

# **Carroll Lakes**

## **Community Wildfire Protection Plan**



**June, 2005**

**Donald Wescot Fire Protection District  
NE Teller Fire Protection District  
El Paso County, FEMA  
Colorado State Forest Service, USDA Forest Service**

**Prepared by Land Stewardship Associates LLC**

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## I. COMMUNITY IDENTIFICATION AND DESCRIPTION

The Carroll Lakes Area is located in the upper South Beaver Creek watershed that flows into the Monument Creek that in turn flows through the United States Air Force Academy (USAFA) property. The area is about 4 miles west of the AFA (western boundary) and about 4 miles east of the town of Woodland Park. The area is about 15 northwest of Colorado Springs, following highway US 24. The area is approximately 3,220 acres in size and ranges in elevation from 8,900 to 9,300 feet. A series of 8 man-made lakes (Sapphire Lake, Leo Lake, Grace Lake, Lake Judy, Aspen Lake, Boulder Lake, Columbine Lake and Rainbow Lake) run through the center of the area along South Beaver Creek. The following vicinity map identifies communities, Landownership (Pike National Forest, private and Farrish Memorial Recreation Area (USAFA), and the Wildland-Urban Interface (WUI) Boundary as specified by Federal Register, Volume 66, No.3, page 753. Highway US 24 accesses the area from Colorado Springs. The Rampart Range Road (FR300) which begins near Sadalia, Colorado, accesses the area from the north. A well maintained power line and right-of-way, that could be used as a fire line, is in the northern portion of the WUI.

The area is dominated by highly erosive, decomposed granitic soils. Vegetation is dominated by a ponderosa pine/Douglas-fir montane forest, which is relatively dense and even-aged. An aspen component is scattered throughout the ponderosa pine/Douglas-fir forest and will likely be released when treatment occurs. The release of the aspen will improve vegetation diversity and will likely improve wildlife habitat. Limber pine is also present. The north slopes are more dense, with larger trees. The south slopes are also dense but trees are shorter and have less Douglas-fir present. The density of the ponderosa pine/Douglas-fir forest is generally dense enough to sustain a substantial crown fire—resulting in a high fire risk.

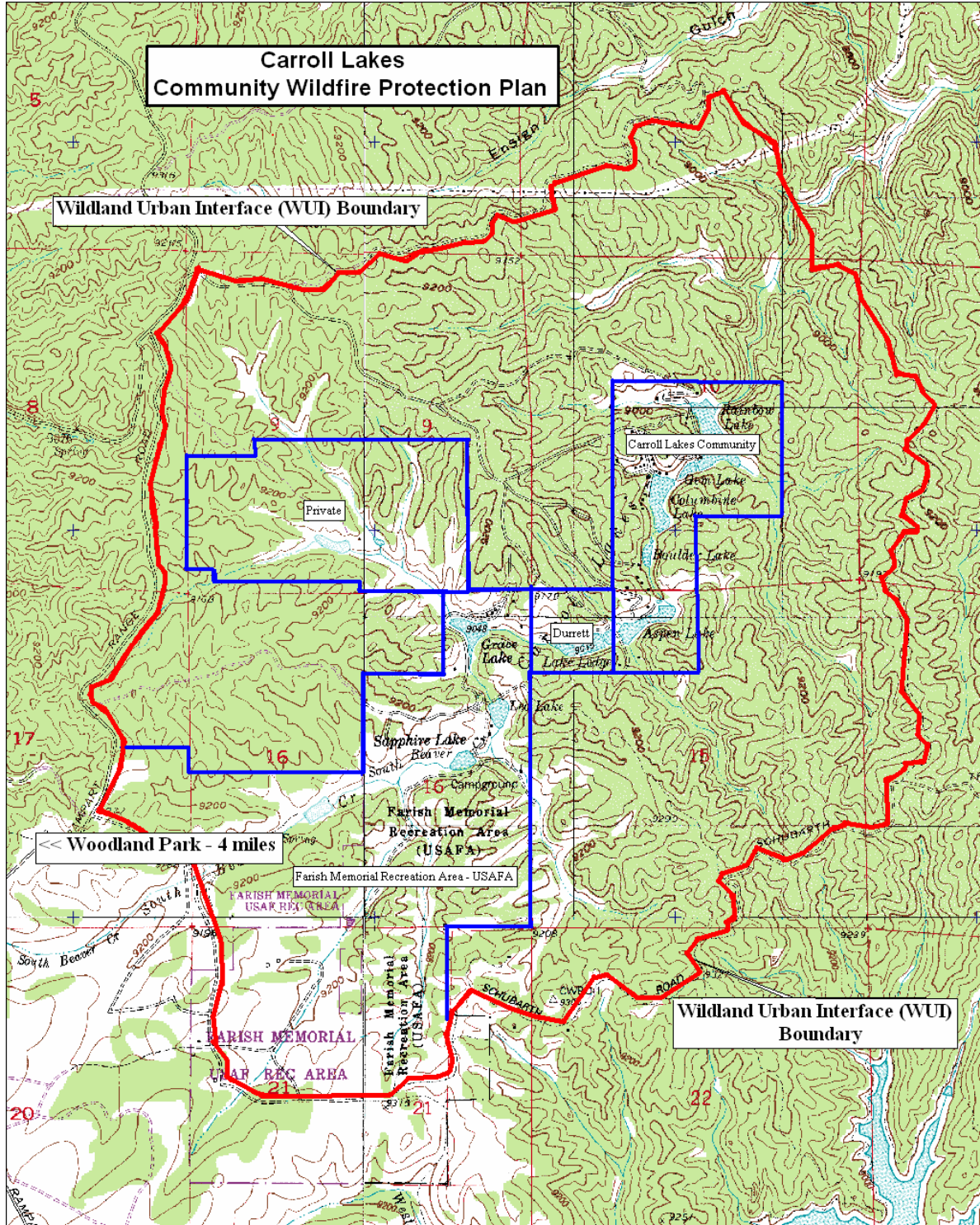
One such fire, the Hayman (2002, the largest wildfire on record in Colorado) burned about 7 miles north of the area. A substantial portion of the Hayman fire was severely burned with high intensity burns, leaving patches of hydrophobic soils and significant erosion. The Carroll Lakes area has similar hazard and risk ratings to the Hayman fire area.

