## SAN BENITO COUNTY COMMUNITY WILDFIRE PROTECTION PLAN

SAN BENITO COUNTY, CALIFORNIA

San Benito Fire Safe Council

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**MAY 2010** 

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## 1.0 INTRODUCTION

The San Benito County Community Wildfire Protection Plan (SBCCWPP) was developed by the San Benito Fire Safe Council (SBFSC) with guidance and support from the California Department of Forestry and Fire Protection, the Bureau of Land Management, San Benito County, community members, interested parties, forest and rangeland property owners, and wildfire protection planning consultants from Dudek.

As a key component of the Healthy Forest Restoration Act (HFRA) of 2003, a Community Wildfire Protection Plan (CWPP) serves as a mechanism for community input and identification of areas presenting high fire hazard risk as well as identification of potential projects intended to mitigate such risk. Further, the CWPP process is intended to provide the community a forum for identifying values at risk from wildfire, which may include people, property, natural resources, cultural values, economic interests, and infrastructure. The identification of these values at risk by the community strongly influences the potential wildfire hazard mitigation projects identified in this SBCCWPP.

This SBCCWPP covers San Benito County, California. The purpose of this collaboratively prepared SBCCWPP is to serve as a fire protection planning document that presents the County's physical characteristics, landscape-scale fire hazard, rated fire hazard risk areas, the wildland urban interface (WUI), and designated fuel reduction projects and specifications for the area. The goal of this SBCCWPP is to provide a planning-level framework for hazardous fuel assessment and reduction within County WUI areas so that structures and assets are provided additional protection, reducing the potential for wildfire-originated ignitions. This SBCCWPP is intended to be a living document managed and updated routinely by the SBFSC.

## 2.0 SBCCWPP DEVELOPMENT PROCESS

This section lists the representatives or organizations either involved in the development of the SBCCWPP or who provided information for the completion of this SBCCWPP. The organization, roles, and responsibilities are indicated in the following table:

Organization	Roles/Responsibilities
San Benito Fire Safe Council (SBFSC) Web site, documents, forms, grant management, public education and outreach	Provides review and guidance for SBCCWPP preparation, coordinates community involvement, and is involved with SBCCWPP review team and approval process; provides planning information and resources, web site forms and information; provides member input, review, meeting attendance and coordination; responsible for grant administration and management
forest and rangeland property owners, and interested parties	and collaboratively engage with agencies and the SBFSC in SBCCWPP review and preparation
Local Fire Departments San Benito County Fire Hollister City Fire Dept. San Juan Bautista Volunteer Fire Dept. Aromas Tri-County Fire Dept.	Provide input from a local fire agency perspective and identify concerns and priorities. Also collaboratively engage with public agencies and the SBFSC in SBCCWPP review and preparation
California Department of Forestry and Fire Protection (CAL FIRE)	Primary fire suppression for State Responsibility Area (SRA) lands within San Benito County, provides input and expertise on minimum standards, SRA lands, and fuel reduction
Bureau of Land Management (BLM)	Provides input and expertise on SBCCWPP preparation, existing and proposed projects, and fuel reduction efforts
San Benito County Planning Department	Identifies regulatory framework for balancing the SBCCWPP with County land use plans
Dudek Wildfire Protection Planners	Prepared wildfire hazard reduction plan, recommendations for fuel reduction and structural ignition reduction; Primary development of SBCCWPP with guidance and input from the SBFSC, community risk and value assessment, development of community protection priorities, and establishment of fuels treatment project areas and methods

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## 2.1 Signatories

The signatories for the San Benito County Community Wildfire Protection Plan include:

1. Local Government:

Reb Monaco, Chairman, San Benito County Board of Supervisors

- 2. San Benito County Fire Department: Richard C. Hutchinson Jr., *Fire Chief*
- 3. California Department of Forestry and Fire Protection (CAL FIRE): Richard C. Hutchinson Jr., *San Benito – Monterey Unit Chief*

## 2.2 Federal Agencies

Federal agencies managing land in San Benito County include:

- 1. Bureau of Land Management (BLM), Hollister Field Office
- 2. National Park Service (NPS), Pinnacles National Monument

## 2.3 State and Local Agencies

Representatives of the state/local agencies that have jurisdictional responsibilities in San Benito County include:

- 1. California Department of Parks and Recreation (CDPR)
- 2. California Department of Fish and Game (CDFG)
- 3. California Department of Transportation (CalTrans)
- 4. California Highway Patrol (CHP), Hollister-Gilroy
- 5. Monterey Bay Unified Air Pollution Control District (APCD)
- 6. San Benito County
- 7. City of Hollister
- 8. City of San Juan Bautista
- 9. San Benito Resource Conservation District
- 10. American Red Cross, Monterey-San Benito Counties Chapter
- 11. San Benito County Water District
- 12. Aromas Water District

### 2.4 Interested Parties

Parties from the communities in San Benito County that have shown interest in fire management or may be interested in this SBCCWPP include:

- 1. San Benito Fire Safe Council
- 2. Pacific Gas & Electric (PG&E)
- 3. San Juan Canyon Committee
- 4. Granite Rock Construction
- 5. Davey Resource Group
- 6. California Native Plant Society, Monterey Bay Chapter
- 7. The Nature Conservancy
- 8. Aromas Community Foundation Committee
- 9. San Benito Community Foundation

#### 2.4.1 Community Involvement

The following community meetings were held during the preparation of the SBCCWPP in order to provide community members an opportunity to contribute to the CWPP process. Specifically, community input was sought to better understand the vulnerability of San Benito County residents, businesses, and resources to wildfire and to promote awareness of the county-wide wildland fire hazard and propose workable solutions to reduce the risk of wildfire. Finally, the meetings provided a forum for the community to discuss how to best mitigate wildfire risk in San Benito County. Table 2 provides specific information regarding each meeting.

Meeting Location	Date	Time
South County, San Benito County Fairgrounds	Wednesday October 28, 2009	6:30pm
San Juan Bautista, San Juan Bautista Fire Station	Wednesday November 11, 2009	6:30pm
Aromas, Aromas Tri-County Fire Station	Wednesday November 18, 2009	6:30pm

 Table 2. Community Meeting Schedule

Following community meetings, a draft SBCCWPP was prepared which included public input. This draft was distributed first to the local fire and land management agencies then to the community for review and comment. This SBCCWPP incorporates the comments submitted by both groups.

## 2.5 Funding/Grant Management

Funding for the preparation of this SBCCWPP was made available from a 2009 USDI Bureau of Land Management Fire Safe Communities Act Grant, made available via the California Fire Safe Council. The grant period started in February 2008 and extends through June 2010. Grant management and reporting is being conducted by the SBFSC.

## 3.0 SAN BENITO COUNTY PLANNING AREA

This SBCCWPP covers San Benito County, California. Located in central California, San Benito County is bordered by Monterey County on the west, Fresno County on the south and east, Merced County on the east, and Santa Cruz and Santa Clara Counties on the north. San Benito County encompasses approximately 890,000 acres and supports a population of approximately 55,000 people distributed among two incorporated cities (San Juan Bautista and Hollister) and unincorporated County areas. San Juan Bautista and Hollister encompass approximately 5,800 acres (10.5%) with a combined population of approximately 38,000 (69%) while the remaining population of approximately 17,000 (31%) live in unincorporated portions of the County. This section presents more detailed information about San Benito County, specifically a description of factors affecting wildfire risk within the County.

## 3.1 Existing Fire Response Capabilities

Fire management responsibilities in San Benito County are currently distributed between the following agencies: San Benito County Fire Department, CAL FIRE, Aromas Tri-County Fire Department, Hollister Fire Department, San Juan Bautista Volunteer Fire Department, and the Bureau of Land Management. The following provides more detail on the responsibilities of each of the aforementioned agencies.

#### 3.1.1 San Benito County Fire Department

The County of San Benito has a Cooperative Fire Protection Agreement with CAL FIRE for administration of the San Benito County Fire Department (SBCFD). Under this agreement, the CAL FIRE Unit Chief (San Benito-Monterey Unit) serves as the County Fire Chief. Although the County contracts with CAL FIRE, the two are separate entities. The SBCFD staffs one County-owned fire engine at the Hollister Station, which provides year-round, 24 hour coverage with two permanent firefighters per shift. The SBCFD also utilizes Paid Call Firefighters (PCF) with an authorized strength of 25. PCFs provide additional staffing and depth when available. Although the SBCFD does not own a station, it does own a water tender, a Type III engine, and 3 Type I engines (one located at the Hollister Station, one given to San Juan Bautista Volunteer Fire Department for mutual aid, and one reserve engine).

#### 3.1.2 California Department of Forestry and Fire Protection (CAL FIRE)

CAL FIRE is a wildland fire organization with a mission to protect watershed on non-federal, unincorporated lands within the state. Four CAL FIRE stations exist in San Benito County and include the Bear Valley Station in Bear Valley, the Beaver Dam Station near Bitterwater, the Antelope Station in Antelope Valley, and the Hollister Station in Hollister. Further, CAL FIRE air tankers are housed at the Hollister Airport and a dozer is housed at the Hollister Station. CAL FIRE provides two battalion chiefs dedicated to its operations in San Benito County.

CAL FIRE staffs the Bear Valley, Beaver Dam, Antelope, and Hollister Stations during peak fire season, from June 15 to October 15. Total on-duty staffing at CAL FIRE facilities is a minimum of 24 firefighters responding on seven fire engines, one bulldozer and two battalion chiefs. Additional CAL FIRE resources available to the County include a helicopter with water dropping capabilities and firefighting crew, air tankers, air tactical coordinator and inmate hand crews. CAL FIRE also operates the Emergency Command Center (ECC) in Monterey, which is supervised by a battalion chief and is capable of handling any type of emergency, including multiple incidents and major disasters with four fire captains.

#### 3.1.3 Aromas Tri-County Fire Department

The Aromas Tri-County Fire Protection District (ATCFPD) provides fire protection services within its service area in San Benito County and operates under a Cooperative Fire Protection Agreements with CAL FIRE. The ATCFPD provides a full-time battalion chief, fire captain, fire apparatus engineer, and firefighters. The ATCFPD fire engine is staffed with a minimum of three personnel and the battalion chief provides back up chief officer coverage to the SBCFD at no charge to the County.

#### 3.1.4 Hollister Fire Department

The Hollister Fire Department (HFD) currently operates two stations in the City of Hollister. Station 1 is staffed with two fire captains, two fire apparatus engineers, and one firefighter. The fire chief and an administrative fire captain are on duty Monday through Friday. Historically, the department was supported with a compliment of reserve PCFs, however, following the opening of Station 2, the PCF program is not significantly active. Station 2 runs one engine company and is staffed with one fire captain, one fire apparatus engineer, and one firefighter. The HFD provides service to the City of Hollister.

#### 3.1.5 San Juan Bautista Volunteer Fire Department

The San Juan Bautista Volunteer Fire Department (SJBVFD) provides fire suppression, emergency medical services (basic life support), fire prevention, public education, and rescue services within the City of San Juan Bautista. It operates one station in San Juan Bautista. A county-owned fire engine is available to the SJBVFD through a cooperative agreement and is housed at the San Juan Bautista Fire Station. The SJBVFD agrees to staff and respond via mutual aid in the county area when requested. In addition, the SJBVFD Large Animal Rescue Unit, with staff trained in tactics, operations, and an equipment cache, are a primary resource to assist the community with large animal incidents that are technically overwhelming whether it occurs in the course of an evacuation or a single incident.

#### 3.1.6 Bureau of Land Management

The Bureau of Land Management (BLM) is responsible for fire management and response on its approximately 82,000 acres in San Benito County. BLM staffs a hand crew and dozer from May to October each year. BLM has a Direct Protection Agreement (DPA) with CAL FIRE for all BLM lands in San Benito County. CAL FIRE and BLM respond to incidents in BLM property and CAL FIRE has suppression responsibilities for BLM property for initial attack only. BLM assumes responsibility in the event that a wildland fire goes to extended attack status. The BLM also supports fire protection planning efforts in San Benito County through its involvement in the SBFSC and grant funding for public education or WUI fuel reduction projects.

## 3.2 County Characteristics

This section presents a discussion of the conditions affecting fire behavior and risk assessment for San Benito County.

## 3.2.1 Topography

The topography of San Benito County is extremely variable and is affected greatly by the presence of the San Andreas Fault, which bisects the County from approximately Bitterwater in the southeast to San Juan Bautista in the northwest. The San Benito River runs the length of the County along a similar alignment. Two mountain ranges characterize San Benito County and include the Gabilan Range along the south west edge of the County and the Diablo Range in the eastern portion of the County. Steep, varied terrain characterizes the southern portion of the County while the northern portion of the County near Hollister and San Juan Bautista is relatively flat. Elevations in the County at the confluence of the San Benito River and the Pajaro River up to over 5,200 feet amsl in the southeast corner of the property atop San Benito

Mountain. The topography of San Benito County is graphically displayed in the map in Appendix B-1.

The regional topographic conditions within San Benito County can have considerable effect on wildland fire behavior, as well as on the ability of fire fighters to suppress those fires. Steep slopes and canyons alignments are conducive to channeling, deflecting, concentrating, or dispersing winds, and creating extremely erratic wildfire conditions, especially during wind-driven fire events.

