2. PROGRAM DESCRIPTION

2.1 OVERVIEW OF THE VTP

CAL FIRE proposes to implement the VTP, which is a formal program that would comprehensively direct the management of wildland fuel sources within CAL FIRE's State Responsibility Area – an area comprised of over 31 million acres of private land. The VTP is projected to treat approximately 60,000 acres of this landscape annually, or 600,000 acres over a 10-year time frame. The VTP consists of a strategy that would implement vegetation treatment activities for the purpose of altering landscape fuels to reduce the size, number, or frequency of damaging fires and reduce losses to life, property, and natural resources. The process would generally involve the survey and monitoring of site conditions before, during, and after treatment to determine if objectives are being met and if program methods need to be revised.

The VTP must be consistent with CAL FIRE's mission to serve and safeguard the people and protect the property and resources of California. The VTP consists of specific vegetation treatment activities: prescribed fire, manual activities, mechanical activities, prescribed herbivory (beneficial grazing), and targeted ground application of herbicides. CAL FIRE has grouped the areas where vegetation treatment activities would occur by the following program treatment categories: wildland-urban interface (WUI), fuel break, and ecological restoration. These program treatment categories are summarized in Section 2.2.3 and described in greater detail in Chapter 4, Section 1 (4.1).

The VTP is intended to evaluate the potential vegetation management activities that would be implemented within individual CAL FIRE Units/Contract Counties. It is at the individual Unit/Contract County level where the initial review of those proposals will take place. As part of the VTP, CAL FIRE would utilize CEQA Coordinators at three levels for review (Unit/Contract County, Region, and Sacramento). The Unit/Contract County CEQA Coordinators would play a key role in reviewing VTP projects proposed by public or private entities and managing them for consistency with the VTP Program EIR. They would seek public input and engage with stakeholders to determine project priorities and fuel treatment strategies. The coordinators will also ensure each project properly implements Project Requirements and mitigation measures included in this Program EIR. Each vegetation treatment project proposed would require the preparation of a Project Scale Analysis (PSA) that would document the project's consistency with the requirements and findings of this Program EIR. The PSA would be submitted to the Region and Sacramento CEQA Coordinators for review and authorization prior to

implementation of the project. If it is determined that the proposed project does not fall within the scope of the approved VTP and Program EIR, then that project would need to proceed with separate environmental analysis, documentation, and approval procedures.

Each VTP project will be required to do implementation monitoring, photo-point effectivness monitoring, and be entered into a geospatial database for program tracking purposes. More rigorous project and program monitoring will be implemented once key uncertainties are identified by the VTP Monitoring Working Group, and once funding is secured for a more formal adaptive management process. The Monitoring and Communication Plan (Appendix I) provides more information related to monitoring and adaptive management.

2.2 CONCEPTUAL FRAMEWORK OF THE VTP

CAL FIRE will implement the VTP with the intent of lowering the risk of damaging wildfire in the SRA by managing wildland fuels through the use of environmentally appropriate vegetation treatments. The VTP will only be applied to portions of the SRA that will best allow for the achievement of VTP objectives. The following conceptual framework for the proposed VTP is heavily influenced by recommendations from the California Fire Science Consortium (2014).

Given that California is the most bio-diverse state in the Union (Stein et al., 2000; Stein, 2002), the VTP must characterize the state in such a way that recognizes this diversity while still providing a tractable framework for analysis at the statewide scale. To do so, the Program groups the state's vegetation communities into three major vegetation formations: tree, grasslands, and shrublands. These major vegetation formations generally exhibit similar fire behavior and provide a good first basis for stratifying the state for programmatic assessment (Rothermel, 1983; Scott & Burgan, 2005; Anderson, 1982). Through the use of Standard Project Requirements (SPRs) and Project Specific Requirements (PSRs) (see Section 2.5 below), the process outlined in this VTP would address variability within these major vegetation communities, and for a variety of other environmental factors, to ensure the appropriate application of treatments.

The VTP also stratifies treatments into three basic program treatment categories that are defined in Section 2.2.3: wildland-urban interface (WUI), fuel breaks, and ecological restoration. These three types of treatments would be selected based on the values at risk, surrounding fuel conditions, strategic necessity for fire suppression activities, and departure from natural fire regime. The actual prioritization of such projects would be made at the local CAL FIRE Unit/Contract County level, but the relative prioritization of projects would reflect concepts outlined in Figure 2.4-2.

The data in this Program EIR is generally summarized geographically through the use of California Bioregions. Bioregions are defined based on common geophysical characteristics and existing plant communities. They help describe common qualities, sensitivities, species, and natural processes within a region for purposes of resources management and environmental impact analysis. This chapter and the remaining portions of the Program EIR utilize the bioregions as modified from the California Biodiversity Council (Figure 2.2-1) to organize the projected VTP treatments in SRA around the state and provide information helpful to environmental impact analysis. Refer to Chapter 4.1 and Appendix A for more information on the Bioregions.

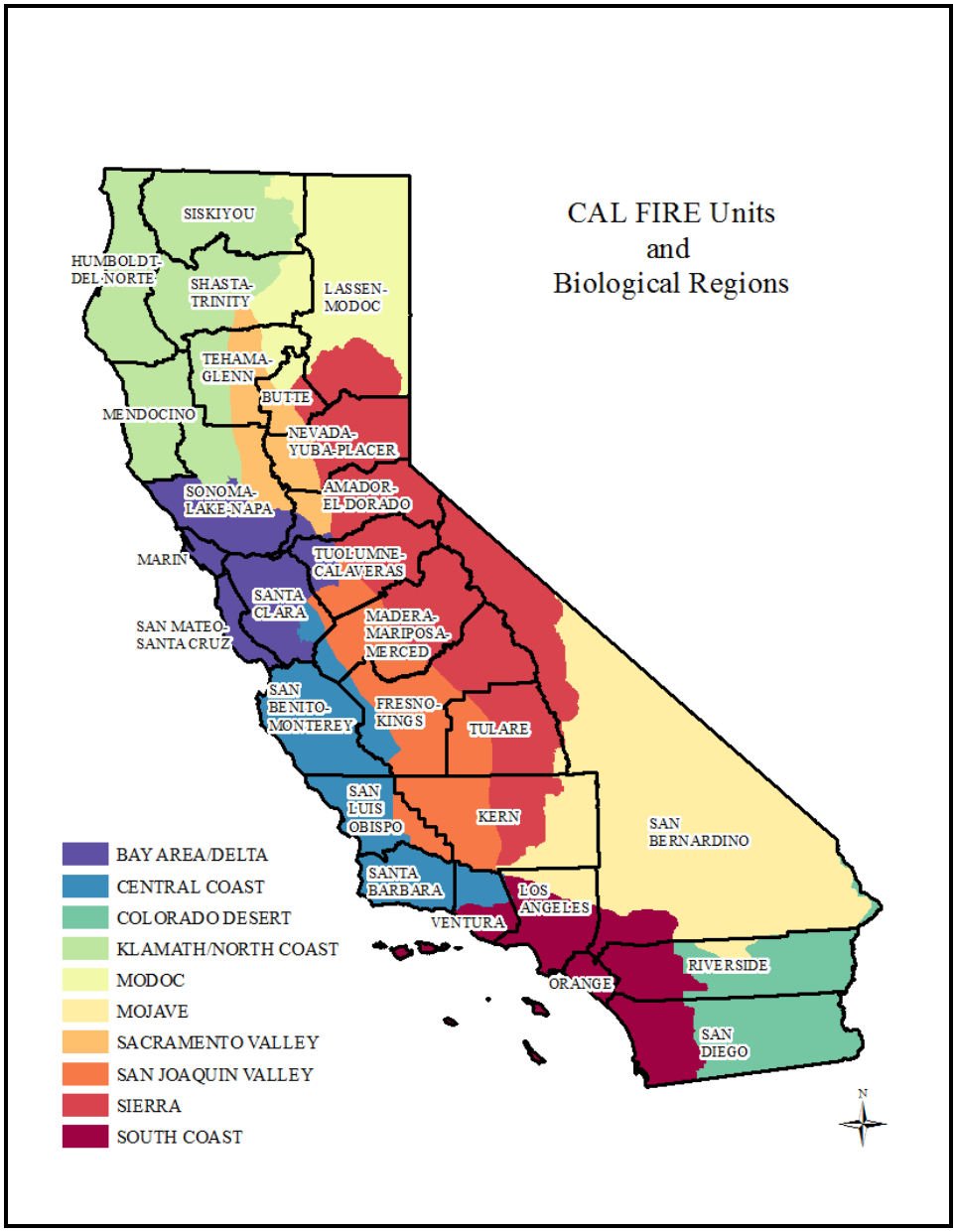


Figure 2.2-1 Statewide distribution of CAL FIRE Units and the Bioregions

2.2.1 OBJECTIVES OF THE VTP

The general objective of the proposed VTP is to implement vegetation treatment activities throughout California that would meet the goals outlined in the Board of Forestry and Fire Protection's *2010 Strategic Fire Plan for California* and CAL FIRE's *2012 Strategic Plan* in a manner that both reduces wildfire risk and severity and avoids significant environmental effects, to the extent feasible. The primary purpose of these documents and the VTP is to implement actions to minimize the negative effects of wildfire. The specific objectives of the proposed VTP are:

Vegetation Treatment Program Objectives
1. Modify wildland fire behavior to help reduce losses to life, property, and natural resources.
2. Increase the opportunities for altering or influencing the size, intensity, shape, and direction of wildfires within the wildland-urban interface (WUI).
3. Reduce the potential size and associated suppression costs of wildland fires by altering the continuity of wildland fuels.
4. Reduce the potential for high severity fires by restoring and maintaining a range of native, fire-adapted plant communities through periodic low intensity treatments within the appropriate vegetation types.
5. Provide a consistent, accountable, and transparent process for vegetation treatment that is responsive to the objectives, priorities, and concerns of landowners, local, state, and federal governments, and other stakeholders.

OBJECTIVE 1: Modify wildland fire behavior to help reduce losses to life, property, and natural resources.

This is the governing objective of the program, and is consistent with the goals outlined in the *2010 Strategic Fire Plan for California* (Board, 2010). Fire behavior is the manner in which fire reacts to weather, topography, and fuels (NWCG, 2014). Of the three variables, only fuels can be feasibly altered by humans. The primary assumption of the VTP is that appropriate vegetation treatments can affect wildland fire behavior through the manipulation of wildland fuels. Since human activity cannot influence weather or topography, reducing the continuity of wildland fuels would result in lower fuel hazard and more favorable fire behavior. In turn, this would allow for more effective fire suppression and, therefore, reduce the likelihood of wildfire adversely affecting values at risk. Values at risk include, but are not limited to, public and firefighter health and safety, structures, infrastructure, and environmental services (e.g., biodiversity, clean water, carbon sequestration, etc).

OBJECTIVE 2: Increase the opportunities for altering or influencing size, intensity, shape, and direction of wildfires within the wildland urban interface.

This objective places emphasis on increasing the strategic and tactical effectiveness of fire suppression within the WUI through the use of appropriate vegetation treatments. The WUI is the geographical overlap of two diverse systems: wildland and structures. At this interface, the buildings and vegetation are sufficiently close that a wildland fire could spread to a structure or a structure fire could ignite wildland vegetation. Focusing vegetation treatments in the WUI is critical, because losses in the WUI are on the rise (Stephens et al., 2009) and are expected to get worse (Mann et al., 2014). This objective only relates to fuel treatments within the WUI; influences or changes to local land use planning associated with the WUI is outside the scope of this VTP, but is part of a larger strategy being implemented by CAL FIRE and the Board (Board, 2010).

Achieving this objective is dependent on integration with CAL FIRE WUI operating policies, as existing when a VTP project is planned and implemented (Figure 2.2-2). CAL FIRE's operating principles in the WUI includes an emphasis on pre-incident planning and prioritizing perimeter control before the fire reaches structures (CAL FIRE, 2014). The need for vegetation treatments will be evaluated during the pre-incident planning process, and strategically placed vegetation treatments can offer a more effective means of perimeter control.

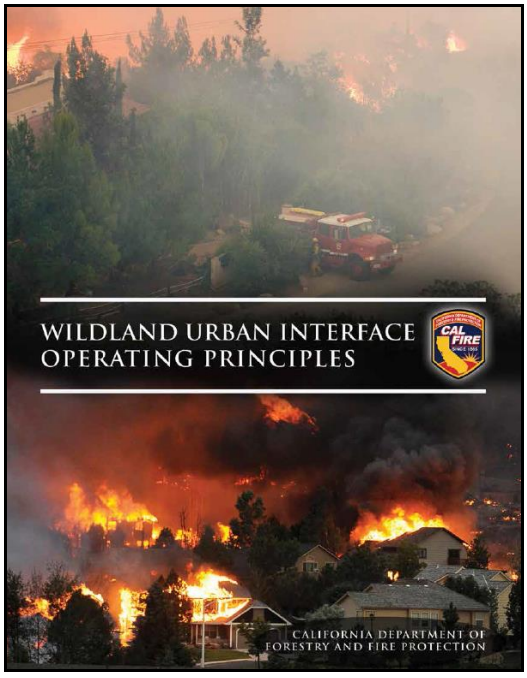


Figure 2.2-2 CAL FIRE's "Wildland Urban Interface Operating Principles" outlines some of the Department's WUI operating policies.

OBJECTIVE 3: Reduce the potential size and associated suppression costs of wildland fires by altering the continuity of wildland fuels.

Wildfire suppression costs borne by California taxpayers have risen significantly in the past 35 years (Figure 2.2-3). Figure 1.1-1 (Chapter 1) and Figure 2.2-3 suggest a steady increase in both acres burned and suppression costs since the year 2000. This objective seeks to reduce the size of fires through the use of appropriate vegetation treatments. The assumption is that decreasing fire size will have a resulting decrease on fire suppression costs (Figure

2.2-4). While wildfire acreage is not the only variable that drives suppression costs (Gude et al., 2013[1]), increasing the likelihood that fires would be contained to relatively small areas should also relate to lower cumulative fire suppression costs.

There is strong scientific agreement that the use of fuel treatments helps to reduce the impact and damage from wildfires (Reinhardt et al., 2008; Safford et al., 2009; Schoennagel and Nelson, 2011), but there is a lack of quantifying data to directly relate treatment methods to a reduction in damage and costs relative to the WUI. Alternatively, modeling has shown significant effectiveness directly on tree mortality (Stephens and Moghaddas, 2005; Martinson and Omi, 2005).

Benefits from projects can be realized in the initial attack phase because more fires can be controlled at very small sizes. As fires escape initial attack they grow more complex, with many factors contributing to the costs of fire suppression and damage. Individual treatments within these larger fire areas can systematically realize extended attack benefits outside their actual boundaries if the collection and pattern of treatment areas has been developed using landscape level strategies (Finney, 2005). Targeted fuel treatments aimed at reducing the vulnerability of houses in the WUI can make a difference for individual structures, entire subdivisions, or even towns and villages in the path of an approaching wildfire. Vegetation treatment has other benefits (range improvement, biomass fuels, watershed integrity), but it is from the reduction of fire hazards where the largest share of economic benefits would be derived.

The initial attack phase is most critical for controlling overall wildfire related costs and losses. CAL FIRE's goal for wildland fire protection is to contain 95 percent of vegetation fires at 10 acres or less. Statewide, approximately 97 percent of all vegetation fires are contained within the first few hours after they are reported. Some of the three percent that escape initial attack may eventually become large and complex campaign fires which require a formal base camp and management functions including logistics, communication, finance, food services, and other functions. A typical campaign fire can cost one million dollars or more per day at full staffing. Several large fires burning at one time can quickly draw down the pool of fire suppression resources, increasing the chances of more escaped fires. Stopping fires before they become large is a key to limiting wildfire related costs, damage and loss of life.

[1] Gude et al. (2013) suggests that fire proximity to homes is a significant driver of suppression costs.

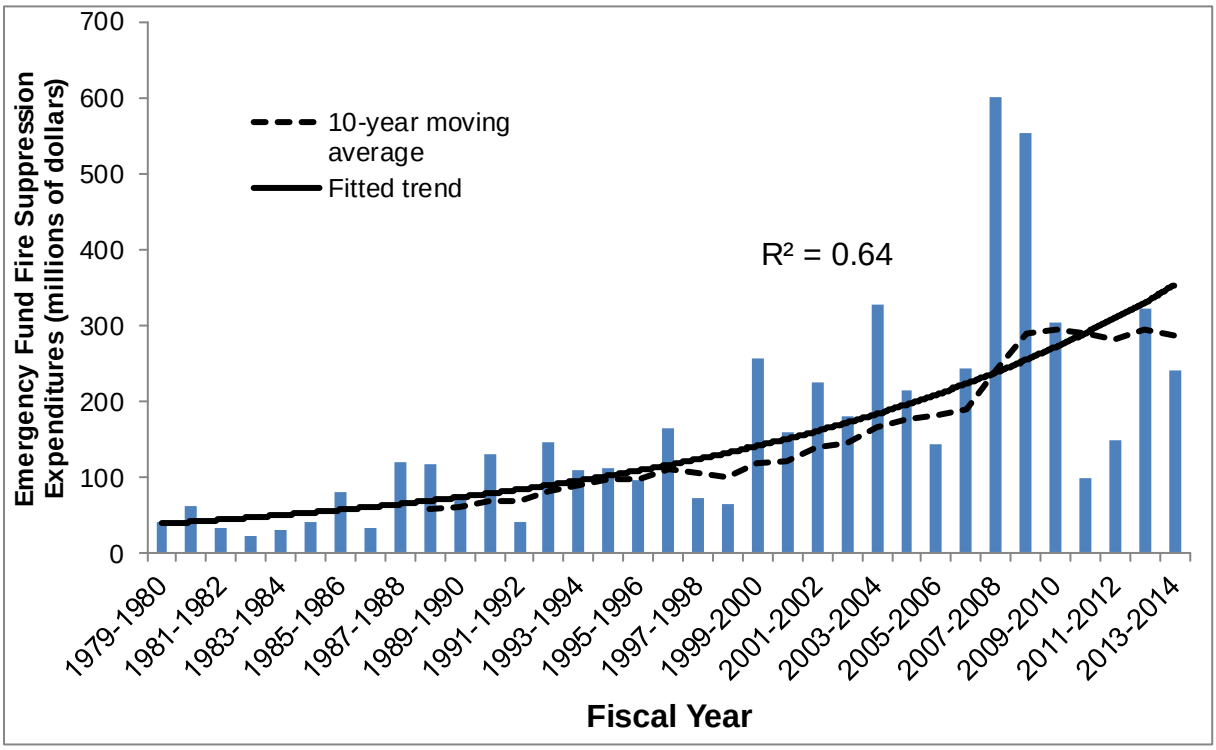


Figure 2.2-3 Emergency fund fire suppression expenditures for fiscal years between 1979 and 2014 Expenditures corrected for inflation using the Consumer Price Index. Data taken form CAL FIRE Emergency Fund Suppression Expenditures, September 2014.

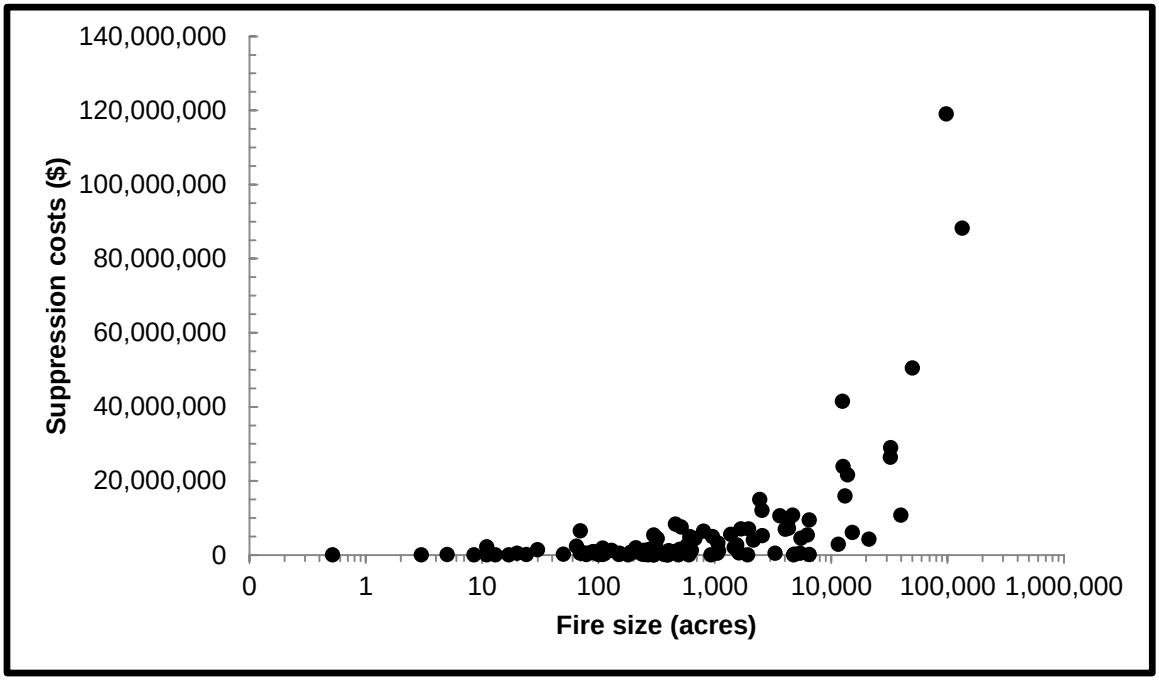


Figure 2.2-4 Suppression costs versus fire size for CAL FIRE incidents during the 2014 calendar year ending on October 25, 2014. Costs and acreage extracted from ICS-209 forms.

