



# Community Wildfire Protection Plan

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Prepared By

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And

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In Cooperation With:  
Colorado State Forest Service

## ACCEPTANCE

The Falcon Fire Protection District Community Wildfire Protection Plan (CWPP) was developed in accordance with the guidelines set forth by the Healthy Forests Restoration Act of 2003 and the Colorado State Forest Services' Minimum Standards for CWPP's.

This CWPP is a collaborative effort to guide the District's stewardship management activities, including wildfire protection. The activities recommended in this plan are appropriate to meet District objectives and will benefit the natural resources and reduce the risk from wildland fire. This plan is voluntary, and where possible, the District intends to apply the recommended practices, thus improving community preparedness, and increasing public safety.

The Falcon Fire Protection District Community Wildfire Protection Plan has been reviewed and approved by the FFPD Board of Directors.

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President  
**Falcon Fire Protection District**

\_\_\_\_\_  
Date

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Chair, El Paso County Board of County Commissioners

\_\_\_\_\_  
Date

\_\_\_\_\_  
ATTEST

\_\_\_\_\_  
Larry Long, District Forester  
Colorado State Forest Service

\_\_\_\_\_  
Date

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Fire Chief, Falcon Fire Protection District

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Date

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## Foreword

The experience of the last several fire seasons, sustained drought conditions and ever increasing number of homes constructed in the Wildland-Urban Interface (WUI) make future wildfires in the Falcon Fire Protection District (FFPD) and El Paso County forested areas, a near certainty. All residents and property owners of the District have a responsibility to understand the linkage between forest stewardship, their personal safety, that of their neighbors and our firefighters.

With future fires a certainty, it is vitally important that each individual home and property owner understand and apply principles and guidelines in the Colorado State Forest Service Publication, *Protecting Your Home From Wildfire: Creating Wildfire Defensible Zones* FIRE 2012-1, and other Firewise recommendations found at [www.firewise.org](http://www.firewise.org). However, principles, standards and techniques in various wildfire publications are useless without a key factor- the human will to make a change in the WUI environment.

To make this change, three key principles can be examined: Community, Consensus, and Collaboration, or, the three C's.

### Community:

- ❖ Responsibility- individual and collective.
- ❖ Entire areas mitigated and forests restored to healthy conditions.
- ❖ Overall reduction in unnatural fuel volumes.
- ❖ Risk Management as opposed to an unrealistic expectation of risk elimination.

### Consensus:

- ❖ Standards for fuel reduction intended to protect life, property and natural resources.
- ❖ Adoption of an overall Plan (CWPP) to address/manage wildfire risks.
- ❖ Breaking through deeply held cultural values and beliefs that prevent District residents from becoming more adapted to fire as a natural part of the ecosystem.
- ❖ Definition of a healthy forest, using the best science available, and development of an acceptable "aesthetic" based on this science.
- ❖ Wildfires will happen. It is not a matter of "if", but "when".
- ❖ There are no guarantees with wildfire due to many variables; both human and natural.

### Collaboration:

- ❖ Partnering with organizations that can have an impact on the life, property and natural resources of the District.
- ❖ Working together to take advantage of any outside financial assistance or programs.
- ❖ Empathy with different standards.
- ❖ Getting past "no" and/or willful ignorance.



Final Approved at BOD, 1-20-16

The Three C's are vital to building common interest, understanding and action; and necessary to protect the values that make the District unique.<sup>1</sup>

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<sup>1</sup> "The Three C's", High Forest Ranch CWPP, 2014, Gary Hoffman, Firewise Chairman.

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### **Appendices:**

- A** - Fuel Treatment Priorities and Maps
- B** – Maintenance Schedule for Homeowner Associations
- C** – Firefighter Safety Zone Guidelines
- D** – Firewise and Wildfire Mitigation Web Links
- E** - Glossary

## Introduction

The District was impacted by the 2013 Black Forest Fire. The fire started on June 11<sup>th</sup> and burned into the District that same afternoon, pushed by high winds. Fourteen homes were lost in the District. Numerous properties were impacted by the fire. However, it should be noted sufficient protection resources were in place, late in the day, and the fire front died down as evening fell. It is suspected the outcome would not have been the same if the fire had burned into the District earlier on the first day. The presence of significant ladder fuels, in the form of ponderosa pine regeneration, and continuous unthinned forests would have spelled disaster. The District's residents must still reduce their ladder fuels and increase tree crown separation to survive a high intensity wildfire.<sup>2</sup>

The District, in an effort to be proactive, has begun to establish Firewise Communities within high risk neighborhoods. All District residents can also take advantage of the Black Forest Slash Mulch Site.

Objectives of the plan are:

- ❖ To protect life, property and natural resources of the District.
- ❖ To protect lifestyle and shared community values.
- ❖ To restore and protect the forests of the District.
- ❖ To protect homeowner access to affordable insurance.
- ❖ To reduce wildfire risks in the District.
- ❖ To develop partnerships with those that can have an influence on the wildfire risk to District residents and their forests.
- ❖ To provide for the safety of firefighters and allow them to be more effective in protecting us.
- ❖ Collaborate with adjoining fire departments, Black Forest Together and El Paso County to mitigate wildfire hazards on a landscape level.

## The CWPP Process

The minimum requirements for a CWPP as described in the Healthy Forest Restoration Act of 2003 are:

1. **Collaboration:** A CWPP must be collaboratively developed by local and state government representatives, in consultation with federal agencies and other interested parties.

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<sup>2</sup> Black Forest Fire Assessment Report. Pikes Peak Wildfire Prevention Partners, 2014, [www.ppwpp.org](http://www.ppwpp.org)

2. **Prioritized Fuel Reduction:** A CWPP must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will protect one or more at-risk communities and essential infrastructure.
3. **Treatment of Structural Ignitability:** A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan.<sup>3</sup>

The CWPP process will cover:

- ❖ **Assessment:**
  - Carry out a general community assessment and an analysis of community fire mitigation capacity;
- ❖ **Education and Preparedness:**
  - Develop community education and preparedness initiatives about wildfire behavior and mitigation;
- ❖ **Mitigation planning**
  - Engage in community wildfire mitigation planning;
- ❖ **Implementation**
  - Implement risk reduction and community protection activities;
- ❖ **Monitoring and Sustainability**
  - And commit to project implementation monitoring and building sustainable community capacity.

It is hoped that communities will add their own wildfire assessments to this document by:

- ❖ Completing a community wildfire assessment in cooperation with FFPD, following Firewise Communities USA criteria (or similar model).
- ❖ Becoming a Firewise Community USA (FWC). Note: FFPD and CSFS approval is required to become an FWC.
- ❖ Upon recognition, the community wildfire assessment shall become part of this document, along with its list of priorities, so long as the community maintains its active FWC status.

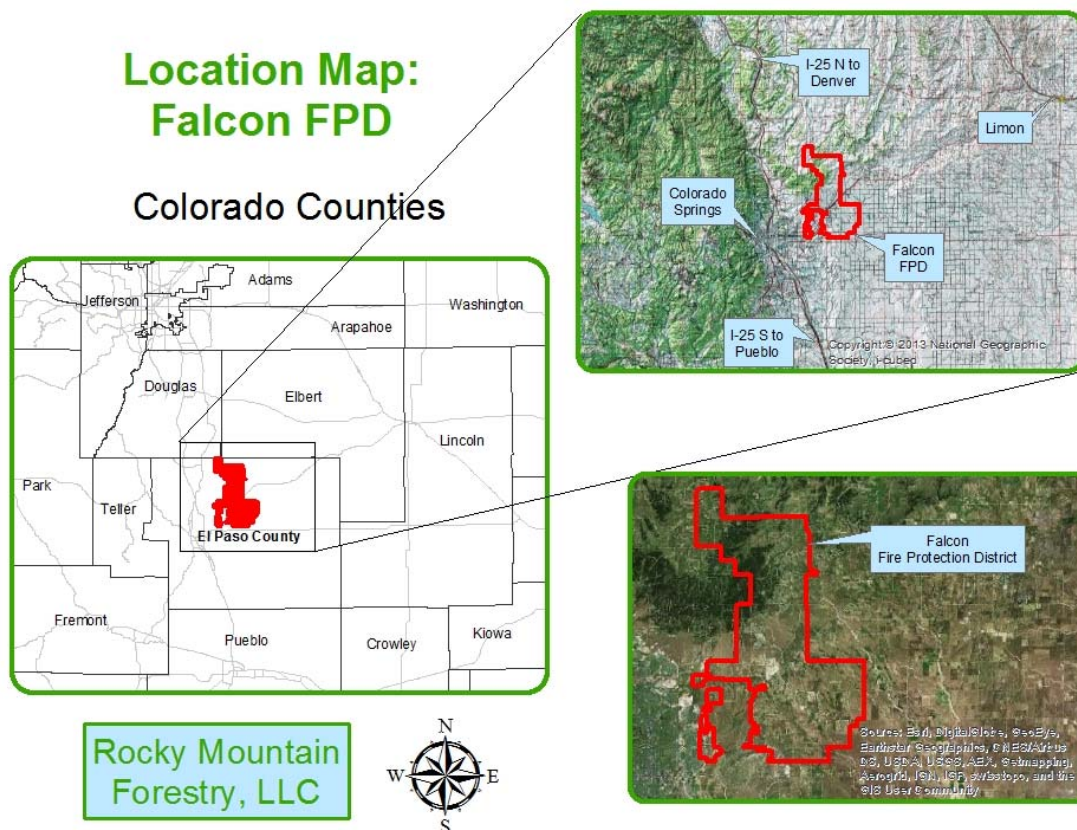
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<sup>3</sup> Preparing a Community Wildfire Protection Plan, National Association of State Foresters, et al, March 2004.

## COMMUNITY IDENTIFICATION AND DESCRIPTION

### Location and General Description

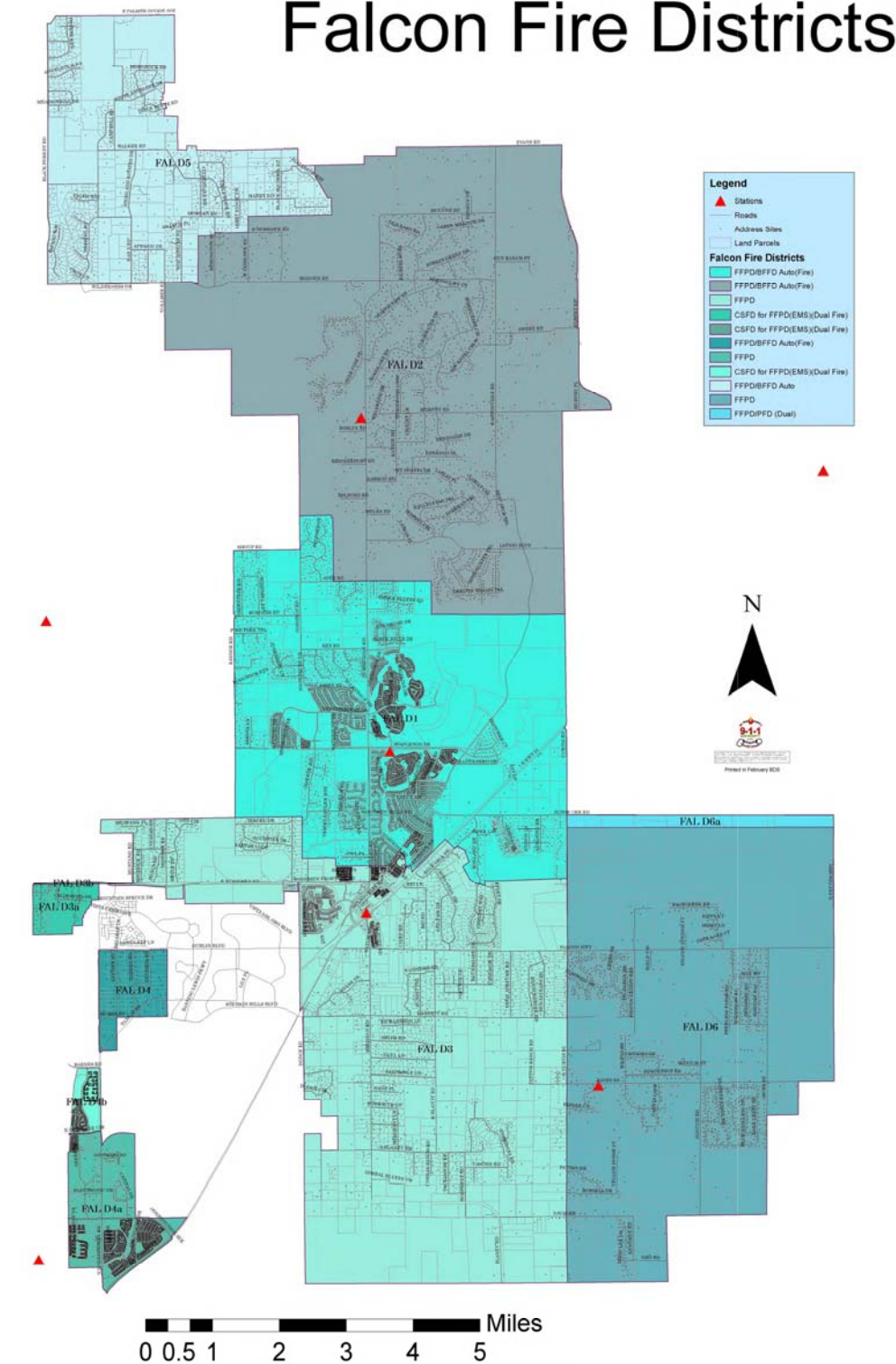
## Community Wildfire Protection Plan



The District is located in the north central portion of unincorporated El Paso County, Colorado. The southwest boundary of the District abuts the city limits of Colorado Springs.

The District's main headquarters is located at 7030 Old Meridian Road, Peyton, Colorado, in **Township 13 South; Range 65 W of the 6<sup>th</sup> Prime Meridian**, and the latitude and longitude at the center of the community is **38° 56' 01' N, 104° 36' 33" W**.

# Falcon Fire Districts



Falcon Fire District Map

The District is comprised of mostly private lands. No federal lands are located in the District. Section 36, (Township 12 S, 65W), located at the intersection of Stapleton and Meridian, is a state owned property, with prairie fuels. Primary transportation routes are US Hwy 24, Woodman Road, Meridian Road, and Hodgen Road. With the exception of Hwy 24, all roads are operated and maintained by El Paso County.

The following are excerpts from the District's web site:

## **District Demographics**

The Falcon Fire Protection District proudly serves more than 32,000 citizens. With borders extending from Peyton Highway on the east to County Line Road on the north to one-half mile west of Marksheffel Road on the west and one mile north of Colorado Highway 94 on the south, our 113-square-mile fire district protects more than 15,500 structures with a 2014 market value of \$3.1 billion. Seventy-five percent of the structures within the District are residential, 2 percent are commercial buildings, and the remainder are non-commercial or non-residential outbuildings.

## **COMMUNITY ASSESSMENT**

### **Community Values at Risk**

The number one asset in the northern third of the District is the forest. This asset provides two values. The first is the aesthetic value. The second value, property value, is directly related to lot costs and home resale values for forested properties. Other less tangible values include wildlife habitat, view corridors, and privacy.

### **Wildland Urban Interface Boundary**

The wildland urban interface (WUI) boundary is defined as the area where a wildfire would be a threat to the community. The boundary, shown as a red outlined area on the map below, was set at the District boundaries. It should be noted that embers generated outside of the community can also impact residents.<sup>4</sup>

Ninety-eight percent of wildfires are typically contained or controlled within the first or second burning period.<sup>5</sup> The Black Forest Fire fits into the remaining two percent of fires that exceeded the suppression capacity of fire service control due to extreme weather and fuel conditions. Most of the homes and structures were lost during this

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<sup>4</sup> Framework for Addressing the National Wildland Urban Interface Fire Problem – Determining Fire and Ember Exposure Zones using a WUI Hazard Scale, NIST Technical Note 1748, January 2013, A. Maranghides, W. Mell <http://dx.doi.org/10.6028/NIST.TN.1748>

<sup>5</sup> *Assessing Wildfire Hazards in the Home Ignition Zone*, NFPA, 2010, Publication FWC93710PKD

“convergence of conditions” of fuel, weather and topography within the first 24 hours of the fire.