#### 3.2.2 Vegetation/Fuels

In addition to weather and topography, vegetation (or fuel) plays a major role in affecting fire behavior and shaping fire hazard potential. Vegetation distribution throughout the County varies by location and topography, with dramatic differences observed between the northern, agricultural portions of the County and the more mountainous, southern region. Current land cover/fuels distribution within the County is characterized by eleven different vegetation/fuel types (FRAP 2009), as presented in Table 3. Dominant vegetative cover within San Benito County is herbaceous, or grassland cover (49.5%), distributed primarily in the low-lying valley areas and rolling hills south of Hollister. While this fuel type can burn quickly under strong, dry wind patterns, it does not produce the high heat intensity and high flame lengths associated with chaparral fuel types. Other significant vegetative cover types include pine/grass (14.1%), light brush (19.7%), and tall chaparral (4.8%). These vegetation types are primarily associated with the steeper, upland areas in the southern portion of the County. Fire behavior in brush fuel types produces higher flame lengths than that in grassland, although spread rates are typically slower. Fire behavior in woodlands is variable, depending on surface fuel conditions and the presence of ladder fuels. The distribution of fuels in San Benito County is graphically presented in the map in Appendix B-2.

Fuel Model Number	Description*	Approximate Acreage*	Percent Cover
1	Grass	440,315	49.5%
2	Pine/Grass	125,257	14.1%
4	Tall Chaparral	42,404	4.8%
5	Light Brush	175,073	19.7%
6	Intermediate Brush	34	0.0%
8	Hardwood/Conifer Litter	19,880	2.2%
10	Heavy Conifer Litter w/ Understory	5,510	0.6%
28	Urban	4,073	0.5%
97	Agriculture	75,763	8.5%
98	Water	365	0.0%
99	Barren	730	0.1%
	Total:	889,404	100.0%

#### Table 3. San Benito County Land Cover

\*FRAP 2009

Variations in vegetative cover type and species composition have a direct effect on fire behavior. Some vegetation types and their associated plant species have increased flammability based on plant physiology (resin content), biological function (flowering, retention of dead plant material), physical structure (leaf size, branching patterns), and overall fuel loading. For example, the native shrub species that compose chaparral vegetation types present a high potential hazard based on such criteria.

As described, vegetation plays a significant role in fire behavior. A critical factor to consider is the dynamic nature of vegetation types. Fire presence and absence at varying cycles or regimes affects vegetation type succession. Succession of vegetation types, most notably the gradual conversion of shrublands to grasslands with high frequency fires and grasslands to shrublands with fire exclusion, is highly dependent on the fire regime. Biomass and associated fuel loading will increase over time, assuming that disturbance or fuel reduction efforts are not implemented.

Wildfire disturbances can also have dramatic impacts on plants and plant composition. Heat shock, accumulation of post-fire charred wood, and change in photoperiods due to removal of shrub canopies may all stimulate seed germination. The post-fire response for most species is vegetative reproduction and stimulation of flowering and fruiting. The combustion of aboveground biomass alters seedbeds and temporarily eliminates competition for moisture, nutrients, heat, and light. Species that can rapidly take advantage of the available resources will flourish. It is possible to alter successional pathways for different vegetation types through manual alteration. This concept is a key component in the overall establishment and maintenance of the fuel reduction projects included in this SBCCWPP.

#### Sudden Oak Death

Although there are currently no known occurrences of Sudden Oak Death (SOD) in San Benito County, the climate in the surrounding coastal region supports the SOD pathogen (*Phytophthora ramorum*), which affects rhododendron (*Rhododendron* spp.), redwood (*Sequoia sempervirens*), and oaks (*Quercus* spp.). The SOD pathogen requires moist environments for survival and spore dissemination. The SOD pathogen infects the water flow system of susceptible trees and shrubs, eventually blocking this flow and resulting in rapid plant/tree mortality. Precautions must be used when handling infected plant material and/or tools used in trimming/removal of infected wood. More information on SOD and specifics on susceptible plant species can be found via the website for the California Oak Mortality Task Force:

#### http://www.suddenoakdeath.org/index.html

#### **Pine Pitch Canker**

As with SOD, there are no currently known occurrences of pine pitch canker in San Benito County. Primarily affecting Monterey pine trees (*Pinus radiata*), the disease-causing fungus (*Fusarium subglutinans* f. sp. *Pini*) affects a number of other pine species. Pine Pitch Canker occurs in response to a fungal infection and is characterized by resinous cankers on the trunk, branches or roots accompanied by needle wilt, limb dieback and eventual tree mortality. The fungus is spread through distribution of the fungal spores by contact with infected material and by insect vectors including several species of bark, twig and cone beetles. The Pitch Canker Action Plan was approved in 1995 under the direction of the Pine Pitch Canker Task Force and is intended to identify management, research and educational priorities to limit the spread of pine pitch canker in California. More information on pine pitch canker can be found via the Pine Pitch Canker Task Force:

#### http://frap.cdf.ca.gov/pitch\_canker/

The implication of these forest diseases and other insect infestations in relation to fire prevention and protection is the relatively rapid mortality that occurs, resulting in increased dead fuel loads. Standing dead fuels contribute to increased wildfire hazard and require treatment and/or removal, especially within wildland urban interface areas. Further, care must be taken to avoid transportation of infected tools, chips, and trimmings/plant material into non-infected regions.

#### 3.2.3 Climate

Weather conditions in San Benito County are affected by topography and proximity to the Pacific Ocean. In the northwest portion of the County, marine influence affects weather patterns,

humidity levels, and plant moisture content. In the majority of the County, however, clouds and fog are less prevalent allowing maximum temperatures to reach 90 to 100 degrees F with humidity levels dropping to 10% or lower (CAL FIRE 2009). Fluctuations in wind patterns are expected due to the influence of topography, although predominant wind direction is northwest with average speeds between 7 and 10 mph (CAL FIRE 2009). Average annual rainfall in San Benito County is approximately 12 inches.

Remote Automated Weather Stations (RAWS) are another important tool in fire protection planning and provide detailed weather data including wind speed, relative humidity, fuel moisture, temperature, and precipitation. The processed data are automatically transmitted via satellite and can be downloaded and analyzed for planning purposes. Four RAWS are located in San Benito County and are described in greater detail in Table 4.

RAWS Name	WIMS ID	Latitude	Longitude	Elevation	Data Years
Hollister	44406	36.842222	-121.362222	404 feet	1981-2009
Pinnacles	44410	36.470833	-121.147222	1,322 feet	2002-2009
Hernandez	44409	36.382500	-120.855833	3,733 feet	1992-2009
Santa Rita	44408	36.347778	-120.597778	5,000 feet	1991-1995, 1997- 2009

 Table 4. San Benito County RAWS

#### 3.2.4 Fire History

Fire history is an important component in understanding fire frequency, fire type, significant ignition sources, and vulnerable areas/communities. The topography, vegetation, and climatic condition associated with San Benito County combine to create a unique situation capable of supporting wildfires. Relative to other areas in the central coast region of California, San Benito County has not been subject to large-scale conflagrations over the course of the recorded fire history. While numerous fires have burned in San Benito County, their sizes remain small relative to other fires in the region (e.g. the Basin Complex Fire in Monterey County in 2008 which burned over 160,000 acres). The history of wildfires in San Benito County is graphically portrayed in the map in Appendix B-3.

Based on historical fire perimeter data (FRAP 2009)<sup>1</sup>, repeated burning is not observed within the County and fires are concentrated primarily in the Gabilan Range with a few burning in the Diablo Range and lower valley bottom areas. Fuel type is a likely factor affecting the geographic

<sup>1</sup> Based on polygon GIS data from Cal Fire's Fire and Resource Assessment Program (FRAP), which includes data from Cal Fire, USDA Forest Service Region 5, BLM, NPS, Contract Counties and other agencies. The data set is a comprehensive fire perimeter GIS layer for public and private lands throughout the state and covers fires 10 acres and greater back to 1878.

distribution of fires in San Benito County. Grass-dominated rangelands in the eastern portion of the County exhibit small, well-dispersed burn perimeters, while the heavier chaparral fuels in the western portion of the County (Gabilan Range) exhibit a more concentrated distribution of fire perimeters. Notable large wildfires that have burned primarily outside of San Benito County but have burned a portion within the County boundary include the 1950 Mack Fire and the 1979 Ciervo Fire, both in the extreme southwest corner of the County. The average interval between large wildfires in excess of 2,000 acres burning within San Benito County is 5.8 years, with intervals as short as 1 year and as long as 17 years. Table 5 presents notable fires burning over 2,000 acres in San Benito County.

Fire Name*	Year	Approximate Acreage Burned
Mack Fire	1950	35,380 total (11,120 in San Benito Co.)
Melendy Fire	1952	4,485
101 Ranch Fire	1953	4,465
Burkett Fire	1955	11,574
Stone Canyon Fire	1957	4,280 total (3,824 in San Benito Co.)
Webb Fire	1957	2,305
Romo Fire	1974	3,270
Horse Valley Fire	1981	3,830
Cognina Fire	1982	2,056
Stonewall Fire	1998	2,795
Brown Fire	2008	3,787

Table 5. San Benito County Fires in Excess of 2,000 Acres

\*FRAP 2009

#### 3.2.5 Population and Housing

The estimated population of San Benito County is 54,699 people within 2 incorporated cities and unincorporated County lands (US Census Bureau 2009). The largest population center is the City of Hollister, with approximately 35,690 people, followed by unincorporated County areas that include approximately 14,000 people. Other cities or population centers include San Juan Bautista (approx. 1,550 people) and Aromas (approx. 2,800 people). The County includes approximately 17,000 housing units (US Census Bureau 2009). Housing density data provided by FRAP (2009) for San Benito County was analyzed to evaluate population centers and population distribution in the County. The results presented in Table 6 reflect housing density classifications and were ultimately used in evaluating fire risk, project prioritization, and fire threat ratings discussed in this SBCCWPP. As presented in Table 6, the overwhelming majority of San Benito County (over 95%) consists of low-density housing. Further, spatial analysis of this data set reveals that higher density development is concentrated in Hollister, San Juan

Bautista, and Aromas, with densities decreasing with increased distance from these urban centers.

Housing Density*	Approximate Acreage	Percent
One unit per 40 acres, or less	846,761	95.1%
One unit per 5 acres to one unit per 40 acres	35,586	4.0%
One unit per acre to one unit per 5 acres	4,620	0.5%
Greater than one unit per acre	3,341	0.4%
Total:	890,308	100.0%

Table 6.	San	Benito	County	Housing	Density

\*FRAP 2009

#### 3.2.6 Land Ownership

Over 87 percent of the land within San Benito County is privately owned. Other significant ownership includes the Bureau of Land Management lands, primarily in the southeastern portions of the County (9.3 percent) and Pinnacles National Monument (2.3 percent). The current distribution of land ownership within San Benito County is presented in Table 7. Land ownership distribution for San Benito County is presented in the Land Ownership map in Appendix B-4.

 Table 7. San Benito County Land Ownership

Ownership Type*	Approximate Acreage	Percent	
Private	780,045	87.6%	
BLM	82,560	9.3%	
California Dept. of Parks and Recreation	6,274	0.7%	
California State Lands Commission	943	0.1%	
NPS (Pinnacles National Monument)	20,506	2.3%	
Total:	890,328	100.0%	

\*FRAP 2009

## 3.3 Existing Management Plans

The following sections describe existing fire management plans prepared by agencies and/or local districts that affect fuel management activities in San Benito County.

#### 3.3.1 California Department of Forestry and Fire Protection (CAL FIRE)

The 2009 Fire Plan<sup>2</sup> prepared by the California Department of Forestry and Fire Protection San Benito – Monterey Unit (BEU) addresses the goals and objectives set forth in the California Fire Plan, focusing on overall wildfire risk reduction at a local level (CAL FIRE 2009). The Plan outlines local stakeholders, discusses the local fire environment, evaluates assets at risk, and identifies priority fuel treatment areas. The at-risk communities and fuel treatment priorities outlined in this SBCCWPP include those presented in the 2009 CAL FIRE Plan.

#### 3.3.2 Bureau of Land Management (BLM)

#### 3.3.2.1 BLM Hollister Field Office, 2008 Fire Management Plan

The BLM Hollister Fire Management Plan (FMP) presents fire management strategies for BLM land in San Benito County (BLM 2008). It identifies resource values and conditions pertaining to fire management on BLM land and recommends strategies for wildland fire suppression, prescribed fire, non-fire fuels treatment, and community assistance/protection. The strategies outlined in the BLM FMP are utilized in preparing the annual agency work plan and associated budgets. Management guidelines in the FMP prioritize public/firefighter safety, reduction of hazardous fuels, and wildfire risk reduction through prevention, mitigation, and education, amongst others.

The FMP also identifies and describes BLM-specific fire management units (FMU) and provides management type, dominant vegetation, and target fuel treatment objectives. Table 8 summarizes the BLM FMU characteristics and management objectives within San Benito County.