The Carroll Lakes Area can be characterized as a mountain community with permanent and recreational home sites scattered throughout. A good many of the homesites are members of the Colorado Springs Fly Casting Club and are located along the lakes within the center of the area. Landownership patterns are private parcels along the lakes, surrounded by Pike National Forest lands and the Farrish Memorial Recreation Area (USAFA).

Carroll Lakes area is under the Donald Westcot Fire Protection District in northeastern Colorado Springs which is about 40+ miles from the area and roughly has a 45 minute to one hour response time to the area. The nearest engines are in the Donald Westcot Fire Protection District are at Glen Eagle (NE of USAFA on the east side of I-25).

The NE Teller Co. FPD in Woodland Park is only 6.75 miles away and is by far the closest potential responder. Current understanding of existing agreements is that they will respond to wildland fire ignitions but not to structure fires in the Carrol Lakes area. NE Teller FPD equipment includes: 1 Type 6 Wildland Engine (rebuilt military) Response time to Carroll Lakes is about 15 minutes.

# Vicinity Map



The USFS Pike National Forest work center has 1 Type 4 and 1 Type 6 engine. It also maintains a cash for a 5 man wildland fire fighting crew.

An agreement is needed between the USFS and the Carroll Lakes development to allow fire suppression forces to take water from the lakes in the Carroll Lake area for suppression.

**Table 1: Fire Departments/Agencies Near, But Outside the Carroll Lakes WUI Area**

Department/Agency	County	Station Location(s)
Donald Westcot Fire Protection District	El Paso	Glen Eagle (NE of USAFA On east side of I-25)
NE Teller County Fire Protection District	El Paso	Woodland Park
US Forest Service	El Paso	Woodland Park Work Center

A public meeting was held March 3, 2005, at Woodland Park, Colorado. Participants included the Colorado State Forest Service, and landowners within the Carroll Lakes area. This plan was developed from recommendations and input received at this meeting. The draft plan was reviewed by representatives from El Paso County, USAFA and Pike National Forest staff. Comments and suggestions were incorporated into the final plan.

## II. COMMUNITY ASSESSMENT

The overall risk to the community from wildland fire is high. This section will discuss the factors considered that led to the overall rating.