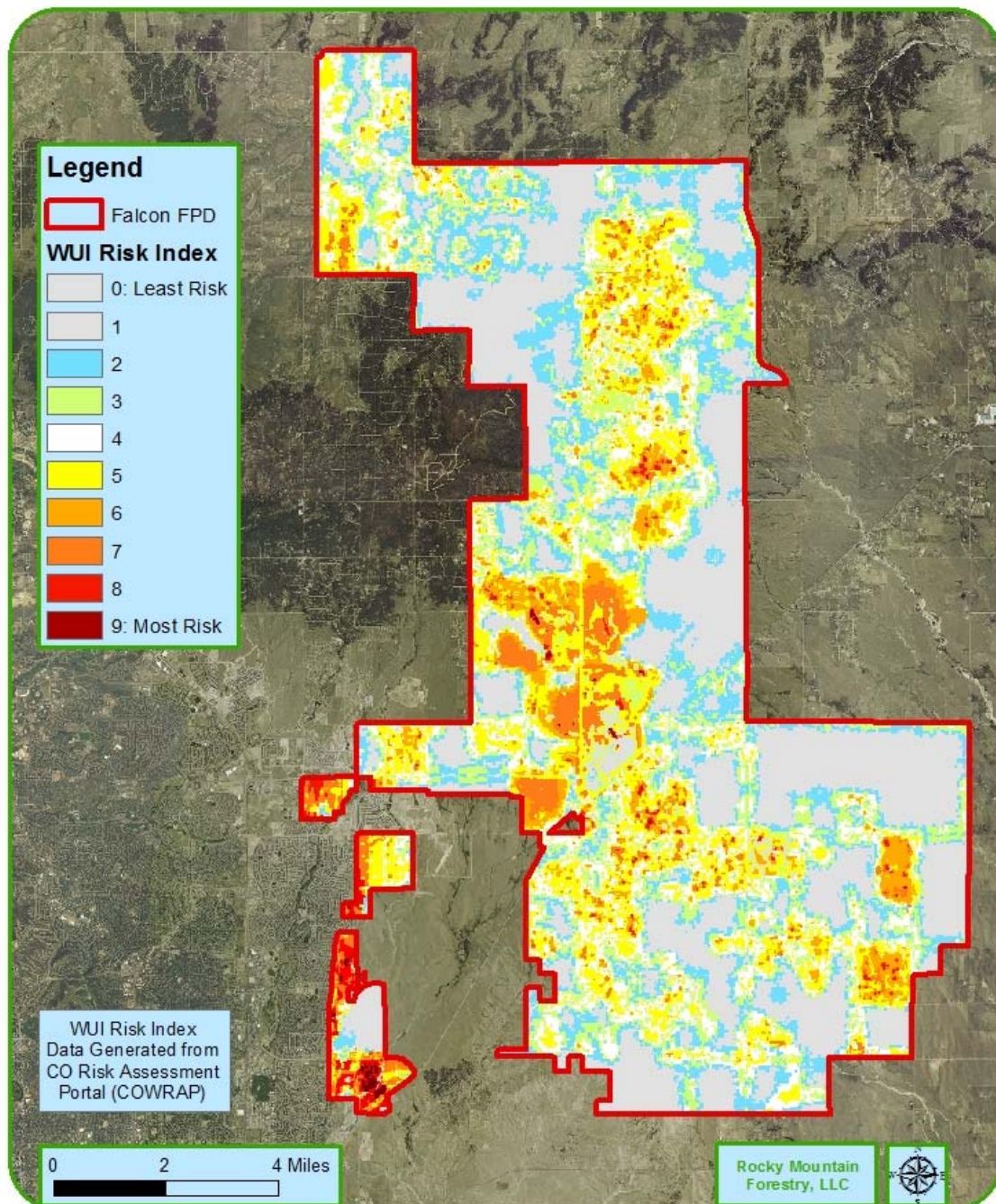
Other observations of the fuels in the District are:

- Large, unthinned, decadent forests will exacerbate fire behavior.
- Limited fuel treatments implemented by homeowners can be easily overwhelmed due to untreated fuels on surrounding properties.
- Unmitigated fuels in El Paso County and Colorado DOT road right-of-ways can threaten civilian evacuation, and firefighter access and safety.
- Aerial resources may be of limited value for reducing rate of fire spread due to extreme fire behavior and high winds.
- Density of the tree canopy provides challenges for the effective placement of retardant by some of the delivery systems in use.



# **Community Wildfire Protection Plan**

## **WUI Risk Index: Falcon Fire Protection District**



**Fire District Boundary and WUI Boundary**

## **Wildfire Risk**

Vegetation, in the northern portion of the District, is dominated by a second-growth ponderosa pine forest with a high percentage of closed crowns, and dense pine understory. Fuel models for the Black Forest timber are:

- FBO Fuel Models **1** and **9**<sup>6</sup>
- NFDRS Models **U** and **L**<sup>7</sup>

The majority of the District is covered by prairie fuels intermixed with low shrub species. Fuel models for these areas are:

- FBO Fuel Models **1** and **2**
- NFDRS Models **A**, **C**, **L** and **T**

Riparian zones along waterways and seasonal storm channels are made up of shrub species such as willows and cottonwoods, intermixed with grass fuels. These areas are of particular concern where they abut high density subdivisions; especially under drought conditions. Fuel models for these areas are:

- FBO Model **5**
- NFDRS Models **F** and **T**

The wildfire intensity map represents the Colorado Wildfire Risk Assessment Portal (CO-WRAP) analysis of the potential wildfire intensity in and around the District. Wildfire risk is the chance that a fire might start or spread into the area. Most of the community is at a “Moderate” to “High” risk for wildfire occurrence and intensity.

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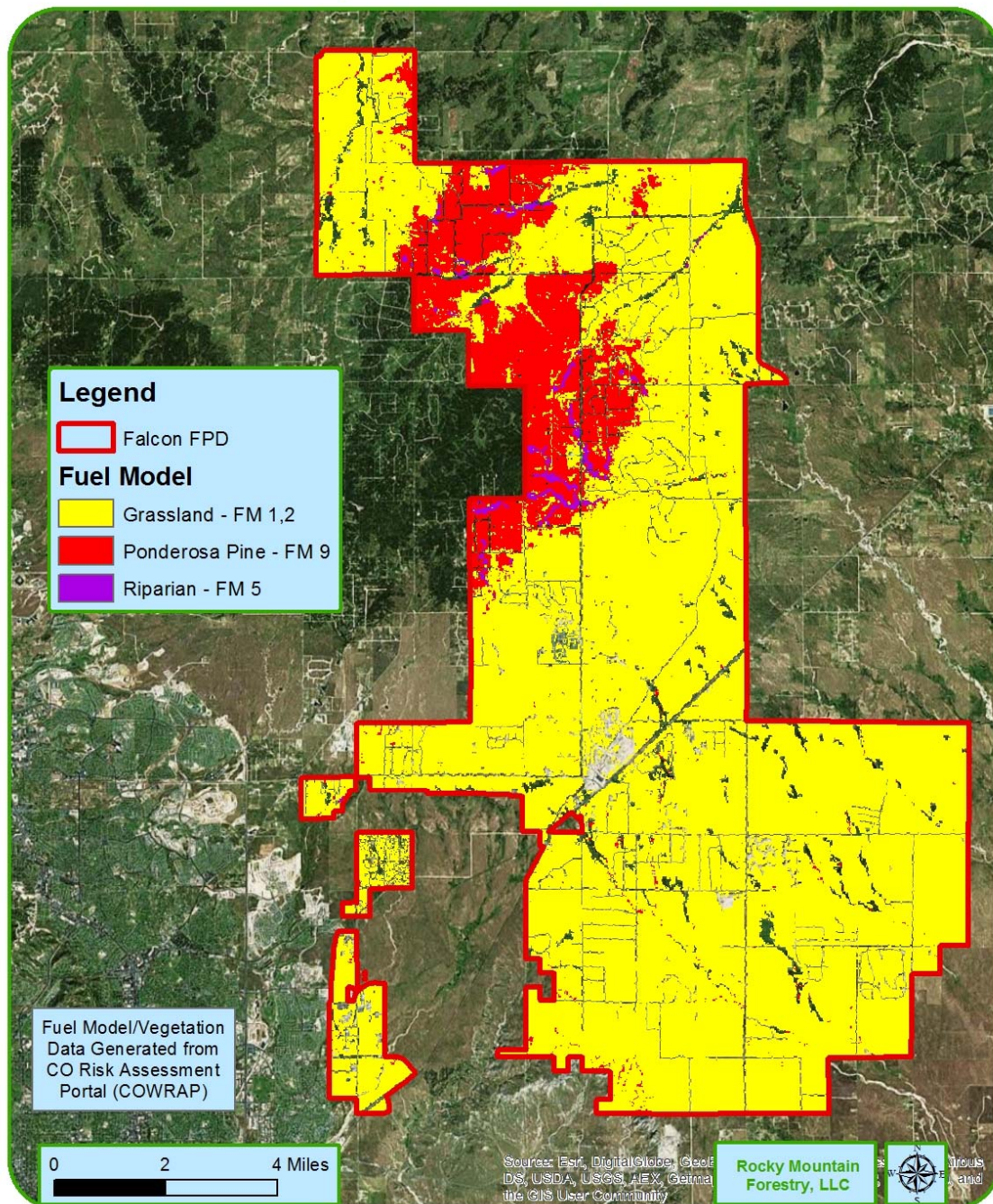
<sup>6</sup> *Aids to Determining Fuel Models For Estimating Fire Behavior*, Hal E. Anderson, USDA Forest Service General Technical Report INT-122, April 1982.

<sup>7</sup> *Gaining an Understanding of the National Fire Danger Rating System (NFDRS)*, PMS 932/NFES 2665, National Wildfire Coordinating Group (NWCG), 2002.



# **Community Wildfire Protection Plan**

## **Fuel Model Map: Falcon Fire Protection District**



**Wildland Urban Interface Fuel Types (CO-WRAP)**

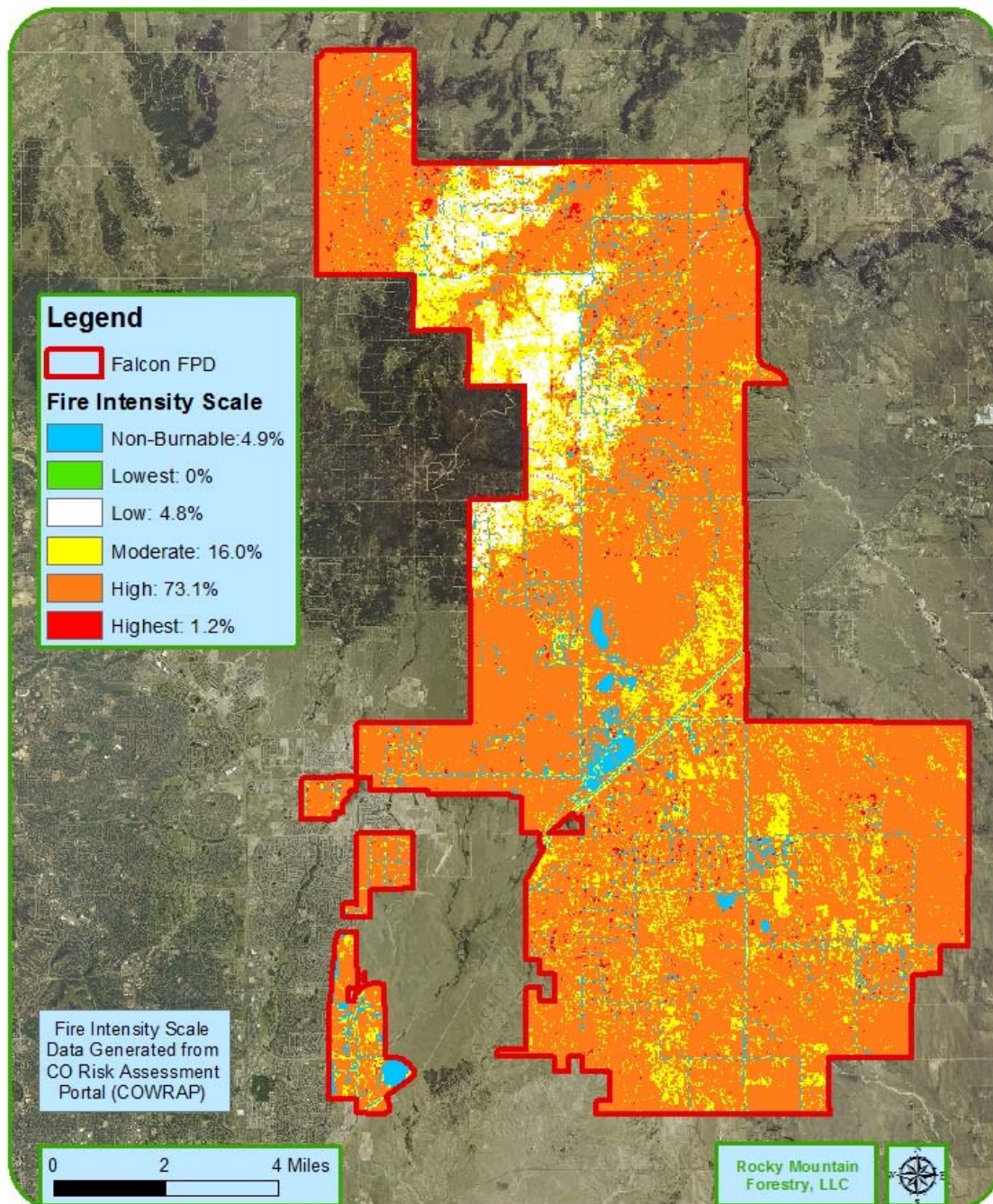
When interpreting CO-WRAP data it should be noted that CO-WRAP predictions are based on the average of historical weather over time. Thus, CO-WRAP does not predict fire behavior on any given day, and weather conditions at the time of a fire greatly influence actual fire behavior and spread. For example both the Waldo Canyon and Black Forest fires burned during the most severe fire weather and not on average days. The effect of weather conditions on fire behavior is further explained in the section on fire behavior.

These fuels have high rates of spread under relatively mild weather conditions.



# **Community Wildfire Protection Plan**

## Fire Intensity Scale Map: Falcon Fire Protection District



Rate of Spread and Wildfire Intensity (1 Chain = 66 feet)

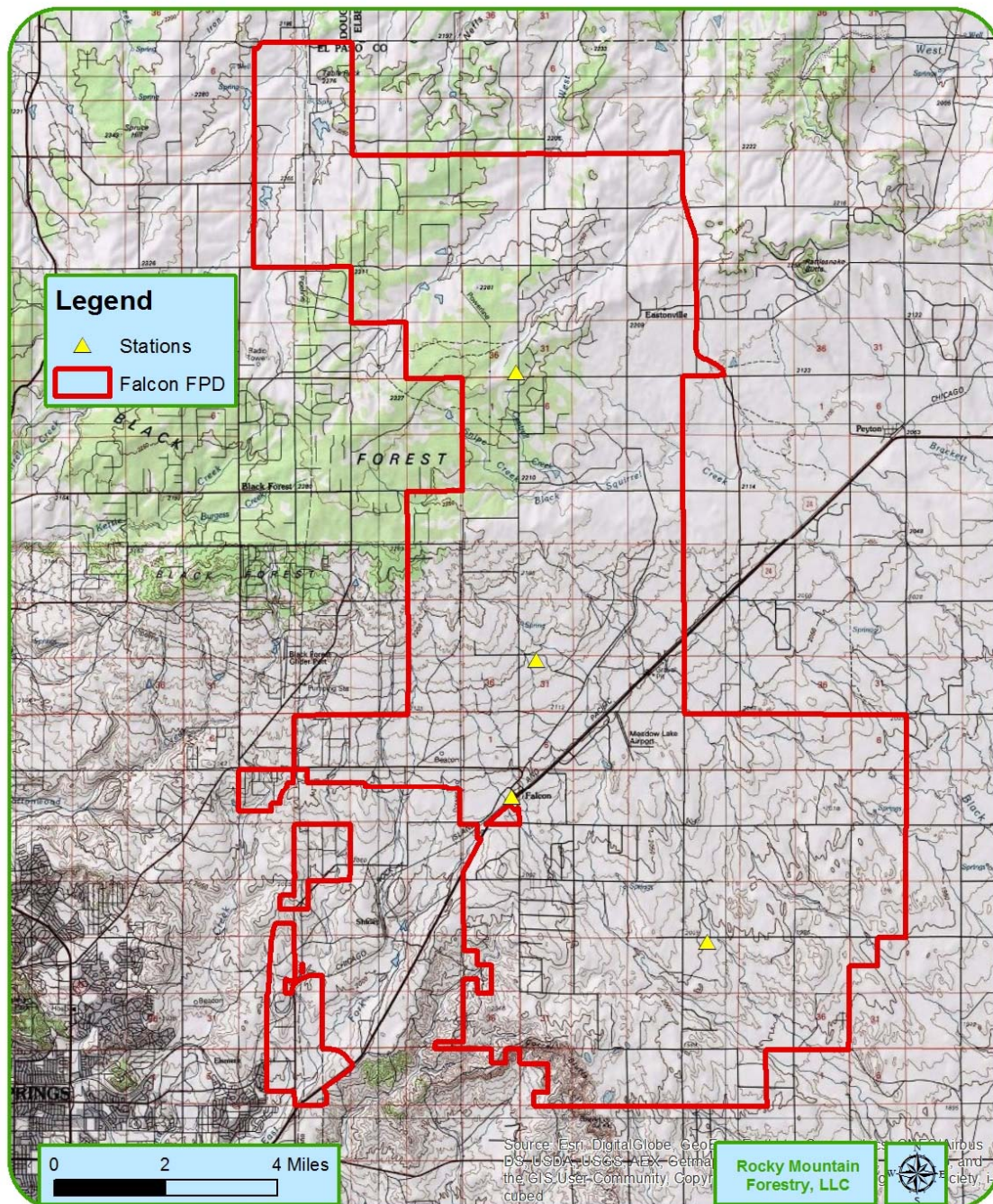
Local topography further aggravates fire behavior and control. Prevailing west winds are funneled through the communities involved. Slopes range from ten to over forty percent with most hillsides ranging from twenty to thirty percent.

**Note:** Rate of spread shown on these maps is under normal burning conditions. During the Black Forest Fire, burning conditions were considered extreme, with spread rates over 100 chains per hour or 1.25 miles per hour.



# **Community Wildfire Protection Plan**

## **Topographic Map: Falcon Fire Protection District**



**Topographic Map of FFPD and Surrounding Area**

## **Preparedness to Respond**

### **FFPD Stations and Apparatus**

#### **Station 1**

Located in the Woodmen Hills neighborhood, this is the primary response station for areas north of Woodmen Road. Groundbreaking for the 15,500-square foot station took place July 31, 2009, and the station became operational in May 2010. The station has a Community Room and a First Aid room. It also serves as the District's primary fitness center for its personnel.

Apparatus at Station 1 include:

- An engine
- A water tender (water truck)
- A brush truck
- An AMR ambulance
- A pump tender (engine tender)
- A command vehicle

#### **Station 2**

Located on Meridian Road, this is currently an unstaffed station. It also serves as the fleet maintenance and repair facility for minor work on apparatus and equipment.

