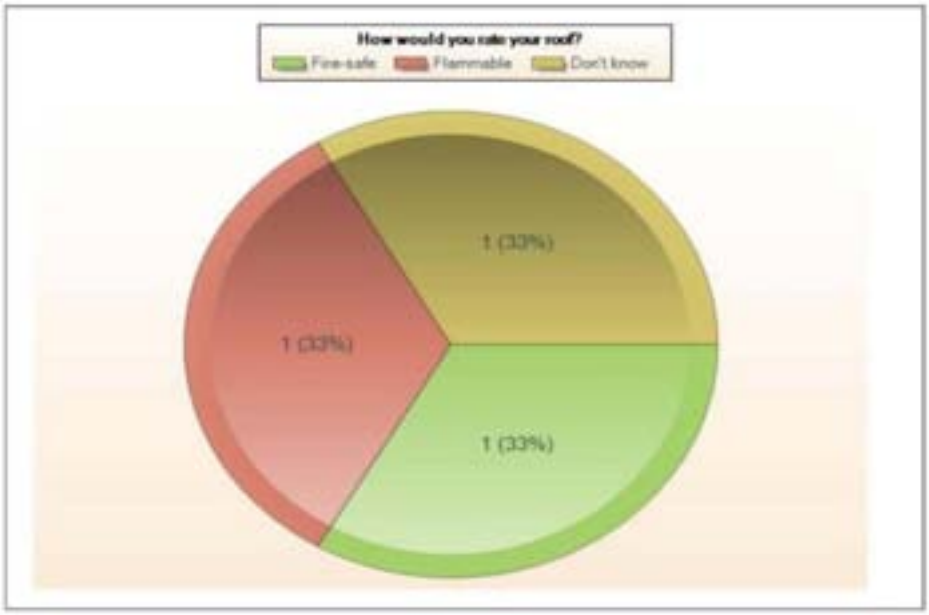
MontroseCounty Community Wildfire Protection Plan Resident Survey: Do you have an annual program for clearing the brush around your home?



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

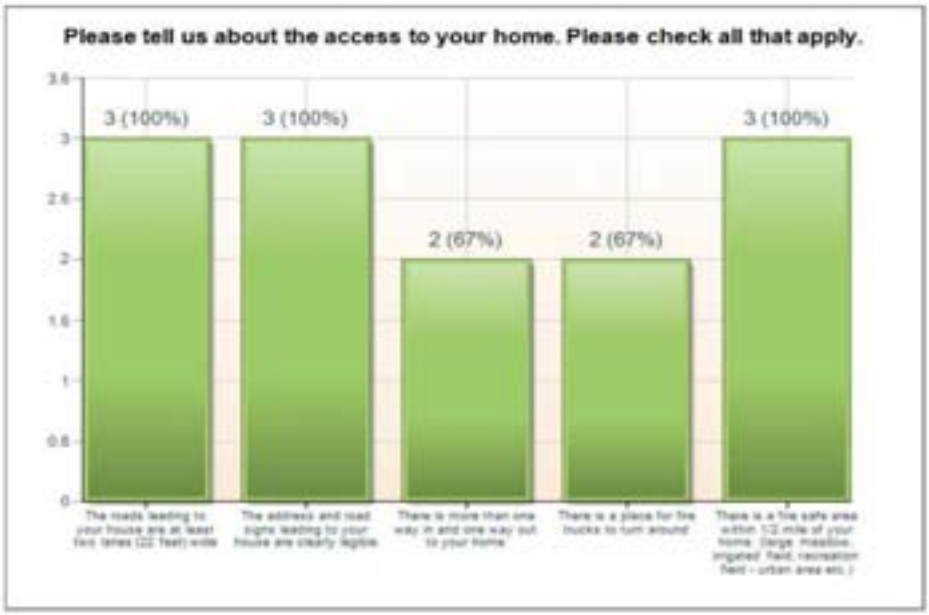


MontroseCounty Community Wildfire Protection Plan Resident Survey: How would you rate your roof?



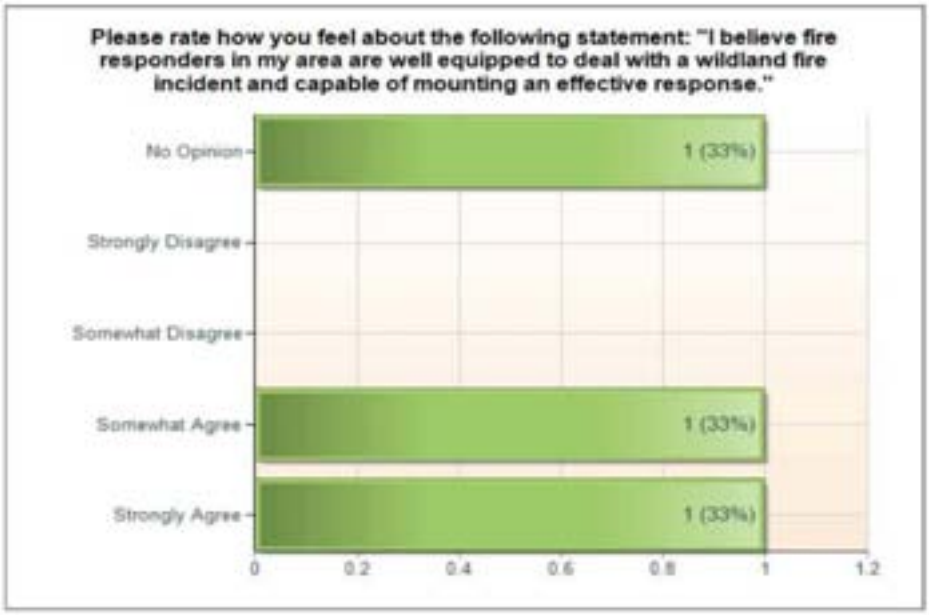
MontroseCounty Community Wildfire Protection Plan Resident Survey: How would you rate your firefighting water supply? Please check all that apply.

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



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

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



ADDITIONAL PLANNING PROCESS DOCUMENTATION

Letter of invitation to public meetings sent to at least Wildfire Mitigation Advocate within each CWPP community

Montrose County
Department of Emergency Management

Issac Holland, Emergency Manager
161 S. Townsend Ave Montrose,CO 81401
Phone: 970-252-4526 Fax: 970-249-7761
www.montrosecounty.net

February 14, 2011

Dear Montrose 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 Montrose 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.

Montrose County Community Wildfire Protection Plan Meetings:

Tuesday, March 8th	**Thursday, March 10th**
Montrose County Fairgrounds (Friendship Hall)	**Nucla High School**
4:00 PM	**6:00 PM**
1001 N. Second St.	*225 West 4th Avenue*
Montrose, CO 81401	*Nucla, CO 81424*

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 Montrose 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 Montrose 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 Montrose 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: wrwc.lilia@gmail.com

West Region Wildfire Council

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

Advertisement for newspaper and press release

FOR IMMEDIATE RELEASE:

2-15-2011 CONTACT: Montrose County Emergency Management

Public invited to Community Wildfire Protection Plan Meetings

Please join neighbors and friends for a meeting to discuss the County's draft Community Wildfire Protection Plan. Two meetings are planned, one in Montrose **4:00pm Tuesday, March 8th at the Montrose County Fair Grounds, Friendship Hall, 1001 North Second St and one at 6:00 pm Thursday, March 10th at the Nucla High School,** 225 West 4th Avenue. The meetings are an opportunity for the public and stakeholders to provide feedback on what will become the *Montrose County Community Wildfire Protection Plan.* The meetings 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 door prizes at the meetings. 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/WEB22BTUJECG79/

For more information, please contact:
Ike Holland, Montrose County Emergency Management
iholland@co.montrose.co.us, 970-252-4526
Lilia Colter, West Region Wildfire Council CWPP Coordinator
wrwc.lilia@gmail.com, 970-249-9051 ext 125

Flyer for public meeting in Montrose

Community Wildfire Protection Plan

PUBLIC MEETING NOTICE

DATE: Tuesday, March 8th
TIME: 4:00 PM
LOCATION: Montrose County Fairgrounds, Friendship Hall, *1001 N. Second St. Montrose, CO 81401*

Please join us on Tuesday March 8th to discuss Montrose 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 *Montrose 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 assistance from Anchor Point and AMEC.

Chance to win a Cabela's gift card 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/WEB22BTUJECG79/

For more information, please contact:
Lilia Colter, West Region Wildfire Council, wrwc.lilia@gmail.com 970-249-9051 x125
Jeff Brislawn, AMEC Earth and Environmental, jeff.brislawn@amec.com 303-443-7839

PARTNERS:

- **Montrose County**
- **West Region Wildfire Council**
- **Crawford, Montrose, Norwood, Nucla-Naturita, Olathe and Paradox Fire Protection Districts**

FIRE MANAGEMENT

amec

Flyer for public meeting in Nucla

Community Wildfire Protection Plan

PUBLIC MEETING NOTICE

DATE: Thursday, March 10th
TIME: 6:00 PM
LOCATION: Nulca High School, *225 West 4th Avenue, Nucla CO 81424*

Please join us on Thursday March 10th to discuss Montrose 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 *Montrose 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 assistance from Anchor Point and AMEC.

Chance to win a Cabela's gift card 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/WEB22BTUJECG79/

For more information, please contact:
Lilia Colter, West Region Wildfire Council, wrwc.lilia@gmail.com 970-249-9051 x125
Jeff Brislawn, AMEC Earth and Environmental, jeff.brislawn@amec.com 303-443-7839

PARTNERS:

- **Montrose County**
- **West Region Wildfire Council**
- **Crawford, Montrose, Norwood, Nulca-Naturita, Olathe and Paradox Fire Protection Districts**

FIRE MANAGEMENT

amec

Public meeting rosters

Montrose County Community Wildfire Protection Plan Public Meeting

Name	Community Designation	Email	Phone Number	Address	[illegible]
1 Mark Ragsdale	Redvale		970-327-4930	PO Box 189 Redvale Co 81431	
2 [illegible] Lee	Paradox	[illegible]	970-426-[illegible]	Box 596 81429	
3 John Riley Jr	Naturita	JDRGH2@aol.com	970-765-1762	Box 61 Nucla, CO.	
4 Bobby Breeder	Redvale [illegible]	breeder@[illegible]	970-864-[illegible]	33700 Hwy 145 Redvale	
5 Ricky Klement	Norwood	rdk1955@centurytel.net	970-327-4956	439 [illegible] Rd	
6 Susan Culver	Nucla	editor@fone.net	864-7425	Po Box 9 Nucla	
7 Maree Farr	Paradox		[illegible]859-7272	PO Box 325 Paradox	
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03/22/2011 11:26 9702495718 MONTROSE USDA CENTER PAGE 03/12

Montrose County Community Wildfire Protection Plan Public Meeting

Name	Community Designation	Email	Phone Number	Address	Would like more info Y/N
1 [illegible] Barlinghouse	Elk Springs		249-2293	61766 David Rd Olathe	Yes
2 Lyssa Barlinghouse	Elk springs		249-8160	60921 Carnation Rd Olathe	Yes
3 Cody Barlinghouse	Elk springs			61766 David Rd Olathe	
4 Leslie Barlinghouse	Elk springs			61928 David Rd Olathe	
5 Sherry Duncan	Elk Springs		249-8313	65883 Solar Rd Montrose	
6 Bob Duncan	Elk Springs		249-8313	65883 Solar Rd Montrose	
7 Wayne Drake			240-7936	1712 6400 Rd Montrose	
8 Lisa Goetsch	County	lgoetsch@montrosecounty.net	252-4567		
9 Ted Rowan	MFPD	Ted.Rowan@[illegible]	249-9181	441 S. Unc. – Montrose.	
10 Greg Thornton	Montrose County	gthornton@montrosecounty.net	403-2170	1834 Estates Drive Unit C Montrose	
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03/22/2011 11:26 9702495718 MONTROSE USDA CENTER PAGE 01/12

Montrose County Community Wildfire Protection Plan Public Meeting

	Name	Community Designation	Email	Phone Number	Address	Would like more info Y/N
1	Betsy Deake	Montrose		240-7936	1712 6400 Rd. Montrose	Yes
2	Elizabeth McBroom	Pinon Hills	elmbowman@msn.com	596-1592	61505 V60 TR, Montrose 81405	✓
3	Kristin Modrell	Montrose	kscuderi@montrosecounty.net	252-4505	161 S. Townsend Ave. Montrose CO	Yes
4	Stan Stanzill	Duct Draw	Stanzillstan@gmail.com	240-9478	65398 Sunridge Ct	
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03/22/2011 11:26 9702495718 MONTROSE USDA CENTER PAGE 02/12

Montrose County Community Wildfire Protection Plan Public Meeting

	Name	Community Designation	Email	Phone Number	Address	Would like more info Y/N
1	Steve CLASS	Tappan Creek	SteveCLASS@q.com	303-912-9810	62101 Tres Coyotes Trail	yes
2	Brian Peterson	Montrose	BrianPCIS@Yahoo.com	970-596-8718	8 Columbia Way	
3	Doug Bowman	Pinon Hill Estates	elmbowman@msn.com	970-596-2749	61505 V-60 Trail	Yes
4	Barb Sharrow	BLM	barbara_sharrow@blm.gov	970-240-3395		No
5	Gary Ellis	Montrose BOCC	gellis@montrosecounty.net	252-4532	1161 S. Townsend	
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Letter soliciting comments on final plan

Dear Montrose County Resident,

Montrose 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 (where 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 Montrose County website. There are also hard copies of the plan available at:

Montrose Public Library
Reference Desk
320 S. 2nd
Montrose, CO 81401
970-249-9656

Naturita Public Library
411 W 2nd Ave
Naturita, CO 81422
970-865-2848

As a reminder, the online survey will be available through April 1st. The survey can be found at:
http://www.zoomerang.com/Survey/WEB22BTUJECG79/

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.

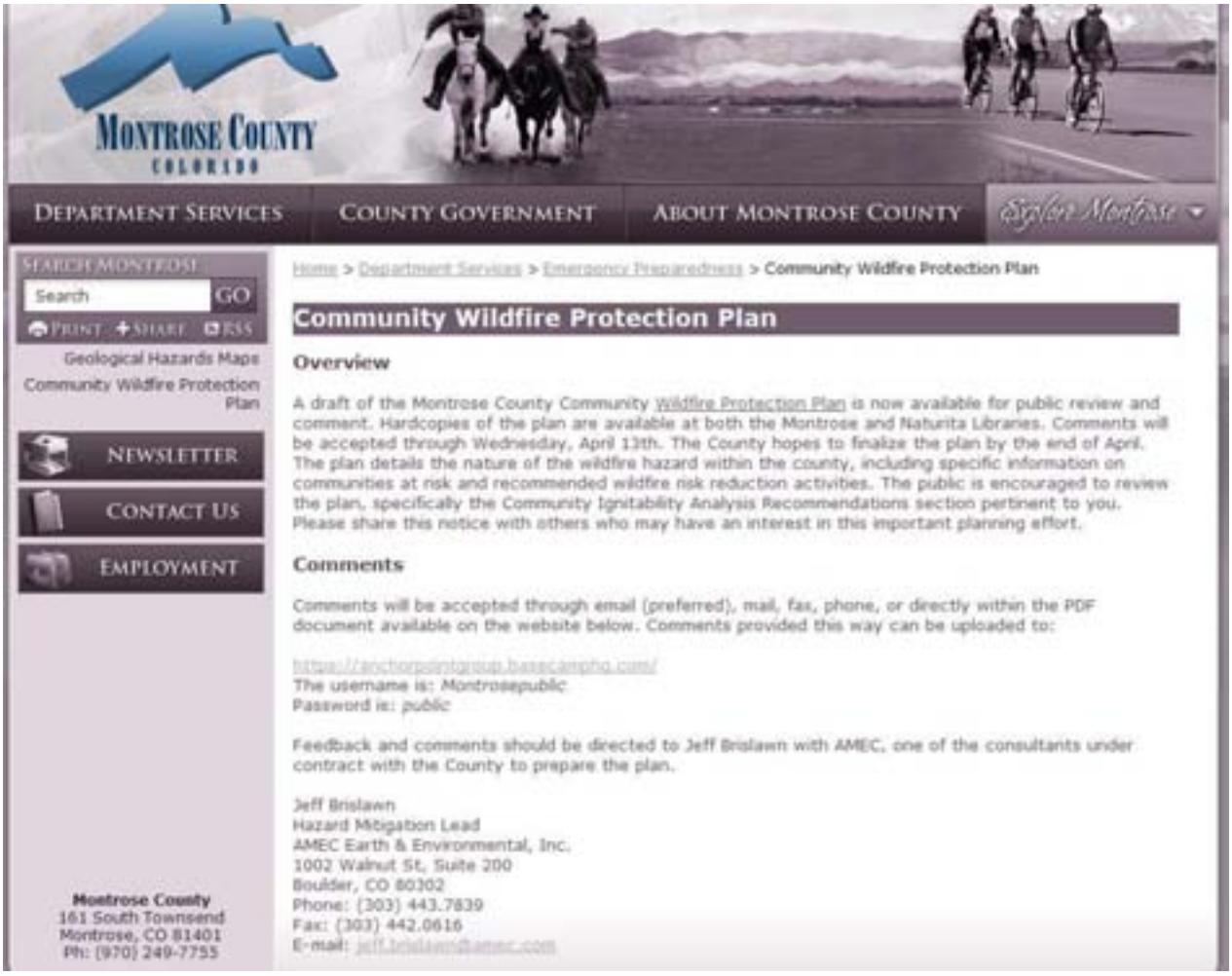
We look forward to hearing from you,

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: wrwc.lilia@gmail.com

Notice of CWPP draft for public review on Montrose County website.