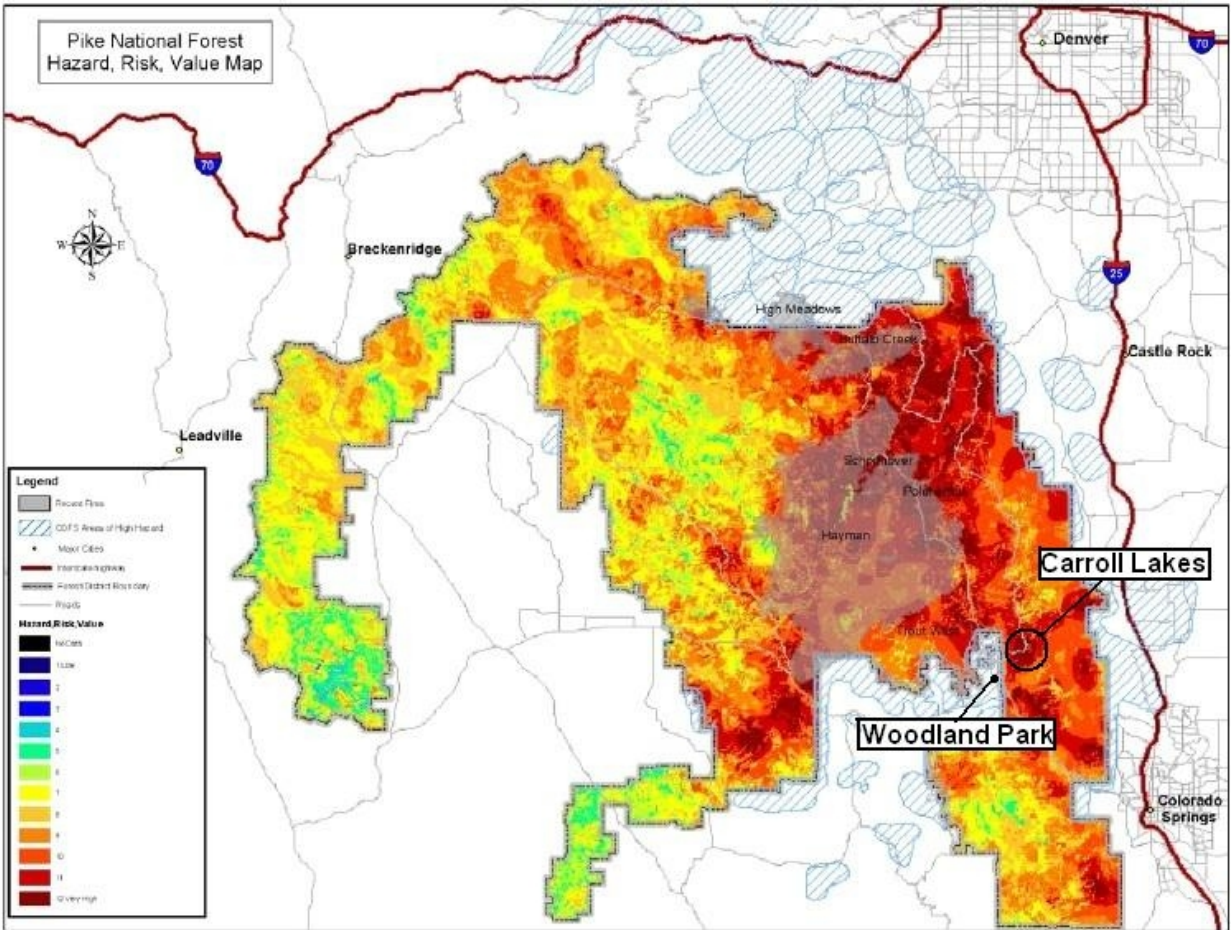
### Fuel Hazards

Dense ponderosa pine and Douglas-fir stands cover substantial portions of the planning area. Crown cover densities within these stands are well above the forty percent threshold for sustained crown fires. North-facing slopes often contain even thicker stands of Douglas-fir. Ground fuel is characterized by fuel models 8 and 9 in these forested areas. Because of a significant amount of dead and down material, a small patch of fuel model 10 is present. *Table 2* gives fire behavior predictions for the fuel models and representative weather conditions.

In the southern portion of the area, and primarily in the Farish Memorial USAF Recreation Area, openings/meadows are prevalent. Ground fuels in these openings/meadows are characterized by fuel model 1. These fuels have high rates of spread under relatively mild weather conditions.

All stands adjacent to structures with crown closures greater than forty percent are problematic. Continuous surface and crown fuel structure, both horizontally and vertically, render this area susceptible to torching, crown fire, and ignition by embers, even under moderate weather conditions. The following *Hazard Assessment* map indicates the WUI has a fuel hazard assessment of high (class 10) to very high (class 12).

PNF Fuel Hazards Map (81/2x11)





**Fuel Type 8**



**Fuel Type 9**



**Fuel Type 1**

**Table 2: Carroll Lakes WUI Fire Behavior Predictions**

<b>FUEL MODEL</b>	<b>RATE OF SPREAD (FT/HR)</b>	<b>FLAME LENGTH (FT)</b>	<b>FIRE SIZE 2 HOUR (AC)</b>	<b>SPOTTING DISTANCE (MI)</b>
<b>1</b>	11,000	6	3,700	0.4
<b>8</b>	224	1.5	1.5	0.4
<b>9</b>	1,000	4	30	0.4
<b>10</b>	1,617	9	14	0.4

*Note: These predictions are based upon renderings of Pickle Gulch Remote Automated Weather Station (051901) weather during high-extreme fire danger.*

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

## Risk of Ignition and Wildfire Occurrence

Reconstruction of fire history and forest dynamics in the neighboring upper south platte landscape, which is located immediately north and west of the community, reveal (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 just north and west of the Carroll Lakes landscape 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.

The Hayman Fire of 2002 is the most recent and spectacular of a number of large fires that have burned in the area within the past ten years. Other notable fires along the Front Range include Buffalo Creek (1996), Big Turkey (1998), Hi Meadow (2000), Snaking (2002), Black Mountain (2002) and Schoonover (2002). These fires have burned a total of 669 structures in less than ten years.

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, troublesome wildfires. Human population is increasing in the area. All recent large fires, except for the Schoonover Fire, 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. *Table 2* gives fire behavior predictions for several fuel models and representative weather conditions.

## Community Values at Risk

- **Values** - There are four “neighborhoods” or subdivisions, including the USAFA Farish Memorial Recreation Area with 60+ home sites in the Carroll Lakes WUI area. *Table 3* gives a summary of the home site and neighborhood wildfire hazard evaluations. Most have heavy fuels nearby and around them. Most of the homes have wood frame construction and date back to 1920-1930. Very few of the structures have recognizable defensible space. Propane tanks on many homesites are too close to the building. Power lines to the structures are often too low. Many have flammable material near by, on the porch or under decks, increasing their vulnerability. A few of the structures have wooden shingle or shake roofs. The composition and wooden roofs tend to hold pine needles and forest debris allowing accumulations that also increase vulnerability to fire brands. Most of the structures are vulnerable to wildfire damage occurring from firebrand ignition and/or radiation ignition due

to the heavy forest fuels within the area. The details of home site and neighborhood hazard evaluations are contained in *Appendices C and D*.