Apparatus at Station 2 include:

- A 4-wheel drive engine
- A water tender
- A brush truck

#### **Station 3 / HEADQUARTERS / TRAINING**

With the opening of Station 1, the Falcon Fire Department's building on Old Meridian Road became a true headquarters facility that includes administration functions such as human relations and payroll. It hosts the monthly Falcon Fire Protection District Board meetings, and serves as the Department's primary classroom and training facility for emergency medical services, fire, hazardous materials, and technical rescue disciplines.

Apparatus at Station 3 include:

- An engine
- A tender
- A utility truck



- A brush truck

### **Station 6 (formerly Station 3)**

Located on Jones Road, this is currently an unstaffed station.

Apparatus at Station 6 include:

- A water tender

### **Staging Areas**

The District has identified locations where responding mutual aid or auto aid fire departments may be staged for assignment in the early stages of a wildland event, or until an emergency operations center is established. These locations are shown on the map below. These should follow NWCG guidelines for firefighter safety zones, and based on all personnel in full Personal Protective Equipment (PPE). Diameters to be adjusted based on surrounding fuel loading.

### **Water Supplies**

Firefighting water supplies are available through hydrant systems in the developed portions of the District that are served by water districts. However, rural areas are dependent on cisterns. Current cisterns are shown on the map below. These are operated and maintained by fire department staff.

It should be noted both water supplies are intended for use during structure fires in which, typically, only one house is on fire at any one time. Firefighting resources are not required to be mobile. The opposite occurs during a wildland fire in which resources must be mobile, and prepared to move quickly out of harm's way.

Water supplies are critical for maintaining lower ISO (Insurance Services Organization) ratings that affect homeowner insurance rates. The District should continue to require these for all new subdivisions.

### **Evacuation Centers**

Three primary locations were identified as potential evacuation centers. These are:

- Pikes Peak School of Expeditionary Learning (American Red Cross site)
- Falcon High School
- Falcon Middle School

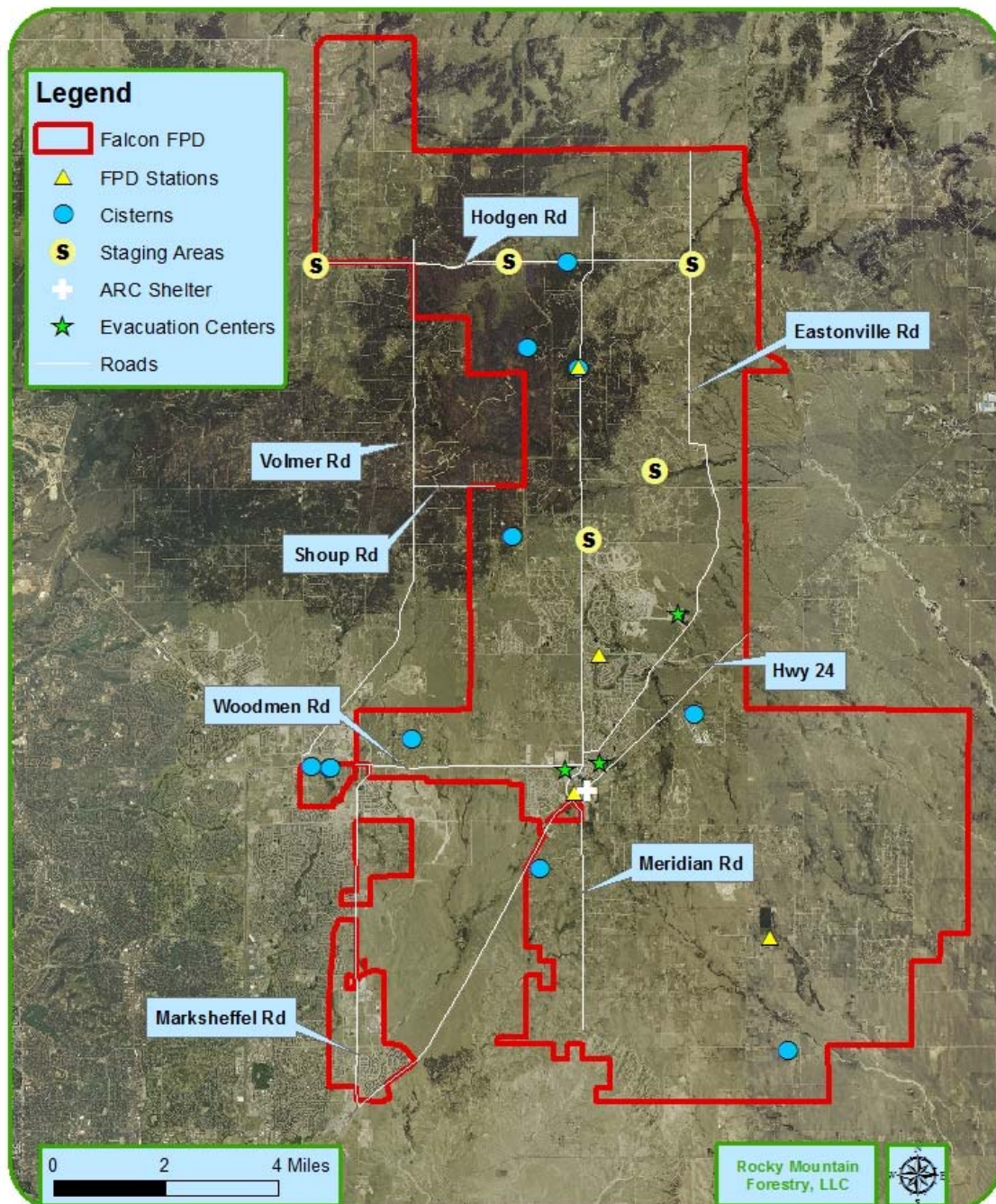
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- Penrose Stadium and El Paso County Fair Grounds (Calhan) for large animals

All of these locations can serve as emergency operation centers. Designation as an evacuation center will normally be determined by El Paso County.

# Community Wildfire Protection Plan

## DRAFT Emergency Planning Map: Falcon Fire Protection District



Evacuation Centers and Firefighter Staging Areas

## **El Paso County**

El Paso County has detailed plans and agreements in place to respond to a wildfire anywhere within the County. The quoted passages below are taken directly from the *El Paso County Wildfire Protection Plan*.<sup>8</sup>

### *Inter-jurisdictional Cooperation*

“First responders and community leaders recognize that wildland fire does not respect jurisdictional boundaries, and that large fires can only be managed by pooling resources. As a result, El Paso County enjoys general good cooperation among its many firefighting entities.

### *Standardized Command and Control*

“All County fire departments use the Incident Command System (ICS) and National Incident Management System (NIMS) as a tool to manage interagency response operations. ICS/NIMS clarify roles and responsibilities in many common situations, such as when one area belongs to two overlapping jurisdictions, or when an area is not part of a fire protection jurisdiction.

### *Mutual and Automatic Aid*

“County fire departments have executed several agreements to provide mutual and automatic aid to each other upon request. Groups of neighboring departments have also set up local automatic aid agreements, so that all departments in that group are dispatched to any fire in any of their jurisdictions.

“The El Paso County Sheriff’s Office participates in the 2013 Annual Wildfire Operating Plan for El Paso County Colorado. The Plan, updated annually, describes how County agencies coordinate wildfire suppression activities with those of the [Department of Public Safety (DPS)], the U. S Forest Service, and the Bureau of Land Management. It outlines rules and procedures for requesting mutual aid, ordering out-of-county resources, radio communications, and air operations. The 2013 AOP is scheduled for update after June 1, 2014.

### *An Expanding Hierarchy of Resources*

“The responsibility for wildfire suppression initially rests with the jurisdiction where the wildfire starts. The El Paso County Sheriff is responsible for suppression of

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<sup>8</sup> Russell, Kathy (2011). *Community Wildfire Protection Plan for Unincorporated El Paso County*. El Paso County Sheriff’s Office, Emergency Services Division. pp. 46, 47.

wildfires that occur on unincorporated, non-federal land that is outside a fire protection district.

“If a wildland fire grows beyond a local fire protection district’s ability to control, the Sheriff may appoint an incident management team to provide command and control over the fire response. At that point, the Sheriff also may assume financial responsibility for firefighting expenses, on behalf of El Paso County.

“If the fire exceeds the County’s capability to control, the Sheriff can request assistance from the Colorado Department of Public Safety, under terms of the Emergency Fire Fund (EFF) Agreement. When EFF is implemented, DPS assumes responsibility and authority for all suppression activity until the fire has been controlled and management of the fire has been returned to the county.

#### County Support to Wildfire Responses

“El Paso County has a mature system for mobilizing County and community resources to support a wildfire response.

#### Public Notification and Warning

“The Sheriff’s Office has several methods to notify and warn people who are threatened by an approaching wildfire:

- Automated telephone notification
- Local news media announcements
- When possible door-to-door warnings

#### Evacuation and Sheltering

“An Incident Commander may request evacuation of specified neighborhoods, or closure of certain roads; the actual evacuation is the responsibility of the Sheriff.

“The El Paso County Emergency Operations Center coordinates evacuation and sheltering for displaced persons, as well as their service animals, pets, and livestock.”

### **Emergency Evacuation**

**NOTICE TO EVACUATE.** In case of a fire or other emergency, the primary notification to evacuate will be issued by the El Paso County Sheriff by means of a reverse emergency notification system. Residents should follow directions

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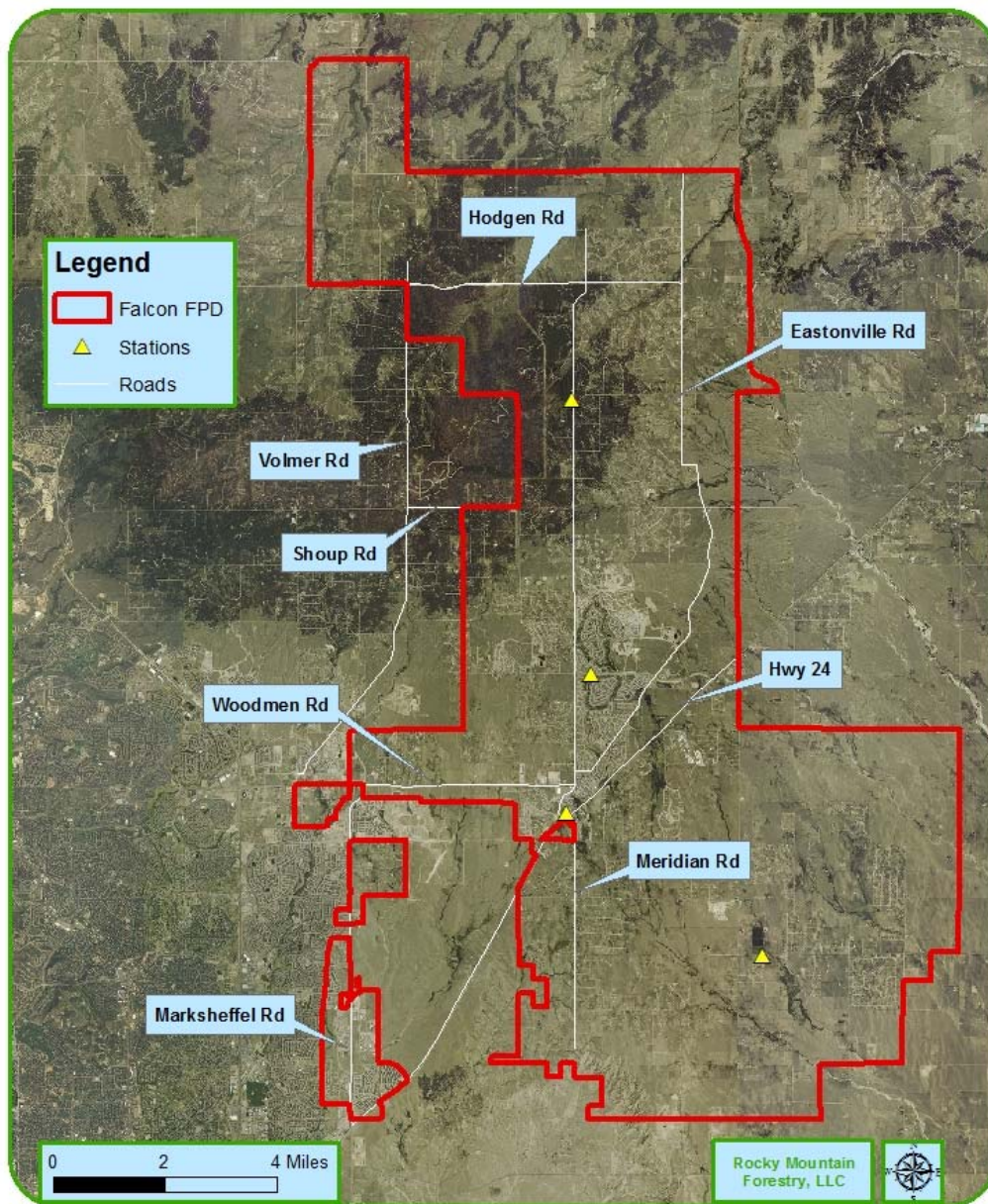
provided in the recorded message. Other notifications may come from local TV and Radio stations.

**EVACUATION ROUTE.** The primary evacuation routes will be to Hodgen Road, Meridian Road, Woodman Road, Eastonville Road and State Hwy 24. These are shown on the map below.



## **Community Wildfire Protection Plan**

### **Aerial Map: Falcon Fire Protection District**



### **Primary Evacuation Routes**

It is important to note that the fatalities in both the Waldo Canyon and Black Forest Fires were of residents who did not evacuate in time. In the event of a fire, the El Paso County Sheriff will determine the best evacuation routes and procedures

based on expected fire behavior. Residents should heed the evacuation instructions given by the Sheriff without delay! If a fire is threatening the area, it is not necessary to wait for an evacuation order to leave.

It is vitally important that residents are prepared to evacuate long before a fire or other disaster. Just as fire mitigation should be complete long before a fire threatens, a personal plan for evacuation should be prepared before it is needed. A personal evacuation plan should consist of:

- Papers, photos computer drives, prescriptions and other important items should be stored and ready to take a moment's notice.
- Be sure to have a bag packed with a change of clothes and personal items packed and ready.
- Keep a complete inventory, including photos of home contents, of items in the home stored in a safe location if need to document insurance claims. Be sure you insurance coverage is adequate.
- Have a plan to shelter pets and livestock.
- Have a communication plan for all members of the family to stay in contact. Have an agreed upon meeting place, such as a friend's home, for family members in case family members are separated.

Emergency notification calls are not automatically routed to cellular phones. Residents who rely only on cellular phones should register their cell phones at: <http://www.elpasoteller911.org/> to be certain of notifications. The same applies to residents that use Voice-over-internet-protocol (VOIP) telephone service. These phone numbers are typically not automatically included in emergency notifications unless the subscriber has registered the phone number ahead of time with the 911 Authority.

El Paso School District 49 currently has a notification system in place (**Flash Alert**) used to communicate with parents. No schools are currently located in high hazard areas. However, students may be at risk if school bus routes are compromised by wildfire. The school district may be requested to keep students at the school until the emergency has ended. The **Flash Alert** system can be used to notify parents of the status of their children. School district and FFPD should consider partnering to:

- Provide notification to schools with students from impacted areas.
- Train bus drivers on procedures should they encounter a wildfire situation, and awareness of alternate routes to safety, in the absence of direction from law enforcement.



- Pre-determine locations for return of students, whether to the point of origin or evacuation center.
- Utilize existing communication tools for distribution of emergency preparedness information to parents.

## **Risk of Ignition and Wildfire Occurrence**

### **Causes of Wildfire Ignitions**

Reconstruction of fire history and forest dynamics in the Black Forest area along the Palmer Divide, reveals (i) an average fire interval of about fifty years during the period 1300-1880, but no major fires between 1880 and 2002; (ii) a mix of non-lethal surface fire and lethal, stand replacing fire in the historic burns (mixed severity fire regime); and (iii) a striking increase in forest density from 1900-2002.

The extent of the high-severity Hayman burn in 2002 was unprecedented in the last 700 years, in part because of the dense forest conditions that had developed during the twentieth century, and in part because of the extreme drought and fire weather conditions that existed in 2002. Similar drought conditions contributed to the Waldo Canyon and Black Forest Fires a decade later.

Low fuel moistures and relative humidity are common in the area, as are periods of high winds. When dry and windy conditions coincide the stage is set for large wildfires. Human population is increasing in the area. All recent large fires were caused by humans. Numerous fires are ignited each year by lightning. Except for portions of Florida, this area has some of the highest occurrence of lightning in the continental US.

Fires originating in or near communities are the most immediate concern, but fires starting well beyond the boundaries of the planning area can have profound effects upon the communities. Rapid rates of spread and long distance spotting are the norms for fires in the vicinity. Areas classified as high to moderate fuel loading are the most worrisome.

Natural fires were typically caused by lightning. Aboriginal use of fire in the area is unknown. Human activities, both accidental and intentional, remain as the highest risk for fire starts. The same roadways that may be critical for evacuation can also be ignition points for wildfire starts. These roadways create exposures from auto accidents, disabled vehicles, cigarettes, and right-of-way maintenance activities. Residential exposures to fire can be from maintenance equipment, barbeque grills, unsupervised youth, and burning structures. A more detailed fire history for the area can be found in Appendix E.

## Fuel Hazards

### **Factors Affecting Homes in the Wildland/Urban Interface**

The overall risk to the community from wildland fire is moderate to high. This section will discuss the factors considered that led to the overall rating. All residences in the District should be considered as being in the Wildland/Urban Interface (WUI). The homes in District have various risks of being destroyed by a wildfire. The amount of risk depends on the vegetative fuels, topography, weather events, and the construction of the home itself. It is important to understand these conditions and factors in order to make appropriate decisions about vegetative fuels reductions.

Fire Behavior at any time is dependent on three factors: weather, topography and fuels.