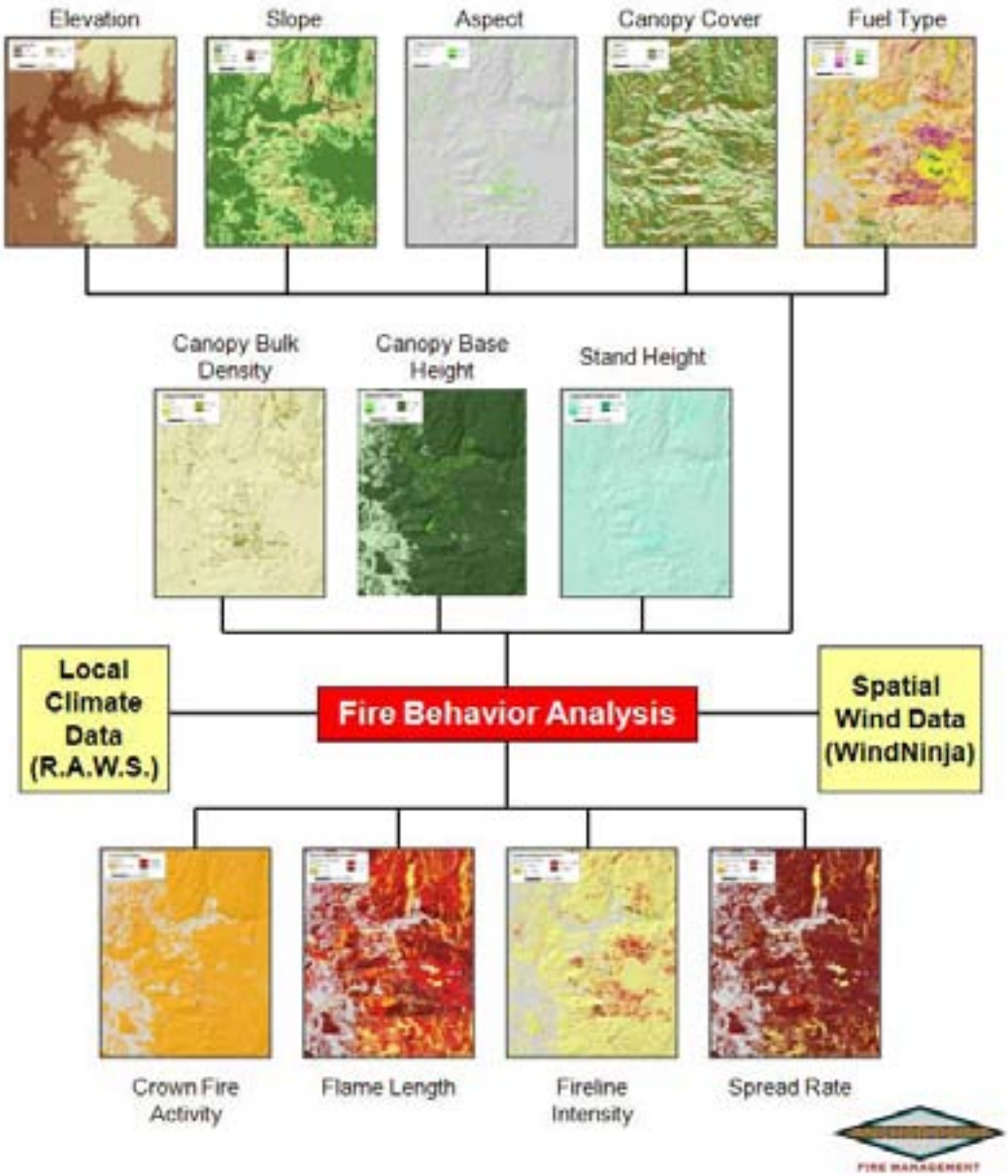
APPENDIX C: FIRE BEHAVIOR TECHNICAL REFERENCE

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'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)

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[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).

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 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 ~~"p~~ixels") 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 half 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 ~~"a~~reas of concern," which are useful for prioritizing mitigation actions. This is sometimes referred to as a ~~"v~~alues 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.

FlamMap

Anchor Point used FlamMap to evaluate the potential fire conditions in the fire behavior study area. The study area encompasses 1,438,080 acres (2,247 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

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

and canopy closure, canopy base height (CBH), and canopy bulk density (CBD).[5] 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, which was subsequently used within 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 and 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.[6]

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

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[5] http://www.landfire.gov/

[6] 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

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.

Figure C2. Montrose County RAWS Sites

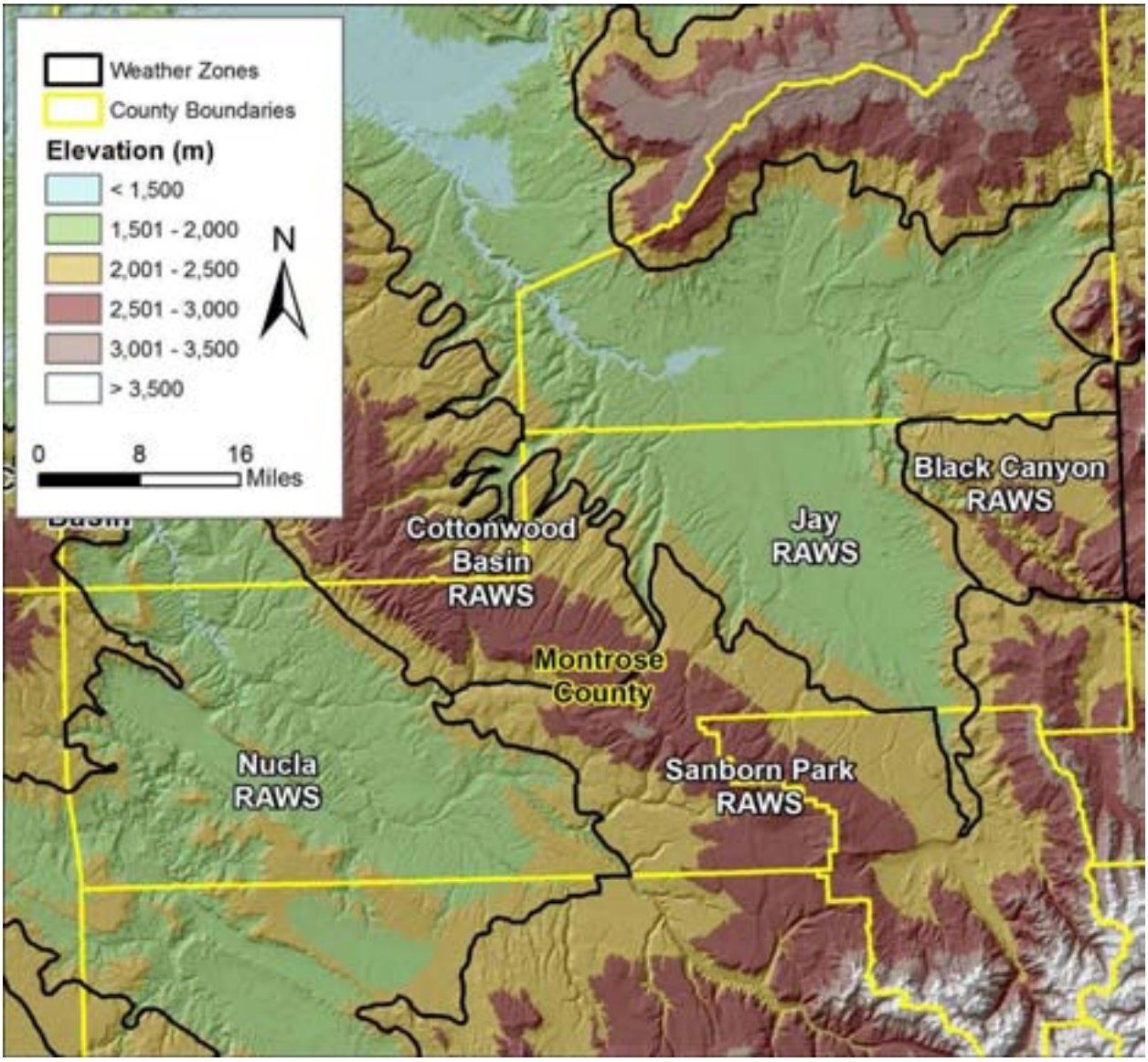


Table C1. Montrose County RAWS Information

Montrose County	Weather Condition	Black Canyon	Cottonwood Basin	Jay	Nucla	Sanborn Park
Elevation (ft)		8560	7220	7930	5820	10410
Latitude		38.54	38.57	38.19	38.23	38.91
Longitude		-107.69	-108.28	-108.22	-108.56	-106.6
Years Included		1997 - 2009	2000 - 2009	1984 - 2009	1984 - 2009	2000 - 2009
Fire Season		May 1 - October 31	May 1 - October 31	May 1 - October 31	May 1 - October 31	May 15 - September 30
Wind Direction		Always upslope	Always upslope	Always upslope	Always upslope	Always upslope
Wind Speed (mph)	Moderate	10	10	8	10	12
	High	19	26	17	29	26
1-hour Fuel Moisture	Moderate	5	6	6	3	6
	High	3	2	3	2	4
10-hour Fuel Moisture	Moderate	6	7	9	4	12
	High	3	3	5	3	95
100-hour Fuel Moisture	Moderate	10	10	11	7	12
	High	6	5	7	5	9
Herbaceous Fuel Moisture	Moderate	30	30	38	30	47
	High	30	30	33	30	38
Woody Fuel Moisture	Moderate	88	86	95	68	100
	High	61	62	74	65	80

Fuel Models and Fire Behavior

In the context of fire behavior modeling, ~~f~~uel 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.[7] For specific information about the fuel models' affects on the landscape see the discussions in the Community Ignitability Analysis Recommendations section of the main plan.

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)	*FM141 (SH1)	FM161 (TU1)	NB3 (93) Agricultural
FM102 (GR2)	*FM142 (SH2)	FM165 (TU5)	NB9 (99) Bare Ground
*FM121 (GS1)		*FM188 (TU8)	
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.

7 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.

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.

Table C3. Flame Length Outputs for Montrose Fuel Models

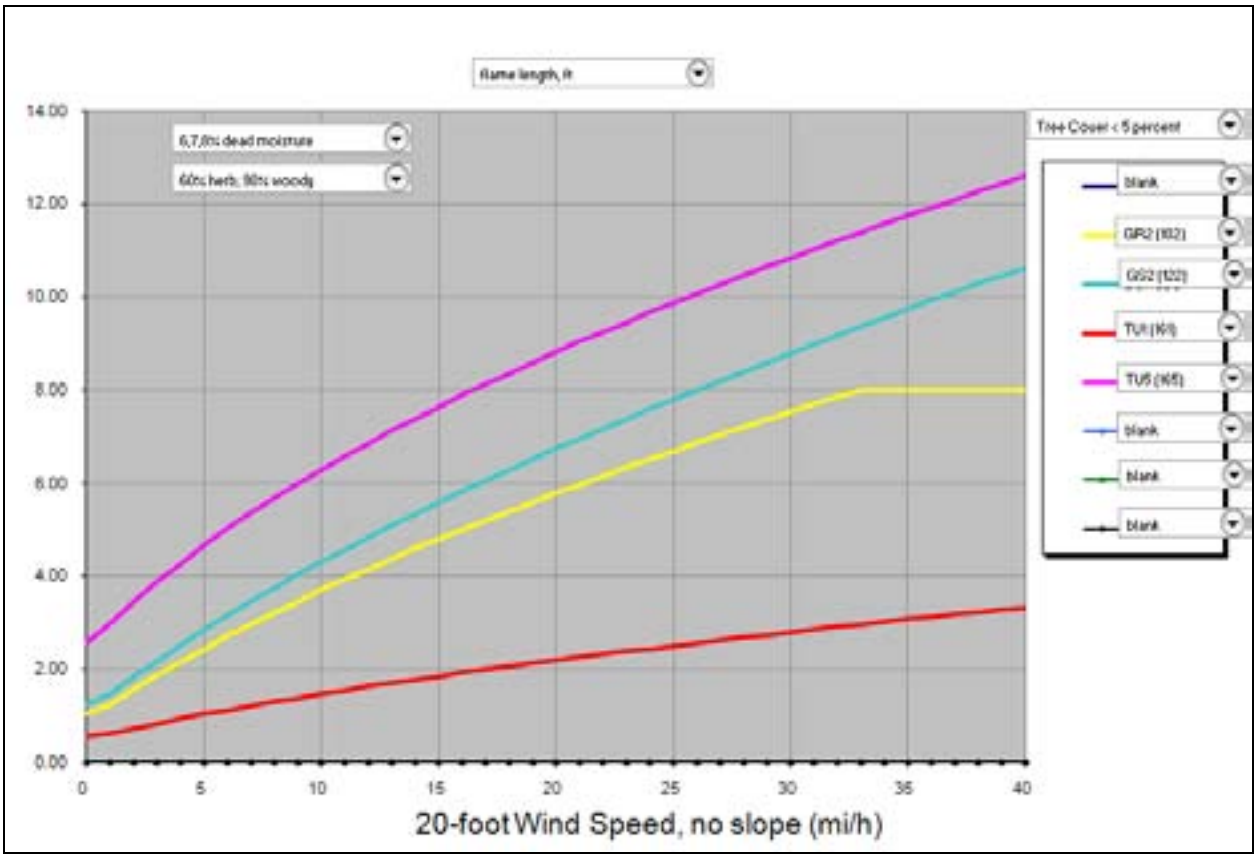
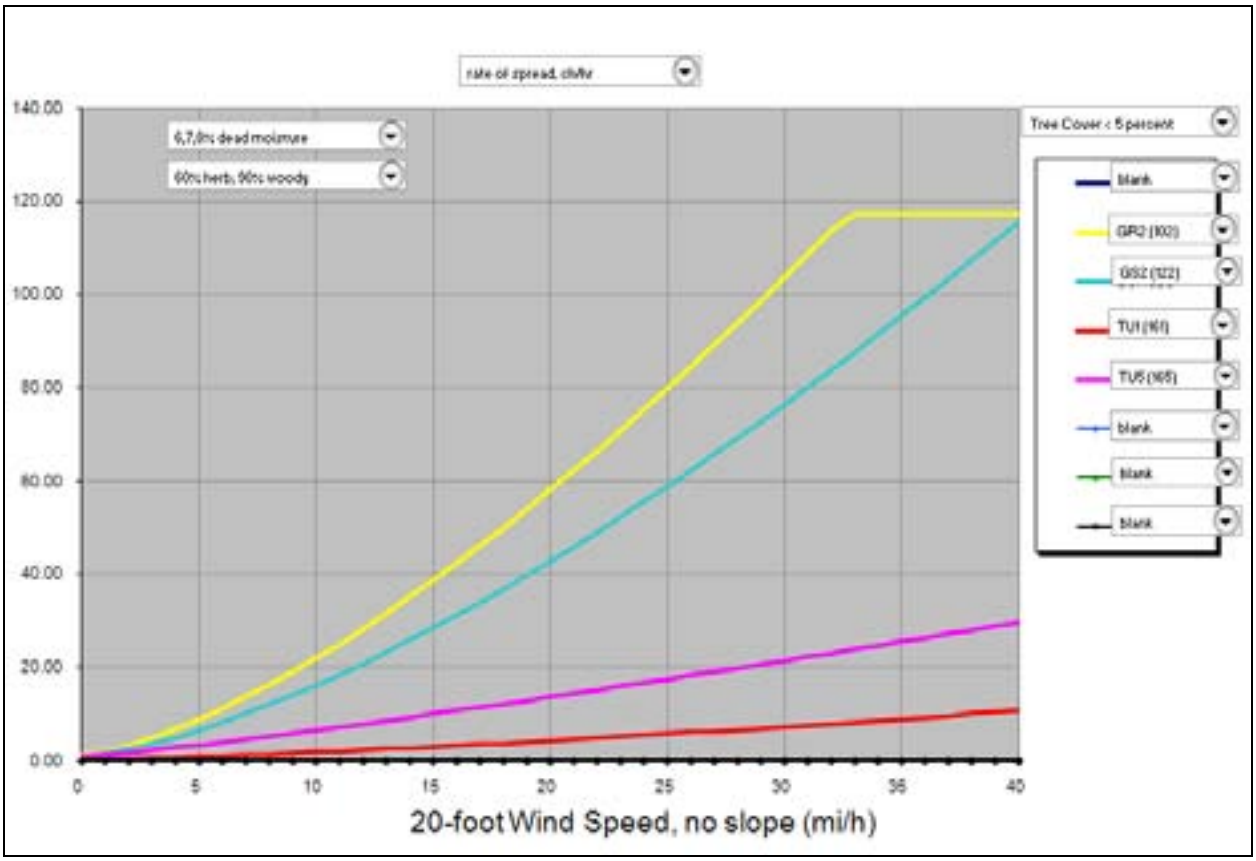


