

**Rancho Mira Sol
Community Wildfire Protection Plan
January 2013**



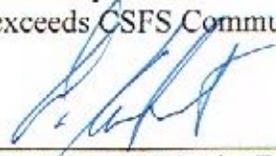
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Road Association
Durango, Colorado

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Community Wildfire Protection Plan: Rancho Mira Sol

Approval

The Durango District of the **Colorado State Forest Service** has reviewed this Community Wildfire Protection Plan and approves its content and certifies that it meets or exceeds CSFS Community Wildfire Protection Plan minimum standards.

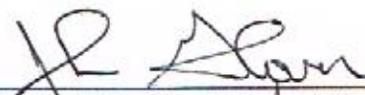


D. Kent Grant, District Forester

2/25/13

Date

The following entities have received a copy of this Community Wildfire Protection Plan and agree with and support its content and recommendations.



Mira Sol Drive Road Association

1/31/2013

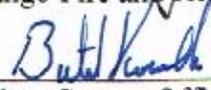
Date



Durango Fire and Rescue Authority

2-2-2013

Date



La Plata County Office of Emergency Management

Feb 19 2013

Date

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1. INTRODUCTION

Community Wildfire Protection Plans are authorized by the Healthy Forests Restoration Act (HFRA) of 2003. HFRA places renewed emphasis on local community wildfire protection and response planning by extending a variety of benefits to communities with a wildfire protection plan in place. Among the benefits are the abilities to participate in establishment of fuels treatment priorities for both federal and non-federal lands surrounding communities, establishment of a local definition and boundary for the Wildland-Urban Interface (WUI), and enhanced opportunities for cost-sharing of community-based fuels treatments.

The Mira Sol Drive Road Association has recognized that the subdivision may be at risk from wildfires moving into or originating within the subdivision. A local effort to educate homeowners and develop defensible space has been underway for several years in conjunction with FireWise of Southwest Colorado and the Durango Fire and Rescue Authority (DFRA). Development of a Community Wildfire Protection Plan (CWPP) for Rancho Mira Sol is the next step in that effort.

2. BACKGROUND

A. Location

This CWPP covers the Rancho Mira Sol subdivision and its defined Wildland Urban Interface (WUI). Rancho Mira Sol is located in La Plata County in southwest Colorado, approximately seven miles east of Durango on the north side of County Road 228 (**Vicinity Map**, Appendix A). Average elevation of the subdivision is approximately 7,550 feet.

B. Community

Rancho Mira Sol is a 1,230-acre subdivision with 27 parcels. As of October 2012, 15 residences are present. The residences are single-family structures with exterior finishes of logs, hardboard or wood siding, metal, masonry or stucco. Roof coverings are metal, cement tile or asphalt shingle. Most have wood or composite decks and porches. Four natural gas well pads are located within the subdivision boundary. The water supply for the residents comes from individual wells.

Public access to the subdivision is via a single entrance onto La Plata County Road 228. Roads in the subdivision are graveled one and one half to two-lane. Access to homes is adequate for normal urban structural fire apparatus but driveways and road termini often have limited turn-around space for large vehicles.

Rancho Mira Sol is located in ponderosa pine/Gambel oak and Gambel oak/montane shrub vegetation types. Tree species include ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii*) and occasional white fir (*Abies concolor*), piñon pine (*Pinus edulis*) and Rocky Mountain juniper (*Sabina scopulorum*). Colorado blue spruce (*Picea pungens*) and narrowleaf cottonwood (*Populus angustifolia*) are found along riparian areas. Gambel oak (*Quercus gambelii*) is occasionally found as a small tree but is more often the dominant shrub in the understory. Gambel oak is an overstory species in parts of the subdivision with strong southern and western exposures. Other understory species include chokecherry (*Prunus virginiana* ssp. *melanocarpa*), shrubby cinquefoil (*Pentaphylloides floribunda*), wax currant (*Ribes cereum*), Oregon grape (*Mahonia repens*), kinnikinnik (*Arctostaphylos uva-ursi*) and common juniper (*Juniperus communis*). Grasses include pine dropseed (*Blepharoneuron tricholepis*), Arizona fescue (*Festuca arizonica*), blue gramma (*Bouteloua gracilis*) and sedge (*Caryx* spp.). Forbs include yarrow (*Achillea lanulosa*), pasqueflower (*Pulsatilla patens*), Nuttall's larkspur (*Delphinium nuttallianum*), James buckwheat (*Erigeron jamesii*), and several penstemmons (*Penstemon* spp.).

A characteristic of the subdivision is the retention of the native trees and shrubs during construction of the residences. The overall context is rural. Most homes have small irrigated yard areas with planted grasses, flowers and shrubs typical of southwestern Colorado.