As previously stated, the Carroll Lakes WUI area contains 8 small lakes used for recreational, primarily fishing, purposes. Substantial costs could be incurred in removing sediment and debris from these lakes if a wildfire occurred in the WUI, similar to the costly removal of debris in Strontia Springs reservoir following the Buffalo Creek Fire.

- **Access** - Primary access is the Rampart Range Road (FR 300), which runs from Woodland Park to Sadalia. From the Rampart Range Road access on FR 312 (Route 1, *Appendix A – Fuel Treatment Map*) is “one way in, one way out” to the Carroll Lakes community and the Durrett property. Driveways are not marked and home and cabin addresses are not present. Roads within subdivision areas and driveways are often narrow. Turnarounds are marginal or lacking (see *Appendices C and D* for details on access to particular neighborhoods and home sites).

Access to Farish (USAFA) is FR 309 (Route 3, *Appendix A – Fuel Treatment Map*) and the Schubarth Road to the southern portion of the property, both of which intersect with the primary Rampart Range Road (FR 300).

An old road bed connects FR 312 and FR 309 which can provide an alternate evacuation access for the Carroll Lakes community. (A 1970 Pike National Forest Map shows that FR 309 did not exist and that it originally was identified as FR 312—hence FR 312 was originally planned as a loop road.) The road bed is currently closed at the north end with a gate and large boulders. The southern end of the road bed goes through an area that is planned to contain fuel storage tanks (Farish Master Plan). In its current condition, and with a minimum of grading and improvement work, the old, closed road bed could handle passenger vehicles.

- **Risk** - Because of the lack of defensible space around many home sites, natural fuel continuity and steep slopes between some of the neighborhoods, it would be very difficult to protect some home sites from wildfire during periods of high to extreme fire danger.
- **Evacuation** – Because of the “one way in, one way out” access situation, evacuation planning is needed to minimize fire emergency confusion and risk to residents who might be asked to evacuate in the event of an emergency. *Appendix G* provides guidelines for developing an evacuation plan.

**Table 3: Summary of Wildfire Hazards for Home sites and Neighborhoods for Carroll Lakes CWPP**

Area Name	County	Fire Protection District	Predominate Homesite Hazard Rating	Neighborhood Hazard Rating	# of Structures
Colorado Springs Fly Casting Club	El Paso	Donald Westcot FPD			50
Durrett	El Paso	Donald Westcot FPD			
Farish Memorial Recreation Area USAFA	El Paso	Donald Westcot FPD			
Other Private	El Paso	Donald Westcot FPD			
<b>Totals</b>					

### Local Preparedness and Protection Capability

**NE Teller County Fire Protection District** is currently being petitioned by private landowners to provide protection for the Carroll Lakes WUI area.

**US Forest Service (Pike NF)** has one Type-6, one Type-4 and one 5 person crew stationed at Woodland Park, all within fifteen minutes of the community.

**Evacuation planning** is sorely needed for the WUI, given the ‘one way in, one way out’ situation for the Carroll Lakes community. As discussed above (see Route 1 and 3, *Appendix A – Fuel Treatment Map*) the old, closed road bed should be improved to handle passenger vehicles for use only for emergency evacuations. Route 1 and 3 (see *Appendix A – Fuel Treatment Map*)A gate should be installed at the south end, with both gates having locks for use by community officials during wildfire emergencies (this may require modification of the Farish USAFA Master Plan). Routes 5, 6, 7 and 8 should also be explored as to feasibility of evacuation routes with a major fire moving from the west. The plan calls for roadside thinning along all the routes to reduce fuels.

*Appendix B – Fire Control Features/Evacuation* map gives proposed primary and secondary evacuation routes and safety zones.

### III. COMMUNITY MITIGATION PLAN

In consultation with interested parties during the March meeting at Woodland Park, *Table 4: Fuel Treatment Table* and *Appendix A – Fuel Treatment Map* were developed. They depict in detail the strategy for addressing mitigation needs in terms of fuel reduction within Carroll Lakes WUI.

The strategy basically addresses fuel treatments and defensible space needs in numerous areas over a several year period. Twenty one (21) treatment areas on over 1,852 acres, and about 13 miles of shaded fuel breaks along travel-ways have been identified. The areas include private land, planned and proposed public land (Pike National Forest and Air Force Academy) parcels between the private parcels, and a series of “shaded fuel breaks” along travel routes and roads, existing 4x4 trails and a selected strategic ridgeline to break up fuel continuities. Over the near future, the USFS, Pike National Forest will be evaluating HR I and HR J to validate or modify the treatment unit boundaries and/or add more treatment units. In addition, several treatment areas on public land have been identified where work can be accomplished through the CSFS by using authorities contained in “Good Neighbor Agreements”.

Essential to the success of the plan is the involvement of the private landowners. Implicit to the plan is “ownership of the fire problem” by private landowners. While CSFS and the local FPDs have worked hard to promote defensible space and land management, private landowners must accept responsibility for completing work on their own lands. Incorporated in the private land treatments is the task of working with individual landowners to improve defensible space in the ignition zone around the buildings.