<sup>&</sup>lt;sup>2</sup> On-line at: <u>http://cdfdata.fire.ca.gov/fire\_er/fpp\_planning\_plans\_details?plan\_id=95</u>

Fire Management Unit/ID	BLM Acreage	Fire Management Unit Type	Dominant Vegetation	Target Rx Burn Acreage	Target Mechanical Treatment Acreage
Panoche WSA – North and South Areas CA-190-01	17,921	Wilderness Study Area	Annual grassland and annual grassland/shrub	1,000 (decadal)	1,000 (decadal)
San Benito Natural Area – WSA CA-190-03	1,870	Special Management Area	Barren areas with scattered plants in serpentine soils, conifer forests at higher elevations	100 (decadal)	100 (decadal)
Clear Creek Serpentine ACEC CA-190-04	50,000	Area of Critical Environmental Concern	Mosaic of bald hills, forests on north- facing slopes, mixed chaparral and oak woodland	1,500 (decadal)	1,500 (decadal)
San Joaquin Valley South CA-190-06	14,500	Special Management Area	Annual grassland and annual grassland/shrub	1,000 (decadal)	1,000 (decadal)

#### Table 8. BLM FMU Characteristics and Objectives in San Benito County

## 3.3.2.2 BLM San Benito Mountain Research Natural Area – Interim Management Plan and Management Guidance

The BLM has prepared an Interim Management Plan<sup>3</sup> for the San Benito Mountain Research Natural Area (SBMRNA), located adjacent to San Benito Mountain in the southeast corner of San Benito County. This plan focuses solely on the SBMRNA and identifies fire management objectives that will closely approximate the historical and natural fire regime of the area and incorporates post-fire monitoring and adaptive management following fire. The Plan identifies fire management objectives, sensitive/threatened species protection priorities, suppression objectives, prescribed fire objectives, and post-fire rehabilitation and restoration objectives.

#### 3.3.3 Pinnacles National Monument

Pinnacles National Monument has prepared a Fire Management Plan<sup>4</sup> (Pinnacles National Monument 2007) for their land in central-southern San Benito County. The Plan serves as an operational manual for the Monument's fire management program and includes guidelines for fire management actions within the Monument. The Plan outlines a framework for fire

<sup>&</sup>lt;sup>3</sup> On-line at <u>http://www.blm.gov/ca/pdfs/hollister\_pdfs/Clear\_Creek\_ROD/ROD-Complete.pdf</u>

<sup>&</sup>lt;sup>4</sup> On-line at: <u>http://www.nps.gov/pinn/parkmgmt/upload/PINN%200perational%20FMP%2007.10.07.pdf</u>

prevention and fuels reduction programs and prioritizes firefighter and public safety, public property protection, and restoration of natural and cultural resources. Finally, the Plan identifies National Park Service relationships with CAL FIRE and BLM in achieving the primary goals of federal wildland fire policy, including improved prevention and suppression, hazardous fuels reduction, restoration of fire-adapted ecosystems, and promotion of community assistance.

## 3.4 Regulatory Framework

The following sections describe existing environmental regulations relevant to fuels management activity in San Benito County.

#### 3.4.1 San Benito County General Plan and Ordinances

San Benito County is currently in the process of updating its General Plan. However, the currently enforced plan (1980) is still in effect until completion of the plan update, estimated to occur in 2011. According to the existing Safety Element of the 1980 San Benito County General Plan, "it will be the County's policy to incorporate into subdivision and zoning ordinances those fire safe guides adopted by the Board of Supervisors and entitled "Fire Safe Guides for Residential Development in California (in or near forests, brush and grassland areas)," revised and printed by the California Department of Forestry, May, 1980." The aforementioned "Fire Safe Guides" document has been updated since the completion of the 1980 San Benito County General Plan and is now titled the "Structural Fire Prevention Field Guide" (CAL FIRE 2000).

In addition to addressing land use planning and development standards, the wildfire risk reduction strategies addressed in the Structural Fire Prevention Field Guide include an emphasis on maintaining defensible space. Further, this document addresses the importance and necessity of neighborhood and community action in mitigating wildfire risk and specifically identifies Fire Safe Councils as a mechanism for community involvement in fire protection planning efforts. This SBCCWPP emphasizes the importance of defensible space, and incorporates the principles of vegetation management and community involvement as outlined in the Structural Fire Prevention Field Guide and accepted by San Benito County.

#### 3.4.2 Environmental Review

Any proposed fuel treatment project on federal land will require compliance with the National Environmental Policy Act (NEPA). Projects implementing a CWPP recommendation on federal land within the WUI defined in a CWPP are afforded expedited NEPA review. NEPA review is typically conducted by the federal agency responsible for land ownership (e.g. BLM, NPS).

Proposed fuel reduction projects on non-federal lands may require compliance with the

California Environmental Quality Act (CEQA) or the California Forest Practice Rules (CFPR). Private landowners conducting defensible space projects under PRC 4291 guidelines are not subject to CEQA review requirements. Non-defensible space fuel treatment projects on non-federal lands that are discretionary and are to be carried out or approved by public agencies would be subject to CEQA review and documentation (CEQA Guidelines 21080(a)). CEQA review for non-defensible space fuel reduction projects should be instituted during the project planning process.

The California Forest Practice Rules may be applicable to fuel reduction efforts on timberlands in San Benito County. CAL FIRE is responsible for administering Timber Harvesting Regulations conducted throughout California on all non-federal timberland. This applies regardless of zoning and includes lands inside of city limits. The removal of California native "commercial" timber species from forested lots, areas of pending new construction, and from around existing structures is included under these regulations. The CAL FIRE checklist provided in Appendix C is compiled from Title 14, California Code of Regulations and the Public Resources Code and is included to assist property owners in determining whether a Timber Harvest Plan (THP), a Timberland Conversion Permit (TCP), or another type of timber harvest plan exemption or emergency document is required.

#### 3.4.3 Agencies

Regulatory permits may also be required for fuel treatment actions that would adversely impact riparian areas under the jurisdiction of the U.S. Army Corps of Engineers (ACOE), the Regional Water Quality Control Board (RWQCB), and the California Department of Fish and Game (CDFG). It is anticipated that the ACOE may require a fill permit under section 404 of the Clean Water Act. CDFG may require a streambed alteration agreement under Section 1602 of the California Fish and Game Code. RWQCB may require a water quality certification under Section 401 of the Clean Water Act. Additionally, it is anticipated that the ACOE would consult with the U.S. Fish and Wildlife Service (USFWS) pursuant to Section 7 of the federal Endangered Species Act (ESA) during the 404 permitting process for potential impacts to special-status plants/wildlife and their habitats. Applications for each of these regulatory permits can be processed concurrently; however, some may take longer than others to process and obtain. Consultation with a qualified biologist and initiating any necessary seasonal surveys and early coordination with the regulatory agencies is recommended.

## 4.0 SAN BENITO COUNTY RISK ASSESSMENT

Using CAL FIRE's Fire and Resource Assessment Program (FRAP) data to more thoroughly evaluate wildfire risk in San Benito County, this section presents a summary of the FRAP analyses and the prioritization of threats to at-risk communities in San Benito County.

## 4.1 At-risk Communities

For the purposes of this SBCCWPP, at-risk communities in San Benito County are those that meet the definitions outlined in the Healthy Forest Restoration Act of 2003 (HFRA), which means an area:

(A) that is comprised of—

(i) an interface community as defined in the notice entitled "Wildland Urban Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire" issued by the Secretary of Agriculture and the Secretary of the Interior in accordance with title IV of the Department of the Interior and Related Agencies Appropriations Act, 2001 (114 Stat. 1009) (66 Fed. Reg. 753, January 4, 2001); or

(ii) a group of homes and other structures with basic infrastructure and services (such as utilities and collectively maintained transportation routes) within or adjacent to Federal land;

(B) in which conditions are conducive to a large-scale wildland fire disturbance event; and

(C) for which a significant threat to human life or property exists as a result of a wildland fire disturbance event.

In addition to this definition, the California Fire Alliance maintains a list of Communities-at-Risk, which contains only two communities in San Benito County (Hollister and San Juan Bautista). Due to this limitation, the at-risk communities included in this SBCCWPP include both the California Fire Alliance Communities-at-Risk and other communities for which a wildland fire threat exists.

## 4.2 Community Risk Assessment

#### 4.2.1 Fuel Rank

Based on an analysis of expected fire behavior for unique combinations of topography and vegetative fuels under severe weather conditions, a fuel rank has been developed for San Benito County (FRAP 2009). Rank is based on fuel model (vegetation type) and slope, and is adjusted based on the amount of ladder and/or crown fuel present. According to FRAP, fuel rank values can be "used to identify and prioritize pre-fire projects that reduce costs and losses from large fire events" (FRAP 2009). This analysis rates areas of the County into four separate categories,

including non-fuel, moderate, high, or very high. Table 9 presents fuel rank acreages and percentage for San Benito County, while the map in Appendix B-5 graphically presents the distribution of fuel rank ratings across the County.

Fuel Rank*	Acreage	Percent
Non-Fuel	76,858	8.6%
Moderate	151,480	17.0%
High	580,850	65.3%
Very High	80,214	9.0%
Total:	889,402	100.0%

#### Table 9. San Benito County Fuel Rank

\* FRAP 2009

#### 4.2.2 Fire Threat

Based on an analysis of fire frequency and potential fire behavior (hazard), FRAP has evaluated fire threat for San Benito County (FRAP 2009). According to FRAP, fire threat values can be "used to estimate the potential for impacts on various assets and values susceptible to fire" (FRAP 2009). The FRAP fire threat analysis rates areas of the County into five separate categories, including little/none, moderate, high, very high, or extreme. Table 10 presents fire threat acreages and percentage for San Benito County, while the map in Appendix B-6 graphically presents the distribution of fire threat ratings across the County.

**Table 10. San Benito County Fire Threat** 

Fire Threat Rating*	Acreage	Percent
Little to None	70,812	8.0%
Moderate	130,696	14.8%
High	336,897	38.1%
Very High	341,963	38.6%
Extreme	4,426	0.5%
Total:	884,794	100.0%

\* FRAP 2009

## 4.2.3 Wildland Urban Interface

The wildland urban interface (WUI) is a potential treatment zone in which fuel-reduction projects may be conducted to reduce wildland fire threats to communities/infrastructure at risk (FRAP 2009). The Healthy Forest Restoration Act of 2003 (HFRA) defines the WUI as:

(A) an area within or adjacent to an at-risk community that is identified in recommendations to the Secretary in a community wildfire protection plan; or

(B) in the case of any area for which a community wildfire protection plan is not in effect-

(i) an area extending <sup>1</sup>/<sub>2</sub> mile from the boundary of an at-risk community;

(ii) an area within 1  $\frac{1}{2}$  miles of the boundary of an at-risk community, including any land that-

(I) has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community;

(II) has a geographic feature that aids in creating an effective fire break, such as a road or ridge top; or

(III) is in condition class 3, as documented by the Secretary in the project-specific environmental analysis; and

(iii) an area that is adjacent to an evacuation route for an at-risk community that the Secretary determines, in cooperation with the at-risk community, requires hazardous fuel reduction to provide safer evacuation from the at-risk community.

The importance of the HFRA definition of the WUI is emphasized in the expedited environmental review process for federal fuel treatment projects conducted within 1.5 miles of a community at risk. Specifically, "if an authorized hazardous fuel reduction project proposed to be conducted in the wildland-urban interface is located no further than 1.5 miles from the boundary of an at-risk community, the Secretary is not required to study, develop, or describe any alternative to the proposed agency action in the environmental assessment or environmental impact statement prepared pursuant to section 102(2) of the National Environmental Policy Act of 1969." (HRFA 2003).

In prioritizing fuel treatment areas for this SBCCWPP, fire rotation and fire threat data were analyzed and compared with the FRAP- generated WUI boundary for San Benito County. Based on this analysis, the WUI boundary, as defined in this SBCCWPP, was modified to better represent the extent of the WUI in San Benito County. The resulting WUI boundary was then used in evaluating WUI fire threat and informed the community priority rating presented in Section 4.2. The SBCCWPP WUI boundary is also presented graphically in the map in Appendix D.

#### 4.2.4 Wildland Urban Interface Fire Threat

The fire threat within the WUI outlines relative risk to populated areas or assets from wildfire and provides a measure for evaluating potential loss of structures and threats to public safety. The results from the FRAP fire threat analysis were analyzed within the boundary of the SBCCWPP WUI in order to prioritize the communities at risk from wildfire, as presented in Section 4.2.

## 4.3 Community Priority Rating

Based on an evaluation of the Fire Threat data and the extent of the WUI (sections 4.2.2 and 4.2.3), the following community priority ratings were developed for the at-risk communities in San Benito County. As designated on the Community Base Map (Appendix D), Table 11 lists the associated wildfire risk, by community or area. Those designated as an at-risk community from the California Fire Alliance were published in the Federal Register in 2001 and are considered at risk of damage from wildfire; however, these do not represent the only areas at risk in San Benito County.