Figure C3. Rate of Spread Outputs for Montrose Fuel Models

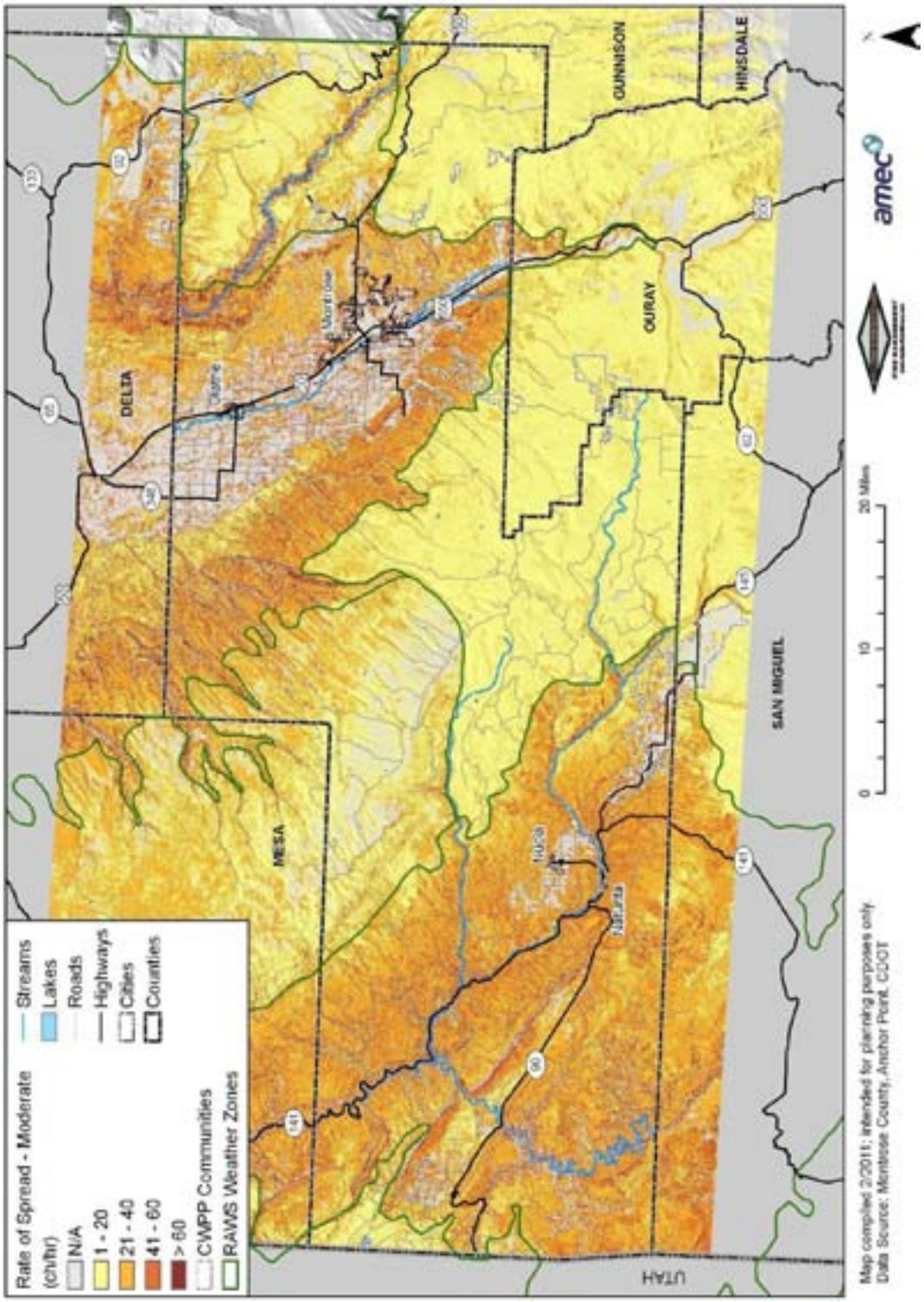


Fire Behavior Outputs

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).

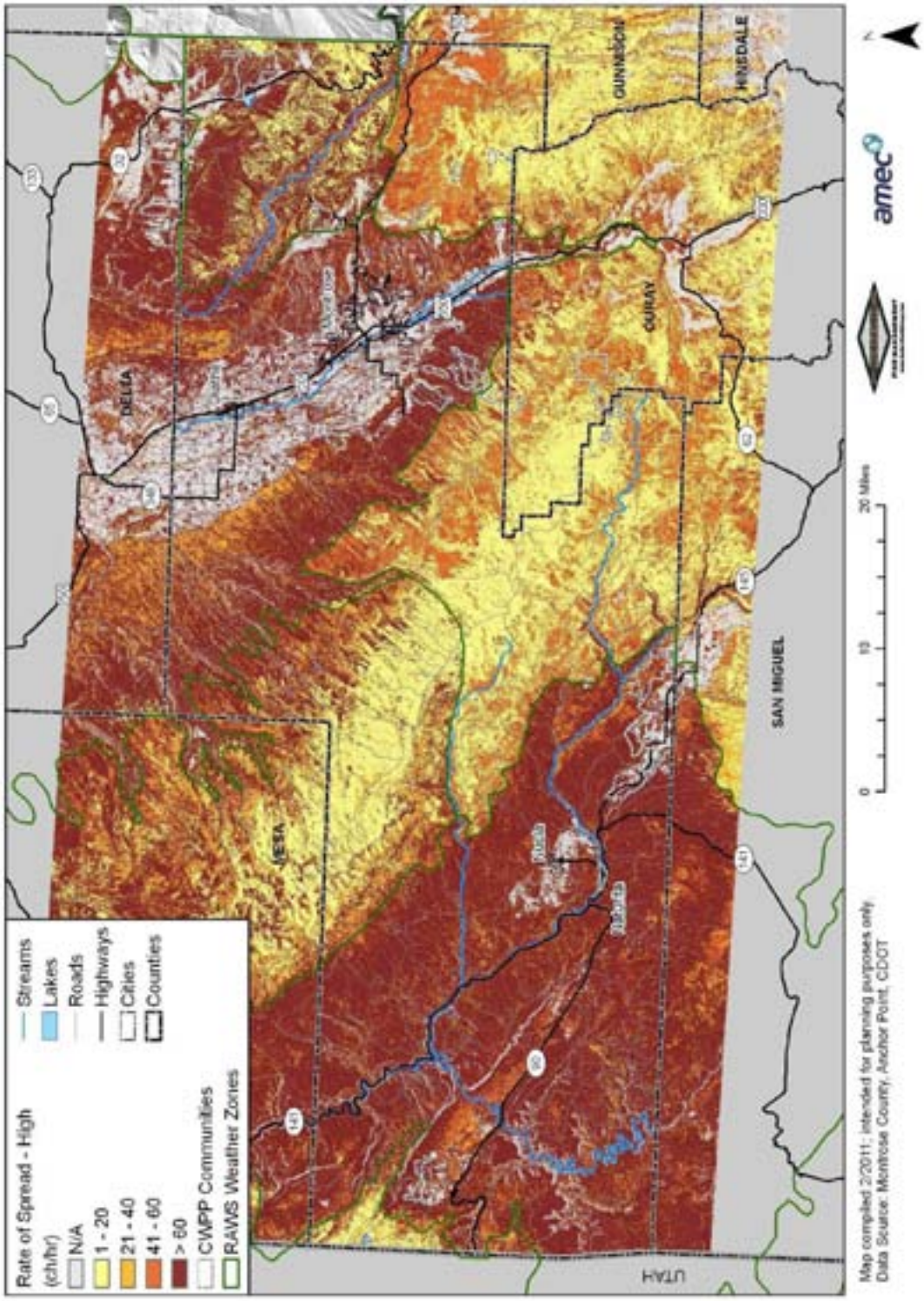
*It should be noted that a high rate of spread is not necessarily severe. Fire will move very quickly across grass fields but may not cause any major damage to the soil.

Figure C4. Predicted rate of spread under moderate weather conditions



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

Figure C5. 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 were generated by the FlamMap model and 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 C6 may also be found in an 11 x 17 format in Appendix D.

Figure C6. Predicted flame lengths under moderate weather conditions

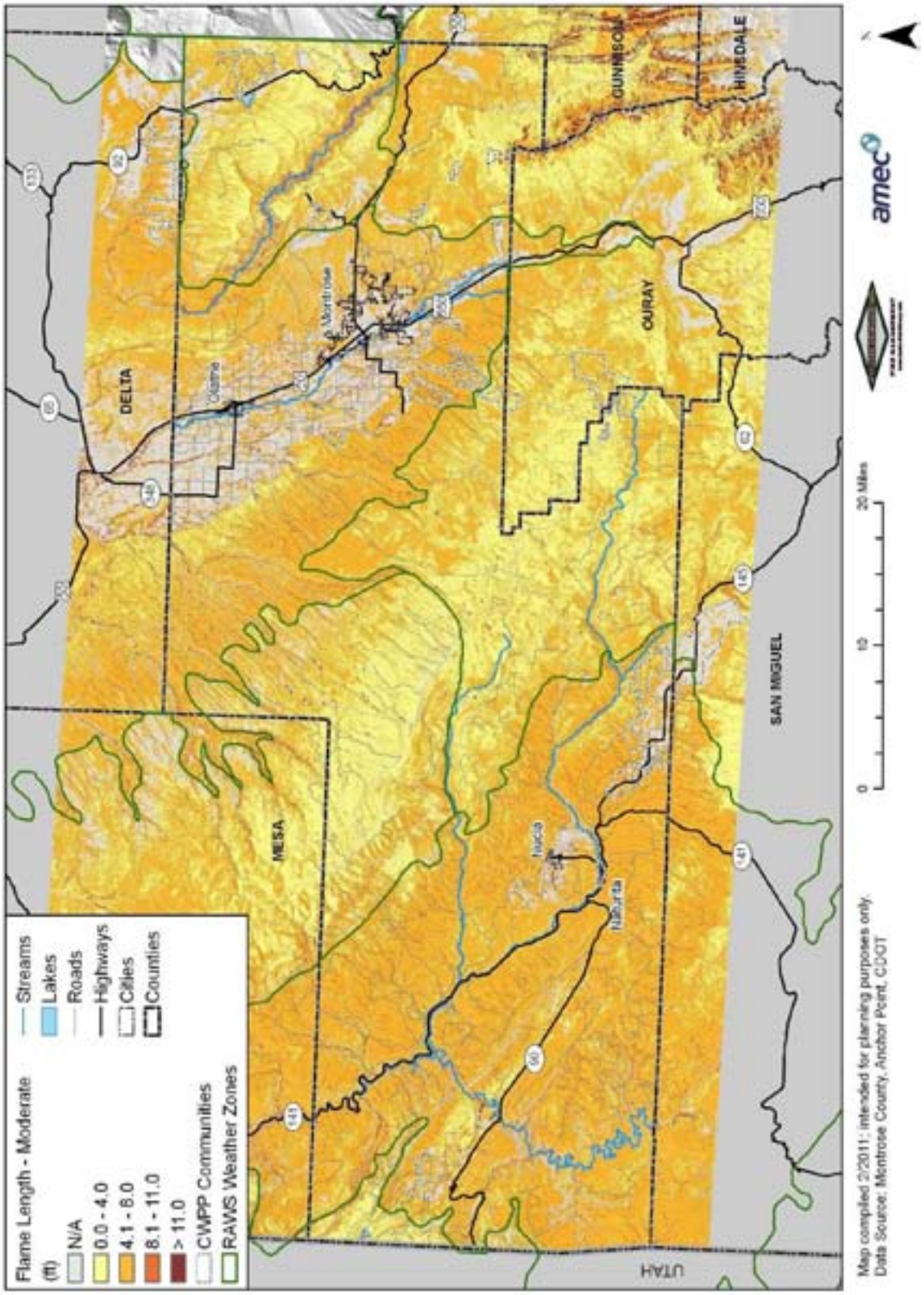
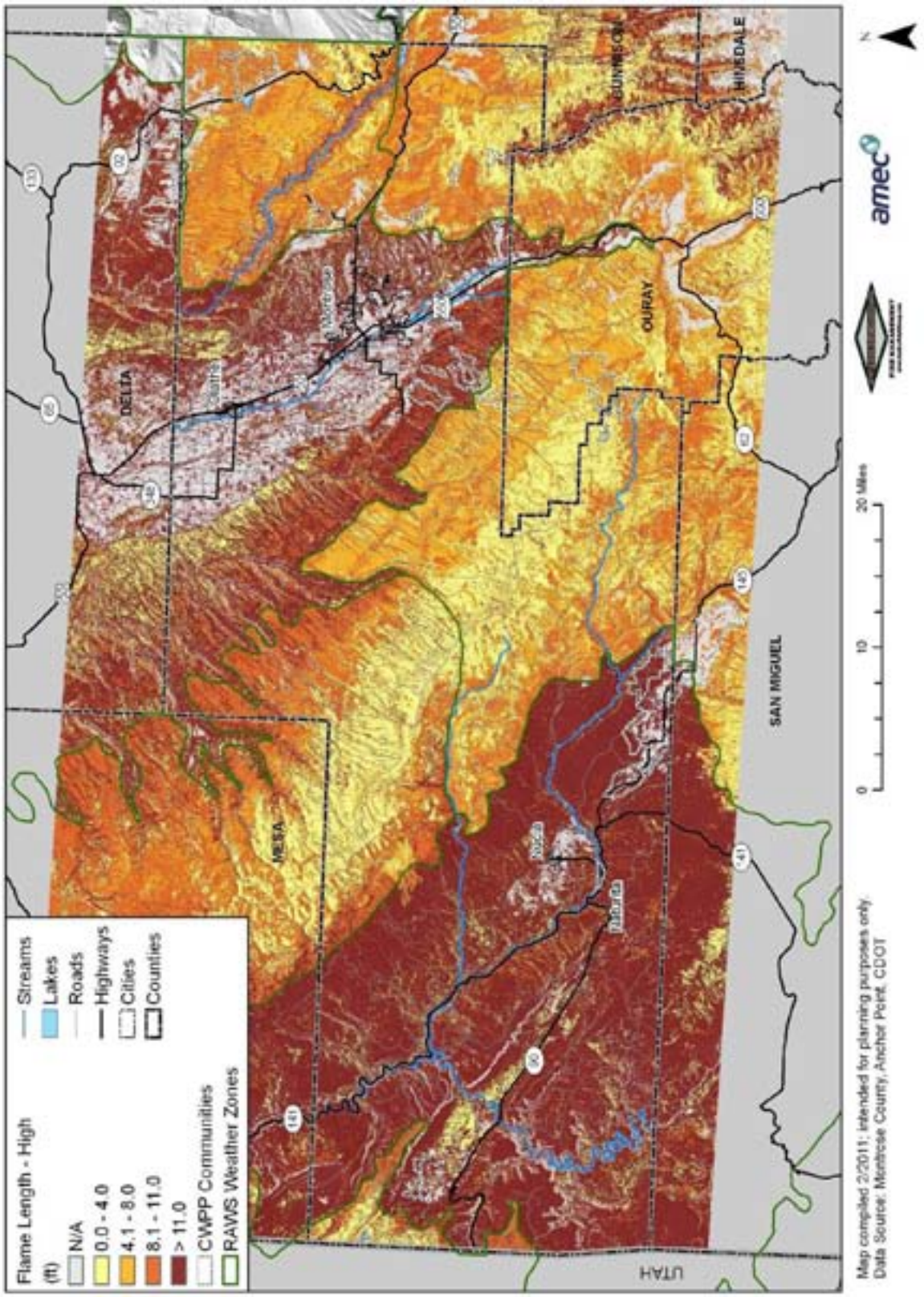


Figure C7. Predicted flame lengths under high weather conditions



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 C8, C9 and C11 may also be found in an 11 x 17 format in Appendix D.