Identified in *Table 4* are the parcel of land, size, ownership, treatment priority, time frame, lead agency and general type of treatment.

#### Fuel Hazard Reduction

*Appendix A: Fuel Treatment Map*, the fuel treatment map for the Carroll Lakes WUI, depicts locations of the suggested treatment areas listed in *Table 4*.

**Table 4: Fuel Treatment Table – Carroll Lakes Community Wildfire Protection Plan**

Treatment Area	Acres	Miles	Ownership	Priority	Time Frame	Lead Agency	Treatment	Notes
<b>Private Land</b>	<b>186</b>							
HR A (CL)	18	NA	Pvt	1	2005	CSFS	Mech/Hand	Cost Share, Contact ready to Award
HR B (CL)	17	NA	Pvt	1	2005	CSFS	Mech/Hand	Cost Share, Contact ready to Award
HR C (D)	11	NA	Pvt	1	2005	CSFS	Mech/Hand	Cost Share, Contact ready to Award
HR D (D)	11	NA	Pvt	1	2005	CSFS	Mech/Hand	Cost Share, Contact ready to Award
HR E (R)	129	NA	Pvt	2	2006	CSFS	Mech/Hand	
<b>Good Neighbr</b>	<b>59</b>							
HR K	42	NA	USFS	2	2006	CSFS	Mech/Hand	
HR L	17	NA	USFS	2	2006	CSFS	Mech/Hand	
<b>Pike NF USFS</b>	<b>1,120</b>							
HR F	490	NA	USFS	1	2005	USFS	Mechanical	Started NEPA scoping
HR G	276	NA	USFS	1	2006	USFS	Mechanical	
HR H	60	NA	USFS	1	2006	USFS	Mechanical	
HR I	196	NA	USFS	3	2006	USFS	Mechanical	
HR J	98	NA	USFS	3	2006	USFS	Mechanical	
<b>Farish USAFA</b>	<b>18</b>							
HR M	18	NA	USAFA	2	2006	USAFA	Mechanical	
<b>Roadside Thin</b>	<b>469</b>	<b>12.9</b>						
RT 1 (FR312)	NA	3.6	USFS/Pvt	1	2005	USFS/CSFS	Mech/Hand	
RT 2 (FR300)	NA	2.0	USFS	1	2005	USFS	Mech/Hand	
RT 3 (FR309)	NA	1.0	USFS	1	2005	USFS	Mech/Hand	
RT 4 (FR307)	NA	.2	USFS	2	2006	USFS	Mech/Hand	
RT 5 (FR314)	NA	1.7	USFS	2	2006	USFS	Mech/Hand	
RT 6 (FR307A)	NA	2.8	USFS	2	2006	USFS	Mech/Hand	
RT 7 (FR721)	NA	.8	USFS	2	2006	USFS	Mech/Hand	
RT 8	NA	.8	USFS	2	2006	USFS	Mech/Hand	

Priorities for reducing fuel hazards were based the following criteria:

- Priority 1:** Defensible space around the most vulnerable home sites, and primary evacuation routes.
- Priority 2:** Interior treatment areas closest to homes; private and “good neighbor” projects; secondary evacuation routes.
- Priority 3:** Remaining treatments.

Because of the generally small size of material to be removed, poor markets and lack of local processing mills, it is anticipated that very little of the treatment products will be able to be used commercially. However, there will be some pockets within treatment areas where commercial use of the material may be feasible. In these cases, efforts will be made to contact mills, operators, etc. to see if commercial utilization would be feasible.

## **Wildfire Prevention and Fire Loss Mitigation**

Prevention strategies focus on education, burning restrictions and closure orders. The coordination of fire restrictions is detailed in County Annual Fire Operating Plans. However, in actual practice, it often is cumbersome and difficult to coordinate. In addition, restrictions may be in place within counties, but not on USFS lands.

There is a need to improve the process of initiating and coordinating fire restrictions. The best and most favored approach is to develop uniform actions based on the National Fire Danger Rating System adjective ratings. In depth discussions about thresholds for various restrictions can occur during the winter and be automatically triggered when fire hazard warrants without a flurry of last minute phone calls. Prearranged actions take a lot of the hassle out of the implementation of fire restrictions and facilitate communications among cooperators.

While the Colorado State Forest Service have been working diligently to improve defensible space within the community, and will continue to do so, much remains to be done. The Fire Protection Districts need to continue to actively support creation and maintenance of defensible space and FireWise home construction.

## **Improved Protection Capability**

The North Teller Fire Protection District is being contacted with the request that the Carroll Lakes community be included in the North Teller District. The Carroll Lakes community is contacting the USFS, Pike NF to develop a permit for fire fighters to use water from the lakes for fire suppression activities. The Carroll Lakes community is also evaluating installation of one or more dry hydrants to improve water availability for pumps.

The Fire Protection Districts are being contacted with the suggestion to equip engines with Floto-pumps or portable pumps which will guarantee water availability from the lakes.

The Fire Protection Districts need to develop a triage map that shows defensible homes, gas turnoffs, and road/driveway assessments over the next few years.

A separate Communications Plan to address ongoing efforts to inform landowners about steps and measures they can take to reduce their hazards and risks will be developed and updated annually.

