

STRUCTURAL FIRE PREVENTION FIELD GUIDE

For Mtigation of Wildland Fires



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FOREWORD

The *Fire Safe Guides for Residential Development in California* have been well received and well used. However, the time has come for an update and a new title – *Structural Fire Prevention Field Guide*. New legislation, new research data, and new technology such as geographic information systems (GIS) must all be discussed in this updated guide. Much of the experience gained has validated previous fire safe guides. In addition, CDF now has a vital “Fire Plan,” and federal agencies have revised their Fire Management Policy.

The purpose of this new *Structural Fire Prevention Field Guide* is to facilitate implementation of state ordinances within the Urban-Wildland Interface in order to make structures safer. This Guide is intended for wide distribution to agency staff, to help homeowners, landowners, decision-makers, and local government planners learn more about factors important to land use decisions.

The Introduction of this updated Guide presents the difficulty of structure protection when accumulated fuels (due to successful fire suppression) make property damage more likely and firefighting harder. Increased numbers of structures in the wildland change firefighting strategies and often limit defensive options.

This Guide discusses the legal underpinnings of fire safe requirements, including laws and regulations covering general fire prevention and wildland fire safe regulations, recommended standards spanning entire fire and building codes, and spatial factors of lot development, infrastructure, and building construction. Guidelines for hands-on implementation of fire safe strategies through fire resistant landscaping or fuel modification are also included in this guide. A section on land use planning, particularly how fire safety can be incorporated into land use planning decisions at the general plan level, is an important portion of this guide. The section presents ways to assess hazards for land use planning decisions, with specific information on how to identify needs for increases in pre-fire management. Finally, the guide describes how to develop and implement a fire safe plan for large areas (i.e. less than a county, larger than a subdivision).

The appendices provide a useful bibliography, a glossary, statutes and regulations, legal opinions on fire safe issues, and fire resistant landscaping or fuel modification methods.

The California Department of Forestry and Fire Protection hopes this document will be well used to help enhance structure protection and minimize damage to California’s abundant and precious natural resources. Users should feel free to put this material to good use by copying graphics, quote regulations, etc.

This document contains several hyperlinks to other documents and on-line sources of information about structural fire prevention and protection.

1. INTRODUCTION

To protect resources, both natural and developed, public policy demanded an aggressive initial attack fire suppression strategy. This strategy resulted in the interruption of California's natural fire regime with lower frequency, shorter seasons, larger average fire size and increased intensity. The consequences of this change in the fire regime include increased fire hazards and increased continuity of fuels, including vegetation and structures, which complicate firefighting. Skyrocketing firefighting costs and unacceptable damages to natural and developed resources have resulted.

At the same time, a boom of growth in residences increased the number of ignitions in the wildlands, posing an unprecedented threat to natural resources while prompting changes in firefighting techniques and strategies. Recently a change in emphasis—from fire protection resources to pre-fire management—has been embraced by all major agencies with natural resource management and fire protection responsibilities.

The effectiveness of pre-fire management is demonstrated by house survivability studies. For example, information from wildland resource expert Ethan Foote's *Structure Survival on the 1990 Santa Barbara "Paint" Fire* indicates that homes with a noncombustible roof and vegetation clearance had a 90% chance of survival (99% when defensive actions were also taken by civilians or firefighters). These measures tend to create a defensible space so that people may defend the structure. Houses with combustible roofs, no vegetation clearance, and lack of intervention had a 4% chance of survival. Under this scenario, pre-fire management provided nearly certain survival as opposed to nearly certain destruction.

Legislators have recognized the need for and effectiveness of pre-fire management by way of various laws. These encompass hazard assessment, requirements for noncombustible roofing, and disclosure for fire hazards when selling real property.

It is now the responsibility of those who implement fire safe regulations to apply these strategies using common sense. This guide will assist in implementation and help promote positive action.

2. FIRE PROBLEM

2.1 Analysis of the Problem

The diagram in Appendix A outlines the complexity of issues about structure protection in the wildlands. Many factors affect each other. Intervention to minimize damage can occur in various ways. For example, better roads and/or water systems may be constructed, subdivision review and approval can require mitigation of fire hazards, or vegetation can be modified around structures. However, for an area to be fire safe, most if not all of the factors shown in Appendix A will need to be addressed.

This is a challenging task that requires knowledge of fire behavior, communication with the public and decision-makers, infrastructure, fuel modifications and their environmental impacts.

2.2 Special Fire Problems

California has a disturbance-based ecosystem, meaning among other things, that a significant portion of the state burns every year. On the average, grasslands generally burn every five years, pine forests every ten years and chaparral stands every 40 years. Until the 1970's, fire suppression tended to minimize fire spread, but the 1990's have seen a trend of larger, more damaging fires.

California's forest, grass and brush land ecosystems have adapted to fire, evolving characteristics that make burning part of their survival process. For instance, ponderosa pines have resinous needles that create flammable litter, while chamise retains more and more highly aerated oil as it ages. Millions of years of evolution support California's chances of experiencing fires.

Surprisingly, the vast majority of California's residents do not fully recognize the threat of wildfires. Instead, crime, education and economy top politicians constituency's concerns, since fire does not play a significant role in every area of the state. Accepting the inevitability of fire in California's landscape could be the biggest problem facing fire prevention and protection specialists. Some opposition to fuel management rests on the assumption that fire is a natural occurrence. However, to say, "let nature take its course" may have dire consequences in this situation.

Occasionally nature deals fire safety a bad card. For example, the effects of heavy snow, bent and broken tree branches fueled the huge lightning-caused 1977 Marble Cone Fire in the Ventana wilderness in Monterey County. Broken tree branches and dense brush fields fueled rapid fire growth in the 1991 Oakland/Berkeley Tunnel Fire. Six years of drought in the 1970's, the late 1980's and early 1990's triggered insect infestations, causing trees to die in places where tree density was unnaturally high, such as in the Tahoe basin and throughout the Sierra Nevadas. Natural events such as frost, insect infestations, and blow downs will happen again. The same area affected by snowfall in 1976 was again blanketed with unseasonable snow in 1998. While these events may be short-lived, dead, flammable fuels will remain until they are removed, either by wildfires or by pre-fire management.

3. DEFENSIBLE SPACE

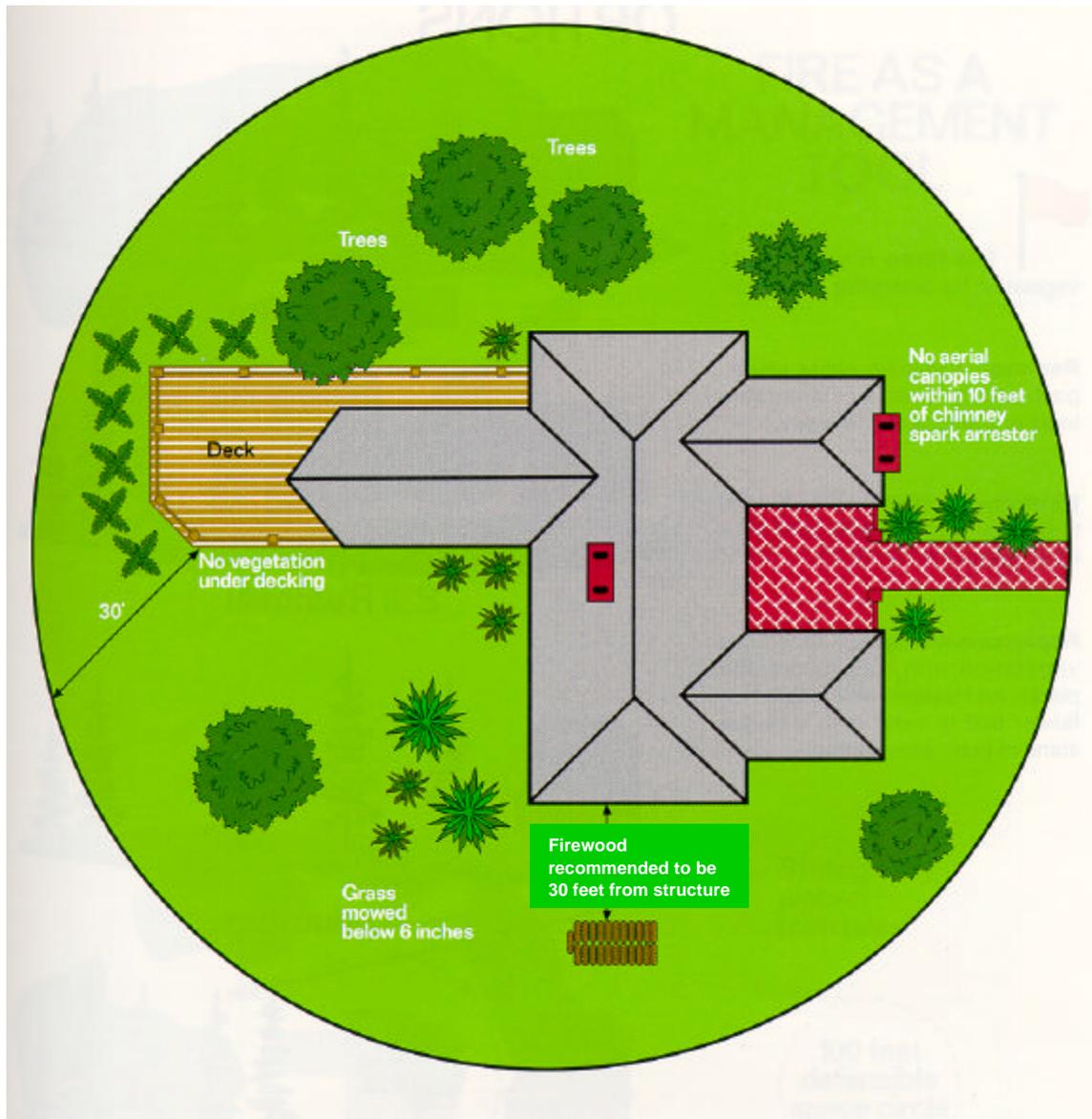
The term “defensible space” was first coined in the 1980 *Fire Safe Guide for Residential Development in California*, and it now provides the cornerstone for the Board of Forestry's fire-safe regulations and CDF's wildland fire prevention planning program.

Defensible space is the area within the perimeter of a parcel, development, neighborhood or community where basic wildland fire prevention practices and measures are implemented, providing the key point of defense from an approaching wildfire, an encroaching wildfire or an escaping structure fire. The perimeter is the area of the parcel or parcels proposed for construction and/or development, excluding the physical structure itself. Properly maintained emergency vehicle access, emergency water reserves, street signs, building identification, and fuel modification should characterize the perimeter area. CDF can provide guidance to local jurisdictions, agencies, professionals and the public in implementing these measures.



Photograph 3.1.
Lack of Defensible Space

The design and construction of structures, subdivisions and developments in State Responsibility Areas (SRA), as well as in Local Responsibility Areas (LRA), must provide for defensible space, including built-in wildland fire prevention as prescribed by local jurisdictions and fire agencies. The employment of defensible space is just one step in mitigating wildland fire losses. The primary key of this concept is built-in fire prevention. Each home built in the wildlands must provide some basic level of self-protection, including water, adequate roads, flammable vegetation clearance and proper building identification. Each resident and developer must accept part of the responsibility for incorporating basic perimeter fire prevention measures into the design and construction of wildland structures and developments. This incorporation of defensible space provides a margin of safety for wildland and structural firefighters, provides a point of attack or defense, and increases the survivability of the home or development.



Photograph 3.2.
Defensible Space

3.1 Maintenance of Defensible Space

Fire prevention measures are often specified during the permitting and map approval stages of development. Unfortunately, over time, these measures may not be properly maintained. A fire hydrant that does not supply water is not worth having. Regular maintenance of defensible space requirements is essential to the success of the state's wildland fire prevention mission and should be a condition of any permit or map approved by local government. Maintenance timing, whether annual or more frequent, must be considered during the planning phase.

The party responsible for maintenance must be identified before development and construction begins. It

may be the property owner, the developer, a homeowners association, a county service area or even the public jurisdiction. Agreement, bond or inclusion in a maintenance district or service area can secure maintenance.

3.2 The State's Responsibility

The state of California has retained the responsibility for wildland fire prevention as a part of its mission of protecting and enhancing California's natural resources. As homes and communities have been built in the wildlands, the state has taken an active role in proposing mitigation, recommending and assisting in preparing strategic plans and providing effective fire prevention and loss reduction programs and activities. The Fire Safe program was developed in 1963 to address this growing conflict between homes and wildfire. Its goals are to:

- Develop uniform statewide minimum standards for wildland fire prevention.
- Reduce loss and damage to structures and resources.
- Create a safer environment for occupants living in the wildlands who are at risk from wildfires.
- Require self-protection, with less dependence on state and local fire agencies.
- Provide defensible space for firefighters, reducing firefighter risk.
- Reduce the vulnerability of homes and developments to wildfire.
- Support CDF's resource protection mission.

3.3 Local Government's Responsibility

Local government is granted the authority to provide life and property fire protection and to approve local construction and development. Local government therefore has the responsibility to develop prudent and appropriate land use goals, and to implement them through general plan policies, zoning and land use controls. The implementation process is the approval and issuance of permits and maps. To fulfill this role of land use authority, local government must look beyond its interpreted statutory role and accept its responsibility for life, property, safety and natural resources. When growth is allowed to continue in rural areas, local government must ensure that the growth is responsible, limiting risks to an acceptable level. This requires an active response! Demonstration gardens and examples of Fire Safe development and construction must be recognized and shared with those who need to learn. Local government can promote public awareness by demonstrating leadership and appropriate responses to the Urban-Wildland Interface problem.

In response to major wildfire conflagrations in the LRA, the Legislature established fire safe requirements for these areas to balance local fire prevention with that of the SRA. These effort, which are most widely known as the "Bates" and "Brown" bills (AB 337 and 3819), were signed into law in 1992 and 1994 respectively, and are now in effect. As required by the Bates bill, CDF in cooperation with local fire authorities identified Very High Fire Hazard Severity Zones (VHFHSZ) in LRA. In accordance with this statute, the original zone identifications were transmitted to local authorities, and the State Fire Marshal (SFM) developed a model ordinance for zone adoption. Local authorities had the option of adopting the ordinance or indicating their fire safe regulations already "met or exceeded" those fire safe standards included in the Bates bill. In accordance with the Brown bill, the SFM drafted another model ordinance in 1996, including more stringent fire safe standards. The history of these laws and the model ordinances are available on the Internet at <http://www.prefire.ucfpl.ucop.edu/izhazard.htm>, as part of the *Wildland Fire Hazard Assessment* publication.

3.4 Public Responsibility

Government today is overburdened and overwhelmed with its responsibilities, especially in the area of fire protection. New fire engines and more firefighters, while necessary to maintain fire protection equivalent with basic growth, are very expensive. Fire engines and firefighters do not solve the whole problem. Eight, 10, 20 or even 100 fire engines cannot protect every home threatened during a wildfire. Thus, the responsibility falls on the homeowner, developer and contractor who create the environment.

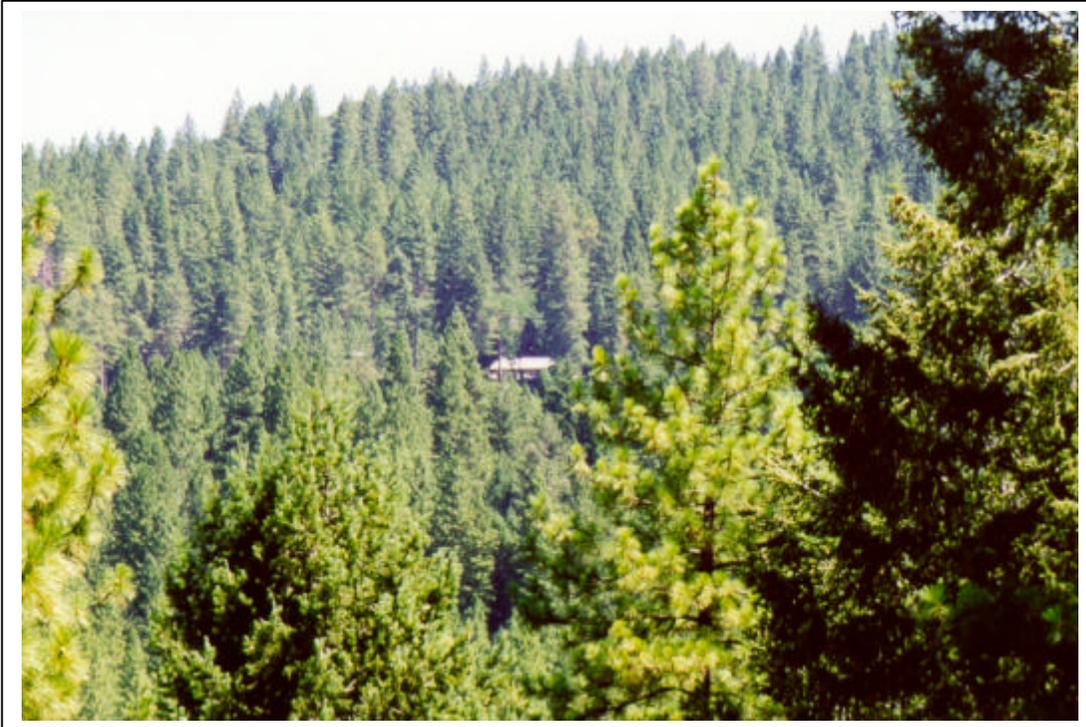
Neighborhood and community action are essential. New revenues and tax sources are not easy to find, and new approaches must be found. The residents are the keys to positive action. Groups such as homeowners' associations and Fire Safe Councils (<http://www.firesafecouncil.org>) are local catalysts that can bring the community together with decision-makers to make active progress.

Fire departments must solicit the support of local officials, citizens and advocacy groups to facilitate adoption, implementation and maintenance of fire safe standards. Public education efforts should focus on these groups. Every wildland resident and visitor must understand how to act in a fire safe manner.

3.5 Natural Hazard Disclosure

Since July 1, 1991, each seller of real property in SRA has been required to disclose to any prospective purchaser that the property for sale is in a wildland area that may be subject to wildfire risks and hazards. Each seller shall also disclose that the property must meet the flammable vegetation clearance requirements of Public Resources Code (PRC) 4291. The seller must also disclose to any prospective buyer that it is not the state's responsibility to provide fire protection services to any building or structure located within the wildland unless the state has entered into an agreement with local government to provide structure fire protection.

Effective June 1, 1998 the law requires disclosure by the seller of real property of all areas subject to certain natural hazards including fire hazards. All SRA lands pursuant to PRC 4125 are included on Natural Hazard Disclosure (NHD) maps. Very High Fire Hazard Severity Zones (VHFHSZ) in LRA identified pursuant to Government Code Sections 51178 and 51179 are also on these maps. Copies of the maps showing these areas have been provided to each county planning department and to each CDF Ranger Unit. Additional copies are available through the Teale Data Center in Sacramento. More information about NHD is available on the Internet at <http://www.ceres.ca.gov/planning/nhd>.



Photograph 3.3.
Home within State Responsibility Area

4. LAND USE PLANNING

"The Legislature finds and declares that California's land is an exhaustible resource, not just a commodity, and is essential to the economy, environment, and general well-being of the people of California. It is the policy of the state and the intent of the Legislature to protect California's land resource, to insure its preservation, and use in ways which are economically, and socially desirable in an attempt to improve the quality of life in California" (Government Code, Section 65030).

"The Legislature also finds that decisions involving the future growth of the state, most of which are made and will continue to be made at the local level, should be guided by an effective planning process, including the local general plan, and should proceed within the framework of officially approved statewide goals and policies directed to land use, population growth and distribution, development, open space, resource preservation and utilization, air and water quality, and other related physical, social, and economic development factors" (Government Code Section 65030.1).

These Government Code Sections are the cornerstone of land use decisions in California. Since 1963, CDF has taken an active role in the development of statewide resource protection and life safety policies, as well as influencing local general plan development and implementation. Local fire jurisdictions should become actively involved in developing, editing and implementing local land use planning laws and decisions. These are prime opportunities to implement positive wildland and structural fire prevention to benefit a community. This will help communities to 1) resolve problems before they become difficult, and 2) plan for the future.

In most jurisdictions, the responsibility and authority for regulating land use and development rests with the county or individual community. Guiding these development and land use decisions are master plans or general plans, which in many cases are legally mandated. General plans provide a master policy template to guide growth and provide the authority for other local controls such as planning and zoning laws and local ordinances. Most planning documents include: 1) a data and analysis section, where local hazards, risks and fire protection capabilities are identified, 2) a policy section, that provides broad direction to resolve a problem or implement a solution, and 3) implementation measures, such as applying a local ordinance.

4.1 Development Plans

General plans and the resulting area plans, zoning ordinances and fire prevention ordinances can mitigate the impact of new housing and subdivisions on a department's ability to provide fire protection.

Results may include interior and exterior life safety measures, wildland and structural fire prevention systems, mitigation fees, maintenance prescriptions to keep the required measures operating and in place, restrictions on road design, and enhanced water supply systems.

In conjunction with the local building code, these measures can address individual parcels as well as individual residences and commercial occupancies. Where remodeling occurs, or in the case of existing structures that do not meet today's standards, it is more difficult to achieve results, but even these can be handled by a local ordinance, depending upon the political and economic mood of the community.

The key is to talk to those who make the decisions, educate them, become active in the land use process, maintain continued involvement and be reasonable to their needs. Suggested planning references include *Fuel Modification Plan Guidelines for High Fire Hazard Areas* developed by the Orange County Wildland/Urban Interface Task Force Subcommittee on Fuel Modification and the *Subdivision Map Act Manual and California Land Use and Planning Law* available through Solano Press in Point Arena.



Photograph 4.1.
Major Development within California Wildland

Fire safe regulations are implemented via the local government building permit and subdivision map approval process. Because local government is the approval authority for development, these regulations are triggered by the application for a building permit for purposes other than limited remodeling. These include but are not limited to submittal of a subdivision map, application for a use permit, siting a mobile or manufactured home, or constructing a road.

4.2 County General Plans

California law (Government Code Section 65030.1) directs that future growth decisions shall be made at the local level, guided by an effective planning process (general plan, etc.) and statewide land use goals and policies. Many opportunities for design, direction and improvement of fire and resource protection are found in the general plan.

The county general plan provides: 1) long-term plans for growth, 2) local controls over development, 3) protection of public health and safety, and 4) descriptions of community values and future expectations. The courts have defined the county general plan as the constitution for local development. It is the master document that governs land use. All land use must comply with the general plan, and the general plan must be consistent internally. The Governor's Office of Planning and Research distributes guidelines for development of county general plans, including specific directions on mandatory elements and issues, including the safety element provision for wildfire safety. Each county develops its own general plan and

elements that accordingly address local issues of growth.

4.2a Fire Safe Requirements

Government Code, Section 65302(i) requires all counties to address fire safe standards in the safety element of their general plan, specifically: evacuation routes, peak load water supplies, minimum road widths and clearances around structures. This was to be completed by 1974. Most counties did address some level of fire safe measures in their general plan. However, many did not. Even where they did address fire safe standards, the standards vary widely in content and effectiveness. On the other hand, several counties have adopted strong fire safe ordinances that require significant fire prevention measures. CDF, as the fire agency responsible for protecting SRA, believes that firefighter safety is an issue that crosses governmental boundaries and requires statewide attention. The following discussion details required and recommended activities.