Figure C8. Predicted crown fire activity under high weather conditions

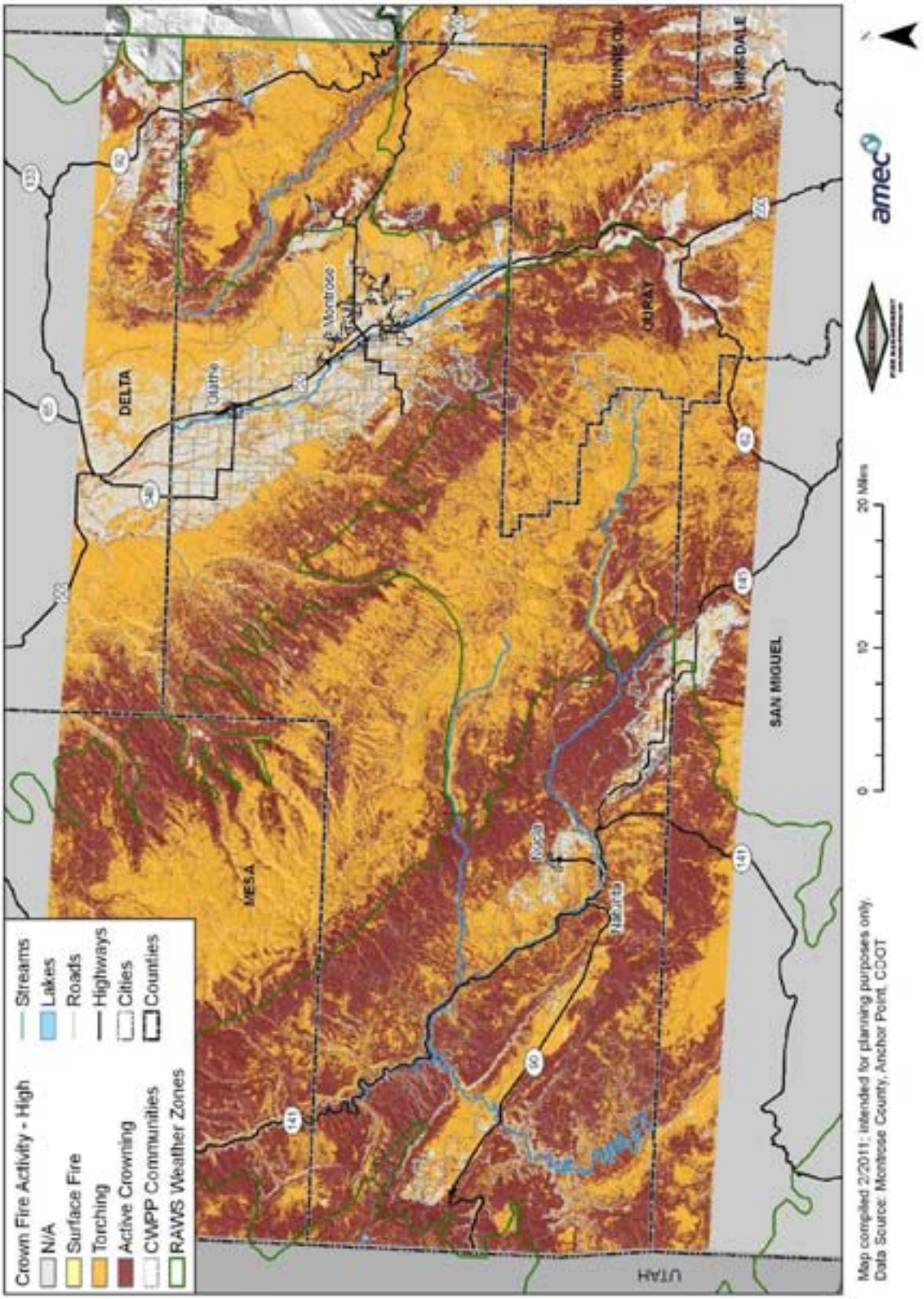


Figure C9. Fireline Intensity Under Moderate Weather Conditions

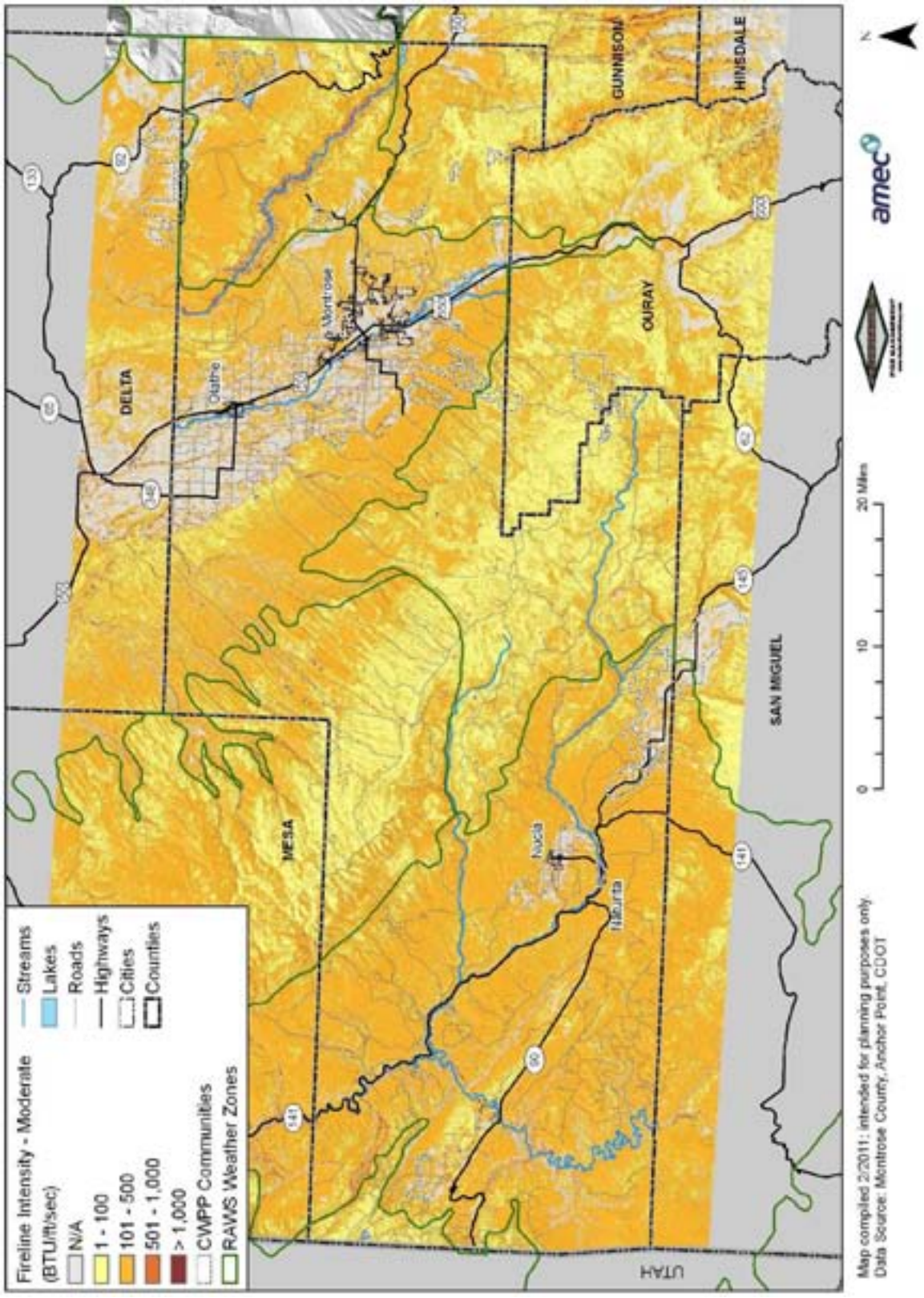
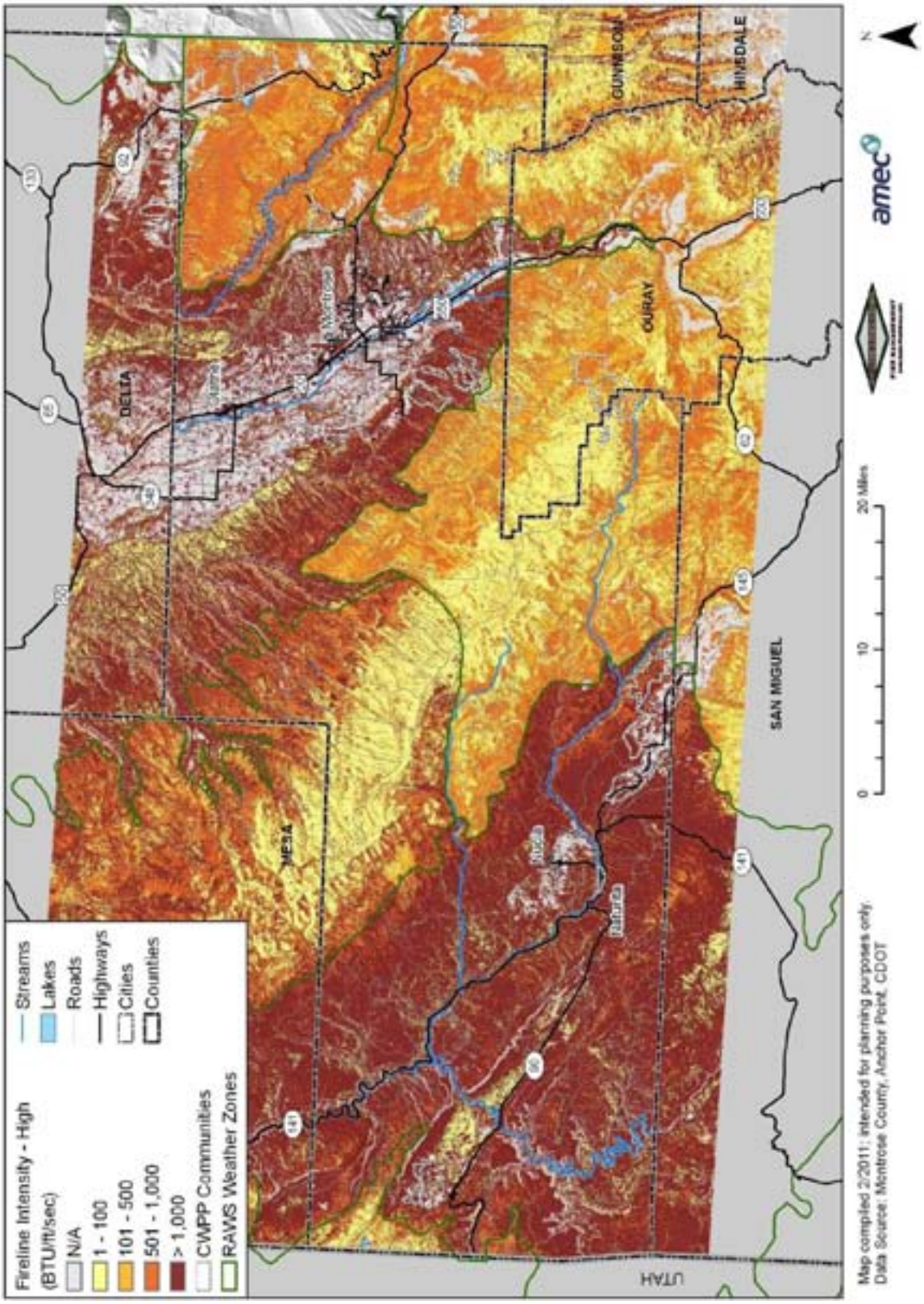