The wildlife present in the area includes all the species expected in the lower montane areas of the central Rocky Mountains. Mule deer (*Odocoileus hemionus*), elk (*Cervus elaphus*), black bear (*Ursus americanus*), cougar (*Felis concolor*), coyote (*Canis latrans*), porcupine (*Erethizon dorsatum*), skunk (*Spilogale* spp), and piñon mouse (*Peromyscus truei*) are some of the mammalian species. Merriam's turkey (*Meleagris gallopavo merriami*), common raven (*Corvus corax*), golden eagle (*Aquila chrysaetos*), red-tailed hawk (*Buteo jamaicensis*), horned owl (*Bubo virginianus*), mountain and western bluebirds (*Sialia currucoides* and *S. mexicana*), downy woodpecker (*Picoides pubescens*), white-breasted nuthatch (*Sitta carolinensis*), and mountain chickadee (*Parus Gambeli*) are some of the avian species. No US Fish and Wildlife Service listed "Threatened" or "Endangered" species are known to inhabit the subdivision.

Slopes range from essentially level (0-5%) from County Road 228 north along the drainage containing Mira Sol Drive to the intersection of Cadillac Canyon Road and 10 to 15% from there north to the subdivision boundary. Side slopes into the drainage from the east and west are 20% to 40%. Slope shapes are convex. Aspects are varied but generally from southeast to southwest.

Annual precipitation for the area is approximately 20 inches, with the majority falling as snow from October through March. May and June are relatively dry, with a summer "monsoon" in July and August. Early monsoonal storms are often

characterized by dry thunderstorms with lightning and strong, variable outflow winds. The largest wildfires in the past 20 years in La Plata County have occurred from early June into early August.

C. Local Fire History

No wildfires over an acre have occurred in the subdivision since its inception. The fires that have occurred have been single-tree or small brush fires caused by lightning strikes. However, large wildfires have occurred in La Plata County in similar fuel types over the past twenty years. Examples include the Missionary Ridge Fire (2002) that burned 76,000 acres of Gambel oak, ponderosa pine, aspen, spruce and mixed conifer and 56 homes approximately six miles north of the subdivision and the Red Creek fire of 2010 that burned 45 acres of mixed conifer forest approximately four miles north. A four-acre wildfire occurred on BLM lands adjoining the north side of the subdivision in June 2012.

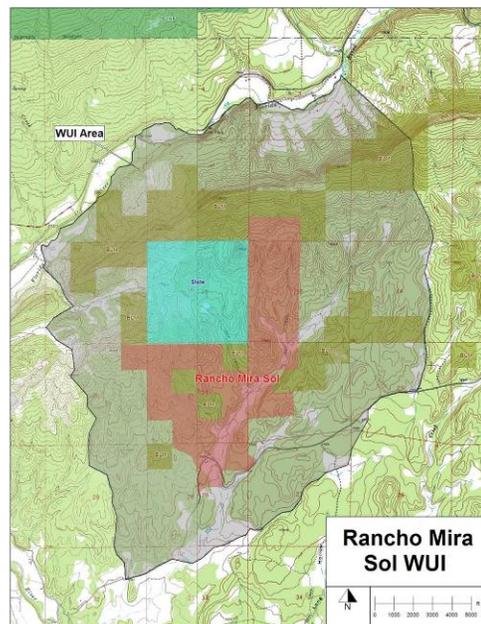
D. Recent Wildfire Preparedness Activities

1. Three members of the community are FireWise Ambassadors for the subdivision.
2. Several community work days have been held to do fuel mitigation around individual residences and along roads in the last year.
3. A well and pond available for engine drafting and helicopter bucket dips was developed in the summer of 2012 along Mira Sol Drive in the south-central part of the subdivision.

3. PLAN AREA

A. Boundaries

The CWPP covering the WUI area was developed collaboratively with the subdivision residents, the Colorado State Forest Service, La Plata County Office of Emergency Management, Durango Fire and Rescue Authority, FireWise of Southwest Colorado, the San Juan National Forest and the Bureau of Land Management. The WUI area is based on the area centered on the subdivision likely to burn in high fire danger conditions



during a single burning period if pushed by 20 mph winds. The WUI boundaries are from CR 228 nine tenths of a mile northeast of the intersection of CR 225 north along the drainage to the ridge and then north from the ridge down a drainage to the Florida River, then northeast along the Florida River an unnamed drainage across from the mouth of Red Creek, then southeast up that drainage to the ridge of Vosberg Pike, then south along a drainage to CR 228, then west along CR 228 to the top of the Spring Creek drainage, then southwest along the drainage to its intersection with CR 228 and then southwest along CR 228 to the beginning point. Total WUI area is 8,100 acres and is shown on the WUI Map above and in Appendix A. Private land in the WUI covers 5,810 acres. The remaining area consists of 640 acres owned by the State of Colorado and 1,650 acres under Bureau of Land Management stewardship.

B. Private Land Characteristics

The 5,810 acres of private land within the WUI boundary includes the 1,230-acre Rancho Mira Sol subdivision with 15 residences. There are 135 other parcels outside the subdivision, ranging in size from approximately one tenth acre to 1,500 acres. Altogether, there are over 125 residences plus at least the same number of garages, sheds, barns, and other outbuildings within the WUI area.

Land use history is a rural landscape of former homesteads and relatively large holdings that were used for farming, ranching and timber production. As Durango grew in population through the mid to late twentieth century a number of the large holdings were subdivided for residential purposes. This trend accelerated from the 1970's through the present time, resulting in suburban-like residential densities scattered across a more rural forested landscape matrix. The subdivisions have retained much of the forest matrix as they were developed. Current land uses in the area are residential, agricultural (pasture and hay production), gas and oil production and non-industrial business.