Information on the county general plan, the development process and strategic fire planning can be found in *A Discussion of the County General Plan and the Role of Strategic Fire Protection Planning*, prepared under contract for CDF on September 30, 1989. Additional information is included in these Governor's Office of Planning and Research publications: *Planning, Development and Zoning Laws; County General Plan Guidelines*, and *CEQA: The California Environmental Quality Act, Statutes and Guidelines*. Summaries and excerpts from these documents will follow.

Six of the mandated seven elements are pertinent to the wildland fire prevention and protection mission. These are described with comments on their importance to fire and resource protection, along with some sample evaluation criteria.

4.2b Land Use

The land use element "dedicates" lands to particular purposes. It tells how the jurisdiction will designate and separate various uses such as commercial, industrial and residential. Natural resource, agriculture, timber production and flood plain areas (if any) must be included. A major intent of the element is to design developments that are compatible with one another. That is, heavy industrial areas should be separated from, and not adjacent to, residential areas. On the other hand, light commercial or shopping center designations may be compatible with residential uses. Sometimes, commercial areas are set aside as buffers or gradual-change areas between residential and industrial uses.

Examination of the land use element in conjunction with wildland areas may reveal current or future conflicts with fire and resource protection. All too frequently, the compatibility of land uses is compromised where development and wildlands meet. All types of uses might be designated in or adjacent to hazardous fire areas without buffer zones or other mitigating measures. Land use policies should consider and reduce these conflicts. Since zoning districts are derived from land use designations, it is important to assure that those designations, policies, and ordinances are compatible with wildland protection. For example, residential, open space, agriculture and timber preserve land uses could be designated to include fuel break and fuel reduction zones.

When evaluating a land use element, one should consider the following questions:

- Does the land use element include wildland fire risks and hazards in the data and analysis section?
- Do policies include reduction of hazard levels by various methods?
- Are recreation areas (parks, golf courses) and agricultural uses (pastures, irrigated tree farms) located to provide buffers between development and wildlands?

4.2c Housing

The housing element determines how the government will regulate density and intensity of residential development. It includes provisions for low income and handicapped needs. In some cases, it may actually allow lower standards of design and construction to encourage affordable housing. In hazardous areas, this element could conflict with fire safe development. Access, construction standards and design requirements may be reduced by the jurisdiction in an effort to provide affordable housing. Alternatively, safer areas should be designated for this type of development.

When evaluating a housing element, one should consider the following questions:

- Does the data and analysis section describe vulnerable, unsafe areas for "sub-standard" housing?
- Do the policies recognize those areas and prohibit this type of development there?
- Are construction standards in accord with defined fire prevention needs (access, roofing, fire flow)?
- If not, what compensating mitigation measures are required to provide safety?

4.2d Circulation

The circulation element delineates the general location of existing and planned transportation routes and public utilities. Designations, policies and implementation measures in this element (and all others) must be consistent with the land use element. The information is usually shown on maps or diagrams to show how the transportation system serves the various land use designations. This element is the primary guide for access routes and road design requirements (not engineering standards). Government Code Section 14000 requires that the circulation element provide transportation facilities that reduce hazards to human life and minimize damage to natural resources. This provides the opportunity to make strong recommendations about transportation routes and design requirements such as turnouts, helispots and safety zones.

When evaluating a circulation element, the following questions should be considered:

- Does the element plan for satisfactory access to high hazard areas?
- Are standards high enough to provide safe evacuation from residential (and other) land use areas?
- Are policies defined to limit the number and length of one-way roads?
- Are heliports and helispots designated in areas to facilitate suppression and other emergency needs?

4.2e Conservation

The conservation element describes how the jurisdiction intends to protect and conserve its natural resources. It should discuss water, soils, forests, wildlife and fisheries. Potential fire and flood impacts on all resources should be included. This element ties directly to the life, property and wildland fire prevention and protection mission. It should be written to support that mission. As with all other elements, this one must be consistent with the general plan. It must explain natural resource management policies in a way that makes sense alongside other land use policies. In some counties, urban bias shows itself quite clearly in this element, when only local wastelands, rocky ridges, and impassable canyons are included in the conservation element. This is not the intent of the Legislature nor planning and zoning laws.

When evaluating a conservation element, consider the following questions:

- Is the element consistent and logically applied, or does it just gather up unusable areas and "lump" them into a conservation category?
- Does the element discuss resource values?

- Are potential resource losses from fire (soil loss, sedimentation, local flooding, timber production, wildlife habitat, etc.) included in the data and analysis section?
- Do policies include management options of prescribed fire and fuel breaks to enhance protection?

4.2f Open Space

The open space element designates areas for preservation and managed production of natural resources, outdoor recreation, and public health and safety. The open space element is related to the conservation element in some ways, and designated lands in either element could be actually or nearly the same. The important difference between conservation and open space elements is the very specific inclusion of public health and safety requirements in open space. Government Code Sections 66560-66564 dictate that this element should include designation of "areas that require special management because of fire risks." These sections of the Government Code authorize the connecting or linking of these areas into complete networks in the interest of public safety. The open space element offers an opportunity to analyze conflagration potential and to design fuel break and fuel reduction zones, helispots, access and water systems into strategic fire defense improvement systems. Developers can be required to construct and maintain these improvements. Inclusion of strategic defense improvements in the open space and safety elements will lead to zoning for such improvements and eliminate the owner-by-owner agreements and public agency financing now necessary for construction and maintenance.

When evaluating an Open Space element, one should consider the following questions:

- Does the element relate to fire safety and suppression effectiveness?
- Is it consistent with the land use, safety and conservation elements to provide integrated and systematic resource and public protection improvements?
- Does it contain policies and implementation measures requiring dedication, construction and/or maintenance of these improvements on all projects?

4.2g Safety

The safety element defines community protection in relation to fire, seismic and geological hazards. It must include provisions for evacuation routes, water supply, minimum road widths and clearances around structures. It should include mapping of fire hazard severity zones and could include analyses of minimum suppression resources required. The safety element can be used to strengthen or further justify other elements. It is an excellent place to include project design requirements for reducing hazard levels and to provide for mitigation measures not included elsewhere in the general plan. It may also be used to justify zoning for strategic fire defense systems.

When evaluating a safety element, the following questions should be considered:

- Does the element correlate with others to provide for the best and safest suppression actions? Does it recognize evacuation needs?
- Does it address the traditional suppression problems and include policies and implementation measures to eliminate those problems?

During 1989, the Legislature applied some effective "band-aids" to the Urban-Wildland Interface problem. Per Senate Bill 186, each county is now required to submit any revisions of their General Plan safety element to the California Board of Forestry for review and comment. If the county fails to implement the Board's comments, they must state why. CDF staff members also successfully encouraged the Governor's Office of Planning and Research (OPR) to address significant strategic wildland fire prevention and protection methods in their 1991 edition of the *General Plan Guidelines*. This document guides the

development and update of general plan elements by counties.

4.3 Actions You Can Take to Improve Land Use Plans

Again, the key is to be active in the land use planning process. Talk to the decision-makers, educate them about fire safety issues and be reasonable about their needs.

- A. Review comprehensive land use plans prepared in advance of development. These should be prepared and reviewed as soon as fire hazard areas are considered for development. This way, problems can be resolved before the proposed development has begun. Situations hazardous to life and property resulting from lack of land use planning are often very difficult to correct. In such cases, all those concerned must acknowledge and accept the level of risk and probable damage from wildfires.
- B. Conduct fire prevention planning for large cohesive units in conjunction with planning drainage, soil erosion, flood control and sanitation. Fire prevention planning is necessary for safe development of watershed areas. Develop examples of how to apply planning to an actual problem area to illustrate the basic relationship of fire prevention to the development of mountainous, grassy and brush-covered land. Such examples or area models may encourage a mutual understanding of fire planning principles between planners, land developers, builders and regulatory agencies of government.

A good source for more information is the City of Hayward [*Hillside Design and Urban/Wildland Guidelines*](#).

- C. Use Fire Hazard Severity Zones to specify conditions under which the use and development of specific areas can occur. A hazard classification system can also provide a basis for detailed zoning. In addition, future use of the California Fire Economics Simulator (CFES) as part of a series of analytical programs may help identify the effects of a specific development, whether fire safe or not, to CDF's wildland fire prevention and protection mission. Encourage local government to adopt and enforce the standards specified in this guide. If circumstances warrant, develop more restrictive standards in conjunction with local jurisdictions. In SRA there are three levels of fire hazard identified. Very High is the most critical, and proposed developments in these areas need special attention. The CDF system uses weather, fuels, and topography to rate each area. In LRA, the same system has been used with structural density and points added or subtracted for other criteria. If the proposed development is adjacent to Federal Lands, the appropriate authority should be contacted to ascertain whether the Federal Lands have been rated (there currently is no common system in use by Federal agencies). For more information about hazard assessment and severity zones, refer to the *Wildland Fire Hazard Assessment* publication at <http://www.prefire.ucfpl.ucop.edu/izhazard.htm>.
- D. Review proposed lot splits, subdivisions and other developments for fire prevention and protection needs in conjunction with water, road, health and flood control authorities. Make planning recommendations for large-scale housing or planned-unit developments, not just for traditional subdivisions. Review new development, appropriate variances and use permits to assure an acceptable level of fire safety. Also review changes in zoning related to land use and development density, as well as area and specific plans or other long and short-range plans.

- E. Recognize and confer with the fire protection agency where the project is located when establishing conditions for use or development of an area. Local fire protection agencies, along with local planners, can recommend a comprehensive land use system which recognizes special fire problems and requirements related to vegetation, topography, weather, transportation systems, water supply systems, building density, hazard reduction and risk. The overriding concern in developing recommendations is to emphasize the protection of life and property from wildfire and prevention of damage to adjacent watersheds and other natural resources. Be sure to consider the cost versus risk analysis and economic impact of any recommendations.



Photograph 4.2.
Special Fire Problems in Rural Areas

- F. Require the developer to provide at least two access routes during each phase of a large development. Require the developer to provide fire prevention and protection measures throughout the entire project. Include current and projected fire protection needs, including fire facility sites, in all development plans. Require assurance bonds of performance to ensure that developers provide fire safe measures that give new residents a reasonable level of protection. The value of assurance bonds should be sufficient to compensate for increased costs due to inflated values over the duration of the development. Require developers to hire a licensed urban forester to oversee the management of vegetation during development. The urban forester can assist with planning the location of parks, golf courses, utility corridors, roads, streets and landscaping with fire prevention and protection in mind.

The functional placement of greenbelts--areas of managed vegetation kept irrigated and constantly green--can reduce the vulnerability of a development to wildfire at little cost. Include permanent greenbelts or fuel breaks in the plan, and assign the responsibility for maintaining these areas so that the benefits of such measures are guaranteed in the future.

- G. Review any division of land into two or more parcels for the purpose of lease, sale, conveyance or

transfer, whether immediate or future, which is not defined as a subdivision. This will assure that fire safe standards are applied to high fire hazard areas developed outside of major subdivisions. Counties may apply the same requirements to major and minor subdivisions, such as road and water requirements, but many choose to apply alternative strategies to “4x4s” and other parcel splits. For more information refer to the *PRC 4290 Guidebook*.

- H. Design fire prevention planning measures such as emergency access roads, emergency water storage, heliports, safety islands, fuel breaks and vegetation management as part of an overall fire defense system to facilitate fire control. Fuel management modifies the threat posed by vast areas of vegetation either by reducing the available fuel through prescribed fires, or by converting the vegetation to a type that is less hazardous. Treat all wildland adjacent to an inhabited area to reduce the conflagration hazard. Various measures can break up broad expanses of vegetation into manageable segments. Encourage wildland fire protection agencies to perform and assist landowners in such treatments. Also encourage cooperative land management planning efforts for land treatment systems, community firebreaks and facilities for the mutual defense of both the community and natural resources. Contact CDF and local fire departments for additional information and assistance.

5. FIRE SAFE LAND USE PLANNING BUSINESS PROCESS

Fire safe land use planning should be developed and implemented for large cohesive units under the guidance of the general plan safety element, and in conjunction with the planning for drainage, soil erosion, flood control and sanitation. Planning for fire prevention and protection is necessary for full and safe development of watershed areas. To illustrate this planning concept and the basic relationship of fire prevention to the development of the wildland, local planning and fire authorities should develop examples of how planning could be applied to an actual problem area. Such examples, or area models, would encourage mutual understanding of fire planning principles between planners, land developers, builders and regulatory agencies. For specific information on the CDF California Fire Plan, visit the Internet site http://frap.cdf.ca.gov/fire_plan/.

5.1 Elements of a Fire Safe Land Use Plan

There are three parts to the planning process: the technical process, legal requirements and political acceptance. The technical process defines the needs for adequate protection complying with and supporting state planning laws. Meeting legal requirements is also relatively easy, if the technical work has been done correctly. The political process is the most difficult, because it depends heavily on the attitudes and perceptions of people. This chapter touches very briefly on that process because every jurisdiction will have some differences in the way they understand and accept strategic fire prevention and protection planning. Dealing with those differences requires approaches that fit actual local situations, not just written guidelines. There are, however, some key actions that can facilitate political acceptance in any jurisdiction. Those actions are promoting an informed public, involving key government personnel, and implementing a professionally presented product.

Achieving protection of life, property and resources becomes more difficult as people and structures enter wildland areas at an ever-increasing rate. Existing policies and procedures indicate that the inherent problems in protecting wildland as well as life and property will be compounded in the decades ahead.

For example, Nevada County's 49er fire in 1988 exhibited all of the problems common to wildland-structural fire suppression that can be expected in the future. Initial attack and reinforcement engines were immediately forced into structure protection rather than perimeter control. Water was in short supply. Inaccessible roads and driveways hindered the defense of some structures, and accumulation of fuels adjacent to other buildings made their defense impossible. A dozer was trapped and burned in heavy fuels while trying to pioneer a control line. Air tankers had to drop as much retardant on and around structures as they did on the fire front, thus reducing perimeter control effectiveness. Major evacuations jammed roads and slowed suppression efforts. This fire destroyed 312 structures and burned 33,700 acres. In terms of structures lost, 10 out of the 20 largest wildfires in California's history, have occurred since 1990.

These losses could have been reduced or prevented with long-term planning, enabling suppression forces to do more than just react to the fire's spread on a spontaneous and tactical basis. Strategic initiative was lost before the fire started, and during the first several hours the tactical reaction was characterized more by crisis than by planned suppression. Given the current status of development in most of California's wildlands, this loss of initiative and crisis reaction will be typical of fires in the future unless some significant changes are made. Fire prevention planning can help make these changes. It can address all of the root causes of suppression problems and be a major actor in regaining the initiative in fire protection.

5.2 Fire Safe Land Use Planning Defined

Fire safe land use planning is a combination of fire behavior knowledge, several decades of suppression experience and the practical application of planning law. It can be a way to infuse wildland fire and resource protection requirements into general plans and all the subsequent planning of a local jurisdiction. It is designed to provide area-wide protection systems to watersheds, localized communities and entire counties.

There are three goals for fire safe land use planning:

- (1) *To provide professional wildland suppression advice to local governments;*
- (2) *To reduce or eliminate the urban bias, and thereby bring a more balanced approach to wildland planning and development, and*
- (3) *To provide suppression forces with the best and safest chances for stopping wildfires.*

5.3 Fire Safe Land Use Planning Process

One important key to successful fire safe land use planning is to understand (and believe) that planning is a legitimate exercise within the fire service's mission. It may not have been done before, and local government may not accept it eagerly, but it is a proper and worthwhile activity. From a people-oriented perspective, the process will be more effective if extra effort is expended to educate, inform and involve citizens and officials about every step of planning. Here are the technical steps involved in strategic fire prevention and protection planning.

Step 1. Preparation

Local and state fire protection agencies and local government(s) should be a part of the process. Inform and involve them before work actually starts. Develop a working relationship with the jurisdiction's planning director and staff, and learn their process of planning and amending general plans, since counties vary in the ways they perform these tasks. Identify and contact others who may become involved. Seek their participation in all of the activities. If some kind of multidisciplinary team can be formed, it will bring about a better final product and feelings of joint cooperation about the plan. Think about long-term strategy. Obtain State Department of Finance (DOF) population projections for the next twenty years and consider how and where these people will be integrated into the jurisdiction.

Step 2. Define the Fire Environment(s)

The objective of this step is to provide a comprehensive description of the local fire challenge in ways that comply with planning law and can be clearly explained to the public and elected officials.

Document the fire information in the same manner as required by OPR for other issues of concern in the data and analysis section of a general plan element. This would include both maps and a narrative on fire history and fire potential. Show how current and future development is, or may be, located in fire-prone areas. Document significant historical fires, estimating the fuel loadings and rates-of-spread, noting the locations of fire perimeters. Document historical fire numbers in relation to population and bring the data up to date. Show how population increases compare with fire incidence. Describe current fuel loadings in each fuel type in the jurisdiction and predict current rates-of-spread under average to worst conditions. Compare these with the historical information.

Much of this data is already available through CDF and local fire departments from work done on fire

management analysis and in development of other fire protection issues. However, it is probable that the data will have to be rearranged or reformatted to fit the local planning process.

Step 3. Illustrate Potential Fire Problems

The objectives of this step are to describe what can happen under present conditions and to suggest specific ways that future fire damage can be reduced or prevented.

Use fire modeling, "gaming" and/or personal knowledge to determine and map fire potential in problem areas. Consider the average to worst fire situations in calculating the potentials. Recognize that recent fires in other jurisdictions may be a clue to potentials in your area. The number and frequency of disaster fires are growing, and they each indicate an increasing possibility that they can happen anywhere in California. Estimate potential economic and other losses associated with predicted fire problems.

The logical next step is to correlate the determined fire potentials with elements in the general plan. Here are examples of items to consider:

- A. **The land use element...**What are the current and planned areas for residential, commercial and industrial uses? Are there conflicts between land use plans and the documented fire potential? If so, how could they be resolved?
- B. **The circulation element...**How do the transportation routes relate to fire potential and suppression needs? Are evacuation potentials considered? Are helibases and helispots considered as part of the transportation system and access for fire equipment as called for in PRC 4290? Can improvements be made to reduce potentials and/or increase suppression effectiveness?
- C. **The conservation element...**Are natural resources on SRA lands threatened? How might they be better protected?
- D. **The open space element...**How does this element fit with the conservation element? Can there be a stronger relationship to enhance both? Where are the best chances for fuel breaks? How can complete networks of fuel breaks be linked together as authorized by the Government Code?
- E. **The safety element...**Are all areas of significant fire risk identified? Is the fire hazard severity scale incorporated into the element? Are there increasing levels of design and improvement requirements for the higher hazard levels? If not, what should be added?

Step 4. Designing Fire Protection Measures

The objective of this step is to show what is needed to improve suppression effectiveness. It is the place to define how and where initiatives can be incorporated in future planning and development.

This step requires the unlearning of two old but powerful concepts. First, disregard existing planning, zoning and development. Imagine that the entire jurisdiction is undeveloped, and that the strategic plan is being prepared for undeveloped wildlands. The existing patterns of development probably will change over time. Thus, the idea here is to design protection based on actual wildland fire potential, not on the current character of development. Do not get trapped into poor protection in the future because the jurisdiction has made poor planning decisions in the past.



Photograph 5.1.
Community Firebreaks are Needed in Subdivisions

Second, disregard funding mechanisms for the improvements. While all of the defined improvements must be realistic, efficient and justifiable, do not base decisions on the type, size or amount of strategic defense systems on the premise that CDF will have to fund the work. The designed improvements will be funded by various means as development goes forth.

The specific design tasks include:

- A. Design a complete fuel break system focused on the shelter-in-place concept. This design should be an ideal version, showing the very best possible system. Show major fuel breaks (200-300' wide) on key ridges, secondary fuel breaks (100-200') on secondary ridges, and tertiary breaks (50-100') to interconnect with other improvements. Use fire behavior and suppression knowledge in these designs and relate them to the fire hazard assessment. Divide the identified "High" and "Very High" hazards within the jurisdictions into manageable suppression areas of 30 to 300 acres, depending on slope, aspect, fuel types and fuel loading. "Low" and "Moderate" hazard areas may also need fuel breaks, depending on the overall conditions of the area.



Photograph 5.2.
Fuel Break

- B. Add "Fuel Reduction Areas" to the fuel break design. These would be areas where fuel breaks are not feasible, but where current or future fuel loading will create suppression problems. The reduction areas might be in steep canyons, along roadsides or adjacent to secondary and tertiary fuel breaks. They could also be areas suitable for greenbelt types of improvements such as pastures, golf courses, playing fields, etc. Objectives are to: 1) plan fuel reduction to widen or strengthen fuel breaks, or 2) to interconnect fuel breaks and other strategic improvements. The actual work of reducing fuels, by whatever means, may only have to be done once, or once every ten years. However, the strategic plan should delineate the areas for zoning and development requirements into the future.



Photograph 5.3.
Fuel Reduction Area

- B-1. Now go back and consider the constraints of existing development. Look at each place where the ideal design is hampered by the presence of structures. In each of those cases, design some kind of alternative that will give the best possible suppression effectiveness under the circumstances. The alternatives may be rerouting fuel breaks and relocating fuel reduction area boundaries, or it may be feasible to substitute additional water supply or access improvements. Whatever the situation, develop this step to provide strategic defense improvements that meet the best and safest objectives.
- C. Identify those general areas where adequate water sources are needed. If actual sources are known and available at the time of designation, they can be included. Otherwise indicate general areas only, because actual sources and future development cannot be predicted at the time of the update. Define flow and volume requirements for wildland suppression needs in each area. The strategic planning of water sources could show, for example, that individual water supplies would be less effective than fewer but larger sources in critical locations.
- D. Review the jurisdiction's current road and driveway standards for all types of development. Define the changes in these standards needed to provide adequate access, suppression effectiveness and public safety. Specify private and public culverts and bridges that need improvement to provide suppression access, now and in the future. Relate these substandard facilities to the California Environmental Quality Act (CEQA) requirements for evacuation and emergency plans and the circulation element standards in the Government Code.
 - D-1. Define air access requirements. Map locations where heliports and helispots are needed. Designate existing air tanker bases that need to be included in public safety and conservation elements to reduce or avoid future challenges from encroaching development. Relate this to water supply needs.

Step 5. Other Facilities.

Will additional fire stations be required? If so, identify general areas.

Step 6. Compile Data and Recommendations.

Prepare a draft proposal for changes in the jurisdiction's general plan. The proposal should include recommended policies, implementation measures, land use designations and zoning ordinance revisions that will support the strategic plan.

5.4 Implementing Fire Safe Land Use Plans

The technical planning steps that have just been outlined can be done in about 60-90 working days. That's the easy part. Actually implementing the plan involves two other processes or procedures that need to be accomplished concurrently, extending both the time and effort required. One of these procedures is legal review of the general plan amendment; the other is the political process of approval and adoption by the local government.

5.5 The Legal Aspects

The legal aspects are straightforward. Government Code, Section 65350 defines the process in detail. Some of the key conditions are:

- Anyone may propose amendment(s) to the existing general plan. With some exceptions, local government can conduct amendment procedures four times each year.
- Amendment procedures require notification of the public, other affected agencies and adjacent local jurisdictions. Time limits are specified for notification and replies.
- Amendments must be considered at public hearings before the local planning commission(s) and the legislative body.
- The local government as a result of public hearings and legislative prerogative may change initial contents of a proposed amendment. Amendments may be denied.
- Proposed amendments are subject to CEQA review and requirements. Title 14, California Code of Regulations Sections 15307 and 15308 provide exemptions for regulatory actions that will protect natural resources and the environment. An initial study that describes the protection values of a strategic plan is all that is necessary for CEQA compliance.