*Appendix B: Fire Control Features/Evacuation Map* displays location of the existing infrastructure, *i.e.* water sources, possible location for a helispot, staging areas, safety zone, incident command post (ICP) and potential location for a dry hydrant. This map should improve communications during complex fire situations when mutual aid resources are used.

## **IV. IMPLEMENTATION AND MONITORING**

### **Implementation**

*Table 4* lists all of the 21 mitigation projects identified, their priority rankings and the lead agency for the projects. In addition to the projects in *Table 4*, approximately 40+ home sites are rated as high or extreme wildfire hazard and are in critical need of defensible space improvement (see *Appendices C* and *D* for specific needs and *Appendix K* for guidelines when creating defensible space). In total, about 60+ small and large projects have been identified.

*Table 5: Action Plan for the South Platte Wildfire Protection Plan*, identifies the responsibilities and roles (tasks) necessary to finalize the Carroll Lakes Community Wildfire Protection Plan and to implement the agreed upon priorities.

### **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.

Monitoring in the Carroll Lakes Community Wildfire Protection Plan calls for an annual field review by the partners (participants) of accomplishments and need for maintenance. Based on this review, it calls for needed adjustments in the next years plan, as appropriate. Thirdly, it calls for a determination of interest and meeting by the partners for monitoring the ecological and social effects of projects. These tasks are identified in *Table 5*.

Task	Lead Agency	Date	CSFS	USFS	Fire Depts	AFA	County	Neighbor-hoods	FEMA
<b>Community Wildfire Protection Plan</b>									
Finalize Plan									
Review Draft Plan	CSFS	6/05		x	x	x	x	x	x
Finalize Fuel Treatment Map and Attribute Table	USFS	6/05	x		x	x			
Gain public understand, acceptance and support	All	ongoing							
Develop Communications Plan	CSFS	8/05	x	x	x	x	x		
Hold public open house—explain, ask input, train	Fire Dept	8/05	x	x	x	x	x	x	x
Sign Plan	All	9/05	x	x	x	x	x	x	x
<b>Evacuation</b>									
Improve, gate and manage emergency route FR312 to FR309	USFS/USAFA	7/05	x	x	x	x	x	x	x
<b>Defensible Space Improvement</b>									
Coordinate efforts to develop Defensible Space	CSFS	2 /Year	x		x			x	
Mailing and Visit Homeowners	Fire Depts	8/05	x					x	
Provide Assistance in Preparing Cost Share Grant Requests	CSFS	Yearly			x		x	x	
Technical Assist to Landowners (maybe through contractors)	CSFS&Fire Dept	ongoing							
Marking trees	CSFS	ongoing		x		x		x	
Tree/debris removal	CSFS	ongoing		x		x		x	
<b>Local Protection</b>									
Petition NW Teller District for coverage of Carroll Lakes	Pvt. Lndwnrs	8/05			x	x	x	x	x
<b>Good Neighbor Projects</b>									
Complete NEPA on Projects—TES clearance	USFS	ongoing	x			x			
Coordinate project with adjacent landowners	CSFS	ongoing		x		x		x	
<b>Annual Project Planning</b> (complete by Sept each year)									
Estimate costs and schedule for next years work—PNF	USFS	9/05	x		x		x	x	
Estimate costs, schedule and grants for next years work—Private & Denver Water Land	CSFS	9/05	x		x		x	x	
Estimate costs and schedule for next years work—Lndwnrs	Pvt Lndwnrs	9/05	x					x	
Estimate costs and schedule for next years work	Fire Dept	9/06	x	x		x	x		x
<b>Annual Monitoring</b>									
Annual Meeting of Partners (field review of accomplishments)	CSFS	11/05	x	x	x		x	x	x
Update CWPP per review by partners	CSFS	11/05	x	x	x		x	x	x
Mtg to determine interest/extent of monitoring	CSFS	2/06	x	x	x		x	x	x

**Table 4: Action Plan for the Carroll Lakes Community Wildfire Protection Plan**

## APPENDIX E – Primary Fuel and Fire Hazards

The primary fuels within the Carroll Lakes WUI are forested land with some grass areas in the southern portions of the area. Fuel Models 8, 9, and 10 probably best depict the forested areas depending on the amount of dead and down material intermingled, the canopy closure and age (size) class of the timber. Fuel Model 8 depicts the aspen stands in the summer while Fuel Model 9 is more indicative of fall burning conditions in aspen. Fuel Model 1 best depicts grass lands.

### Fuel Model 1

Fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material.

### Fuel Model 8

Slow-burning ground fires with low flame lengths are generally the case, although the fire may encounter an occasional “jackpot” or heavy fuel concentration that can flare up. Only under severe weather conditions involving high temperatures and low humidity’s, and high winds do the fuels pose high hazards. The thinned and cleaned up stands represent this model.

### Fuel Model 9

Fires run through the surface litter faster than model 8 and have longer flame height. Concentrations of dead-down woody material will contribute to possible torching out of trees, spotting and crowning. The pure stands of aspen represent this model. In the fall, after the associated grass and forbs have cured, this fuel will burn more intensely and is temporarily more of a threat.