The Rancho Mira Sol subdivision has three predominant cover types – Ponderosa Pine/Gambel Oak, Gambel Oak/Montane Shrub, and Grass. The Ponderosa Pine /Gambel Oak type covers the most land area. The Gambel oak and montane shrub type varies in abundance across the subdivision and is an overstory component on some areas. Douglas-fir and blue spruce are found as minor components of both the overstory and understory in the northern part of the subdivision. The Grass type is found primarily in the irrigated pastureland in the central part of the subdivision. Fuel Models associated with the cover types are discussed in section 6: **Resource Assessments and Trends**.

Private lands outside the subdivision within the WUI area have similar cover types. Vegetation grades from Gambel oak/montane shrub in the northern part of

the WUI on south and west aspects and the ridge of Vosberg Pike to ponderosa pine/Gambel oak through the south half of the WUI.

C. Public Land Characteristics

Public lands in the WUI include 80 acres in two 40-acre parcels managed by the USDI Bureau of Land Management inside the subdivision boundary and another 1,570 acres of BLM public lands surrounding the subdivision. Vegetative cover includes ponderosa pine, scattered Douglas-fir, Gambel oak and other montane shrubs. The state of Colorado owns 640 acres immediately adjoining the northwest boundary of Rancho Mira Sol. Vegetation is the same as the BLM lands and the Rancho Mira Sol subdivision.

The BLM has conducted forest management and fuels reduction activities on 540 acres of public lands adjoining Rancho Mira Sol on the east. "Project 228" directly treated 152 acres with oak and shrub mastication and thinned 82 acres of ponderosa pine forest.

No forest or fuel management activities have taken place on the State lands adjoining Rancho Mira Sol.

D. Fire Protection

The boundary of the Upper Pine River Fire Protection District (UPRFPD) and the Durango Fire and Rescue Authority (DFRA) splits Rancho Mira Sol, however structural and wildland fire protection is provided by DFRA. DFRA Substation Five is 6.25 miles east of the entrance to Rancho Mira Sol at the intersection of County Roads 240 and 234. UPRFPD Station Five is 3.25 miles west of the entrance at the intersection of County Roads 228 and 502. Structural and wildland fire engines are resources available through both DFRA and UPRFPD. Other wildland fire resources are available through Durango Interagency Dispatch Center. Wildland fire resources include engines and crews from the US Forest Service, Bureau of Land Management, Mesa Verde National Park, Colorado State Forest Service, Bureau of Indian Affairs and the Southern Ute and Ute Mountain Ute Tribes. An air tanker base is located at Durango - La Plata Regional Airport and additional aerial wildfire support can be provided by the Mesa Verde National Park initial attack helicopter at Hesperus, the Ute Mountain Ute initial attack helicopter at Towaoc and the Colorado State Forest Service Single Engine Air Tanker at Cortez. The Counties, Federal land management agencies, Colorado State Forest Service and Fire Protection Districts in Southwest Colorado operate under a Consolidated County Annual Operating Plan (AOP) for wildfire protection.

4. PLANNING PARTNERS AND PROCESS

A. Partners

The Community Association has received process and planning assistance and input from the following individuals and organizations:

Dan Noonan, Chief, Durango Fire and Rescue Authority.
Kent Grant, Durango District Forester, Colorado State Forest Service.
Pam Wilson, Program Director, FireWise Council of Southwest Colorado.
Butch Knowlton, La Plata County Emergency Manager.
John Glover, Rancho Mira Sol homeowner and FireWise Ambassador.
Dustin Crandall, Rancho Mira Sol homeowner and FireWise Ambassador.
Ben Murphy, Rancho Mira Sol homeowner and FireWise Ambassador,
Damascus Road Association.
Craig Sullivan, Fuels Mitigation Forester, Columbine Ranger District, San Juan National Forest.

B. Process

A Core Team was assembled including representatives from the Colorado State Forest Service, San Juan Public Lands Center, Durango Fire and Rescue Authority, the Mira Sol Drive Road Association, and the FireWise Council of Southwest Colorado. Several vegetation sampling plots were taken in July 2012 to characterize the forest and woody fuel conditions. A meeting with members of the Road Association, the FireWise Ambassadors and the contractor was held in April 2012 to get feedback on what the Plan should contain. The draft CWPP was reviewed with the residents at the Road Association Annual Meeting in October 2012.

C. Desired Future Condition

The Desired Future Condition (DFC) for Rancho Mira Sol has been developed through the collaborative CWPP process. The DFC is:

Rancho Mira Sol is a desirable forested community safer from catastrophic wildfire moving into or through the community. Homes are less vulnerable to wildfire by encouraging the use of fire-resistant construction methods and FireWise landscaping. Fuels within 100 feet of residences are maintained at levels which would support only low intensity surface fires, while fuels in the remainder of the landscape in the subdivision would support low to moderate intensity wildfire.

5. POLICIES

A. Federal

The Rancho Mira Sol CWPP has been developed in response to the Healthy Forests Restoration Act of 2003 (HFRA). This legislation established unprecedented incentives for communities to develop comprehensive wildfire protection plans in a collaborative, inclusive process. Furthermore, this legislation directs the Departments of Interior and Agriculture to address local community priorities in fuel reduction treatments, on both federal and non-federal lands.