OBJECTIVE 4: Reduce the potential for high severity fires by restoring and maintaining a range of native fire-adapted plant communities through periodic low intensity treatments within the appropriate vegetation types.

Before the twentieth century, many forests within California were generally open and park-like due to the thinning effects of recurrent fire. Decades of fire suppression and other forest management have left a legacy of increased fuel loads and ecosystems dense with an understory of shade-tolerant, late-succession plant species. The widespread level of dangerous fuel conditions is a result of highly productive vegetative systems accumulating fuels and/or reductions in fire frequency from fire suppression. In the absence of fire, these plant communities accrue biomass and alter the arrangement of it in ways that significantly increase fuel availability and expected fire intensity. As such, many ecosystems are conducive to large, severe fires, especially during hot, dry, windy periods in late summer through fall. Additionally, the spatial continuity of fuels has increased with fewer structural breaks to retard fire spread and intensity. The increased accumulations of live and dead fuels may burn longer and more completely, threatening the integrity and sustainability of the ecosystems.

Species composition within these forests is also rapidly changing. Plant and animal species that require open conditions and/or highly patchy edge ecotones are declining and streams are drying as evapotranspiration increases due to increased stocking. Additionally, streams are subject to sedimentation following high severity fires, and unnaturally severe wildfires have destroyed vast areas of forest (Bonnicksen, 2003). Some insects and disease have reached epidemic proportions in parts of the state and current forest conditions are conducive to more outbreaks. The understory of these once open forests is now dominated by smaller shade tolerant trees that would have previously been thinned and/or consumed by fire.

The restoration of lower fuel amounts is a critical need across portions of the western United States (Agee and Skinner, 2005). In California, fuel treatments have been shown to reduce fire severity (Skinner et al., 2004; Stephens et al., 2009). It is also recognized that fuel reduction projects within forested settings appear to be more effective in reducing burn severity as compared to some southern California chaparral ecosystems. Nevertheless, this objective recognizes that appropriately designed vegetation treatments can mimic the disturbance processes that historically controlled plant community composition and structure. In addition, reduced fuel loading in appropriate vegetation types can increase ecosystem resiliency to wildfire, drought, and potentially climate change.

OBJECTIVE 5: Provide a consistent, accountable, and transparent process for vegetation treatment that is responsive to the objectives, priorities, and concerns of landowners; local, state, and federal governments; and other stakeholders.

Adopting a programmatic approach to vegetation treatment can assure that a consistent process is applied to the prioritization, evaluation, and implementation of vegetation treatment projects. There is also recognition that projects can be improved through the consideration of stakeholder commentary. In addition, there is a need to demonstrate whether the desired program and/or project outcomes are being achieved, and whether elements of the program should be iteratively changed in response to emerging data (i.e., adaptive management). As such, this objective recognizes that the chosen alternative would foster consistency, accountability, and transparency for the VTP in a way that satisfies the needs of vested stakeholders.

2.2.2 MAJOR VEGETATION FORMATIONS: FIRE BEHAVIOR AND DEPARTURE FROM NATURAL FIRE REGIMES

Wildland fires are an important ecosystem process throughout the western United States. Coniferous forests in California have long been subject to frequent low-intensity fires, which played an important role in reducing hazardous fuels and maintaining ecosystem processes. For grasslands, frequent fires increase biodiversity. In chaparral shrublands, high-intensity crown fires have been a strong force guiding the evolution of plant life, and regulation of ecological communities. In many desert habitats, fires have been far less frequent, and often are a more severe disturbance.

A multitude of factors in the wildland fire environment contribute to fire behavior. One of the most important factors that can influence fire behavior is the fuel type. Fuel type represents an identifiable association of fuel elements of distinctive species, form, size, arrangement, or other characteristics that will cause resistance to control under specified weather conditions (NWCG, 2014; Anderson, 1982). While California is home to a tremendous range of fuel types, these fuel types can be condensed into three main groups based on the sufficiently distinct fire behavior each group exhibits (Bishop, 2007; Anderson, 1982). These groups can be classified as tree dominated, grass dominated, and shrub dominated vegetative formations, with each vegetation formation consisting of vegetation subtypes as summarized in Table 2.2-1. Figure 2.2-5 shows these vegetation subtypes within the SRA.

The fire behavior associated with tree dominated vegetation formations typically exhibits as slow-burning ground fires with low flame lengths. Only under severe weather conditions involving high temperatures, low relative humidity, and high winds do the

fuels pose significant fire hazards. Closed canopy stands of short-needle conifers or hardwoods that have leafed out support fire in the compact litter layer. The compact litter layer is mainly needles, leaves, and occasionally twigs; little undergrowth is present in the stand. Fall fires in hardwoods are generally predictable, but high winds will cause higher rates of spread than predicted because of spotting caused by rolling and blowing leaves. High concentrations of dead-down woody material will contribute to possible torching out of trees, spotting, and crowning.

For grass fuel types, the fire spread is governed by the fine, very porous, and continuous herbaceous fuels that have cured or are nearly cured. Fires are surface fires that move rapidly through the cured grass and associated material. Very little shrub or timber is present in most cases and generally comprise less than one third of the area. Fire growth for this fuel type is generally predictable and lacks the complexity of other fuel types.

In shrub dominated fuel types, fire intensity and fast-spreading fires involve the foliage and live and dead fine woody material in the crowns of a nearly continuous secondary overstory. Stands of mature shrubs, such as California mixed chaparral, are typical of this fuel type. Besides flammable foliage, dead woody material in the stands significantly contributes to the fire intensity.

Table 2.2-1 Vegetation subtypes by dominant vegetation formation

Tree Dominated	Shrub Dominated	Grass Dominated
Hardwood Forests	General Shrublands	Grasslands
Long-Needled Conifers	Desert Shrublands	
Short-Needled Conifers		

Vegetation subtypes can further be broken into California Wildlife Habitat Relations (WHRs). The California Wildlife Habitat Relations (WHR) vegetation classification system was used to characterize vegetation associations within the SRA. The WHR system, managed by CDFW, is a system which classifies vegetation types important to wildlife and was developed to recognize and logically categorize major vegetative complexes at a scale sufficient to predict wildlife-habitat relationships.

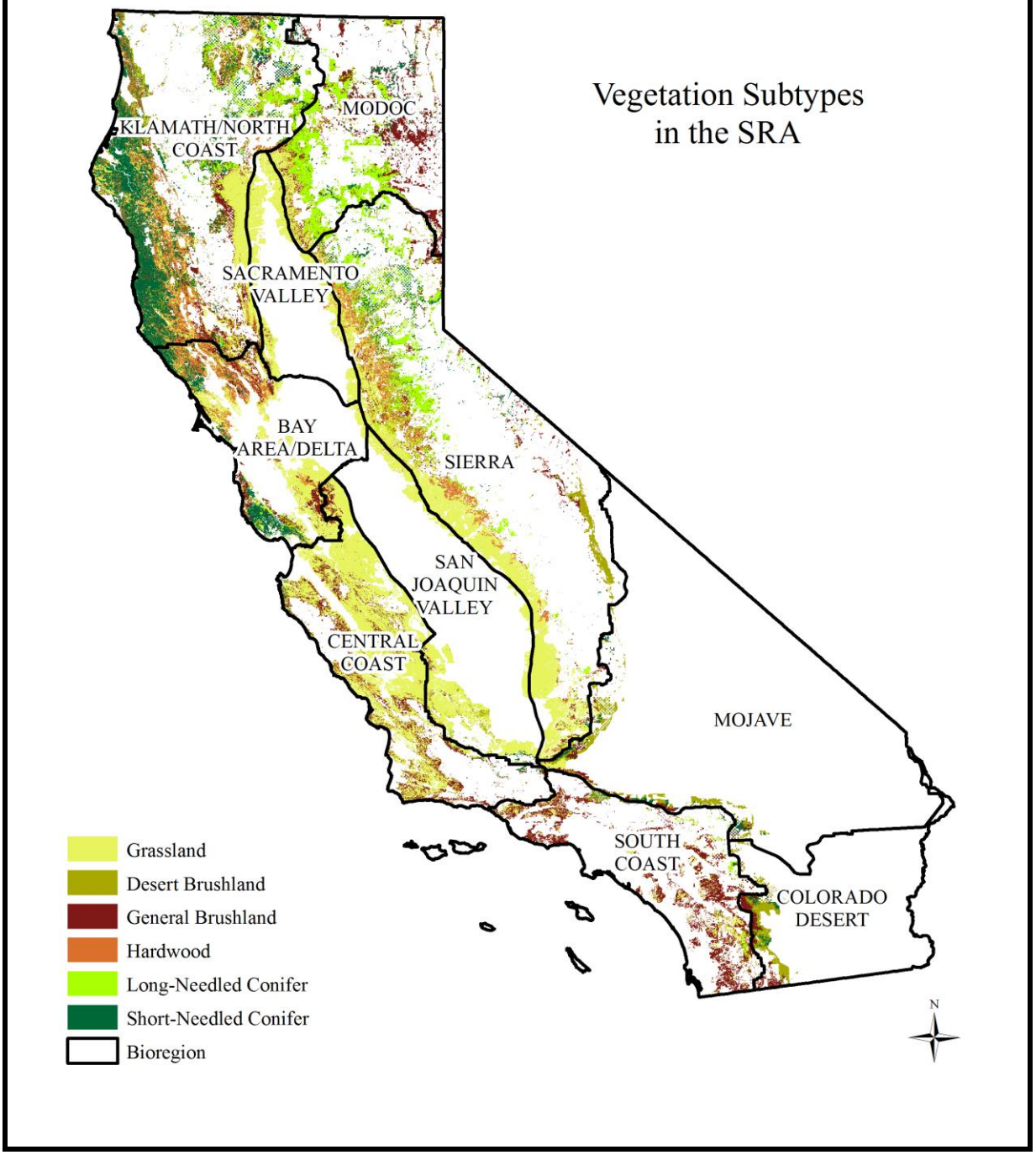


Figure 2.2-5 Vegetation subtypes located within the SRA

For each WHR vegetation type described, a specific fuel model was assigned for fire behavior predictions at the project-level analysis. This process is summarized in Chapter 4 (Sections 4.1.3.1 through 4.1.3.3). The assigned fuel models presented include both the 13 Northern Forest Fire Laboratory models (Anderson, 1982) and the 40 Standard Fire Behavior Fuel Models (Scott and Burgan, 2005) because both sets are still widely used today. A fuel model is a standardized set of fuel bed characteristics that are used as input for a variety of wildfire modeling applications. The fuel models presented in this VTP are standardized fuel models and would be used to evaluate potential fire behavior calculations for wildfires of for burn plan preparation[2].

Median fire return intervals (FRI) were identified for each WHR type (Van de Water and Safford, 2011; Safford et al., 2011). FRI is an approximation of how often, on average, an area likely burned prior to European settlement in the United States. The median FRI is an approximation of the center of pre-European settlement fire frequency. Because FRI distributions are often skewed, median FRI values offer a better approximation of how often a given area is likely to burn (Van de Water and Safford, 2011; Safford et al., 2011). FRIs for individual WHRs are summarized in Chapter 4 (Sections 4.1.3.1 through 4.1.3.3).

For the VTPEIR, each WHR vegetation type occurring within the SRA was evaluated for treatability and assigned to one of the vegetation formations (i.e., tree, grass, and shrub) (Table 2.2-2). Some WHR vegetation types (e.g., orchards, irrigated grain crops, estuarine, etc) were excluded from the potential vegetation types that could be treated under this program, because wildfire risk are neglible (Table 2.2-2).

Within the dominant vegetation formations, the grass dominated vegetation formation occupies approximately 43 percent of the state responsibility landscape and is the largest of the three groups. Tree dominated and shrub dominated formations occupy approximately 36 percent and 21 percent of the total acreage, respectively. Figure 2.2-5 summarizes the acreages associated with each of the three vegetation formations. Figure 2.2-6 shows the spatial distributions of the three vegetation formations across the SRA.

Additional analysis and review of the three vegetation types are included in Section 4.1.3.

[2] Any prescribed fire activity will require a burn plan in addition to completing the PSA. An example of a burn plan is included in Appendix J. Some fuel bed situations may warrant the development of customized fuel models to better describe a complex fuel bed situation. Under these situations, the parameters used to generate the custom fuel model would be identified in the burn plan to ensure the custom fuel model appropriately describes the fuel bed.

Table 2.2-2 Vegetation Status in VTP

WHR LIFE FORM VEGETATION TYPE	TREATABLE	WHR LIFE FORM VEGETATION TYPE	TREATABLE
Annual Grassland	Likely	Valley Foothill Riparian	Likely
Aspen	Likely	Valley Oak Woodland	Likely
Bitterbrush	Likely	White Fir	Likely
Blue Oak Woodland	Likely	Alkali Desert Scrub	Unlikely
Blue Oak-Foothill Pine	Likely	Alpine-Dwarf Shrub	Unlikely
Chamise-Redshank Chaparral	Likely	Desert Scrub	Unlikely
Closed-Cone Pine-Cypress	Likely	Desert Succulent Shrub	Unlikely
Coastal Oak Woodland	Likely	Joshua Tree	Unlikely
Coastal Scrub	Likely	Subalpine Conifer	Unlikely
Douglas Fir	Likely	Agriculture	Excluded
Eastside Pine	Likely	Barren	Excluded
Eucalyptus	Likely	Cropland	Excluded
Hardwood	Likely	Deciduous Orchard	Excluded
Jeffrey Pine	Likely	Desert Riparian	Excluded
Juniper	Likely	Desert Wash	Excluded
Klamath Mixed Conifer	Likely	Dryland Grain Crops	Excluded
Lodgepole Pine	Likely	Estuarine	Excluded
Low Sage	Likely	Evergreen Orchard	Excluded
Mixed Chaparral	Likely	Fresh Emergent Wetland	Excluded
Montane Chaparral	Likely	Irrigated Grain Crops	Excluded
Montane Hardwood	Likely	Irrigated Row and Field Crops	Excluded
Montane Hardwood-Conifer	Likely	Lacustrine	Excluded
Montane Riparian	Likely	Orchard - Vineyard	Excluded
Perennial Grassland	Likely	Palm Oasis	Excluded
Pinyon-Juniper	Likely	Pasture	Excluded
Ponderosa Pine	Likely	Rice	Excluded
Red Fir	Likely	Riverine	Excluded
Redwood	Likely	Saline Emergent Wetland	Excluded
Sagebrush	Likely	Urban	Excluded
Sierran Mixed Conifer	Likely	Vineyard	Excluded
Undetermined Conifer	Likely	Water	Excluded
Undetermined Shrub	Likely	Wet Meadow	Excluded

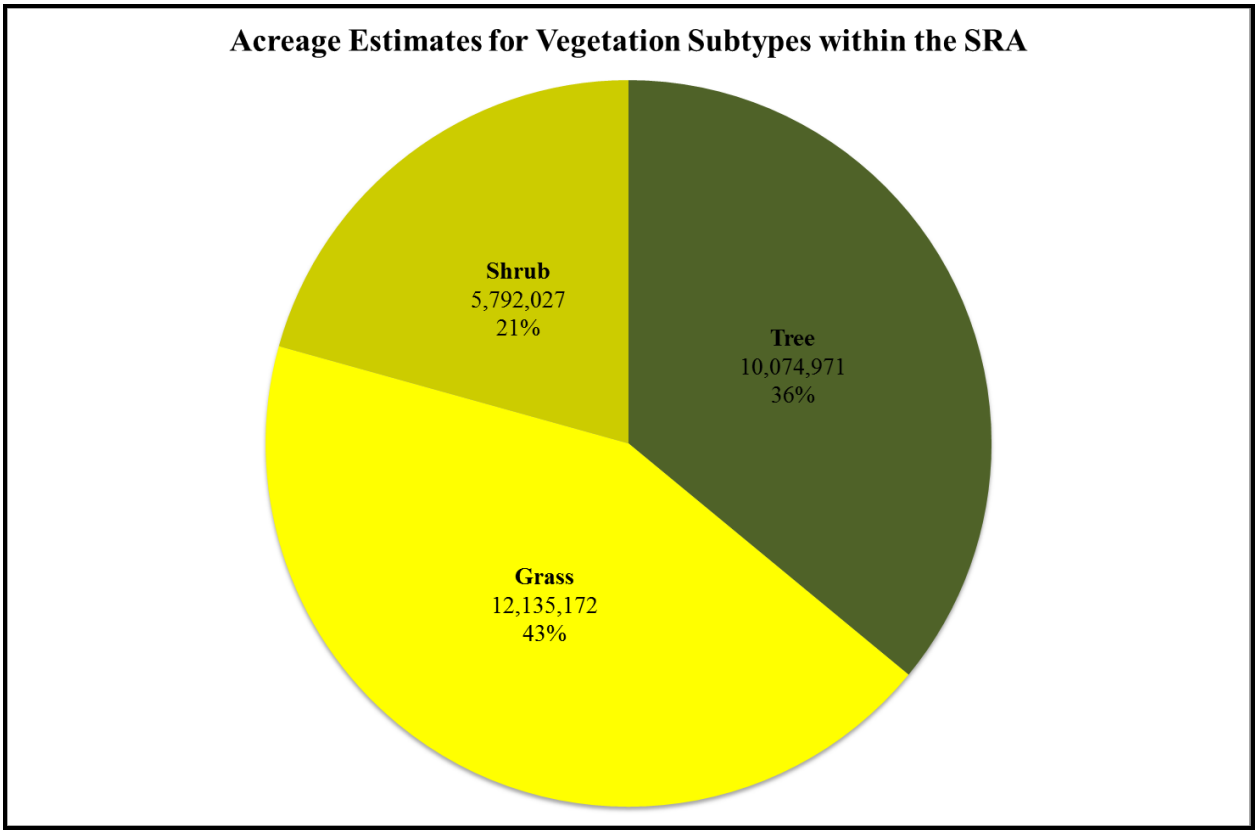


Figure 2.2-5 Acreage estimates for dominant vegetation formations in SRA

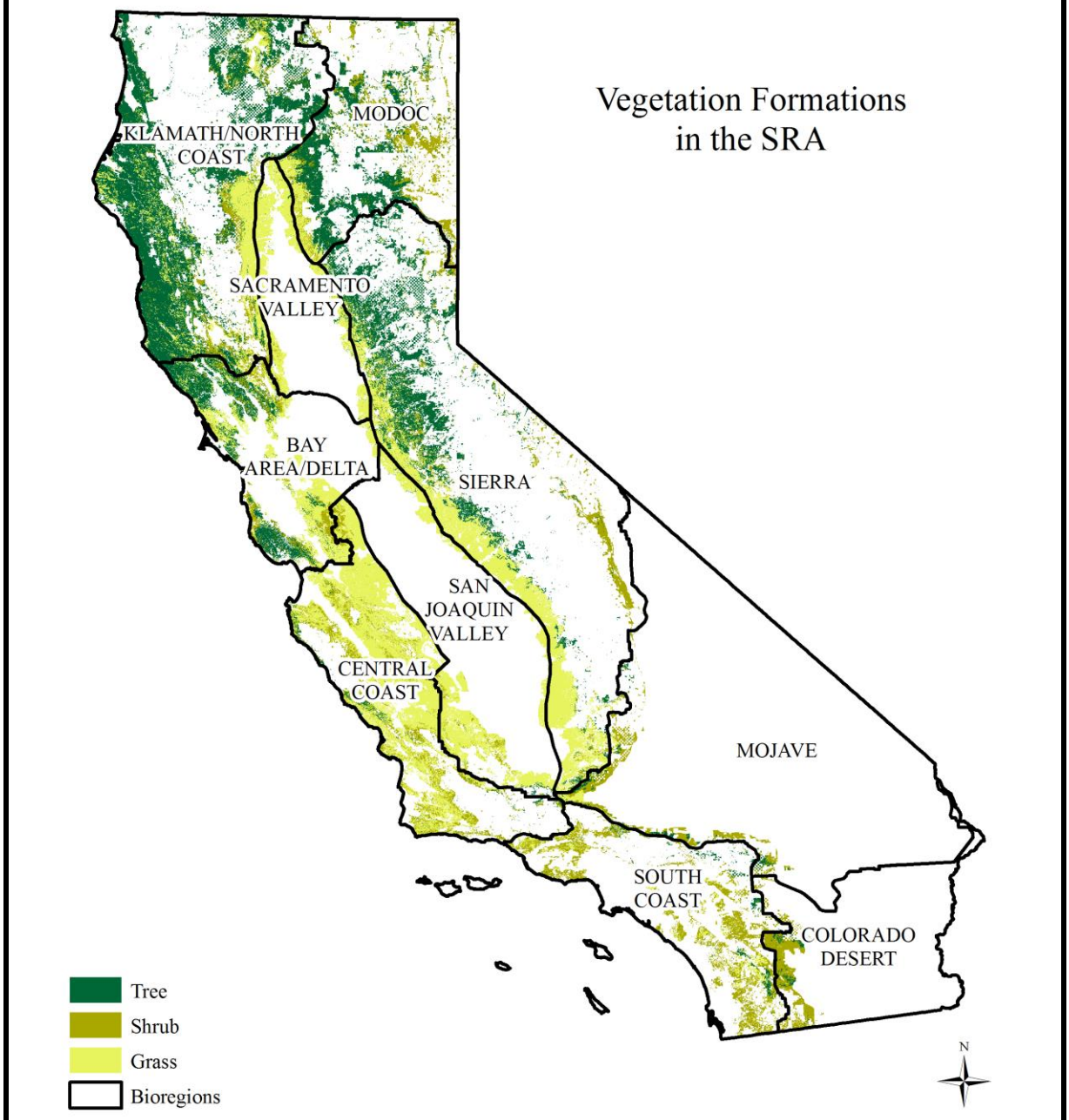


Figure 2.2-6 Three dominant vegetation formations located within SRA under this Program EIR

2.2.2.1 Fire Behavior

Quantifying the potential fire behavior across the landscape is the first step in developing a comprehensive fuel management strategy. FRAP developed a **Fuel Rank** assessment product for the 2010 Strategic Fire Plan for California to identify and prioritize the location of fuel reduction projects to ultimately reduce the potential for large wildland fires. The fuel ranking methodology assigns ranks based on the expected fire behavior for unique combinations of topography and vegetative fuels under specific weather conditions (wind speed, humidity, and temperature). The procedure makes an initial assessment of rank based on an assigned fuel model and slope. From fire behavior modeling results, surface ranks can be assigned according to the rate of spread and heat per unit area associated with each unique fuel model-slope combination. The amount of ladder and/or crown fuel present is used to adjust the rank to arrive at a final fuel rank.