**Weather:** Weather influences fire behavior as both a long term and transient phenomenon. Long term weather trends such as extended drought increase the possibility of ignition and increase the rate of fire spread.

**Topography:** Topography includes the degree of slope and the shape of the terrain. Hot gases rise in front of the fire along the slope face, pre-heating the vegetation above a fire. As slope increases the effect of the preheating and increased spread increases, and fires may move up to four times faster with flames twice as long than a fire on level ground.

**Fuels:** The two fuel types in a WUI are vegetative and structural. Vegetative fuels consist of living and dead trees, bushes, and grasses. Typically, grasses ignite more easily and burn more quickly but with less intensity than trees. Fires can move quickly through grass and herbaceous vegetation, and these smaller fuels are often the kindling that moves fires to larger size fuels.

Fire intensity and spread rate depend on the fuel type and condition (live/dead), the weather conditions prior and during ignition, and the topography. Generally the following relationships hold between the fire behavior and the fuel, weather and topography.

- Fine fuels ignite more easily and spread faster with higher intensities than coarser fuels. For a given fuel, the more there is and the more continuous it is, the faster the fire spreads and the higher the intensities. Fine fuels take a shorter time to burn out than coarser fuels.
- The weather conditions affect the moisture content of the dead and live vegetative fuels. Dead fine fuel moisture content is highly dependent on the relative humidity and the degree of sun exposure. The lower the relative humidity and the greater the sun exposure, the lower will be the fuel moisture content. Lower fuel moistures produce higher spread rates and fire intensities.
- Wind speed significantly influences the rate of fire spread and fire intensity. The higher the wind speed, the greater the spread rate and intensity.

- Topography influences fire behavior principally by the steepness of the slope. However, the configuration of the terrain such as narrow draws, saddles and so forth can influence fire spread and intensity. In general, the steeper the slope, the higher the uphill fire spread and intensity.

### **How Structures Catch Fire**

There are three ways that a wildfire can transfer itself from natural vegetation, or burning homes, to other homes. They are through radiation, convection, and firebrands.

*Radiation:* Wildfires can spread to a home by radiating heat in the same way a radiator heats rooms in the wintertime. Radiated heat is capable of igniting combustible materials from a distance of 100 feet.

*Convection:* Direct contact with flames, or the wildfire's convective heat column—the hot air and gasses rising from the flames--may also ignite a home. This will most likely occur when trees or brush near a structure ignite and the flames touch a flammable part of the structure.

*Firebrands:* Firebrands are burning materials that detach from a fire during strong convection drafts in the burning zone. In most cases, the flame front passes quickly, but a shower of burning embers, or firebrands, impinges on the structure for some time before and after the flame front passes. Firebrands are most often the cause of home loss. Firebrands can be carried long distances – more than a mile – by the winds associated with a wildfire. Many homes in the community are particularly vulnerable to firebrands.

### **Home construction and Vulnerability to Wildfire:**

The District is located in a wildfire environment. Wildfires will happen--exclusion is not a choice. The variables in a fire scenario are when the fire will occur, and where. This assessment addresses the wildfire-related characteristics of the District. It examines the area's exposure to wildfire as it relates to ignition potential. The assessment does not focus on specific homes, but examines the community as a whole.

A house burns because of its interrelationship with everything in its surrounding home ignition zone----the house and its immediate surroundings. To avoid a home ignition, a homeowner must eliminate the wildfire's potential relationship with his/her house. This can be accomplished by interrupting the natural path a fire takes. Changing a fire's path by clearing a home ignition zone is an easy-to-accomplish task that can result in avoiding home loss. To accomplish this, combustible items such as dead vegetation and debris must be removed from the area immediately around the structure to prevent flames from contacting it. Also, reducing the volume of live vegetation will affect the intensity of the wildfire as it enters the home ignition zone.

Included in this assessment are observations made while visiting the District. The assessment addresses the ease with which home ignitions can occur under severe

wildfire conditions and how these ignitions might be avoided within the home ignition zones of affected residents. Residents can reduce their risk of destruction during a wildfire by taking actions within their home ignition zones. This zone principally determines the potential for home ignitions during a wildland fire; it includes a house and its immediate surroundings within 100 to 200 feet.

The result of the assessment is that wildfire behavior will be dominated by the residential characteristics of this area. The good news is that by addressing community vulnerabilities, residents will be able to substantially reduce their exposure to loss. Relatively small investments of time and effort will reap great rewards in wildfire safety.

The construction materials, location and even the shape of a structure influence its vulnerability to wildfire.<sup>9</sup> It is not the intent of this CWPP to suggest extensive alterations to homes that already exist in the community. Understanding how home construction affects the vulnerability of the structure to a wildfire helps residents plan defensible space projects to compensate for construction differences. When remodeling or home improvement projects are done plans can be made to reduce the ignitability of the buildings.

## **PRESCRIPTIONS FOR WILDFIRE HAZARD REDUCTION**

### **Home Ignition Zone, Defensible Space and Fuel Breaks:**



Diagram of Home Ignition Zone

<sup>9</sup> Slack, Peter, (2000): *Firewise Construction: Design and Materials*. Colorado State Forest Service.

In a broad sense there are two generalized categories of mitigation. First is defensible space thinning in the Home Ignition Zone around structures to increase the chance that the structure will survive a wildfire. Second, is fuel break thinning away from structures to reduce severe fire behavior and give firefighters a safer place to work and possibly halt an approaching wildfire. Both approaches require thinning of the canopy and removal of ladder fuels. The approach will vary depending of the forest conditions existing on the area in question.

## **THE HOME IGNITION ZONE:**

Modification of vegetation around a structure to reduce fire intensity is called defensible space. The term “home ignition zone” (HIZ) is defined as a structure and the surrounding vegetation. A structure’s vulnerability to wildfire depends on the surrounding vegetation, including landscaping, and the structure itself.

**Protecting Homes in the HIZ:** Thinning around homes is different than thinning for fuel breaks. Thinning in the HIZ is designed to protect structures from the heat of wildfires. Defensible space includes both thinning around structures to reduce the heat from burning vegetation and reducing combustibility of the structures to protect them from wind born embers, radiation and convective heat. Further information about increasing the survivability of structures is found on the CSFS web site at:

<http://csfs.colostate.edu/pages/pub-csfs2.html#wildfire>.

Defensible space is defined as an area around a structure where existing vegetation is modified to slow the rate and intensity of an advancing wildfire. This includes selective removal of trees around structures in two or three concentric management zones. On slopes, increase the width of each zone on the downhill side. Fuels are reduced according to prescriptions for each zone.

**Zone One:** This is the closest zone to a structure, and extends 30 feet from the outermost edge of a structure including any decks. The management goal is to reduce or eliminate most large trees or shrubs within this zone so that the convective heat will not ignite the structure. A few tall trees may be left in zone one if the lowest branches are pruned so that they are well above a fire resistant roof. It is best to limit this to one or two trees near a structure. Treat such trees as part of the structure and create 30 feet of space outside the tree.

While it is necessary to remove combustible material in zone one within five feet of foundations and under decks, it is not necessary to do so elsewhere. Needles on the forest floor act as mulch retaining moisture in the soil, reduce erosion, and add organic matter to the soil as they decay. If regeneration of new trees is an objective, however, it is desirable to expose some bare soil since this will promote seed germination and establishment. *Raking up pine needles is not a substitute for thinning and ladder fuel removal.*

**Zone two:** The width of zone two depends on the slope around the house. If the average slope angle is less than 5%, zone two extends out 70 feet from zone one (100 feet total

distance around the house). As slopes increase, increase the width of zone two on the downhill side of the house, and increase the spacing between tree crowns.

The main fuels reduction guideline for zone two is to thin the trees to an average spacing of 10-foot crown separation. Clumps of two or three trees may be retained in this zone if the space between the clump and the adjoining trees is at least 20 feet. All ladder fuels under trees should be removed. The branches of large trees should be pruned to a height of 10 feet above ground, but small trees should have at least two-thirds of the green needles remaining.

Firefighters must be able to escape quickly if conditions suddenly deteriorate. Zone two should extend along both sides of driveways for a width of 30 feet from each edge of the drive. This is important to allow safe access and egress for emergency vehicles. Adequate clearance should be maintained to allow access for large structural fire trucks. Twelve feet of horizontal clearance and 13 feet of vertical clearance should be maintained. At the end of driveways, adequate room for a large fire engine to turn around should be maintained.

**Zone three:** The guideline for zone three is to thin the forest primarily to improve forest health. Spacing is less critical in this area but spaces should be made in the canopy. A useful rule of thumb is that a tree should receive sunlight from all four sides.

Though thinning in zone three is often considered an afterthought compared to zones one and two. Thinning in zone three is usually recommended as a form of forest stewardship rather than fire mitigation. Management and thinning in this area it is critical to fire mitigation on a community wide basis since it connects the defensible spaces into an integrated whole.

### **Thinning and Fuel Reduction**

Foresters use many methods of thinning depending on the specific objectives of the landowner. Fuel break thinning is most often accomplished by a process called thinning from below. Trees are usually removed or remain based on their height in the canopy.

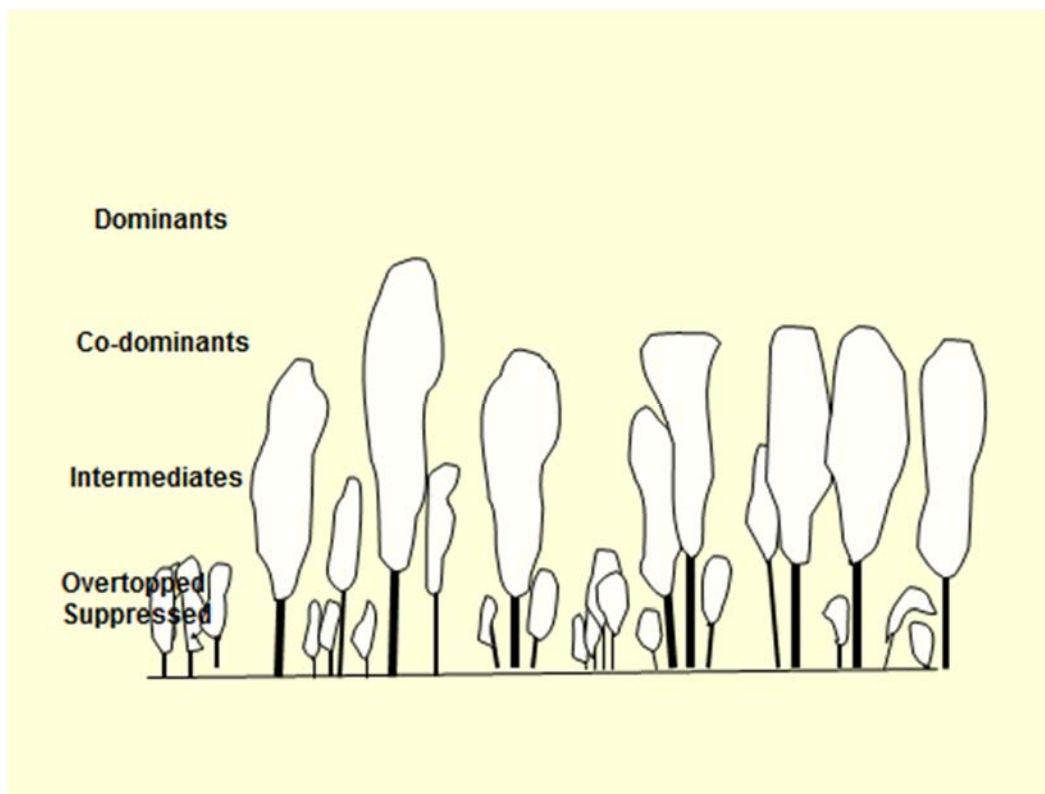
For simplicity, trees can be divided in four levels in the forest canopy. The largest trees at the highest level of the canopy are called dominants. These are usually the most vigorous since they have the largest root systems, most leaf



Thinning from below on the Black Forest School Section. These trees were first thinned in about 1980, and dense regeneration was thinned again in 2008.

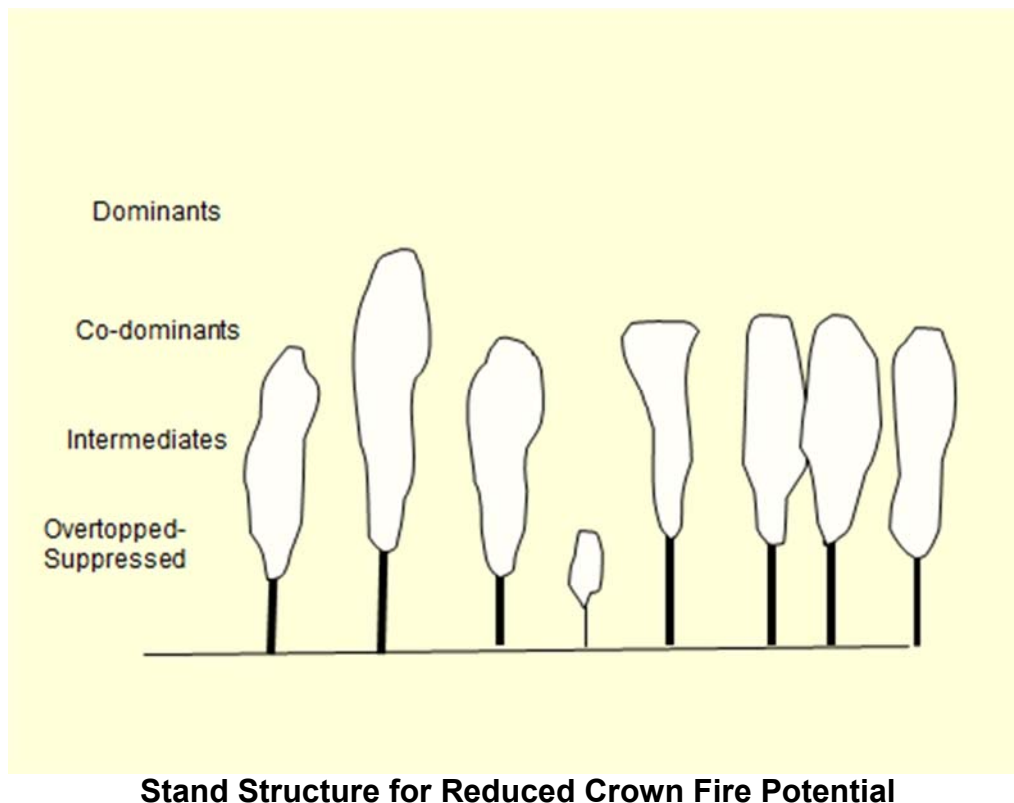


area and receive the most sunlight. Next are the co-dominant trees generally the same height and diameter, but not overtopped by other trees, including dominants. Intermediate trees occupy the middle level of the canopy, but tend to be crowded and of smaller diameter. They are less vigorous with smaller root systems and fewer leaves as the result of crowding by the dominant and co-dominant trees. At the lowest level of the forest canopy are the overtopped trees. These are completely shaded by the dominant and co-dominant trees.



### **Crown Fire Prone Stand Structure**

Thinning from below removes all of the overtopped and most of the intermediate trees. It is essential when thinning for fuel breaks to remove ladder fuels and create enough openings in the forest canopy to reduce the crown fire risk. Thinning from below is desirable in fuel reduction projects because it: 1) leaves the most vigorous trees on the site; 2) creates openings in the forest canopy by removing the less vigorous co-dominants and intermediate trees; and 3) eliminates ladder fuels by removing the overtopped trees, shrubs, and pruning lower limbs of remaining trees.



**Stand Structure for Reduced Crown Fire Potential**

### **Maintenance**

Defensible space, fuel break thinning, or any type of forest management, does not end when the initial project is finished. Continual maintenance is an essential part of any forest management program. Even in well managed forests trees will die, storms and wind will damage trees, and new trees will germinate.

Trees should be inspected every spring for any sign of damage from winter or spring snows or wind. Prune any broken branches if they are not too high in the tree, and trees bent by heavy winter snows should be removed. Check for any signs of insect activity or disease.

Late October is the best time to inspect trees for attack by mountain pine beetles. Beetles have finished attacking trees at this time, and there is adequate time to cut and treat the tree before the adult beetles fly the next July.

At five years check the canopy closure, especially in zones one and two. Remove any trees necessary to maintain openings in the canopy. Do any additional pruning or removal of trees and shrubs to eliminate ladder fuels.

After ten years, dense thickets of young trees (regeneration) may have become established, and these will need to be thinned. Not all regeneration should be cut since trees of various ages are important for forest diversity. Young trees in openings with adequate room to grow should remain. Regeneration that is likely to become ladder fuel



or crowded by other trees should be cut. Depending on their objectives, landowners may want to consider removing some of the larger trees to make room for the younger ones.

### **Prairie Fuels**

Prairie fires have the potential to be both deadly and destructive. These fuels should be considered as moderate hazard due to their ability to spread rapidly under windy conditions. Ignition potential is high. Containment is often difficult due to spotting; especially if embers are generated by burning structures in the fire's path.

The primary technique for managing prairie fuels is by regular mowing to a maximum height of six inches. Typically, no more than two mowings per year should be necessary for lower density residential areas beyond thirty feet from structures. Areas within thirty feet of structures, including fences, should be mowed on a more regular basis, and cut to a four inch height. Grazing can also be used as a fuel management tool.

Outbuildings and vehicle storage areas should also be well maintained to prevent loss during fast moving prairie fires.



Prairie Fuels shown with high level of maintenance around structures.

## Riparian Zones

Flood plain areas, riparian zones, can have high wildfire potential during the fall and winter. Extended droughts can also allow normally wet areas to burn with high intensity. Ember potential can also be high under windy conditions.



Riparian Zone with cattail fuels abutting homes.