The HFRA emphasizes the need for federal agencies to collaborate with communities in developing hazardous fuel reduction projects and places priority on treatment areas identified by communities themselves through development of a Community Wildfire Protection Plan (CWPP). Priority areas include the wildland-urban interface (WUI), municipal watersheds, areas impacted by windthrow or insect or disease epidemics, and critical wildlife habitat that would be negatively impacted by a catastrophic wildfire. In compliance with Title 1 of the HFRA, the CWPP requires agreement among local government, local fire departments, and the state agency responsible for forest management i.e., the Colorado State Forest Service. The CWPP must also be developed in consultation with interested parties and the applicable federal agencies managing public lands surrounding the at-risk communities.

B. State

The State of Colorado is concerned about the size and intensity of wildfires occurring across the state in recent years. The State Legislature enacted House Bill 1110 in 2008, creating a five-year program running from 2009 to 2014 that allows landowners to deduct a portion of the actual costs of their wildfire mitigation from their state income tax. The program allows each landowner to get credit for fifty percent of the cost of wildfire mitigation up to a total of \$2,500. To get the full credit the total mitigation costs must be \$5,000 or greater. The work must be done in accord with an approved Community Wildfire Protection Plan to qualify.

The Colorado State Forest Service conducted a Statewide Forest Resource Assessment and released a Statewide Forest Resource Strategy in 2010. One of the themes for the Assessment and Strategy is “Protect Forests from Harm.” The identified threats relevant to Rancho Mira Sol are:

- Wildfire in the Wildland-Urban Interface.
- Insects and Diseases Affecting Community Forests.

The area around the subdivision has been identified on the La Plata County Fire Risk/Communities of Concern map as having Moderate to High Wildfire Susceptibility based on weather, historic fire occurrence, topography, surface fuels and canopy closure.

The applicable strategies identified to address the threats are:

- Focus forest management activities to reduce impacts of wildfire, and forest insects and diseases.
- Coordinate forest management implementation among all parties affected by the CWPP.
- Advocate landscape approaches to protect communities.
- Collaborate with land management agencies, fire protection districts and insurance organizations to develop improved standards that lead to protection of homes in the WUI.
- Expand the use of the Colorado Good Neighbor Policy.

C. Consolidated County Annual Operating Plan

The Counties, Federal land management agencies, Colorado State Forest Service and Fire Protection Districts in Southwest Colorado operate under a Consolidated County Annual Operating Plan (AOP) for wildfire protection. This plan provides for mutual aid to assist with the management of wildfire incidents in southwest Colorado. The plan for mutual aid provides significantly enhanced initial and extended attack capabilities through the rapid mobilization of fire protection resources for managing a wildfire. The Consolidated County AOP outlines standard operating procedures and the level of participation and available resources of each party under the plan.

D. USFS and BLM Land and Resource Management Plan / Fire Management Plan

The San Juan National Forest Land and Resource Management Plan, the Southwest Colorado District-Tres Rios Field Office Resource Management Plan and associated Fire Management Plans describe the role of fire in the native ecosystems in southwest Colorado. These plans outline the strategies that the USFS and BLM will utilize to manage wildland fire and fuels on these federal lands in southwest Colorado. The San Juan National Forest and Southwest Colorado District-Tres Rios Field Office area Fire Management Plan (2007) specifically describes objectives and strategies to manage fire and fuels on federal lands near communities within the wildland-urban interface.

E. La Plata County CWPP

The Rancho Mira Sol CWPP tiers to the La Plata County CWPP, approved in 2002 and revised in July 2006. This plan is consistent with the goals and strategies described within the La Plata County CWPP and provides further

strategic and tactical recommendations specific to wildfire protection and mitigation for the Rancho Mira Sol community.

6. RESOURCE ASSESSMENT AND TRENDS

A. Fuels and Fire Hazard

1. Cover Types

Rancho Mira Sol has three predominant cover types – Gambel Oak/Montane Shrub, Ponderosa Pine/Gambel Oak, and Grass. The cover types are displayed in the **Cover Types** map in Appendix A.

Cover Type	Area	Area Percent
Montane Shrub	630 acres	51%
Ponderosa Pine/Gambel Oak	420 acres	34%
Grass/Forb	180 acres	15%

Montane shrubs are primarily Gambel oak, with densities up to 5,000 stems per acre. The oak is present as both discrete clumps and as understories in the ponderosa pine sites. The oak is large enough to become ladder fuel. Scattered piñon pine (*Pinus edulis*) and Rocky Mountain juniper (*Juniperus scopulorum*) are also present, further increasing the risk of crown fires.

The Ponderosa Pine/Gambel Oak cover type is approximately 100 years old, reflecting the extensive timber harvests that occurred in the lower elevations of La Plata County in the early 1900's. Stand densities range from 10 to 140 square feet of basal area per acre and average approximately 60 square feet per acre. Stand densities are generally acceptable for forest health but ladder fuels are common due to the shrub component and low crown basal heights. The tree groups over 100 square feet per acre are at risk from bark beetle attack. Trees are immediately adjacent to several residences.