Of the three determinants that drive fire behavior – topography, weather, and fuels – only fuels can be modified in order to change fire behavior. When fuels are modified, two important fire behavior charactersitics are altered: fire line intensity and rate of spread. By moderating the fuels, suppression activities become safer for fire fighters and fire control effectiveness would increase and ultimately become more successful in keeping fires small and more controllable. In turn, this should result in fewer costly large fires. Concurrently, reducing intensity will reduce severity, thus minimizing losses to values at risk. Chapter 4 (4.1.4.1) provides a summary of Fuel Rank acreages within the SRA for each bioregion. It should be noted that of the total SRA acreage, approximately 69 percent is classifed as High or Very High hazard areas. Within the WUI, projects would be designed to reduce areas of High and Very High Fuel Ranks while maintaining those areas that remain in the Moderate class. Figure 2.2-7 illustrates this relationship across California.

Each WHR has a characteristic fuel model (see Sections 4.1.3.1 through 4.1.3.3) which is a critical element in determining fuel rank. If we lump each WHR into an associated vegetation formation, we can infer general relationships between the vegetation formation, fire behavior, and the likelihood of successful fire suppression activities. This relationship is illustrated in Table 2.2-3, which shows the probability of success for initial and extended attack as a function of fuel rank. Through the use of appropriate vegetation treatments, the VTP can increase the likelihood of suppression activities by reducing fuel ranks at the project scale.

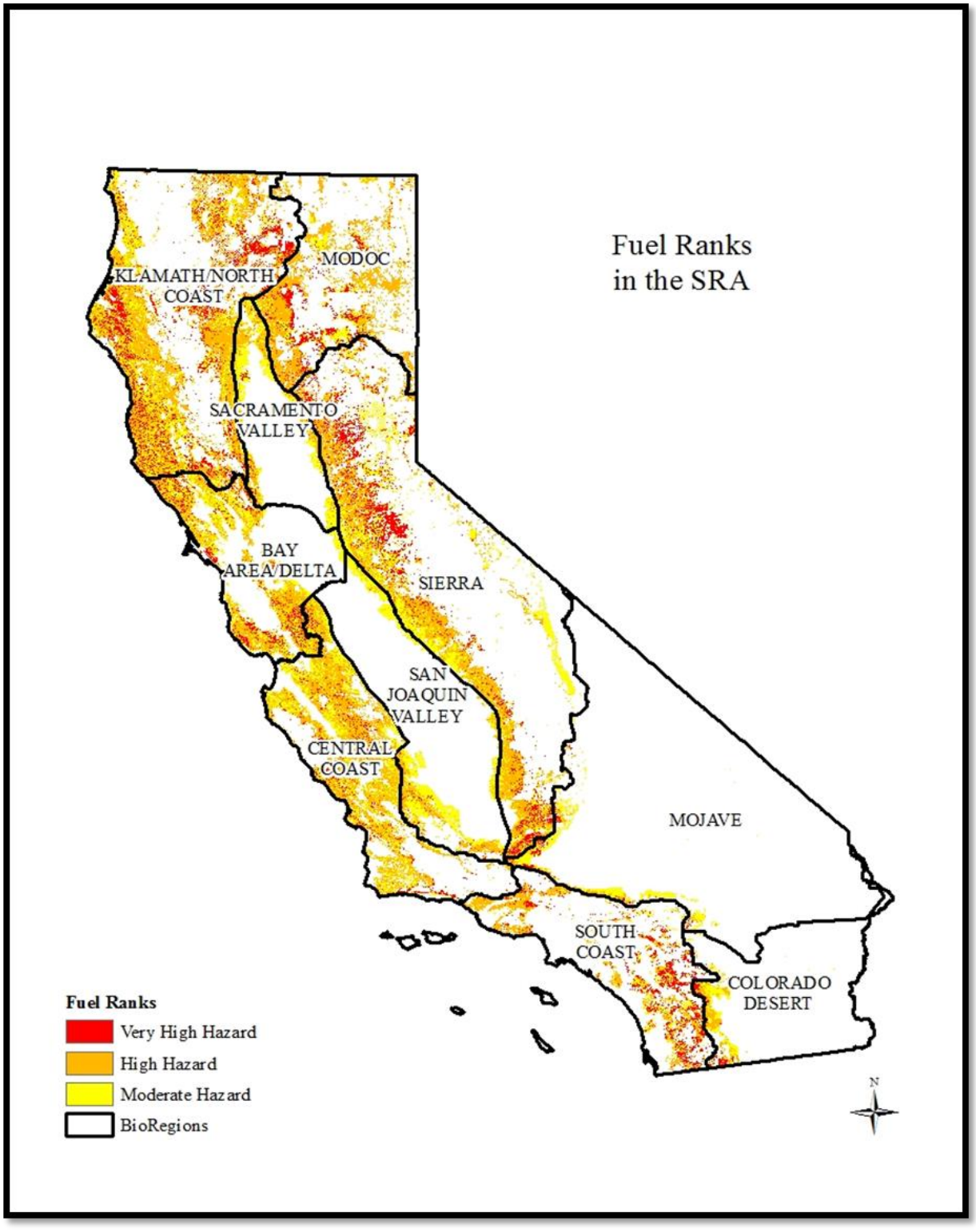


Figure 2.2-7 Fuel Rank Potential Fire Behavior in the SRA

Table 2.2-3 Quantification of suppression effectiveness in different vegetation types

Life Form	Grass Dominated	Shrub Dominated		Tree Dominated	
		Young	Old	Litter	Crown
Subtype	Annual Perennial	General Shrubland Desert Shrubland		Hardwood forests Long-needled conifers Short-needled conifers	
Expected Fire Behavior	Surface Fire: expected rate of spread is moderate to high, with low to high fire intensity (flame length)*	Surface/crown fire: expected rates of spread and fire line intensities (flame length) are moderate to high*	Crown fire: control efforts at the head of the fire are ineffective**	Surface (litter): spread rates are low to moderate, fire line intensity (flame length) may be low to high**	Crown fire: control efforts at the head of the fire are Ineffective**
Fuel Rank	**Probability of Initial Attack/Extended Attack Success**				
Very High	Less Likely	Not Likely	Not Likely	Highly Likely	Not Likely
High	Likely	Likely	Not Likely	Highly Likely	Not Likely
Moderate	Highly Likely	Very Likely	Likely	Highly Likely	Not Likely

*Probability of success is driven by flame length and rate of spread (NWCG, 2014)

** NWCG Fireline Handbook Appendix B (2006)

2.2.2.2 Departure from Fire Regime

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee, 1993; Brown, 1995). Coarse scale definitions for natural (historical) fire regimes have been developed by Hardy et al. (2001) and Schmidt et al. (2002) and interpreted for fire and fuels management by Hann and Bunnell (2001). Following the National Fire Plan concepts, FRAP integrates data specific to California for describing ecosystems and fire-related metrics used in other analyses to specifically define and describe fire-related risks to ecosystems. Fundamental to this idea is that current expected fires are compared to historic fire regimes with respect to fire frequency[3], size and patchiness, and effects on key ecosystem elements and processes. Thus, an area can be classified based on current vegetation type and structure, an understanding of its pre-settlement fire regime, and current conditions regarding expected fire frequency and potential fire behavior.

[3] Median fire return intervals by WHR and vegetation subtypes are summarized in Section 4.1.3.1 through 4.1.3.3.

As a result of these efforts, **Condition Classes** were defined as the relative risk of losing key components that define an ecosystem (Hardy et al., 2001). The conceptual basis is that for fire-adapted ecosystems, much of their ecological structure and processes are driven by fire. Also, disruption of fire regimes leads to changes in plant composition and structure, uncharacteristic fire behavior, opportunities for pests, altered hydrologic processes, and increased smoke production (Table 2.2-4).

Table 2.2-4 Condition Class definitions used in assessment of risks to ecosystem health

Condition Class	Departure from Natural Regimes	Vegetation Composition, Structure, Fuels	Fire Behavior, Severity, Pattern	Disturbance Agents, Native Species, Hydrologic Functions	Increased Smoke Production
Low Cond Class 1	None, Minimal	Similar	Similar	Within Natural Range of Variation	Low
Moderate Cond Class 2	Moderate	Moderately Altered	Uncharacteristic	Outside Historic Range of Variation	Moderate
High Cond Class 3	High	Significantly Different	Highly Uncharacteristic	Substantially Outside Historic Range of Variation	High

Condition classes are assigned based on current vegetation type and structure as defined by California Wildlife Habitat Relationship type, size, and density as well as the unique combination of expected fire frequency and potential fire behavior. As such, condition class can be related back to the generalized vegetation formations.

2.2.3 PROGRAM TREATMENTS

Fuels management at the landscape scale is focused on treating fuels to either help suppression forces more easily contain fire or reduce the area burned by high-intensity fire. This is accomplished by modifying fire behavior through strategic placement and arrangement of fuel reduction treatments on the landscape (Finney and Cohen, 2003; Graham et al., 2004). To address the fuel conditions throughout the SRA, projects conducted under this VTP have been organized into three general treatments or project types. Within each of these treatment categories, a menu of treatment activities (see Section 2.4 below) would be implemented to modify the fuels within the landscape.

1) **Wildland-Urban Interface:** projects would be focused in WUI-designated areas, would generally consist of fuel reduction to prevent the spread of fire between structures and wildlands.
2) **Ecological Restoration:** projects would generally occur outside of the WUI in areas that have departed from the natural fire regime, would generally consist of restoring the fire resiliency by promoting native fire-adapted plant communities.

3) **Fuel Breaks:** projects would consist of converting the vegetation along strategically located areas to support fire control activities.

The background analysis used in the definition of the WUI, Ecological Restoration, and Fuel Break categories is included in Chapter 4.1.4.

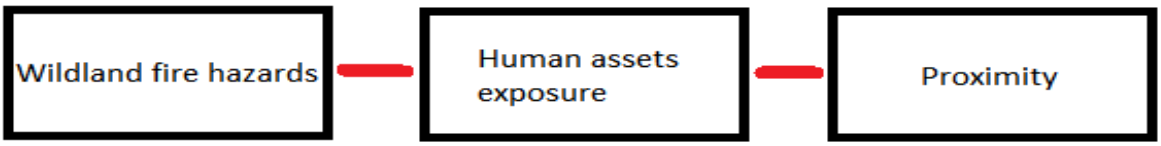
Case Study Examples – Throughout the remaining chapter there are nine case studies examining vegetation treatments that were used to help control the impacts of wildfires. There are two additional case studies that discuss the utilization of pre-planning and community involvement as a wildland firefighting strategies and their impacts.

Wildland-Urban Interface (WUI)

The WUI is the geographical overlap of two diverse systems, wildland and structures. At this interface, the buildings and vegetation are sufficiently close that a wildland fire could spread to a structure or a structure fire could ignite wildland vegetation. Treatments would focus on modifying fire behavior by breaking up the horizontal and vertical continuity of fuels while also considering crown fire flame size, ignition sources, and potential spread rate, including public and firefighter safety.

Beginning in 2001, CAL FIRE FRAP began developing maps of the WUI as part of a requirement for states under the National Fire Plan (USDA and USDI, 2000). The mapping efforts resulted in the original compilation of the Communities at Risk for California list, published in the National Registrar. Since that time, the principle concepts utilized by CAL FIRE FRAP have become standardized in numerous national-level mapping efforts.

There are three main components used in combination to arrive at a spatially definable area to define the wildland-urban interface and used to provide the geographical landscape for modeling purposes: wildland fire hazards, human assets exposure, and proximity. These three building blocks contain specific information supporting the



development of strategies to prioritize mitigation efforts and contribute to a risk assessment of potential loss from wildland fire. For this assessment, the WUI footprint was developed using a multitude of inputs creating a zone that fluctuates between 0.5 and 1.5 miles (See section 4.1.4.2). Area identified as WUI for the purposes of this assessment are shown in Figure 2.2-8.

Projects implemented under the WUI treatment type would take place outside of the 100 foot defensible space requirements under PRC 4291 and within the outer edge of the defined WUI area as described in Chapter 4.1. The location and type of project must be included in a local Unit Fire Plan. If a **WUI pre-incident plan** exists as per CAL FIRE's Wildland Urban Interface Operating Principles (CAL FIRE, 2014), projects shall be consistent with:

- The strategy and tactics employed in the target area (e.g., perimeter control adjacent to structures)
- Likely scenarios (e.g., evacuation, road access, protecting critical infrastructure, etc)
- Likely fire behavior

While participation in the Vegetation Treatment Program is completely voluntary, the successful placement of projects will depend on the public's involvement. Unit Fire Plans also function as Community Wildfire Protection Plans (CWPP), and may contain all or some of projects outlined in smaller CWPPs throughout the Unit/Contract County. CWPPs have several requirements to guarantee public participation and sign-off in the creation of the plans, which ensures public input into the selection of VTP projects. Additional VTP projects may also be proposed through Fire Safe Councils or other community groups in coordination with the local Unit/Contract County. Consequently, public feedback helps shape the location and type of vegetation treatment projects.

The focus of these projects is to modify fuels in order to directly protect communities and assets at risk from potential damage from wildfires originating in the adjacent wildlands as well as to protect the wildlands from fires transitioning to the wildlands from human infrastructure. **WUI treatments would focus on reducing fuels with fuel rank designations of high to very high**. WUI areas could also include Ecological Restoration and Fuel Break treatment types to achieve a reduced risk wildfire hazards within the WUI. Treatment prioritization within the WUI would be concepts illustrated in Figure 2.2-9.

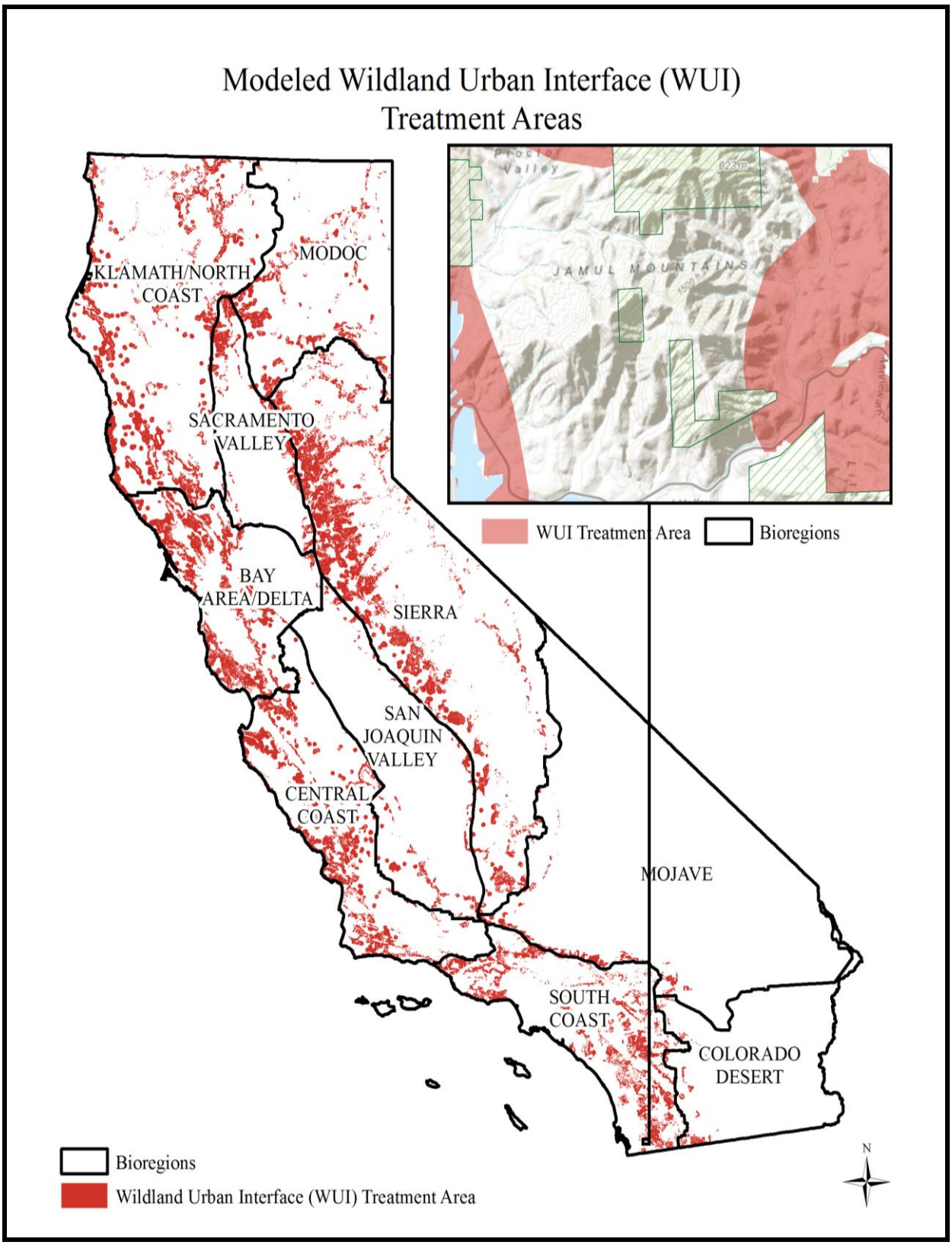


Figure 2.2-8 Wildland Urban Interface within the SRA.

WUI treatments also serve as areas for firefighter deployment when engaging an active wildfire. Although the protective clothing for wildland firefighters provides thermal protection against external heat sources, it is not without its limits, and has gone through several iterations over time to address firefighter injuries. A Wildland Firefighting Hazard & Risk Assessment was conducted through the CAL FIRE Personal Protective Equipment Working Group in 2010 and stated:

> Firefighters should not be expected to perform work in conditions where they are "experiencing" convective and/or conductive heat. These conditions can quickly exceed the limits of protective clothing and may also compromise the airway. Firefighters should be trained to change tactics or move to safer location (distance) when they are experiencing heat energy in the form of convection and/or conduction. Protective clothing should provide a reasonable amount of protection (time) to allow the firefighter to move out of the convective or conductive heat condition.

Nomex and other protective clothing are one component of firefighter safety; having fuel breaks and other areas to deploy during a wildfire is an advantage both tactically and for firefighter safety.