5.6 Time

One practical impact of the legal process is time. Notification of other agencies, scheduling of amendment proposals, public notification and public hearings all take pre-planning. At best, an amendment that has complete support from all concerned parties, requiring no revisions, could take as long as 14 weeks to become effective. Yet few amendments enjoy that kind of progress. Most encounter obstacles that require revision or rescheduling.

5.7 Adoption Alternatives

Another practical impact involves both time and procedural considerations. There are two alternatives for moving a strategic plan to adoption. One alternative is incremental, i.e. to propose one part of the plan at a time, gaining its adoption before proposing the next part. The other alternative is to move the entire

comprehensive plan through the process as a single amendment to the general plan. Each alternative has advantages and disadvantages. The incremental process will take significantly longer, but it may provide some fire prevention and protection improvements a little sooner. The comprehensive approach should take less time initially, but one strong objection to part of the plan could delay the whole thing until revisions are made and supported.

The local planning department(s) affected by any strategic plan proposal can be of aid in helping to move it through the legal process. This is further justification for involving them in the planning effort.

5.8 The Political Process

The political process is not as clear-cut as the legal procedure. Elected officials have tremendous powers, and they may "just say no" to a proposal regardless of its professional accuracy or protection necessity. It is almost certain that some of the decision-makers will have philosophical resistance to a fire safe land use plan. They may also misunderstand the issues of private property rights and taking land. Special interests in the jurisdiction may also have the same orientations and offer objections. These political obstacles can be formidable. Here are suggestions to overcome those obstacles:

- An informed public (including elected and appointed officials) can be a strong positive influence on the outcome of a strategic planning effort. A coordinated public information and education plan should be part of the planning process.
- Do not surprise the local leaders with a completed plan and amendment proposal that they did not know was coming. Inform and involve them from the outset, as noted in the preparation step outlined earlier. Throughout the process, information and involvement contacts should be made to expose potential resistance and to find legitimate ways to overcome it.
- Assure them that the strategic plan is solidly based on scientific and professional knowledge. Propose the amendment(s) in a format that includes reference to, and compliance with, planning law.

A good reference on this subject is *Citizens Involved, Handle with Care*, by Dr. Jean Mater.

6. FIRE HAZARD ASSESSMENT

6.1 Assessment Tools and Application

Wildfire is a hazard wherever people and residential developments intermix with the wildlands. However, the degree of hazard and the required amount of fire safety measures vary from area to area. Identifying areas of differing severity provides for the application of reasonable fire-safe standards based on the actual threat present. However, remember that there is a baseline of fire prevention or fire-safe activities that must be applied to obtain a basic level of protection.

Local government land use planning agencies need to identify and classify areas of varying fire hazard severity and specify the conditions under which development and use of these areas may occur. Fire agencies need to assess their protection responsibilities for applying appropriate fire prevention programs and targeting critical areas for special programs. Insurance companies have shown a significant interest in wildland fire hazard assessment following the Painted Cave (1990) and Tunnel (1991) fires.

To take effective action, involved personnel must understand the elements, components and factors that contribute to the problem. The expertise of the agency and the complexity of the problem need to be considered when selecting an assessment process. CDF can assist local agencies in developing their fire hazard assessment analysis.

6.2 Fire Hazard Severity Zones (FHSZ)

In 1973, CDF developed a fire hazard severity classification system for SRA to provide land use planners a practical and logical system for classifying the severity of fire hazard in California's wildlands. Fuel loading (the quantity of flammable vegetation and other fuel per unit of land area), fire weather and slope are the primary criteria for identifying and classifying the severity of the fire hazard in any given area. In order for planners, developers and fire authorities to have a uniform understanding of the area of reference, these fire hazardous areas were, in many cases, delineated on U.S. Geological Survey (USGS) topographic maps. These maps served as the basic tools in defining fire hazard severity and effectively administering fire safety measures until new fire hazard severity zones were defined in the early 1980s.

Legislation implemented in 1981 and amended in 1982 required CDF to classify wildland fire hazard severity zones within SRA for the purpose of *"identifying measures to be taken to retard the rate of spreading and to reduce the potential intensity of uncontrolled fires that threaten to destroy resources, life or property. The zoning identifies where the potential of large, destructive wildfires exists"* (PRC 4201). Each fire hazard zone *"shall embrace relatively homogeneous lands and shall be based on fuel loading, slope, fire weather, and other relevant factors present"* (PRC 4202). Two factors primarily determine the potential for large, destructive wildfires: 1) expected fire behavior and 2) difficulty in fire containment. The Burning Index (BI) of the National Fire Danger Rating System (NFDRS) describes these factors, which are the basis for this classification system. The method for comparing fire hazard severity in differing areas of the state was to compare the frequency with which the BI exceeded a rating of 61. Above this threshold, firefighters can expect severe fire behavior, significant difficulty in containing the spread of the fire, and spotting of fire brands and burning embers over 1 mile in advance of the fire front.

The SRA zones were intentionally assessed without including the additional elements of value and risk. These fire hazard severity zones were adopted and implemented in August 1988. The State Fire Marshal, as directed by the Legislature, has adopted fire resistive roofing regulations that overlay the zones and

SRA. Additional requirements specify public and county review of the SRA zones and periodic review and update by CDF (PRC 4203 and 4204).

Some of these regulations were amended by the passage of AB 337 (Bates) and AB 3819 (Brown). These laws require fire hazard assessment and mitigation standards in LRA. CDF was also directed to participate in the LRA assessment, but local agencies have been given the right and the responsibility to ratify or reject CDF recommendations for Very High Fire Hazard Severity Zones (VHFHSZ). Therefore, non-identification of a VHFHSZ in an LRA jurisdiction under “Bates” does not necessarily mean a very high fire hazard is not present. If the local jurisdiction already met or exceeded the minimum standards in Section 51182 of the Government Code per AB 337, then the jurisdiction was exempted from assessment requirements. This means that there are many more areas in California that qualify as VHFHSZ than were identified by CDF. Nonetheless, standardized and/or customized maps and digital data of the LRA hazard assessment (VHFHSZ) may be obtained at a cost from the Teale Data Center, GIS Technology Center, Post Office Box 13436, Sacramento, California 95813-4436, (916) 263-1767, and FAX (916) 263-1346. Additional information and maps to view or download are also available on the Internet at <http://ceres.ca.gov/planning/nhd>. Synopses of AB 337 (Bates) and AB 3819 (Brown) are also contained in Appendices G and I of this document.

As part of a FEMA grant, CDF has evaluated some of the various rating systems in place by other departments and the insurance industry. The USDA Forest Service is studying a system that uses fuels, elevation, slope and aspect in combination. It has been tested on the San Bernardino and other Southern California forests. The ISO has in place a system using four fuel types, slope, aspect, and dead-end roads to determine risk. Several insurance companies are currently utilizing this system. As a result of the *Wildland Fire Hazard Assessment* FEMA study (see Chapters III and IV), future hazard assessment recommendations are being made that closely resemble the latest GIS technology developments in conjunction with the CDF California Fire Plan update, but no related mapping projects have yet been undertaken.

7. ENVIRONMENTAL REVIEW OF DEVELOPMENT

The California Environmental Quality Act (CEQA), PRC 21000 et seq., was developed to provide a process for review and approval of activities that affect the environment. This process is outlined in the *CEQA Guidelines* (<http://ceres.ca.gov/qeqa/>) prepared by the Secretary of Resources. The statute and the guidelines are frequently amended, and specific questions and references should be to the most current version of the statute or guideline.

In many cases, the first contact with a project or development is through the review of an environmental impact report (EIR) submitted by a project proponent. This is the earliest official opportunity for fire service comment. In many cases, the proponent has already contacted the appropriate agencies before preparation of the report. CDF and fire department staff should review appropriate permits and tentative maps relating to development and construction in SRA for appropriate wildland fire hazard mitigation. The recommendations presented through the local jurisdiction should be taken from the forest and fire laws and requirements contained in Title 14, California Code of Regulations, Section 1270 et seq. (T14, CCR, 1270 et seq.). CDF and fire department staff should also review project environmental documentation provided via the local jurisdiction for conformance with T14, CCR, Sec. 1270 et seq., the forest and fire laws, and other CDF program interests.

As the state's wildland fire protection agency, CDF becomes the responsible agency on many projects in SRA, requiring receipt and review of project environmental documentation. Where deficiencies in the general plan are identified, the deficiencies should be noted and passed through the chain of command. The notice should include a clear description of the deficiency and recommendations or alternatives for correction. An excellent reference is the *Guide to the California Environmental Quality Act (CEQA)*, by Daniel J. Curtin, Jr. A good example of an EIR that addresses fire management is the *Mt. Tamalpais EIR*, by Charles Leonard & Associates.

7.1 Processing

Environmental project documentation for discretionary projects received from the county should be routed back to the county after comments have been made. CDF review of permit applications and tentative maps shall be accomplished within the time frames set by, and in use by, the local jurisdiction.

7.2 Reviewing Projects

When environmental documentation for a discretionary project or a ministerial project is being processed at the local level, it is preferable to meet with an applicant to discuss construction and development requirements to review possible exceptions and alternatives prior to the submission of a tentative map or application for a permit. Initial review and joint inspections of the project site with the applicant may resolve many problems, easing the reviewer's time commitment and simplifying negotiations and approval. Station personnel, battalion chiefs, division chiefs and resource management personnel should be involved and consulted when appropriate. Meeting records should be kept for future review.

7.3 Inspection of Projects

During preliminary field inspections of projects, the adequacy of proposed activities, measures and practices should be reviewed and discussed. Requests for alternatives or exceptions should be evaluated and, if warranted, should be endorsed. Where alternatives are not appropriate, the inspector should provide recommendations. Field notes should be taken, and a letter to the applicant indicating areas of agreement and disagreement, as well as recommendations, should be prepared. In all cases, reference all documents to the project using the parcel number or project number and retain a copy of all notes and transmittals. If possible, station, battalion or supervisory personnel should be involved.

Inspections following the issuance of an application or approval of a tentative parcel map should evaluate the conformance of project activities with the conditions placed on the permit or map and notes taken during any preliminary meeting or inspection. Documentation of non-conforming activities and measures shall be based on local procedures.

8. WILDLAND FIRE SAFE REGULATIONS

8.1 Background

In 1986, the California Board of Forestry, supported by CDF, introduced legislation (Senate Bill 1075, Rogers) to develop *minimum* statewide standards for defensible space in State Responsibility Areas (SRA). This legislation was motivated by local government's general lack of response to wildland fire prevention and protection problems over the previous 20 years. This comprehensive wildland fire safety legislation was passed by the Legislature and signed by the Governor in 1987. SB1075 required the California Board of Forestry to establish minimum fire safety requirements that applied to SRA. Regulation development began in earnest early in 1988, and final implementation of the state and local regulation packages occurred on January 1, 1992 via PRC 4290. These requirements address emergency access and water supplies, addressing and street signing, and fuel modification relating to new construction and development.

While a large block of forestland generally experiences limited fire occurrence, the level of risk increases directly with the influx of population due to development and construction. Before roads and houses are built, there is little need for rules and regulations beyond some general forest and fire laws. However, roads and houses bring with them more fires and greater values at risk than just grass, brush and trees. As development occurs, there becomes a need to require built-in fire prevention. The developer and the homeowner are required to shoulder some of the responsibility for fire prevention. They should not just expect the fire department to solve the problem. Regulations target these areas where homes are encroaching on wildland and watershed areas and change the equation and cost of wildland fire prevention and protection. Construction and development trigger these regulations.

8.2 Administrative Elements

The implementation of these regulations occurs through the local government building permit and subdivision map approval process. Local government is still the approving authority for development. These regulations are triggered by the application for a building permit for purposes other than limited remodels, including but not limited to submittal of a subdivision map, application for a use permit, siting a mobile or manufactured home, or constructing a road. These regulations do not supersede existing local regulations that are equal to or more stringent than the state regulations.

CDF has been given the role of wildland fire protection expert and is provided the opportunity to review and comment on all proposed construction and development within the SRA. If a project or mitigation appeal is filed, CDF can present the relevant wildfire prevention issues and needs to the appeal board. The county is granted the authority to make the final ruling on the appeal, but must provide the California Board of Forestry with findings if the appeal is granted.

Locally developed rules are more responsive to the local constituency and local environmental conditions. They can be finely tuned to local wildfire suppression strategies and needs. The proposed local rules must provide for the same practical effect as the overall state regulation package. Each protection measure and activity cannot be judged alone, but must be compared to the overall protection provided by the total regulation package. Many counties have selected this option and have prepared and submitted certification packages. For more information refer to the *PRC 4290 Guidebook* at _____.

The regulations also provide for exceptions to the rules due to health, safety, environmental and physical

site limitations. In fact, the developer or owner may propose a reasonable alternative outside of the criteria listed above. If it is impossible to change the width of a road, other options must be evaluated. In this case, reduced road length, safety islands, fuel modification along the road, and turnout construction might be acceptable alternatives to allow for a narrower road.

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8.4 Infrastructure

8.4a Access

Access is a major fire prevention and protection need, whether wildland or structural. Failure to provide reasonable access for emergency equipment and evacuation exits for civilians can result in major loss of life, property and natural resources. Fire apparatus sitting at an intersection, waiting for civilians to exit on a narrow road, cannot provide the necessary fire suppression action. Safe access requires street and road networks that limit dead-end roads and provide reasonable widths, grades and curves on all roads and driveways.

Road networks should provide unobstructed traffic circulation during a wildfire emergency. CDF recommends two separate points of ingress/egress to each development. Alternate routes of escape that will safely handle evacuations and emergency equipment should be established. Road and street systems should provide maximum circulation consistent with topography to meet fire safety needs. The following standards are recommended for subdivisions:



Photograph 8.1.
Inadequate Access

- **Access Routes** - PRC 4290 requires at least two different public ingress/egress routes on all roads.
- **Road Width** - All roads shall be constructed to provide a minimum of two nine-foot traffic lanes providing two-way traffic flow. Additional requirements shall be mandated by local jurisdictions.

- **Roadway Surface** - The surface shall provide unobstructed access to conventional drive vehicles, including sedans and fire engines. Surfaces should be established in conformance with local ordinances and be capable of supporting a minimum 40,000-pound load.
- **Roadway Grades** - The grade for all roads, streets, private lanes and driveways shall not exceed 16 percent.
- **Roadway Radius** - No roadway shall have a horizontal inside radius curvature of less than 50 feet. Additional surface width of 4 feet shall be added to curves of 50-100 feet radius--2 feet to those from 100-200 feet. The length of vertical curves in roadways, exclusive of gutters, ditches and drainage structures designed to hold or divert water, shall not be less than 100 feet.



Photograph 8.2.
Roadway to Rural Structure

- **Roadway Turnarounds** - Turnarounds are required on driveways and dead-end roads as specified. The minimum turning radius for a turnaround shall be 40 feet from the centerline of the road. If a hammerhead “T” is used, the top of the “T” shall be a minimum of 60 feet in length.



Photograph 8.3.
Turnaround

- **Roadway Turnouts** - Turnouts shall be a minimum 25-foot taper on each end.
- **Roadway Structures** - All driveway, street and private lane roadway structures shall be constructed to carry at least the maximum load and provide the minimum vertical clearance as required by Vehicle Code Sections 35550, 35760 and 35250. A bridge with only one traffic lane may be authorized by the local jurisdiction; however, it shall provide for unobstructed visibility from one end to the other and turnouts at both ends.
- **One-Way Roads** - All one-way roads shall be constructed to provide a minimum of one 10-foot traffic lane. The local jurisdiction may approve one-way roads. All one-way roads shall connect to a two-lane roadway at both ends and shall provide access to an area currently zoned for no more than 10 dwelling units. In no case shall it exceed 2640 feet in length. A turnout shall be placed and constructed at approximately the midpoint of each one-way road.

- **Dead-End Roads** - The maximum length of a dead-end road shall not exceed cumulative lengths, regardless of the number of parcels served.

PARCELS ZONED FOR LESS THAN ONE ACRE	800 ft
PARCELS ZONED FOR 1 ACRE TO 4.99 ACRES	1320 ft
PARCELS ZONED FOR 5 ACRES TO 19.99 ACRES	2640 ft
PARCELS ZONED FOR 20 ACRES OR LARGER	5280 ft

All lengths shall be measured from the edge of the roadway surfaces at the intersection that begins the road. Where parcels are zoned 5 acres or larger, turnouts shall be provided at a maximum of 1320 foot intervals. Each dead-end road shall have a turnaround constructed at its terminus.

- **Driveways** - All driveways shall provide a minimum 10-foot traffic lane and unobstructed vertical clearance of 15 feet along its entire length. Driveways exceeding 150 feet in length, but less than 800 feet in length, shall provide a turnout near the midpoint of the driveway. A turnaround shall be provided at all building sites on driveways over 300 feet in length and shall be within 50 feet of the building.
- **Gate Entrances** - Gate entrances shall be at least two feet wider than the width of the traffic lane serving that gate. All gates providing access from a road to a driveway shall be located at least 30 feet from the roadway and open to allow a vehicle to stop without obstructing traffic. Where a one-way road with a single traffic lane provides access to a gated entrance, a 40-foot-turning radius shall be used.



Photograph 8.4.
Gate

- **Bridges** - Bridges should have a minimum load of 40,000 pounds (20 tons) and be no narrower than the driving portion of road serving each end. Major ingress/egress roads in subdivisions should have a minimum load limit on bridges of 80,000 pounds (40 tons).

8.4b Addressing and Street Signing

The difficulty of locating an unnamed or poorly signed road during an emergency, especially under smoky conditions, is a major problem to wildland and structural firefighters. Beyond this, many jurisdictions have allowed duplicate numbering and naming for roads and access, further compounding the location problem. The potential losses of resources, property and life are greater without an adequately visible and consistent addressing and numbering system.

Street signs and building addresses are necessary to facilitate the location of a fire and to avoid delays in response. All existing and newly constructed or approved roads, streets and buildings shall be designated by names or numbers posted on signs clearly visible and legible from the roadway.



Photograph 8.5.
Street Signs

- **Street and Road Identification Sign** - Street sign numbers must be not less than 3 inches high and not less than 3/8 inch in stroke. All numbers and/or names required must be located or positioned not less than 3 feet, or more than 6 feet above the ground level, so as to be visible to emergency equipment for a distance of not less than 100 feet from either direction on the traveled road. Numbers and/or names must also be reflectorized, with contrasting background.
- **Buildings and Structures** - Every building or structure must be provided with an appropriate noncombustible marker, located with respect to the nearest public highway, street or road, servicing such building or structure so as to be clearly visible at all times to an approaching vehicle for a distance of not less than 100 feet.



Photograph 8.6.
Structure Identification

- **Structure Identification Numbers** - Structure identification numbers should be at least 3 inches in height, with a 3/8-inch stroke. In lieu of providing a separate marker and a separate building or close grouping of several buildings or a structure identification number, the fire protection agency may recommend that a cluster of buildings comprising a single occupancy use one marker and one identification number as a location identifier.

8.4c Water Supplies

The application of water and the construction of a fire line are the primary tools used by wildland firefighters to contain and control a wildfire. The siting and availability of sufficient quantities of water are essential to fire suppression and firefighter safety. While a single system of water delivery and/or storage is adequate, the effectiveness of any suppression system increases with diversity.

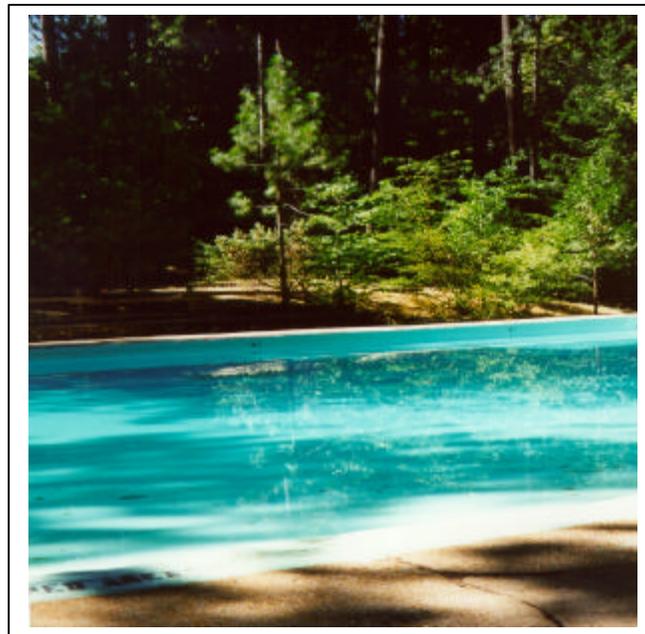
Emergency water supplies are necessary to provide available and accessible emergency water for wildfire protection, in sufficient quantities and locations to attack a wildfire or defend property from a wildfire. Such emergency water may be provided in a fire agency mobile water tender, or naturally occurring or manmade containment structure, as long as the specified quantity is immediately available. Water should be available on-site prior to the completion of road construction where a community water system is approved, or prior to the completion of building construction where an individual system is approved.

Water systems that meet or exceed the standards specified in the Public Utilities Commission of California (PUC) revised *General Order #103*, Section VIII, *Fire Protection Standards* and other sections relating to fire protection water delivery systems; static water systems equaling or exceeding the National Fire Protection Association (NFPA) Standard 1231, *Standard on Water Supplies for Suburban and Rural*

Fire Fighting; or mobile water systems that meet the Insurance Services Office **Rural Class 8 Standard**, shall be considered as meeting the requirements of wildland fire protection. On-site emergency storage where a community system exists should be considered supplemental to the required fire flow provided through the community system.

Water is the most important single factor in fighting structural fires and is vital in suppressing wildland fires. Therefore, to assure adequate and reliable water supplies for community fire prevention and protection in hazardous areas, the following minimum requirements shall be met:

- **Water Mains** - The minimum size of water distribution mains on which fire hydrants are located should be 8 inches in a system designed to permit circulating water flow.
- **Fire Hydrants** - The size, type and location of fire hydrants should meet the approval of the responsible fire authority and of applicable state and county regulations, with a minimum size of waterway not smaller than the size of the street main, up to a nominal 8-inch size. A 6-inch lateral to the hydrant is permitted. Dry barrel hydrants should conform to American Water Works Association (AWWA) **Standard C-502**. Wet barrel hydrants should conform to AWWA **Standard C-503**. All hydrants should be designed for a working pressure of 150 psi. A gate valve should be placed on the connection between main and hydrants. Hydrant spacing should not exceed 660 feet, with minimum fire flow of 750 gpm required for population densities of two or less single family residences per acre. For population densities of more than two dwellings per acre, hydrant spacing should not exceed 330 feet, with a minimum fire flow of 1000 gpm, and more where structural conditions require. Fire flow quantities should be available at 30-psi residual pressure in extreme fire hazard areas and 20-psi residual in low, moderate or high areas. Water source facilities should have the capacity to support the required fire flow for a minimum duration of two hours, in addition to the maximum daily flow requirements for other consumptive uses.