Figure C10. Fireline Intensity Under High Weather Conditions



Additional Fire Behavior Input Maps

Figure C11. Montrose County Slope

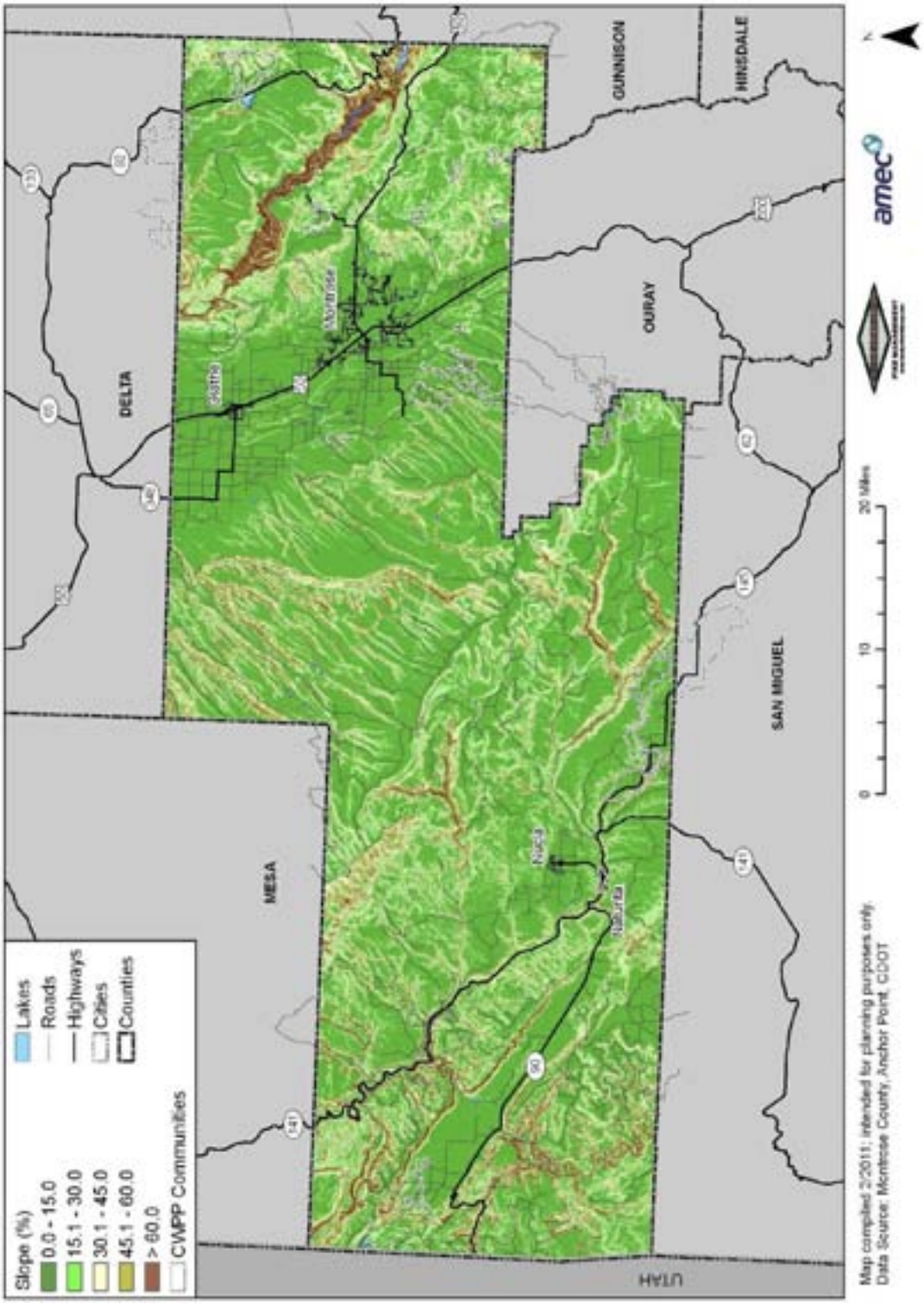


Figure C12. Montrose County Aspect

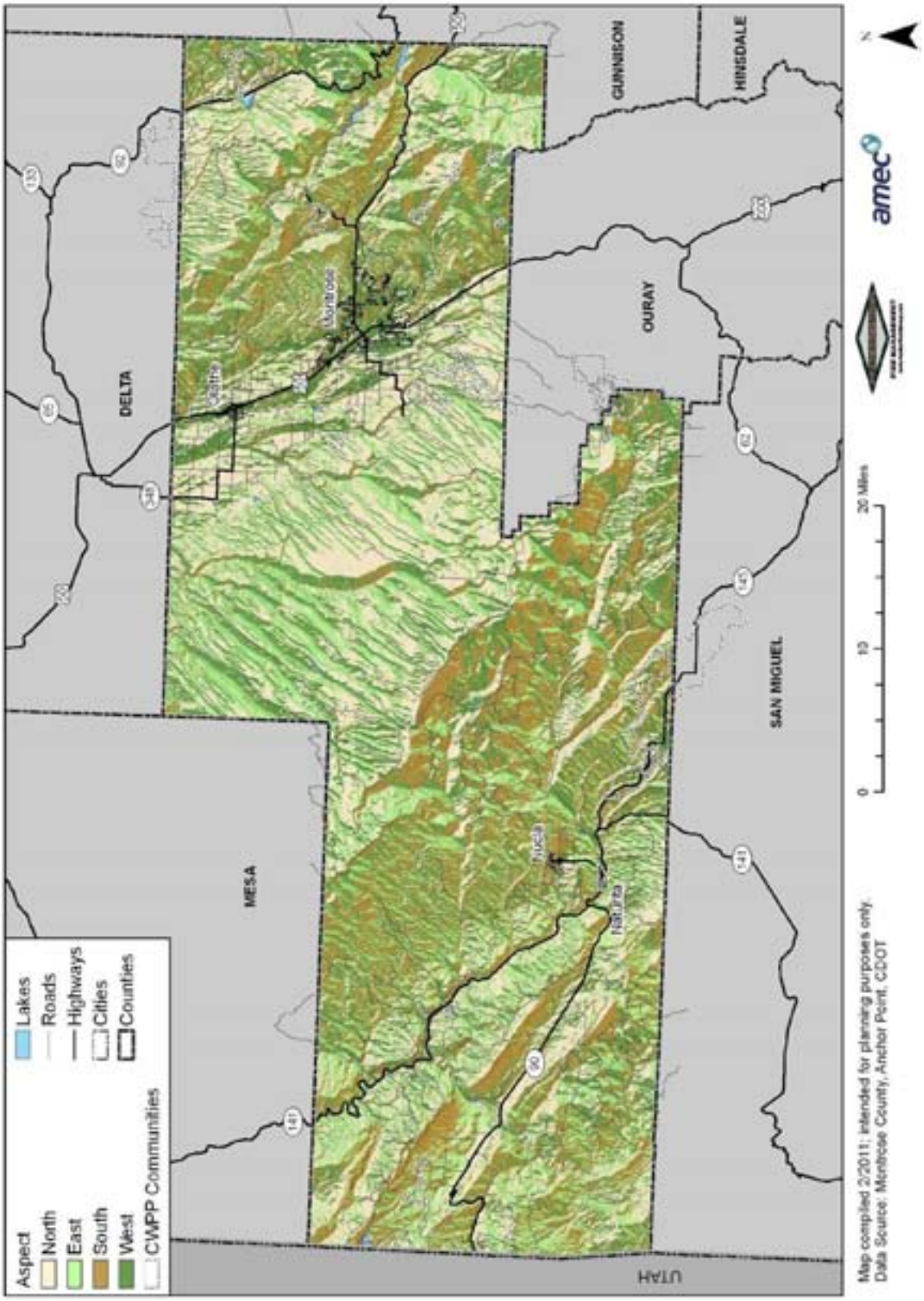


Figure C13. Montrose County Elevation

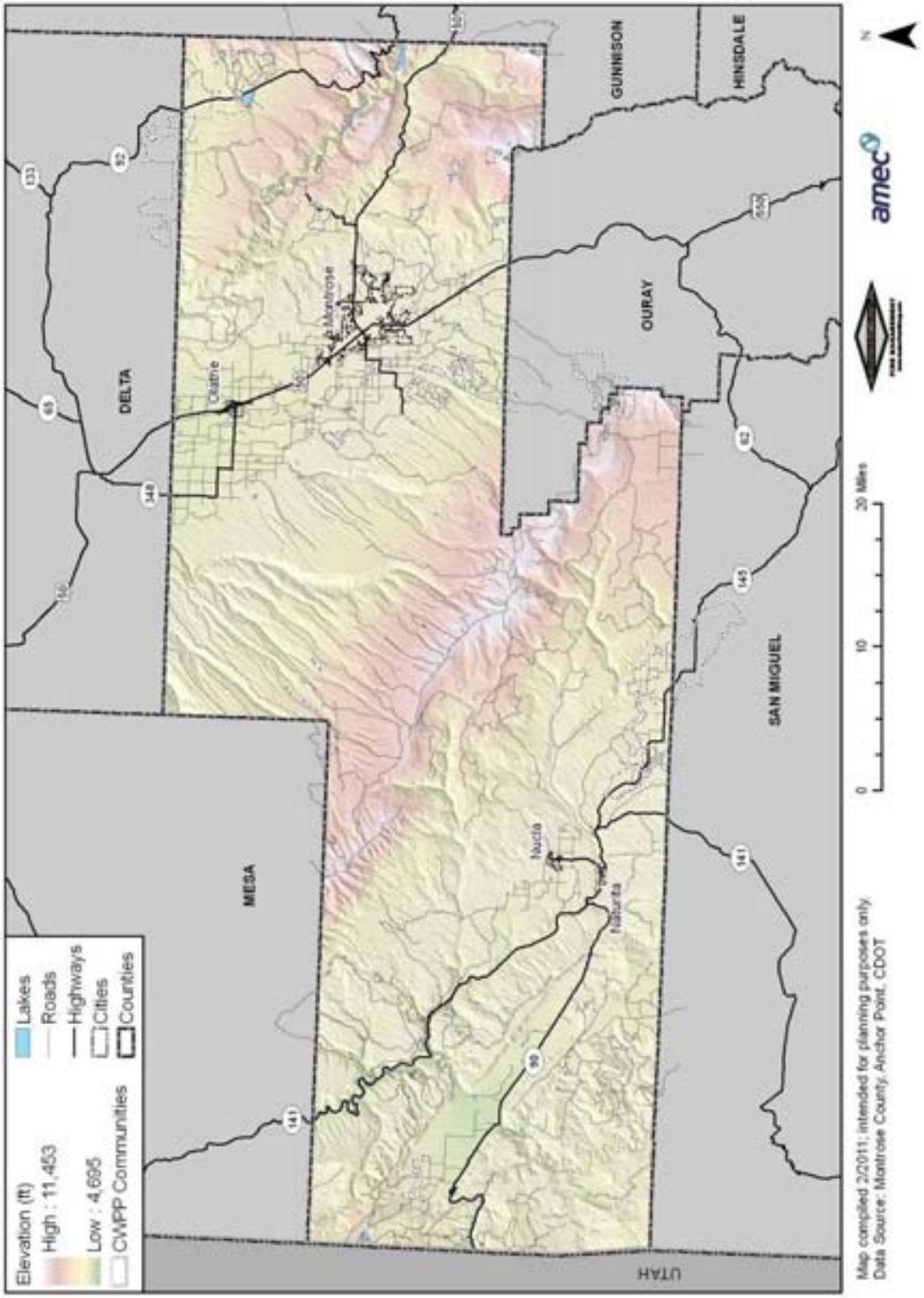


Figure C14. Stand Height

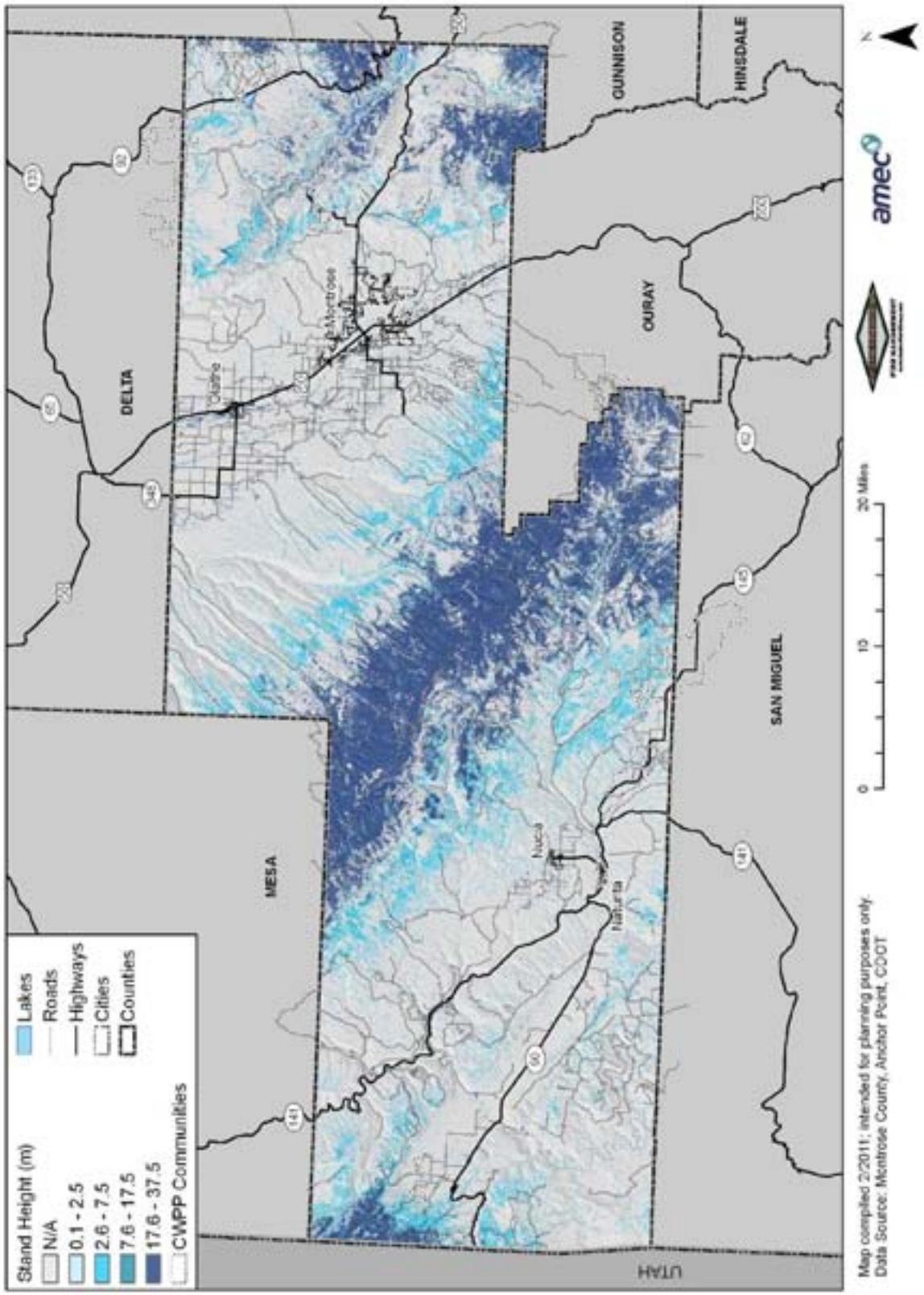


Figure C15. Fuel Model

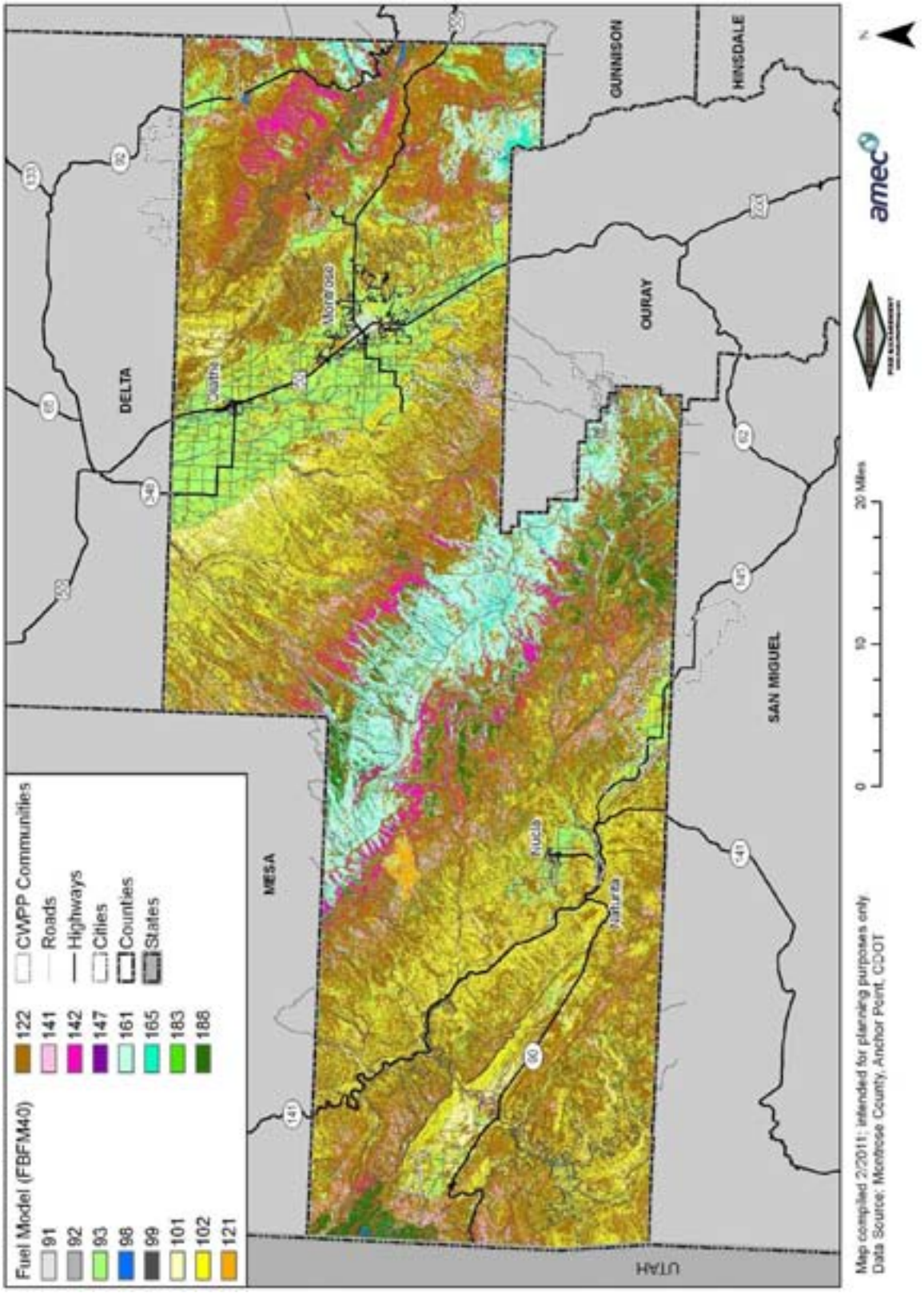


Figure C16. Canopy Base Height

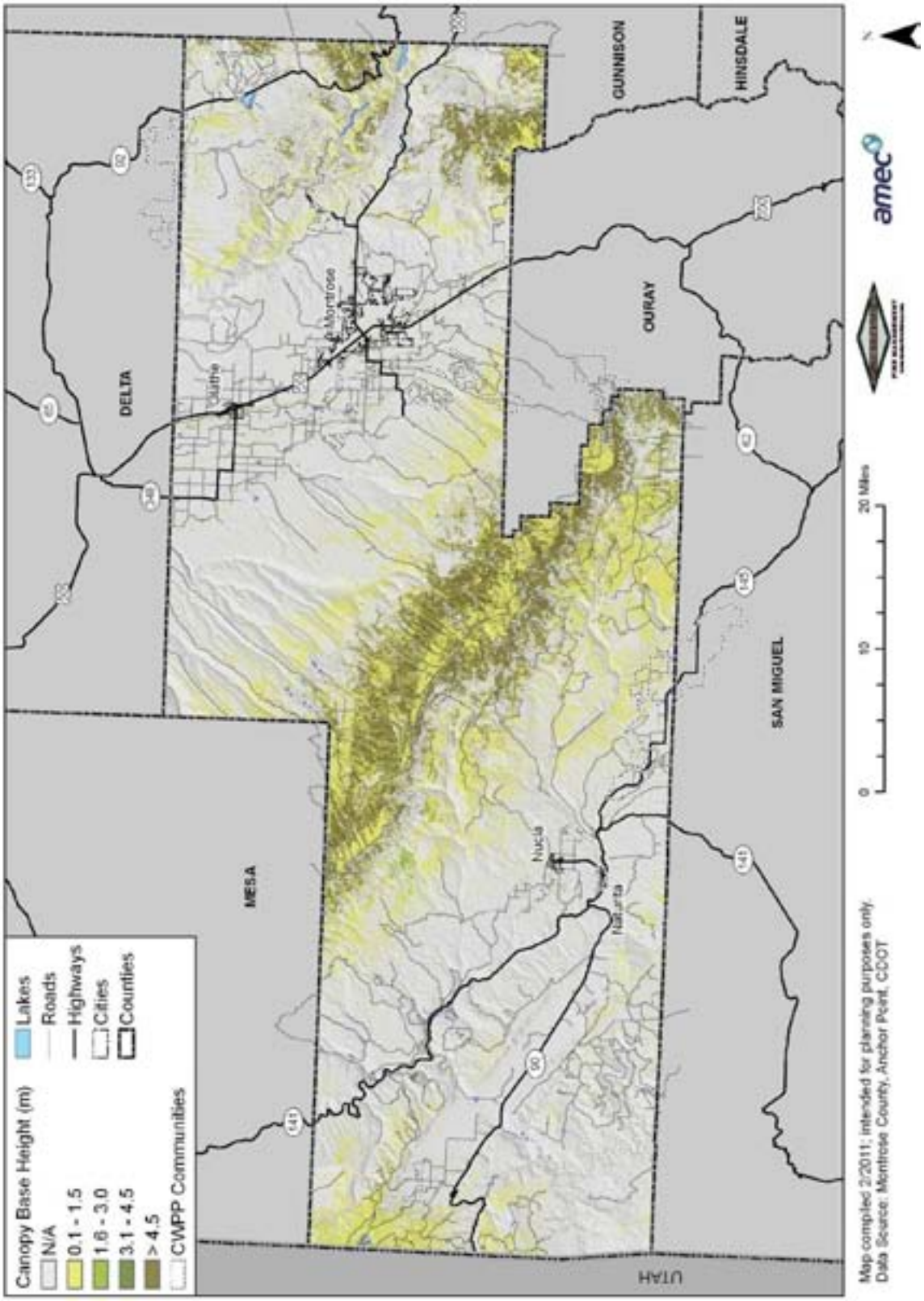