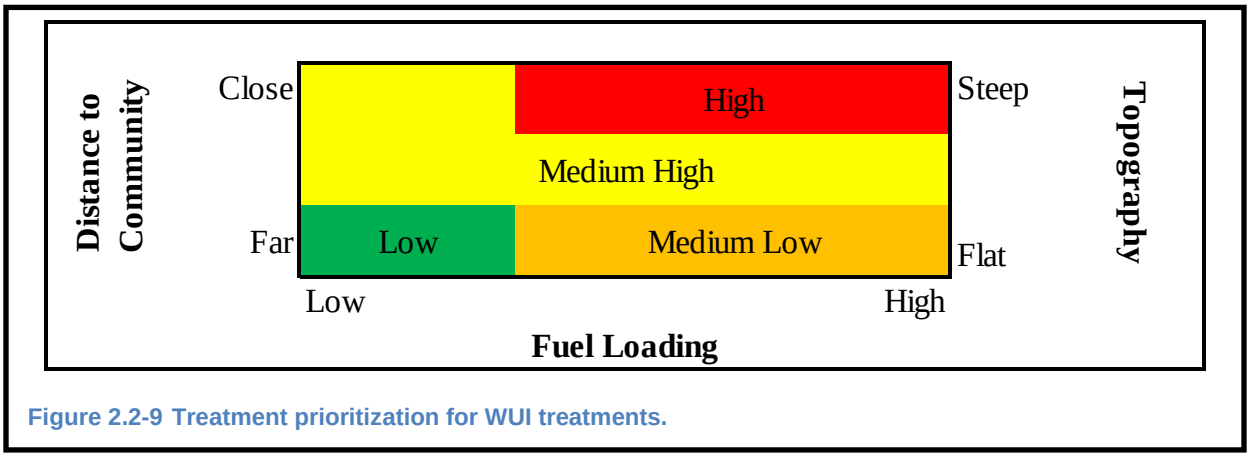


Figure 2.2-9 Treatment prioritization for WUI treatments.

Example of a WUI project:

This project area consists of oak woodlands, low elevation pockets of Ponderosa Pine, and chaparral vegetation with a large number of homes scattered throughout. The Auburn Lake Trails subdivision is situated on a plateau that rests along the south rim of the American River Canyon over the location that was to be a lake created by the Auburn Dam. This subdivision was planned to be a lake side development. At this time, the Auburn Dam project is likely to never be completed, and even if it were, vegetation treatment would still be necessary due to the ignition potential posed by lake side access by recreational users.

The areas directly below the subdivision are covered with heavy vegetation on slopes that are extremely steep. To complicate things, the area is a State Recreation Area with heavy use by river rafting enthusiasts, hikers, bikers, and horse back riders. The ignition potential below the subdivision is extreme as evidenced by the approximately 600 acre Mammoth Bar fire of July 16, 2009. The area has been identified by the local CAL FIRE Battalion Chief as a high priority for fuels management in the Unit Fire Plan.

A primary goal of this project is to maintain and continue to create a Shaded Fuel Break on private and publicly owned lands along the rim of the American River Canyon along topographic features that will allow fire suppression operations to safely occur in the event of wildfire. The Bureau of Reclamation, California Department of Parks and Recreation, and the California Department of Forestry and Fire Protection (CAL FIRE) will be cooperating on the development of this project. CAL FIRE is preparing this VMP to address CEQA on the privately owned lands that will be included in this project. Those lands that are managed or owned by other agencies will be covered by that agencies respective environmental planning process.

A minimum 300' wide shaded fuel break will be maintained and constructed along the edge of the subdivision, utilizing topography as the primary criteria for determining the final location of the fuel break. CAL FIRE inmate crews will be utilized from the Growlersburg Camp to complete the work. Fuel break maintenance and construction will be done by hand and any resulting material will be pile burned or chipped on site by the hand crew.

The Objectives of this WUI project:

1. To reduce wildfire hazard.
2. Maintain & construct a perimeter shaded fuel break on private lands at a location that will provide the maximum safety and benefit to fire suppression operations in the event of wildland fire.
3. Protect residential structures from the wildland fire threat that exists in the area.

CASE STUDY– WUI

Ranch Fire

December 21, 1999

Ventura County's Ojai Valley has long been considered an area especially susceptible to wildland fire. The valley is known for its high winds and dense vegetation. These conditions were made worse in the winter of 1999 when a lack of rainfall made high intensity wildland fire even more likely.

On the night of December 21, 1999 firefighters got the call that they had long been expecting: fireworks had ignited the Ranch Fire in the upper Ojai Valley and in its path lay homes, schools, and agriculture. As Santa Ana winds roared through the valley, the situation looked dire and left many local residents expecting a terrible disaster to be left in the Ranch Fire's wake.

However, almost seven years earlier a process was started that would ultimately save the community and save the taxpayers millions of dollars. The Ventura County Fire Protection District's Vegetation Officer started a five-year plan to reduce the threat in areas with the greatest potential for costly damaging wildfires. A large percentage of the cost of the project was provided by the Federal Emergency Management Agency after severe firestorms ravaged areas of Southern California in 1993.

The upper Ojai Valley had specifically been included in the plan, and by the spring of 1993 a comprehensive action plan was put together with the cooperation of landowners, the U.S. Forest Service, CAL FIRE, local schools, businesses, and residents.

Cooperators used prescribed burns to create defensible space between vegetation and homes. Further vegetation was cut and stacked in many areas and was burned in low intensity prescribed fires during the winter. Maintenance of this new community protection fuel break was the next issue. Property owners fenced the area and used livestock to eat the chaparral regrowth. Almost all of the homeowners in the community pitched in by cleaning flammable vegetation from around their homes. Fire department inspectors reported 99 percent compliance with local and state fire hazard clearance laws.

During the first few hours of the incident many success stories unveiled themselves. The weed abatement and pre-fire work made the disaster much less damaging than it otherwise would have been. While 4,400 acres and one home had burned, crews were successful at saving the other 67 homes in the area. Efforts by this committee freed up fire fighting forces to attack the fire before it could enter the community of Ojai. This is an example of how insightful planning and interagency teamwork can save communities from certain destruction by wildland fire.

Ecological Restoration

Ecological Restoration is the process of re-establishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions.

Projects implemented under the Ecological Restoration designation would attempt to restore the fire resiliency associated with the specified fire-adapted plant community by renewing degraded, damaged, or destroyed ecosystems and habitats in the environment through active intervention. The location and type of project must be included in a local Unit Fire Plan. While participation in the Vegetation Treatment Program is completely voluntary, the successful placement of projects will depend on the public's involvement. Unit Fire Plans also function as Community Wildfire Protection Plans (CWPP), and may contain all or some of projects outlined in smaller CWPPs throughout the Unit/Contract County. CWPPs have several requirements to guarantee public participation and sign-off in the creation of the plans, which ensures public input into the selection of VTP projects. Additional VTP projects may also be proposed through Fire Safe Councils or other community groups in coordination with the local Unit/Contract County. Consequently, public feedback helps shape the location and type of vegetation treatment projects.

Ecological Restoration treatments include the removal of invasive or non-native species from a high or moderate condition class in (i.e., condition class 2 and 3) order to promote native fire adapted plant communities. The conceptual basis is that for fire-adapted ecosystems, much of their ecological structure and processes are driven by fire, and the disruption of fire regimes leads to changes in plant composition and structure, uncharacteristic fire behavior and other disturbance agents (such as pests), altered hydrologic processes, and increased smoke production (Table 2.2-4). This conceptual basis is illustrated in Figure 2.2-10. This treatment may also be used to maintain certain rangeland characteristics to facilitate terrestrial and aquatic ecosystem sustainability. Under the VTP, median FRIs are used to gauge the appropriate frequency of prescribed burns occurring within Ecological Restoration project types. Some vegetative communities, such as mixed chaparral and coastal scrub, are sensitive to short intervals between burns and pose a higher risk for long-term impacts such as type conversion.

Ecological Restoration projects would predominantly occur outside of the WUI in areas that have departed from the natural fire regime; however these practices may have value in the WUI. Additional analysis and review are included in Chapter 4.1.4.3.

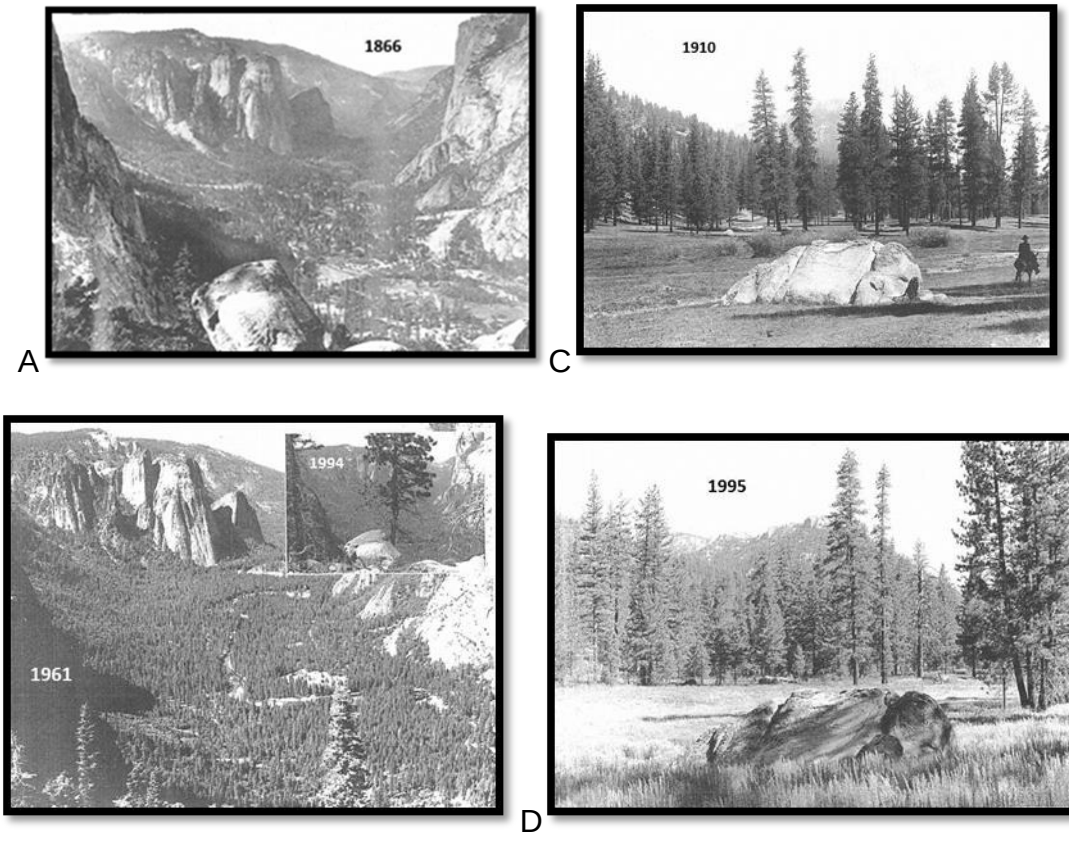


Figure 2.2-10 Photos demonstrating the concept of ecological restoration (taken from Gruell, 2001). The historic photos of Yosemite Valley (a) and Trout Meadows/Tulare County (c) indicate a condition analogous to Condition Class I, whereas the modern photos (B and D) reflect Condition Classes 2 or 3. Ecological restoration treatments would attempt to restore stand densities, fuel loading, and species composition to a condition that more closely resemble the historic photos (A and C).

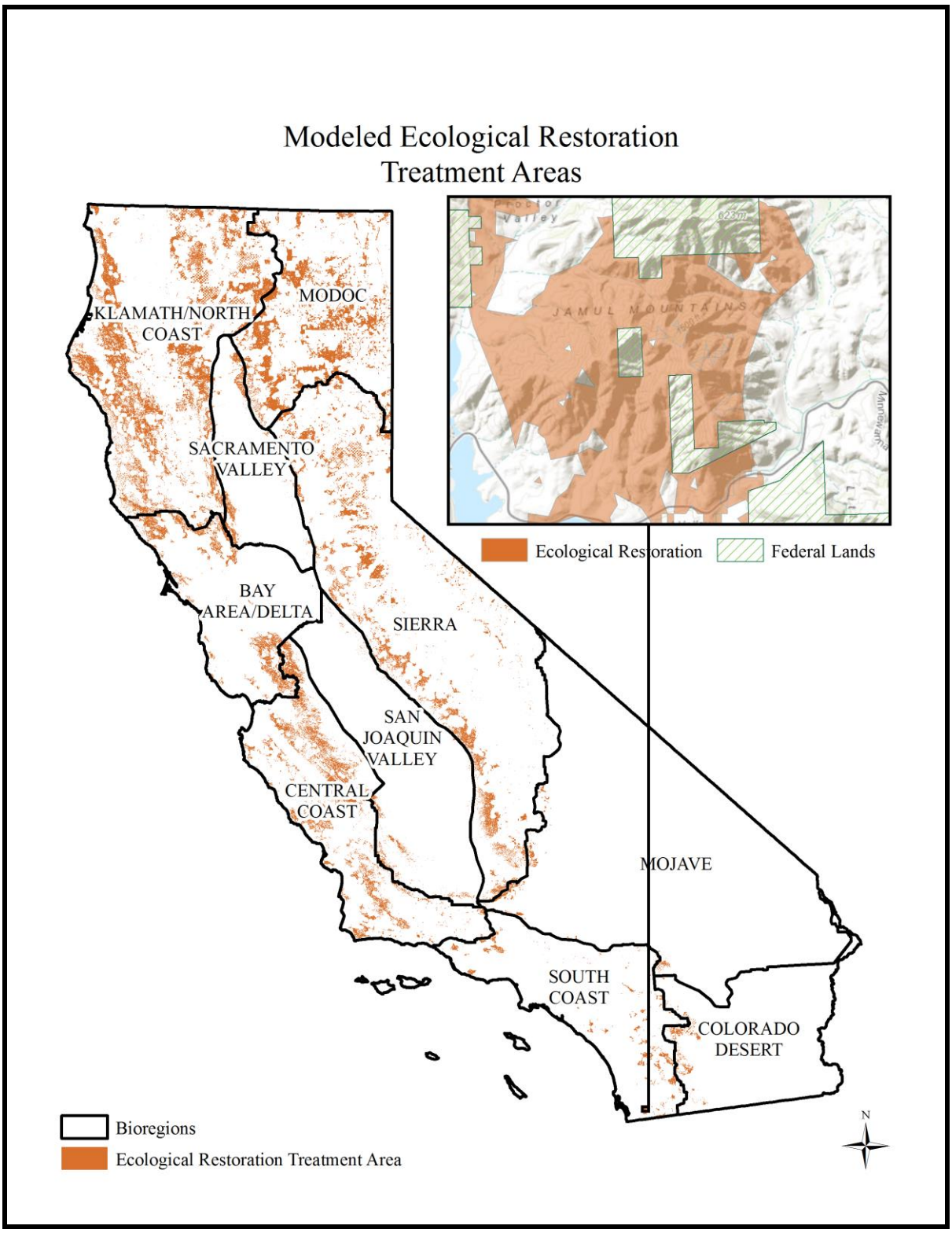


Figure 2.2-11 Ecological Restoration within the SRA.

Example of an Ecological Restoration Project:

The Big Creek VMP is an ongoing cooperative effort between CAL FIRE and the landowner to reduce fuel adjacent to the community of Hayfork. Big Creek VMP is being conducted on the Big Creek Ranch and includes a total of 542 acres of proposed fuel treatments. The treatment for the portion of the VMP was prescribed fire. Prescribed fire is the use of live fire to modify vegetation under carefully specified conditions of moisture content, weather conditions, and fire behavior (the prescription) to achieve definite management objectives. Control lines are pre-planned and constructed prior to burning operations. An Incident Commander (IC) will be identified by the Unit Chief to oversee all aspects of the prescribed burn. The firing method and firing device to be used is at the discretion of the IC.

Before treatment...

After treatment...

The Objectives for this Ecological Restoration Project:

- Cooperate with the landowner to meet their goals. Landowner goals include:
  - Protect existing oak stands by reducing understory fuel loads.
  - Encourage return of native grasses by reducing non-native invasive grasses and brush.
  - Improve grazing for livestock and wildlife.
- Reduce the fuel loading in the burn units to limit the spread of future wildfires, thus reducing the threat to life and property.
- Conduct project operations in such a manner as to protect the environmental and cultural values of the landscape.
- Train fire personnel in the safe application of prescribed burning methods and techniques.
- Reduce the threat of sediment delivery to fisheries in Big Creek and Hayfork Creek by reducing the threat of large wildfire.
- Conduct the prescribed burns in a manner to minimize smoke impacts to population centers, specifically Hayfork.

Fuel Breaks

Fuel breaks are an area in which flammable vegetation has been modified to create a defensible space in an attempt to reduce fire spread to structures and/or natural resources, and to provide a safer location to fight fire. This treatment category could be a part of a series of fuel modifications strategically located along a landscape.

The wildland fuels of California occur mainly on mountainous terrain, which increases the difficulty in controlling wildfires. Typical fuel break locations include ridgelines, along roads, or in other favorable topographic situations. Fuel breaks can provide safe access for quick manning of fire control lines. As stated previously, firefighter protective clothing has limitations on how much convection and conduction heat energy they can take. Consequently, these types of vegetation treatments can provide the necessary firefighter safety zones or immediate access to escape wildfire burn injuries.

Low-volume fuels, especially flammable grass, can be cleared quickly to widen a fire line under conditions where backfiring would be impossible in heavy fuels with high heat output. Aerial attack can also be used effectively in conjunction with fuel breaks to contain the lateral spread of an advancing wildfire.

Strategic fuel breaks may vary in character depending on their specific location, vegetation type, expected fire behavior in the immediate location, and other land management objectives relative to the area under consideration. Under critical fire weather conditions, well-located fuel breaks assist with containing lateral fire spread rather than preventing the forward spread. Strategic fuel breaks, in this context, are designed specifically to protect assets assessed as having national, state, or regional significance and, where possible, will provide essential linkages between fire control systems across the landscape. Fuel breaks must address a clear fire prevention need and be based on local activity such as ignition patterns and fire spread history. Additional principles for fuel break planning include:

- Be constructed to mitigate the loss of high value assets
- Significantly increase the chance of reducing the occurrence and impact of landscape-scale fires
- Be based on clear objectives, including acceptable fire size within a landscape unit
- Be located at the most effective position on the landscape
- Use, if appropriate, existing roads and fuel break networks
- Be constructed to minimize and/or avoid environmental impacts
- Be constructed to increase firefighter safety
- Sufficiently reviewed and adopted as a component of a Unit Fire Plan

Projects implemented under the fuel break category would consist of converting the vegetation along strategically located areas for fire control through mowing, mastication, herbicide application, and other methods. **Treatments will focus on reducing fuels in areas exhibiting condition class 2 and 3**. The location and type of project must be included in a local Unit Fire Plan. While participation in the Vegetation Treatment Program is completely voluntary, the successful placement of projects will depend on the public's involvement. Unit Fire Plans also function as Community Wildfire Protection Plans (CWPP), and may contain all or some of projects outlined in smaller CWPPs throughout the Unit/Contract County. CWPPs have several requirements to guarantee public participation and sign-off in the creation of the plans, which ensures public input into the selection of VTP projects. Additional VTP projects may also be proposed through Fire Safe Councils or other community groups in coordination with the local Unit/Contract County. Consequently, public feedback helps shape the location and type of vegetation treatment projects.

The fuel break concept is illustrated in Figure 2.2-12. Areas modeled as fuel breaks are shown in Figure 2.2-13. Additional Fuel Break analysis and review are included in Chapter 4.1.4.3.

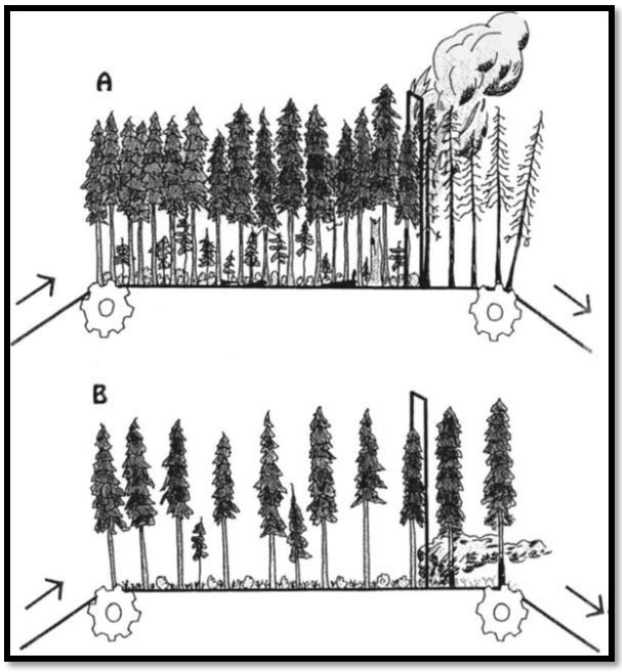
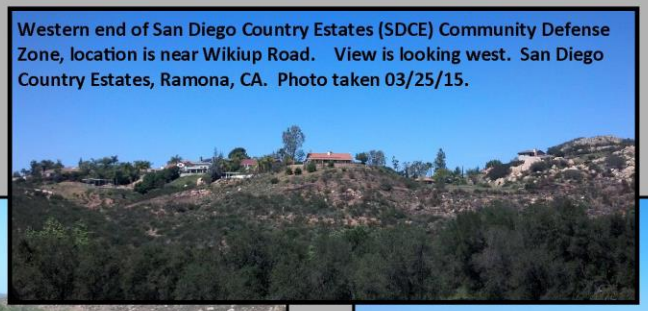


Figure 2.2-12. Critical conditions for mass flow rate can be visualized by passing a forest along a `conveyor belt' through a stationary flaming front. (A) Under severe fire weather and high rate of spread, crown mass passes through the flaming front rapidly and exceeds a critical mass flow rate, and crown fire occurs. (B) Where crown bulk density is lower under the same rate of spread, critical levels of mass flow rate cannot be obtained and the fire remains a surface fire. Lower crown fire rate of spread (i.e., lower wind speed), might also result in loss of crown fire activity. (Agee et al. 2000).