At-risk Community or Area	California Fire Alliance Community at Risk	Overall Risk	Values at Risk	
		Communities		
Antelope Valley		High	Residences and associated structures	
Aromas	Х*	Very High	Residences and associated structures	
Bitterwater		High	Residences and associated structures	
Cienega Canyon		High	Residences and associated structures	
Hollister	X	Moderate	Residences, associated structures, agricultural land	
Paicines		Moderate	Residences and associated structures	
Panoche Valley		Moderate	Residences and associated structures	
Ridgemark		Moderate	Residences and associated structures	
San Juan Bautista	X	Moderate	Residences, associated structures, historic buildings	
San Juan Canyon		Very High	Residences and associated structures	
Tres Pinos		Moderate	Residences and associated structures	
Significant Areas/Infrastructure				
Communications Facility (Fremont Peak)		Very High	Emergency services communication infrastructure	
Indian Canyon		Very High	Residences, associated structures, cultural heritage site	
New Idria		High	California Historic Landmark, buildings	

Table 11. San Benito County	Community	<b>Priority</b>	Rating
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\*Aromas is located in San Benito, Monterey, and Santa Cruz Counties. It is classified as a Community at Risk by the California Fire Alliance for Monterey County, but not for San Benito or Santa Cruz Counties.

## 4.4 Community Hazard Reduction Priorities

The risk assessment process resulted in the identification of fuel treatment recommendations for the at-risk communities and rural areas identified in this SBCCWPP. Fires in the WUI have the potential to move from wildland fuels to urban fuels (e.g. landscape plantings, outbuildings, decks, and homes), and to high-value agricultural crops and critical watersheds, and create the greatest risk with regards to public and firefighter safety. As such, this SBCCWPP focuses on prioritizing fuel treatments within the WUI and forest and rangeland areas that present threats to values at risk. This section also identifies the overall priority rating for the at-risk communities and other areas identified as priorities by community members and stakeholders in San Benito County.

#### 4.4.1 Public Resource Code 4291

The State of California Public Resource Code 4291 (PRC 4291) requires owners of property to create defensible space around structures on their property where firefighters can provide protection during a wildfire. PRC 4291 applies to areas of the state within the responsibility area of CAL FIRE and includes:

"a building or structure in, upon, or adjoining any mountainous area, forest-covered lands, brushcovered lands, grass-covered lands, or any land that is covered with flammable material..."

PRC 4291 outlines fuel treatment criteria, which have been incorporated into the specific treatment recommendations contained in this SBCCWPP. The defensible space distance is measured along the grade from the perimeter or projection of the building or structure. Under PRC 4291, the defensible space distances require up to 100 feet, or to the property limit, whichever is closer; however, the amount of fuel modification necessary may extend beyond 100 feet depending on the flammability of the structure, topography, and fuels. The CAL FIRE Guidelines for Creating Defensible Space as outlined in PRC 4291 is included in Appendix E.

#### 4.4.2 Priority Areas

Based on the results of the community priority rating for San Benito County, the community recommendations for the type and method of treatment for the surrounding vegetation are listed in Table 12.

At-risk community or Area	Type of Treatment	Overall Priority	
Communities			
Antelope Valley	Defensible space, hazard fuel reduction	Medium	
Aromas	Roadside fuel treatment, defensible space, hazard fuel reduction	Very High	
Bitterwater	Defensible space, hazard fuel reduction	High	
Cienega Canyon	Defensible space, hazard fuel reduction	High	
Hollister	Defensible space, hazard fuel reduction	Medium	
Paicines	Defensible space, hazard fuel reduction	Medium	
Panoche Valley	Defensible space, hazard fuel reduction	Low	
Ridgemark	Defensible space, hazard fuel reduction	Medium	
San Juan Bautista	Defensible space, hazard fuel reduction	Low	
San Juan Canyon	Roadside fuel treatment, defensible space, hazard fuel reduction	Very High	
Tres Pinos	Defensible space, hazard fuel reduction	Medium	
Significant Areas/Infrastructure			
Communications Facility (Fremont Peak)	Roadside fuel treatment, hazard fuel reduction	Very High	
Indian Canyon	Roadside fuel treatment, defensible space, hazard fuel reduction	High	
New Idria	Hazard fuel reduction	Moderate	

#### Table 12. Priority Area and Treatment Designation

## 5.0 SAN BENITO COUNTY BASE MAP

The San Benito County base map prepared in support of this SBCCWPP is included in Appendix D. The San Benito County border serves as the boundary of the community base map. This map presents the at-risk communities as identified in this SBCCWPP, and includes:

- 1. Antelope Valley
- 2. Aromas
- 3. Bitterwater
- 4. Cienega Canyon
- 5. Hollister
- 6. Paicines
- 7. Panoche Valley
- 8. Ridgemark

- 9. San Juan Bautista
- 10. San Juan Canyon
- 11. Tres Pinos

Areas containing critical human infrastructure, such as escape routes, municipal water supplies, or power and communication structures, or areas of cultural significance include:

- 1. Highway 101
- 2. Highway 156
- 3. Airline Highway/Highway 25
- 4. Panoche Road
- 5. Coalinga Road
- 6. New Idria (California Historic Landmark #324)
- 7. Pinnacles National Monument
- 8. Communications Facility at Fremont Peak
- 9. Indian Canyon

## 5.1 Wildland Urban Interface

After considering the location of the communities and assets at risk in San Benito County and wildfire threat data, the wildland-urban interface (WUI) has been identified on the San Benito County base map (Appendix D). The WUI delineation is based on local input and evaluation of fire threat data. This WUI zone designates potential hazardous fuel treatment areas within the County intended to reduce wildfire hazard and structural ignition potential.

## 6.0 TREATMENT OF STRUCTURAL IGNITABILITY

In cooperation with CAL FIRE, the San Benito Fire Safe Council supports and promotes Firewise activities by educating its citizens in ways to reduce structure ignitibility through meeting State requirements.

The partnership that exists between the listed organizations (federal, state, local, and citizens) allows the communities in San Benito County to reduce hazardous fuels that could ignite residences and commercial facilities during fire weather conditions. Maintaining properties with the appropriate defensible space is a key factor to protecting lives and property in the at-risk communities.

A progressive process typically occurs as a structure is exposed to a wildland fire. First, ashes are cast in front of a fire by its smoke or convection column. In some instances, these ashes retain enough heat and/or flame that secondary ignitions are possible. Following the lighter ash, heavier embers/firebrands with more surface area and mass, and consequently, more heat, are blown in front of advancing flames and often provide sources of additional ignition to structures and vegetation. Finally, intrusion of a flame front and the associated radiant heat flux can expose combustible material outside of a building and the exterior of the structure itself to various levels of radiant heat. Studies reveal that the actual exposure of a building to a typical wildland flame front by the perimeter of a fire is usually less than six minutes. However, exposure to the other forms of ignition source materials can result in proliferation of secondary ignitions of structures or adjacent vegetation and a longer exposure, depending on wind, topography and fuel conditions.

To enhance structural survivability, the primary focus must include first, providing sufficient measures to prevent the ignition of structural materials from objects (fire brands) that are cast in front of the fire and, second, reducing the likelihood that direct flame impingement will occur and preventing flames from penetrating into the building and resulting in an interior fire. There are considerable problems in achieving these objectives without the benefit of new construction subject to the latest building codes.

All forms of fire protection are classified as either active or passive. Active fire protection includes implementing specific action to control a fire in some manner. Passive fire protection uses resistance to ignition or provides some form of warning that allows other action to be taken. These two classifications of self-defense mechanisms create different problems with regard to being accepted as alternatives for building construction. Furthermore, certain self-defense mechanisms must be incorporated during new construction, and others may only be capable of being added as a retrofit to existing structures. In the absence of ignition resistant construction, the focus for reducing structural ignitability shifts to landscaping and fuel treatment areas.

Many of the residential structures within the San Benito County at-risk communities are not built to current building code standards, which have been implemented statewide and based on intelligence gained from large wildfire events that included structure loss. It is not realistic to retrofit existing homes with enhanced ignition resistant construction, although the existing code can trigger upgrades to current code requirements for certain home additions. Based on the type of development within the San Benito County at-risk communities and the existing fuels and terrain, structural ignition reduction will primarily be realized through implementation of fuel modification as described in this SBCCWPP. Recommended standard fuel treatment prescriptions are presented in Section 6.1.

## 6.1 Hazard Reduction

#### 6.1.1 Defensible Space Fuel Treatments

The following descriptions of vegetation treatment/hazard reduction operations are provided to promote individual homeowner compliance with PRC 4291. The guidelines, published by CAL FIRE<sup>5</sup> should be reviewed by homeowners in the WUI area as defined in this SBCCWPP. The Guidelines are provided for reference in Appendix E of this SBCCWPP. Additionally, Figure 1 presents an illustrated graphic outlining the basics of defensible space creation and maintenance, as published by CAL FIRE. The following guidelines, provided by CAL FIRE, outline two distinct zones: from the structure outward to 30 feet and from 30 to 100 feet from structures (Reduced Fuel Zone):

- 1. Maintain a firebreak by removing and clearing away all flammable vegetation and other combustible growth within 30 feet of each building or structure, with certain exceptions pursuant to PRC §4291(a). Single specimens of trees or other vegetation may be retained provided they are well-spaced, well-pruned, and create a condition that avoids spread of fire to other vegetation or to a building or structure.
- 2. Dead and dying woody surface fuels and aerial fuels within the Reduced Fuel Zone shall be removed. Loose surface litter, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches, shall be permitted to a depth of 3 inches. This guideline is primarily intended to eliminate trees, bushes, shrubs and surface debris that are completely dead or with substantial amounts of dead branches or leaves/needles that would readily burn.
- 3. Down logs or stumps anywhere within 100 feet from the building or structure, when embedded in the soil, may be retained when isolated from other vegetation. Occasional (approximately one per acre) standing dead trees (snags) that are well-space from other vegetation and which will not fall on buildings or structures or on roadways/driveways may be retained.
- 4. Within the Reduced Fuel Zone, one of the following fuel treatments (4a. or 4b.) shall be implemented. Properties with greater fire hazards will require greater clearing treatments. Combinations of the methods may be acceptable under §1299(c) as long as the intent of these guidelines is met.
  - a) Reduced Fuel Zone: In conjunction with General Guidelines 1., 2., and 3., above, minimum clearance between fuels surrounding each building or structure will

<sup>&</sup>lt;sup>5</sup> On-line at: <u>http://www.fire.ca.gov/cdfbofdb/pdfs/4291finalguidelines2\_23\_06.pdf</u>

#### Figure 1. Defensible Space Illustration by CAL FIRE



## Why 100 Feet?

Following these simple steps can dramatically increase the chance of your home surviving a wildfire!

A Defensible Space of 100 feet around your home is required by law.<sup>1</sup> The goal is to protect your home while providing a safe area for firefighters.

"Lean, Clean and Green Zone."

 Clearing an area of 30 feet immediately surrounding your home is critical. This area requires the greatest reduction in flammable vegetation.

#### 2 "Reduced Fuel Zone."

- The fuel reduction zone in the remaining 70 feet (or to property line) will depend on the steepness of your property and the vegetation.

Spacing between plants improves the chance of stopping a wildfire before it destroys your home. You have two options in this area:

Create horizontal and vertical spacing between plants. The amount of space will depend on how steep the slope is and the size of the plants.

Large trees do not have to be cut and removed as long as all of the plants beneath them are removed. This eliminates a vertical "fire ladder."

When clearing vegetation, use care when operating equipment such as lawnmowers. One small spark may start a fire; a string trimmer is much safer.

Remove all build – up of needles and leaves from your roof and gutters. Keep tree limbs trimmed at least 10 feet from any chimneys and remove dead limbs that hang over your home or garage. The law also requires a screen over your chimney outlet of not more than ½ inch mesh.

1. These regulations affect most of the grass, brush, and timber-covered private lands in the State. Some fire departmentjurisdictions may have additional requirements. Some activities may require permits for tree removal. Also, some activities may require special procedures for, 1) threatened and endangered species, 2) avoiding erosion, and 3) protection of water quality. Check with local officials if in doubt. Current regulations allow an insurance company to require additional clearance. The area to be treated does not extend beyond your property. The State Board of Forestry and Fire Protection has approved Guidelines to assist you in complying with the new law. Contact your local CAL FIRE office for more details.



range from 4 feet to 40 feet in all directions, both horizontally and vertically. Clearance distances between vegetation will depend on the slope, vegetation size, vegetation type (brush, grass, trees), and other fuel characteristics (fuel compaction, chemical content etc.). Properties with greater fire hazards will require greater separation between fuels. For example, properties on steep slopes having large sized vegetation will require greater spacing between individual trees and bushes (see Plant Spacing Guidelines and Case Examples below). Groups of vegetation (numerous plants growing together less than 10 feet in total foliage width) may be treated as a single plant. For example, three individual manzanita plants growing together with a total foliage width of eight feet can be "grouped" and considered as one plant and spaced according to the Plant Spacing Guidelines in this document. Grass generally should not exceed 4 inches in height. However, homeowners may keep grass and other forbs less than 18 inches in height above the ground when these grasses are isolated from other fuels or where necessary to stabilize the soil and prevent erosion. Clearance requirements include:

- Horizontal clearance between aerial fuels, such as the outside edge of the tree crowns or high brush. Horizontal clearance helps stop the spread of fire from one fuel to the next.
- Vertical clearance between lower limbs of aerial fuels and the nearest surface fuels and grass/weeds. Vertical clearance removes ladder fuels and helps prevent a fire from moving from the shorter fuels to the taller fuels.
- b) To achieve defensible space while retaining a stand of larger trees with a continuous tree canopy apply the following treatments:
  - Generally, remove all surface fuels greater than 4 inches in height. Single specimens of trees or other vegetation may be retained provided they are well-spaced, well-pruned, and create a condition that avoids spread of fire to other vegetation or to a building or structure.
  - Remove lower limbs of trees ("prune") to at least 6 feet up to 15 feet (or the lower 1/3 branches for small trees). Properties with greater fire hazards, such as steeper slopes or more severe fire danger, will require pruning heights in the upper end of this range.