Figure C17. Canopy Bulk Density

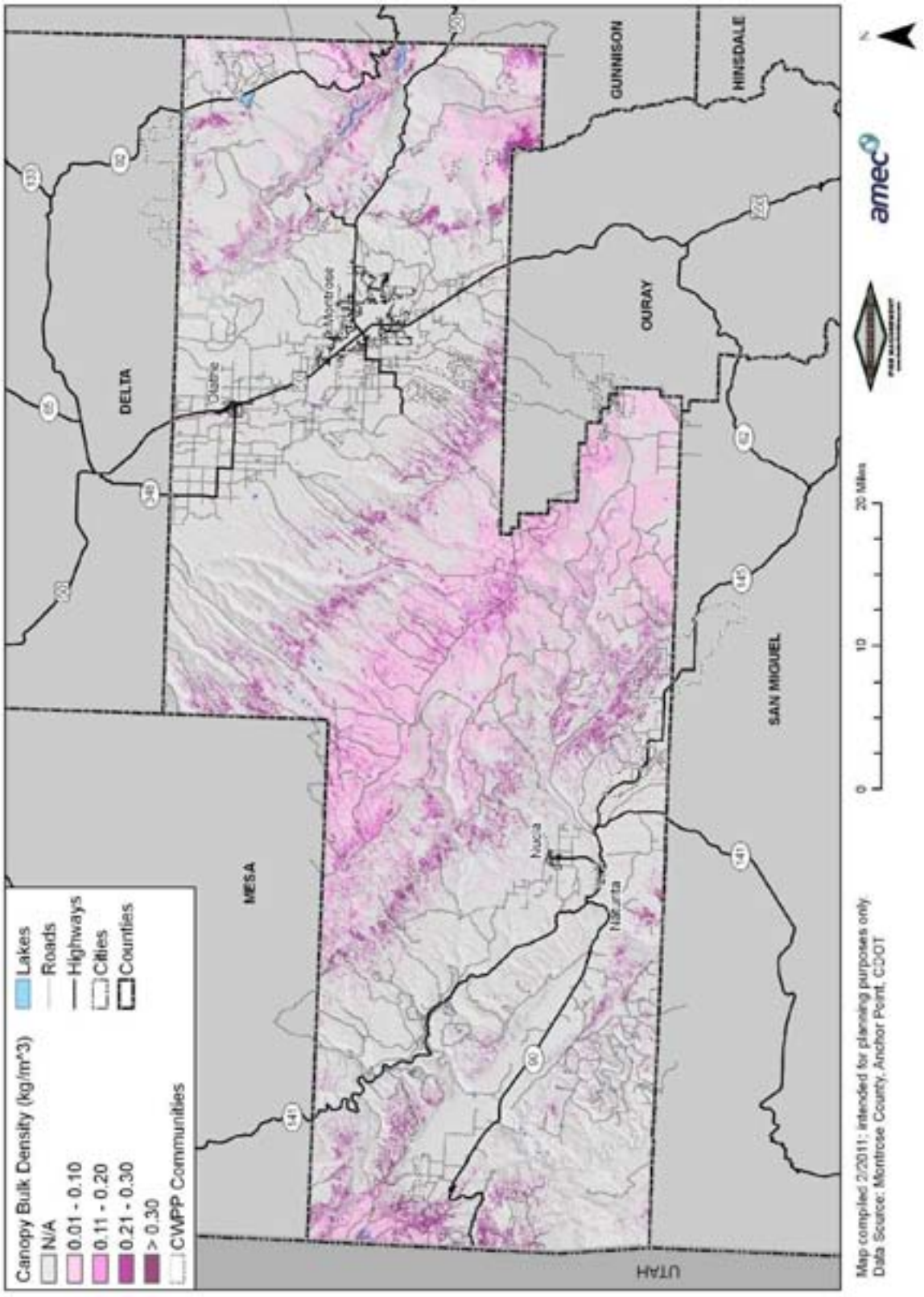
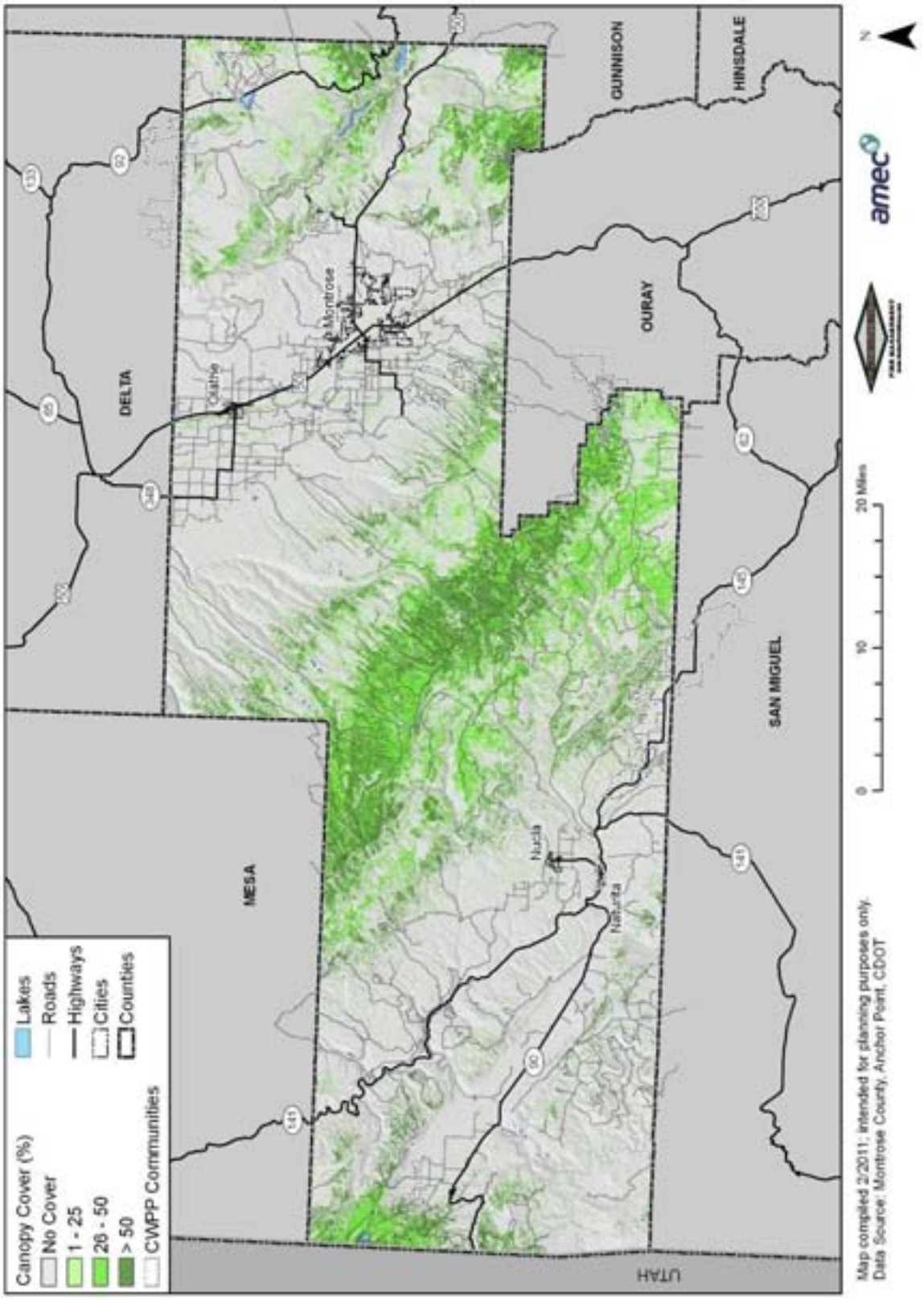


Figure C18. Canopy Cover

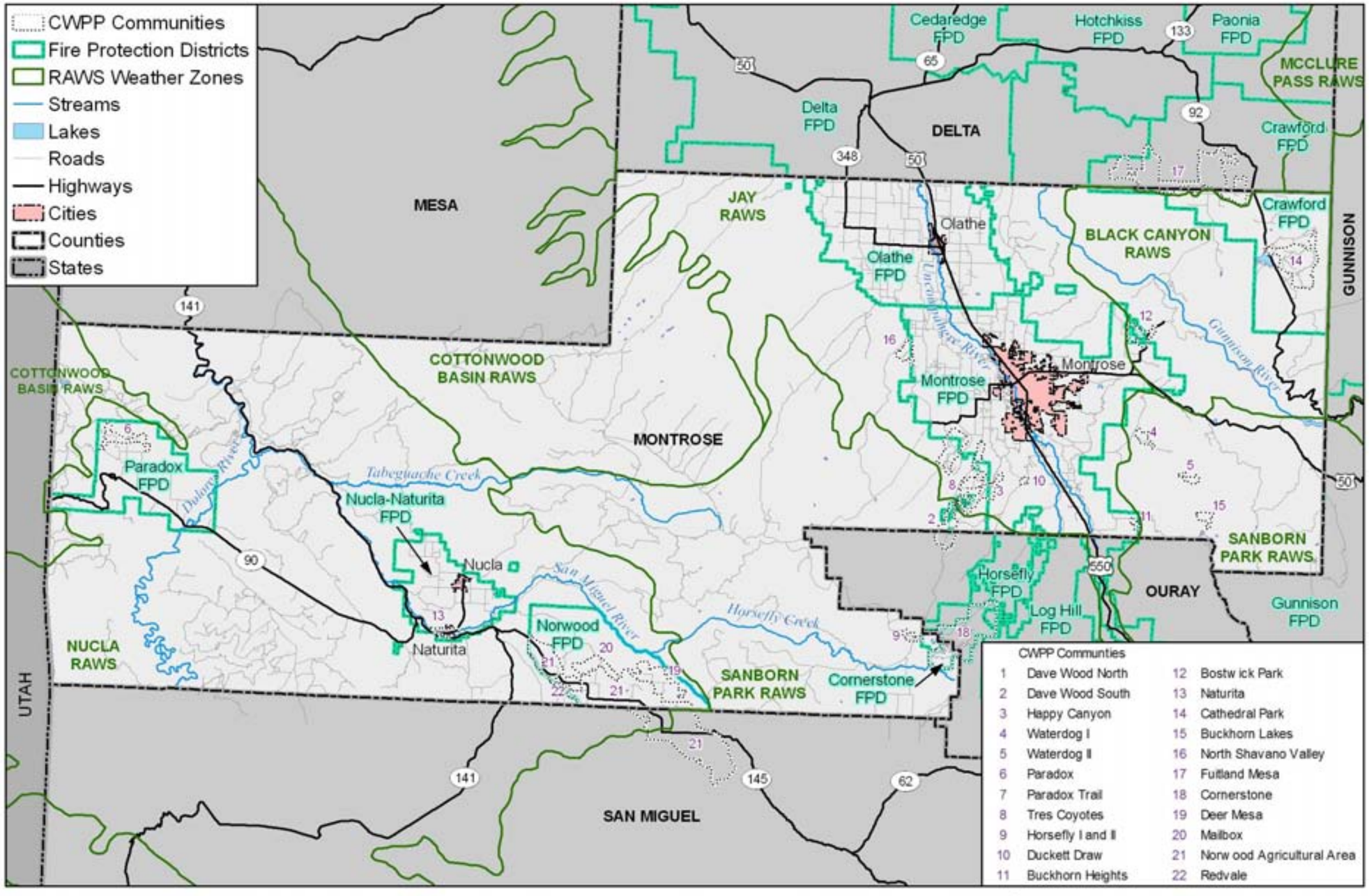


APPENDIX D: 11 X 17 MAPS

The following maps have been enlarged to an 11 x 17 format:

- County CWPP Communities (figure 2)
- Other Agency Treatments (figure 6)
- County CWPP Communities and Hazard Ratings (figure 8)
- County Rural Planning Area (figure 9)
- Areas of Special interest Map (figure 44)
- 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)