### Fuel Model 10

The fires burn in the surface and ground fuels with greater fire intensity than the models 8 and 9. Dead-down fuels include greater quantities of 3-inch or larger limb wood resulting from over maturity or natural events such as mountain pine beetle that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees is more frequent in this fuel situation, leading to potential fire control difficulties. Within these types in most places there is dead material caused from blow down and insect mortality

## APPENDIX F – Evacuation Planning Guidelines

### Background

The growth of urban development in forested wildland areas in recent years has resulted in a potentially hazardous situation. People are attracted to forested areas seeking solitude and to escape the pressures of everyday life. Large land holdings have been subdivided into small affordable acreages for cabin sites or remote homes. At the same time wildfires have been aggressively suppressed allowing young trees to establish in high densities and dead fuels to accumulate to alarming levels. These ladder fuels provide a “leg up” for a wildfire to burn into the crowns and move rapidly under windy conditions. The new generation of small lot landowners value individual trees and have built their cabins under the cover of these overstocked forests. Cabins are constructed on prominent points or ridge tops for the view or they are tucked into the forest canopy seeking solitude. In order to minimize the impact of their presence on the land driveways are often narrow with inadequate opportunities to turn around at the building site. Little attention has been paid to the potential destructive capacity of an uncontrolled wildfire.

In an emergency wildfire situation that threatens the lives and property of residents in the area, the Donald Westcot Fire Protection District and the NE Teller County Fire Protection District, in consultation with the fire suppression team and land managing agencies, have the responsibility and authority to evacuate residents to a safe area. Prior evacuation planning is essential to implement this action effectively.

By definition, evacuation is a protective action—moving people from a place of danger to a place of relative safety. As a phenomenon, it is a temporary mass movement of people that collectively emerges in coping with a threat to park visitors.

An Evacuation Plan will facilitate this orderly evacuation during an emergency wildfire situation that threatens residents and facilities. Step by step actions provide critical information and guidance for fire suppression, and law enforcement personnel during an emergency situation. Each subdivision, home site development area or land owner association should be strongly encouraged to develop an evacuation plan for their area that identifies potential evacuation routes and critical information (locked gates, inadequate bridges, etc) for a variety of wildfire threat scenarios.

### Critical Contacts

El Paso County Sheriff xxx-xxx-xxxx  
El Paso County Fire Warden  
Colorado State Patrol  
Colorado State Forest Service, Woodland Park  
Colorado Division of Wildlife  
Pike-San Isabel National Forest, Pikes Peak Ranger District  
Bureau of Land Management Canon City Office  
Interagency Fire Center/Fire Dispatch Center  
Federal Emergency Management Agency  
El Paso County Emergency Preparedness Director  
Local News Media  
Red Cross  
Local Towing Service  
Others \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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## **APPENDIX G – Definition of Terms**

**Appropriate Management Response (AMR)** - Specific actions taken in response to a wildland fire to implement protection and fire use objectives identified by appropriate government agency. AMR allows for a full range of strategies to be applied, from an intense full suppression response to wildland fire use. The first response decision to be made is whether to have a suppression oriented response or to allow the fire to burn for predetermined benefits.

**Confinement Response-** The suppression-orientated strategy employed in appropriate management response where a fire perimeter is managed by a combination of direct and indirect actions and use of natural topographic features, fuels, and weather factors. These strategies and tactics could include perimeter control.

**Defensible Space-** Area around a structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure. It also reduces the chance of a structure fire moving from the building to surrounding forest. Defensible space provides room for firefighters to do their jobs.

**Disturbance-** A discrete event, either natural or human induced, that causes a change in the existing condition of an ecological system.

**Energy Release Component (ERC)** - An index developed through the National Fire Danger Rating System. ERC then is an indicator of dryness in the fuel, is a fuel loading based rate that predicts how much energy f fire will produce both from its consumption of available fuel and through its residence time. ERC, and 1000 hour time lag fuel moisture has been used in dry climates to track seasonal drying trends.

**Escape Fire Situation Analysis (EFSA)** - If a wildfire has escaped initial attack EFSA is the process the agency administrator or acting uses to determine the best suppression strategy for achieving appropriate suppression that best meets resource objectives.

**Fire Management Plan (FMP)** - A strategic plan that defines a program to manage wildland and prescribed fires. The plan could be supplemented by operational plans, prescribed fire plans, hazardous fuels reduction, and prevention plans.

**Fire Use** - The combination of wildland fire use and prescribed fire application to meet specific resource and landowner objectives.

**Fuel Treatment** - Programmed and contracted to reduce or change fuel loading or type on a site. Can be accomplished by mechanical, chemical, or fire use.

**Full Response** - A suppression response action that can include: control lines surrounding the entire perimeter, (hot spot and cold trail may be considered completed line) including any spot fires, protection of interior islands, burn-out of fuels adjacent to control lines and mop-up to a standard adequate to hold under high fire intensity conditions. Full response objectives are based on safe yet aggressive approach to achieve containment of the fire by the beginning of the next burn period. Fire behavior may dictate, at least temporarily, the utilization of natural barriers or indirect strategies. These strategies and tactics would include direct control.