Photograph 8.7.
Alternate Water Supply

- **Water Storage** - Water storage may be required to assure the required minimum duration fire flow of two hours. Built-up areas served by pumping units with nonexistent or limited gravity storage may require certain other features of reliability such as alternate power sources, duplicate pumps or additional gravity storage in case of main breaks, mechanical failure of pumping units or loss of primary power source. The local fire authority may adjust the water quantities and duration set forth on the basis of local conditions, exposure, congestion, and construction of buildings.
- **Lakes, Ponds, Swimming Pools, Streams or Other Water Sources** - Establish access for fire equipment. Emergency equipment must be able to get within 12 feet of these water sources to effectively obtain the water. All subdivision and development plans should have these water fill or drafting sources noted or identified on the development map.
- **Private Water Supply** - Separately developed dwellings with an individual private water supply should provide an acceptable guaranteed minimum supply of water, in addition to the amount required for domestic needs. The amount of water available for structure protection will vary. The local fire authority should be consulted to establish specific water requirements. Water storage capacity should not be less than 2,500 gallons, with supply mains of at least 2 1/2 inches, preferably a 4-inch diameter standpipe, located for fire engine filling, and at least two hose outlets no less than 50 feet from the building. If the water supply is dependent on an electrical pump, it should be installed with an independent electrical system or backup generator.

8.4d Fuel Modification Considerations

The establishment of physical barriers between a structure and the wildland is recognized as a major deterrent and loss reduction measure. Such barriers should be considered key to individual and community defensible space. While fuel breaks have strategic application over large geographical areas, they are expensive to construct and maintain. Other measures, such as the strategic siting of roads, recreational parks, irrigated landscaping, setback from property lines and fuel modification around structures are more suitable around homes and subdivisions. For information on fire resistant landscape plants, go to <http://www.prefire.ucfpl.ucop.edu/vegetati.htm>.



Photograph 8.9.
Shaded Fuel Break

Fuel modification is necessary to reduce the intensity of a wildfire by reducing the volume and density of flammable vegetation. Fuel modification will provide: 1) increased safety for emergency fire equipment and evacuating civilians, 2) a point of attack or defense from a wildfire, and 3) strategic siting of fuel modification and greenbelts. CEQA review of projects and site-specific mitigation at the permit and map review stage shall be conducted to secure perimeter and interior fuel modification zones, including building setback to apply PRC 4291 fuel modification zones along roads and to the strategic siting of greenbelts.

8.4e Roadside Vegetation Management

Roadside vegetation should be removed for a distance of 10 feet on each side of the traveled section. In order to protect escape routes from radiant heat caused by wildfires, the native vegetation should be thinned and dead material removed on each side of roads or highways to reduce radiant heat from wildfire to a tolerable level.



**Photograph 8.10.
Roadside Vegetation**

8.4f Right-of-Way Fuel Modification

The clearance distances and type or amount of fuel management needed depends on local conditions. Fuel modification areas should extend at least 100 feet, and up to 300 feet if needed, from the edge of the roadway to be beneficial as a fire defense system. Fire protection agencies can provide fuel treatment directions for planning purposes. Other methods of treatment include pruning the lower limbs of trees over 12 feet tall and planting fire resistive ornamental shrubbery and cultivated ground cover such as green grass, ivy, succulents or similar plants in forms that do not readily transmit fire.

8.4g Planting Under and Near Power Lines

Trees planted under utility lines should reach a maximum height of 20-25 feet at maturity. Trees taller than 25 feet at maturity should be planted far enough away that branches do not come within 10 feet of the conductors. Proper selection of trees under or near power lines can reduce hazards, limit the need for pruning on a regular basis and add to the beauty of the landscape. Christmas tree farms under active management may be authorized.

8.4h Power Utility Systems

All new electrical distribution lines and extensions of existing lines in fire hazardous areas should be constructed using the latest approved methods that minimize fire hazards.

9. RECOMMENDED FIRE SAFE STANDARDS

State regulations, and to some extent local ordinances, are minimum standards that substantially imply the need for more stringent pre-fire management standards. The nature of the regulatory process creates a series of standards that are predicated upon minimums, yet become maximums when applied as law. This certainly applies to wildland fire prevention standards. The regulations discussed in the last chapter are minimum standards. There is a need in many cases to promote a greater level of protection for less vulnerability. This is certainly an option for any homeowner or developer. The design and construction of structures, subdivisions and developments in the wildlands of California should provide for defensible space and built-in wildland fire prevention. This should be a common goal with interested state agencies, local jurisdictions and fire agencies.

9.1 National Fire Codes

The National Fire Codes are a product of the National Fire Protection Association (NFPA). These model codes are annually compiled from the codes, standards, recommended practices, manuals, guides and model laws that are prepared by the individual technical committees of NFPA. The members of NFPA adopt the published codes. The individual codes are in many cases adopted by jurisdictions, or modified and adopted as that jurisdiction's ordinance. For more information about NFPA, go to <http://www.nfpa.com>.

9.2 Uniform Fire Code

The Uniform Fire Code (UFC) is a product of the International Fire Code Institute (IFCI). This Code is a model code that is designed for adoption by local jurisdictions. Many jurisdictions have amended and modified the UFC as their local fire code. IFCI, recognizing the growing problem in the Western United States, has also developed the *Urban-Wildland Interface Code*, 1997 Edition, which is available through their office. Contact IFCI at <http://www.ifci.com>.

9.3 Uniform Building Code

California has adopted the Uniform Building Code (UBC), with state-adopted modifications, as the standard for construction known as the California Building Code (CBC). In support of this standard, most counties have adopted the National Electrical Code (NEC) and the Uniform Plumbing Code (UPC) to regulate construction. These codes have been written to work in concert with each other; however, they do not recognize nor address the Urban-Wildland Interface fire problem, since they were not developed with California's specific environment in mind. Location of structures and subdivisions and the allowable exterior building materials may incorporate wildfire vulnerability into new homes and developments. There is a lack of consistency between adjacent jurisdictions and statewide areas as to what is and is not authorized in terms of wildland fire prevention and protection. The California Building Standards Commission can be contacted at <http://www.dgs.ca.gov/bsc>.

Every new building or remodel of an existing structure should be constructed to at least meet the requirements specified in the current edition of the CBC as outlined by the International Conference of Building Officials (ICBO) for the group and type of occupancy intended. More stringent standards may be necessary as determined by the local jurisdiction. Specific sections, including spark arresters and fire department access, should be consulted and reviewed. For more information about ICBO, go to <http://www.icbo.org>.

9.4 Local Regulations and Ordinances

A more restrictive provision shall supersede the requirements of the Uniform Building Code when required by other statutes or regulations adopted pursuant to statutory authority or by any local ordinance.

9.5 Siting, Spacing and Density Considerations

Structure density, spacing and siting should be based on the fire hazard severity classification and the on-site topography. As fuels and slopes increase, low density or planned unit developments should be considered. From a protection standpoint, it is easier to protect these two types of developments.

Buildings must be set back at least 30 feet from the property line on parcels one acre and larger (PRC 4290). Since close spacing is common in mobile home parks, those situated in wildland areas are particularly susceptible to destruction by wildfire. Spacing should conform to those standards already mentioned.

Building densities should be as follows:

- 15-30 percent slope, no more than three dwellings per acre.
- 31-50 percent slope, no more than one dwelling per 3-5 acres.
- Where slopes and fuels exhibit very high fire hazard, local government should prohibit development or apply more stringent standards.
- In all cases, development of ridge tops, canyons or ridgeline saddles should be limited or mitigated with greater levels of built-in fire prevention.



Photograph 9.1.
Structure Siting

9.6 Lot Development

Lots that front on two or more streets should provide access for vehicles from the street to which the address is assigned. All new access roads and driveways must conform to local fire safe standards.



Photograph 9.2.
Lot Development

9.7 Building Construction Standards

9.7a Structure Vulnerability

Professional experience and research have documented the two most vulnerable elements of a structure: the roof and the flammable vegetation around the structure. CDF has several research projects in progress that will add to the wealth of professional knowledge that currently guides wildland fire prevention. While not available at the time this guide was printed, interested individuals should contact the local CDF office for current information. Additional information is also available on the Internet at <http://www.ucfpl.ucop.edu>.

9.7b Roofing

One common issue surfaces among the numerous reports, papers and tasks related to the problem of homes and developments constructed in areas with potential for major wildfire conflagrations: flammable, non-rated wood shakes and shingles have made buildings especially vulnerable to ignition from flaming material carried by the winds and convection columns in advance of a fire front. Once wood shakes and shingles have ignited one building, they are torn away by the wind and rapidly carried by the convection column to ignite additional vegetation and roofs of other buildings. The roof is the most vulnerable part of a building during a wildland conflagration. A roof that is horizontal is especially vulnerable because it can catch and hold firebrands carried by strong winds and convection columns characteristic of these fires. Unlike

ground fire, a conflagration produces firebrands that travel over and beyond any natural or artificial fire break and are a distinct hazard to structures as far as a mile away from the wildfire.



Photograph 9.3.
Shake Shingles Before and After a Fire

9.7c One Preliminary Study

Following the devastating series of fires in June and July of 1985 in Southern California, CDF sponsored a study by the University of California to evaluate the structure loss on two of the fires that occurred during this period. Of the 42 homes with asphalt and fiberglass roofs that were threatened, 37, or 88 percent, were not destroyed. Of the nine houses with shake roofs, six, or 67 percent, were not destroyed. The study also pointed out that a house with a fire retardant roof had a 70 percent better chance of surviving a wildfire, even when flammable vegetation had not been cleared as required by PRC 4291.

9.7d Roofs Contribute to Fire Spread

During wildfires, structural ignition comes from any of three sources: direct exposure to the flames, radiated heat or firebrands carried by winds or convection columns. The roof is the most common structural fuel bed for ignition by these flying firebrands. Therefore, fire retardant roofing materials are of prime importance as a personal protection and fire prevention measure.

Test methods have been developed to evaluate the fire hazards of roof coverings. NFPA 256, *Methods of Fire Tests of Roof Coverings*, describes the appropriate procedures. The test evaluates the flammability of the roof covering, the protection it provides to a combustible roof deck, and the potential for producing flaming brands. Roof materials are classified as Class A, Class B, and Class C. To receive one of the classifications, the roof covering is given a series of fire tests of varying degree of severity. After all roof-covering tests have been conducted, roof coverings are classified based upon test results:

- Class A covering is one that is effective against a severe fire exposure, affords a high degree of fire prevention to the roof deck, does not slip from position, and does not present a flying brand hazard.
- A Class B roof covering is one that is effective against a moderate fire exposure, affords a moderate degree of fire prevention to the roof deck, does not slip from position, and does not present a flying brand hazard.

- A Class C covering is effective against light test exposure, provides a light degree of fire prevention to the roof deck, does not slip from position, and does not present a flying brand hazard.



Photograph 9.4.
Class A Roof

The specific definition of each roofing classification is dependent upon the roofing material, roofing support construction and sheathing. With a given surface material, the classification may change, depending on whether the sheathing is solid (plywood) or lath, and whether the underlay material is foil, tar paper or felt (different weights available). The Class A rating provides the most fire resistive characteristics.

Roof coverings may not be the only failure contributing to the rapid spread of fires. All structural features (roofs, siding, windows and eaves) need to be evaluated for their ability to provide an acceptable level of safety for the homeowner during a wildland fire.

It is especially important that the roof be kept free of flammable material such as pine needles. Tile roofs should also be plugged in the ends of the tile rows because bird nests were shown to be a significant cause of house loss via fire entry from the roof. Additional information is also available on the Internet at <http://www.ucfpl.ucop.edu>.

9.7e Roof Covering Requirement

New regulations affecting roof coverings have been established pursuant to AB 423 (Chapter 380, Statutes of 1999). Roof covering regulations are located in the 1998 California Building Code, Sections 1503.1-1503.3. See Section 1502 for the definition of fire-retardant shakes and shingles.

9.7f Sprinkler Systems

Automatic and/or manual roof sprinkler systems will not substitute for the required roof covering, as these systems are too unreliable. Roof sprinklers are also not a substitute for on-site or nearby emergency water storage. Residential sprinklers are highly recommended to protect a family and to prevent the spread of an interior structure fire to the wildlands; however, they are not a substitute for nearby or on-site emergency water storage.

9.7g Eaves, Balconies, Unenclosed Roofs and Floors

Eaves, balconies, unenclosed roofs and floors and other similar surfaces should be protected on the exposed underside by materials approved for one-hour fire resistant construction. All supporting members (vertical, horizontal and diagonal) used in stilt or cantilevered construction shall be built to one-hour fire resistant construction as set forth in the 1998 California Building Code, Chapter 7.

9.7h Chimneys and Vents

Every chimney or vent attached to any solid or liquid fuel-burning device shall be provided with an approved, securely attached spark arrester conforming to requirements outlined in the 1998 California Building Code, Section 3102.3.8(a) relating to spark arresters. The spark arrester shall be maintained, in working condition, mounted in a vertical or near vertical position, and visible from the ground (PRC 4291[c] and [f]).

All attic openings, soffit vents, foundation louvers or other ventilation openings in vertical exterior walls, eave overhangs and vents through a roof should not exceed 144 square inches each, and covered with one-quarter-inch mesh metal screens which are corrosion resistant. Pre-cut, fire resistive vent covers should be available for installation when a wildfire is threatening.



Photograph 9.5.
Dormer Vent and Chimneys

9.7i Exterior Walls

Exterior walls of buildings should be protected with materials of not less than one-hour fire resistant construction on the exterior side (see Table 7-B of the CBC). The materials should extend from the top of the foundation to the underside of the roof sheathing.

9.7j Rafters

The spaces between rafters, the wall plate line and the underside of the roof sheathing should be filled with not less than two-inch nominal thickness wood or equivalent solid blocking.

9.7k Windows

The vulnerability of windows to wildfire is currently being debated. Until that debate is settled, it is prudent to take the position that windows are a vulnerability. Windows, especially large vista windows, should be limited in number on the side of a building that faces high hazard fuels. Windows should be dual or triple-paned to resist breaking and radiant heat. These window types are also energy efficient. Fire resistive shutters should be constructed in advance and be available to cover all windows when a wildfire is threatening.

9.7l Dooryard Activities

Firewood piles and LPG tanks (UFC Section 8209) should be located a minimum of 30 feet from any structure. Each should be provided a 10-foot clearance of flammable vegetation and material in all directions. Firewood piles, smoldering after the fire has passed, have contributed to the loss of many homes that otherwise survived the initial fire onslaught.

LPG tanks, when overheated, can explode, sending large pieces of shrapnel and flaming gas in all directions. The LPG pressure relief valve in this case is overwhelmed and is unable to release the required pressure. In many cases, the pressure relief stream is ignited and becomes a blowtorch. The pressure relief valve should be directed away from any structure or access road.



Photograph 9.6.
LPG Tank

10. FUELS AND VEGETATION IN RESIDENTIAL DEVELOPMENTS

Major wildland fires do not occur just in large acres of heavy fuels. Major fires and major losses can occur in any fuel type when all of the "right" conditions are present. All vegetation is flammable to some extent. However, the intensity and speed of spreading fire depends upon the time of year, the moisture content of the fuels, the weather, the topography and the size and arrangement of the fuels. Fine fuels such as grass can ignite easily and will burn very fast while generating little heat. Grass fires are generally easy to extinguish. Heavier and larger fuels are hard to ignite and generally burn very hot and slow, are more difficult to distinguish and generate a lot of heat. Fatalities and damage to resources and property can occur under a wide range of conditions and fuels. Treatment of wildland fuels includes modification of the size, arrangement and type of fuel to reduce the probability that a fire will start and reduce the subsequent damage.

10.1 Fire Resistive Landscaping

If enough heat is present, almost any plant will burn. The objective of fire resistive landscaping is to reduce the heat available and reduce the chance of ignition. Fire resistive landscaping combines native or ornamental plants with proper placement and proper maintenance. The key is separating plants vertically and horizontally to prevent fire spread and extension. If proper clearance of flammable vegetation has not occurred or where a fire resistive landscaping has not been planted, some insurance companies add a surcharge to the home insurance policy.



Photograph 10.1.
Fire Safe Landscaping

A listing of information and properties of some common landscaping plants was developed by the University of California Forest Products Laboratory. This *Defensible Space Landscaping in the Urban/Wildland Interface: A Compilation of Fire Performance Ratings of Residential Landscape Plants* is available through the Forest Products Lab and may be viewed on their Web Page <http://www.ucfpl.ucop.edu>. In addition, the Cal Poly, San Luis Obispo Home Page <http://www.calpoly.edu> contains a good reference guide on growing characteristics for a large number of trees, including heights and recommended growing space requirements.

10.1a Climate and Environment

Obviously, some species are better than others. More importantly, some plant species just won't grow in certain climate zones. Consult your local nursery, fire department or CDF for proper selections in your area. Consideration of soil protection and visual impact during fuel modification planning is essential to a successful project. However, inappropriate modification of the native landscape can create serious problems such as slope failures, soil erosion, damaged wildlife habitat and reduced visual quality. Proper planning and consultation with experts can prevent this from happening. Before modifying your landscape, contact your local nurseryman, extension specialist, fire department or CDF.

10.1b Placement

The placement of landscaping plants is a key element of a fire resistive landscape. Large trees should be located away from the house, and large shrubs should not be planted under the eaves, right next to the house. Vary the height of the landscape plants and space them so fire can't travel from one plant to another. Eliminate ladders of fuel from low-growing plants to shrubs to trees that can allow fire to spread into the crowns of nearby trees. Trees over 12 feet tall should have the branches on the lower one-third of the trunk pruned and removed. Trees over 18 feet tall should have all limbs within six feet of the ground removed. As landscaping progresses farther from the house, taller plants can be retained or planted.

10.1c Landscaping Zones

Landscaping zones may protect the surrounding vegetation of damage from a home fire, but does not protect a home from wildfire. Many experts recommend a zone approach to fire-safe landscaping. Where the property is large enough, landscaping close to the house, out to 30 feet, requires irrigated, low-growing plants. The next zone, from 30-70 feet, allows medium-height shrubs and individual trees. The final zone, beyond 70 feet, allows selectively thinned brush and trees, preserving the native, natural landscape look. The distances stated here are only a general guide. Each zone landscaping approach recommends different distances. Contact your local fire department or CDF for site specific information.

10.1d Brush and Timber Stands

Dense stands of brush or timber must be thinned to reduce the volume of fuel and reduce the opportunity for fire to spread from tree crown to tree crown. Separate all trees and individual brush specimens by at least 15 feet horizontally and six feet vertically. Trees should be pruned to at least six feet in height to eliminate "ladders."

10.1e Maintenance

Once a fire resistive landscape is established, it must be maintained. Regularly remove dead branches, litter, needles and leaves and weeds. Keep shrubs and trees neatly pruned. In many locations, burning of debris is not allowed and hauling cut vegetation to the dump is not recommended. Consider chipping material for use as compost to improve watering efficiency. Remember to maintain an appropriate irrigation schedule that is beneficial to the plants selected. Consider drip irrigation to conserve water and reduce growth of weeds.

10.2 Fuel Modifications

Global fuel modification requires two elements, identification and implementation. It is not enough to just identify those areas of extra-hazardous fuels, to delineate areas that need modification or determine where fuel breaks should be constructed to concur with development. Implementation before development occurs is the key. Once development has occurred, land ownership patterns preclude bringing hundreds of owners into a cooperative agreement. Before development begins, the only owner is the developer. Establish the agreements and begin to modify the fuels before development occurs. Locate strategic fuel breaks and secure the rights-of-way authority, establish land conservation zones and open space available for defensible space. Don't forget to ensure that maintenance of these fuel modification zones is applied on a regular basis and that funding is secured. The planning element has already been described in the Strategic Fire Planning section. The identification of a strategic plan should be included in the city or county general plan.

10.2a Objective

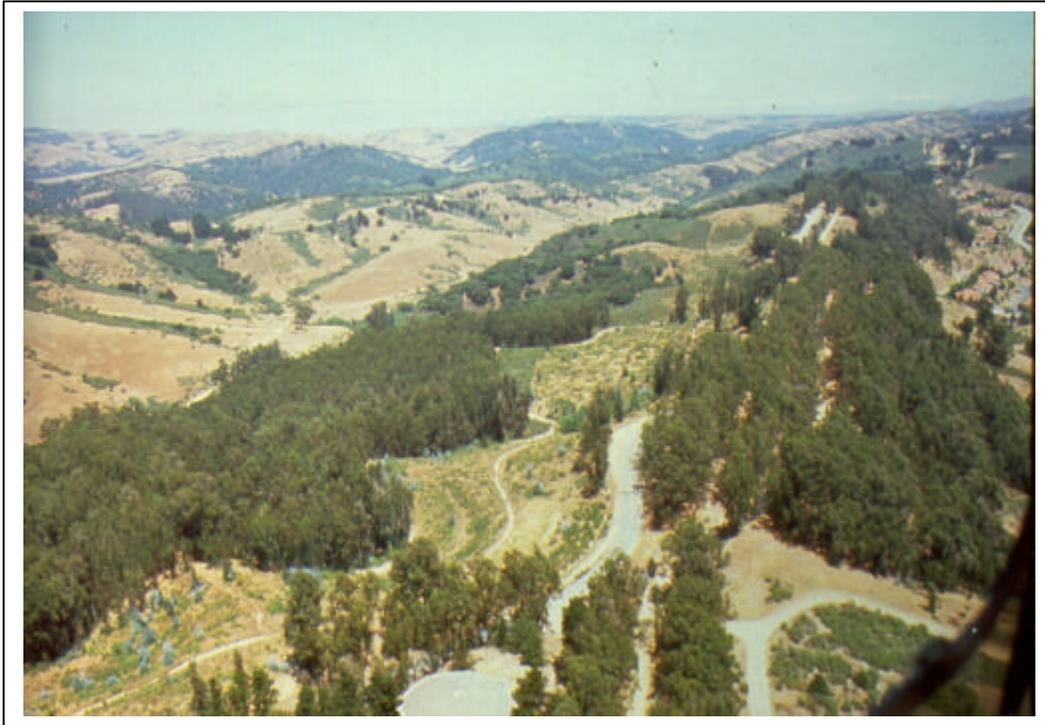
The purposes of strategic fuel modification are to separate communities or groups of structures from the native vegetation and break up large expanses of flammable fuel into smaller blocks, all with the purpose of reducing fire loss and damage.

10.2b Fuel Breaks

A fuel break is a strip or block of land on which the native vegetation has been permanently reduced and/or modified so that fires burning around it can be more readily and safely controlled. Fuel breaks are generally constructed to separate communities and clusters of communities from the native vegetation, in order to protect both the developing area and the adjacent wildlands. They are most commonly found along ridgelines where fire control efforts are focused. The most advantageous location and design must be individually determined after considering fuels, topography, weather, exposures and other constructed or planned improvements.

Fuels within fuel breaks are reduced in volume through thinning or pruning, or are changed to vegetative types which burn with a lower intensity and offer less resistance to fire control efforts. Fuel breaks are not intended to stop a rapidly moving fire, but to correct two conditions that have limited the effectiveness of fire control: the difficulty of quick, safe staffing of critical line locations when needed and the need for widening many fire breaks before they can be used effectively. Fuel breaks are not expected to control a fire in themselves, but provide points of access to facilitate control of the flanks and provide possible backfire action in the face of an advancing fire head. A fuel break system may utilize existing federal, state, county or local road systems. Most fuel breaks include roadways for vehicle access, or other continuous strips cleared to mineral soil, which serve as a barrier to the spread of fire through the fine fuels or as a line from which to backfire.

Obtaining landowner(s) approval and/or cooperation to construct a fuel break on private land can be difficult if there is no plausible benefit to the landowner. Without the landowner's approval and cooperation, the construction of a fuel break may not be feasible. If a landowner does not want to cooperate, there is generally no legal avenue to pursue. Generally a strong, effective community education program will help convince landowners of the need for cooperation. This effort can be greatly enhanced with a coordinated approach from the various entities of government that are, or will be, involved in the planning, construction and maintenance of a fuel break.