Western end of San Diego Country Estates (SDCE) Community Defense Zone, location is near Wikiup Road. View is looking west. San Diego Country Estates, Ramona, CA. Photo taken 03/25/15.

Before:
Eastern end of San Diego Country Estates (SDCE) Community Defense Zone. USFS Cleveland National Forest's San Vicente Community Defense Zone parallels (as shown on right side of photo) a portion of SDCE Community Defense Zone. View is looking west. San Diego Country Estates, Ramona, CA. Photo taken 07/31/14.

After:
Eastern end of San Diego Country Estates (SDCE) Community Defense Zone. USFS Cleveland National Forest's San Vicente Community Defense Zone parallels (as shown on right side of photo) a portion of SDCE Community Defense Zone. View is looking west. San Diego Country Estates, Ramona, CA. Photo taken 03/25/15.

San Diego Country Estates Fuel Break

The purpose of this project was to provide enhanced defensible space to homes and properties along the northern perimeter of the San Diego Country Estates (SDCE), located in the San Vicente Valley, six miles southeast of the unincorporated community of Ramona in San Diego County. The intent of this project was to reduce a potential fire's intensity, and decrease the threat of fire originating from the adjacent urban area. Requiring a collaborative approach due to the array of property ownerships the fuel break would be constructed on, the project incorporated lands owned by the Bureau of Land Management (BLM), San Diego Country Estates Association, and private landowners. Width of the proposed zone varied from 150 feet to 400 feet wide and is approximately six miles in length. The average width of the of the defense zone is approximately 200 feet wide, and increases to 400 feet wide for a distance of approximately 1,500 feet at the eastern boundary where it parallels the Cleveland National Forest's San Vicente/Barona Mesa Community Defense Zone.

Before Treatment

After Treatment

Before Treatment

After Treatment

CASE STUDY-Shaded Fuel Break

Peterson Fire

July 12, 2004

On July 12, 2004 in eastern Fresno County a wildland fire was reported. The initial attack Incident Commander arrived at the scene and found the fire rapidly spreading uphill, threatening structures above and on each flank. Reported temperature was 89 degrees Fahrenheit, wind was from the southwest at 5-11 mph, with 17% relative humidity, and fuel moistures were 4.7%. In addition, the fire was rapidly spreading towards the recently completed Cressman Road Fuel Modification Zone (FMZ), a shaded fuel break.

CAL FIRE, in cooperation with the Pine Ridge Property Owners Association, the Highway 168 Fire Safe Council, and the California Department of Corrections, developed the Cressman Road FMZ. A FMZ is an area where selected vegetation has been removed in such a way as to break the horizontal and vertical continuity of forest fuels. The Cressman Road FMZ involved 60 parcels and 57 different landowners.

The purpose of this project was to try to increase the level of safety for both residents and firefighters that may be entering and/or leaving the Cressman Road area under wildfire conditions. This increased level of safety has been achieved through the selective removal of vegetation along Cressman Road. The Cressman Road area was selected for this project because of several reasons:

1. The Fresno/Kings Unit of CAL FIRE had identified the Pine Ridge area as a priority area for fuel reduction projects. This area was selected as a priority because of its high fuel loading, its potential for a large damaging fire, and its high population density intermixed within the wildland.
2. The Highway 168 Fire Safe Council had identified the Pine Ridge area as a priority area for fuel reduction projects for similar reasons.
3. Cressman Road is a single lane road, open to the public, which accesses approximately 113 parcels and 75 residences.
4. At the initial discussion stages of this project, the Pine Ridge Property Owners Association expressed interest in and support of the proposed project.

The Incident Commander on the Peterson Fire states that the Cressman Fuel Modification Project provided him with:

- The confidence that the head of the fire would be stopped or slowed when it reached the FMZ;
- That it would serve as a safe point of attack for firefighters even at the head of the fire;
- That firefighters could “anchor-in” at the FMZ and safely make a downhill hose lay along the flank of the fire;
- Significantly reducing the number of firefighting resources ordered for the incident;
- Significantly reduced fire intensities and subsequent resource damage in the FMZ compared to the non-treated areas in the fire perimeter.

CASE STUDY-Fuel Break

Toro Creek Fire - Fuel Break Utilization

November 8, 2013

At 10:30am on November 8, 2013, CAL FIRE San Luis Obispo Unit (SLU) dispatched a full-scale wildfire response to a 20 acre fire near Toro Creek Road and Highway 41, west of Atascadero in San Luis Obispo County. This area is characterized as mountainous terrain that is heavily covered in brush, set within the northwestern tip of the Los Padres National Forest.

During the operational planning of this fire, the West Atascadero Wildland Fire Pre-Plan map created by the SLU Pre-Fire Division was utilized. The Incident commander successfully utilized this map and explained that the map helped in "gathering situational awareness on the same operating plan."

Another equally important component in this success story was the presence of the West Atascadero Fuel Break which was completed in 2012 just north of the Toro Fire location. This fuel break was created under the CAL FIRE HFT2 grant program funded by the USFS. The fuel break was constructed using mastication equipment and a limited amount of hand crew work. This fuel break was used exactly as it was designed, to offer a strategic location from which to conduct aggressive control operations. Fortunately, the fire was stopped prior to reaching the fuel break, because the fuel break providing easier access to the fire location. Consequently, suppression resources, especially dozers, could quickly access the ridge on the east side of the fire and build a control line down the gas line. The local knowledge gained from building the fuel break and having accurate maps and firsthand knowledge of exactly how to safely and quickly access this area was why the fire was held to just 51 acres. Were it not for the existence of the fuel break and the knowledge of the local road system, the dozer line would not have been constructed nearly as quickly and the fire would have likely grown substantially larger.

Figure 2.2-13 Proposed Fuel Break Treatment Areas

2.2.4 PROGRAM ACTIVITIES

The WUI, Fuel Breaks, and Ecological Restoration treatment categories include the removal, rearrangement, or conversion of vegetation using various treatment "activities." These activities may be applied singularly or in any combination needed for a particular vegetation type to meet specific resource management objectives. The method, or methods, used would be those that are most likely to achieve the desired objectives while protecting natural resource values and meeting the overall program objectives. The activities are tools to alter vegetation or site condition(s) in order to achieve a desired management objective(s). During the planning phase of a VTP project, the appropriate activity would be selected that is matched to the operational needs as well as treatment constraints on the landscape (Graham et al., 2010). The activities to be implemented under the VTP are identified in Table 2.2-5.

Table 2.2-5 Proposed VTP Activities

Treatment Activities	Description	Methods of Application
Prescribe Fire: Pile Burn	Application of fire to an intentionally concentrated pile of fuels to accomplish planned resource management objectives.	Pile and burn fuels.
Prescribe Fire: Broadcast Burn	Application of prescribed fire to fuels to accomplish planned resource management objectives under specified conditions of fuels, weather, and other variables.	Understory burn within timber or oak woodlands, or broadcast treatment using fire with a control line along the perimeter.
Mechanical	Use of motorized equipment designed to cut, uproot, crush/compact, or chop existing vegetation.	Masticating, chipping, brush raking, tilling, mowing, roller chopping, chaining, skidding and removal, piling, often combined with pile burning.
Manual	Use of hand tools and hand-operated power tools to cut, clear, or prune herbaceous and woody species.	Hand pull and grub, thin, prune, hand pile, lop and scatter, hand plant, often combined with pile burning.
Prescribed Herbivory	Intentional use of domestic livestock to reduce a targeted plant population to an acceptable level and/or reducing the vegetative competition of a desired plant species.	Grazing or browsing by cattle, horses, sheep, or goats
Herbicides	Chemical applications designed to inhibit growth of vegetation.	Ground applications only, such as backpack spray, hypo-hatchet, pellet dispersal, etc.

The activities described above are techniques or tools rather than end results. Projects implemented under the VTP would use prescriptions incorporating the appropriate vegetation activities and methods described above in order to create specific project results, such as shaded fuel breaks, fuel reduction zones, or improvement of browse or forage for wildlife or domestic stock. The VTP would allow herbicide treatments on the landscape, subject to the landscape constraints and the specific project requirements pertaining to herbicide application described below. Detailed descriptions of Program Activities are found in Chapter 4.1.5.

The number and type of vegetation activities would be selected based on a number of parameters, which may include, but are not limited to:

- Potential for significant adverse impacts;
- Ability and willingness of landowner to maintain treated area;
- Management program requirements or objectives for the site;
- Historic and current conditions;
- Opportunities to prevent future problems;
- Opportunities to conserve desirable vegetation and wildlife habitat;
- Effectiveness and cost of the treatment methods and follow-up maintenance treatments;
- Available funding;
- Success of past treatments, or treatments conducted under similar conditions;
- Recommendations by local experts;
- Input from local community;
- Characteristics of the target plant species, including size, distribution, density, life cycle, and life stage during which the plants are most susceptible to treatment;
- Non-target plant species potentially impacted by the treatment;
- Fuel configuration (amount, arrangement, and size classes);
- Primary land use (e.g., WUI, forestry, range, and open space);
- Accessibility of the treatment area;
- Soil characteristics of the treatment area;
- Weather conditions at the time of treatment, particularly wind speed and direction, precipitation prior to or likely to occur during or after application, and time of year;
- Proximity of the treatment area to sensitive areas, such as wetlands, streams, or habitat for plant or animal species of concern, rare plants and habitat structure vital to species survival and reproduction, air and water quality, soil productivity and cultural resources;
- Need for subsequent re-treatment;
- Maintenance of prior treated area;
- Size of the target area; and
- Topography, slope, and aspect of the treatment area.

These parameters would be considered before activity methods are selected. In addition, prior to any vegetation activities or ground disturbance occurring, CAL FIRE would verify that any specialists and/or databases for sensitive areas/species are consulted and reviewed regarding the project area. These notifications would be identified as part of the PSA. Furthermore, the project sites would be surveyed for listed, state-candidate, state/federal threatened or endangered species, rare plants, and for evidence of cultural, or prehistoric sites. The results of these surveys would also be included within the VTP PSA (Chapter 7).

Initial activities and follow up maintenance within specific vegetation types would vary depending on the ecological characteristics of the vegetation types, the objective(s) of the treatment, and funding. In general, all vegetation types require follow up maintenance to meet long-term vegetation management goals. The type of follow up treatment and interval between treatments would depend on site conditions and project objectives. The discussion of maintenance in further discussed in Section 4.1.5.7.

2.3 SCOPE OF THE VTP

Over a ten year period, CAL FIRE would implement vegetation treatment activities on approximately 60,000 acres per year with a total of 600,000 acres treated over the ten-year period. Within a ten-year period it is estimated that there would be approximately 2,3010 projects implemented – approximately 231 projects per year at an average project size of 260 acres.

The above annual rate of treament and total acres treated is included in the analysis presented in this Program EIR. However, the actual acres treated annually in any region will vary year-to-year based on several factors, such as the number of willing landowners, funding ability, and access constraints. In addition, it is expected that the ten-year total acreage treated would never all occur within one year or any one region, but would be distributed across several years and several regions. Finally, if the acreage being treated in a region exceeded 110 percent of the projected yearly average by bioregion (see Table 2.5-6), then further analysis would be required at the project level to ensure that significant environmental effects do not occur. This determination would be made by the Sacramento CEQA Program Coordinator.

2.3.1 GEOGRAPHIC EXTENT OF THE VTP

The environmental setting of the fuel landscape that could be modified by VTP activities is diverse, from conifer and hardwood forest and woodlands in mountain and coastal areas; to shrub and herbaceous rangelands in the south coast, north interior, and central valley; to desert habitats in the southeast (FRAP, 2010). Covering such an

extensive and heterogeneous region, VTP projects would need to reflect the treatment needs of the vegetation at the local and regional levels.

Nearly all VTP projects would occur on privately owned lands. Of the over 80 million acres of land in California, approximately 31 million acres fall within CAL FIRE's SRA. Table 2.1-1 shows the total area of land cover type by owner group. These lands are managed for a variety of purposes, including recreation, open space, and ecological services and goods.

Table 2.3-1 Area of land cover type by owner group (acres in thousands) (FRAP, 2010)

Vegetation Type	Private	USFS	BLM	NPS	Other Public	NGO	Total*
Conifer Forest	6,653	10,762	345	1,106	434	34	19,335
Hardwood Forest	2,828	1,305	194	104	151	12	4,594
Conifer Woodland	466	989	469	317	137	21	2,399
Hardwood Woodland	4,296	284	193	19	456	45	5,292
Shrub	4,842	5,806	2,353	282	1,180	60	14,522
Herbaceous**	9,525	376	433	82	831	159	11,407
Desert	3,540	137	10,450	4,772	4,325	27	23,251
Total	**32,150**	**19,659**	**14,437**	**6,682**	**7,514**	**358**	**80,800**

*Totals may not add up due to rounding **Includes wetlands

2.3.2 TREATABLE AREA

Because the scale of an individual VTP project is ultimately determined by local and site-specific objectives and constraints, an evaluation of program scale is an inherently hypothetical exercise. This sub-section provides a good faith estimate of the scale of treatable acres under the VTP based on:

1. The area available for treatment under the VTP's three basic treatment categories outlined in Section 2.3.
2. The scale of previous vegetation management activities.
3. Assumptions regarding increased work capacity for doing more vegetation treatment projects.

SRA accounts for over 31 million acres in California, but not all of the area is appropriate for the three basic treatment categories outlined in Section 2.3. The total land area designated as a potential WUI, Fuel Break, or Ecological Restoration treatment area is approximately 24 million acres (Table 2.5-1), or 78 percent of the SRA. Approximately 50 percent of the acreage is within the proposed WUI treatment category, with the majority of the WUI acreage occurring in the Sierra Nevada and

Klamath/North Coast bioregions, respectively. The Ecological Restoration category accounts for approximately 36 percent of the available acreage (Table 2.5-1); with most of the acreage occurring in the Klamath/North Coast, Modoc, and Sierra Nevada bioregions, respectively. The Fuel Breaks category makes up the smallest proportion of the treatments, accounting for only 14 percent of the area available for treatment.

Table 2.3-2 Acreage available for treatment by treatment type within each bioregion

Bioregion	WUI	Fuel Breaks	Ecological Restoration	Total by Bioregion
Bay Area/Delta	1,478,478	357,587	552,079	**2,388,144**
Central Coast	1,597,985	511,340	1,117,229	**3,226,555**
Colorado Desert	119,585	227,851	91,279	**438,715**
Klamath/North Coast	2,273,106	868,110	2,953,745	**6,094,961**
Modoc	784,269	440,614	1,650,871	**2,875,754**
Mojave	267,527	709,593	111,080	**1,088,200**
Sacramento Valley	521,311	200,810	184,088	**906,209**
San Joaquin Valley	345,424	291,663	110,102	**747,189**
Sierra Nevada	2,986,664	523,617	1,536,219	**5,046,500**
South Coast	1,349,996	405,051	311,096	**2,066,144**
Total by Treatment	**11,724,346**	**4,536,236**	**8,617,787**	**24,878,369**

Tables 2.5-2 to 2.5-4 show the estimated potential treatable acres for the tree, shrub, and grass dominated vegetation subtypes described in Section 2.2 by bioregion. Table 2.5-5 consolidates the data from Tables 2.5-2 through 2.5-4 and summarizes the vegetation by treatment types. Together, these tables indicate that tree-dominated, shrub-dominated, and grass-dominated vegetation subtypes account for 60, 21, and 19 percent of the available treatable landscape, respectively.

Table 2.3-3: Available shrub-dominated acreage by bioregions and treatment type

Bioregion	WUI	Fuel Breaks	Ecological Restoration	Total by Bioregion
Bay Area/Delta	192,543	56,220	88,840	**337,603**
Central Coast	318,622	108,344	287,789	**714,755**
Colorado Desert	112,413	217,758	41,801	**371,973**
Klamath/North Coast	245,433	93,706	52,087	**391,226**
Modoc	256,274	162,586	566,836	**985,696**
Mojave	194,691	667,615	28,548	**890,853**
Sacramento Valley	3,583	2,304	718	**6,605**
San Joaquin Valley	27,145	20,580	26,306	**74,032**
Sierra Nevada	319,545	91,159	91,049	**501,752**
South Coast	958,274	294,694	247,734	**1,500,702**
Total by Treatment	**2,628,524**	**1,714,965**	**1,431,708**	**5,775,197**

Table 2.3-4: Available tree-dominated acreage by bioregion and treatment type.

Bioregion	WUI	Fuel Breaks	Ecological Restoration	Total by Bioregion
Bay Area/Delta	588,675	108,736	247,734	**945,144**
Central Coast	52,272	11,457	54,482	**118,211**
Colorado Desert	2,806	9,328	48,840	**60,975**
Klamath/North Coast	1,545,973	608,831	2,558,494	**4,713,298**
Modoc	414,674	235,654	1,032,694	**1,683,021**
Mojave	40,905	26,068	62,050	**129,022**
Sacramento Valley	25,443	10,156	8,018	**43,617**
San Joaquin Valley	9,439	5,105	14,101	**28,645**
Sierra Nevada	1,436,767	203,453	878,311	**2,518,532**
South Coast	111,117	35,727	32,844	**179,687**
Total by Treatment	**4,228,070**	**1,254,514**	**4,937,567**	**10,420,152**

Table 2.3-5: Available grass-dominated acreage by bioregion and treatment type

Bioregion	WUI	Fuel Breaks	Ecological Restoration	Total by Bioregion
Bay Area/Delta	697,260	192,632	215,505	**1,105,397**
Central Coast	1,227,091	391,538	774,959	**2,393,588**
Colorado Desert	4,366	764	637	**5,767**
Klamath/North Coast	481,700	165,573	343,164	**990,437**
Modoc	113,321	42,375	51,341	**207,037**
Mojave	31,932	15,910	20,482	**68,324**
Sacramento Valley	492,285	188,351	175,351	**855,987**
San Joaquin Valley	308,839	265,978	69,695	**644,512**
Sierra Nevada	1,230,353	229,006	566,858	**2,026,217**
South Coast	280,605	74,630	30,519	**385,754**
Total by Treatment	**4,867,752**	**1,566,758**	**2,248,511**	**8,683,021**

Table 2.3-6 Available VTP treatment acreage within each vegetation type

Vegetation Type	Treatments (acres)		
	WUI	Fuel Break	Ecological Restoration
Tree dominated	**4,228,070**	**1,254,514**	**4,937,567**
Shrub dominated	**2,628,524**	**1,714,965**	**1,431,708**
Grass dominated	**4,867,752**	**1,566,758**	**2,248,511**

2.3.3 SCALE OF PAST TREATMENTS

Annual records of treated acreage by Unit/Contract County from the 1996/1997 to 2013/2014 fiscal years indicate an average of approximately 14,000 acres of lands are treated per year under CAL FIRE's current VMP. The annual treated acreage statewide ranged from a low of 3,246 acres in the 2013/2014 fiscal year to a high of 50,867 acres in the 1996/1997 fiscal year and indicates a significant decrease in treated acreage over time. However, the dataset suffers from possible quality control/quality assurance issues, as 40 percent of the tabulated data are listed as zeros or are blank, and it is unclear whether the reported acreage was for prescribed burning only or included additional vegetation management projects. Years with more complete reporting (e.g., 1996-2004) indicate an annual average of approximately 23,000 treated acres.

Unit and Contract County pre-fire engineers (PFEs) were contacted via email to determine their capacity for conducting vegetation treatment activities given current staffing levels and constraints (e.g., available burn days). Nine PFEs responded to the

information request, with estimated annual treated acreage ranging from 600 to 2,905 acres per year. The average annual treated acreage reported by Unit or Contract County PFEs was approximately 1,500 acres. If this average value is multiplied by the 27 Units and Contract Counties, the estimated annual statewide acreage that could reasonably be treated is approximately 40,000 acres per year.

2.3.4 PROJECTED SCALE OF VTP

It is reasonable to expect CAL FIRE would increase the annual acreage treated under the VTP by 100 percent when compared to historic treatment acreages under the existing VMP for a number of reasons. First, the limited scope of the existing VMP, which is the primary CEQA mechanism CAL FIRE uses for implementing fuels management projects in shrub and grass fuel types, excludes forested landscapes. As a result, fuel reduction projects occurring within forested fuel types have not been represented under the historic VMP annual treatment acreage figures. Because the proposed VTP scope includes all vegetative fuel types within SRA, including forested fuel types, fuels management projects occurring beyond the scope of the current VMP program could now be accounted for under the proposed VTP. Secondly, replacing the costly, time consuming, and repetitive process of preparing multiple CEQA documents for projects located in forested fuel types with this Program EIR would result in a more efficient use of staff time and finances leading to CAL FIRE's ability to treat additional acres.