The intent of these descriptions is to detail vegetation treatment actions aimed at reducing fire spread rates and heat intensity, while providing defensible space for fire suppression efforts. Although these treatment descriptions are aimed at reducing current fuel volumes and creating both vertical and horizontal separation between vegetation groups, long-term maintenance of the

landscape within the WUI should adhere to the vegetation spacing, fuel volume reduction, and vegetation clearance recommendations contained herein. Finally, these fuel reduction techniques should be conducted annually during the early spring and late summer in order to avoid the accumulation of hazardous fuels over time.

#### 6.1.2 Non-Defensible Space Fuel Treatments

In addition to defensible space treatments required under PRC 4291, other fuel treatment projects may be desirable to reduce overall wildfire threat to a community or asset. Such projects may occur on private or public land and are intended to act as a buffer between communities and/or assets and non-maintained wildland fuels. Non-defensible space treatments may include the following treatments:

- Fuel Breaks: intended to modify fire behavior and spread by altering fuel beds in a linear alignment, typically situated along ridgetops and may include retained trees (shaded fuel breaks).
- Road-side Fuel Treatments: intended to reduce the likelihood of ignition sources along roadways and maintain access/egress capabilities.
- Prescribed Burning: intended to reduce fuel loads in key locations while considering vegetation type characteristics and disturbance regimes.
- Area Treatments: intended to modify fire behavior by treating fuels over large areas in strategic locations or historic fire corridors; typically conducted on large expanses of federal or private land (e.g. Strategically Placed Area Treatments).

#### 6.1.3 Fuel Treatment Prescription Recommendations

The following fuel treatment prescriptions are provided as recommendations for reducing vegetative fuel hazards in defensible and non-defensible space fuel treatment areas:

• Vegetation Thinning. Thinning of vegetation involves an overall reduction of woody biomass to break up the horizontal and vertical continuity of fuels. In defensible space areas, thinning efforts should adhere to the minimum distances in PRC 4291. Site specific conditions should dictate thinning percentages in relation to structures and will be heavily dependent on topography, vegetation type, and building construction characteristics. In cases where shrubs and/or trees require removal, root systems should be left intact where needed to maintain slope stability. In such cases, annual treatment of stump growth or resprouting may be needed to maintain reduced fuel load volumes.

- **Tree Removal**. Removal of trees within the WUI should focus primarily on removing dead and dying trees, however live tree removal may be necessary to improve vegetation spacing and reduce overall fuel continuity. All fuel treatment operations should comply with the criteria set forth in the California Public Resource Code 4291. Tree removal may require oversight by a Registered Professional Forester (RPF).
- **Dead/Dying Plant Removal**. Removal of dead and dying plant material from the WUI will help reduce low fuel moisture biomass. This practice should also be conducted in combination with vegetation thinning efforts and may help reach or completely satisfy thinning objectives in some areas. Within the WUI, the goal is to reduce flame length to less than 4 feet.
- Exotic/Invasive Plant Removal. Removal of non-native and invasive plants from the WUI defensible space zone will help reduce the presence of undesirable species and enhance thinning efforts aimed at reducing overall biomass levels. Typical undesirable exotic species include, but are not limited to:
  - Palm trees (various species)
  - Eucalyptus trees (Eucalyptus spp.)
  - Pepper trees (*Schinus spp.*)
  - Fennel (*Foeniculum vulgare*)
  - Mustard (Brassica spp.)
  - French broom (*Genista monspessulana*)
  - Poison hemlock (Conium maculatum)
  - Thistle (various species)
  - Hardinggrass (*Phalaris aquatica*): a large, dense, aggressive perennial bunch grass that can significantly increase fuel loads in grasslands and woodland edges.
  - Jubata/Pampas grass (*Cortaderis jubata*)
- **Tree and Shrub Pruning.** Trees or large tree-form shrubs (reaching 4 feet or taller at maturity) that are to be retained in the WUI defensible space zone should be trimmed or pruned to reduce both vertical and horizontal fuel continuity:

<u>Vertical Separation</u>. Pruning of vegetation off the ground should provide vertical clearance that measures 3 times the height of the understory vegetation or 10 feet, whichever is higher. Vertical separation serves to minimize the potential for a ground fire to transition to a crown fire. This process will remove ladder fuels and reduce the potential for fire spread from lower shrubs to higher trees and structures.
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<u>Horizontal Separation</u>. Pruning of vegetation shall result in horizontal clearance that measures three times the height of the plant material height or 20 feet, whichever is greater. Horizontal separation serves to minimize fire spread from plant to plant and from plant to structure.

<u>Vegetation Grouping</u>. Maintaining groups of shrubs is recommended to provide a mosaic pattern in the landscape. However, shrub groups should be separated from other shrub groups according to the horizontal separation criteria discussed above.

- **Mowing.** Mowing of native, non-native grasses and exotic weeds should be conducted to maintain grass heights at 4 inches or lower. Focus should be primarily on invasive weed prevention, suppression and monitoring; and properly timed and implemented grassland management (e.g. mowing, grazing) that promotes the establishment of less volatile native perennial grasses. Mowing should take place before 10 a.m. to reduce the risk of wildfire resulting from mowing activities.
- **Chipping.** Chipping and spreading of existing dead biomass or that resulting from fuel reduction efforts within the WUI is an effective method for weed suppression. However, chip or mulch depth should not exceed 6 inches.
- **Grazing.** Livestock (including goats) have proven to be an effective method for reducing fuel volumes in wildland-urban interface areas. Management, maintenance, public safety, and environmental permitting issues should be considered prior to use.
- **Mastication:** Mastication is the operation of reducing vegetation volume by grinding, shredding or chopping material. This treatment can lower fuel bed depth, raise crown base height, increase fuel-ground contact to promote decomposition, and generate more fine materials.
- Vegetation Clearance from Structures. All vegetation should be trimmed such that a minimum clearance of 10 feet exists between structures and exposed wildland vegetation. In cases where vegetation is planted within 10 feet of a structure (vines, shrubs), such vegetation should be maintained free of dead material and shall be pruned and maintained to reduce overall fuel volume.

In cases where tree canopies extend over roof tops, 10 feet of clearance should be maintained between the roof and the lowest tree branch extending over the structure. Any tree adjacent to or overhanging a structure should be maintained free of dead or dying wood (PRC 4291 (d)).

Firewood or other combustible material should not be stored within 15 feet of existing

#### structures.

All combustible material, including tree leaves, pine needles, branches, and twigs should be removed from roofs and rain gutters (PRC 4291 (e)).

All vegetation should be trimmed such that a clearance of 10 feet exists in all directions between landscape vegetation and the outlet of a chimney or stovepipe (PRC 4291 (c)).

All vegetation should be trimmed such that a 10 foot wide clearance exists along both sides of a structure, from the street to the rear of the property to promote firefighter access/egress. In cases where property setback widths are less than 10 feet, the entire width should be maintained free of obstructing vegetation.

Prescribed Burning. This management technique is currently employed by CAL FIRE, private landowners, and on BLM and NPS property by trained professionals. Prescribed burning may be conducted by private landowners under permit from CAL FIRE, or under contract with CAL FIRE under the statewide Vegetation Management Program (VMP). The VMP is a cost-sharing program that focuses on the use of prescribed fire, and mechanical means, for addressing wildland fire fuel hazards and other resource management issues on State Responsibility Area (SRA) lands. VMP allows private landowners to enter into a contract with CAL FIRE to use prescribed fire to accomplish a combination of fire protection and resource management goals. Implementation of VMP projects is by CAL FIRE Units. Additionally, rangeland burning activity may be conducted under a permit issued by the CAL FIRE Battalion Chief/Unit Forester only. An LE-6 (Application), LE-7 (Burning Permit), and LE-8 (Minimum Precautions) are required.

In some locations, pile burning requires no permit. Pile burning of hazardous fuels is more cost effective, and recommended as an alternative to mechanical chipping wherever feasible by the Monterey Bay Unified Air Control District. Pile burning shall be conducted in compliance with applicable laws.

#### 7.0 STRATEGY AND ACTION PLAN

Federal agencies and private landowners responsible for managing the vegetation in and surrounding the identified at-risk communities within San Benito County were and will continue to be invited to submit projects that provide for wildfire protection and reduce risk. The Fuel Reduction Projects and Community Recommendations table in Appendix E presents a list of projects submitted as of the date of this SBCCWPP, the responsible agency, project funding source, the time frame for implementation, and the associated community recommendation.

#### San Benito Fire Safe Council San Benito County Community Wildfire Protection Plan

The SBFSC, along with the local communities, intends to assess project progress annually and invite agencies, landowners, and involved citizens to submit projects that provide community protection. Project identification and implementation is an on-going process and additional projects will be presented annually in an updated Fuel Reduction Projects and Community Recommendations table in Appendix F of this SBCCWPP.

This SBCCWPP is a living document and has been created to allow for ongoing management, updates, and community input intended for reducing the severity of wildland fires in the WUI and reducing the vulnerability of assets to wildland fires in San Benito County. The following sections discuss long-term management objectives intended to promote fire safe communities in San Benito County.

#### 7.1 Long Term Maintenance/Monitoring

Long-term maintenance and monitoring of fuel reduction efforts within San Benito County is important to maintaining reduced fuel loads in critical threat areas and identifying new or additional projects necessary for reducing overall community wildfire risk. The following actions by the SBFSC are intended for reducing community wildfire risk:

- Conduct annual monitoring of treated areas. Maintenance of hazardous fuels is recommended within the WUI and can typically be completed at a cost less than that for the initial effort. Monitoring efforts can identify areas in need of additional fuel reduction treatments. Monitoring efforts will be managed by the SBFSC and performance standards identified on a project-level basis.
- Long-term maintenance of the SBCCWPP is essential. Maintaining the SBCCWPP document is critical to track completed projects and on-going fuel reduction efforts, and, most importantly, to address and define new priority areas and associated fuel reduction projects. The SBFSC should direct the management of the SBCCWPP and should conduct a review of the SBCCWPP at least annually with an edit cycle every three to five years. The SBFSC should also set up a standing committee to address the long-term management and maintenance of the SBCCWPP.
- The Fuel Reduction Projects included in Appendix F of this SBCCWPP should be updated at least annually by the SBFSC. Requests from project proponents to update Appendix F should be considered in a timely manner.

#### 7.2 Public Education and Outreach

Public outreach and education is an important component in community wildfire hazard reduction efforts. The SBFSC sponsors ongoing fire prevention and public education and outreach programs countywide and supports and promotes Firewise activities by educating its citizens in ways to reduce structure ignitibility. The SBFSC is currently engaged in active public outreach, including a presence at local community events (e.g. the San Benito County Fair), facilitation of defensible space training and education events, presence and maintenance of the SBFSC website, and bi-lingual radio addresses discussing the importance of defensible space maintenance. In addition to the aforementioned actions currently conducted by the SBFSC, the following actions are intended to further public education and outreach goals:

- Maintain the SBFSC website as a portal for public information regarding fuel reduction efforts throughout the County.
- Post the SBCCWPP, updates, and specific project descriptions on the SBFSC website.
- Coordinate with San Benito County to provide a link to the SBFSC website on the San Benito County Fire Department homepage: <u>http://www.san-benito.ca.us/departments/calfire/</u>
- Provide a list of local fuel reduction contractors and consultants on the SBFSC website.
- Develop printed educational materials for distribution in the at-risk communities.
- Conduct public outreach/education in communities where fuel reduction projects are proposed prior to initiation of work.
- Develop strategic partnerships and funding opportunities with local industry to support fuel reduction projects.

#### 8.0 SBCCWPP AUTHORIZATION

The San Benito County Community Wildfire Protection Plan was collaboratively developed. Interested parties, local, state, and federal agencies managing land within or adjacent to the atrisk communities have been consulted. This document also identifies and prioritizes areas for hazardous fuel reduction treatments, provides recommendations for the types and methods of treatment that will protect the at-risk communities in San Benito County, and recommends measures to reduce the ignitability of structures within the wildland urban interface areas of San Benito County. This plan is intended to better protect communities from the threat of wildfires by promoting community-level fuel reduction projects.