Photograph 10.2.
Fuel Break

10.2c Fuel Break Construction

A fuel break is a natural or constructed barrier used to stop or check fires or to provide a control from which to work. A fuel break is normally scraped, dug or bladed to mineral soil. The basic use and purpose of a firebreak is similar to that of a fuel break: to minimize the spread of fire from any of the included occupancies or uses to surrounding wildland areas.

The planned construction of firebreaks is no longer as common as it once was. Firebreaks are not aesthetically pleasing and can often cause serious erosion and soil stability problems. When a firebreak is the desired or required fire defense improvement, adequate environmental protection must be considered. Soil stabilization, erosion prevention measures and long-term maintenance requirements must receive thorough consideration during the planning and construction phase.

10.2d Greenbelts

A greenbelt is an area of green vegetation, usually irrigated and landscaped, used as a buffer zone between developed or developing areas and wildlands. Greenbelts are designed for additional uses such as golf courses, parks and occasionally farmland. Some other greenbelts include parking lots, ball fields and other

areas that may not normally be considered to provide wildland fire prevention.

Greenbelts are similar to fuel breaks and quite often are integrated into a fuel break system. The major difference is that greenbelts are generally irrigated areas that have additional land use functions. Special consideration must be given to visual and environmental impacts during the greenbelt planning phase. Provisions for continued maintenance must also be considered. This provision may require an assessment-fee system to a homeowner's group or to an entity of local government.



Photograph 10.3.
Greenbelt and Fuel Break

10.2e Converting Fire Breaks to Fuel Breaks

An important but often overlooked aspect of the fuel break and greenbelt planning effort is the conversion of a fire break built during the suppression of a wildfire. Often fire breaks constructed by bulldozers to halt the advance of a fire are ideally located for continual maintenance as a fuel break or even a greenbelt. Immediately after a fire of any significance, public awareness and interest is highly focused on the need to prevent similar fires. This public interest should be used to gain property owner concurrence to convert a suppression firebreak into a fuel break or greenbelt. At any rate, firebreaks should be “winterized” to prevent excess erosion during the rainy season by placement of water breaks and scattering of limbs and other woody debris across them to intercept rain.

10.3 Fuels Management

Fuel management is the planned manipulation or reduction of living or dead vegetation to prevent the ignition of wildland fires and to reduce the rate of spread and intensity of any wildfire.

Intensive fire protection provided by CDF and all fire agencies has produced contradictory results. Fire protection has been, for the most part, efficient in safeguarding natural resources, life and property. It has

also been a major contributor, however, to a gradual buildup of living and dead vegetation that, under critical burning conditions, has fed disastrous wildfires.

California's Mediterranean-type climate promotes the rapid growth of natural vegetation. Much of this vegetation dies each year and accumulates on site. Annual plants leave their total volume at the end of each growing season. Perennials renew their parts regularly and continually shed their leaves, twigs and branches. Whole plants die from old age. The result is a natural accumulation of flammable fuel that varies from one-half ton to three tons or more an acre per year.

Natural events can cause even more rapid accumulations of fuel. Drought, blowdown, snowdown, freezing and attacks from animals, insects and diseases can result in a build-up of large quantities of dead vegetation within a short time. Also contributing to the volume of dead fuels are activities such as timber harvesting, road construction and the development of subdivisions.

California's Mediterranean-type climate also discourages rapid decomposition of the dead vegetation, allowing vegetative matter to accumulate year after year. Normally this litter would be removed by nature through periodic fires started by lightning. However, wildfires are no longer permitted to remove or reduce the build-up of fuel as they did before the era of organized fire protection. Consequently, the quantity of fuel continues to increase in California's wildlands.

The inevitable result, especially during critical burning conditions, is a steady number of high-intensity conflagrations each year. These conflagrations are difficult, if not almost impossible to stop, and they often destroy thousands of acres of natural resources, hundreds of homes and other structures. Prescribed fire and controlled burns should be encouraged, under proper conditions, to assist in removing hazardous fuel accumulations and managing the remaining fuels. CDF can provide technical and professional assistance in fuels management.

In relation to this fuel management necessity, research has been conducted by the UCFPL regarding the use and disposal of accumulated fuels, termed biomass. This project is designed to identify the key issues in biomass utilization and to thoroughly describe the raw material potential of the various types of forest-based biomass materials. The results of the project will be directed towards identifying research needs, helping frame the issues at the community and state levels, and disseminating knowledge and technology. For more information on this project, go to <http://www.ucfpl.ucop.edu/biomass/woodybio.htm>.

10.4 Fire Resistive Vegetation

Fire resistive plants are generally low-growing, have a low sap or resin content, grow without accumulating quantities of dead branches, needles or leaves, are easily maintained and pruned and are preferably drought tolerant (low water users). The species may be native or ornamental. However, it has been determined that most publications on fire resistant vegetation have not relied on "actual" tests, but only on intuition or reputation. A list of fire resistive vegetation is available on the Internet at <http://www.ucfpl.ucop.edu>.

10.5 Protecting and Enhancing Native Vegetation During Construction

Many homebuilders elect to retain native vegetation as the predominant landscape plants in their yards. Native vegetation is adapted to the climate and soils and has already established itself. There is no need to wait for plants to grow into their ultimate size to see if they suit the homeowner's vision.

However, it should be recognized that human involvement or interruption of natural processes to build roads and homes could be very threatening to the health of native vegetation. Surface compaction and mechanical injury of the trunk or stem cause much of the damage. The negative effects may become evident immediately or may begin to show over time.

In addition to direct damage and injury, many construction and development activities create conditions that weaken native vegetation or that favor insects, pests and diseases. The result is additional fuels available to wildfire. An excellent reference for the builder or contractor, *Protecting Trees When Building on Forested Land* (leaflet 21348), is available through the University of California, Cooperative Extension. General considerations include:

- Reducing the density of trees so that those remaining will have sufficient light, moisture and nutrients.
- Removing trees that are close to or that will interfere with proposed roads, foundations, septic systems, driveways and utility corridors.
- Selecting remaining trees for health and vigor, aesthetics and the ability to provide appropriate shade and visual and wind screening.
- Avoiding trees that will require roof modifications or decks to be built around them, that are most likely to be damaged during construction and that will have their health compromised due to site changes such as moisture and soil level.
- Maintaining a mixture of ages; allowing older trees to be replaced by younger, healthier trees.
- A tree that is the right size now may be too big in a few years -- plan ahead.
- Select native vegetation that has good vigor. A local nursery and forester can assist in identifying the correct trees and shrubs to keep.
- Fence around trees and shrubs at the drip-line to avoid damage by construction activity and equipment.
- Minimize grading and soil movement.
- Utility trenches should be kept away from "keeper" trees. Tunnel if activities must encroach in their root zone.
- Do not backfill or change the grade immediately around trees. Build a stone or concrete well to protect the original grade around the tree.
- Asphalt and other hard surfaces can prevent or significantly reduce the amount of water reaching the roots of a "keeper" tree.
- DO NOT attach utility wires or lines to trees.
- Frequent watering of lawns and flowerbeds can damage the sensitive root systems of native species.

10.6 Urban Forestry

It may seem strange to see the term urban combined with the practice of forestry. Yet, the urban exodus and rural community growth in California have brought with them many urban environment problems and have created many new ones. Many communities in rural California are now landscaped with urban forests. Urban and formal landscape vegetation is mixed with rural and native plants, and all are intermixed with homes and businesses. Failure to deal with the problems associated with rural growth may create a landscape that is unhealthy, dying, lacks vigor and is aesthetically unpleasant. In addition, conditions may foster and promote an increased fire hazard.

10.7 Project Learning Tree

Education is needed to increase awareness, knowledge, and critical and creative thinking skills. The California Project Learning Tree (PLT) program is part of an international network of parents, educators, resource professionals, members of community and environmental groups, and the forest products industry.

PLT provides educators, working with children in grade preK-12, with an effective environmental education program that uses the forest as a “window” into the natural and built world. In California, PLT is sponsored by CDF and is managed by one State Coordinator and a cadre of volunteer facilitators, supporters and a statewide advisory committee. For more information visit their website at <http://www.plt.org>.

10.8 Weed Abatement Ordinances

The maintenance of defensible space around the home is as important as a fire resistive roof in protecting a home from wildfire. The state law for clearance of flammable vegetation was discussed in an earlier chapter. Many local jurisdictions also require clearance of flammable vegetation. In a community setting, this may take the form of clearance of vacant lots within a subdivision. In a more rural setting, this may be similar to the state clearance law, though most local jurisdictions require clearance well beyond the 30 feet required by state law. In either case, if a landowner fails to provide the required clearance, the jurisdiction has a contractor clear the lot or property and bills the property owner. Failure to pay the bill enables the placement of a lien on the title of the property. You should contact your local fire department for further information. An excellent example of a weed abatement ordinance is the [*Riverside County, Idyllwild Weed Abatement Ordinance*](#).

11. EXISTING BUILDINGS AND STRUCTURES

Obviously, existing buildings and structures are exempt from most new fire safety requirements. It is extremely expensive to upgrade several miles of road when building a single house. Yet, when a new subdivision is proposed at the end of an existing road, the jurisdiction may require upgrading the entire road under CEQA, based upon a public safety need. Yet, in the majority of cases, once it is built, it does not have to change.

There are exceptions, however, including the requirement that if more than 50 percent of a roof covering is replaced within a year, the entire roof must be replaced with the appropriate roof covering required within that particular zone. Many local jurisdictions require some retroactive application when triggered by a major remodel or specific life safety activity. Any homeowner who is remodeling should be encouraged to adopt reasonable fire safe standards as reconstruction occurs.

Efforts to gather homeowner support to upgrade roads and other infrastructure may be approached through a local homeowners' association or road improvement district. Individual adoption of defensible space can be triggered through direct application of multi-media fire safety programs and peer pressure. Demonstration activities and "how-to" presentations can convince many that the cost is minimal and the gains are significant. Neighborhood or block clean-up parties can stimulate interest and motivate large numbers of people to get involved and protect themselves.

Fuel and vegetation modification practices discussed in an earlier chapter are readily available for individual as well as community or neighborhood protection. Using roads and perimeter areas surrounding a neighborhood, minor fuel modification may be enough to establish a reasonable defensible space.

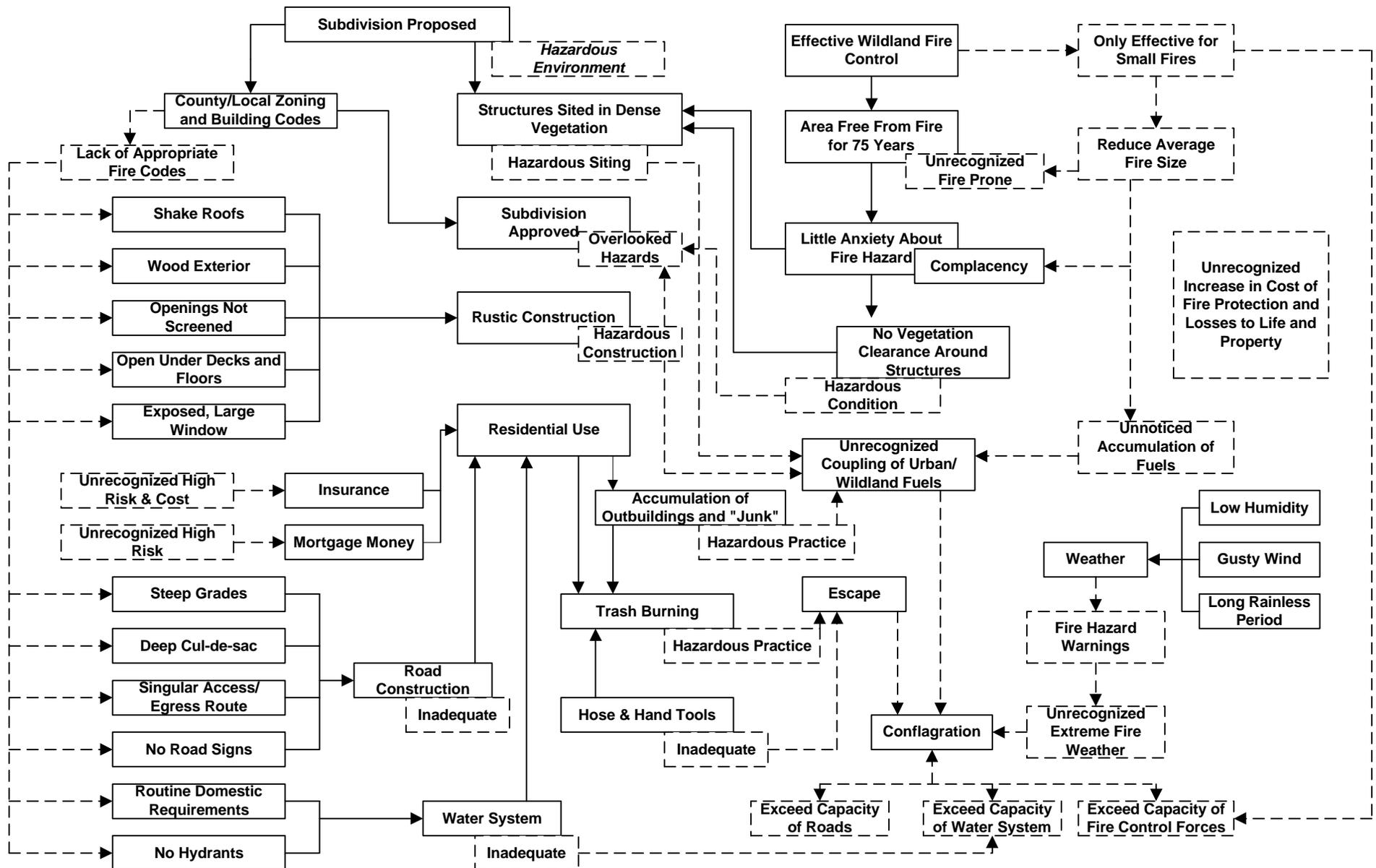
Information relative to the Bates Bill, State Fire Marshal "Model Ordinance for Defensibility of Space and Structures," and the Brown Bill is included as Appendices G, H, and I, respectively. Extensive information on these items is also available in the *Wildland Fire Hazard Assessment* report, which can be found at <http://www.prefire.ucfpl.ucop.edu/izhazard.htm>.

Appendix A

RON HODGSON'S SUBDIVISION PROPOSAL AND APPROVAL FLOWCHART

The diagram printed on the following page was created by parks and recreation expert Ron Hodgson. It attempts to identify the relationships between the many interactive factors involved in protecting structures located in Urban-Wildland Interface developments.

Intervention to minimize damage can occur in various ways. For example, better roads and/or water systems may be constructed, subdivision review and approval can require mitigation of fire hazards, or vegetation can be modified around structures. Most or all of the factors listed on the diagram should be addressed when planning a new or improving an existing development in the Urban-Wildland Interface.



Appendix B

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Appendix C

GLOSSARY OF TERMS

Accessory Building: Any building used as an accessory to residential, commercial, recreational, industrial, or educational purposes as defined in the latest adopted edition of the California Building Code, Group U, Division I, Occupancy that requires a building permit.

Activity Timing: The identification of when a given prevention activity needs to be conducted. This can be identified as dates, times, or by burning index or other indicators, such as “deer hunting season”. Activity Timing will be part of any prevention prescription.

Agriculture: Land used for agricultural purposes as defined in a local jurisdiction’s zoning ordinance.

Building: Any structure used or intended for supporting or sheltering any use or occupancy that is defined in the California Building Code, 1994 Amendments, Chapter 2.

CDF: California Department of Forestry and Fire Protection.

CEQA: California Environmental Quality Act.

CFES-IAM: California Fire Economics Simulator-Initial Attack Module, a software program for modeling the initial attack system and simulating changes in the fire protection system.

California Fire Economics Simulator (CFES): A computer model used as part of the Data Processing System for the Fire Plan. CFES will also be used as a data processing program for the Prevention Planning Process.

Classic Interface: A well-defined boundary. In California this interface type exists at the perimeter of well-developed urban areas. The traditional interface, for example, implies some kind of boundary of defined perimeter that can be defended along some kind of front. And once the front is defended, the fire becomes clearly structural in character, or clearly wildland.

Clearance: Space cleared of vegetation as required by law, regulation, easement, etc., for the purpose of preventing fires.

Clearance-Conductor: Distance from overhead open conductors which must be kept free of vegetation; distance varies depending on voltage carried by conductors.

Clearance-Pole: Radial space around base of pole or tower, measured horizontally, which must be kept free of flammable vegetation if certain hardware is in use overhead.

Climax Forest: See *Late Seral Forest*.

Code Enforcement: Application of specific codes based on statutory mandated conducted through inspection.

Contract Counties: In California, the six counties that provide fire-prevention services in state responsibility areas under contract with the state. These counties are Marin, Kern, Santa Barbara, Ventura, Los Angeles and Orange.

Cost Estimates: Each prescription/identified activity will have an estimated cost factor. This factor will be used to compare the program cost to the potential reduction in fire suppression costs.

Damage Assessment (Fire Suppression): Amount of economic loss.

Damage Evaluation (Fire Prevention Engineering): The impact and effect of statutes and regulations on structures and other improvements relating to engineering, education, and enforcement.

Dead-End Road: A road that has only one point of vehicular ingress/egress, including cul-de-sacs and looped roads.

Defensible Space: The area within the perimeter of a parcel, development, neighborhood or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching wildfire or defense against encroaching wildfires or escaping structure fires. The perimeter as used in this regulation is the area encompassing the parcel or parcels proposed for construction and/or development, excluding the physical structure itself. The establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures characterize the area.

Development: The uses to which the land, which is the subject of a map, shall be put, the buildings to be constructed on it, and all alterations of the land and construction incident thereto (GC 66418.1).

Director: Director of the Department of Forestry and Fire Protection or his/her designee.

Driveway: A vehicular access that serves no more than two buildings, with no more than three dwelling units on a single parcel, and any number of accessory buildings.

Duff: Partially decayed leaves, needles, grass or other organic material accumulated on the ground.

Dwelling Unit: Any building or portion thereof which contains living facilities, including provisions for sleeping, eating, cooking and/or sanitation for not more than one family.

Easement: A right afforded a person to make limited use of another's real property.

Exception: An alternative to the specified standard requested by the applicant that may be necessary due to health, safety, environmental conditions, physical site limitations or other limiting conditions such as recorded historical sites, that provides mitigation of the problem.

Exempt: Does not require clearance of flammable vegetation.

Exhaust Particles: All internal combustion engines produce exhaust particles which are predominantly carbon with contaminants. These particles originate from deposits formed on the internal surface of the engine or exhaust system and, depending on their exact origin, may be expelled at temperatures in excess of 3,000 F. Depending on the nature of the contaminants, these particles are capable of glowing or sometimes flaming combustion. When expelled through the exhaust system into the atmosphere, the combustion process may continue or even be accelerated during flight. Such particles if larger than 0.023 inch in diameter and at temperatures of 1,200 F are capable of igniting cellulose materials upon contact.

Federal Railroad Administration (FRA): An agency of the U.S. Department of Transportation charged with overseeing and regulating matters relating to rail transportation and safety. Assumed most of the responsibilities of the Interstate Commerce Commission (ICC) insofar as railroads are concerned.

Firebreak: Any natural or constructed barrier utilized to segregate, stop and control the spread of fire or to provide a control line from which to work.

Fire Hazard: Dangerous accumulation of flammable fuels in wildland areas usually referring to vegetation; the flammable materials that may be ignited by the various fire risks or cause fires to increase in intensity or rate of spread.

Fire Risk: A source of ignition of fire hazards.

Fire Season: That portion of the year, generally 6 to 8 months in the summer and fall in California, declared such by the responsible public agency fire administrator. Declaration is based on fuel and weather conditions conducive to the ignition and spread of wildland fires.

Flammable: Combustible and capable of being easily set on fire or kindled.

Fire: The rapid oxidation of a fuel resulting in the release of heat, light and other byproducts.

Fire Information: The distribution of information to the media on ongoing fires.

Fire Plan: The business process used to define values at risk, focus efforts to mitigate potential losses; a framework for minimizing losses.

Fire Prevention: The practices used to keep the combination of heat, fuel and oxidizer from continuing to threaten life or property.

Fire Prevention Education: The development and distribution of policy, practices and publication procedures to targeted user groups in order for them to take appropriate action through behavior modification.

Fire Prevention Enforcement: The actions taken by the Authority Having Jurisdiction (AHJ) to assure that acts, omissions or specific environment requirements set forth in statutes or regulations are adhered to by those being held responsible.

Fire (Prevention) Engineering: The discipline of using the principles of fire behavior and its effects on life or materials to create appropriate controls on the use of fire, or to resist its ignition and spread.

Fire Prevention Program: The use of fire engineering, education and enforcement principles to support the practices to reduce the probability of consequence from unwanted fires.

Fire Prevention Research: Examination of specific topics and data that have not been evaluated thoroughly, in order to prescribe future engineering, education or enforcement needs.

Fire Protection: The policies, practices and procedures used to limit fire losses in specific targeted areas: use of all alternatives to minimize losses.

Fire Protection Planning: Development of the infrastructure to respond effectively once a fire occurs.

Fire Safe: Environment created in and around a building to resist the intrusion of fire.

Fire Safe Engineering: The use of fire prevention engineering practices to reduce fuels, create access and reduce potential of ignition.

Fuelbreak: Strip from which forest fuels and woody vegetation have been reduced by thinning, pruning or removal well ahead of time to slow down or stop a wildfire or to provide a control line from which to work.

Fuel Modification Area: An area where the volume of flammable vegetation has been reduced, providing reduced fire intensity and duration.

Greenbelts: A facility or land-use designed for a use other than fire protection, which will slow or resist the spread of a wildfire. Includes parking lots, irrigated or landscaped areas, golf courses, parks, playgrounds, and maintained vineyards, orchards or annual crops that do not cure in the field.

Hammerhead/T: A roadway that provides a “T” shaped, three-point turnaround space for emergency equipment, being no narrower than the road that serves it.

Hazard: The resistance to control once a wildfire starts—fuels, topographic features, and weather conditions—adversely affecting suppression efforts are hazard factors.

ICS: Incident Command System.

Ignition Management: Includes fire prevention program activities that are aimed at preventing the ignition of wildland fires and/or reducing damage from fires. Components include law enforcement, public education, engineering, fuels modification, and fire-safe planning.

Ignition Management Analysis and Planning Process: A formal process of analyzing and prioritizing ignitions which identifies those ignitions that are most likely to become large and/or damaging fires.

Initial Attack: The wildfire control efforts taken by resources that are first to arrive at a wildfire.

Interface, or Wildland Interface: The geographical meeting point of two diverse systems, wildland and structures. At this interface, structures and vegetation are sufficiently close that a wildland fire could spread to structures or a structure fire ignites vegetation.

Law Enforcement: Action taken to hold accountable those who do not comply with codes/laws (civil/criminal actions).

I-Zone: Casual reference to Urban-Wildland Interface

Late Seral Forest: A forest that has evolved, through successional processes, near to the end of the successional line, or climax forest. Only through disturbance (fire or clear-cutting for example) will the forest return to an earlier seral (successional) stage.

Lightning Arrester: A device designed to channel lightning or over voltage it to ground in order to protect the circuit or equipment from excessive fault current.

Local Jurisdiction: Any county, city/county agency or department, or any locally authorized district that issues or approves building permits, use permits, tentative maps or tentative parcel maps, or has authority to regulate development and construction activity.

Market Values: Those values that can be identified/quantified such as homes, timber, and improvements. These items can be valued with a dollar figure.