Riparian areas should be managed carefully. Any thinning of shrubs or trees should be done by hand and use of heavy equipment should be avoided. Riparian areas may be regulated by the Army Corp of Engineers or Environmental Protection Agency under the Clean Water Act. Before any work is done in riparian areas, a site specific consultation with a qualified professional is recommended.

These areas should be monitored for wildfire risk on a regular basis. Areas of greatest concern are the riparian zones located within suburban communities. Fire starts can move quickly to fences, and then to structures. Areas controlled by homeowner associations should be mowed annually where adjacent to fences and structures. If the association does not manage these fuels, abutting owners should be allowed to keep it maintained. Typically, no more than two mowings per year should be required for hazard reduction. Grasses and weeds along fence lines should not exceed six inches in height.

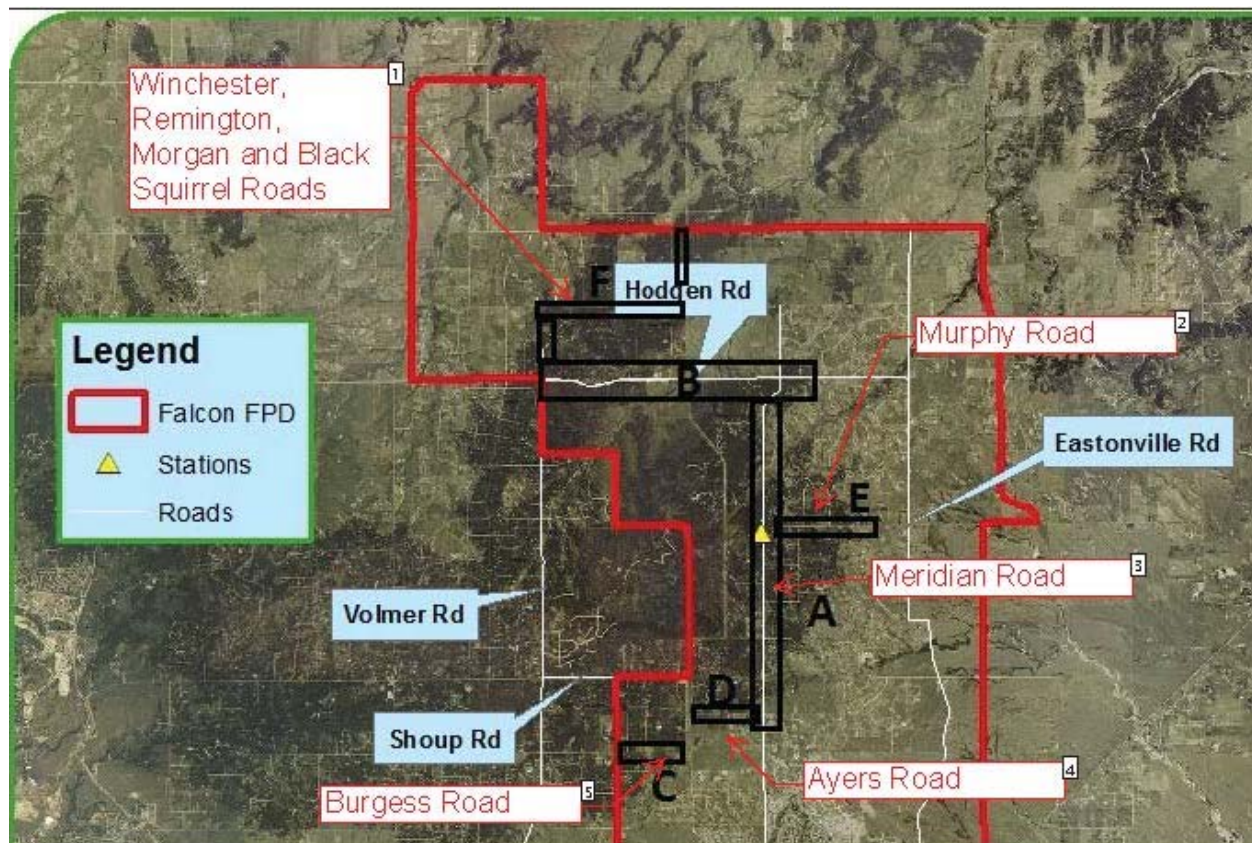


Riparian Zone abutting a subdivision.

## **IMPLEMENTATION AND MONITORING**

### **Implementation**

A table in Appendix A lists mitigation projects identified, their priority rankings and the lead agency for the projects. In addition to the projects in Appendix A, approximately 1/3<sup>rd</sup> of home sites are rated as high or extreme wildfire hazard and are in critical need of defensible space improvement. In total, about six small and large projects have been identified. These are shown in the figure below:



**Proposed High Priority Fuel Treatment Areas**

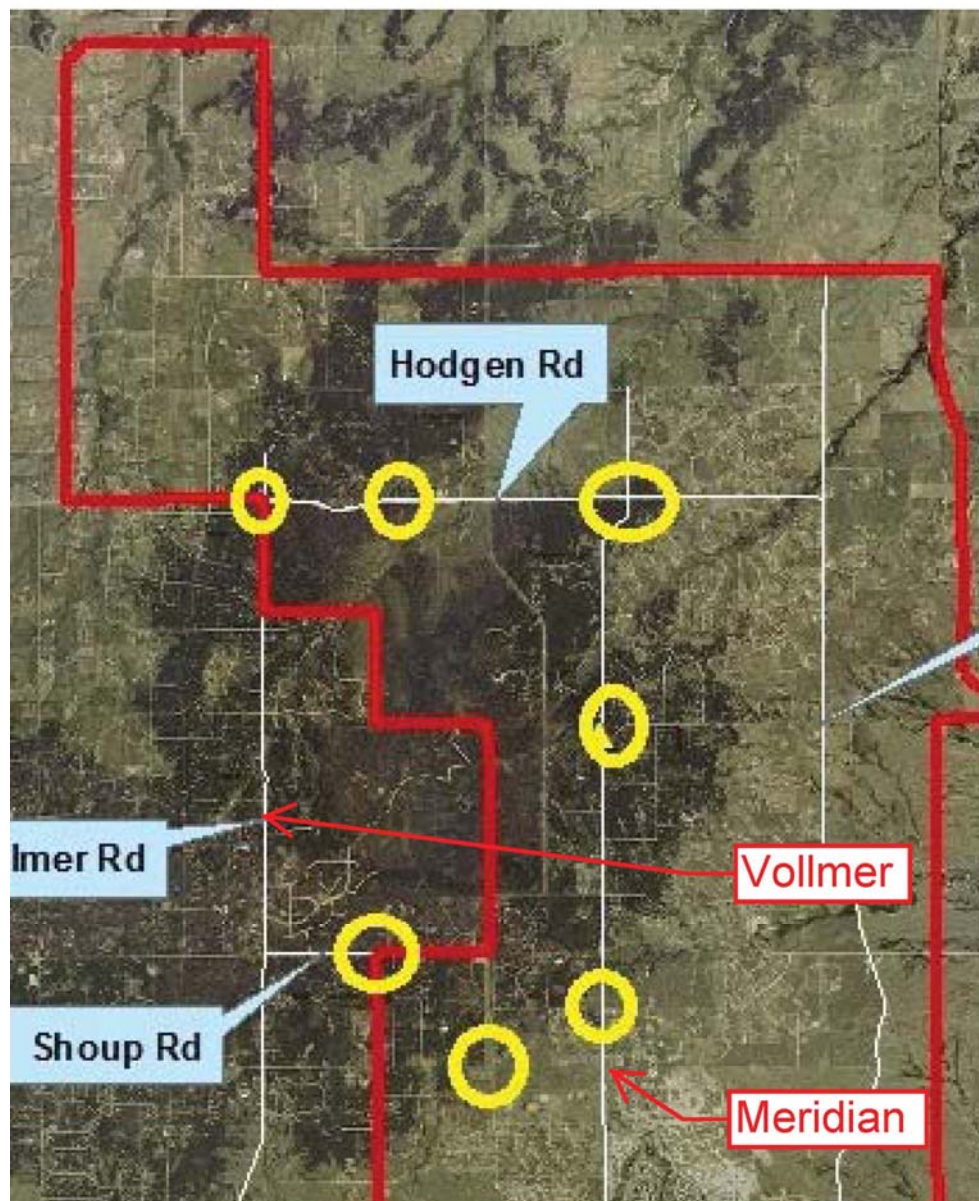
The following are suggested fuel treatments:

- ❖ Shaded Fuel Breaks (SFB)- Major collector roads are critical for emergency evacuation. These should follow CSFS guidelines where possible.<sup>10</sup> Connection of homeowner HIZ's to SFB areas is recommended.
- ❖ Forest Management and HIZ overlap zones- These are on private property, typically in Defensible-space Zones 2 and 3. Ladder fuels should be reduced or removed, and forests thinned to promote forest health. Where possible, the long range goal should be establishment of an uneven aged forest.

The figure below shows key intersections and areas that should be monitored regularly for fuel buildup.

<sup>10</sup> Fuel Break Guidelines for Forested Subdivisions and Communities. Frank C. Dennis, Colorado State Forest Service.





### Key Intersections

These intersections will be critical during a wildfire for:

- ❖ Safe egress of residents during evacuation.
- ❖ Residents may be required to wait at intersections temporarily while evacuation is staged from areas of greatest wildfire threat.
- ❖ Safe ingress of emergency services.
- ❖ Safe staffing by law enforcement personnel who may be directing traffic.



Fire and smoke impinging on right-of-way.

### **Monitoring**

Monitoring is an important part of follow-up to the implementation of projects. HFRA instructs participants to establish, where interest is expressed by the communities, a collaborative multiparty monitoring process. This process should address reporting of accomplishments, need for maintenance of treated areas, tracking of burned areas and the positive and negative ecological and social effects of the projects. This can be incorporated into the annual reporting, and/or become a budget line item as an annual reminder to the entire community. In-kind tracking will be one way to gauge levels of participation.

Monitoring of the FFPD Community Wildfire Protection Plan calls for an annual field review by the partners (participants) of accomplishments and need for maintenance. Based on this review, needed adjustments in the next year's plan should be made, as appropriate. Thirdly, determine level of interest and need for meeting by the partners for monitoring the ecological and social effects of projects. Finally, once 80% of the identified project areas have been completed, FFPD may want to consider updating the CWPP. At this point, the community will be substantially fire adapted, and may call for completely different fire suppression strategies. These tasks are identified in the table found in **Appendix B**.

## Residential Community Action Plan

During the CWPP process, the following actions were suggested:

- ❖ Provide operational authority to FFPD for use of the emergency water supplies. This can be in the form of an agreement authorized by the owner or homeowner association board of directors.
- ❖ Develop a community evacuation map for distribution to all residents.
- ❖ Install evacuation route signs at critical exits from neighborhoods.
- ❖ Develop a template for installation and maintenance of community street signs, light poles, and mail kiosks to prevent damage by wildfire.
- ❖ Coordinate with El Paso County on joint fuel treatment projects along the boundaries of parks and open spaces, including participation in possible grant funding.
- ❖ Coordinate with owners of large, undeveloped properties, typically larger than 35 acres, for possible joint fuel treatment projects.
- ❖ Coordinate thinning and/or tree removal with EPDOT in right-of-ways to reduce crown fire potential and remove ladder fuels for fire starts in the roadway.
- ❖ Implement at least two demonstration fuel treatments or forestry projects on private lots.
- ❖ For subdivisions with private roads, develop an overall drainage map showing locations of culverts and major drainage swales that might be impacted by post-fire sediment runoff. Erosion control contractors should be contacted to obtain pricing for post-fire mitigation.
- ❖ Implement a "Don't Fence Me In" program, in cooperation with Mountain View Electric Association for all above ground electrical facilities.
- ❖ Establish community guidelines for Firewise construction, landscaping, and forestry practices in coordination with all HOA committees. These should be updated as needed.
- ❖ Obtain Firewise Communities/USA recognition status.

The following are actions the community can incorporate into its routine budget categories to manage wildfire risks. These are broken down into categories that allow for annual planning and budgeting (See Appendix B).

### Seasonal

- ❖ Mowing:
  - Road sides and roadside ditches- Monthly or as warranted by fire danger.
  - Re-inspect all intersection sight distances for cleared sight triangles.
  - Clear all grasses and fine fuels 3-5 feet from around street signs, light poles and mail box kiosks using weed eaters or non-selective herbicides.



- Open Spaces- Twice per year
  - First mowing mid-summer after wildflower bloom and before grass curing (browning).
  - Second mowing in the fall after grass curing (to reduce wildfire rate of spread during fall/winter fire season, and allow new, green re-growth in the spring).
- ❖ Common Area and Entry Landscaping:
  - Landscape entrance areas with firewise plants to illustrate firewise landscaping principles.
  - Spring cleanup to remove all dead materials (twigs, leaves, needles, etc.).
  - Remove storm damaged trees and branches.
  - Mid-summer re-inspection to again remove fine fuels within 5-10 feet of all combustible materials.
- ❖ Education/Awareness:
  - Spring alerts/mailings for:
    - Emergency notification system signups and updates.
    - Family evacuation plans.
    - Home inventories.
    - Home assessments by local fire agencies.
  - Early to mid-Summer:
    - Firewise classes with emphasis on structural ignitability and forest health.
- ❖ Implementation
  - Annual slash disposal program.
  - Consider developing a second seasonal slash disposal effort.
  - Coordinate/facilitate property-to-property (neighborhood) fuel treatment projects.
  - Become a recognized Firewise Community.

## **Annual**

- ❖ Renew Firewise Community status
  - Firewise Day, meeting or special event.
- ❖ Coordinate cross-training between all committees (Forestry, Architectural Control, and Fire Mitigation, etc.)
- ❖ Update annual operating agreements with local fire agencies for emergency use of common areas and water supplies.
- ❖ Continue to encourage neighboring property owners to implement lot-to-lot mitigation projects that enhance all home ignition zones (HIZ).
- ❖ Review operating plans to determine annual project needs:
  - Apply for grant funding as available.

- ❖ Contact all partners to update any wildfire mitigation needs related to critical infrastructure.
  - Mountain View Electric- Power line clearance needs along all utility easements, and around power sub-stations.
  - Utility pedestal clearances inspected to reduce loss or damage by wildfire.
  - Right-of-way mowing along public roads.
- ❖ Inspect all fuel treatment areas to identify any maintenance needs, such as dead tree removal, storm damage cleanup, or insect/disease control.
- ❖ Meet with abutting ownerships to coordinate fuel treatment projects.
- ❖ Continue community wide educational programs through classes, meetings and annual events. Topics may include:
  - Evacuation Planning.
  - El Paso/Teller 911 program signup (target of 100% participation).
  - Forest Health and related topics.
  - Noxious Weed prevention and control.
  - Wildlife habitat restoration.
  - Insurance coverage for “being made whole again” in the event of home loss.
  - Neighborhood Watch, and “phone trees” (cascading phone call plan to ensure all residents are notified).
  - Special Needs Populations.
  - Evacuation Planning for Pets and Livestock.

### **Every Three/Five/Ten Years**

- ❖ Inspect all fuel treatments for:
  - Tree crown closure in all areas
    - Shaded Fuel Breaks and D-Space Zone 2: 10 feet between crowns (20 feet between crowns of tree clumps).
    - Forest Health Thinning D-Space Zone 3: 3-5 feet between crowns and/or to allow full sun to tree crowns for optimum tree growth/health.
  - Seedling tree invasion/encroachment
    - Mow or cut seedling and sapling size trees when located within the drip line of mature trees, or not in full sun locations.
    - Where trees establish in open areas, thin out trees to promote full crown development, and reduce crowning potential. Consider removing most encroaching trees from meadows to maintain biological diversity.
    - Prune as necessary to reduce torching potential.

## Recommendations

This section provides recommendations for the many stakeholders who can have an impact on wildfire and public safety.

### El Paso County

El Paso County is the major governmental entity covering unincorporated areas of the Black Forest region. FFPD recommends the following:

- County Road rights –of-ways (ROW) should be cleared and kept free of invading conifer species. Conifers, ponderosa pines, contributed significantly to fire spread and heat transfer across roadways during the Black Forest Fire. Evacuation of civilians and firefighter safety were compromised. Ditch maintenance and mowing practices are also impeded. The one exception to total tree removal is if trees are adequately spaced as part of a “shaded fuel break”<sup>11</sup> extending 150 feet from the ROW edge. This is a public safety issue that should be addressed immediately, and with little room for debate as it relates to the county’s charge of protection of life, safety and welfare of its citizens.
- Plastic corrugated culverts should not be allowed in public ROW due to their susceptibility to total consumption during wildfires. Several instances of firefighter safety being compromised during the Black Forest Fire were reported. In one instance, a fire truck was stuck after a burnt out culvert collapsed and nearly resulted in burn-over of the engine and crew.
- County open spaces and parks that abut residential areas should be prioritized for fuel treatments that promote fire adapted ecosystems. Fuel treatment zones should be a minimum of 300 feet wide, adjusted for slope and fuel type. This should be a priority where the adjacent ownerships are managing their fuels. Three parks and/or open spaces are recommended for attention. These are:
  - Rock Island Trailhead
  - Drake Lake Natural Areas
  - Pineries Open Space
- It is imperative that El Paso County be a model for ecosystem restoration and fire adaption. Given the current state of decadent and declining Black Forest timber, restoring forest and ecosystem health is critical for protecting its parks and open spaces. El Paso County should no longer create or accept any open space or

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<sup>11</sup> See document “*Fuel Break Guidelines for Forested Subdivisions and Communities*”, Colorado State Forest Service, F. C. Dennis

park property that has not been mitigated and its ecosystem restored to a fire adapted condition.