The Grass/Forb cover type consists largely of irrigated pastureland in the central portion of the subdivision. The agricultural pastures can act as a fuel break for wildfires.

2. Fuel Models

The La Plata County CWPP (2006) shows the area of Rancho Mira Sol as a “Moderate” level of concern on the La Plata County Fire Risk Zone Map due to the cover types and fuel loads typically present.

The major Fuel Models present across the subdivision by cover type are:

Cover Type	NFFL Model (Anderson, 1982)	Standard Fire Behavior Models (Scott and Burgan, 2005)
Ponderosa Pine/Gambel Oak	9	TL8
Montane Shrub	6	SH2
Grass/Forbs	1	GR1



Models 9/TL8

Closed Canopy Long-Needled Conifer (NFFL 9/Standard Fire Behavior TL8): This model is for the closed canopy ponderosa pine cover type. Fires generally carry through the surface litter and low brush with low flame lengths. Interlocking tree crowns and the presence of concentrations of fuels coupled with low fuel moisture, low humidities, high temperatures and moderate to high winds can

increase spread rates and intensities and move fire into the tree crowns.



Model 6 / SH2

Montane Shrub (NFFL 6/Standard Fire Behavior SH2): This model is for the Gambel oak cover type. Fires carry through the shrub layer as well as the cured litter and dead woody material on the ground surface with moderate (greater than 8 miles/hour eye-level) winds. Lighter winds and openings in the canopy will drop the fire to the surface. Intensity and duration can be moderate to

high. A complicating factor for this fuel model is the level of standing and down dead wood present due to past drought damage and frost-kill in the oak. Down woody fuels exceed 10 tons per acre in some locations. Normal live and dead fuel loads in Fuel Model 6 are 6 tons per acre.



Model 1 / GR1

Short Grass (NFFL 1/ Standard Fire Behavior GR1): This model includes both native grass and agricultural pasture cover types. Fire spread is governed by the fine and continuous herbaceous material that is cured or nearly so. Fire will not readily spread when relative humidity is over 25%. Fires are surface fires that move rapidly through the cured grass and associated litter. Fires can be intense if fuels are very dry but fire duration is usually short.

3. Slash Treatment

Effective reduction of slash created by fuels mitigation is an important aspect of a fuels mitigation program. Piling and burning of slash is an effective treatment but usually requires snow cover or very moist conditions. Broadcast burning is also effective and more ecologically desirable since it can increase soil nutrients and provide good establishment conditions for desirable vegetation. However, broadcast burning requires a high level of technical expertise to accomplish.

Chipping slash is an alternative to piling and burning but it can generate large chip piles that stay for years or chip depths across the landscape which are a fire hazard in themselves in dry years.

4. Structural Vulnerability

Residential structure ignitability is generally low with some moderate. Siding material for the residences varies from stucco to hardboard to wood planking to logs. Fences, porches and decks are generally of wood construction. Roofing is metal, cement shingle type material or Class A asphalt shingles. The major vulnerability issues are flammable vegetation like grass or trees in close proximity to the structures. Pine needles and leaves on the roofs are issues for some residences. Access to Rancho Mira Sol is good and all the roads will accommodate a Type One structural engine.

B. Values At Risk

1. Socio/Economic

The rural ambiance of the subdivision is valued by its residents. Rancho Mira Sol is close to Durango so the location is prized by its residents. House pets are common. Livestock is grazed in the pastureland.

2. Ecological

The setting of Rancho Mira Sol is rural forest and shrubland, so loss of the trees and shrubs from wildfire would have a significant impact to the ambiance of the community, even if no structures were lost. No threatened or endangered species are known to inhabit the subdivision itself, but rare plants may occur.

Southwest Colorado is noted for its good air quality. Wildfire would negatively affect the air quality of the area during a fire.

Wildfire can adversely affect soil quality, reducing water permeability, increasing bulk density and removing organic matter. The soils in the subdivision are derived from sedimentary shales and silts with moderate erodibility and moderate fertility.

The subdivision is located in the Florida River watershed. Water originating from the watershed flows into Navajo Lake and the San Juan River and then into the Colorado River. Introduction of soot and sediment due to a wildfire within the watershed could compromise water quality in Navajo Lake and the Colorado River.

Ecosystem health for the subdivision is moderate. The fuels management activities in the past three years has resulted in good tree density and forest health conditions in the treated areas of the subdivision. The remainder of the WUI is fair. Tree and oak densities in the areas southwest of Rancho Mira Sol are higher and ladder fuels are more prevalent. The Bureau of Land Management has thinned the ponderosa pine and masticated overmature oak stands on the BLM parcel to the east of Rancho Mira Sol in the past five years.

C. Protection Capability

The subdivision is served by the Durango Fire and Rescue Authority (DFRA). The Authority is staffed by both full-time staff and volunteer firefighters. The main fire station is located in Bodo Park in Durango eight air miles southwest. There is a DFRA station approximately six road miles east of the entrance to Rancho Mira Sol at the intersection of County Roads 234 and 240. An Upper Pine River Fire Protection District (UPRFPD) station is three road miles east of the subdivision entrance. Rancho Mira Sol straddles the boundary between DFRA and UPRFPD, with twelve residences in DFRA and three residences in UPRFPD. The subdivision entrance is within the DFRA geographic area. Resources from

both Fire Protection Districts would likely respond to a fire in the subdivision, but confusion over responsibility could slow response.