Multi-Position Small Engine (MSE): A hand-held, internal combustion engine operable in more than one position. MSE configurations include, for example, such devices as chain saws, weed trimmers, brush-cutters, blowers, hedge trimmers, and cut-off saws.

National Fire Danger Rating System: A scientifically developed system for estimating degree of fire hazard, risk and burning intensity expressed numerically for broad areas.

Non-Exempt: Requires clearance of flammable vegetation.

Non-Market Values: Values that cannot easily be quantified into a set figure as aesthetics, rare and endangered species, or flood potential. These values will need a value rating of high, medium, or low.

Occluded Wildland: Where isolated islands of wildlands are surrounded by primarily urban development. The urban and wildland areas are generally clearly separated, meeting at a well-defined boundary or interface. These occluded wildlands may be many miles from continuous stretches of wildland.

Occupancy: The purpose of which a building, or part thereof, is used or intended to be used.

Operating Area: All the property on which active operations, including transportation, are to be conducted. The area within 100 feet of the traveled surface of roads is generally considered part of the operating area whether or not it is included in rights-of-way or easements.

Operational Area: An intermediate level of the state emergency services organization, consisting of a county and all political subdivisions within the county area.

Pollution Rights: In some areas, industries can buy and sell rights to emit specified amounts of pollutants.

Post-Fire Management: Damage Evaluation, Damage Assessment and Recovery.

Pre Fire: Actions taken prior to the ignition of a fire to affect the fire's behavior or impact.

PreFire Management: The comprehensive application of safety, fire prevention, and fire hazard reduction techniques aimed to prevent the ignition of wildland fires, prevent the damage fires can cause, reduce the costs of suppressing the fires and improving forest health.

PreFire Planning: Efforts to identify specifics where actions should be taken to have the most effect on potential fires.

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

Pre-suppression: Activities undertaken in advance of fire occurrence to help ensure more efficient fire suppression. It includes over-all planning, recruitment and training of fire personnel, procurement and maintenance of fire fighting equipment and supplies, and creating maintaining, and improving a system of fuel-breaks, roads, water sources, and control lines.

Prevention Prescription: A list of activities developed to solve an identified problem or need. A prescription will include: 1) what will be done, 2) when it will be done, 3) where it will be done, 4) who will do it, and 5) the estimated cost. Prescriptions will normally be associated only with targeted fire prevention activities.

Public Education: The distribution of information to influence the behavior of the general public.

Public Information: Distribution of information regarding ongoing department activities and proclamation, advisories and education messages.

Quad 81st Grid: This is a 7-1/2 minute quadrangles overlay grid system to facilitate the Fire Environmental Assessment process. 9 columns and 9 rows divide the 7-1/2 minute quadrangles. The resultant cells are approximately 450 acres in size. Grid cell size gives adequate level of resolution for setting unit and statewide priorities.

Range: A tier of sections six miles wide numbered east or west from a prime meridian running through a Public Land Survey reference point.

Ranger Unit: Administrative unit of the CDF.

Red Flag Fire Alert: A warning system for notification of the public and industry that extreme fire conditions are eminent or in effect.

Right-of-Way: The strip of land of varying width on which the tracks and other operating installations are placed and over which the operating company has some degree of control, by either deed, easement or special use permit; the right to pass over property owned by another party.

Risk: The likelihood of a wildfire ignition. This is normally a result of the activities of people.

Risk-Fire: Potential for ignition of fuels or an ignition agent.

Roadway: Any surface designed, improved, or ordinarily used for vehicle travel.

Roadway Structures: Bridges, culverts, and other appurtenant structures that supplement the roadway bed or shoulders.

Same Practical Effect: An exception or alternative with the capability of applying accepted wildland fire suppression strategies and tactics, and provisions for firefighter safety, including: a) access for emergency wildland fire equipment; b) safe civilian evacuation; c) signing that avoids delays in emergency equipment response; d) available and accessible water to effectively attack wildfire or defend a structure from wildfire; and e) fuel modification sufficient for civilian and firefighter safety.

Section: Normally one square mile containing 640 acres as laid out in the Public Land Survey.

Silviculture: The art of cultivating a forest; forestry.

Slash: Severed limbs and tops remaining after felling or pruning trees or brush.

Snag: A standing dead tree.

Spark Arrester: A device that traps or pulverizes exhaust carbon particles to a size below 0.023 inch in diameter, as they are expelled from an exhaust system. A spark arrester system includes the following components: Internal, combustion engine, internal parts, external parts (bumper spikes, wrap-around handle bar, chain brakes, covers, muffler, and spark arrester).

Stakeholder: Any person, agency or organization with a particular interest – a stake – in fire safety and protection of assets from wildland fires.

Stand-Replacing Fire: A fire that kills most or all of the trees in a section of forest.

State Board of Forestry (SBF): A nine-member board appointed by the Governor, which is responsible for developing the general forest policy of the State, for determining the guidance policies of the Department of Forestry and Fire Protection, and for representing the State's interest in federal land in California.

State Responsibility Area (SRA): Areas of the State in which the financial responsibility of preventing and suppressing fires has been determined by the State Board of Forestry pursuant to PRC 4125, to be primarily the responsibility of the State (PRC 4102).

Structure: That which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

Subdivision: As defined in Section 66424 of the Government Code.

Township: A tier of sections six miles wide numbered north or south from a base line running through a Public Land survey reference point.

Turnaround: A roadway, unobstructed by parking, which allows for a safe opposite change of direction for emergency equipment. Design of such area may be a hammerhead/T or terminus bulb.

Turnouts: A widening in a roadway to allow vehicles to pass.

Uncontrolled Fire: Any fire that threatens to destroy life, property or natural resources, and either is not burning within the confines of firebreaks, or is burning with such intensity that it cannot be readily extinguished with ordinary tools commonly available.

Understory: Small trees (seedlings, saplings, pole-sized) growing under a canopy of large, more or less mature trees.

Urban-Wildland Interface: Refers to the geographical point where flammable vegetation meets man-made structures.

Value: The values at risk - what can be destroyed by a wildland fire. Value includes market (quantifiable) values and non-market values such as rare and endangered species, visual aspects, etc. Timber resource losses and potential improvement losses should be considered as market values.

Vertical Clearance: The minimum specified height of a bridge or overhead projection above the roadway.

Wildfire: As defined in Public Resources Code Sections 4103 and 4104.

Wildland: Uncultivated land, other than fallow, neglected or maintained for such purposes as wood or range-forage production, wildlife, recreation, protective watershed cover or wilderness.

Wildland Fire: Any fire occurring on undeveloped land.

Appendix D

OPINION NO. 94-708--MARCH 7, 1995

Requested by: CALIFORNIA BUILDING STANDARDS
COMMISSION and MEMBER OF THE STATE ASSEMBLY

Opinion by: DANIEL E. LUNGREN, Attorney General
Maxine P. Cutler, Deputy

THE CALIFORNIA BUILDING STANDARDS COMMISSION has requested an opinion on the following question: As a condition of issuing a building permit for construction of a single-family residence or other building, may a city or county require by ordinance the installation of an emergency water supply, such as a 5,000 gallon water reservoir?

THE HONORABLE DAN HAUSER, MEMBER OF THE CALIFORNIA STATE ASSEMBLY, has requested an opinion on the following question: As a condition of issuing a building permit for the construction of a single-family residence, may a city or county require by ordinance the installation of a paved driveway from the property line to the residence for emergency vehicle access?

CONCLUSIONS

1. As a condition of issuing a building permit for the construction of a single-family residence or other building, a city or county may require by ordinance the installation of an emergency water supply, such as a 5,000 gallon water reservoir. Specific findings may be necessary for adoption of the ordinance depending upon the particular facts and circumstances.
2. As a condition of issuing a building permit for the construction of a single-family residence, a city or county may require by ordinance the installation of a paved driveway from the property line to the residence for emergency vehicle access. Specific findings may be necessary for adoption of the ordinance depending upon the particular facts and circumstances.

ANALYSIS

The two questions presented for resolution concern the authority of cities and counties to impose certain conditions when issuing building permits. The conditions would require an emergency water supply, such as a private water reservoir, and a paved access road for the proposed building structure. Both conditions would serve to protect the building and its occupants in case of a fire or other emergency. We conclude that cities and counties have the constitutional authority to impose the two requirements when issuing building permits.

1. Emergency Water Supply

The first question presents an issue similar to one we addressed in a 1985 opinion. In 68 Ops.Cal.Atty.Gen. 225 (1985), we were asked whether a fire protection district could require the installation of an emergency water supply at the time of construction of every building in the district. We explained the factual situation therein as follows:

"In many rural communities with established subdivisions of large lot parcels and no public or private water systems, the availability of a water source sufficient to fight a fire at each building site is of major concern. Normally, the fire truck itself would have a

limited supply of 500 to 1,000 gallons, and water from wells available at the site would be of limited supply and have insufficient pressure to prove effective. One alternative in solving this problem would be to have a water reservoir of, for example, 5,000 gallons installed at each building site which a fire truck could drain with its pumps." (*Id.*, at p. 226.)¹

The general authority of cities and counties to adopt local ordinances is set forth in section 7 of article XI of the Constitution:

"A county or city may make and enforce within its limits all local, police, sanitary, and other ordinances and regulations not in conflict with general laws."

This constitutional authority, often referred to as the "police power," is subject only to the limitations that it be exercised within territorial limits and be subordinate to state law. As explained by the Supreme Court in *Candid Enterprises, Inc. v. Grossmont Union High School District* (1985) 29 Cal.3d 878, 885: "Counties and cities have plenary authority to govern, subject only to the limitation that they exercise this power within their territorial limits and subordinate to state law." Except for these limitations, the police power authority of a city or county "is as broad as the police power exercisable by the Legislature itself." (*Birkenfeld v. City of Berkeley* (1976) 17 Cal.3d 129, 140.)

Of course, the exercise of the police power by the Legislature or by cities and counties is subject to the limitations imposed by the state and federal Constitutions. Among these limitations is the requirement that the legislation be rationally related to a legitimate governmental concern. (*Metromedia, Inc. v. City of San Diego* (1981) 453 U.S. 490, 415; *Schad v. Mt. Ephraim* (1981) 452 U.S. 61, 68.) We assume for purposes of this analysis that the requisite need for an emergency water supply may be established in the particular circumstances.

The regulation of land development is a traditional subject for the exercise of the constitutional police power by a city or county. (See *Griffin Development Company v. City of Oxnard* (1985) 39 Cal.3d 256, 261-264; *Santa Monica Pines, Ltd. v. Rent Control Board* (1984) 35 Cal.3d 858, 868-869; *Birkenfeld v. City of Berkeley*, *supra*, 17 Cal.3d at 140.) The courts have upheld numerous types of conditions imposed by cities and counties when approving building permits. (See, e.g., *Shelby Realty Co. v. City of San Buenaventura* (1973) 10 Cal.3d 110 [dedication of a right of way]; *Friends of Westwood, Inc. v. City of Los Angeles* (1987) 191 Cal.App.3d 259 [street access points and internal parking circulation]; *Slagle Construction Co. v. County of Contra Costa* (1977) 67 Cal.App.3d 559 [burial of overhead utility lines].)² More particularly, a local ordinance which is intended to protect the public health, safety, and welfare, such as one prescribing building standards relating to fire safety, would fall within a city's or county's police power authority. (58 Ops.Cal.Atty.Gen. 13, 14 (1975); cf., *People ex rel. Deukmejian v. County of Mendocino* (1984) 36 Cal.3d 476, 484; *People v. Mueller* (1970) 8 Cal.App.3d 949, 954, fn. 1.) The ordinance would be presumed valid so long as it did not conflict with general state law. (Cf., *Stanislaus*

¹ In our 1985 opinion, we concluded that a fire protection district did not have the statutory authority to impose such a requirement. The Legislature has since granted fire protection districts the necessary authority. (Health & Saf. Code § 13869.7.)

² Under Government Code section 65909, subdivision (a), a city or county may not "condition the issuance of any building . . . permit . . . on . . . [t]he dedication of land for any purpose not reasonably related to the use of the property for which the . . . building . . . permit is requested." (See *Dolan v. City of Tigard* (1994) 512 U.S.—[129 L.Ed.2d 304]; *Nollan v. California Coastal Comm'n* (1987) 483 U.S. 825 [97 L.Ed.2d 677]; *Salton Bay Marina, Inc. v. Imperial Irrigation Dist.* (1985) 172 Cal. App.3d 914, 236-938.)

Co. etc. Assn. v. Stanislaus (1937) 8 Cal.2d 378, 383-384; *Freeman v. Contra Costa County Water District* (1971) 18 Cal.App.3d 404, 408.)

We have not been apprised of any state law that would be in conflict with the proposed emergency water supply ordinance in question. We have examined the codes and have found none. Nevertheless, a discussion of several statutory provisions appears appropriate to dispel any uncertainty.

In 68 Ops.Cal.Atty.Gen. 225, supra, we indicated that requiring an emergency water supply could in some circumstances be considered a "building standard" for purposes of the State Building Standards Law (Health & Saf. Code, §§ 18901-18949.6).³ Section 18909, subdivision (b) provides: ". . . 'building standard' includes architectural and design functions of a building or structure" The building standards published in the State Building Standards Code "shall be binding on the state and other public agencies" (§ 18944.5.) While the code does not contain a building standard for an emergency water supply, section 18941.5, subdivision (b) states:

"Neither the State Building Standards Law contained in this part, nor the application of building standards contained in this section, shall limit the authority of a city, county, or city and county to establish more restrictive building standards reasonably necessary because of local climatic, geological, or topographical conditions . . ."

Similarly, the State Housing Law (§§ 17910-17995.5; see *Taschner v. City Council* (1973) 31 Cal.App.3d 48, 60), which would be applicable to single-family residences, allows cities and counties to adopt more restrictive building standards than those adopted on a statewide basis by the Department of Housing and Community Development. Although the latter has not adopted a building standard for an emergency water supply, section 17958.5, subdivision (a) states:

". . . a city or county may make changes or modifications in the requirements contained in the provisions published in the California Building Standards Code and the other regulations adopted [by the Department of Housing and Community Development] pursuant to Section 17922 as it determines, pursuant to the provisions of Section 17958.7, are reasonably necessary because of local climatic, geological, or topographical conditions.

"For purposes of this subdivision, a city and county may make reasonably necessary modifications to the requirements, adopted pursuant to Section 17922, contained in the provisions of the code and regulations on the basis of local conditions."

Subdivision (a) of section 17958.7 states in turn:

". . . the governing body of a city or county, before making any modifications or changes pursuant to Section 17958.5, shall make an express finding that such modifications or changes are reasonably necessary because of local climatic, geological or topographical conditions. Such a finding shall be available as public record. A copy of such findings, together with the modification or change expressly marked and identified to which each such finding refers, shall be filed with the department. No such modification or change shall become effective or

³ All references hereafter to the Health and Safety Code are by section number only.

operative for any purpose until the finding and the modification or change have been filed with the department."

The Legislature has accorded similar treatment to the fire safety standards adopted by the State Fire Marshal for various types of buildings. (See, e.g., §§ 13108, 13143, 13143.6, 13211, 17921; 72 Ops.Cal.Atty.Gen. 180 (1989).) Again, although the State Fire Marshal has not adopted an emergency water supply requirement, subdivision (a) of section 13143.5 provides:

"Notwithstanding Part 2 (commencing with Section 13100) of Division 12, Part 1.5 (commencing with Section 17910) of Division 13, and Part 2.5 (commencing with Section 18901) of Division 13, any city, county, or city and county may, by ordinance, make changes or modifications that are more stringent than the requirements published in the California Building Standards Code relating to fire and panic safety and the other regulations adopted pursuant to this part. Any changes or modifications that are more stringent than the requirements published in the California Building Standards Code relating to fire and panic safety shall be subject to subdivision (b) of Section 18941.5."⁴

Consistent with this legislative approach, the statutory scheme (Pub. Resources Code, §§ 4290-4299) authorizing the State Board of Forestry to adopt fire safety standards for state responsibility area lands (see 76 Ops.Cal.Atty.Gen. 19 (1993)) allows the board to set standards for "[m]inimum private water supply reservoirs for emergency fire use" (Pub. Resources Code, § 4290, subd. (a)), but then specifies that such standards "do not supersede local regulations which equal or exceed" the minimum standards established by the board (Pub. Resources Code, § 4290, subd. (b)).

Because each of these statutory schemes expressly authorizes or recognizes local legislation, the exercise by a city or county of its constitutional police power authority in these areas would not be "in conflict with general laws." (Cal. Const., art. XI, § 7.) As stated by the Supreme Court in *People ex rel. Deukmejian v. County of Mendocino*, *supra*, 36 Cal.3d at 485: "Preemption by implication of legislative intent may not be found when the Legislature has expressed its intent to permit local regulations. Similarly, it should not be found when the statutory scheme recognizes local regulations."

Finally, we note "the general rule that a builder must comply with the laws which are in effect at the time a building permit is issued, including the laws which were enacted after application for the permit. [Citations.]" (*Avco Community Developers, Inc. v. South Coast Regional Com.* (1976) 17 Cal.3d 785, 795.) On occasion, the Legislature has changed the general rule. Government Code section 65961, for example, states in part:

"Notwithstanding any other provision of law, upon approval or conditional approval of a tentative map for a subdivision of single- or multiple-family residential units, or upon recordation of a parcel map for such a subdivision for which no tentative map was required, during the five year period following recordation of the final map or parcel map for the subdivision, a city, county, or a city and county shall not require as a condition to

⁴ Our 1989 opinion concluded that cities and counties do not have the authority to modify the fire safety standards adopted by the State Fire Marshal. (72 Ops.Cal.Atty.Gen., *supra*, 180.) With its amendment in 1990 (Stats. 1990, ch. 1111, § 3), section 13143.5 now grants such statutory authority to cities and counties. Of course, requiring an emergency water supply must reasonably be viewed as "more restrictive," "more stringent," and a "change" in standards that lack such a requirement.

the issuance of any building permit or equivalent permit for such single- or multiple-family residential units, conformance with or the performance of any conditions that the city or county could have lawfully imposed as a condition to the previously approved tentative or parcel map. Nor shall a city, county, or city and county withhold or refuse to issue a building permit or equivalent permit for failure to conform with or perform any conditions that the city, county, or city and county could have lawfully imposed as a condition to the previously approved tentative or parcel map. However, the provisions of this section shall not prohibit a city, county, or city and county from doing any of the following:

"(a) Imposing conditions or requirements upon the issuance of a building permit or equivalent permit which could have been lawfully imposed as a condition to the approval of a tentative or parcel map if the local agency finds it necessary to impose the condition or requirement for any of the following reasons:

"(1) A failure to do so would place the residents of the subdivision or of the immediate community, or both, in a condition perilous to their health or safety, or both.

"(2) The condition is required in order to comply with state or federal law.

"(b) Withholding or refusing to issue a building permit or equivalent permit if the local agency finds it is required to do so in order to comply with state or federal law.

"(c) Assuring compliance with the applicable zoning ordinance."

Depending upon the individual circumstances, the limitations of Government Code section 65961 may require consideration when adopting an ordinance mandating the installation of an emergency water supply as a condition of issuing a building permit. (See *Golden State Homebuilding Associates v. City of Modesto* (1994) 26 Cal.App.4th 601, 607-613.)⁵

In answer to the first question, therefore, we conclude that as a condition of issuing a building permit for the construction of a single-family residence or other building, a city or county may require by ordinance the installation of an emergency water supply, such as a 5,000 gallon water reservoir.⁶ Specific findings may be necessary for adoption of the ordinance depending upon the particular facts and circumstances.

2. A Paved Driveway

The second question posed is whether a city or county may require, as a condition of issuing a building permit for a single-family residence, the installation of a paved driveway from the property line to the residence in order to provide emergency vehicle access.

Our analysis of the first question provides the answer to the second question. A city or county has constitutional authority to enact ordinances protecting the public health, safety, and welfare of its

⁵The judicially developed doctrine of "vested rights" which is founded in the common law and based upon the principle of equitable estoppel would not be applicable here, since "the right generally has been held to arise only upon issuance of a building permit or other final discretionary approval, and is limited in scope to the terms of the permit itself." (*Golden State Homebuilding Associates v. City of Modesto*, supra, 26 Cal.App.4th at 607.)

⁶ Because of the conclusion reached, we need not address the "home rule" constitutional authority of charter cities and counties to enact ordinances inconsistent with general law. (See Cal. Const., art XI, §§ 3-6; *Dibb v. County of San Diego* (1994) 8 Cal.4th 1200, 1206-1208; *Agnes' v. City of Los Angeles* (1961) 190 Cal.App.2d 820, 827.)

inhabitants. The obvious purpose of requiring paved emergency access to a single-family residence would be to protect the health, safety, and welfare of its occupants.

As with a local ordinance imposing an emergency water supply requirement, we must determine if any general state laws have been enacted which might be "in conflict with" an ordinance requiring a paved driveway. No law has been brought to our attention providing such a conflict; we have found none.

While an emergency water supply requirement might involve a "building standard," a paved driveway requirement would not. (§§ 18908-18909.) Assuming a paved driveway requirement is imposed as a fire safety standard by the State Fire Marshal (see Cal. Code Regs., tit. 19, § 3.05) or the State Board of Forestry, the state laws governing such standards authorize local legislation. (§ 13143.5; Pub. Resources Code, § 4290.) Accordingly, no preemption of local ordinances may be found in these state laws. (See *People ex rel. Deukmejian v. County of Mendocino, supra*, 36 Cal.3d at 485.) Of course, the local standard must be reasonable and meet any applicable statutory conditions.

In answer to the second question, therefore, we conclude that as a condition of issuing a building permit for the construction of a single-family residence, a city or county may require by ordinance the installation of a paved driveway from the property line to the residence for emergency vehicle access. Specific findings may be necessary for adoption of the ordinance depending upon the particular facts and circumstances.

Appendix E

OPINION NO. 92-807--MARCH 17, 1993

Requested by: COUNTY COUNSEL, COUNTY OF AMADOR
Opinion by: DANIEL E. LUNGREN, Attorney General
Gregory L. Gonot, Deputy

THE HONORABLE JOHN F. HAHN, COUNTY COUNSEL, COUNTY OF AMADOR, has requested an opinion on the following question:

Do the fire safety standards adopted by the Board of Forestry for development on state responsibility area lands apply to the perimeters and access to buildings constructed after January 1, 1991, on parcels created by parcel or tentative maps approved prior to January 1, 1991?

CONCLUSION

The fire safety standards adopted by the Board of Forestry for development on state responsibility area lands apply to the perimeters and access to buildings constructed after January 1, 1991, on parcels created by parcel or tentative maps approved prior to January 1, 1991, to the extent that conditions relating to the perimeters and access to the buildings were not imposed as part of the approval of the parcel or tentative maps.

ANALYSIS

By legislation enacted in 1987 (Stats. 1987, ch. 955, § 2), the State Board of Forestry ('Board') was directed to adopt minimum fire safety standards for state responsibility area lands¹ under the authority of the Department of Forestry and Fire Protection. Public Resources Code section 4290² states:

The board shall adopt regulations implementing minimum fire safety standards related to defensible space which are applicable to state responsibility area lands under the authority of the department. These regulations apply to the perimeters and access to all residential, commercial, and industrial building construction within state responsibility areas approved after January 1, 1991.