Thirdly, treatment options, such as mechanical mastication and the use of herbicides, are options now included under the VTP which were not available to CAL FIRE under existing EIRs. For example, CAL FIRE routinely engages in mastication projects by utilizing Mitigated Negative Declarations or EIRs beyond existing CAL FIRE environmental documents. Mechanical fuel reduction projects, which treat large areas and are favorable when the risk of an escaped prescribed fire may exist, would now be accounted for under the VTP. Additionally, herbicide use, which is a cost effective fuel management option that can be used for a variety of applications, has been largely unavailable under existing CAL FIRE environmental protocols. The inclusion of new treatment options would add flexibility and improve efficiency, which ultimately translates to a greater ability to treat additional acres compared to existing conditions.

Fourth, there are new funding sources available that would allow CAL FIRE to increase treated acres. A variety of grant programs have developed in recent years that specifically relate to fuels management. The significant increase in available grant funding statewide combined with the increase in CAL FIRE staffing would provide additional resources to implement VTP projects.

Considering the levels of historic annual treatment acreage through the CAL FIRE's VMP (i.e., approximately 20,000 acres) and the information submitted by CAL FIRE Units regarding the expected increase in project acres utilizing this VTP (i.e., approximately 40,000 acres), the average between the two values is approximately 30,000 acres per year. With the combination of an expanded VTP scope, the inclusion of project acreage historically outside the scope of the existing program, the addition of treatment options, and an increase in both funding and staff, it is reasonable to assume that the annual acreage treated would increase by a factor of two. Thus, an average annual treated acreage for the VTP is projected to be 60,000 acres, and the estimate of acres treated would be approximately 600,000 acres over a 10-year period.

The spatial distribution of the projects implemented by the proposed VTP is likely to follow a pattern similar to the historic distribution of vegetation treatment projects (Table 2.5-6). As such, the total treated acreage would likely be highest in the Sierra Nevada, Central Coast, and Klamath/North Coast bioregions, respectively. Treated acres would likely be lowest in the Mojave, San Joaquin Valley, and Colorado Desert bioregions, respectively. However, the absolute magnitude of treatments by bioregion is not expected to remain static over time, and would change in response to emerging priorities and environmental constraints.

Table 2.3-7 Proposed program treatment acreage by Bioregion

Bioregion	Total Landscape Acres for Treatment	Approximate 10-Year Acreage	Approximate Annual Acreage	% of Treatable Landscape Treated per Decade	% of SRA Treated per Decade
Bay Area/Delta	2,388,144	57,596	5,760	0.23%	0.19%
Central Coast	3,226,555	77,816	7,782	0.31%	0.25%
Colorado Desert	438,715	10,581	1,058	0.04%	0.03%
Klamath/North Coast	6,094,961	146,994	14,699	0.59%	0.47%
Modoc	2,875,754	69,356	6,936	0.28%	0.22%
Mojave	1,088,200	26,244	2,624	0.11%	0.08%
Sacramento Valley	906,209	21,855	2,186	0.09%	0.07%
San Joaquin Valley	747,189	18,020	1,802	0.07%	0.06%
Sierra Nevada	5,046,500	121,708	12,171	0.49%	0.39%
South Coast	2,066,144	49,830	4,983	0.20%	0.16%
Total by Treatment	**24,878,369**	**600,000**	**60,000**	**2.41%**	**1.93%**

Although the annual treated acres are projected to be 60,000 acres, this number should not be considered an upper limit to the number of acres that might be treated over an annual timeframe. Rather, these annual and ten-year acreage estimates would be used to determine the individual and cumulative impacts of the proposed program. If the

acreage treated within any bioregion exceeds 110 percent of the yearly amounts in Table 2.5-6, then additional analysis would be required at the project level to assess whether there are additional significant effects.

The relative distribution of projects by activity type (e.g., prescribed fire, mechanical) is based on trends from the available recorded data and is generally expected to be distributed as follows:

- 50% prescribed fire
- 10% hand treatments
- 20% mechanical treatments
- 10% herbicide treatments
- 10% prescribed herbivory

Because each of these activity types can have a characteristic impact on the environment, this allows for more focused impact assessment later in the document. It is anticipated that the percentage of treatments utilizing prescribed fire would decline over time due to the environmental constraints associated with burning. Also, additional funding sources would help to subsidize the less cost-effective treatments such as mechanical and hand treatments, and this increased funding would likely result in a higher proportion of non-burning activities than indicated by the historic data. As stated earlier, the assumption in this analysis is that CAL FIRE can increase the number of treated acres by 100 percent (Table 2.5-6), thereby doubling the treated area to approximately 60,000 acres annually on average. Table 2.5-7 shows the projected acreage by treatment and vegetation subtype, and Table 2.5-8 shows the number of projects by treatment and vegetation subtype. The data in these tables show that the majority of projected VTP treated acres (i.e., >50 percent) and projects would be in the WUI treatment type. Ecological Restoration and Fuel Breaks treatments would comprise 34 and 18 percent of the treated acreage, respectively. Thirty-nine percent of treatments would be in the grass-dominated vegetation subtype, while 24 and 37 percent would be in the shrub and tree dominated subtypes, respectively.

Table 2.3-8 Estimated Proposed VTP acreage, average per year

Vegetation Type	Treatments (acres)		
	WUI	Fuel Break	Ecological Restoration
Tree dominated	9,584	3,312	9,249
Shrub dominated	6,445	3,528	4,207
Grass dominated	12,247	4,100	7,328

Table 2.3-9 Estimated number of projects for VTP projects per year

Vegetation Type	Treatments (projects)		
	WUI	Fuel Break	Ecological Restoration
Tree dominated	37	13	36
Shrub dominated	25	14	16
Grass dominated	47	16	28

2.4 IMPLEMENTATION FRAMEWORK

2.4.1 IMPLEMENTATION PROCESS

As described above, the VTP is a formal program that would comprehensively direct the management of fuel sources within CAL FIRE's SRA lands. The VTP consists of a strategy that would implement vegetation treatment activities on primarily privately owned land for the purpose of altering fuels to reduce the size, number, or frequency of damaging fires and reduce losses to life, property, and natural resources. VTP treatments will be prioritized using concepts illustrated in Figure 2.4-1. **In general, WUI treatments will receive the highest priority.** The implementation process is explained as a step-wise process in Figure 2.4-2.

On private property, VTP projects would only be implemented in cooperation with willing landowners. Efforts should be made to include private, local, state and federal stakeholder involvement where vegetation treatments may connect previous fuel reduction projects. In addition, planning and collaboration for various landscape treatments are encouraged when they directly benefit local communities. During the project planning phase, the project proponent will provide a public meeting for projects outside of the WUI, advertised in a local newspaper and through other means (see Appendix I – Monitoring and Communication Plan). The public meeting will be used to inform stakeholders about the project and to solicit information on the potential for significant environmental impacts during the project planning phase (See SPR ADM-9 and Figure 2.4-2). For all projects implemented under the VTP, CAL FIRE would serve as the CEQA lead agency and would oversee the implementation of vegetation treatment activities at the CAL FIRE Unit level. The only exception would be in circumstances where proposed VTP projects are located on lands controlled by the California Department of Parks and Recreation (State Parks). In this case, State Parks may act as the lead agency and may rely upon CAL FIRE's Program EIR in implementation of their vegetation treatment projects.

While CAL FIRE would serve as the CEQA lead agency under most circumstances, most projects would be funded, at least partially, and implemented by private

landowners, Fire Safe Councils, other public agencies (e.g., resource conservation districts [RCDs]), or non-profit groups. In these situations, the implementing entity would enter into a contract or agreement with CAL FIRE to carry out the VTP project. If the project qualifies as one that has been considered and evaluated in this Program EIR, SPRs and mitigation measures would be included in the contract requirements and the project's CEQA compliance and implementation would be coordinated through local CAL FIRE Units/Contract Counties.

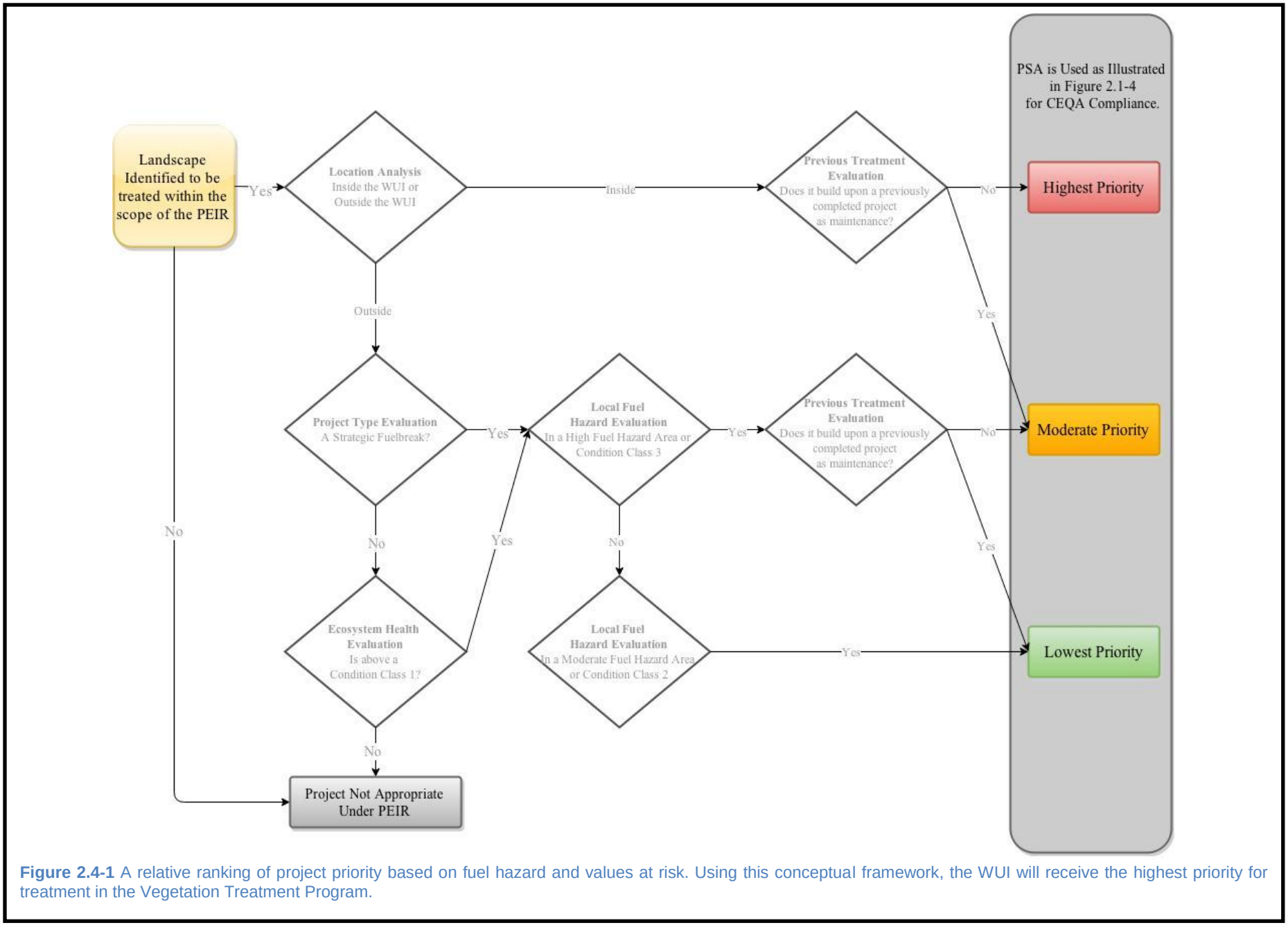


Figure 2.4-1 A relative ranking of project priority based on fuel hazard and values at risk. Using this conceptual framework, the WUI will receive the highest priority for treatment in the Vegetation Treatment Program.

CASE STUDY– Community Pre-planning

Firewise Community in San Luis Obispo 2010-2013

Before Treatment

After Treatment

2010

In 2010, CAL FIRE began discussions with the Oak Shores Community Association (OSCA) General Manager about the hazardous fuel situation in and around the community. After assessing the situation, it was agreed that OSCA should apply to become a Fire Safe Council Focus Group in order to use San Luis Obispo County Community Fire Safe Council (FSCSLO) resources to help implement a fuel management program in cooperation with CAL FIRE. In early 2011 OSCA was accepted as a Focus Group in accordance with Fire Safe Council policies. OSCA immediately began working with CAL FIRE to establish priorities for the Hazardous Fuel Reduction Program, which was then successfully incorporated into the annual FSC Clearinghouse Grants process. 140 acres consisting primarily of OSCA open space parcels and the 2 ½ mile entry road (Oak Shores Drive) were identified as high risk areas in need of fuel removal or reduction.

In 2011, the OSCA Focus Group, through the efforts of the Fire Safe Council, received a grant to begin fuel modification work adjacent to the 2 ½ mile main entry road and within a 16 acre portion of the main drainage that divides the community into two areas. The work was performed by CAL FIRE Hand Crews from Cuesta Camp in San Luis Obispo. This initial phase of the project lasted 9 months.

In 2012, the OSCA Focus Group received additional funding to continue the second phase of the fuel reduction program priorities outlined in 2011. This work was also was done by CAL FIRE Hand Crews from Cuesta Camp. The methods used consisted of cutting/chipping and cutting/piling/burning. Concurrently, OSCA also started a yard waste disposal program allowing owners to bring their trimmings and debris to a common location with the intent of creating a burn pile. This effort was so successful and so much material accumulated that chipping was used to reduce the size of the pile while waiting for fire season to end.

In 2013, additional funding was awarded to complete the third phase of the projects outlined in 2011. As of January 2014, fuel treatment on 120 of the 140 acres identified by CAL FIRE as high fire hazard areas has been completed. This work was done on OSCA property and on adjacent property outside of the community. The support of CAL FIRE with the Cuesta Camp Crews and the financial support from the Fire Safe Council have allowed the Community to be able to continue with follow-up maintenance of this area now and into the future.

CASE STUDY– Pre-Attack Planning

The benefits of Pre-Attack Planning

July 16, 2012

On July 16, 2012 a wildfire started around 11:35 am at the intersection of Highway 58 and Pozo Road, 5-8 miles east of the town of Santa Margarita. The CAL FIRE San Luis Obispo Unit dispatched a full wildland fire response to the incident. The fire, which was burning in very rough terrain making access difficult for firefighters, eventually grew to 640 acres. Evacuations took place along Parkhill Road between Highway 58 and Seven Oaks Road. During the fire, the Parkhill Area pre-attack plan (developed by the San Luis Obispo County Fire Department, GIS Department) was used to efficiently deploy resources around the fire.

According to the Incident Commander, Battalion Chief Phil Veneris, the pre-attack plan allowed for everyone involved to be looking at the same operating plan. The pre-attack plan allowed firefighters to easily locate safety zones, staging areas, water sources, proposed dozer lines, hazards, and other important features. Additionally, all of the residences in the area had been checked and verified prior to the fire during the creation of the pre-attack plan allowing for a timely evacuation. The pre-attack plan enabled the IC to focus firefighting efforts in areas where control lines could easily and safely be held. Lastly, the ICS symbology of the maps allowed everyone to easily read and locate points of interest on the maps.

For firefighters stationed in the area, everyone had seen and gone over the pre-attack map, as well as having double-checked to ensure the map was correct. This allowed for faster deployment when the fire did start and created a safer operating area. Not only was the pre-attack plan useful in the fire, it has also been useful in search and rescue operations and vegetation management plans. The pre-attack plan has also been given to other agencies that are stationed in the area, in order for them to learn the best points around the area for holding a fire.

2.4.2 SUBSEQUENT REVIEW UNDER THE VTP

If the VTP is approved by the Board, CAL FIRE would begin the implementation and roll-out of the program. The first step in the implementation process would be for each of the CAL FIRE Units/Contract Counties to update their annual Unit Fire Management Plans/Contract County Strategic Fire Plans ("Unit Fire Plans") to identify vegetation treatment projects that are proposed for implementation and would be covered under the VTP. In general, the CAL FIRE Unit/Contract County staff would coordinate with private landowners and interested agencies to identify which projects would be implemented. While participation in the Vegetation Treatment Program is completely voluntary, the successful placement of projects will depend on the public's involvement. Unit Fire Plans also function as Community Wildfire Protection Plans (CWPP), and may contain all or some of projects outlined in smaller CWPPs throughout the Unit/Contract County. CWPPs have several requirements to guarantee public participation and sign-off in the creation of the plans, which ensures public input into the selection of VTP projects. Additional VTP projects may also be proposed through Fire Safe Councils or other community groups in coordination with the local Unit/Contract County. Consequently, the public feedback helps shape the location and type of vegetation treatment projects.

By incorporating proposed VTP projects into the Unit Fire Plans, the proposed project would be appropriately linked to the comprehensively planned fire prevention activities within the Unit's jurisdiction providing enhanced fire suppression capabilities.

Once a Unit Fire Plan has identified proposed VTP projects, the CAL FIRE Unit/Contract County staff and the project proponent, together, would begin the project evaluation process by completing the VTP Project Scale Analysis (PSA). The purpose of the PSA would be to determine whether the environmental effects of the proposed VTP project were addressed in this Program EIR. The PSA also requires CAL FIRE to consider whether all applicable SPRs and mitigation measures identified in the Program EIR have been incorporated into the VTP project and whether additional mitigation would be necessary. This is also an opportune time for the project proponent to initiate the public workshop as previously discussed for projects outside the WUI. If the VTP project is being carried out by contract through a private landowner or other public or non-profit entity, the contract terms would require implementation of the applicable SPRs and mitigation measures and any Project Specific Requirements (PSRs) identified after completing the PSA. The PSA would document whether any specific permits from responsible and trustee agencies would be required. A copy of the VTP PSA is included in Chapter 7.

Once completed, the PSA would be submitted for three levels of review: Unit/Contract County review, Regional review, and Sacramento CEQA Coordinator review. The Unit/Contract County review would focus on the project objectives, project scope, and proper use of the VTP PSA; the feasibility of the activities proposed; and whether the project has been appropriately included in the Unit Fire Plan. The CAL FIRE Region representative would review the PSA, confirm the project is within the scope of the Program EIR, and would determine if there are any areas where shared use of resources between Units could be coordinated. Finally, the Sacramento CEQA Coordinator review would provide the final determination of whether the proposed project is consistent with the Program EIR, whether supplemental environmental review in compliance with CEQA would be required, or whether the project does not qualify under the VTP Program EIR and separate environmental documentation would need to be prepared. If it is determined that the project falls within the scope of the Program EIR then no additional CEQA documentation would be required. The project would be implemented subject to the applicable SPRs, mitigation measures, PSRs, and permitting requirements identified for the project. At the conclusion of the project, a completion inspection would be completed by CAL FIRE staff. The completion inspection (i.e., monitoring) would evaluate if the vegetation management activities were completed in accordance with the authorized project plan. Follow up effectiveness or validation monitoring might also be performed on the project area after project implementation (See Figure 2.4-2 and Appendix I for additional information).

If it is determined that the proposed VTP project includes activities or chemicals that are substantially different from those evaluated in the Program EIR or that the VTP project may result in one or more new significant impacts not addressed in the Program EIR, the following actions may be taken:

- The project may be changed to avoid the potential impact.
- The project may be cancelled.
- Additional CEQA analysis, in the form of a mitigated negative declaration or supplemental or subsequent EIR, may be conducted to address the impacts and identify any feasible mitigation measures.
- An alternate environmental process may be engaged.

2.4.3 MONITORING AND ADAPTIVE MANAGEMENT

The VTP requires program elements that will aid in program implementation, help assess program effectiveness, and will provide feedback for adaptive decision-making. Required elements under the VTP include:

- A mechanism for introducing independent science into the VTP;
- A requirement to geospatially track project implementation over time;

- Implementation monitoring to provide a rapid feedback loop for corrective action at the project scale;
- Qualitative project effectiveness monitoring to communicate “lessons learned” during VTP implementation;
- Post-incident effectiveness monitoring;
- An annual workshop in each CAL FIRE Region to communicate Program implementation, effectiveness, and “lessons learned” to stakeholders;
- A process that will allow for stakeholder involvement in scoping for non-WUI related projects in southern California; and
- A goal to implement “active” adaptive management by securing dedicated funding for research effectiveness and validation monitoring.

Implementing informal adaptive management will be a required element of the VTP until funding can be secured to employ more formal adaptive management strategies. Further details on monitoring requirements and adaptive management are contained in Appendix I – the Monitoring and Communications Plan.

CASE STUDY– Prescribed Fire Fuel Reduction

Winton Fire

September 9, 1999

California is prone to dry lightning in the late summer months. Lightning-caused fires can cost taxpayers millions of dollars because lightning often ignites multiple fires at one time in remote mountainous areas.

Lightning started the Winton Fire outside of the Stanislaus National Forest in Calaveras County on September 9,1999. When fire crews responded to the call, they already knew that as many as 40 homes could be threatened if they were unable to quickly contain it.

The work of those crews was made easier because of logging and prescribed fire projects that had been done in 1996 by Sierra Pacific Industries. Due to reduced fuel on the northwestern side of the fire, where a prescribed burn had been completed, the flames burned at a much lower intensity and spread slower. In addition, the main road used by fire personnel to access the head of the fire ran through this treated area. This allowed fire crews safe access and an escape route should they need one. Because of these factors, the Winton Fire Incident Commander was able to concentrate crews and equipment on more actively burning areas of the fire.