Montrose County CWPP Communities



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

0 10 20 Miles

FIRE MANAGEMENT

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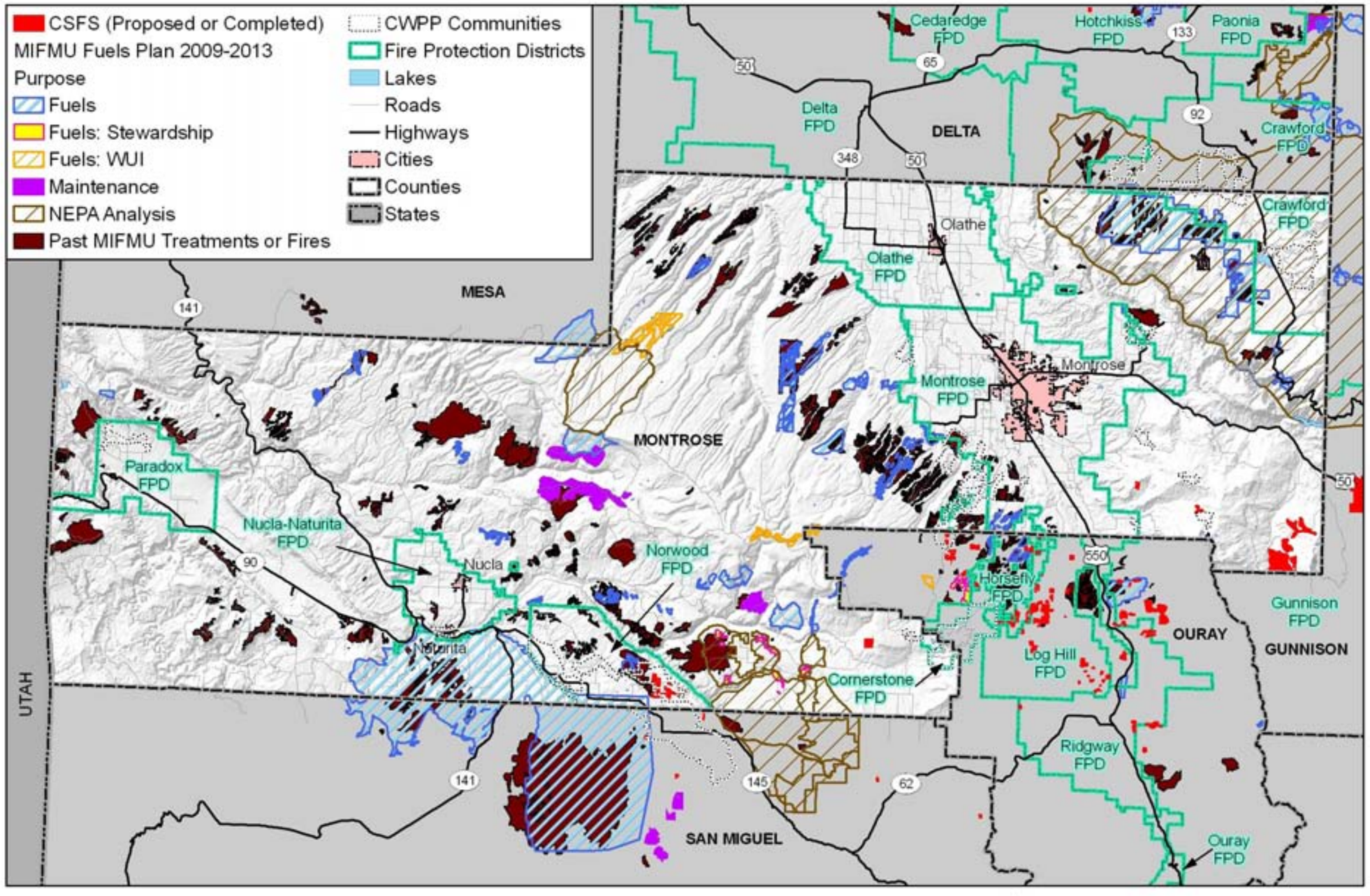
Montrose County Other Agency Treatments



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

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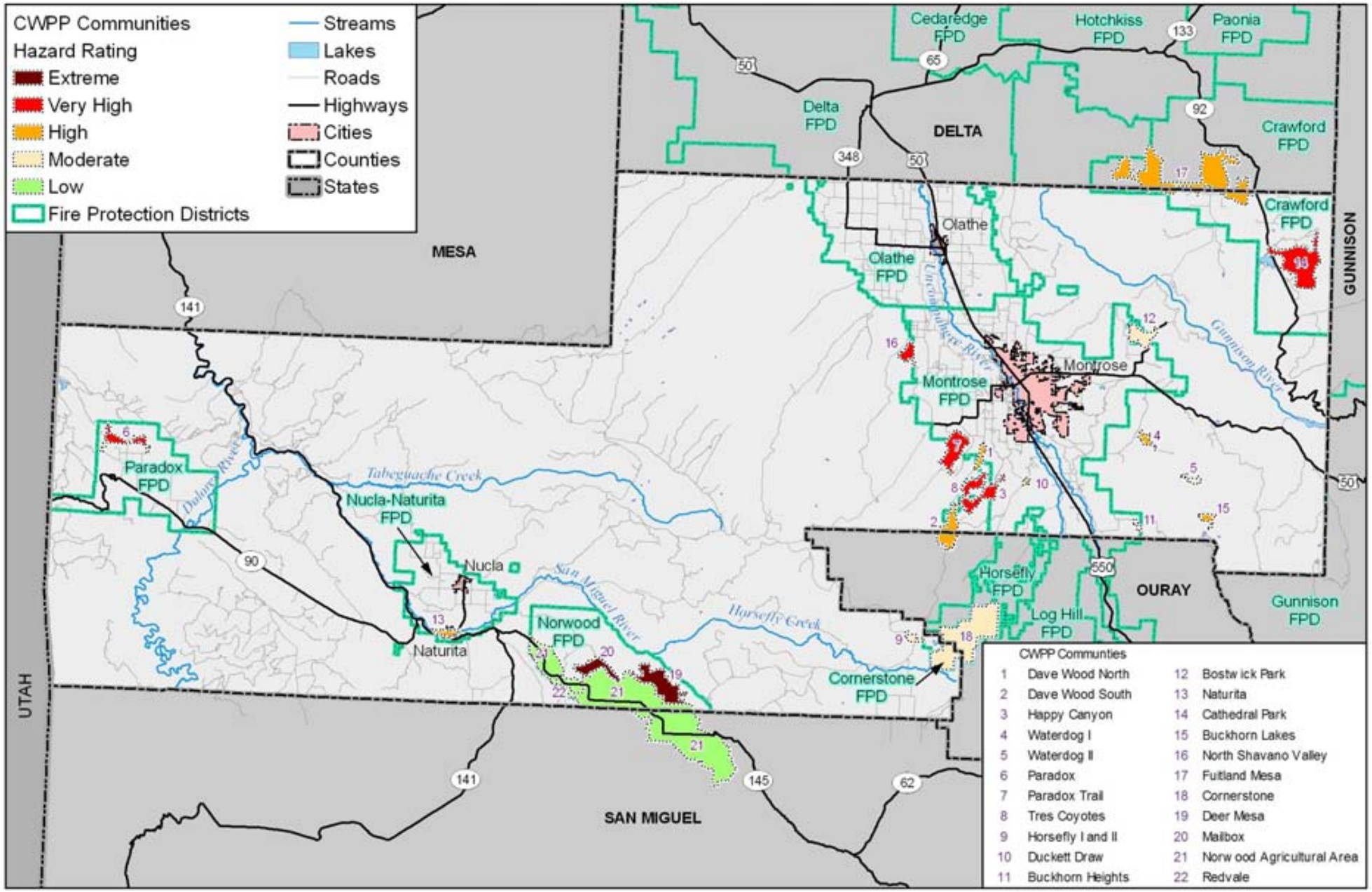
Montrose County CWPP Communities and Hazard Ratings



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

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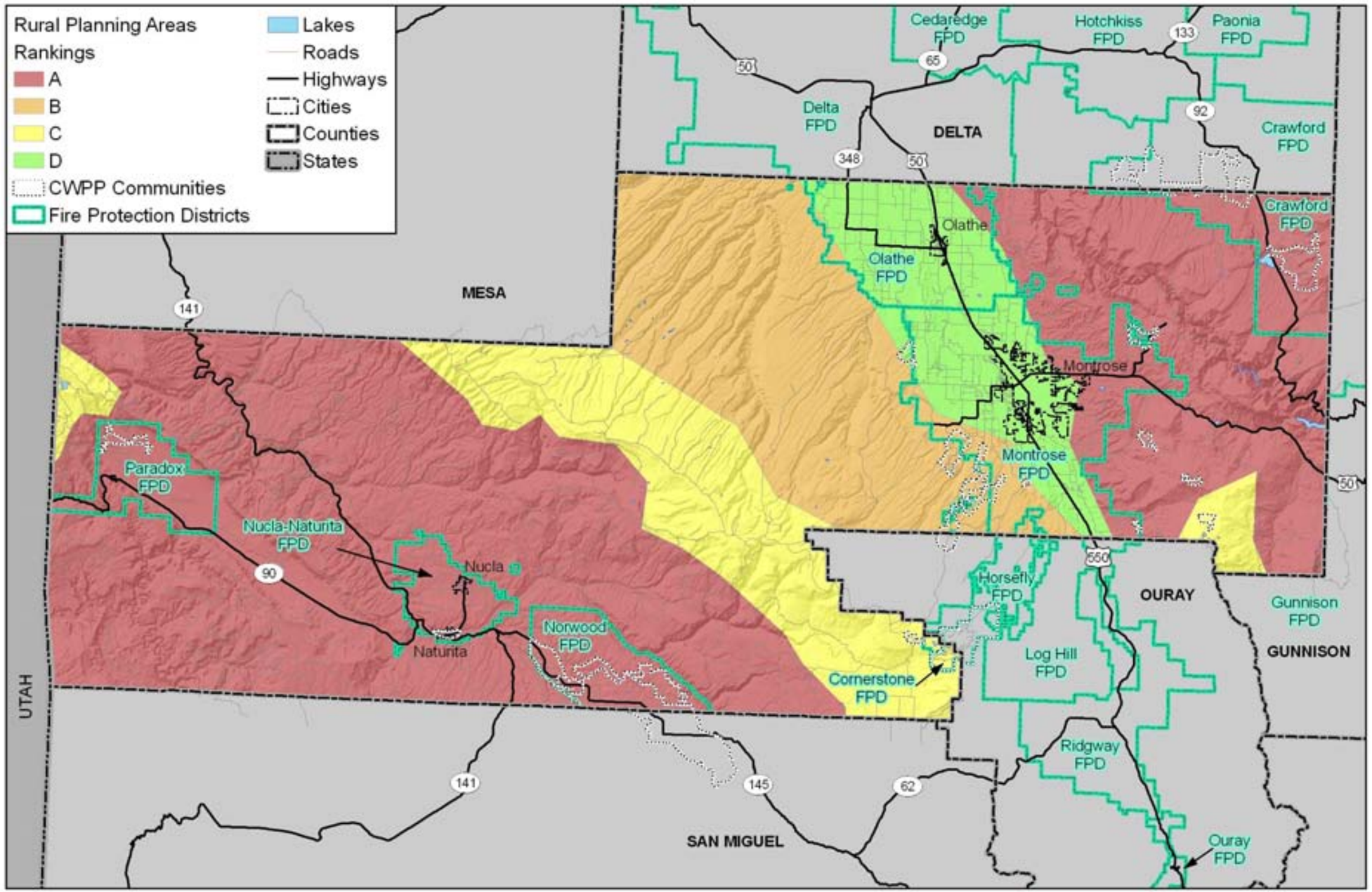
Montrose County Rural Planning Areas



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

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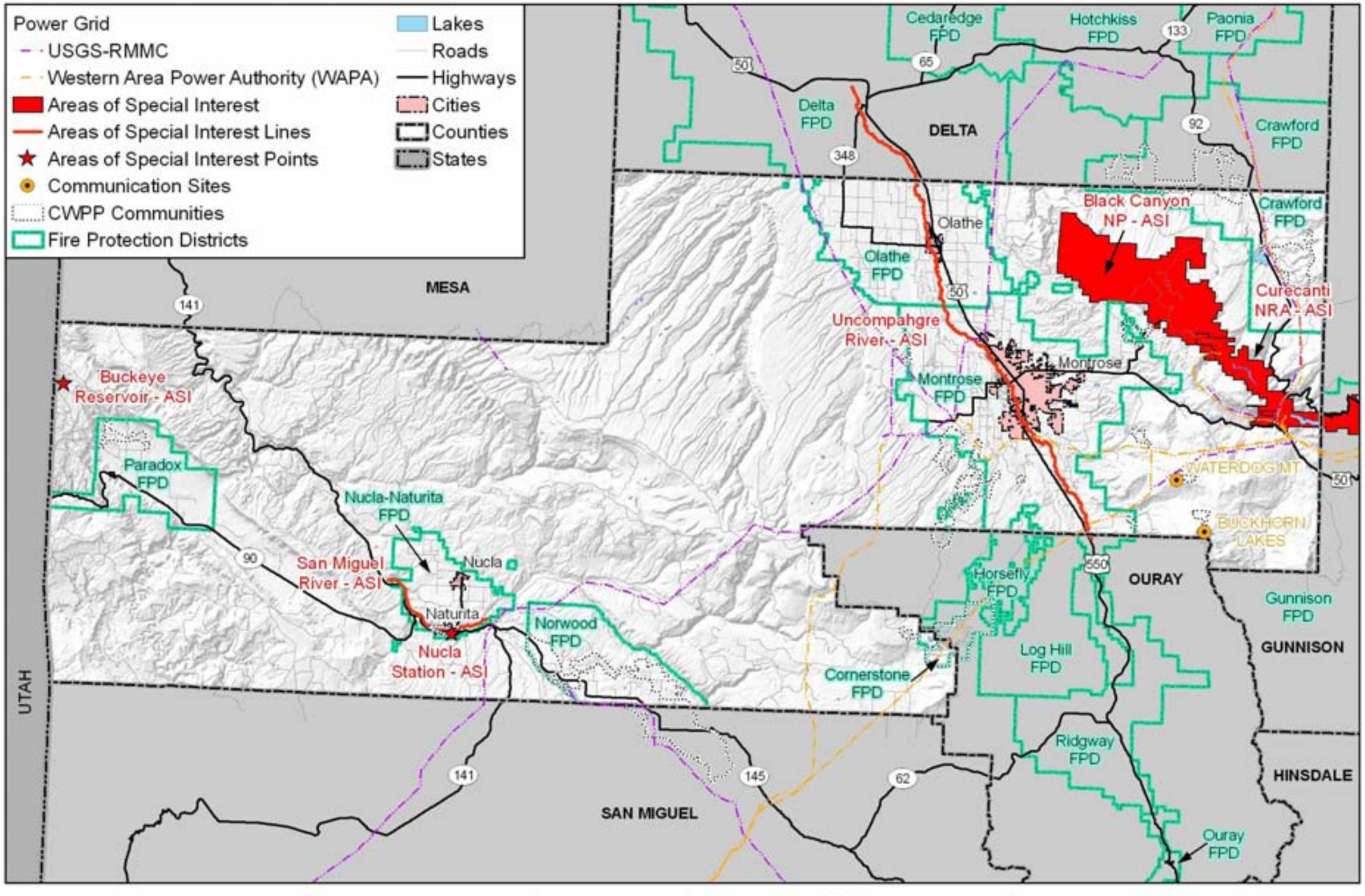
Montrose County Areas of Special Interest