The board may not adopt building standards, as defined in Section 18909 of the Health and Safety Code, under the authority of this section. As an integral part of fire safety standards, the State Fire Marshal has the authority to adopt regulations for roof coverings and openings into the attic areas of buildings specified in Section 13108.5 of the Health and Safety Code. The regulations apply to the placement of mobile homes as defined by National Fire Protection Association standards. *These regulations do not apply where an application for a building permit was filed prior to January 1, 1991, or to parcel or tentative maps or other developments approved prior to January 1, 1991, if the final map*

¹On state responsibility area lands (see Pub. Resources Code, §§ 4126-4127; Cal. Code Regs. tit. 14, §§1220-1220.5), the financial responsibility of preventing and suppressing fires is primarily the responsibility of the state, as opposed to local or federal agencies. (Pub. Resources Code, § 4125.)

²All references hereafter to the Public Resources Code prior to footnote 8 are by section number only.

for the tentative map is approved within the time prescribed by the local ordinance. The regulations shall include all of the following:

- "(1) Road standards for fire equipment access.
 - "(2) Standards for signs identifying streets, roads, and buildings.
 - "(3) Minimum private water supply reserves for emergency fire use.
 - "(4) Fuel breaks and greenbelts.
 - "(b) These regulations do not supersede local regulations which equal or exceed minimum regulations adopted by the state."
- (Emphasis added.)

As indicated in the statute, the Board's regulations are to help create "defensible space"³ for the protection of state responsibility areas against wildfires.

Originally the regulations were to be applicable with respect to all building construction approved after July 1, 1989, but by subsequent legislation (Stats. 1989, ch. 60, § 1), the threshold date was changed to January 1, 1991. The regulations (Cal. Code Regs., tit. 14, §§ 127-1276.03)⁴ in fact became operative on May 30, 1991.

A "grandfather clause" in the underlying statute provides that "[t]hese regulations do not apply where an application for a building permit was filed prior to January 1, 1991, or to parcel or tentative maps or other developments approved prior to January 1, 1991, if the final map for the tentative map is approved within the time prescribed by the local ordinance." (§ 4290.) We are asked to determine whether the regulations apply to an application for a building permit filed *after* January 1, 1991, for a dwelling to be built on a parcel lawfully created by a parcel map or tentative map approved *prior* to January 1, 1991.

We begin by noting that the grandfather clause contains two ostensibly independent exceptions to the application of the regulations. One is directed at building permits and the other at subdivision maps.⁵ These exceptions were apparently designed by the Legislature to exempt construction and development activity already in the "pipeline" as of January 1, 1991. According to Regulation 1270.01, it is the "*future* design and construction of structures, subdivisions and development" (emphasis added) which is to trigger application of the regulations.

Thus, although an application for a building permit is not made until after January 1, 1991, the proposed construction may garner an exemption if the parcel is covered by a parcel or tentative map approved prior to January 1, 1991 (provided that the final map for the tentative map is approved within the time prescribed

³ Defensible space is defined as: "The area within the perimeter of a parcel, development, neighborhood or community where basic wild land fire protection practices and measures are implemented, providing the key point of defense from an approaching wildfire or defense against encroaching wild fires or escaping structure fires. The perimeter as used in this regulation is the area encompassing the parcel or parcels proposed for construction and/or development, excluding the physical structure itself. The area is characterized by the establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures." (Cal. Code Regs., tit. 14, § 1271.00.)

⁴ All references hereafter to title 14 of the California Code of Regulations are by regulation number only.

⁵ A parcel map is filed when creating subdivisions of four or fewer parcels, while a tentative map and final map are filed when creating subdivisions of five or more parcels. (Gov. Code. §§ 66426. 66428.)

by the local ordinance).⁶ However, this raises the question of the purpose of the building permit exception since virtually any application for a building permit will be preceded by a parcel or tentative map approval for the parcel upon which the construction is proposed, even one which may have been obtained in the distant past.⁷ A well-established rule of statutory construction holds that "[w]henver possible, effect should be given to the statute as a whole, and to its every word and clause, so that no part or provision will be useless or meaningless..." (*Colombo Construction Co. v. Panama Union School Dist.* (1982) 136 Cal.App.3d 868, 876; see *Harris v. Capital Growth Investors XIV* (1991) 52 Cal.3d 1149, 1159 ["In analyzing statutory language, we seek to give meaning to every word and phrase in the statute to accomplish a result consistent with the legislative purpose, i.e., the object to be achieved and the evil to be prevented by the legislation"].)

Our task then is to search for an interpretation of section 4290 which is not only consistent with the legislative purpose but also furnishes independent significance to each of the two exceptions. We believe that the answer lies in the different manner in which each exception is phrased. The first is "where an application for a building permit was filed prior to January 1, 1991," and the second is "to parcel or tentative maps or other developments approved prior to January 1, 1991" The "where" of the first exception implies a broad exemption encompassing all activity related to the building permit, whereas the "to" of the second exception implies an exemption which is limited to matters contained in the parcel or tentative map approval.

Under this reading of section 4290, only those perimeter and access conditions which were imposed during the parcel or tentative map approval process would be immune from the effect of the regulations. Typically, parcel and tentative map approvals include requirements for the improvement of the parcels within the subdivision. The Subdivision Map Act (Gov. Code, §§ 66410-66499.37; "Act")⁸ establishes general criteria for land development planning in the creation of subdivisions throughout the state. Cities and counties are given authority under the legislation to regulate the design and improvement of divisions of land in their areas through a process of approving subdivision maps required to be filed by each subdivider. (§ 66411; *Santa Monica Pines, Ltd. v. Rent Control Board*, *supra*, 35 Cal.3d 858, 869; *South Central Coast Regional Com. v. Charles A. Pratt Construction Co.* (1982) 128 Cal.App.3d 830, 844 845.) A subdivider must obtain approval of the appropriate map before the subdivided parcels are offered for sale, or lease, or are financed. (§§ 66499.30, 66499.31; *Bright v. Board of Supervisors* (1977) 66 Cal.App.3d 191, 193-194.)

The Act sets forth procedures by which cities and counties may impose a variety of specific conditions when approving the subdivision maps. Such conditions typically cover streets, public access rights, drainage, public utility easements, and parks, among other improvements. (§§ 66475-66489; see *Associated Home Builders etc., Inc. v. City of Walnut Creek* (1971) 4 Cal.3d 633, 639-647; *Ayers v. City Council of Los Angeles* (1949) 34 Cal.2d 31, 37-43.)

⁶ The approval of a final map is a ministerial function once the tentative map has been approved and the conditions that were attached to the tentative map have been fulfilled. (Gov. Code, §§ 66458, 66473, 66474. 1; *Santa Monica Pines, Ltd. v. Rent Control Board* (1984) 35 Cal.3d 858, 865; *Youngblood v. Board of Supervisors* (1978) 22 Cal.3d 644, 653.)

⁷ Statutory provisions for tentative maps and final maps first appeared in 1929 (Stats. 1929. ch. 838), while parcel maps were first required in 1971 (Stats. 1971. ch. 1446). (See Cal. Subdivision Map Act Practice (Cont.Ed.Bar 1987) §§ 1.2-1.3, pp. 3-5.)

⁸ All references hereafter to the Business and Professions Code are by section number only.

The Act vests cities and counties with the power to regulate and control the "design and improvement of subdivisions" (§ 66411) independent of the power to impose the specified conditions enumerated above. "Design" is defined as:

". . . (1) street alignments, grades and widths; (2) drainage and sanitary facilities and utilities, including alignments and grades thereof; (3) location and size of all required easements and rights-of-way; (4) fire roads and firebreaks; (5) lot size and configuration; (6) traffic access; (7) grading; (8) land to be dedicated for park or recreational purposes; and (9) such other specific physical requirements in the plan and configuration of the entire subdivision as may be necessary to ensure consistency with, or implementation of, the general plan or any applicable specific plan." (§66418.)

"Improvement" is defined as:

". . . any street work and utilities to be installed, or agreed to be installed, by the subdivider on the land to be used for public or private streets, highways, ways, and easements, as are necessary for the general use of the lot owners in the subdivision and local neighborhood traffic and drainage needs as a condition precedent to the approval and acceptance of the final map thereof.

". . . also . . . any other specific improvements or types of improvements, the installation of which, either by the subdivider, by public agencies, by private utilities, by any other entity approved by the local agency, or by a combination thereof, is necessary to ensure consistency with, or implementation of, the general plan or any applicable specific plan." (§ 66419.)

Accordingly, we believe that when a person applies for a building permit after January 1, 1991, the Board's fire safety regulations would be inapplicable as to any matters approved prior to January 1, 1991, as part of the parcel or tentative map process.⁹ By contrast, a person who applied for a building permit prior to January 1, 1991, would not be subject to any of the access or perimeter requirements set forth in the regulations.

In addition to preserving independent significance for the building permit exception, the aforementioned reading of Public Resources Code section 4290 comports with another principle of statutory construction, namely that "[e]xceptions to the general rule of a statute are to be strictly construed." (*Da Vinci Group v. San Francisco Residential Rent etc. Bd.* (1992) 5 Cal.App.4th 24, 28; see *Goins v. Board of Pension Commissioners* (1979) 96 Cal.App.3d 1005, 1009; see also *Board of Medical Quality Assurance v. Andrews* (1989) 211 Cal.App.3d 1346, 1355 [statutes conferring exemptions from regulatory schemes are narrowly construed].) More specifically, we have cited "the general rule that a grandfather clause, being contrary to the general rule expressed in a statute, must be narrowly construed. [Citations.]" (57 Ops.Cal.Atty.Gen. 284, 286 (1974).) A blanket exemption for all construction and development activity related to a parcel covered by an approved tentative or parcel map (provided the final map for the tentative map is approved within the time prescribed by the local ordinance) would violate these principles of statutory construction.

⁹ Regulation 1270.02. for example, exempts "[r]oads required as a condition of tentative [or] parcel maps prior to the effective date of these regulations...."

On the other hand, we decline to construe the grandfather clause here so narrowly that *all* of the Board's fire safety regulations become applicable when the owner of a parcel covered by a parcel or tentative map approved prior to January 1, 1991, applies for a permit to build on that parcel after January 1, 1991. To do so would mean that the exception for approved tentative or parcel maps would afford the landowner nothing at the construction and development stage. Again, we are guided by the principle that a statute should be interpreted in such a way that no part or provision will be rendered useless or meaningless. (*Colombo Construction Co. v. Panama Union School District, supra*, 136 Cal.App. 868, 876.)

Finally, we observe the rule that if more than one construction of a statute appears possible, we must adopt the one that leads to the most reasonable result. (*Industrial Indemnity Co. v. City and County of San Francisco* (1990) 218 Cal.App.3d 999, 1008.) An exemption from the regulations for those access and perimeter conditions which are included in the approval of a parcel or tentative map prior to January 1, 1991, serves to lock in reasonable entitlements while ensuring that other fire safety standards may be applied at the time a building permit is sought subsequent to January 1, 1991.

On the basis of the foregoing analysis and principles of statutory construction, we conclude that the fire safety standards adopted by the Board for development on state responsibility area lands apply to the perimeters and access to buildings constructed after January 1, 1991, on parcels created by parcel or tentative maps approved prior to January 1, 1991, to the extent that conditions relating to the perimeters and access to the buildings were not imposed as part of the approval of the parcel or tentative maps.

Appendix F

Stanley Mosk
Attorney General

State of California
Office of the Attorney General
Department of Justice
Library and Courts Building, Sacramento 14
March 23, 1964

Department of Conservation
Division of Forestry
State Office Building No. 1
Sacramento, California 95814

Attention: Mr. F. H. Raymond
State Forester

Re: Law Enforcement Fire Protection and
Clearance Requirements
Public Resources Code § 4105

Dear Mr. Raymond:

This is in reply to your memo of November 17, 1963, requesting the opinion of this office on the following two questions:

1. Does Public Resources Code section 4105 (all references will be to the Public Resources Code unless otherwise indicated), as added by Stats. 1963, Chapter 2038, apply within the boundaries of incorporated cities?
2. If the answer is yes, may the local fire chief or other enforcement agency exercise the authority granted to the State Forester in subdivision (b) to prescribe firebreaks in excess of 30 feet where extra hazardous conditions exist?

You have forwarded to this office a copy of the opinion of Harold W. Kennedy, County Counsel of the County of Los Angeles, dated November 26, 1963, in response to substantially the same questions by Chief K. E. Klinger of that county. We are in substantial agreement with the conclusions of the opinion so far as they relate directly to the above questions.

Section 4105 provides as follows:

Any person who owns, leases, controls, operates, or maintains any building or structure in, upon, or adjoining any mountainous area or forest-, brush-, or grass-covered lands or land covered with flammable material shall at all times do all of the following:

- (a) Maintain around and adjacent to such building or structure a firebreak made by removing and clearing away, for a distance of not less than 30 feet on each side thereof or to the property line, whichever is nearer, all flammable vegetation or other combustible growth. This subdivision does not apply to single specimens of trees, ornamental shrubbery, or similar plants which are used as ground cover, provided that they do not form a means of rapidly transmitting fire from the native growth to any building or structure.

- (b) Maintain around and adjacent to any such building or structure additional fire protection or firebreak made by removing all brush, flammable vegetation, or combustible growth which is located from 30 feet to 100 feet from such building or structure or to the property line, whichever is nearer, as may be required by the State Forester when he finds that because of extra hazardous conditions a firebreak of only 30 feet around such building or structure is not sufficient to provide reasonable fire safety. Grass and other vegetation located more than 30 feet from such building or structure and less than 18 inches in heights about the ground may be maintained where necessary to stabilize the soil and prevent erosion.
- (c) Remove that portion of any tree which extends within 10 feet of the outlet of any chimney or stovepipe.
- (d) Maintain any tree adjacent to or overhanging any building free of dead or dying wood.
- (e) Maintain the roof of any structure free of leaves, needles, or other dead vegetative growth.
- (f) Every chimney or stovepipe that is attached to any fireplace, stove, or other device that burns any solid or liquid fuel shall be provided and maintained at all times with a screen over the outlet. Such screen shall be constructed of nonflammable material with openings of not more than one-half inch in size.

Enacted as it was by a general act, this section is applicable everywhere in the state including incorporated cities, unless such application is otherwise qualified or restricted. See, *Ex parte Beck*, 162 Cal. 701, 711, 124 P. 543. There appear to be no provisions expressly or impliedly excluding incorporated cities from the area in which this section is to apply. In fact, it is quite clear from section 1 of chapter 2038, Stats. 1963, adding section 4105 to the code, that the purpose of the legislation is to protect life and property from fire in all parts of the state without reference to the political subdivision within which particular areas fall:

The Legislature of the State of California hereby finds and declares that the unrestricted use of grass-, grain-, brush-, or forest-covered land within the State is a potential menace to life and property from fire and resulting erosion.

See, also, section 3, chapter 2038, Stats. 1963. It is true, of course, that section 4162 provides that the requirements of article 5, chapter 1, division 4, of the code, are not to apply to the setting of fires on lands within any municipal corporation. However, section 4105 was not added to that article and the limits of section 4162 has no application to section 4105.

We conclude, therefore, that the provisions of section 4105 are applicable within the limits and boundaries of incorporated cities.

In answer to your second question, particular note is made of the fact that the authority under subdivision (b) of section 4105 to prescribe and require wider firebreaks in hazardous areas is expressly granted only to the State Forester. There appears, therefore, no cause or basis for implying that such authority may be exercised by any other person. The Legislature in the same statute adopting this section leaves no room for doubt when authority is given jointly to the State Forester and another agency to prescribe requirements to meet special conditions. For example, section 4107, added by Stats. 1963, chapter 2038, confers such authority to “the State Forester or the agency having primary responsibility for the fire protection” of the areas involved.

See, also, section 4106. The failure to expressly give authority to any person or agency other than the

State Forester in subdivision (a) of section 4105 under such circumstances doubly evidences the legislative intent that this authority is to be exercised only by the State Forester. It may also be noted that the power to prescribe such additional clearances is a discretionary power and consequently is personal to the State Forester and not subject to delegation by him to any other public officer such as a local fire chief.

While our conclusion is that subdivision (b) of section 4105 vests no authority in a local fire chief or responsible enforcement agency to require a firebreak in excess of 30 feet, it is our opinion that the matter can be handled by appropriate local ordinance, rule, or regulation. Section 4018, added by chapter 2038, provides:

.... Counties, cities and counties, cities, and districts may adopt ordinances, rules, or regulations to provide fire prevention restrictions or regulations that are necessary to meet local conditions of weather, vegetation, or other fire hazards. Such ordinances, rules, or regulations may be more restrictive than state statutes in order to meet local fire hazard conditions.

Hence, to meet local conditions a city, as well as a county, city and county, or a district may adopt an ordinance, rule, or regulations prescribing or requiring a firebreak in excess of the 30 feet required by subdivision (a) of section 4105.

Very truly yours,

STANLEY MOSK
Attorney General

R. H. CONNETT
Deputy Attorney General

RHC:cb

Appendix G

VERY HIGH FIRE HAZARD SEVERITY ZONING (LRA) REGULATIONS SUMMARY

- Assembly Bill 337 (Bates) became law January 1, 1993, adding Government Code Sections 51175 et seq., and amended Health and Safety Code Section 13108.5
- Regards Very High Fire Hazard Severity Zones (VHFHSZ) within Local Responsibility Areas (LRA)
- CDF designated lead agency to determine areas within LRA which meet established criteria for a VHFHSZ
- Participation of local authority entirely discretionary. Local authority may disagree classification and choose not to adopt, or make the contention that its jurisdiction meets or exceeds Bates
- If local jurisdictions desire to participate in the Bates project, they must adopt a local ordinance which requires at least a class B roof for all new construction, and when at least 50% of the existing roof is replaced; along with a number of other fire safe measures as 30-foot minimum clearances, additional clearances of 30-40 feet, screens over chimneys, no overhanging branches, and the like
- Model ordinance, as developed by the State Fire Marshal, can be adopted as a local ordinance which complies with Bates
- Once local jurisdictions are notified by CDF that such a zone exists within their jurisdiction, they have 120-days to enact the more restrictive ordinance, unless the jurisdiction already has in place an ordinance which meets or exceeds that required by Bates
- If the local authority chooses to exclude an area from the requirements to maintain vegetation clearances as prescribed in Bates, that local authority must make findings supported by substantial evidence in the record that the requirements of Government Code Section 51182 are not necessary for effective fire protection within the area
- In contrast to the above, the local authority can also include areas within the VHFHSZ in their respective jurisdictions which were not identified by CDF, following findings supported by substantial evidence in the record
- Changes made by the local authority to the recommendations of CDF shall be final and are not rebuttable by the Director
- The term Very High Fire Hazard Severity Zone need not necessarily be used in local ordinances to describe this area
- Assembly Bill 3819 became law on September 25, 1994, adding Government Code Sections 51178.5 and 51189, and amending Health and Safety Code Sections 13108.5 and 13132.7.
- Requires that local agencies allow for public review of identified VHFHSZ in the form of maps within 30 days of notification by the CDF director
- Requires that the State Fire Marshal's Office develop a Model Ordinance that provides for comprehensive space and structure defensibility, including building design and construction requirements.

Appendix H

MODEL ORDINANCE FOR VERY HIGH FIRE HAZARD SEVERITY ZONE ADOPTION

ORDINANCE NO. _____

An ordinance of the city (or county or district) of _____ requiring the fire chief to designate very high fire hazard severity zones and the building official to enforce the requirements of Section 3203, Title 24 California Code of Regulations.

THE _____ COUNCIL OF THE _____ DOES ORDAIN AS FOLLOWS:

Section 1: The Fire Chief is hereby authorized to designate Very High Fire Hazard Severity Zones within 120 days of receiving recommendations from the California Department of Forestry and Fire Protection.

Section 2: The Fire Chief may designate areas not identified as Very High Fire Hazard Severity Zones by the California Department of Forestry and Fire Protection following a finding supported by substantial evidence in the record that the requirements for Very High Fire Hazard Severity Zones are necessary for effective fire protections within the area(s).

Section 3: The Fire Chief may decline to designate areas identified by the California Department of Forestry and Fire Protection as Very High Fire Hazard Severity Zones following a finding supported by substantial evidence in the record that the requirements for Very High Fire Hazard Severity Zones are not necessary for effective fire protection within the area(s).

Section 4: The Building Official shall enforce the provisions of Section 3203, Title 24 California Code of Regulations, in all Very High Fire Hazard Severity Zones designated by the Fire Chief (Section 4 may be deleted if more stringent requirements prevail).

On the motion of Council Member _____, seconded by Council Member _____. The role call vote:

AYES:

NOES:

ABSENT:

The foregoing ordinance was passed and adopted this ____ day of _____, 19____.

(mayor or lead council member)

Attest: _____
(city clerk)

Appendix I

ROOFING REGULATIONS SUMMARY

- Assembly Bill 3819 (Brown) became law on September 25, 1994, adding Government Code Sections 51178.5 and 51189; adding Public Resources Code Section 4205; and amended Health and Safety Code Sections 13108.5 and 13132.7.
- The Brown bill furthered the roof covering concepts of the Bates Bill.
- Assembly Bill 747 (V. Brown) became law on August 4, 1995, amending Health and Safety Code Section 13132.7.
- Assembly Bill 423 (Dutra) became law on January 1, 2000, once again amending Health and Safety Code Section 13132.7.
- Within VHFHSZ, in both SRA and LRA, requires a Class A roof for all new buildings, all repairs and replacements, and for existing buildings where 50% or more of the roof area is re-roofed within a one-year, the entire roof covering must be replaced with Class A materials. If the local jurisdiction adopts the State Fire Marshal's Model Ordinance for the Defensibility of Space and Structures, and transmits a copy of that ordinance to CDF, Class B materials are allowed.
- For all other SRA areas, at least Class B materials must be used under the same circumstances as explained above.
- All other areas of California shall have at least a Class C roof covering, and the same circumstances apply as explained above.
- Requires all installers of roof coverings to provide a certificate of the roof covering classification
- Permits certain historical buildings to utilize alternative fire retardant roof coverings
- Requires that wood roof covering designs have passed a 10-year weather and rain test
- Requires that the insurance commissioner accept treated wood shakes for existing "replacement cost" insurance policies

Appendix J

MODEL ORDINANCE FOR THE DEFENSIBILITY OF SPACE AND STRUCTURES

ORDINANCE NO. _____

AN ORDINANCE OF THE (CITY/COUNTY) OF, _____, CALIFORNIA, ADOPTED PURSUANT TO THE STATE HEALTH AND SAFETY CODE, AMENDING THE LATEST ADOPTED EDITION OF THE UNIFORM BUILDING AND FIRE CODES TO REGULATE HAZARDOUS FIRE CONDITIONS IN THE VERY HIGH FIRE HAZARD SEVERITY ZONES DESIGNATED IN ACCORDANCE WITH THE CODE OF (CITY/COUNTY)

The (City Council/Board of Supervisors) of the (city/county) of _____ does ordain as follows:

SECTION 1. This Ordinance shall apply to all real property located within the (city/unincorporated area of the county) which is within the very high fire hazard severity zones designated pursuant to Section of the Code of (city/county).

SECTION 2. Definitions.

Accessory Building: Any building used as an accessory to residential, commercial, recreational, industrial, or educational purposes as defined in the latest adopted edition of the California Building Code, Group U, Division 1, Occupancy that requires a building permit.

Building: Any structure used or intended for supporting or sheltering any use or occupancy that is defined in the latest adopted edition of the California Building Code, except Group U, Division 1, Occupancy. For the purposes of this subchapter, building includes mobile homes and manufactured homes, churches and day care facilities.

Dead-End Road: A road that has only one point of vehicular ingress/egress, including cur-de-sacs and looped roads.

Defensible Space: The area within the perimeter of a parcel, development, neighborhood or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching wildfire or defense against encroaching wildfires or escaping structure fires. The perimeter as used herein is the area encompassing the parcel or parcels proposed for construction and/or development, excluding the physical structure itself. The area is characterized by the establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures.