U.S. Forest Service and Bureau of Land Management fire crews and aerial wildfire support by the Mesa Verde National Park initial attack helicopter at Hesperus and the Ute Mountain Ute initial attack helicopter at Towaoc are available under the County mutual aid agreement. Wildland fires occurring on private lands are generally managed for full suppression. Wildfires on National Forest and BLM-managed public lands and Tribal lands in La Plata County are managed with policies that may involve full suppression, point suppression, confinement or containment strategies.

Evacuation of the subdivision in an emergency could be difficult due to the single entrance onto County Road 228 and limited alternative directions for traffic movement within the subdivision. Evacuation actions are the responsibility of the La Plata County Sheriff's Office and the La Plata County Emergency Manager.

7. MITIGATION ACTION PLAN

A. Education and Community Outreach

The audience for the Mitigation Action Plan includes the residents of Rancho Mira Sol, landowners immediately surrounding the subdivision that can benefit from mitigation activities on their properties and in the subdivision; government agencies planning complementary mitigation treatments and/or supplying grants or matching funds to perform mitigation; and emergency responders.

Outreach methods may include:

- Educational information at scheduled community meetings.
- Educational community workshops which could include subdivision residents and other community members sponsored by the FireWise Council of Southwest Colorado and/or the Durango Fire and Rescue Authority.
- FireWise Committee information mailed to all residents.
- Awareness training on basic wildland fire behavior and evacuation procedures for subdivision residents

B. Policy

Authority and responsibility for managing vegetation on private property within Rancho Mira Sol rests with the residents. The Road Association has authority and responsibility for managing vegetation on the road rights-of-way.

C. Wildfire Mitigation Activities

1. Vegetation/Fuels Management

The recommendations below are consistent with *Protecting Your Home from Wildfire: Creating Wildfire-Defensible Zones* (CSFS Quick Guide FIRE 2012-1). The major Zone 1 vegetation management issues are fuels like grass, leaf and needle litter and flammable landscape plants growing in close proximity to structures. Flammable vegetation or shrubs are discouraged within 15 feet of residences (Zone 1). If desirable trees, shrubs or other plants are in this area, dead branches, stems and leaf litter should be removed and the zone extended accordingly. Xeriscaping landscaping techniques using plants and materials with low flammability can reduce the risk of flames adjacent to structures. Wood chips should not be used as mulch next to structures or under flammable shrubs within Zone 1.



Demonstration Zone 2 Treatment (Los Ranchitos)

The Zone 2 area is from 15 to 100 feet of the residence. Here, trees taller than 15 feet should be thinned to a spacing of 10-20 feet between crowns. Trees selected for retention should generally have at least 50% live crowns. Branches lower than ten feet from the ground surface should be pruned, but no more than 50% of the live crown should be removed. Trees shorter than 15 feet tall should be spaced no closer than five feet from the edge of adjacent

tree crown edges. Oak clumps should be spaced no closer than two times shrub height to other clumps or trees. Grasses should be mowed to a maximum of six to eight inches, especially by fall when grasses are dried out. Zone 2 treatment areas are shown on the **Treatments** map in Appendix A.

Areas farther than 100 feet from structures are in Zone 3. These areas should be managed to maintain good forest health and to reduce the probability of continuous crown fire. Locations of recommended oak mastication and forest thinning in Zone 3 are shown on the **Treatments** map. Treated acres by ownership are shown in the table below.

	Rancho Mira Sol	State	BLM
Mastication	128 acres	117 acres	183 acres
Thinning	178 acres	119 acres	95 acres

The prescription for oak mastication is removal of half of the oak within the treatment area. Ponderosa pine and Douglas-fir in the treated areas should generally be retained subject to the spacing guidelines. Piñon pine and juniper within ten feet of ponderosa pine or Douglas-fir in the treated areas should be removed.

The forest thinning prescription is for thinning to a crown spacing of no less than ten feet and an average density of 70 square feet of basal area (BA) per acre. Maximum density within clumps of ponderosa pine should not exceed 90 square feet per acre. Preference for removal would be trees infected with dwarf mistletoe, having broken or multiple tops or with other obvious damage.

Probability of wildfire moving into or out of Rancho Mira Sol can be reduced through maintenance of shaded fuelbreaks along the boundaries of the subdivision and along the road rights-of-way. The treatment prescription would be similar to Zone 2, i.e., crown spacing of 15 to 25 feet between trees, tree clumps or shrub clumps and pruning of tree branches on trees taller than 25 feet up ten feet. More



Example Shaded Fuelbreak Density (Edgemont Highlands)

dense clumps of trees up to densities of 90 BA per acre can be left in some areas for wildlife security and screening. The denser (70 to 90 BA per acre) areas should not exceed 25% of the shaded fuelbreak area. Treatment areas are shown on the **Recommended Treatments** map in Appendix A. The boundary shaded fuelbreaks total 100 acres in the subdivision, 21 acres on State lands, 39 acres on BLM and 42 acres on other private lands. Road R-O-W shaded fuelbreak treatments total 46 acres.