- El Paso County should not allow creation of any private open spaces or lots within any future subdivisions in which the ecosystem or forest has not been restored to a fire adapted condition. The county's current policy of requiring forest or fire mitigation plans is not effective due to failure to insure implementation of the plans. The "Cathedral Pines Assessment" and "State School Land Section 16 Assessment"<sup>12</sup> are good examples to follow.
- El Paso County must partner with fire departments in the development of building regulations that promote compatibility with wildfire prone environments. Structural hardening is a critical criterion for construction in the WUI. This will require engagement with the politically powerful land development and home building community. Jefferson and Douglas County regulatory models should be studied for El Paso County compatibility. The insurance industry and real estate community are rapidly moving toward requirements for WUI properties. This trend will have a significant impact on the ability of WUI residents to obtain affordable insurance, and affect re-sales of existing properties. The WUI can be rightfully compared to heavily regulated flood and geologic hazard zones regarding threats to life, property and natural resources. This is further compounded by the public costs for protecting WUI dwellers, and post-fire recovery expenditures that can linger on for years. The fiscally conservative approach should be to impose these costs on their beneficiaries (developers, builders and WUI dwellers). Weed abatement or junk vehicle ordinances are good examples of current regulations intended to lessen the public burden of negligent property owners.
- Education is a powerful tool for changing behavior. El Paso County currently has no wildfire awareness program in place. It is imperative for the county to reach out to existing organizations as an active partner for wildfire mitigation.

## **Fire Jurisdictions**

The true Black Forest fuel type extends eastward from Palmer Lake, well into Elbert County. Its southern edge extends into the City of Colorado Springs (North Gate) and northern edge into the City of Aurora (E-470 and Smokey Hill Road). Multiple fire agencies provide wildfire coverage for the Black Forest timber type. The region

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<sup>12</sup> Black Forest Fire Assessment Report. Pikes Peak Wildfire Prevention Partners, 2014, [www.ppwpp.org](http://www.ppwpp.org)

described as “Black Forest” falls primarily within the Black Forest and Falcon Fire Districts. The wildfire occurred within these jurisdictions.

Multiple challenges exist. Recommendations are:

- Continue to work toward better communication systems. The Firefighter Survey<sup>13</sup> noted poor radio communications during the Black Forest Fire that placed firefighters at risk. Communications were hampered by irregular terrain that creates “shadowed” areas with little or no coverage.
- Continue to improve cooperation between the Sheriff’s Office and fire jurisdictions. It appeared that little or no cross-training, pre-planning, or coordination had occurred with the Sheriff’s Office prior to the fire. Since then, the following actions have been set in motion: Increases in responses, including heavier resources; responses from county DOT have been improved; improved burn ordinances; improved interaction with all responding agencies, adding a additional fire investigator, run card and communication improvements from dispatch; and, continually cross train with all jurisdiction and welcome anyone to attend these trainings. Initial attack is the responsibility of the local fire jurisdiction(s). When the capacity of local resources is exceeded, by state statute, the county sheriff becomes the fire warden who then has the authority to call on state resources. This is critical to avoid the perception of the public that a lack of partnering before or during a wildfire can result in post-fire controversy that clouds the real issue: Failure of residents to take personal responsibility for their fuels.
- FFPD should continue to pursue regulations that allow for all new developments and construction to be fire adapted. This will require partnering with non-traditional groups such as the local home builders associations, and development interests. Perpetuation of the current arrangement, in the guise of “property rights”, will only increase risks to the public and firefighters.
- Educate elected officials and the public on the continued need for improved water supplies. At the same time, it is critical to stress that cistern, dry hydrant and central water supplies are for structure protection when one structure is on fire at one time, or for containment of smaller wildfires with normal weather conditions. Extreme wildfire behavior threatens hundreds of structures at one time. A good example of this was the cistern system in Cathedral Pines. Attachment to this system, during the Black Forest Fire, would have placed

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<sup>13</sup> Black Forest Fire Assessment Report. Pikes Peak Wildfire Prevention Partners, 2014, [www.ppwpp.org](http://www.ppwpp.org)

firefighters directly in line with extreme wildfire spread. No amount of water mattered under those conditions.

- Educate elected officials and the public on the use and limitations of aerial firefighting resources as an effective tool if property owners have managed their fuels. The public must understand that aerial resources are a valuable tool, but are not a panacea for inaction by property owners. Otherwise, politicians will continue to use this important tool to obfuscate the real issue of the need to manage wildland fuels and structures in the WUI.
- Continue efforts to educate recalcitrant WUI residents on their responsibility to manage their fuels so firefighters can work safely and effectively to protect their lives, properties and forests.

### **State Level**

The State of Colorado should move forward with recommendations of the Governor's Wildfire Insurance and Forest Health Task Force outlined in its report dated September 2013; especially the section on "Barriers to Progress." The state can also assist the District with the following:

- Communication systems continue to be an on-going problem; not just in the Black Forest area. Convene a panel of key interests to identify deficiencies and develop a long range plan for necessary upgrades to improve interoperability.
- Consider a grant funding system that rewards jurisdictions that implement local regulations designed to promote fire adaption. These should include treatment of native fuels and structural hardening.

### **Resident Responsibilities**

The Black Forest Fire was a predicted disaster. And, it will happen again. District residents should be put on notice that:

- Wildfire mitigation is the responsibility of the property owner who is the sole owner of his/her fuels. An Australian saying bluntly states, "You own the fuel, you own the fire."
- Secondary responsibility falls on neighbors who must work together to manage their collective wildfire risks. Property owners who do not mitigate their fuels place their neighbor's lives, homes and forests at risk.

- Trees must be cut to save the forest. The Black Forest is a decadent, declining forest. At this point, failure to recognize this truly becomes willful ignorance. At what point does this become negligence?
- Structural hardening against ember ignitions and flames must be done on all structures constructed in wildfire prone environments. This will be critical to maintain access to affordable homeowner insurance.
- Property owners must recognize their responsibility to firefighters by providing a safe working space. Firefighters will attempt to protect all homes, if given a chance. Owners should also be aware that failure to mitigate their structures and native fuels takes away valuable time from those who mitigated their fuels.
- Property owners must learn that traditional firefighting resources are based on one house on fire at one time. Wildfires, especially with extreme burning conditions, place hundreds of homes at risk at one time. Property tax assessments are predicated on the traditional model- not the wildfire model.

### **Critical Lessons Learned**

No amount of fire engines, firefighters, bulldozers, slurry bombers or helicopters could have stopped the Black Forest Fire. Unmitigated forest fuels, combined with up sloping terrain and high winds immediately overwhelmed any attempts at containment. Two Black Forest residents lost their lives in the ensuing fire storm. Over 500 structures were damaged or destroyed.

Critical lessons learned were:

- Defensible spaces were critical for insuring firefighter safety and effectiveness.
- Defensible spaces can be overwhelmed by wildfire from adjoining properties.
- Where forest fuels have been treated, tree losses and resource damage are significantly reduced. Fire in Cathedral Pines and State School Land Section 16 can be characterized as “good fire”, comparable to prescribed fire.
- Structural hardening is just as important as treatment of surrounding native fuels. Ember ignitions of structures were a major contributor to wildfire intensity.
- Unregulated construction in areas prone to extreme wildfire behavior will continue to result in similar disasters.



## **Summary**

This plan is intended as a guide to help reduce losses from catastrophic wildfire. The CWPP is a living document that allows for flexibility. Adjustments, based on new science and technologies, can be adopted without need for plan modification, so long as the intent of the CWPP is met.

The District is a special community and provides a unique living environment with its mix of forests and prairies. Wildfires are inevitable and a part of both ecosystems. It is not a matter of “if”, but “when”. It takes a community that is resolved to work together to manage this risk. Responsibility begins with every property owner, supported by community wide mitigation efforts.

# Appendix A

## Falcon Fire Protection District Priorities

And  
Maps

## Falcon Fire Protection District Wildfire Mitigation Priorities

The table below is a list of priority projects within the District intended to promote public safety, protect property and reduce damage to natural resources. These should also promote firefighter safety, and post-fire recovery.

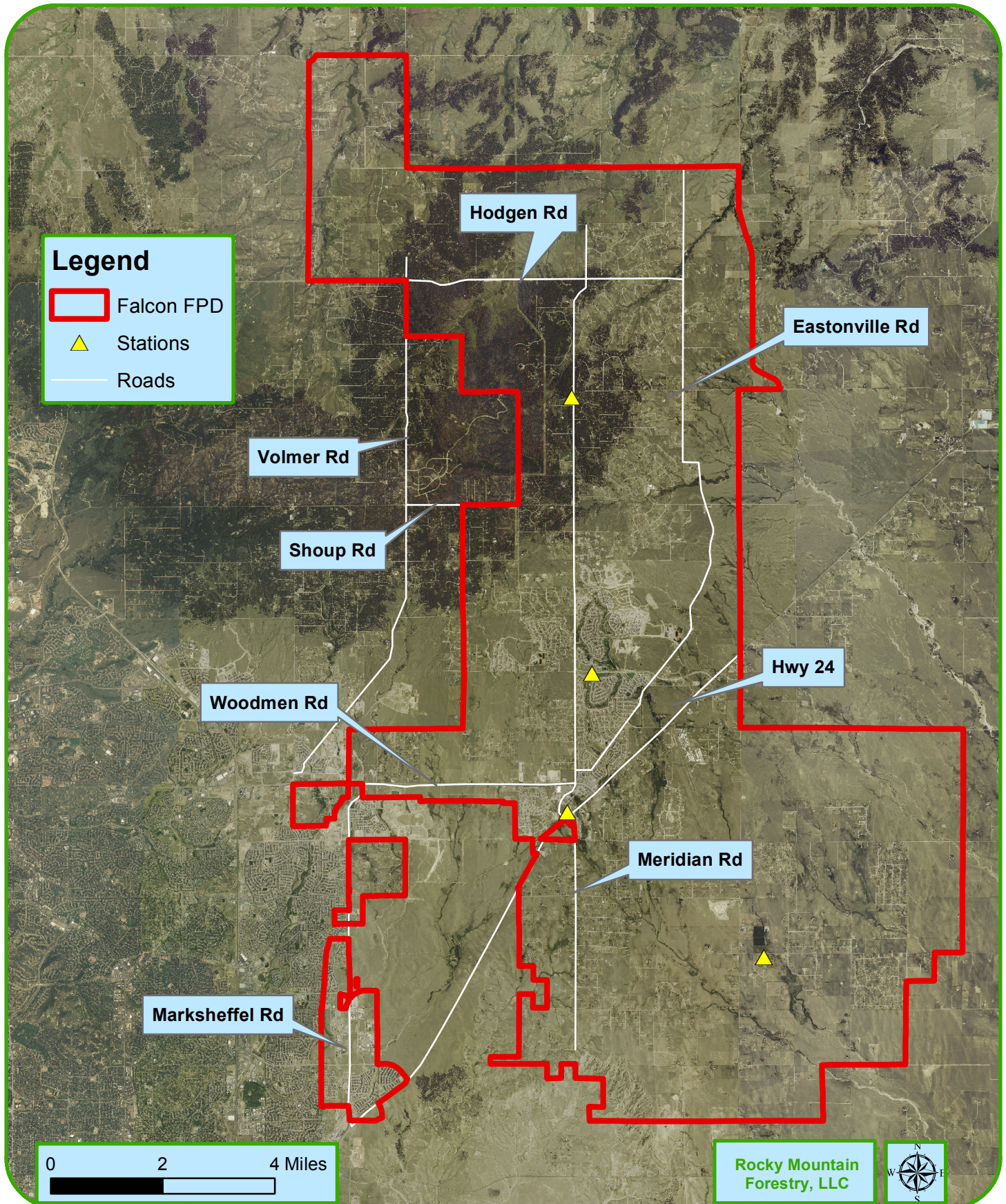
Project or Activity	Treatment	Ownership	Priority
Road right-of-ways	Fuel reduction, shaded fuel breaks	County and private roads	1
Critical Intersections	Fuel reduction, shaded fuel breaks	County and private roads	1
Critical Infrastructure: Power lines	Line clearance and tree removal below power lines	Mountain View Electric, and Excel Energy	1
Critical Infrastructure: Power substations	Fuel reduction, shaded fuel breaks	Mountain View Electric	1
Homeowner Defensible Spaces and Home Ignition Zones (HIZ)	Structural hardening, forest thinning, tree crown separation	Private owners	1
Watersheds	Fuel treatments necessary to protect water quality, and prevent soil erosion	Public and private ownerships	1
Critical Infrastructure: Storm water structures	Fuel treatments upstream from storm water conveyances (culverts, bridges, ditches, etc.)	Public and private	1
Firewise Community Projects	Fuel treatments intended to unify community wildfire mitigation	Private owners and communities	1
Public Open Spaces and Parks	Fuel management zones for given fuel type to reduce crown fire potential	El Paso County	2
Private Open Spaces and Parks	Fuel management zones for given fuel type to reduce crown fire potential	Homeowner Associations	2
Private Access Easements	Fuel management zones for given fuel type	Private owners	2
Farm and Ranches abutting subdivisions	Fuel treatment zones for the given fuel type	Private owners	2

# Falcon Fire Protection District Maps



# Community Wildfire Protection Plan

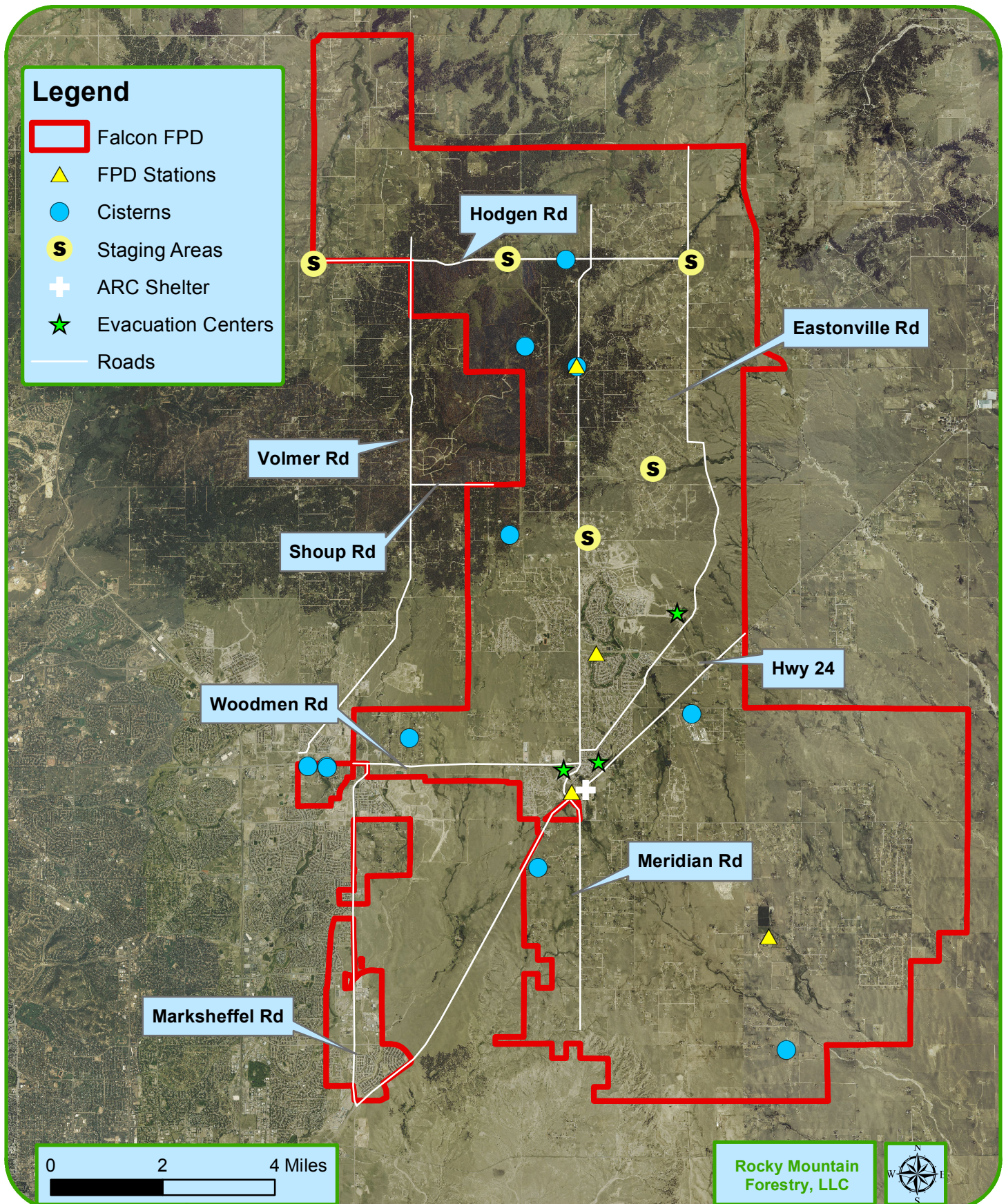
## Aerial Map: Falcon Fire Protection District