The following entities mutually agree with the contents of the San Benito County Community Wildfire Protection Plan:

Richard C. Hutchinson Jr. San Benito-Monterey Unit Chief, CAL FIRE Fire Chief, San Benito County Fire Department

166 Mario

Reb Monaco, Supervisor, District No. 4 San Benito County Board of Supervisors

#### 9.0 **REFERENCES**

- Bureau of Land Management (BLM) 2008. Bureau of Land Management, Hollister Field Office. Fire Management Plan 2008.
- CAL FIRE 2000. Structural Fire Prevention Field Guide for Mitigation of Wildland Fires. Online at <u>http://cdfdata.fire.ca.gov/pub/fireplan/fpupload/fppguidepdf99.pdf</u>
- CAL FIRE 2009. California Department of Forestry and Fire Protection, San Benito Monterey Unit: 2009 Fire Plan.
- Fire and Resource Assessment Program (FRAP) 2009. GIS data, on-line at: <u>http://frap.cdf.ca.gov/</u>
- InciWeb: Incident Information System. 2009. On-line at: http://www.inciweb.org/
- National Park Service 2007. Pinnacles National Monument Fire Management Plan. On-line at: <u>http://www.nps.gov/pinn/parkmgmt/upload/PINN%20Operational%20FMP%2007.10.07.</u> <u>pdf</u>

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#### 10.0 RESOURCES

Bureau of Land Management, Hollister Field Office

http://www.blm.gov/ca/st/en/fo/hollister.html

California Department of Forestry and Fire Protection (CAL FIRE)

http://www.fire.ca.gov/

http://www.fire.ca.gov/communications/communications\_firesafety\_100feet.php

http://www.fire.ca.gov/communications/downloads/fact\_sheets/Checklist.pdf

http://www.fire.ca.gov/cdfbofdb/pdfs/4291finalguidelines2\_23\_06.pdf (in Appendix E)

#### California Fire Alliance

http://www.cafirealliance.org/

#### Fire and Resource Assessment Program (FRAP)

http://frap.cdf.ca.gov/

The Firesafe Council

http://www.firesafecouncil.org/

#### **Firewise Communities**

http://www.firewise.org/

#### Pinnacles National Monument

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

#### San Benito County

http://www.san-benito.ca.us/

# **APPENDIX A**

**Glossary of Terms** 

*Authority Having Jurisdiction (AHJ)* – The organization, office, or individual responsible for approving equipment, materials, an installation, or a procedure (NFPA, <u>NFPA 1144</u>, 2002, p. 4).

Aspect - Compass direction toward which a slope faces (NFPA, NFPA 1144, 2002, p. 4).

*Building* – Any structure used or intended for supporting or sheltering any use or occupancy (NFPA, *NFPA 1144*, 2002, p. 4).

*Combustible* – Any material that, in the form in which it is used and under the conditions anticipated will ignite and burn or will add appreciable heat to an ambient fire (NFPA, <u>NFPA</u> <u>1144</u>, 2002, p. 5).

*Community Wildfire Protection Plan (CWPP)* – Address issues such as wildfire response, hazard mitigation, community preparedness, or structure protection. The process of developing a CWPP can help communities clarify and refine their priorities for the protection of life, property, and critical infrastructure in the wildland-urban interface (Source: <u>*Preparing a Community Wildfire Protection Plan*</u>. March, 2004).

*Condition Class* – Describes fire-related risk to ecosystems and relates current expected wildfires to their historic frequency and effects. Condition class ranks are defined as the relative risk of losing key components that define an ecosystem. Higher ranked areas present greater risk to ecosystem health. Condition class is a measure of the expected response of ecosystems to fire given current vegetation type and structure that often is far different from that historically present.

Class	Departure from natural regimes	Vegetation composition, structure, fuels	Fire behavior, severity, pattern	Disturbance agents, native species, hydrologic functions	Increased smoke production
Low Condition Class 1	None, minimal	Similar	Similar	Within natural range of variation	Low
Moderate Condition Class 2	Moderate	Moderately Altered	Uncharacteristic	Outside historical range of variation	Moderate
High Condition Class 3	High	Significantly different	Highly uncharacteristic	Substantially outside historical range of variation	High

(Source: <u>CDF FRAP 2003 Forest and Range Assessment</u>, p. 98)

*Defensible Space* – An area as defined by the AHJ (typically a width of 30 feet or more) between an improved property and a potential wildland fire where combustible materials and vegetation have been removed or modified to reduce the potential for fire on improved property

spreading to wildland fuels or to provide a safe working area for fire fighters protecting life and improved property form wildland fire (NFPA, *NFPA 1144*, 2002, p. 5), or as defined by PRC 4291.

*Disaster* – Disaster is characterized by the scope of an emergency. An emergency becomes a disaster when it exceeds the capability of the local resources to manage it. Disasters often result in great damage, loss, or destruction (Greene, R.W., *Confronting Catastrophe*, ESRI Press, 2002, p. 110).

*Dry Hydrant* – An arrangement of pipe permanently connected to a water source other than a piped, pressurized water supply system that provides a ready means of water supply for fire-fighting purposes and that utilizes the drafting (suction) capability of fire department pumpers (NFPA, <u>NFPA 1144</u>, 2002, p. 5).

*Dwelling* – One or more living units, each providing complete and independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation (NFPA, *NFPA 1144*, 2002, p. 4).

*Emergency* – A deviation from planned or expected behavior or course of events that endangers or adversely affects people, property, or the environment (Greene, R.W., *Confronting Catastrophe*, ESRI Press, 2002, p. 110).

*Evacuation/Escape Route* – A route away from dangerous areas on a fire; should be preplanned (FIREWISE Communities, 2009, <u>http://www.firewisewiki.org/main/index.php/Escape\_Route</u>)

*Fire Behavior* – The manner in which a fire reacts to the influences of fuel, weather, and topography (FIREWISE Communities, 2009, <a href="http://www.firewisewiki.org/main/index.php/Fire\_behavior">http://www.firewisewiki.org/main/index.php/Fire\_behavior</a>).

*Fire Frequency* – A broad measure of the rate of fire occurrence in a particular area. For historical analyses, fire frequency is often expressed using the fire return interval calculation. For modern-era analyses, where data on timing and size of fires are recorded, fire frequency is often best expressed using fire rotation (*CDF FRAP 2003 Forest and Range Assessment*, p. A-12).

*Fire Hazard* – A fuel complex, defined by volume, type condition, arrangement, and location that determine the degree of ease of ignition and of resistance to control (FIREWISE Communities, 2009, <u>http://www.firewisewiki.org/main/index.php/Fire\_hazard</u>).

*Fire Hydrant* – A valved connection on a water supply system having one or more outlets and that is used to supply hose and fire department pumpers with water (NFPA, <u>NFPA 1144</u>, 2002, p. 5).

*Fire Lane* – A means of access or other passageway designated and identified to provide access for emergency apparatus where parking is not allowed (NFPA, *NFPA 1141*, 1998, p. 4).

*Fire Protection* – All measures taken to reduce the burden of fire on the quality of life. Fire protection includes measures such as fire prevention, fire suppression, built-in *fire protection systems*, and planning and building codes (NFPA, <u>NFPA 1141</u>, 1998, p. 4).

*Fire Protection System* – Any fire alarm device or system or fire extinguishing device or system, or their combination, that is designed and installed for detecting, controlling, or extinguishing a fire or otherwise alerting occupants, or the fire department, or both, that a fire has occurred (NFPA, *NFPA 1141*, 1998, p. 4).

*Fire Threat* – The combination of two factors: 1) fire frequency, or the likelihood of a given area burning, and 2) potential fire behavior (hazard). Components include surface fuels, topography, fire history, and weather conditions (Source: CDF FRAP, <a href="http://frap.cdf.ca.gov/frapgisdata/output/fthrt.txt">http://frap.cdf.ca.gov/frapgisdata/output/fthrt.txt</a>, *CDF FRAP 2003 Forest and Range Assessment*, p. A-12, <a href="http://frap.cdf.ca.gov/assessment2003/">http://frap.cdf.ca.gov/assessment2003/</a>).

*Fire Regime* – A measure of the general pattern of fire frequency and severity typical to a particular area or type of landscape: The regime can include other metrics of the fire, including seasonality and typical fire size, as well as a measure of the pattern of variability in characteristics (*CDF FRAP 2003 Forest and Range Assessment*, p. A-12).

*Fire Rotation* – An area-based average estimate of fire frequency, calculated as the length of time necessary for an area equal to the total area of interest to burn. Fire rotation is often applied to regionally stratified land groupings where individual fire-return interval across the variability of the strata (i.e., the fine scale pattern of variation in timing of fires) is unknown, but detailed information on fire size is known. Hence, fire rotation is a common estimate of fire frequency during periods of recorded fire sizes (*CDF FRAP 2003 Forest and Range Assessment*, p. A-12).

*Fire Weather* – Weather conditions that influence fire starts, fire behavior or fire suppression (FIREWISE Communities, 2009, <u>http://www.firewisewiki.org/main/index.php/Fire\_weather</u>).

*Firebreak* – A natural or constructed barrier used to stop or check fires that may occur, or to provide a control line from which to work (FIREWISE Communities, 2009, http://www.firewisewiki.org/main/index.php/Firebreak).

*Fuelbreak* – An area, strategically located for fighting anticipated fires, where the native vegetation has been permanently modified or replaced so that fires burning into it can be more easily controlled. Fuel breaks divide fire-prone areas into smaller areas for easier fire control and to provide access for firefighting (FIREWISE Communities, 2009,

http://www.firewisewiki.org/main/index.php/Fuelbreak).

*Fuels* – All combustible material within the wildland/urban interface or intermix, including vegetation and structures (FIREWISE Communities, 2009, <u>http://www.firewisewiki.org/main/index.php/Fuels</u>).

*Fuel Loading* – The volume of fuel in a given area generally expressed in tons per acre (FIREWISE Communities, 2009, <u>http://www.firewisewiki.org/main/index.php/Fuel\_loading</u>).

*Fuel Models* – Description of the types of vegetative combustible material:

*Light Fuels* – grasses, forbs

*Medium Fuels* – short light brush and small trees

Heavy Fuels - tall dense brush, timber and hardwoods

*Slash Fuels* – logs, chunks, bark, branches, stumps, and broken understory trees and brush.

*Fuel Modification* – Any manipulation or removal of fuels to reduce the likelihood of ignition or the resistance to fire control (FIREWISE Communities, 2009, <u>http://www.firewisewiki.org/main/index.php/Fuel\_modification</u>).

#### GIS - See Geographic Information Systems

*Geographic Information Systems* – The combination of skilled persons, spatial and descriptive data, analytic methods, and computer software and hardware – all organized to automate, manage, and deliver information though geographic presentation (i.e., maps) (Zeiler, M., <u>Modeling Our World</u>, ESRI Press, 1999, p. 46).

*Ground Fuels* – All combustible materials such as grass, duff, loose surface litter, tree or shrub roots, rotting wood, leaves, peat or sawdust that typically support combustion (FIREWISE Communities, 2009, <u>http://www.firewisewiki.org/main/index.php/Ground\_fuels</u>).

*Hazard* – Refers generally to physical characteristics that may cause an emergency. Earthquake faults, flood zones, and highly flammable brush fields are all examples of hazards (Greene, R.W., *Confronting Catastrophe*, ESRI Press, 2002, p. 110). Also see *Fire Hazard*.

*Healthy Forests Restoration Act (HFRA), 2003* – Gives incentives for communities to engage in comprehensive forest planning and prioritization. This legislation includes statutory incentives for the US Forest Service (USFS) and the Bureau of Land Management (BLM) to give consideration to the priorities of local communities as they develop and implement forest

management and hazardous fuel reduction priorities. The Act emphasizes the need for federal agencies to work collaboratively with communities in developing hazardous fuel reduction projects, and it places priority on treatment areas identified by communities themselves in a CWPP (Source: <u>Preparing a Community Wildfire Protection Plan</u>. March, 2004).

*Improved Property* – A piece of land or real estate upon which a structure has been placed, a marketable crop is growing (including timber), or other property improvement has been made (NFPA, *NFPA 1144*, 2002, p. 5).

*Intermix* – An area where improved property and wildland fuels meet with no clearly defined boundary (NFPA, *NFPA 1144*, 2002, p. 5).

*Ladder Fuels* – Fuels that provide vertical continuity allowing fire to carry from surface fuels in the crowns of trees or shrubs with relative ease (FIREWISE Communities, 2009, http://www.firewisewiki.org/main/index.php/Ladder\_fuels).

Mitigation – Action that moderates the severity of a fire or risk (NFPA, NFPA 1144, 2002, p. 5).

*National Fire Protection Association (NFPA)* – An international nonprofit organization, established in 1896, to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education (NFPA, 2009,

http://www.nfpa.org/categoryList.asp?categoryID=143&URL=About%20Us).

*NFPA-1144 Standard for Protection of life and Property from Wildfire* – Standard developed by the NFPA to be used to provide minimum planning, construction, maintenance, education, and management elements for the protection of life, property, and other values that could be threatened by wildland fire. The standard shall be used to provide minimum requirements to parties responsible for fire protection, land use planning, property development, property maintenance, and others responsible for or interested in improving fire and life safety in areas where wildland fire could threaten lives, property, and other values (NFPA, <u>NFPA 1144</u>, 2002, p. 4).

*Noncombustible* – Any material that, in the form in which it is used and under the conditions anticipated will not ignite and burn nor will add appreciable heat to an ambient fire (NFPA, <u>NFPA 1144</u>, 2002, p. 5).

*Overstory* – That portion of the trees in a forest that forms the upper or uppermost layer (FIREWISE Communities, 2009, <u>http://www.firewisewiki.org/main/index.php/Overstory</u>).

Risk – The potential or likelihood of an emergency to occur. For example, the risk of damage to a structure from wildfire is high if it is built upon, or adjacent to, a highly flammable brush field

or other area deemed to have a high *Fire Threat* (Greene, R.W., *Confronting Catastrophe*, ESRI Press, 2002, p. 110).