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

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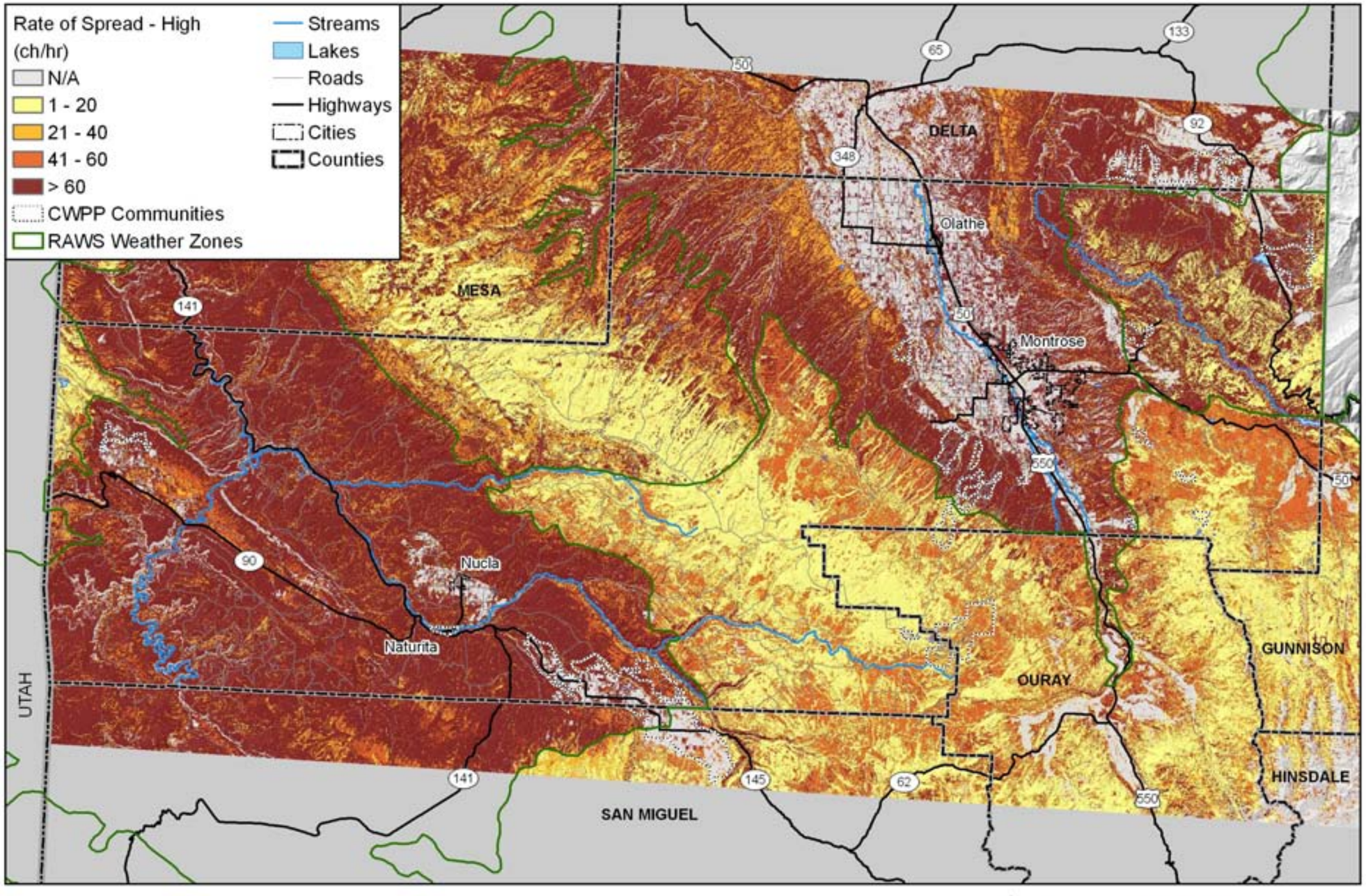
Montrose County Rate of Spread - High Weather Conditions



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

0 10 20 Miles

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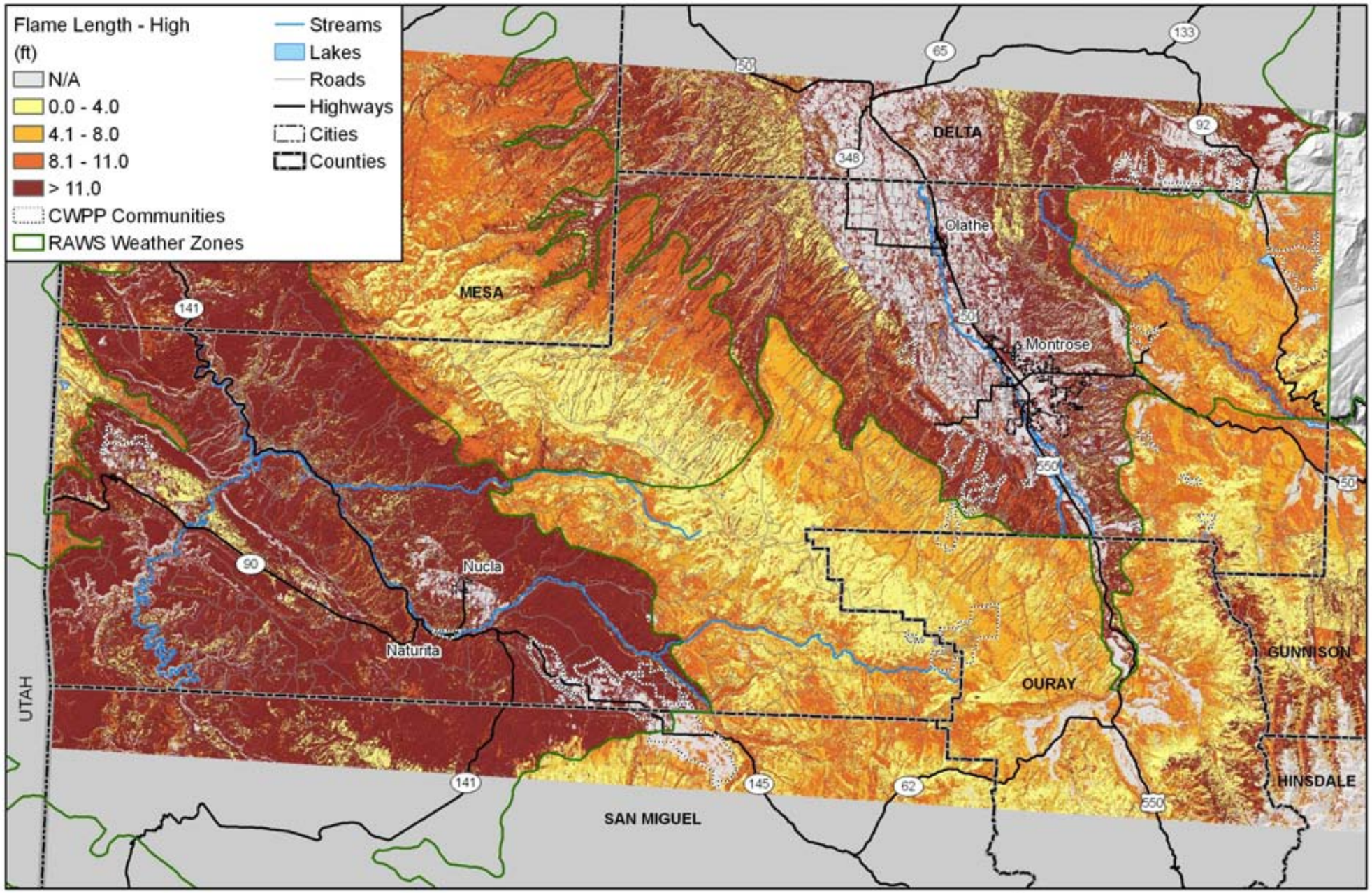
Montrose County Flame Length - High Weather Conditions



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

0 10 20 Miles

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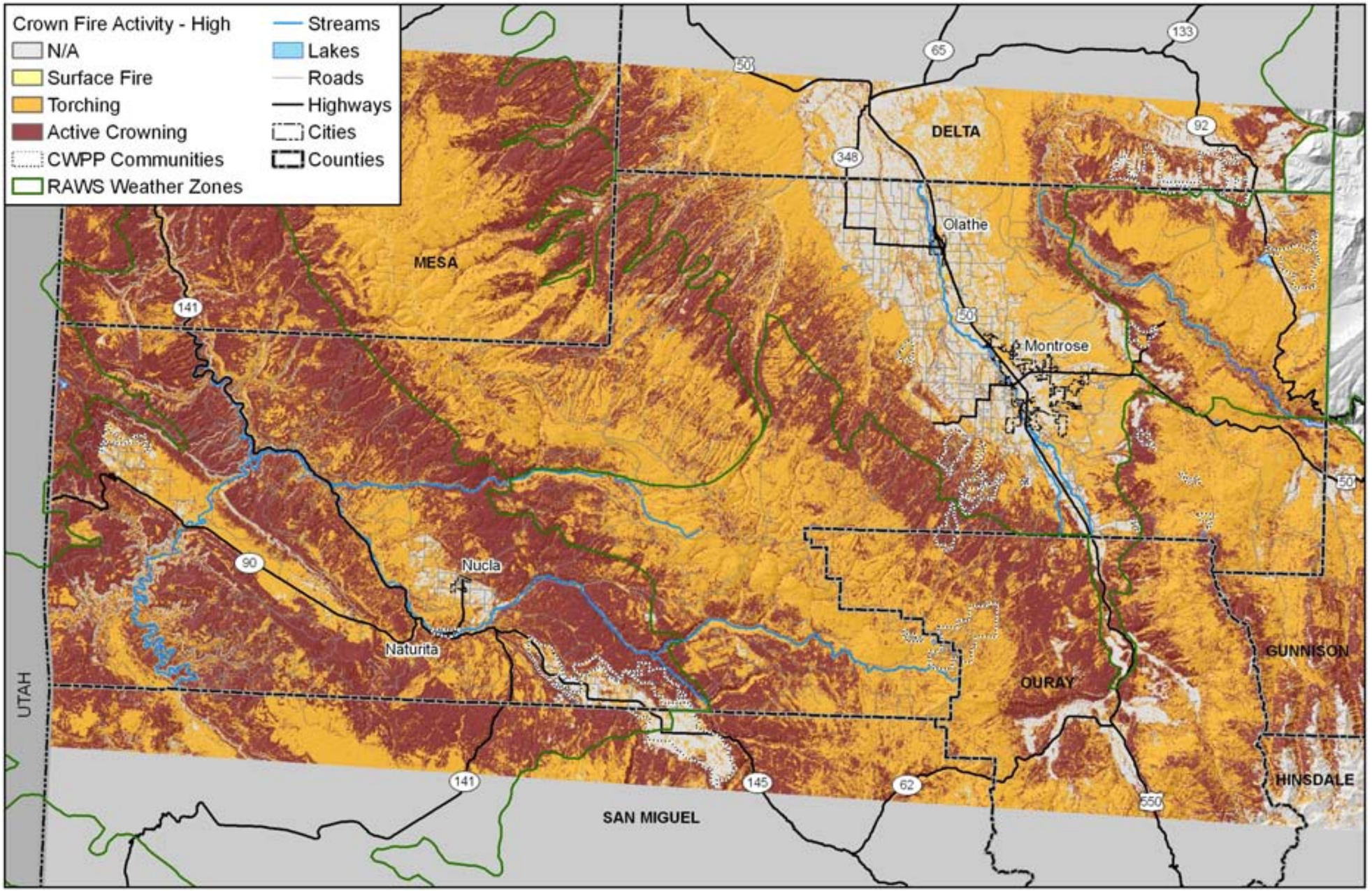
Montrose County Crown Fire - High Weather Conditions



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

0 10 20 Miles

FIRE MANAGEMENT

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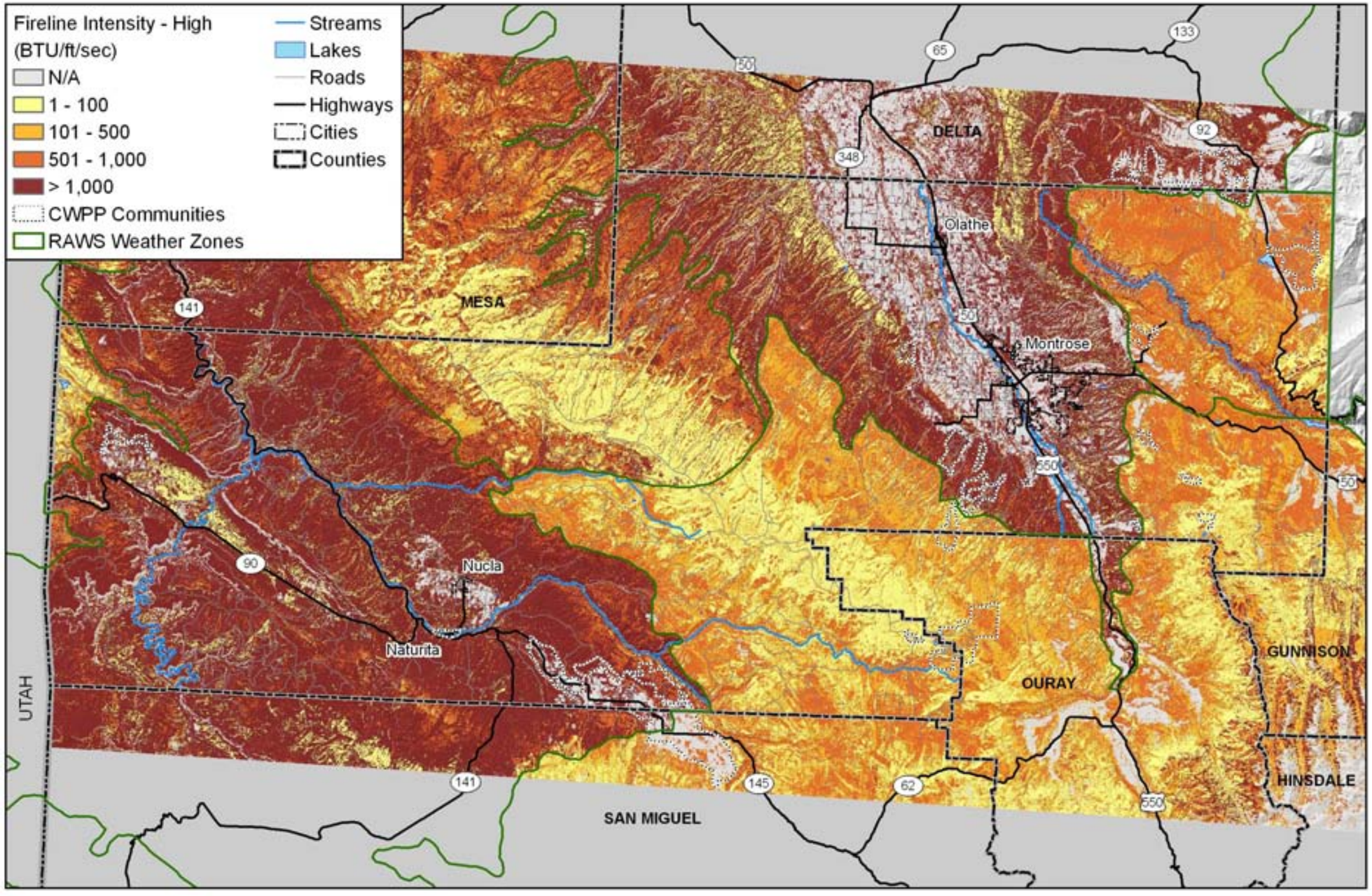
Montrose County Fireline Intensity - High Weather Conditions



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

0 10 20 Miles

FIRE MANAGEMENT

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SIGNATURE PAGE

The following entities participated in the development of this plan and mutually agree on its contents.

County Sheriff	3-12-12 Date
County Emergency Manager	3-12-12 Date
Log Hill Mesa Fire Protection District	2-9-12 Date
Montrose Fire Protection District	2/13/2012 Date
Nucla/Naturita Fire Protection District	3-1-2012 Date
Olathe Fire Protection District	2/13/2012 Date
Paradox Fire Protection District	02/28/2012 Date
Horsefly Volunteer Fire Association	2/15/2012 Date
Norwood Fire Protection District	2-9-12 Date
Colorado State Forest Service District Forester	3-12-12 Date
Montrose Interagency Fire Management Unit	2/15/2012 Date
West Region Wildfire Council	2/9/12 Date
Crawford Fire Protection District	Date
Cornerstone Metropolitan District	2/16/12 Date