# Community Wildfire Protection Plan

## Emergency Planning Map: Falcon Fire Protection District





# Potential Roadway Fuel Treatment Projects

Winchester,  
Remington,  
Morgan and Black  
Squirrel Roads

## Legend

-  Falcon FPD
-  Stations
-  Roads

Hodden Rd

Murphy Road

Eastonville Rd

Volmer Rd

Meridian Road

Shoup Rd

Burgess Road

Ayers Road

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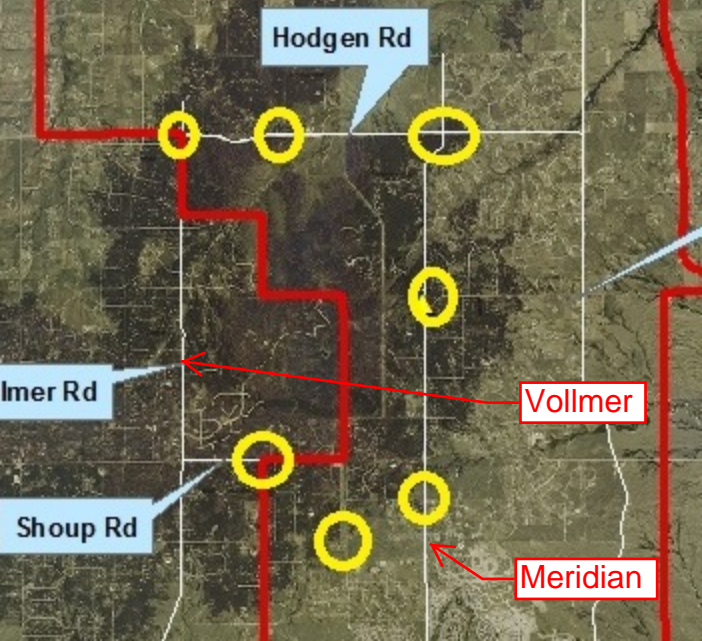
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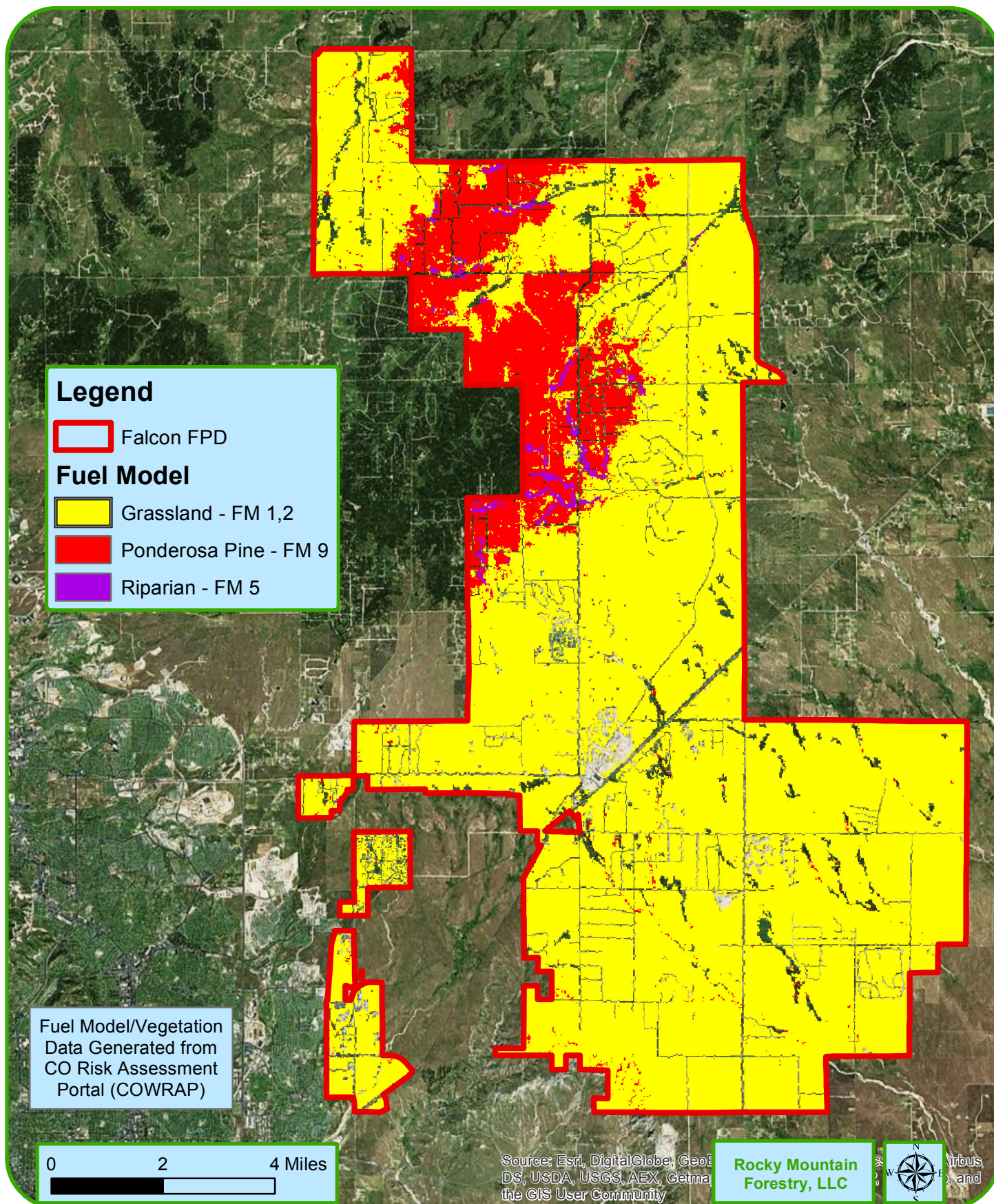
# Critical Intersections





# Community Wildfire Protection Plan

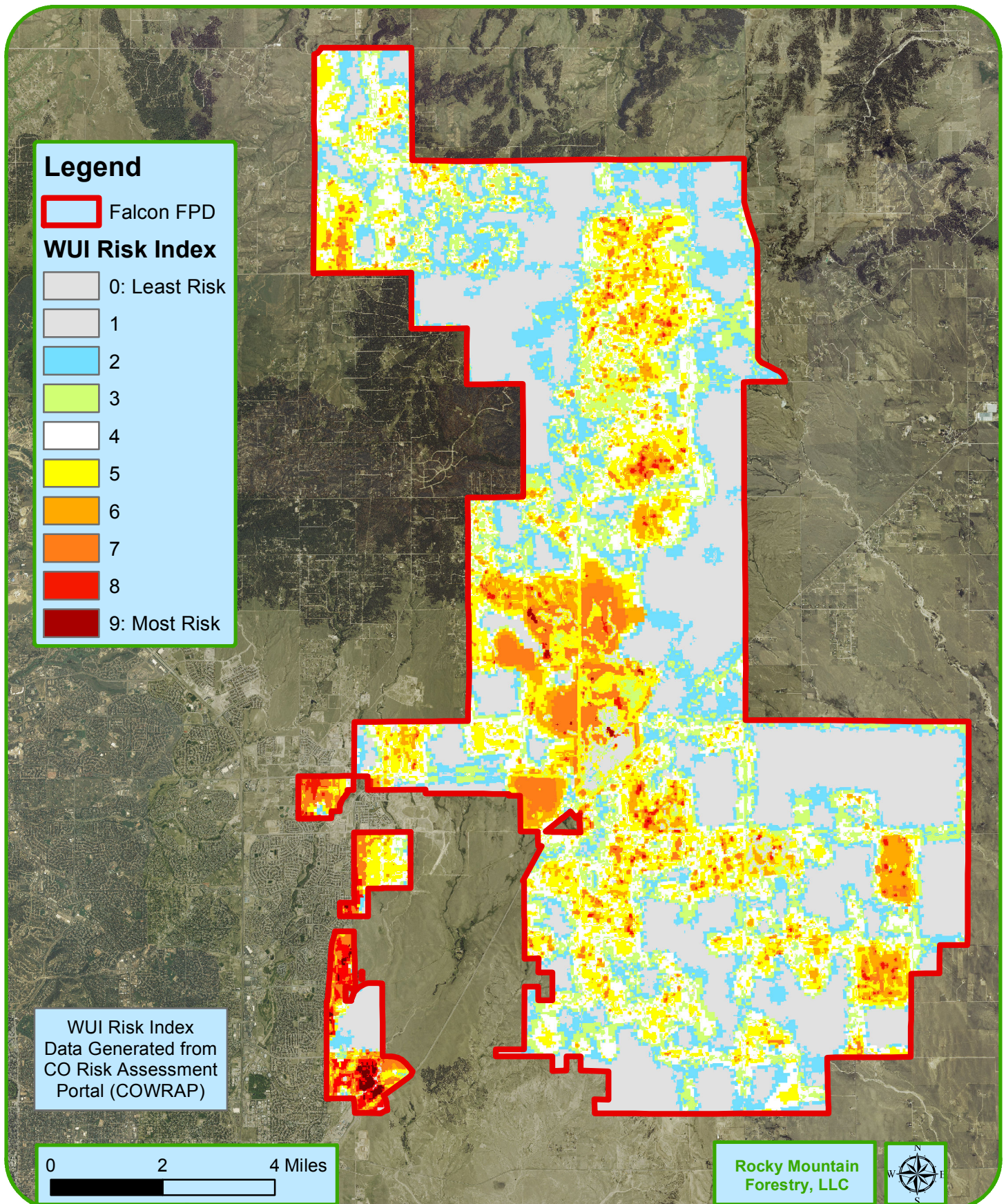
## Fuel Model Map: Falcon Fire Protection District





# Community Wildfire Protection Plan

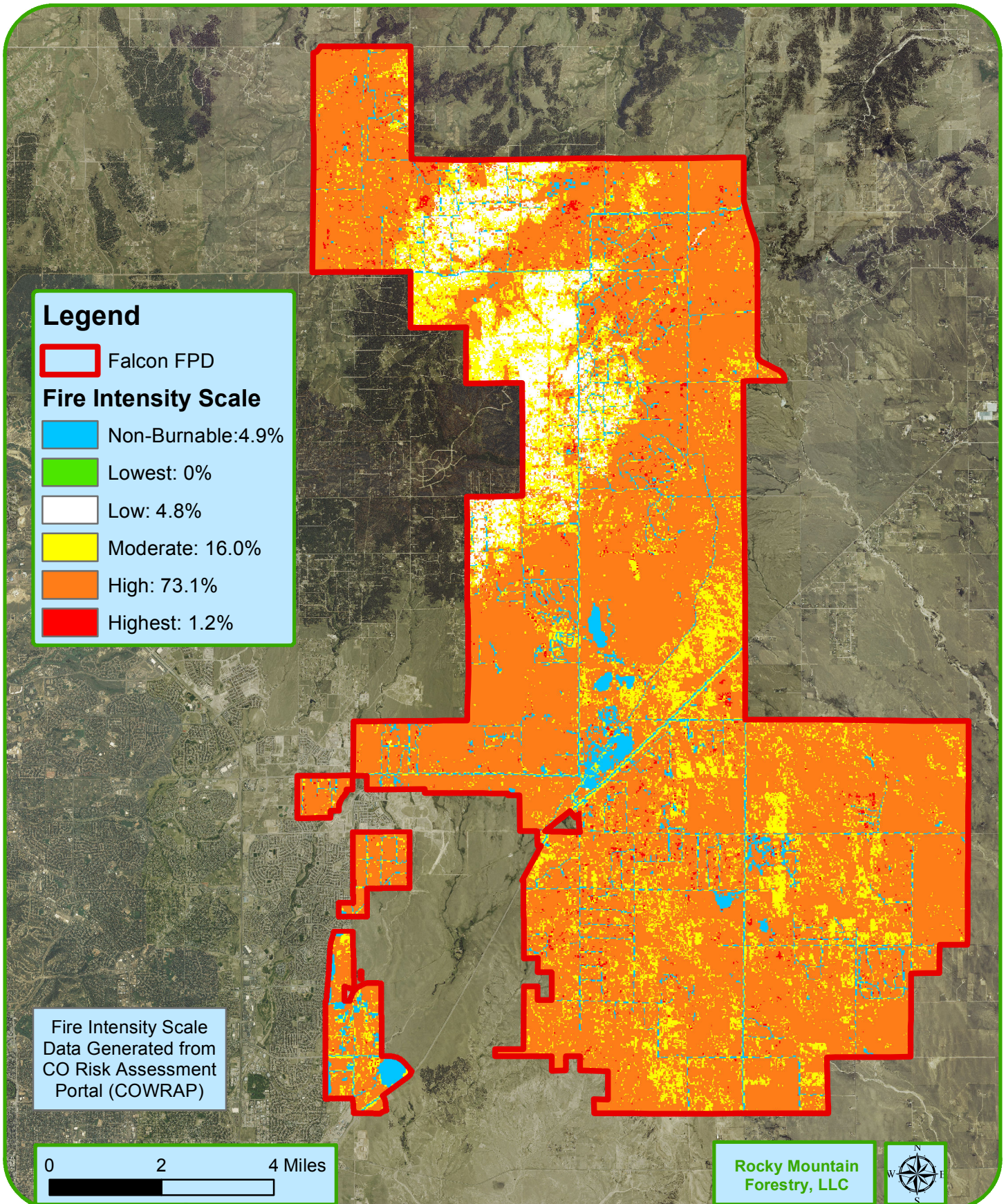
## WUI Risk Index: Falcon Fire Protection District





# Community Wildfire Protection Plan

## Fire Intensity Scale Map: Falcon Fire Protection District





# Appendix B

## Falcon Fire Protection District

### Maintenance Priorities

#### For

#### Homeowners

#### And

#### Homeowner Associations

## Home Owner Association Community Action Plan

During the CWPP process, the following actions were suggested:

Item Descriptions	Date	By
Provide operational authority to Falcon Fire Protection District for use of any emergency water supplies. This can be in the form of an agreement authorized by the board of directors.		
Develop a community evacuation map for distribution to all residents.		
Install evacuation route signs at key intersections or exits from the community.		
Develop a template for installation and maintenance of community street signs, light poles, and mail kiosks to prevent damage by wildfire.		
Coordinate with abutting ownerships on joint fuel treatment projects along community boundaries, including participation in possible grant funding.		
Coordinate thinning and/or tree removal with EPDOT county right-of-ways to reduce crown fire potential and remove ladder fuels for fire starts in the roadway.		
Implement at least two demonstration fuel treatments or forestry projects on private lots.		
Develop an overall drainage map showing locations of culverts and major drainage swales that might be impacted by post-fire sediment runoff. Erosion control contractors should be contacted to obtain pricing.		
Implement a "Don't Fence Me In" program, in cooperation with Mountain View Electric Association for all above-ground electrical facilities in the community.		
Establish community guidelines for Firewise construction, landscaping, and forestry practices in coordination with all HOA committees. These should be updated as needed.		

The following are actions the community can incorporate into its routine budget categories to manage wildfire risks. These are broken down into categories that allow for annual planning and budgeting.

### Seasonal

Activity	Date	By
<b>Mowing:</b>		
-Road sides and roadside ditches- Monthly or as warranted by fire danger.		
-Re-inspect all intersection sight distances for cleared sight triangles.		
-Clear all grasses and fine fuels 3-5 feet from around street signs, light poles and mail box kiosks using weed eaters or non-selective herbicides.		
-Open Spaces- Twice per year		
-First mowing mid-summer after wildflower bloom and before grass curing (browning).		
-Second mowing in the fall after grass curing (to reduce wildfire rate of spread during fall/winter fire season, and allow new, green re-growth in the spring).		
<b>Common Area and Entry Landscaping:</b>		
-Spring cleanup to remove all dead materials (twigs, leaves, needles, etc.).		
-Remove storm damaged trees and branches.		
-Mid-summer re-inspection to again remove fine fuels within 5-10 feet of all combustible materials.		
<b>Education/Awareness:</b>		
-Spring alerts/mailings for:		
-Emergency notification system signups and updates.		
-Family evacuation plans.		
-Home inventories.		
-Home assessments by local fire agencies.		
<b>-Early to mid-Summer:</b>		
-Firewise classes with emphasis on structural ignitability and forest health.		
<b>Implementation:</b>		
-Annual slash disposal program.		
-Consider developing a second seasonal slash disposal effort.		
-Coordinate/facilitate property to property (neighborhood) fuel treatment projects.		

**Annual**

<b>Renew Firewise Community status:</b>	<b>Date</b>	<b>By</b>
-Firewise Day, meeting or special event.		
Coordinate cross-training between all committees (Architectural Control, Landscaping, and Fire Mitigation)		
Update annual operating agreements with local fire agencies for emergency use of common areas and water supplies.		
Continue to encourage neighboring property owners to implement lot-to-lot mitigation projects that enhance all home ignition zones (HIZ).		
<b>Review CWPP to determine annual project needs:</b>		
-Apply for grant funding as available.		
Contact all partners to update any wildfire mitigation needs related to critical infrastructure.		
-Mountain View Electric- Power line clearance needs along roads, or rear lot easements.		
-Utility pedestal clearances inspected to reduce loss or damage by wildfire.		
El Paso County Department of Transportation (EPDOT) tree removals and pruning along roads.		
-Right-of-way mowing along public roads.		
Inspect all fuel treatment areas to identify any maintenance needs, such as dead tree removal, storm damage cleanup, or insect/disease control.		
Meet with abutting ownerships to coordinate fuel treatment projects.		
Coordinate with Falcon Fire on roadway fuel treatment projects.		
Continue community wide educational programs through classes, meetings and annual events. Topics may include:		
-Evacuation Planning.		
-El Paso/Teller 911 program signup (target of 100% participation).		
-Forest Health and related topics.		
-Noxious Weed prevention and control.		
-Wildlife habitat restoration.		
-Insurance coverage for “being made whole again” in the event of home loss.		
-Neighborhood Watch, and “phone trees”.		
-Special Needs Populations.		
-Evacuation Planning for Pets and Livestock.		



**Every Three/Five/Ten Years**

<p>Inspect all fuel treatments for:</p> <hr/> <p>Tree crown closure in all areas:</p> <ul style="list-style-type: none"><li>-Shaded Fuel Breaks and D-Space Zone 2- 10 feet between crowns (20 feet between crowns of tree clumps).</li><li>-Forest Health Thinning Areas: (D-Space Zone 3)- 3-5 feet between crowns and/or to allow full sun to tree crowns for optimum tree growth/health.</li></ul> <hr/> <p>Seedling tree invasion/encroachment:</p> <ul style="list-style-type: none"><li>-Mow or cut seedling and sapling size trees when located within the dripline of mature trees, or not in full sun locations.</li><li>-Where trees establish in open areas, thin out trees to promote full crown development, and reduce crowning potential.</li><li>-Prune as necessary to reduce torching potential.</li></ul>		
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## Appendix C

### Falcon Fire Protection District

#### Firefighter Safety Zones Guidelines (NWCG Fire line Handbook)

##### **Note:**

Guidelines are for firefighters in full  
Personal Protective Equipment (PPE),  
And with wildland fire training.