*Safe Zone* – An area cleared of flammable materials used for escape in the event the line is outflanked or in case a spot fire causes fuels outside the control line to render the line unsafe. In firing operations, crews progress so as to maintain a safety zone close at hand allowing the fuels inside the control line to be consumed before going ahead. Safety zones may also be constructed as integral parts of fuelbreaks; they are greatly enlarged areas which can be used with relative safety by firefighters and their equipment in the event of blowup in the vicinity (National Wildfire Coordinating Group, 2009, http://www.nwcg.gov/pms/pubs/glossary/s.htm).

*Slope* – The variation of terrain from the horizontal; the number of feet rise or fall per 100 feet measured horizontally, expressed as a percentage (FIREWISE Communities, 2009, <u>http://www.firewisewiki.org/main/index.php/Slope</u>). Upward or downward incline or slant (NFPA, *NFPA 1144*, 2002, p. 5).

*Turnaround* – A portion of a roadway, unobstructed by parking, that allows for a safe reversal of direction for emergency equipment (NFPA, *NFPA 1144*, 2002, p. 5).

*Turnouts* – A widening in a travelway of sufficient length and width to allow vehicles to pass one another (NFPA, *NFPA 1144*, 2002, p. 5).

*Understory* – Low-growing vegetation (herbaceous, brush or reproduction) growing under a stand of trees. Also, that portion of trees in a forest stand below the *Overstory* (FIREWISE Communities, 2009, <u>http://www.firewisewiki.org/main/index.php/Understory</u>).

Water Supply - A source of water for fire-fighting activities (NFPA, NFPA 1144, 2002, p. 5).

*Wildfire* – Any fire occurring on undeveloped land; the term specifies a fire occurring on a wildland area that does not meet management objectives and thus requires a suppression response. Wildland fire protection agencies use this term generally to indicate a vegetation fire. Wildfire often replaces such terms as forest fire, brush fire, range fire, and grass fire (*CDF FRAP* 2003 Forest and Range Assessment, p. A-17).

*Wildland* – A region with minimal development as evidenced by few structures; transportation networks may traverse region. Region typically contains natural vegetation and may be used for recreational or agricultural purposes (*CDF FRAP 2003 Forest and Range Assessment*, p. A-17).

*Wildland-Urban Interface (WUI)* – Commonly described as the zone where structures and other human development meet and intermingle with undeveloped wildland or vegetative fuels. In the absence of a CWPP, Section 101 (16) of the HFRA defines WUI as " (I) an area extending <sup>1</sup>/<sub>2</sub> mile from the boundary of an at-risk community; (II) an area within 1 <sup>1</sup>/<sub>2</sub> miles of the boundary of

an at-risk community, including any land that (1) has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community; (2) has a geographic feature that aids in creating an effective fire break, such as a road or ridge top; or (3) is in condition class 3, as documented by the Secretary in the project-specific environmental analysis; (III) an area that is adjacent to an evacuation route for an at-risk community that the Secretary determines, in cooperation with the at-risk community, requires hazardous fuels reduction to provide safer evacuation from the at-risk community." A CWPP offers the opportunity to establish a localized definition and boundary for the wildland-urban interface (Source: *Preparing a Community Wildfire Protection Plan*. March, 2004).

# **APPENDIX B**

San Benito County Maps











# **APPENDIX C**

### **CAL FIRE Forest Practice Checklist**

ARNOLD SCHWARZENEGGER, Governor



DEPARTMENT OF FORESTRY AND FIRE PROTECTION 221 Garden Road Monterey, CA 93940-5385 (831) 333-2600 Website: www.fire.ca.gov

San Benito – Monterey Unit



Revised: June 4, 2008 updated with post fire documents on 8/20/08

#### TREE REMOVAL INFORMATION COMMONLY ASSOCIATED WITH BUILDING PERMITS AND OTHER DEVELOPMENT PROJECTS

#### STATE REGULATIONS

In addition to Fire Code Regulations for State Responsibility Areas noted in the 4290 Checklist, the California Department of Forestry and Fire Protection (CAL FIRE) is responsible for administering Timber Harvesting Regulations conducted throughout California on all non-federal timberland. This applies regardless of zoning and includes lands inside of city limits. The removal of California native "commercial" timber species from forested lots, areas of pending new construction, and from around existing structures is included under these regulations. The following information is compiled from Title 14, California Code of Regulations and the Public Resources Code to assist in the determination of the necessity of a **Timber Harvest Plan (THP)**, **Timberland Conversion Permit (TCP)**, or other type of timber harvest plan **exemption** or **emergency** document.

#### **Forest Practice Checklist**

#### I. DETERMINING IF A HARVESTING PERMIT IS REQUIRED:

- 1. Is the project occurring on timberland?
  - Yes....Go to question #2. In Monterey and San Benito Counties, qualifying commercial timber species include Coast Redwood, Douglas Fir, Monterey Pine, Coulter Pine, Ponderosa Pine, Jeffrey Pine, White Alder, Cottonwood, Pacific Madrone, California Black Oak and Tanoak . **Timberland** includes areas where the above species are now growing naturally or have grown naturally in the recorded past, even if not currently present.
  - No....This does not constitute timber operations and a THP or other harvest document is NOT required by CAL FIRE. STOP HERE.
- 2. Are you cutting trees and plan to sale, barter, exchange or trade any type of wood product?
  - Yes.... A THP or other timber harvest plan exemption document is required by CAL FIRE prior to cutting any trees. Refer to the Section II titled "Types of Harvest Documents".
  - No.... A THP or other timber harvest plan exemption document may still be required by CAL FIRE. Go to question #3.

3. Are you cutting or removing trees from timberland, and converting the area to a non-timber use? <u>NOTE: These</u> requirements apply even if the wood products are not sold commercially or the trees aren't of merchantable size.

a) <b>Yes</b> , and the area involved is less than three acres	Do not harvest without an approved Less than 3- acre conversion exemption (14 CCR 1104.1)
b) Yes, and the area involved is greater than three acres	A TCP and THP are required.
c) Yes, and the area is an approved subdivision under the Subdivision Map Act meet the Less than	An Exemption for Conversion of Non-TPZ <sup>1</sup> Land for Subdivision Development (14 CCR 1104.2) can TCP requirement <u>and</u> either a THP or a 3-acre conversion exemption are required.

d) No.... If question number 1, 2, and 3 above are answered no, a THP or other harvest document is NOT required by CAL FIRE.

<sup>1</sup> TPZ: Zoning classified as Timberland Production Zone.

NOTE: In San Benito and Monterey Counties, the most common examples of conversions include commercial developments or construction of individual residential structures on lands classified as timberland.

#### **II. TYPES OF HARVEST DOCUMENTS:**

Timber Harvest Plans are detailed documents that allow timber operations and provide analysis of environmental impacts, and will not be discussed in any detail. The harvest documents required for Timberland Conversions are addressed in Section I, question 3 above. The following list describes the most commonly used harvest exemptions and emergencies.

- 2. <u>1038 (a,b)\*Christmas Tree; Dead, Dying, or Diseased; Fuelwood or Split Products Exemption</u> This exemption is required when removing trees that are dead or are obviously dying from insect attack or disease (harvest can not exceed 10% of the average volume per acre), or when removing fuelwood or other miscellaneous products such as Christmas trees, fencing, etc. This exemption is required only if wood products are offered for sale, barter, exchange or trade. Registered Professional Forester services are not required, however a Licensed Timber Operator must be listed on the exemption. The exemption is valid for one year. See 14 CCR 1038 (a & b).

#### 3. <u>1104.1 (a) Less Than Three Acre Conversion Exemption</u>

This one-time exemption is required for property owners who intend to cut or remove trees for structures and other needed improvements. *This exemption is required whether or not wood products are offered for sale, barter, exchange or trade.* A Registered Professional Forester must prepare this exemption. *Building* 

contractors are ineligible to perform this work, unless they are also a Licensed Timber Operator. The exemption is valid for one year. See 14 CCR 1104.1.

#### 1. <u>1104.1 (b,c) Public Agency, Public and Private Utility Right of Way Exemptions</u>

These exemptions are used for construction or maintenance of right-of-way by a public agency on its own or any other public property; or the clearing of trees from timberland by a private or public utility for construction of gas, water, sewer, oil, electric, and communications (transmitted by wire, television, radio, or microwave) rights-of-way, and for maintenance and repair of the utility and right-of-way. *This exemption can only be used to remove trees that are marked or felled as hazard trees in established utility right-of-ways, or for construction of right of ways that have been approved by the county.* 

2. 1052 Emergency

Before cutting or removing timber on an emergency basis, a **Registered Professional Forester (RPF) on** behalf of a timber owner or operator shall submit a Notice of Emergency Timber Operations to the Director... An emergency can be filed for removal of damaged, dead, or dying trees due to fire. Per the 14 CCR 895.1 definition of "dying trees", it is up to the RPF to designate dying trees for harvest. Given the provisions of this definition, it would be the RPF's responsibility to designate only those trees that are likely to die within one year.

\* (14 CCR 961.2) Notwithstanding 14 CCR 1038, exemptions from plan filing requirements in the Coastal Commission Special Treatment Areas shall only be allowed for minor operations where no live trees are cut.

Some of the applicable laws and regulations that apply are summarized on the following pages. The rules cited may not be quoted, and are not intended to be authoritative. The code section has been included to provide reference to the official law or rule language can be found at <u>www.leginfo.ca.gov/calaw.html</u>, or the official publications by <u>Barclays</u> <u>Official California Code of Regulations</u> (1-800-888-3600).

If you have any questions or need additional information on the different types of harvest documents that may be applicable to your project, please contact the Unit Forester or the Area Forester where the project is located.

Area All of San Benito and Monterey Counties	<b>Forester</b> Jonathan Pangburn	<b>Telephone</b> (831) 333-2600
or contact	Mike Bacca – Forest Practice Manager Southern Region	(559) 243-4114

#### **Z'berg-Nejedly Forest Practice Act of 1973**

CAL FIRE has enforcement responsibility for the Z'berg-Nejedly Forest Practice Act of 1973. CAL FIRE is also the lead agency for those parts of projects involving the scope of the Forest Practice Act. This involves the regulation of "Timber Operations", as defined in Section 4527 of the Public Resources Code (PRC), on all non-federal private lands.

#### PRC 4526 - Timberland

"Timberland" means land, other than land owned by the federal government, which is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products, including Christmas trees.

#### PRC 4527 - Timber Operations

"Timber Operations" means the cutting or removal or both of timber or other solid wood forest products, including Christmas trees, from timberlands for commercial purposes, together with all the work incidental thereto, including, but not limited to, construction and maintenance of roads, fuel breaks, stream crossings, landings, and skid trails. "Commercial purposes" includes (1) The cutting or removal of trees which are processed into logs, lumber, or other wood products and offered for sale, barter, exchange or trade, or; (2) The cutting or removal of trees or other forest products during the conversion of timberlands to land uses other than the growing of timber which are subject to the provisions of Section 4621, including, but not limited to, residential or commercial developments, production of other agricultural crops, recreational developments, ski developments, water development projects, and transportation projects. Removal or harvest of incidental vegetation from timberlands, such as berries, ferns, greenery, mistletoe, herbs, and other products, which action cannot normally be expected to result in a threat to forest, air, water, or soil resources, does not constitute timber operations.

#### PRC 4581 - Necessity of timber harvest plan

No person shall conduct timber operations unless a timber harvesting plan prepared by a registered professional forester has been submitted for such operations.

Other pertinent rule sections regarding conversion of timberlands: 14 CCR 1100-1110 and PRC 4621.

Richard C. Hutchinson Jr., Unit Chief San Benito - Monterey Unit

By Jonathan Pangburn Unit Forester

# APPENDIX D

Community Base Map







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# **APPENDIX E**

## CAL FIRE Guidelines for Creating Defensible Space

#### **General Guidelines for Creating Defensible Space**

State Board of Forestry and Fire Protection (BOF) California Department of Forestry and Fire Protection

Adopted by BOF on February 8, 2006 Pending Filing with Office of Administrative Law







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#### A. Purpose of Guidelines

Recent changes to Public Resources Code (PRC) 4291 expand the defensible space clearance requirement maintained around buildings and structures from 30 feet to a distance of 100 feet. These guidelines are intended to provide property owners with examples of fuel modification measures that can be used to create an area around buildings or structures to create defensible space. A defensible space perimeter around buildings and structures provide firefighters a working environment that allows them to protect buildings and structures from encroaching wildfires as well as minimizing the chance that a structure fire



Effective defensible space

will escape to the surrounding wildland. These guidelines apply to any person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining any mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or any land that is covered with flammable material, and located within a State Responsibility Area.

The vegetation surrounding a building or structure is fuel for a fire. Even the building or structure itself is considered fuel. Research and experience have shown that fuel reduction around a building or structure increases the probability of it surviving a wildfire. Good defensible space allows firefighters to protect and save buildings or structures safely without facing unacceptable risk to their lives. Fuel reduction through vegetation management is the key to creating good defensible space.