While one home and 115 acres were burned, fire commanders estimated that 40 homes and 300 acres of timber were saved due to the ability of the crews to quickly contain the fire. This is an example of how pre-fire planning and treatment saves homes, resources and money. One of the major benefits of the pre-fire efforts taken in this area was improved firefighter safety. Crews were able to safely access the Winton Fire from the west due to the prescribed fire done earlier. It was not safe for crews to access the flames from any other side due to the high fire intensity in those areas.

CASE STUDY– Fuel Reduction

2006 Esperanza Fire

In 2000 BLM and CAL FIRE began working on a community fuel break to protect the communities of Poppet Flat, Rancho Encino, and the Silent Valley RV Club. On the west side of the communities was a large area of chaparral between the homes and the fuel break. A prescribed burn was planned to reduce the fuel loading in this area. In 2005 the first unit was burned along with the fuel break north and west of town.

The morning of October 26th the Esperanza Fire spread beyond Highway 243 and began to threaten the area. As the fire approached the community its progress was slowed by the fuel breaks and diverted by the prescribed fire. When the fire hit the prescribed burn it was diverted north around the community giving residents the ability to remain in the community, or "shelter in place," while the fire burned past. This saved people from needing to evacuate on Highway 243 through the fire in the area of Twin Pines and downhill to Banning.

During an Esperanza Fire morning briefing the incident command team thanked those responsible for the fuels project and acknowledged its strategic importance in helping firefighters save the communities and allowing the citizens to shelter in place. A map of the fire shows a large unburned island in the fire; this is the Poppet Flat area. The gratefulness of the local residents for their safety made this a rewarding project. With the growing population and development in Southern California fuels projects such as this are crucial in protecting communities and resources.

Picture from: http://media.columbian.com/img/photos/2013/07/17/Southern_California_Wildf3.jpg

2.4.4 FUNDING

Guidelines for the development of, and participation in, VTP projects would be similar to those used for CAL FIRE's existing Vegetation Management Program (VMP) (see Section 1.5.2 for a discussion) and CFIP (see Section 1.5.4 for a discussion) processes. CAL FIRE may share the costs of the project, accept liability in the case of an escaped fire, and suppress escaped fires. As described above, CAL FIRE, acting on behalf of private landowners, State Parks, and a variety of regional and local agencies, such as RCDs, local fire protection agencies, or Fire Safe Councils, may initiate VTP projects. Participants must be willing to:

- Enter into a contract with CAL FIRE to implement the project.
- Assume and guarantee payment of a proportionate share of the project in cases where cost sharing is required.
- Develop or direct completion of a treatment plan.
- Assume any monitoring requirements for a specific VTP project.

Assistance for project funding would be dependent on the availability of funds and consistency with the objectives of the VTP. It is expected that projects utilizing this Program EIR would be funded through grants or other cost-share agreements. CAL FIRE would evaluate the relationship between public and private benefits to determine the basis for any cost-sharing agreement. Projects that benefit only individual private landowners would receive the least assistance, while projects that emphasize public benefits would receive the most assistance. For instance, CAL FIRE would not fund the portion of a fuel reduction project that is required by regulation (e.g., PRC 4291 to provide defensible space around dwellings) and which would not provide protection to a community at large or other high-value resources. Conversely, CAL FIRE would provide a larger proportion of funding for projects that benefit the public, such as reducing fuel hazards to protect communities and high-value resources or areas that CAL FIRE has designated as high priority areas in Unit Fire Plans.

The VTP does not include projects that would cut or remove timber or other solid wood products from timberlands for commercial purposes (as defined by PRC 4527). These projects require a timber harvesting plan (THP), non-industrial timber management plan (NTMP), or other program timber harvesting plan (PTHP).

Regardless of the funding, all projects would be reviewed with the same level of detail as described above in subsection 2.4.2. Subsequent Review Under the VTP.

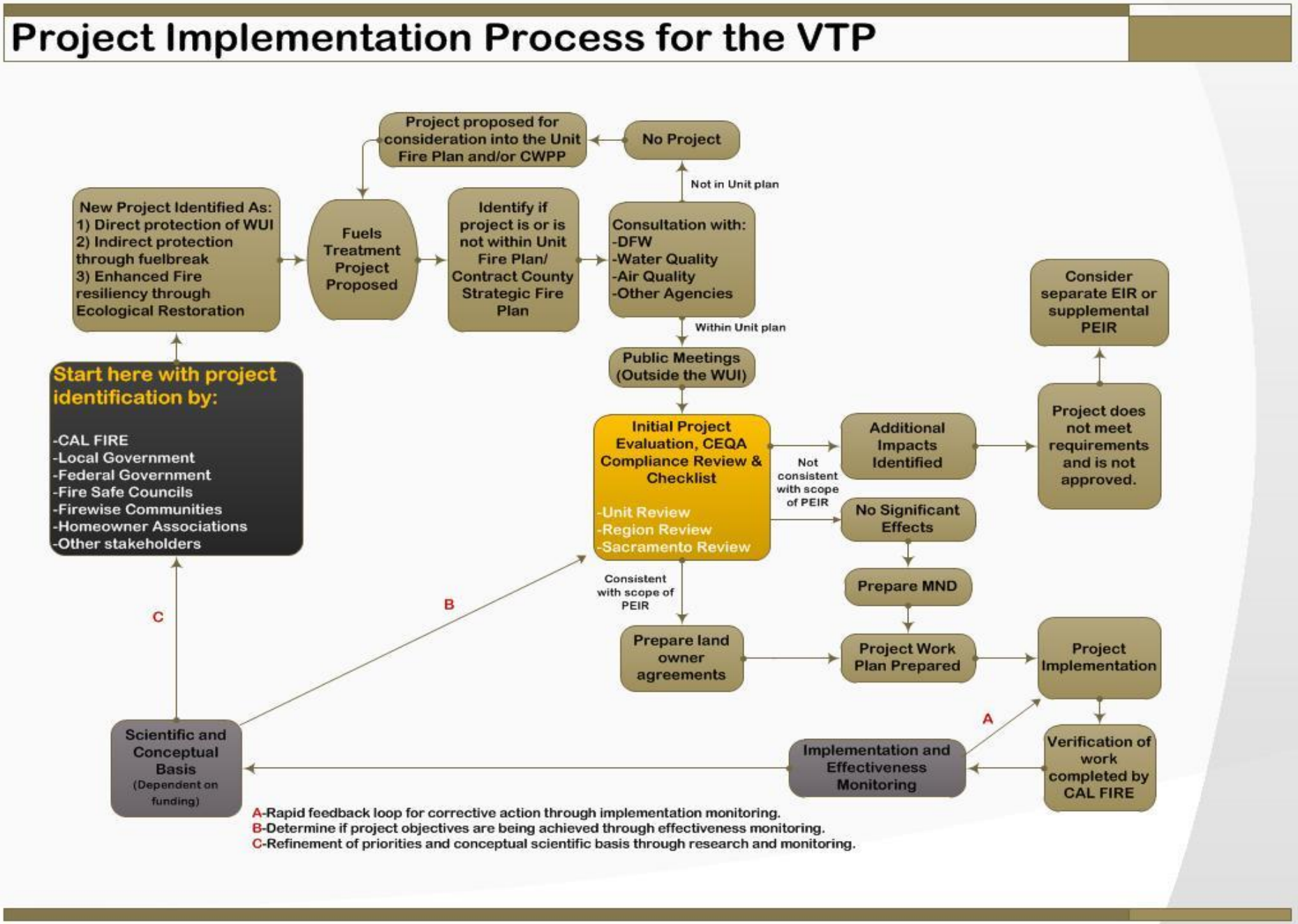


Figure 2.4-2Project Implementation Process

2.5 PROJECT REQUIREMENTS

The VTP provides a reasonable and environmentally protective approach to prioritizing, assessing, designing, and implementing vegetation treatment projects. Requirements (e.g., best management practices) related to program and project design and implementation would be based on constraining biotic and abiotic factors, landowner goals, and the types of vegetation manipulation activities needed to implement the three treatment types, and applicable environmental laws and regulations. Requirements common to all projects are known as Standard Project Requirements (SPRs), whereas site-specific requirements are known as project specific requirements (PSRs).

2.5.1 STANDARD PROJECT REQUIREMENTS AND MITIGATIONS

Standard project requirements (SPR) are program design elements for reducing or avoiding adverse environmental effects of the treatment activities that are set by the VTP and applied to individual projects. SPRs apply to all projects governed by the VTP. SPRs are a collection of standard operating procedures, Best Management Practices, and known regulatory requirements related to project implementation and oversight that help protect the environment. The analysis within Chapter 4 identified the following SPR:

Administrative Standard Project Requirements

ADM-1: Prior to the start of operations, the project coordinator shall meet with the contractor to discuss all resources that must be protected using standard project requirements (SPRs). If burning operations are done with CAL FIRE personnel, the Battalion Chief and/or their Company Officer designee shall meet with the project coordinator onsite prior to operations to discuss resource protection measures. Additionally, the project coordinator shall specify the resource protection measures and details of the burn plan in the incident action plan (IAP) and shall attend the pre-operation briefing to provide further information.

ADM-2: Prior to the start of operations, and at the discretion of the project coordinator, a registered professional forester (RPF) shall flag and/or fence all protected resources for avoidance during operations. The RPF shall also be required to engage other resource professionals that may address issues beyond the RPF's experience or expertise, as required by the Professional Foresters Licensing Law (Public Resources Code Sections 752(b)). The project coordinator or designee shall remove the fencing from around the protected resource after project completion.

ADM-3: The project coordinator or designee shall monitor SPR implementation (and effectiveness in some cases) as an adaptive management tool. If a SPR does not

perform adequately to protect the specified resource, the project coordinator will determine adaptation strategies, in coordination with the contractor and/or CAL FIRE personnel, and require their implementation.

ADM-4: If monitoring is necessary (e.g., effectiveness monitoring), the project coordinator or designee shall notify the party responsible for monitoring a minimum of three weeks in advance of operations. More advanced notification is encouraged from project coordinators to parties responsible for more rigorous monitoring activities.

ADM-5: All ground disturbing treatment activities, including land clearing and bull dozer line construction, shall be suspended when a red flag warning is issued by the local National Weather Service office.

ADM-6: The project coordinator or designee shall consult with the USFS, CAL FIRE, or other public agencies as appropriate to develop a list of past, current, and reasonably foreseeable probable future projects within the planning watershed of the proposed project. If the total combined acreage disturbed in the planning watershed exceeds 20% in a 10-year period, compliance with HYD-16 must be met prior to any ground disturbing operations. Projects that may combine with VTP projects to create the potential for significant effects include, but are not limited to, controlled burning, fuel reduction, and commercial timber harvesting.

ADM-7: Each CAL FIRE Unit shall not conduct more than five simultaneous VTP projects on any day. No more than one of these projects shall be a prescribed burn, unless additional prescribed burns have been approved by the local air district having authority over the project area. In no case will CAL FIRE conduct more than 15 simultaneous prescribed fire projects statewide.

ADM-8: The Sacramento Program manager shall track the annual and 10-year average annual acreage treated by the VTP, by bioregion. If the acreage treated within any bioregion exceeds 110 percent of the yearly amounts as identified in Table 2.5-6, the Program manager will notify the affected CAL FIRE Units that any additional projects submitted within that bioregion fall outside of the scope of analysis by this PEIR and additional CEQA analysis will be required. Additional CEQA analysis, such as a mitigated negative declaration, shall assess the cumulative impacts of the proposed project and identify any additional project constraints that may be necessary to mitigate these to less than significant. Additional CEQA analysis may be tiered off this PEIR when the proposed project is otherwise consistent with the VTP.

Aesthetics-Related Standard Project Requirements

AES-1: See **BIO-5** for shrublands in San Diego, Imperial, Riverside, Orange, Los Angeles, Ventura, Santa Barbara, and San Bernardino counties.

Air Quality-Related Standard Project Requirements

AIR-1: The project shall comply with all local, state, and federal air quality regulations and ordinances. The local Air Pollution Control District (APCD) or Air Quality Management District (AQMD) will be contacted to determine local requirements.

AIR-2: Prior to approval of an CAL FIRE Unit project under the VTP, the project coordinator shall model the project's CAP emissions and compare the projected emissions levels to the thresholds identified by the local air district. If emissions levels exceed air district thresholds, consultation of the air district will occur.

AIR-3: Burning shall only be done in compliance with the burn authorization program of the local air district having jurisdiction over the project area. Authorization to burn shall be received no more than 48 hours prior to ignition. All projects greater than 10 acres or estimated to release more than 1 ton of particulate matter will prepare a smoke management plan. An example smoke management plan can be found in Appendix J.

AIR-4: Fire emissions and fire behavior shall be planned, predicted, and monitored in accordance with SPRs FBE-1, FBE-2, and FBE-3 with the goal of minimizing air pollutant emissions.

AIR-5: Dust control measures shall be implemented in accordance with SPRs Hyd-9 with the goal of minimizing fugitive dust emissions.

AIR-6: The speed of activity-related trucks, vehicles, and equipment traveling on unpaved areas shall be limited to 15 miles per hour (mph) to reduce fugitive dust emissions.

AIR-7: In areas where sufficient water supplies and access to water is available, all visible dust, silt, or mud tracked-out on to public paved roadways as a result of project treatment activities shall be removed at the conclusion of each work day, or a minimum of every 24 hours for continuous fire treatment activities.

AIR-8: Ground-disturbing treatment activities, including land clearing and bull dozer lines, shall be suspended when there is a visible dust transport.

AIR-9: Ground-disturbing treatment activities shall not be performed in areas identified as "moderately likely to contain naturally occurring asbestos (NOA)" according to maps and guidance published by the California Geological Survey (CGS), unless an Asbestos Dust Control Plan is prepared by the Operational Unit and approved by the air district(s) with jurisdiction over the project site. This determination would be based on a CGS publication titled *A General Location Guide for Ultramafic Rocks in California – Areas More Likely to Contain Naturally Occurring Asbestos* (Churchill and Hill 2000), or whatever more current guidance from CGS exists at the time the VTP project is

evaluated. Any NOA-related guidance provided by the applicable local air district shall also be followed. If, it is determined that NOA could be present at the project site, then an Asbestos Dust Control Plan shall be prepared and implemented in accordance with Title 17 of the Public Health CA Code of Regulations of Section 93105.

AIR-10: Operation of large diesel- or gasoline-powered activity equipment (i.e., greater than 50 horsepower [hp]) shall not exceed 16 equipment-hours per day, where an equipment-hour is defined as one piece of equipment operating for one hour (daily CAPs, TACs, GHGs).

AIR-11: All diesel- and gasoline-powered equipment shall be properly maintained according to manufacturer's specifications, and in compliance with all state and federal emissions requirements. Maintenance records shall be available for verification.

AIR-12: In accordance with CCR Section 80160(b), all burn prescriptions shall require the submittal of a smoke management plan for all projects greater than 10 acres or are estimated to produce more than 1 ton of particulate matter. Example of a smoke management plan is in Appendix J.

Mitigation Measure AIR-1

To achieve compliance with local air district emission thresholds in the San Joaquin Valley Unified Air Quality Management District, simultaneously projects within that air district will be constrained to appropriate number as not to exceed air quality standards. As a result, the Program shall implement the following:

- CAL FIRE shall not allow more than 7 simultaneous treatment activities to occur in the San Joaquin Valley Unified Air Quality Management District.

Biological Standard Project Requirements

BIO-1: Projects shall be designed to avoid significant effects and avoid take of rare, threatened, and endangered species, as defined in CEQA Guidelines Section 15380.

BIO-2: The project coordinator shall run a nine-quad search or larger search area (may be required is a project is on the boundary of two USGS quad maps) of the area surrounding the proposed project for rare, threatened, and endangered species, using at a minimum, the California Natural Diversity Database (CNDDB) or its successor.

BIO-3: The project coordinator shall write a summary of all special-status species identified in the biological scoping including the CNDDB search with a preliminary analysis, identifying which species would be affected by the proposed project. A field review will then be conducted by the project coordinator to identify the presence or

absence of any special status species, or appropriate habitat for special status species, within the project area.

BIO-4: The project coordinator, shall ensure that a CAL FIRE Environmental Coordinator analyze impacts to CNDDB species, and shall submit the summary and preliminary analysis to the CDFW, USFWS, and [if applicable] NOAA Fisheries for consultation. The preliminary analysis shall be accompanied with a standard letter containing the following:

- A written description of the project location and boundaries
- Brief narrative of the project objectives
- A description of the types of activities used in the project (e.g., prescribed burning; mastication) and associated acreages
- A project and general location map. Project map shall be of sufficient scale to indicate the spatial extent of activities within the project area
- The output from the CNDDB run, including a map of any special status species located during the field review, and the SPRs that will be implemented to minimize impacts on the identified special status species.
- A request for information regarding the presence and absence of rare, threatened, and endangered plant and animal species, including any applicable HCPs, in the project vicinity, and potential take avoidance measures to be implemented as PSRs.
- An offer to schedule a day to visit the project area with the project coordinator.

BIO-5: Vegetation treatment projects that are not deemed necessary to protect critical infrastructure or forest health in San Diego, Imperial, Riverside, Orange, Los Angeles, Ventura, Santa Barbara, Kern, and San Bernardino counties shall:

- Be designed to prevent vegetation type conversion.
- Not take place in vegetation that has not reached the age of median fire return intervals.
- Not re-enter treatment areas for maintenance in an interval shorter than the median fire return interval outside of the wildland urban interface and excluding fuel break maintenance.
- Not take place in old-growth chaparral without consultation regarding the potential for significant impacts with the CDFW and the CNPS.
- Take into account the local aesthetics, wildlife, and recreation of the shrub-dominated subtype during the planning and implementation of the project.
- During the project planning phase provide a public workshop, or public notice in a newspaper that is circulated locally describing the proposed project during the

project planning phase for projects outside of the WUI. The notification will be used to inform stakeholders and to solicit information on the potential for significant impacts during the project planning phase.

BIO-6: In shrublands containing native oaks, treatments may incorporate retention of older, acorn producing oaks to create deer forage. CAL FIRE or applicants may plant other vegetation to promote species diversity and improve wildlife habitat, when such practices are not in conflict with program goals.

BIO-7: A minimum 50 foot avoidance buffer shall be established around any special status animal, nest site, or den location; and a minimum 15 foot avoidance buffer shall be established around any special status plant within the project area. Additional buffer distances may be required through consultation with the appropriate State or Federal agencies, or a qualified biologist to avoid significant effects to special status species (see BIO-4).

BIO-8: In order to reduce the spread of new invasive plants, only certified weed-free straw and mulch shall be used.

BIO-9: During the planning phase if the project coordinator determines that there is a significant risk of introducing invasive plants, then project specific mitigation measures shall be developed using principles outlined in the document “Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers (3rd edition” or other relevant documents). Coordination of the mitigations will also include consultation with CDFW.

BIO-10: If water drafting becomes a necessary component of the proposed project, drafting sites shall be planned to avoid adverse effects to special-status aquatic species and associated habitat, in-stream flows, and depletion of pool habitat. Screening devices shall be used for water drafting pumps, and pumps with low entry velocity shall be used to minimize removal of aquatic species, including juvenile fish, amphibian egg masses, and tadpoles, from aquatic habitats.

BIO-11: Aquatic habitats and species shall be protected through the use of watercourse and lake protection zones (WLPZ), as described in California Forest Practice Regulations (14 CCR). Other operational restrictions maybe identified through a consultation with CDFW and RWQCB (see BIO-4). See HYD-3 for these standard protection measures.

BIO-12: For projects that require a non-construction-related CDFW Streambed Alteration Agreement, any BMPs identified in the agreement shall be developed and implemented.

BIO-13: If any special status species are identified within the project area, an onsite meeting shall occur between the project coordinator and operating contractor. At this meeting the project manager shall conduct a brief review of life history, field identification, and habitat requirements for each special-status species, their known or probable locations in the vicinity of the treatment site, project specific requirements or avoidance measures, and necessary actions if special-status species or sensitive natural communities are encountered.

Climate Change-Related Standard Project Requirements

CC-1: Prior to approval of Operational Unit project under the VTP, the project coordinator shall run the FOFEM and other GHG-emissions models as appropriate to the treatment activity, to confirm that GHG emissions will be the minimum necessary to achieve risk reduction objectives.

CC-2: Carbon sequestration measures shall be implemented per SPRs BIO-5 and BIO-6 to reduce total carbon emissions resulting from the treatment activity.

CC-3: Treatment activity-related air pollutant emission control measures for prescribed burns shall be implemented in accordance with SPRs AIR-3 and AIR-4.

CC-4: Treatment activity-related air pollutant emission control measures for equipment operation hours, practices, and maintenance shall be implemented in accordance with SPRs AIR-11 and AIR-12.

Archaeology and Cultural Resources-Related Standard Project Requirements

CUL-1: The project coordinator or designee shall order a current records check as per the most current edition of “Archaeological Review Procedures for CAL FIRE Projects” (CAL FIRE, 2010, see appendix H). The project coordinator may contact landowners within the project area who might have already conducted a records check for a Timber Harvest Plan or other project on their land to limit costly redundant records searches. Records checks must be less than five years old at the time of project submission.