## Safety Zone Guidelines

- Avoid locations that are downwind from the fire.
- Avoid locations that are in chimneys, saddles, or narrow canyons.
- Avoid locations that require a steep uphill escape route.
- Take advantage of heat barriers such as lee side of ridges, large rocks, or solid structures.
- Burn out safety zones prior to flame front approach.
- For radiant heat only, the distance separation between the firefighter and the flames must be at least four times the maximum flame height. This distance must be maintained on all sides, if the fire has ability to burn completely around the safety zone. **Convective heat from wind and/or terrain influences will increase this distance requirement.**

### CALCULATIONS ASSUME NO SLOPE AND NO WIND

Flame Height	Distance Separation (firefighters to flame)	Area in Acres
10 ft.	40 ft.	1/10 acre
20 ft.	80 ft.	1/2 acre
50 ft.	200 ft.	3 acres
75 ft.	300 ft.	7 acres
100 ft.	400 ft.	12 acres
200 ft.	800 ft.	50 acres

*Distance Separation is the radius from the center of the safety zone to the nearest fuels. When fuels are present that will allow the fire to burn on all sides of the safety zone this distance must be doubled in order maintain effective separation in front, to the sides, and behind the firefighters.*

*Area in Acres is calculated to allow for distance separation on all sides for a three person engine crew. One acre is approximately the size of a football field or exactly 208 feet x 208 feet.*

# LCES Checklist

LCES must be established and known to  
**ALL** firefighters **BEFORE** needed.

## Lookout(s)

Experienced / Competent / Trusted  
Enough lookouts at good vantage points  
Knowledge of crew locations  
Knowledge of escape and safety locations  
Knowledge of trigger points  
Map / Weather Kit / Watch / IAP

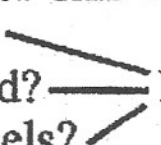
## Communication(s)

Radio frequencies confirmed  
Backup procedures and check-in times established  
Provide updates on any situation change  
Sound alarm early, not late

## Escape Route(s)

More than one escape route  
Avoid steep uphill escape routes  
Scouted: Loose soils / Rocks / Vegetation  
Timed: Slowest person / Fatigue & Temperature factors  
Marked: Flagged for day or night  
Evaluate: Escape time vs. Rate of spread  
Vehicles parked for escape

## Safety Zone(s)

Survivable without a fire shelter  
Back into clean burn  
Natural Features: Rock Areas / Water / Meadows  
Constructed Sites: Clearcuts / Roads / Helispots  
Scouted for size and hazards  
Upslope?   
Downwind?  
Heavy Fuels?  
More heat impact → Larger safety zone

Escape time and safety zone size requirements  
will change as fire behavior changes.

## Appendix D

### Falcon Fire Protection District

### Firewise and Wildfire Mitigation Web Links



# Links to Wildfire Mitigation Resources

**Falcon Fire Protection District:** [www.falconfirepd.org](http://www.falconfirepd.org)

**Colorado State Forest Service:** [www.csfs.colostate.edu](http://www.csfs.colostate.edu)

**El Paso County Sheriff's Office:** [www.elpasoco.com](http://www.elpasoco.com)

**Emergency Notification System (ENS) Signup:** [www.elpasoteller911.org](http://www.elpasoteller911.org)

(NOTE: If you do not have a phone land line through Century Link, your phone number may not be in the ENS (often referred to as "Reverse 911"). Homeowners who rely only on their cell phone or Voice-over-internet-protocol (VIOP) through their cable provider must register their devices and phone numbers at this web site.

**Pikes Peak Wildfire Prevention Partners:** [www.ppwpp.org](http://www.ppwpp.org)

Resource links and access to *Black Forest Fire Assessment Report* and companion video.

## Firewise Links:

Firewise Communities web site: [www.firewise.org](http://www.firewise.org)

1. Resources, contacts and access to library
2. "How to's" for homeowners with downloadable pdf's.

**Ready! Set! Go! (RSG)** Sign up at: [www.wildlandfirersg.org](http://www.wildlandfirersg.org)

-*Ready, Set, Go! Your Personal Wildfire Action Plan* brochure

**Ready Colorado:** [www.readycolorado.com](http://www.readycolorado.com)

-*READYColorado Pack a Kit* brochure (pdf)

-*Pet Preparedness* brochure (pdf)

## Insurance Institute for Business and Home Safety (IBHS)

Web site: [www.disastersafety.org](http://www.disastersafety.org)

1. Site has regional guides for retro-fitting homes for wildfire.
2. Wildfire Home Assessment & Checklist
3. View videos of ember ignition lab tests.

**Rocky Mountain Insurance Information Association:** [www.rmiia.org](http://www.rmiia.org)

-*Wildfire and Insurance* brochure (pdf)

**Fire Adapted Communities (FAC):** [www.fireadapted.org](http://www.fireadapted.org)

Waldo Canyon post-fire report viewable.

## MUST SEE VIDEOS:

- *Wildfire! Preventing Home Ignitions* View at [www.firewise.org](http://www.firewise.org)
- YouTube videos (type in the lines below to view):
  - o "Melody Lane Fire" (See 5 homes ignite in real time)
  - o "IBHS Ember" (See embers ignite a home in the lab)

## Appendix E

### Falcon Fire Protection District

#### Glossary of Forestry and Wildfire Terms

## Appendix D

### Glossary

**Abiotic Factors:** The non-living components of the environment, such as air, rocks, soil, water, peat, and plant litter.

**Afforestation:** The establishment of trees on an area that has lacked forest cover for a very long time, or has never been forested.

**Aerial fuels:** Standing and supported live and dead combustibles not in direct contact with the ground and consisting mainly of foliage, twigs, branches, stems, cones, bark, and vines: typically used in reference to the crowns of trees.

**Cambium:** A single layer of cells between the woody part of the tree and the bark. Division of these cells result in diameter growth of the tree through formation of wood cells (xylem) and inner bark (phloem).

**Canopy:** The forest cover of branches and foliage formed by tree crowns.

**Chain:** A measuring tape, often nylon, 50 meters or 75 meters in length, used to measure distances. This term is derived from an old unit of measurement (80 Chains = 1 mile).

**Chimney:** A topographical feature such as a narrow drainage on a hillside or the upper end of a box canyon that could channel wind, smoke or flames up the slope; acting as a fireplace chimney would to draw smoke and heat upward.

**Class A Roof:** Effective against severe fire test exposures, as classified by the Universal Building Code (UBC). Under such exposures, roof coverings of this class are not readily flammable, afford a fairly high degree of fire protection to the roof deck, do not slip from position, and are not expected to produce flying brands.

**Class B Roof:** Effective against moderate fire test exposures, as classified by the Universal Building Code (UBC). Under such exposures, roof coverings of this class are not readily flammable, afford a moderate degree of fire protection to the roof deck, do not slip from position, and are not expected to produce flying brands.

**Class C Roof:** Effective against light fire test exposure, as classified by the Universal Building Code (UBC). Under such exposures, roof coverings of this class are not readily flammable, afford a measurable degree of fire protection to the roof deck, do not slip from position, and are not expected to produce flying brands.

**Clearcut:** An area of forest land from which all merchantable trees have recently been harvested.

**Climax Forest:** A forest community that represents the final stage of natural forest succession for its locality, i.e. for its environment.

**Coarse Woody Debris (CWD):** Sound and rotting logs and stumps that provide habitat for plants, animals, and insects, and a source of nutrients for soil development.

**Colorado Champion Tree:** The largest known tree of its species in the state. Trees are ranked by a point system based on three measurements: trunk circumference in inches at 4.5 feet above the ground, tree height in feet, and the average crown spread in feet.

**Commercial Thinning:** A silviculture treatment that "thins" out an overstocked stand by removing trees that are large enough to be sold as poles or fence posts. It is carried out to improve the health and growth rate of the remaining crop trees.

**Competing Vegetation:** Vegetation that seeks and uses the limited common resources (space, light, water, and nutrients) of a forest site needed by preferred trees for survival and growth.

**Conifer:** Cone-bearing trees having needles or scale-like leaves, usually evergreen, and producing wood known commercially as "softwoods."

**Conservation:** Management of the human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations. It includes the preservation, maintenance, sustainable utilization, restoration, and enhancement of the environment.

**Crown fire / Crowning:** A form of extreme wildland fire behavior consisting of fire that advances from top to top of trees or shrubs more or less independent of a surface fire. Crown fires are sometimes classed as running or dependent to distinguish the degree of independence from the surface fire.

**Deciduous:** Perennial plants that are normally leafless for some time during the year.

**Defensible Space:** An area within the perimeter of a parcel, development, neighborhood, or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching wildfire or defense against encroaching wildfires or escaping structure fires. The perimeter as used herein is the area encompassing the parcel or parcels proposed for construction and/or development, excluding the physical structure itself. The area is characterized by the establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures. In simplest terms, it is adequate space between structures and flammable vegetation which allows firefighters a safe working area from which they can attack an oncoming wildfire. Defensible Space is the best element of fire protection for individual property owners.

**Defoliator:** An agent that damages trees by destroying leaves or needles.

**Dripline:** The outer most leaves on a tree defines its dripline and the ground within the dripline is known as the drip zone; also defined as the area defined by the outermost circumference of a tree canopy.

**Deforestation:** The removal of a forest stand where the land is put to a non forest use.

**Eave Opening:** A vent located in an eave or soffit which allows airflow into the attic and/or walls of a structure.

**Ecosystem:** A functional unit consisting of all the living organisms (plants, animals, microbes) in a given area, and all the non-living physical and chemical factors of their environment, linked together through nutrient cycling and energy flow. An ecosystem can be of any size a log, pond, field, forest, or the earth's biosphere but it always functions as a whole unit. Ecosystems are commonly described according to the major type of vegetation; for example, forest ecosystem, old-growth ecosystem, or range ecosystem.

**Escape route:** A preplanned and understood route firefighters take to retreat from an unsafe or fire-threatened area and move to a safety zone or other low-risk area.

**Extreme fire behavior:** A level of fire behavior that ordinarily precludes firefighting methods involving direct attack on the fire. One or more of the following is usually involved: high rate of spread, prolific crowning and/or spotting, presence of fire whirls, strong convection column. Predictability is difficult because such fires often exercise some degree of influence on their environment and behave erratically, sometimes dangerously.

**Felling:** The cutting down of trees.

**Firebrands:** Flaming or glowing fuels lofted into the air during intense burning by strong upward convection currents. Also referred to as airborne embers.

**Fire break:** A natural or constructed fuel-free barrier used to stop or check fires that may occur, or to provide a control line from which to work.

**Fire front / Flame front:** The part of a fire within which continuous flaming combustion is taking place. Unless otherwise specified, the fire front is assumed to be the leading edge of the fire perimeter.

**Fire Dependent:** Requiring one or more fires of varying frequency, timing, severity, and size in order to achieve optimal conditions for population survival or growth.

**Fire Hazard Mitigation:** Various methods by which existing fire hazards can be reduced in a certain area, such as fuel breaks, non-combustible roofing, spark arresters, etc.

**Fire Management:** The activities concerned with the protection of people, property, and forest areas from wildfire and the use of prescribed burning for the attainment of forest management and other land use objectives, all conducted in a manner that considers environmental, social, and economic criteria.

**Fire Suppression:** All activities concerned with controlling and extinguishing a fire following its detection.

**Firewise:** A National Fire Protection Association's (NFPA) program encouraging local solutions for wildfire safety by involving homeowners, community leaders, planners, developers, firefighters, and others in the effort to protect people and property from wildfire risks.

**Forest Fire:** Any wildfire or prescribed burn that is burning in forest, grass, alpine, or tundra vegetation types.

**Forest Type:** A group of forested areas or stands of similar composition (species, age, height, and stocking) which differentiates it from other such groups.

**Fuel:** Any living or dead material that will burn.

**Fuel break:** An existing barrier or change in fuel type (to one that is less flammable than that surrounding it) or a wide strip of land on which the native vegetation has been modified or cleared, that acts as a buffer to fire spread so that fires burning into them can be more readily controlled. Often selected or constructed to protect a high value area from fire.

**Fuel Management:** The act or practice of controlling flammability and reducing resistance to control of wildland fuels through mechanical, chemical, biological, or manual means, or by fire in support of land management objectives.

**Fuel reduction zone:** An area similar to a fuel break but not necessarily linear, in which fuels have been reduced or modified to reduce the likelihood of ignition and/or to reduce fire intensity thereby lessening potential damage and resistance to control.

**Germination:** The development of a seedling from a seed.



**Home Ignition Zone (HIZ):** An area including the home and its immediate surroundings within which burning fuels could potentially ignite the structure; usually considered to be an area extending out roughly 100 feet from the home. The HIZ is often used to describe the area in which fuel modification measures should be taken to protect the home.

**Ladder Fuels:** Fuels that provide vertical continuity between the surface fuels and crown fuels in a forest stand, thus contributing to crown fires.

**Lines of Effort:** Tasks sets or sets of actions that are linked or coordinated with other task sets to accomplish a larger mission or reach a desired end state. Lines of effort allow leaders and decision makers to direct a variety of separate actions toward a unified result.

**Maximum Density:** The maximum allowable stand density above which stands must be spaced to a target density of well-spaced, acceptable stems to achieve free-growing status.

**National Fire Protection Association (NFPA):** A private, non-profit organization dedicated to reducing fire hazards and improving fire service.

**Phloem:** A layer of tree tissue just inside the bark that conducts food from the leaves to the stem and roots.

**Pitch Tubes:** A tubular mass of resin that forms on bark surface at bark-beetle entrance holes.

**Prescribed Burning:** Controlled application of fire to wildland fuels, in either their natural or modified state, under certain conditions of weather, fuel moisture, soil moisture, etc. as to allow the fire to be confined to a predetermined area and at the same time to produce results to meet planned land management objective.

**Ready, Set, Go (RSG):** A program, managed by the [International Association of Fire Chiefs \(IAFC\)](#), seeking to develop and improve the dialogue between fire departments and residents. The program helps fire departments teach individuals who live in high-risk wildfire areas how to best prepare themselves and their properties against fire threats.

**Regeneration:** The act of renewing tree cover by establishing young trees, naturally or artificially note regeneration usually maintains the same forest type and is done promptly after the previous stand or forest was removed.

**Saddle:** A depression, dip or pass in a ridgeline; significant in wildland firefighting because winds may be funneled through a saddle, causing an increase in wind speed.

**Safety zone:** An area essentially cleared of flammable materials, used by firefighters to escape unsafe or threatening fire conditions. Safety zones are greatly enlarged areas in which firefighters can distance themselves from threatening fire behavior without having to take extraordinary measure to shield themselves from fire/heat.

**Sapwood:** The light-colored wood that appears on the outer portion of a cross-section of a tree.

**Serotinous:** Pertaining to fruit or cones that remain on a tree without opening for one or more years note in some species cones open and seeds are shed when heat is provided by fires or hot and dry conditions.

**Shaded fuel break:** A fuel break built in a timbered area where the trees within the break are thinned and limbed up to reduce crown fire potential, yet retain enough crown canopy to provide shade, thereby making a less favorable microclimate for surface fires.

**Silviculture:** The art and science of controlling the establishment, growth, composition, health, and quality of forests and woodlands. Silviculture entails the manipulation of forest and woodland vegetation in stands and on landscapes to meet the diverse needs and values of landowners and society on a sustainable basis.

**Snag:** A standing dead tree or part of a dead tree from which at least the smaller branches have fallen.

**Stand:** A continuous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit.

**Spot Fire / Spotting:** Fires ignited beyond control lines or outside the perimeter of a fire by firebrands landing on/among flammable material. Spot fires/spotting are a form of extreme fire behavior typically resulting from high wind conditions.

**Structure protection:** A defensive strategy in wildland firefighting in which firefighters are assigned to evaluate, prepare and, when possible, defend structures/homes that may be threatened by a wildfire.

**Structure triage:** Evaluating and sorting structures/homes into categories based on their relative likelihood of surviving a wildland fire threat (*defensibility*). Triage decisions are based multiple factors and conditions occurring during an actual fire - weather, fire behavior, home ignition potential, defensible space, presence of escape routes, and availability of firefighting resources, among others - with the goal of doing the most good with the resources available.

**Succession (or Ecological Succession):** The replacement of one plant and/or animal species over time by another in progressive development toward climax vegetation.

**Surface fuels:** Fuels lying on or near the surface of the ground, consisting of leaf and needle litter, dead branch material, downed logs, bark, tree cones, and low-lying live vegetation.

**Survivable space:** A term typically used to describe the area around a structure/home indicating that fuels in the area have been reduced to the point that there is little or no serious fire threat to the structure; the structure has a high probability of surviving a wildland fire without anyone on scene providing active protection.

**Thinning:** A cutting made in an immature crop or stand primarily to accelerate diameter increment, but also, by suitable selection, to improve the average form of the tree that remain.

**Torching:** The burning of the foliage of a single tree or a small group of trees, from the bottom up. Sometimes, also called candling. Torching is an extreme form of fire behavior, similar to but less extreme than crowning in that crowning affects larger numbers, even entire stands of trees.

**USDAFS:** United States Department of Agriculture - Forest Service, what is commonly known as just "The Forest Service"

**Windbreak:** A strip of trees or shrubs maintained mainly to alter wind flow and microclimates in the sheltered zone, usually farm buildings.

**Wildland-Urban Interface or Wildland-Urban Intermix (WUI):** The line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. Although *Interface* is the more general, more commonly used term; it technically refers specifically to the area where development and wildlands meet. *Intermix* indicates the presence of wildland vegetation/fuels intermingled throughout the developed area.