2. Structure Vulnerability

Structure construction using unpainted rough wood products including wood shake roof shingles is discouraged since those materials are very receptive to sparks and flame. Roof materials such as metal, cement or cement-fiber shingles and tile are not receptive to sparks, flame and heat. Enclosing soffits with metal and/or metal screening also discourages ignition of roofs and eaves. Detailed fire-resistant construction guidelines are found in *Firewise Construction: Site Design and Building Materials* (Bueche and Foley, 2012) in Appendix G.

Locate woodpiles at least 30 feet from structures. Clear flammable vegetation at least 10 feet away from woodpiles.

The underside of wood decks, porches and steps should be free of combustible materials or vegetation so as not to provide fuel for embers and flames that may get underneath them.

3. Safety

Additional turnouts and turnarounds on upper Mira Sol Drive and Cadillac Canyon Road would be helpful for safely moving emergency responders into the area and evacuating residents. Locations of potential turnouts and turnarounds are noted on the Recommended Treatments map in appendix A.

The Road Association should work with the La Plata County Emergency Manager to develop an Emergency Evacuation Plan for the subdivision. The plan should include wildland fire safety zone locations, standard evacuee assembly points, communication trees, livestock evacuation or care protocols and management action points.

Subdivision residents should be offered a general emergency situation safety awareness session annually to review the evacuation plan and update emergency communication trees, evacuation routes and gathering points.

4. Specific Activity Recommendations and Priorities

The following mitigation activity and treatment recommendations are listed by priority for the Mira Sol Drive Road Association, the residents and land owners of the subdivision, Durango Fire and Rescue Authority and adjoining landowners and cooperators.

Group	Activity Year/Priority	Activity/Action	Estimated Cost
Road Association	2013-18 (ongoing)	Assist homeowners with individual defensible space creation and fuel mitigation by providing annual information and education programs on effective mitigation techniques.	\$500 annually
Land owners	2013-18 (ongoing)	Pruning of trees and large shrubs around residences consistent with the recommendations of CSFS Quick Guide FIRE 2012-1.	\$500 per lot
Land owners	2013-18 (ongoing)	Use "FireWise" plant materials in landscaping per CSU Publication 6.305 <i>FireWise Plant Materials</i> by F. C. Dennis	Variable
Road Association /La Plata OEM	2013 / 1	Develop a subdivision emergency notification and evacuation plan in consultation with the La Plata County Emergency Manager and the subdivision residents. The plan would include safe evacuation routes, "Safety Zones" where residents could safely shelter-in-place and fire equipment staging areas.	\$5,000
Road Association	2013-18 / 1	Construct turnouts and turnarounds on Mira Sol Drive and Cadillac Canyon Road	\$5,000
Road Association	2013-18 / 2	Develop shaded fuelbreaks with tree clump densities from 40 to 50 square feet of basal area per acre along road R-O-W's. Treated area is 46 acres.	\$69,000
Road Association /Land owners	2013-18 / 3	Develop shaded fuelbreaks with tree clump densities from 40 to 50 square feet of basal area per acre along subdivision interior boundaries. Treated area is 100 acres	\$150,000
Other Land owners	2013-18 / 4	Develop shaded fuelbreaks with tree clump densities from 40 to 50 square feet of basal area per acre along subdivision exterior boundaries. Treated area is 42 acres on private lands, 39 acres on BLM and 21 acres on State lands (\$1500/acre)	\$63,000 Pvt \$58,500 BLM \$31,500 State
Land owners	2013-18 / 5	Masticate 26 acres of oak (\$1200/acre) and thin 36 acres of trees (\$1500/acre) on average across the subdivision annually over the next five years.	\$85,200 annually
BLM	2013 -18 / 6	Masticate 37 acres of oak (\$1200/acre) and thin 19 acres of trees (\$1500/acre) on average annually over the next five years.	\$72,900 annually
State	2013-18 / 7	Masticate 24 acres of oak (\$1200/acre) and thin 24 acres of trees (\$1500/acre) on average annually over the next five years.	\$64,800 annually

8. MONITORING AND EVALUATION

Monitoring and evaluation of outreach, education and mitigation efforts within the Rancho Mira Sol and its WUI are an important part of the CWPP. The monitoring and evaluation actions for the CWPP are shown below along with the responsible group and when those actions should occur.

Monitoring		
Group	Action	Period
Road Association	Annual Report to the Community, FireWise Council of SW Colorado , Colorado State Forest Service	Annually
CSFS	Monitoring of mitigation work status for work covered by grants	As required

Evaluation		
Group	Action	Period
Road Association	Annual Report will list “Lessons Learned” from fuels mitigation projects and activities over the preceding year.	Annually
Road Association	Review CWPP and measure progress by degree of accomplishment of mitigation benchmarks	Annually
Road Association/CSFS	Update CWPP	No more than 5 years

9. GLOSSARY

acre: an area of land containing 43,560 square feet. A square acre would be about 209 feet by 209 feet. A circular acre would have a radius of 117.75 feet.

basal area: the cross-sectional area of a single stem, including the bark, measured at breast height (4.5 feet above the ground) For example, the basal area of a tree 13.5 inches in diameter at breast height is about 1 square foot. Basal area = 0.005454 times diameter squared. (b) of an acre of forest: the sum of basal areas of the individual trees on the area. For example, a well stocked pine stand might contain 70 to 90 square feet of basal area per acre.