Terrain, climate conditions and vegetation interact to affect fire behavior and fuel reduction standards. The diversity of California's geography also influences fire behavior and fuel reduction standards as well. While fuel reduction standards will vary throughout the State, there are some common practices that guide fuel modification treatments to ensure creation of adequate defensible space:

- Properties with greater fire hazards will require more clearing. Clearing requirements will be greater for those lands with steeper terrain, larger and denser fuels, fuels that are highly volatile, and in locations subject to frequent fires.
- Creation of defensible space through vegetation management usually means reducing the amount
  of fuel around the building or structure, providing separation between fuels, and or reshaping
  retained fuels by trimming. Defensible space can be created removing dead vegetation, separating
  fuels, and pruning lower limbs.
- In all cases, fuel reduction means arranging the tree, shrubs and other fuels sources in a way that
  makes it difficult for fire to transfer from one fuel source to another. It does not mean cutting down
  all trees and shrubs, or creating a bare ring of earth across the property.
- A homeowner's clearing responsibility is limited to 100 feet away from his or her building or structure or to the property line, which ever is less, and limited to their land. While individual property owners are not required to clear beyond 100 feet, groups of property owners are encouraged to extend clearances beyond the 100 foot requirement in order to create communitywide defensible spaces.
- Homeowners who do fuel reduction activities that remove or dispose of vegetation are required to comply with all federal, state or local environmental protection laws and obtain permits when necessary. Environmental protection laws include, but are not limited to, threatened and endangered species, water quality, air quality, and cultural/archeological resources. For example, trees removed for fuel reduction that are used for commercial purposes require permits from the

California Department of Forestry and Fire Protection. Also, many counties and towns require tree removal permits when cutting trees over a specified size. Contact your local resource or planning agency officials to ensure compliance.

The methods used to manage fuel can be important in the safe creation of defensible space. Care should be taken with the use of equipment when creating your defensible space zone. Internal combustion engines must have an approved spark arresters and metal cutting blades (lawn mowers or weed trimmers) should be used with caution to prevent starting fires during periods of high fire danger. A metal blade striking a rock can create a spark and start a fire, a common cause of fires during summertime.

Vegetation removal can also cause soil disturbance, soil erosion, regrowth of new vegetation, and introduce non-native invasive plants. Always keep soil disturbance to a minimum, especially on steep slopes. Erosion control techniques such as minimizing use of heavy equipment, avoiding stream or gully crossings, using mobile equipment during dry conditions, and covering exposed disturbed soil areas will help reduce soil erosion and plant regrowth.

Areas near water (riparian areas), such as streams or ponds, are a particular concern for protection of water quality. To help protect water quality in riparian areas, avoid removing vegetation associated with water, avoid using heavy equipment, and do not clear vegetation to bare mineral soil.

#### **B. Definitions**

Defensible space: The area within the perimeter of a parcel where basic wildfire protection practices are implemented, providing the key point of defense from an approaching wildfire or escaping structure fire. 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.

Aerial fuels: All live and dead vegetation in the forest canopy or above surface fuels, including tree branches, twigs and cones, snags, moss, and high brush. Examples include trees and large bushes.

Building or structure: Any structure used for support or shelter of any use or occupancy.

Flammable and combustible vegetation: Fuel as defined in these guidelines.

Fuel Vegetative material, live or dead, which is combustible during normal summer weather. For the purposes of these guidelines, it does not include fences, decks, woodpiles, trash, etc.

Homeowner: Any person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining any mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or any land that is covered with flammable material, and located within a State Responsibility Area.

Ladder Fuels: Fuels that can carry a fire vertically between or within a fuel type.

Reduced Fuel Zone: The area that extends out from 30 to 100 feet away from the building or structure (or to the property line, whichever is nearer to the building or structure).

Surface fuels: Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not yet decayed enough to lose their identity; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branches and downed logs.

#### C. Fuel Treatment Guidelines

The following fuel treatment guidelines comply with the requirements of 14 CCR 1299 and PRC 4291. All persons using these guidelines to comply with CCR 1299 and PRC 4291 shall implement General Guidelines 1., 2., 3., and either 4a or 4b., as described below.

#### General Guidelines:

- Maintain a firebreak by removing and clearing away all flammable vegetation and other combustible growth within 30 feet of each building or structure, with certain exceptions pursuant to PRC §4291(a). Single specimens of trees or other vegetation may be retained provided they are wellspaced, well-pruned, and create a condition that avoids spread of fire to other vegetation or to a building or structure.
- 2. Dead and dying woody surface fuels and aerial fuels within the Reduced Fuel Zone shall be removed. Loose surface litter, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches, shall be permitted to a depth of 3 inches. This guideline is primarily intended to eliminate trees, bushes, shrubs and surface debris that are completely dead or with substantial amounts of dead branches or leaves/needles that would readily burn.
- 3. Down logs or stumps anywhere within 100 feet from the building or structure, when embedded in the soil, may be retained when isolated from other vegetation. Occasional (approximately one per acre) standing dead trees (snags) that are well-space from other vegetation and which will not fall on buildings or structures or on roadways/driveways may be retained.
- 4. Within the Reduced Fuel Zone, one of the following fuel treatments (4a. or 4b.) shall be implemented. Properties with greater fire hazards will require greater clearing treatments. Combinations of the methods may be acceptable under §1299(c) as long as the intent of these guidelines is met.

#### 4a. Reduced Fuel Zone: Fuel Separation

In conjunction with General Guidelines 1., 2., and 3., above, minimum clearance between fuels surrounding each building or structure will range from 4 feet to 40 feet in all directions, both horizontally and vertically.

Clearance distances between vegetation will depend on the slope, vegetation size, vegetation type (brush, grass, trees), and other fuel characteristics (fuel compaction, chemical content etc.). Properties with greater fire hazards will require greater separation



between fuels. For example, properties on steep slopes having large sized vegetation will require greater spacing between individual trees and bushes (see Plant Spacing Guidelines and Case Examples below). Groups of vegetation (numerous plants growing together less than 10 feet in total foliage width) may be treated as a single plant. For example, three individual manzanita plants growing together with a total foliage width of eight feet can be "grouped" and considered as one plant and spaced according to the Plant Spacing Guidelines in this document.

Grass generally should not exceed 4 inches in height. However, homeowners may keep grass and other forbs less than 18 inches in height above the ground when these grasses are isolated from other fuels or where necessary to stabilize the soil and prevent erosion.

Clearance requirements include:

 Horizontal clearance between aerial fuels, such as the outside edge of the tree crowns or high brush. Horizontal clearance helps stop the spread of fire from one fuel to the next.



Horizontal clearance between aerial fuels

 Vertical clearance between lower limbs of aerial fuels and the nearest surface fuels and grass/weeds. Vertical clearance removes *ladder fuels* and helps prevent a fire from moving from the shorter fuels to the taller fuels.



Vertical clearance between aerial fuels



Effective vertical and horizontal fuel separation <u>Photo Courtesy</u> <u>Plumas Fire Safe</u> <u>Council.</u>

Plant Spacing Guidelines				
Guidelines a	are designed to break the continuity of compliance with Reg	fuels and be used as a "rule of thumb" for achieving gulation 14 CCR 1299.		
Minimum horizontal space				
Trees	from edge of one tree canopy to the edge of the next			
	Slope	Spacing		
	0% to 20 %	10 feet		
	20% to 40%	20 feet		
E E	Greater than 40%	30 feet		
	Minimum horizontal space between edges of shrub			
Γ	Slope	Spacing		
Shrubs	0% to 20 %	2 times the height of the shrub		
	20% to 40%	4 times the height of the shrub		
Γ	Greater than 40%	6 times the height of the shrub		
Vertical Space	Minimum vertical space between top of shrub and bottom of lower tree branches: 3 times the height of the shrub			

Adapted from: Gilmer, M. 1994. California Wildfire LandscapingLandscaping

#### Case Example of Fuel Separation: Sierra Nevada conifer forests

Conifer forests intermixed with rural housing present a hazardous fire situation. Dense vegetation, long fire seasons, and ample ignition sources related to human access and lightning, makes this home vulnerable to wildfires. This home is located on gentle slopes (less than 20%), and is surrounded by large mature tree overstory and intermixed small to medium size brush (three to four feet in height).

Application of the guideline under 4a. would result in horizontal spacing between large tree branches of 10 feet; removal of many of the smaller trees to create vertical space between large trees and smaller trees and



horizontal spacing between brush of six to eight feet (calculated by using 2 times the height of brush).
## Case Example of Fuel Separation: Southern California chaparral

Mature, dense and continuous chaparral brush fields on steep slopes found in Southern California represents one of the most hazardous fuel situations in the United States. Chaparral grows in an unbroken sea of dense vegetation creating a fuel-rich path which spreads fire rapidly. Chaparral shrubs burn hot and produce tall flames. From the flames come burning embers which can ignite homes and plants. (Gilmer, 1994). All these factors results in a setting where aggressive defensible space clearing requirements are necessary.

Steep slopes (greater than 40%) and tall, old brush (greater than 7 feet tall), need significant modification. These settings require aggressive



clearing to create defensible space, and would require maximum spacing. Application of the guidelines would result in 42 feet horizontal spacing (calculated as 6 times the height of the brush) between retained groups of chaparral.

# Case Example of Fuel Separation: Oak Woodlands

Oak woodlands, the combination of oak trees and other hardwood tree species with a continuous grass ground cover, are found on more than 10 million acres in California. Wildfire in this setting is very common, with fire behavior dominated by rapid spread through burning grass.

Given a setting of moderate slopes (between 20% and 40%), wide spacing between trees, and continuous dense grass, treatment of the grass is the primary fuel reduction concern. Property owners using these guidelines would cut grass to a maximum 4 inches in height, remove the clippings, and consider creating 20 feet spacing between trees.



General Guidelines for Creating Defensible Space February 8, 2006

### 4b. Reduced Fuel Zone: Defensible Space with Continuous Tree Canopy

To achieve defensible space while retaining a stand of larger trees with a continuous tree canopy apply the following treatments:

- Generally, remove all surface fuels greater than 4 inches in height. Single specimens of trees
  or other vegetation may be retained provided they are well-spaced, well-pruned, and create a
  condition that avoids spread of fire to other vegetation or to a building or structure.
- Remove lower limbs of trees ("prune") to at least 6 feet up to 15 feet (or the lower 1/3 branches for small trees). Properties with greater fire hazards, such as steeper slopes or more severe fire danger, will require pruning heights in the upper end of this range.



Defensible Space retaining continuous trees



Photo Courtesy Plumas Fire Safe Council.



Defensible space with continuous tree canopy by clearing understory and pruning

Authority cited: Section 4102, 4291, 4125-4128.5, Public Resource Code. Reference: 4291, Public Resource Code; 14 CCR 1299 (d).

General Guidelines for Creating Defensible Space February 8, 2006

# **APPENDIX F**

Fuel Reduction Projects and Community Recommendations

# San Benito County Community Wildfire Protection Plan

#### At-risk Community Community Agency/ Project **Funding Needs Time Table** Landowner or Area Recommendation Aromas Chipping Private Grant funding 2009-2012 Yes Aromas Firesafe Garden Private Grant funding 2008-2016 Yes Fuel reduction Grant funding Aromas Private 2010 Yes Roadside fuel Public and Aromas treatment, Cole and Grant funding 2011 Yes Private Cannon Road areas Eucalvptus stand fuel Grant and private Aromas Private 2012 Yes break - pilot project funded Address marker Private 2011 Yes Aromas Grant funding program Public and 2012 Aromas Evacuation plan Grant funding Yes Private Coalinga/Mineral Fuel break system BLM Agency budget 2010-2015 Yes Springs Prescribed burn\fuel Condon Peak BLM Agency budget 2009-2016 Yes break system Countv Defensible Space, fuel Communication Private Grant funding 2011 Yes reduction Center County-wide Chipper program Private Grant funding Yes On-going Public education, County-wide Private Grant funding On-going Yes multilingual Prescribed burn/fuel Gabilan BLM 2012-2016 Agency budget Yes break system Hernandez Fuel break system BLM Agency budget 2010-2015 Yes Fire Hollister Firesafe garden Grant funding 2007-2016 Yes Department Fuel break/prescribed BLM 2009-2016 Laguna Mountain Agency budget Yes burn Panoche/Silver Fuel reduction, BLM Agency budget 2008-2016 Yes Creek prescribed burn Fuel reduction/sheep Panoche Hills BLM Agency budget 2009-2016 Yes grazing **Pinnacles National** Defensible space fuel NPS Agency budget 2006-2017 Yes Monument reduction San Juan Canyon Chipping Private Grant funding 2009-2016 Yes Roadside fuel Public and San Juan Canyon treatment to Fremont Grant funding 2011 Yes Private Peak Address marker San Juan Canvon Private Grant funding 2011 Yes program

# **Fuel Reduction Projects and Community Recommendations**

At-risk Community or Area	Project	Agency/ Landowner	Funding Needs	Time Table	Community Recommendation
San Juan Canyon	Evacuation and communications plan	Public and Private	Grant funding	2012	Yes
San Juan Canyon	Pre-plan emergency mapping project	Public and Private	Grant funding	2012	Yes
South County	Tamarisk removal at Silver Creek	BLM	Agency budget	2006-2011	Yes
South County	Star thistle treatment/ prescribed burn	BLM	Agency budget	2006-2015	Yes
South County	Recreation sites hazard fuel reduction	BLM	Agency budget	2007-2016	No