CUL-2: Using the latest Native Americans Contact List from the CAL FIRE website, the project coordinator or designee shall send all Native American groups in the counties where the project is located a standard letter notifying them of the project. The letter shall contain the following:

- A written description of the project location and boundaries.
- Brief narrative of the project objectives.
- A description of the types of activities used in the project (e.g., prescribed burning, mastication) and associated acreages.

- A project and general location map. Project map shall be of sufficient scale to indicate the spatial extent of activities within the project area.
- A request for information regarding potential cultural impacts from the proposed project.

CUL-3: The project coordinator or designee shall contact a CAL FIRE archaeologist or CAL FIRE Certified Archaeological Surveyor to arrange for a survey of the project area if necessary. The specific requirements need to comply with the most current edition of "Archaeological Review Procedures for CAL FIRE Projects" (CAL FIRE, 2010).

CUL-4: Protection measures for archaeological and cultural resources shall be developed through consultation with a CAL FIRE archeologist. If new archaeological sites are discovered, the project coordinator or designee shall notify Native American groups of the resource and the protection measure with the standard second letter (see appendix H). Locations of archaeological resources should not be disclosed on a map to the members of the public including Native American groups.

CUL-5: If an unknown site is discovered during project operations, operations within 100 feet of the identified boundaries of the new site shall immediately halt, and the project will avoid any more disturbances. A CAL FIRE Archaeologist shall be contacted for an evaluation of the significance of the site. In accordance with the California Health and Safety Code, if human remains are discovered during ground disturbing activities, CAL FIRE and/or the project contractor(s) shall immediately halt potentially damaging activities in the area of the burial and notify the County Coroner and a qualified professional archaeologist to determine the nature and significance of the remains.

Fire Behavior-Related Standard Project Requirements

FBE-1: The prescribed fire burn prescription shall be designed to initiate a surface fire of sufficient intensity that will only consume surface and ladder fuels. The prescribed fire burn prescription shall be designed and implemented to protect soil resources from direct soil heating impacts. Soil damage or will not occur as a result of this project.

FBE-2: A burn plan shall be created using the burn plan template. The burn plan shall include a fire behavior model output of BEHAVE or other fire behavior modeling simulation and performed by a fire behavior technical specialist (S-490 qualified). The burn plan shall be created with input from the vegetation project's Battalion Chief and a fire behavior technical specialist (S-490 qualified).

FBE-3: The project coordinator shall run a First Order Fire Effects Model (FOFEM) to analyze fire effects. The results of the analysis shall be included with the Burn Plan. FOFEM calculates consumption of fuels, tree mortality, predicted emissions, GHG emissions, and soil heating.

FBE-4: Approximately two weeks prior to commencement of prescribed burning operations the project coordinator shall 1) post signs along the closest major road way to the project area describing the project, timing, and requesting for smoke sensitive persons in the area to contact the project coordinator; 2) publish a public interest notification in a local newspapers describing the project, timing, and requesting for smoke sensitive persons in the area to contact the CAL FIRE project coordinator; 3) send the local county supervisor a notification letter describing the project, its necessity, timing, and summarize the measures being taken to protect the environment and prevent escape; and 4) develop a list of smoke sensitive persons in the area and contact them prior to burning.

Geologic Standard Project Requirements

GEO-1: An RPF or licensed geologist shall assess the project area for unstable areas and unstable soils as per 14 Section CCR 895.1 of the California Forest Practice Rules. Guidance on identifying unstable areas is contained in the California Licensed Foresters Association *Guide to Determining the Need for Input From a Licensed Geologist During THP Preparation* and California Geological Survey (CGS) Note 50 (see Appendix C). Priority will be placed on assessing watercourse-adjacent slopes greater than 50%. If unstable areas or soils are identified within the project area, are unavoidable, and are potentially directly or indirectly affected by the project operations, a licensed geologist (P.G. or C.E.G.) shall conduct a geologic assessment to determine the potential for project-induced impacts and mitigation strategies. Project shall incorporate all of the recommended mitigations. Geologic reports should cover the topics outlined in CGS Note 45 (see Appendix C).

GEO-2: The potential impacts of prescribed fire on geologic processes shall be reduced by following the Fire Behavior-related SPRs FBE-1, FBE-2, and FBE-3.

Hazards and Hazardous Material-Related Standard Project Requirements

HAZ-1: Prior to the start of vegetation treatment activities, the project coordinator shall conduct an Envirofacts web search to identify any known contamination sites within the project area. If a proposed vegetation treatment project occurs in areas located on the DTSC Cortese List, no activities shall occur within 100 feet of the site boundaries.

HAZ-2: Prior to the start of vegetation treatment activities, the project coordinator or contractor shall inspect all equipment for leaks and regularly inspect thereafter until equipment is removed from the site.

HAZ-3: Prior to the selection of treatment activities, CAL FIRE shall determine if there are viable, cost-effective, non-herbicide treatment activities that could be implemented prior to the selection of herbicide treatments.

HAZ-4: Prior to the start of herbicide treatment activities, the project coordinator shall prepare a Spill Prevention and Response Plan (SPRP) to provide protection to onsite workers, the public, and the environment from accidental leaks or spills of herbicides, adjuvants, or other potential contaminants. This plan shall include (but not be limited to):

- A map that delineates VTP staging areas, where storage, loading, and mixing of herbicides will occur;
- A list of items required in a spill kit onsite that will be maintained throughout the life of the project;
- Procedures for the proper storage, use, and disposal of any herbicides, adjuvants, or other chemicals used in vegetation treatment.

HAZ-5: If remediation of hazardous contamination is needed, the project coordinator shall hire a licensed contractor with expertise in performing such work. The contractor shall comply with all laws and regulations governing worker safety and the removal and disposal of any contaminated material.

HAZ-6: All pesticide use shall be implemented consistent with Pest Control recommendations prepared annually by a licensed Pest Control Advisor.

HAZ-7: All appropriate laws and regulations pertaining to the use of pesticides and safety standards for employees and the public, as governed by the U.S. Environmental Protection Agency, the California Department of Pesticide Regulation, and local jurisdictions shall be followed. All applications shall adhere to label directions for application rates and methods, storage, transportation, mixing, and container disposal. All contracted applicators shall be appropriately licensed by the state. The project coordinator shall coordinate with the County Agricultural Commissioners, and all required licenses and permits shall be obtained prior to pesticide application.

HAZ-8: Projects shall avoid herbicide treatment in areas adjacent to water bodies and riparian areas. Application of herbicides shall be outside the WLPZ and ELZ as specified in HYD-3, or at the distances set forth in the herbicide label requirements, whichever is greater. No aerial spraying of herbicides shall occur under this Program EIR.

HAZ-9: The following general application parameters shall be employed during herbicide application:

- Application shall cease when weather parameters exceed label specifications, when sustained winds at the site of application exceeds seven miles per hour (MPH), or when precipitation (rain) occurs or is forecasted with greater than a 40

percent probability in the next 24-hour period to prevent sediment and herbicides from entering the water via surface runoff;
- Spray nozzles shall be configured to produce a relatively large droplet size;
- Low nozzle pressures (30-70 pounds per square inch [PSI]) shall be observed; and
- Spray nozzles shall be kept within 24 inches of vegetation during spraying.

Drift avoidance measures shall be used to prevent drift in locations where target weeds and pests are in proximity to special-status species or their habitat. Such measures can consist of, but would not be limited to the use of plastic shields around target weeds and pests and adjusting the spray nozzles of application equipment to limit the spray area.

HAZ-10: All herbicide and adjuvant containers shall be triple rinsed with clean water at an approved site, and the rinsate shall be disposed of by placing it in the batch tank for application per 3 CCR § 6684. Used containers shall be punctured on the top and bottom to render them unusable, unless said containers are part of a manufacturer's container recycling program, in which case the manufacturer's instructions shall be followed. Disposal of non-recyclable containers will be at legal dumpsites. Equipment would not be cleaned and personnel would not bathe in a manner that allows contaminated water to directly enter any body of water within the treatment areas or adjacent watersheds. Disposal of all pesticides shall follow label requirements and local waste disposal regulations.

HAZ-11: Storage, loading and mixing of herbicides shall be set back at least 150 feet from any aquatic feature or special-status species or their habitat or sensitive natural communities.

HAZ-12: Appropriate non-toxic colorants or dyes shall be added to the herbicide mixture where needed to determine treated areas and prevent over-spraying.

HAZ-13: For treatment activities located within or adjacent to public recreation areas, signs shall be posted at each end of herbicide treatment areas and any intersecting trails notifying the public of the use of herbicides. The signs shall consist of the following information: signal word, product name, and manufacturer; active ingredient; EPA registration number; target pest; treatment location; date and time of application; date which notification sign may be removed; and contact person with telephone number. Signs shall be posted at the start of treatment and notification will remain in place for 72 hours after treatment ceases.

HAZ-14: All heavy equipment shall be required to include spark arrestors or turbo chargers that eliminate sparks in exhaust, and have fire extinguishers onsite.

Hydrologic and Water Quality-Related Standard Project Requirements

HYD-1: The project shall comply with all applicable water quality requirements adopted by the appropriate Regional Water Quality Control Board and approved by the State Water Board (i.e., Basin Plan).

HYD-2: During the planning phase the project coordinator shall submit a standard letter to the appropriate RWQCB containing the following:

- A written description of the project location and boundaries
- Brief narrative of the project objectives
- A description of the types of activities used in the project (e.g., prescribed burning, mastication) and associated acreages
- A project and general location map. Project map shall be of sufficient scale to indicate the spatial extent of activities within the project area
- Notification of whether the project drains directly into an impaired water body, and the type of water quality constituent(s) that is impairing the water body.
- A request for information and recommendations regarding the potential for significant water quality impacts from the proposed project and an offer to schedule a day to visit the project area with the project coordinator. The project shall incorporate the recommendations that prevent significant impacts to water quality as PSRs.

HYD-3: A WLPZ shall be established on each side of all Class I and II watercourses that is equal to the standard widths specified in the current CA Forest Practice Rules (Table 2.6-1). Fifty foot equipment limitation zones (ELZs) shall be established for Class III watercourses. Vegetation within the WLPZ or ELZ will not be disturbed by project activities, with the exception of backing prescribed fire. Class IV watercourse protections shall be PSRs specified in the PSA, and designed in conjunction with any recommendations from RWQCB staff.

Table 2.5-1 Watercourse and lake protection zone buffer widths by watercourse classification and hill slope gradient (See HYD -3)

Note: ELZ-Equipment Limitation Zone, PSR-Project Specific Requirement

Water Class Characteristics or Key Indicator / Beneficial Use	1)Domestic supplies, including springs, on site and/or within 100 feet downstream of the project area and/or 2) Fish always or seasonally present onsite, includes habitat to sustain fish migration and spawning	1) Fish always or seasonally present offsite within 1000 feet downstream and/or 2) Aquatic habitat for non-fish aquatic species. 3) Excludes Class III water that are tributary to Class I waters	No aquatic life present, watercourse showing evidence of being capable of sediment transport to Class I and II water under normal high water flow conditions of timber operations	Man-made watercourses, usually downstream, established domestic, agricultural, hydroelectric supply or other beneficial use
Water Class	Class I	Class II	Class III	Class IV
Slope Class (%)	Width (ft.)	Width (ft.)	Width (ft.)	Width
<30	75	50	50 (ELZ)	PSR
30-50	100	75	50 (ELZ)	PSR
>50	150	100	50 (ELZ)	PSR

HYD-4: No direct ignition shall be allowed within the WLPZ or ELZs. However, it is acceptable for a fire to enter or back into a WLPZ's or ELZ's.

HYD-5: Compacted and/or bare linear treatment areas (e.g., fire breaks, roads, or trails) capable of generating storm runoff shall be drained via water breaks using the spacing guidelines contained in CCR Sections 914.6, 934.6, and 954.6 (c) of the California Forest Practice Rules.

HYD-6: Compacted and/or bare treatment areas shall be drained such that they are hydrologically disconnected from watercourses or lakes. Measures to hydrologically disconnect these areas shall be guided by consulting with Technical Rule Addendum #5 of the California Forest Practice Rules – Guidance on Hydrologic Disconnection, Road Drainage, Minimization of Diversion Potential, and High Risk Crossings

HYD-7: No high ground pressure vehicles shall be driven through project areas when soils are wet and saturated to avoid compaction and/or damage to soil structure. Saturated soil means that soil and/or surface material pore spaces are filled with water to such an extent that runoff is likely to occur. Indicators of saturated soil conditions may include, but are not limited to: (1) areas of ponded water, (2) pumping of fines from the

soil or road surfacing material during timber operations, (3) loss of bearing strength resulting in the deflection of soil or road surfaces under a load, such as the creation of wheel ruts, (4) spinning or churning of wheels or tracks that produces a wet slurry, or (5) inadequate traction without blading wet soil or surfacing materials.

HYD-8: When possible, bare soil will be mulched with onsite native vegetative material (e.g., cut material).

HYD-9: During dry, dusty conditions, unpaved roads shall be wetted using water trucks or treated with a non-toxic chemical dust suppressant (e.g., emulsion polymers, organic material). Any dust suppressant product used shall be environmentally benign (i.e., non-toxic to plants and shall not negatively impact water quality) and its use shall not be prohibited by the ARB, U.S. Environmental Protection Agency (EPA), or the State Water Resources Control Board. Exposed areas shall not be over-watered such that water results in runoff. The type of dust suppression method shall be selected by the contractor based on soil, traffic, site-specific conditions, and local air quality regulations.

HYD-10: Prior to the start of onsite activities, all equipment will be inspected for leaks and regularly inspected thereafter until equipment is removed from the project area. All contaminated water, sludge, spill residue, or other hazardous compounds will be contained and disposed of outside the boundaries of the site, at a lawfully permitted or authorized destination.

HYD-11: Staging areas shall be designated and located to prevent leakage of oil, hydraulic fluids, or other chemicals into watercourses or lakes.

HYD-12: All heavy equipment parking, refueling, and service shall be conducted within designated areas outside of the WLPZ or ELZ.

HYD-13: No new roads (including temporary roads) shall be constructed or reconstructed (reconstruction is defined as cutting or filling involving less than50 cubic yards/0.25 linear road miles). Existing roads, skid trails, fire lines, fuel breaks, etc. that require reopening or maintenance shall have drainage facilities applied at the conclusion of the project that are at least equal to those of the California Forest Practice Rules.

HYD-14: Heavy equipment is prohibited on slopes exceeding 65 percent or on slopes greater than 50 percent where the erosion hazard rating is high or extreme. Heavy equipment is prohibited on slopes greater than 50 percent that lead without flattening to watercourses.

HYD-15: Burn piles shall not exceed 10 feet in length, width, or diameter, except when on landings or road surfaces.

HYD-16: At the Calwater Planning Watershed scale, if the combined acreage subjected to mechanical fuel treatments, prescribed fire, and logging exceed 20% of the watershed area within a 10-year timespan, an analysis will be performed to determine the potential for hydrologically-induced significant impacts of the proposed activity.

HYD-17: If herbivory is proposed to treat vegetation in a project area containing watercourses, then the following items must be addressed as PSRs:

- The project will require water on site in the form of an on-site stock pond outside the WLPZ or ELZ, or a portable water source located outside the WLPZ or ELZ.
- The project will specify animal containment measures in the PSA to prevent animals from entering the WLPZ and/or ELZs. These might include the use of fencing (i.e., fixed or portable), the use of guard or herd dogs, or the use of an on-site herder.

Noise-Related Standard Project Requirements

NSE-1: Noise generating activities shall abide by the time-of-day restrictions established by local jurisdictions (i.e., city and/or county) if such noise would be audible to receptors located in applicable local jurisdictions. Cities and counties in California typically restrict noise to particular daytime hours. If the local applicable jurisdiction does not have a noise ordinance or policy restricting the time-of-day when noise-generating activities can occur, then noise-generating activities shall be limited to the hours of 0700 to 1900 Monday through Friday.

NSE-2: All powered equipment shall be used and maintained according to manufacturer's specifications.

NSE-3: Equipment engine shrouds shall be closed during equipment operation.

NSE-4: All heavy equipment and equipment staging areas shall be located as far as possible from nearby noise-sensitive land use (e.g., residential land uses, schools, hospitals, places of worship).

NSE-5: All motorized equipment shall be shut down when not in use. Idling of equipment or trucks shall be limited to 5 minutes.

NSE-6: Public notice of the proposed project shall be given to notify noise-sensitive receptors of potential noise-generating activities.

Traffic-Related Standard Project Requirements

TRA-1: Public road ways leading into project area shall be signed to warn traffic of the project activities that are taking place. Road signage shall be posted the morning prior

to the commencement of burning operations and shall remain until all operations are completed.

TRA-2: Direct smoke and dust impacts to roadway visibility and the indirect distraction of operations shall be considered during burning operations. Traffic control operations shall be implemented if weather conditions inhibiting smoke and dust dispersion have the potential to impact roadway visibility to motorists.

2.5.2 PROJECT SPECIFIC REQUIREMENTS

Projects may require additional measures to protect the environment based on site-specific conditions and consultation with affected regulatory agencies and/or stakeholders. These additional measures are known as Project Specific Requirements (PSRs) mitigations, and will be discussed narratively in the body of the VTP PSA. PSRs will also be placed into contract language so that they are properly implemented during project operations.

2.6 AREAS OF CONTROVERSY

Section 15123(b) of the State CEQA Guidelines requires that an EIR identify areas of controversy known to the lead agency, including issues raised by agencies and the public. The following are areas of controversy known to CAL FIRE:

- Impacts to air quality
- Impacts to chaparral communities
- Impacts to water quality, biological resources, and human health
- Impacts to geological features and soils erosion
- Impacts from herbicide applications
- Spread of invasive plants
- Potential for loss of life, property, and resource values due to escaped prescribed fire
- Increasing the amount of treated acres to help mitigate climate change
- Meeting the diverse and complex needs of the state
- Impacts to cultural resources.

CASE STUDY– Shaded Fuel Break

West Fire and Critical Defensible Space Lessons

July 28, 2010

The West Fire started on July 28, 2010 at 14:14 hours in Kern County. The fire was human caused and started along Blackburn Canyon Road 3 miles south of Highline Road. First arriving units reported a fast moving vegetation fire 1-2 acres in size with an immediate structure threat. Within the first 15 minutes the fire was exhibiting extreme fire behavior, with moderate duration crown runs and spotting a ½ mile ahead of the main fire and around several structures. The fire was burning in a north direction down-canyon which is not typical for this area, as the typical wind pattern is west to east.

Vegetation management projects within the community of Old West Ranch started in 2004 when the Fire Safe Council receiving their first grant for vegetation management work to develop the Blackburn Canyon Escape Route. Kern County Fire crews spent the next two summers clearing overgrown vegetation. The project consisted of removing dead and overgrown vegetation, limbing up existing live trees, and removing dead trees within 25 feet of both sides of the road. The purpose of this project was to reduce the fuel build up along the side of the access roads to allow the residents a safe way to evacuate the community and allow emergency vehicles a safe way into the community. In 2010 additional project work consisting of a 150 foot wide shaded fuel break along Wildhorse Ridge to the south of the Old West Ranch community. Kern County fire crews utilized a masticator and were able to complete the majority of the work in three months.

These projects were used effectively in the efforts to control the West Fire. The shaded fuel break along Wildhorse Ridge stopped the southern progression of the fire with no re-enforcement and the escape route project proved to be invaluable in the evacuation and safety of the residents and the safety of emergency equipment accessing the fire.

Defensible space was the key to structure survivability during this fire. During initial attack firefighters were battling an intensely burning, fast moving wildfire, with flame lengths in excess of 150 feet and numerous spot fires ¼- ½ mile ahead of the main fire. Kern County Fire Department enforces the 100 feet defensible space requirement in PRC 4291. In this case the minimum provided to be inadequate in areas due to the intensity of this fire. The 100 feet did suffice in some areas, but in the areas of extreme fire behavior larger clearances were needed to insure survivability.

CASE STUDY– Shaded Fuel Break

Goat Fire

July 18, 2000

The Goat Fire was caused by a campfire on July 18, 2000. Located in steep, rocky terrain along State Highway 44 in Lassen County, the fire spread rapidly toward the community of Lake Forest Estates. Because of extreme fire conditions, and as a precaution, evacuations were started.

Over 1,100 fire fighting resources were called in to battle the flames which were racing through heavy timber, jumping from treetop to treetop in the form of a crown fire. The land had been owned by Roseburg Resources timber company before purchase by Sierra Pacific Industries. Roseburg had completed a thinning and chipping project in the area back in 1991. When the Goat Fire reached this thinned area flames dropped from the crown of the trees to the ground where firefighters were able to attack it.

In addition to the thinned area, Roseburg had completed a 1,000 foot shaded fuel break along one side of Lake Forest Estates in 1990. The fire reached within a mile of the community. Firefighters were able to safely stop the fire in the thinned forest keeping the flames out of Lake Forest Estates.