canopy: the foliage formed by the crowns of trees in a stand.

defensible space: an area around a structure where fuels and vegetation are treated, cleared or reduced to slow the spread of wildfire towards the structure.

diameter at breast height (dbh): the diameter of a stem of a tree at 4 ½ feet above the ground.

downed fuels: the accumulated woody and vegetative material on the forest floor from leaf/needle fall, natural pruning and breakage that serves as fuel for wildfire.

ecosystem: A spatially explicit, relatively homogenous unit of the earth that includes all interacting organisms (plants, animals, microbes) and components of the abiotic environment within its boundaries. An ecosystem can be of any size: a log, pond, field, forest, or the earth's biosphere.

fuel loading: the oven-dry weight of fuel per unit area.

fuelbreak: A strategically located strip or block of land (of varying width) depending on fuel and terrain, in which fuel density is reduced, thus improving fire control opportunities. The stand is thinned and remaining trees are pruned to remove ladder fuels. Most brush, heavy ground fuels, snags and dead trees are removed and an open park-like appearance established.

ladder fuels: combustible material that provides vertical continuity between vegetation strata and allow fire to climb into the crowns of trees or shrubs with relative ease.

litter: the surface layer of a forest floor that is not in an advanced stage of decomposition, usually consisting of freshly fallen leaves, needles, twigs, stems, bark, and fruits.

lop and scatter: a hand method of removing the up-ward branches from tips of felled trees to keep slash low to the ground, to increase rate of decomposition, lower fire hazard, or as a pre-treatment prior to burning.

sapling: a usually young tree larger than a seedling but smaller than a pole.

silviculture: the art, science, and practice of establishing, tending, and reproducing forest stands of desired characteristics. It is based on knowledge of species characteristics and environmental requirements.

slash: the residue of treetops and branches left on the ground after logging or accumulating as a result of storms, fire, girdling or delimiting.

snag: a standing, generally unmerchantable dead tree from which the leaves and most of the branches have fallen.

stand: a contiguous 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.

thinning: a cultural treatment made to reduce stand density of trees primarily to improve growth, enhance forest health, or recover potential mortality.

Wildland-Urban Interface: The geographical meeting point of two diverse systems - wildland and structures. In the WUI, structures and vegetation are sufficiently close so that a wildland fire could spread to structures or a structure fire could ignite vegetation.

Definitions except defensible space and Wildland-Urban Interface from *The Dictionary of Forestry*, John A. Helms, editor.

10. LITERATURE CITED

- Anderson, H.E. 1982.** Aids to Determining Fuel Models for Estimating Fire Behavior. USDA Forest Service General Technical Report INT-GTR-122. Intermountain Forest and Range Experiment Station. Ogden, UT. 22 p.
- Bueche, David and Foley, Tim. 2012.** Firewise Construction: Site Design and Building Materials. Colorado State Forest Service, Ft. Collins, CO. 33 p.
- Colorado State Forest Service. 2012.** Protecting Your Home from Wildfire: Creating Wildfire-Defensible Zones. Colorado State Forest Service Publication FIRE 2012-1. 12 p.
- Dennis, F.C. 1999.** Fire-Resistant Landscaping. Colorado State University Cooperative Extension Resource Publication no. 6.303. 4 p.
- Dennis, F.C. 2002.** FireWise Plant Materials. Colorado State University Cooperative Extension Resource Publication no. 6.305. 6p.
- Dennis, F.C..** Fuel Break Guidelines for Forested Subdivisions & Communities. Colorado State Forest Service. 8 p.
- Helms, J.A., ed. 1998.** The Dictionary of Forestry. The Society of American Foresters. Bethesda, MD. 210 p.
- La Plata County Community Wildfire Protection Plan. 2006.** La Plata County, Colorado. 12 p.
- Scott, Joe H., Burgan, Robert E. 2005.** Standard fire behavior fuel models: a comprehensive set for use with Rothermel's surface fire spread model. Gen. Tech. Rep. RMRS-GTR-153. Fort Collins, CO; USDA Forest Service, Rocky Mountain Research Station. 72p.

Appendices

Appendices B-G may be found by clicking on the link or going to the Colorado State Forest Service Web site at: www.colostate.edu.

Appendix A: Maps

Appendix B: CSFS QUICK GUIDE SERIES, FIRE 2012-1 – [*Protecting Your Home From Wildfire: Creating Wildfire-Defensible Space Zones*](#)

Appendix C: [*Fuelbreak Guidelines for Forested Subdivisions and Communities*](#)

Appendix D: CSFS #6.303 – [*Fire-Resistant Landscaping*](#)

Appendix E: CSFS #6.305 – [*Fire Wise Plant Materials*](#)

Appendix F: CSFS #6.311 – [*Gambel Oak Management*](#)

Appendix G: [*Firewise Construction: Site Design and Building Materials*](#) (Bueche and Foley)

Appendix A

Maps

- 1. Rancho Mira Sol Vicinity**
- 2. Rancho Mira Sol WUI**
- 3. Ranch Mira Sol Cover Types**
- 4. Rancho Mira Sol Treatments**