**Haines Index** - Lower atmosphere stability index (LASI) developed by Donald Haines. The index relies on two variables: dryness and stability/instability. On a scale of six, three points are given to dryness and three to the stability or instability of the atmosphere. Both these variables have a pronounced affect on extreme fire behavior. In the scaling, a 6 is extreme, 5 are high, 4 are moderate, while 3 to 1 are low.

**Initial Attack** - An aggressive suppression action consistent with firefighter and public safety and values to be protected.

**Initial Management Area (IMA)** - The size of an IMA may be adjusted based on fire behavior predictions, weather forecasts, site analysis and risk assessment. The IMA becomes fixed as an MMA once a wildland fire is placed under a stage III implementation plan.

**Insurance Services Office (ISO) Rating** - An overall fire services rating developed for use in determining insurance premiums for residential and commercial property. Factors such as fire alarm systems, equipment, training, availability of water (hydrants), etc. are used to develop the rating. The rating is on a scale of class 1 to class 10, with 1 providing the best public protection and 10 providing the lowest public protection. See [www.iso.com](http://www.iso.com) for more details.

**Maximum Management Area (MMA)** - The firm limits of management capability to accommodate the social, political, and resource impacts of a wildland fire. Once an approved Wildland Fire Use plan is established the MMA is fixed and not subject to change. If MMA determination is exceeded, the fire will follow the Wildland Fire Situation Analysis (WFSA) process.

**Mitigation Actions** - Those on-the-ground activities that will serve to increase the defensibility of the Maximum Manageable Area (MMA); check, direct, or delay the spread of fire, and minimize threats to life, property, and resources. Mitigation actions may include mechanical and physical non-fire tasks, specific fire applications, and limited suppression actions. These actions will be used to construct fire lines, reduce excessive fuel concentrations, reduce vertical fuel, and create black lines.

**POL** – Stands for “Products Other than Logs” thinning to harvest poles and posts and firewood.

**Polygon** - A planning sub-unit within a fire planning area that represents similar resource values and landowners objectives, fuel conditions with associated fire behavior, Social/Political concerns and economic considerations. Polygons are categorized as A, B, C, and D areas.

**Preparedness** - Activities that lead to a safe, efficient, and cost-effective fire management program in support of land and owners management objectives through appropriate planning and coordination.

**Prescribed Fire** - Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist prior to ignition.

**Prescribed Fire Plan** - A plan required for each fire application ignited by management. It must be prepared by qualified personnel and approved by the appropriate agency administrator prior to implementation. Each plan will follow specific direction and must include critical elements and how to mitigate each element.

**Prescription Guidelines** - guidelines used to show upper and lower reaches of a prescription.

**Spread Component (SC)** - An index developed through the National Fire Danger Rating System. The index provides predicted rate of spread of a fire (in chains per hour) from inputted information on the fuel complex and weather information collected from a local Remote Automated Weather System (RAWS) site.

**Suppression Constraints** - A limitation placed on suppression forces to minimize adverse affects to the environment due to fire suppression activities. An example would be restricting the use of heavy equipment in certain areas.

**Suppression Oriented Response** - A range of responses to a wildland fire, which range from full response to confinement of the fire. It may also include periodically checking fire status and fire behavior.

**TSI** – Stands for “Timber Stand Improvement” thinning to stimulate growth and improve residual tree health

**Wildfire** - An unwanted wildland fire.

**Wildland Fire** - Any nonstructural fire, other than prescribed fire, that occurs in the wildland. This term encompasses fires previously called both wildfires and prescribed natural fires.

**Wildland Fire Implementation Plan (WFIP)** - A progressively developed assessment and operational management plan that documents the analysis and selection of strategies and describes the appropriate management response for a wildland fire being managed for resource benefit.

**Wildland Fire Situation Analysis (WFSA)** - A decision-making process that evaluates alternative management strategies against selected safety, environmental, social, economic, political, and resource management objectives.

## APPENDIX K – Fuel Hazard Reduction Guidelines

### **TREE SPACING – RULE OF THUMB** ***Strive to reduce crown density to 40% or less.***

**Ponderosa Pine/Douglas Fir: Convert stem diameter from inches to feet and add 7 more feet.**

**Example:** A Ponderosa Pine 8” in diameter at dbh will have a spacing of 8 feet plus 7 feet for a total of 15 feet to the next tree.

The spacing does not need to be even. In fact the fuel treatment area will look more natural if the spacing varies and small clearings are intermingled with small stands of trees. The important focus should be on breaking up fuel continuity – horizontal and vertical.

Staging the thinning work over a long enough time to allow the standing trees to develop their wind firmness. Thinning when trees are small helps prevent this blow down vulnerability. Thinning in patches and designing the thinning to minimize wind effect can be done depending on location. All of these can be used but can best be accomplished with the assistance of an experienced forester.

An important part of fuel hazard reduction is removal of the ladder fuels; particularly when adequate thinning cannot be accomplished. Therefore, the following is important to do within a lodgepole timber canopy.

- Prune trees up to 6 or 8 feet depending on slope**
- Remove under story reproduction**
- Remove sagebrush, oak or any other flammable brush**
- Remove all dead forest debris**
- Remove trees recently killed by mountain pine beetle or any other disturbance**

\*\*Note: All slash disposal procedures should be implemented to avoid attracting Mountain Pine bark beetle to the project area.