Development: As defined in Section 66418.1 of the California Government Code.

Driveway: A vehicular access that serves no more than two buildings, with no more than 3 dwelling units on a single parcel, and any number of accessory buildings.

Dwelling Unit: Any building or portion thereof which contains living facilities, including provisions for sleeping, eating, cooking and/or sanitation for not more than one family.

Greenbelts: A facility or land-use, designed for a use other than fire protection, which will slow or resist the spread of a wildfire. Includes parking lots, irrigated or landscaped areas, golf courses, parks, playgrounds, maintained vineyards, orchards or annual crops that do not cure in the field.

Hammerhead/T: A roadway that provides a "T" shaped, three-point turnaround space for emergency equipment, being no narrower than the road that serves it.

Hydrant: A valved connection on a water supply/storage system, having at least one 2-1/2 inch outlet, with male American National Fire Hose Screw Threads (NH) used to supply fire apparatus and hoses with water.

Occupancy: The purpose for which a building, or part thereof, is used or intended to be used.

One-Way Road: A minimum of one traffic lane width designed for traffic flow in one direction only.

Roads, Streets, Private Lanes: Vehicular access to more than one parcel; access to any industrial or commercial occupancy, or vehicular access to a single parcel with more than two buildings or four or more dwelling units.

Roadway: Any surface designed, improved, or ordinarily used for vehicle travel.

Same Practical Effect: As used in this ordinance, means an exception or alternative with the capability of applying accepted fire suppression strategies and tactics, and provisions for firefighter safety, including:

- (a) access for emergency fire equipment,
- (b) safe civilian evacuation,
- (c) signing that avoids delays in emergency equipment response,
- (d) available and accessible water to effectively attack fire or defend a structure from fire, and
- (e) fuel modification sufficient for civilian and firefighter safety.

Structure: That which is built or constructed, an edifice or building of any kind or any piece of work artificially built up or composed of parts joined together in some definite manner.

Traffic Lane: The portion of a roadway that provides a single line of vehicle travel.

Turnaround: A roadway, unobstructed by parking, which allows for a safe opposite change of direction for emergency equipment. Design of such area may be a harnmerhead/T or terminus bulb.

Turnouts: A widening in a roadway to allow vehicles to pass.

Vertical Clearance: The minimum specified height of a bridge or overhead projection above the roadway.

SECTION 3. The Uniform Building Code (U.B.C.), (latest adopted edition) as published by the International Conference of Building Officials and the Uniform Fire Code (U.F.C.), (latest adopted edition) as published by the International Conference of Building Officials and Western Fire Chiefs Association, including the appendices thereto, as adopted pursuant to Section _____ of the _____ Code of (city/county), are hereby amended as follows:

I. Add the following, new sub-section to U.B.C. Section _____: Information on Plans and Specifications.

Fire Protection Information on Plans and Specifications in Very High Fire Hazard Severity Zones. In addition to all other relevant provisions of this code and the Uniform Fire Code, appendices and amendments thereto, a vicinity plan, scale no smaller than 1 inch equals 100 feet, shall be submitted to and approved by the fire department prior to the issuance of a grading permit or, if no grading permit is to be issued, prior the issuance of a building permit. The plan shall show the following:

1. All existing and proposed private and public streets on the proposed development property and within 300 feet of the property line of the proposed development, and so identified. with street width dimensions.
2. The location and identification of all existing and proposed fire hydrants within 300 feet of the property line of the proposed development. The water supply shall meet the fire flow requirements as set forth in the latest adopted edition of the U.F.C. and U.B.C., and amendments thereto.
3. The location, occupancy classification, and use of abutting properties.
4. Preliminary fuel modification plans for all improvements in areas containing combustible vegetation shall be submitted to and approved by the (authority having jurisdiction) concurrent with the submittal for approval of any tentative map. Final fuel modification plans shall be submitted to and approved by the (authority having

jurisdiction) prior to the issuance of a grading permit. The plans shall consider the criteria set forth in the Fuel Modification Plan Guidelines for Very High Fire Hazard Severity Zones.

II. Add the following new definition to U.B.C. Section _____: Definitions.

VERY HIGH FIRE HAZARD SEVERITY ZONE. Any geographic area designated pursuant to Government Code Section 51178 to contain the type and condition of vegetation, topography, weather, and structure density to increase the possibility of conflagration fires.

III. Add the following new sub-section to U.F.C. Section _____: Information on Plans and Specifications. Fire Protection Information on Plans and Specifications in Very High Fire Hazard Severity Zones.

In addition to all other relevant provisions of this code and the Uniform Building Code, appendices and amendments thereto, a vicinity plan, scale no smaller than 1 inch equals 100 feet, shall be submitted to and approved by the fire department prior to the issuance of a grading permit or, if no grading permit is to be issued, prior to the issuance of a building permit. The plan shall show the following:

1. All existing and proposed private and public streets on the proposed development property line within 300 feet of the property line of the proposed development, and so identified with street width dimensions.
2. The location and identification of all existing and proposed fire hydrants within 300 feet of the property line of the proposed development. The water supply shall meet the fire flow requirements as set forth in the latest adopted edition of U.F.C. and U.B.C., and amendments thereto.
3. The location, occupancy classification, and use of abutting properties. Preliminary fuel modification plans for all improvements in areas containing combustible vegetation shall be submitted to and approved by the (authority having jurisdiction) concurrent with the submittal for approval of any tentative map. Final fuel modification plans shall be submitted to and approved by the (authority having jurisdiction) prior to the issuance of a grading permit. The plans shall meet the criteria set forth in the Fuel Modification Plan Guidelines for Very High Fire Hazard Severity Zones.

IV. Add the following new definition to U.F.C. Section _____: Definitions.

VERY HIGH FIRE HAZARD SEVERITY ZONE. Any geographic area designated pursuant to Government Code Section 51178 to contain the type and condition of vegetation, topography, weather, and structure density to increase the possibility of conflagration fires.

V. Add the following paragraph to U.F.C. Section _____: Emergency Access.

Road and street networks, whether public or private, shall provide for safe access for emergency fire equipment and civilian evacuation concurrently, and shall provide unobstructed traffic circulation during a fire emergency consistent with Sections VI through XVI.

VI. Add the following paragraph to U.F.C. Section _____: Roadway Width.

All roads shall be constructed to provide a minimum of two nine-foot traffic lanes providing two-way traffic flow, unless other standards are provided in his ordinance or additional requirements are mandated by local jurisdictions or local subdivision requirements.

VII. Add the following paragraph to U.F.C. Section _____: Roadway Surface.

The surface shall provide unobstructed access to all vehicles, including sedans and fire engines. Surfaces should be established in conformance with local ordinances, and be capable of supporting at least a 40,000 pound load.

VIII. Add the following paragraph to U.F.C. Section _____: Roadway Grades.

The maximum grade for all roads, streets, private lanes and driveways shall not exceed 16 percent.

IX. Add the following paragraph to U.F.C. Section _____: Roadway Radius.

- (a) No roadway shall have a horizontal inside radius of curvature of less than 50 feet and additional surface width of 4 feet shall be added to curves of 50-100 feet radius; 2 feet to those from anything over 100 feet.
- (b) The length of vertical curves in roadways, exclusive of gutters, ditches, and drainage structures designed to hold or divert water, shall be not less than 100 feet.

X. Add the following paragraph to U.F.C. Section _____: Roadway Turnarounds.
Turnarounds are required on driveways and dead-end roads as specified in this article. The minimum turning radius for a turnaround shall be 40 feet from the center line of the road. If a hammerhead/T is used, the top of the "T" shall be a minimum of 60 feet in length.

XI. Add the following paragraph to U.F.C. Section _____: Roadway Turnouts.
Turnouts shall be a minimum of 10 feet wide and 30 feet long with a minimum 25 foot taper on each end.

XII. Add the following paragraph to U.F.C. Section _____: Roadway Structures.

(a) All driveway, road, street, and private land roadway structures shall be constructed to carry at least the maximum load and provide the minimum vertical clearance as required by Vehicle Code Sections 35550, 35750, and 35250.

(b) Appropriate signing, including but not limited to weight or vertical clearance limitations, one-way road or single lane conditions, shall reflect the capability of each bridge.

(c) A bridge with only one traffic lane may be authorized; however, it shall provide for unobstructed visibility from one end to the other and turnouts at both ends.

XIII. Add the following paragraph to U.F.C. Section _____: One-Way Roads.

All one-way roads shall be constructed to provide a minimum of one 10-foot traffic lane. All one-way roads shall connect to a two-lane roadway at both ends, and shall provide access to an area currently zoned for no more than 10 dwelling units. In no case shall it exceed 2640 feet in length. A turnout shall be placed and constructed at approximately the midpoint of each one-way road.

XIV. Add the following paragraph to U.F.C. Section _____: Dead-End Roads.

(a) The maximum length of a dead-end road, including all dead-end roads accessed from that dead-end road, shall not exceed the following cumulative lengths, regardless of the number of parcels served:

1. parcels zoned for less than one acre - 800 feet
2. parcels zoned for 1 acre to 4.99 acres - 1320 feet
3. parcels zoned for 5 acres to 19.99 acres - 2640 feet
4. parcels zoned for 20 acres or larger - 5280 feet

All lengths shall be measured from the edge of the roadway surface at the intersection that begins the road to the end of the road surface at its farthest point. Where a dead-end road crosses areas of differing zoned parcel sizes, requiring different length limits, the shortest allowable length shall apply.

(b) Where parcels are zoned 5 acres or larger, turnarounds shall be provided at a maximum of 1320 foot intervals.

(c) Each dead-end road shall have a turnaround constructed at its terminous.

XV. Add the following paragraph to U.F.C. Section _____: Driveways.

All driveways shall provide a minimum 10 foot traffic lane and unobstructed vertical clearance of 15 feet along its entire length.

(a) Driveways exceeding 150 feet in length, but less than 800 feet in length, shall provide a turnout near the midpoint of the driveway. Where the driveway exceeds 800 feet, turnouts be provided no more than 400 feet apart.

(b) A turnaround shall be provided at all building sites on driveways over 300 feet in length, and shall be within 50 feet of the building.

XVI. Add the following paragraph to U.F.C. Section _____: Gate Entrances.

(a) Gate entrances shall be at least two feet wider than the width of the traffic lane(s) serving that gate.

(b) All gates providing access from a road to a driveway shall be located at least 30 feet from the roadway and shall open to allow a vehicle to stop without obstructing traffic on that road.

(c) Where a one-way road with a single traffic lane provides access to a gated entrance, a 40 foot turning radius shall be used.

XVII. Add the following paragraph to U.F.C. Section _____: Size of Letters, Numbers and Symbols for Street and Road Signs.

Size of letters, numbers, and symbols for street and road signs shall be a minimum 3 inch letter height, 3/8 inch stroke, reflectorized, contrasting with the background color of the sign.

XVIII. Add the following paragraphs to U.F.C. Section _____: Visibility and Legibility of Street and Road Signs.

Street and road signs shall be visible and legible from both directions of vehicle travel for a distance of at least 100 feet.

XIX. Add the following paragraph to U.F.C. Section _____: Height of Street and Road Signs.

Height of street and road signs shall be uniform (county/city wide), and meet the visibility and legibility standards of this ordinance.

XX. Add the following paragraph to U.F.C. Section _____: Names and Numbers of Street and Road Signs.

Newly constructed or approved public and private roads and streets must be identified by a name or number through a consistent (county/city wide) system that provides for sequenced or patterned numbering and/or nonduplicative naming within each (county/city). All signs shall be mounted and oriented in a uniform manner. This section does not require any entity to rename or renumber existing roads or streets, nor shall a roadway providing access only to a single commercial or industrial occupancy require naming or numbering.

XXI. Add the following paragraph to U.F.C. Section _____: Intersecting Roads, Street, and Private Lanes.

Signs required by this ordinance identifying intersecting roads, streets and private lanes shall be placed at the intersection of those roads, streets, and/or private lanes.

XXII. Add the following paragraph to U.F.C. Section _____: Signs Identifying Traffic Access Limitations.

A sign identifying traffic access or flow limitations, including but not limited to weight or vertical clearance limitations, dead-end road, one-way road or single lane conditions, shall be placed: (a) at the intersection preceding the traffic access limitation, and (b) no more than 100 feet before such traffic access limitation.

XXIII. Add the following paragraph to U.F.C. Section _____: Installation of Road, Street, and Private Lane Signs.

Road, street and private lane signs required by this ordinance shall be installed prior to final acceptance of road improvements.

XIV. Add the following paragraph to U.F.C. Section _____: Addresses for Buildings.

All buildings shall be issued an address by the local jurisdiction which conforms to the jurisdiction's overall address system. Accessory buildings will not be required to have a separate address; however, each dwelling unit within a building shall be separately identified.

XXV. Add the following paragraph to U.F.C. Section _____: Size of Letters, Numbers, and Symbols for Addresses.

Size of letters, numbers and symbols for addresses shall be a minimum 3 inch letter height, 3/8 inch stroke, reflectorized, contrasting with the background color of the sign.

XXVI. Add the following paragraph to U.F.C. Section _____: Installation, Location, and Visibility of Addresses.

(a) All buildings shall have a permanently posted address, which shall be placed at each driveway entrance and visible from both directions of travel along the road. In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter, and the address shall be visible and legible from the road on which the address is located.

(b) Address signs along one-way roads shall be visible from both the intended direction of travel and the opposite direction.

(c) Where multiple addresses are required at a single driveway, they shall be mounted on a single post.

(d) Where a roadway provides access solely to a single commercial or industrial business. The address sign shall be placed at the nearest road intersection providing access to that site.

XXVII. Amend Section _____ of the U.F.C.: Enforcement.

When the (authority having jurisdiction) finds in any building or on any premises combustible, hazardous or explosive materials or dangerous accumulations of rubbish; or finds unnecessary accumulations of wastepaper, boxes, shavings or any highly flammable materials which are so situated as to endanger life or property; or finds obstructions to or on fire escapes, stairs, passageways, doors or windows that reasonably tend to interfere with the access and/or operations of the fire department or the egress of the occupants of such building or premises; or finds that this code is being violated, the is authorized to issue orders as (authority having jurisdiction) necessary for the enforcement of the fire prevention laws and ordinances governing the same and for the safeguarding of life and property from fire.

SECTION 4. Enforcement. For purposes of enforcement reference is made to amended Section 103.4.1.1 and Appendix VI-C of the 1994 edition of the Uniform Fire Code which is adopted per Section 3 of this document.

SECTION 5. Reduction of Fire Hazard. Any person who owns, leases, controls, operates, or maintains any dwelling or structure in, upon, or adjoining any mountainous area, forest-covered land, brush-covered land, grass-covered land, or any land that is covered with flammable material, which area or land is within a very high fire hazard severity zone shall at all times do all of the following:

- (1) Firebreaks. Maintain around and adjacent to the building or structure a firebreak made be removing and clearing away, for a distance of not less than 30 feet on each side thereof or to the property line, whichever is nearer, all flammable vegetation or other combustible growth. This paragraph does not apply to single specimens of trees. ornamental shrubbery or similar plants that are used as groundcover, if they do not form a means of rapidly transmitting fire from the native growth to any building or structure.
 - (2) Additional Firebreaks. Maintain around and adjacent to any such building or structure additional fire protection or firebreaks made by removing all brush, flammable vegetation, or combustible growth which is located from 30 feet to 100 feet from any such building or structure or to the property line, whichever is nearer, as may be required by the Fire Chief if he/she finds that, because of extra hazardous condition, a firebreak of only 30 feet around the building or structure is not sufficient to provide reasonable fire safety. Grass and other vegetation located more than 30 feet from the building or structure and less than 18 inch s in height above the ground may be maintained where necessary to stabilize the soil and prevent erosion.
 - (3) Trees. Remove that portion of any tree that extends within 10 feet of the outlet of any chimney or stovepipe.
 - (4) Dead or Dying Wood. Maintain any tree adjacent to or overhanging any building free of dead or dying wood.
 - (5) Vegetative Growth. Maintain the roof of any structure free of leaves, needles, or other dead vegetative growth.
 - (6) Chimney and Stovepipe. Provide and maintain at all times a screen over the outlet of every chimney or stovepipe that is attached to any fireplace, stove, or other device that burns any solid or liquid fuel. The screen shall be constructed of nonflammable material with openings of not more than one-half inch in size.
 - (7) Setback. All parcels 1 acre and larger shall provide a minimum 30 foot setback for buildings and accessory buildings from all property lines. For parcels less than 1 acre, jurisdictions shall provide for the same practical effect.
 - (8) Disposal of Flammable Vegetation and Fuels. Disposal, including chipping, burying, burning or removal to a landfill site approved by the local jurisdiction, of flammable vegetation and fuels caused by site development and construction, road and driveway construction, and fuel modification shall be completed prior to completion of road construction or final inspection of a building permits.
- Greenbelts. Subdivisions and other developments, which propose greenbelts as a part of the development plan, shall locate said greenbelts strategically as a separation between wildland fuels and structures. The locations shall be approved by the (authority having jurisdiction).

A person is not required under this section to maintain a clearing on any land if that person does not have the legal right to maintain the clearing nor is any person required to enter upon property that is owned by any other person without the consent of the owner of the property.

SECTION _____ : Exceptions to Section 5. (a) Section 5 of this ordinance shall not apply to any land or water area acquired or managed for one or more of the following purposes or uses:

- (1) Habitat for endangered or threatened species, or any species that is a candidate for listing as an endangered or threatened species by the state or federal government.

- (2) Land kept in a predominantly natural state as habitat for wildlife, plant, or animal communities.
- (3) Open space lands that are environmentally sensitive parklands.
- (4) Other lands having scenic values and declared by the (City Council/Board of Supervisors) of the (city/county) of, or by state or federal law.
 - (a) This exemption applies whether the land or water area is held in fee title or any lesser interest. This exemption applies to any public agency, any private entity that has dedicated the land or water areas to one or more of those purposes or uses, or any combination of public agencies and private entities making that dedication.
 - (b) This section shall not be construed to prohibit the use of properly authorized prescribed burning to improve the biological function of land or to assist in the restoration of desired vegetation.
 - (c) In the event that any lands adjacent to any land or water area described in subdivision (a) are improved such that they are subject to Government Code Section 51182, the obligation to comply with Section 51182 shall be with the person owning, leasing, controlling, operating, or maintaining the occupied dwelling or occupied structure on the improved lands. All maintenance activities and other fire prevention measures required by Section 51182 shall be required only for the improved lands, not the land and water areas described in subdivision (a).

XXVIII. Amend Section _____ of the UBC: Building Standards.

Buildings and structures hereafter constructed, or relocated into Very High Fire Hazard Severity Zones shall, in addition to the requirements of the California Building Code and any other local ordinances, meet the following construction requirements.

- (a) Eaves. Eaves shall be protected on the exposed underside by materials approved for one-hour-rated fire-resistive construction. Fascias are required and must be protected on the backside by materials approved for one-hour-rated fire-resistive construction or 2-inch (51 mm) nominal dimension lumber.
- (b) Roofs. All new structures, and every existing structure where 50 percent or more of the total area of the existing building is re-roofed within any one year period within a very high fire hazard severity zone shall have at least a Class B roof.
- (c) Underfloor Areas. Buildings or structures shall have all underfloor areas enclosed to the ground with exterior walls in accordance with Section (applicable UBC Section).

Exception: Complete enclosure may be omitted where the underside of all exposed floors and all exposed structural columns, beams and supporting walls are protected as required for exterior one-hour-rated fire-resistive construction.
- (d) Unenclosed Accessory Structures. Unenclosed accessory structures attached to buildings with habitable spaces and projections, such as decks, shall be of one-hour-rated fire-resistive construction, or constructed with noncombustible materials.

Exception: When 100 feet of defensible space is provided, patio roofs may be constructed of combustible materials not less than 2x4 inch nominal size and arbors or open lattice work sunshades may be constructed of combustible materials not less than 2x2 inch nominal size.
- (e) Underfloor Areas (Attached Structure). When the attached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface, the area below the structure shall have all underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior walls in accordance with Section (applicable UBC Section).
- (f) Windows. Exterior windows, window walls and skylights shall be tempered glass or multilayered glazed panels.
- (g) Doors. Exterior doors, other than vehicular access doors to garages, shall be noncombustible or solid core not less than 1-3/4 inch (45 mm) thick. Windows within doors and glazed doors shall be in accordance with Section (applicable UBC Section).
- (h) Attics. Attic ventilation openings, foundation or underfloor vents, or other ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical exterior walls and vents through roofs shall not exceed 144 square inches (0.0929m²) each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/4 inch (6.4 mm).

Attic ventilation openings shall not be located in soffits, in eave overhangs, between rafters at eaves, or in other overhang areas. Gable end and dormer vents shall be located at least 10 feet (3048 mm) from property lines. Underfloor ventilation openings shall be located as close to grade as practical.
- (i) Walls. Detached accessory structures located less than 50 feet (15,240 mm) from a building containing

habitable space shall have exterior walls constructed with materials approved for one-hour-rated fire-resistive construction or constructed with noncombustible materials on the exterior side.

(j) Underfloor Areas (Detached Structure). When the detached structure is located and constructed so that the structure or any portion thereof projects over a descending slope surface, the area below the structure shall have all underfloor areas enclosed to within 6 inches (152 mm) of the ground, with exterior walls in accordance with Section (applicable UBC Section)

SECTION _____ . Findings. The provisions of this ordinance are reasonably necessary because of the following local climatic, geographical and topographical conditions:

(a) Very high fire hazard severity zones have been identified and adopted by local ordinance pursuant to Government Code Sections 51175 through 51178.

(b) The very high fire hazard severity zones are located in areas which are subject to periodic conditions of high velocity winds and high temperatures with accompanying low humidity.

(c) The climatic conditions described above are further accentuated by the topographical features of the hill and canyon areas, and the presence of highly combustible vegetation in the identified very high fire hazard severity zones.

(d) The conditions described above make these areas nearly inaccessible and operationally difficult for fire suppression and evacuation activities.

These findings are made pursuant to Sections 17958.5 and 17958.7 of the Health and Safety Code.

Appendix K

MODEL ORDINANCE COMPLIANCE CHECKLIST

The following list of requirements is taken directly from the "MODEL ORDINANCE FOR THE DEFENSIBILITY OF SPACE AND STRUCTURES" as developed by the Office of the State Fire Marshal, Fire Engineering Division, as required by Assembly Bill 3819, Chaptered on September 27, 1994, per the following:

The bill would state the legislative finding that space and structure defensibility is essential to diligent fire prevention and would require the State Fire Marshal, in consultation with the Director of Forestry and Fire Protection, by July 1, 1996, to prepare and adopt a model ordinance that provides for comprehensive space and structure defensibility... in very high fire hazard severity zones. It would require the State Fire Marshal to transmit copies of the ordinance to appropriate local agencies and to the director....

STANDARD	MIN. PER AB 3819	NOTES
ROAD STANDARDS FOR FIRE EQUIPMENT ACCESS:		
Width	Two 9' lanes	
Surface	40,000 lb. Load	
Grades	Not to exceed 16%	
Horizontal Inside Radius	No less than 50'	
Vertical Curves	100'	
Turnarounds	Required, 40' from center	
Hammerhead/"T"	Top of "T" 60' long	
Turnouts	10' x 30'	
	25' taper each end	
Roadway Structures (Bridges)	Load and clearance per Vehicle Code Sections 35550, 35750, 35250	
Bridge Signage	Load, clearance, one-way, single lane	
One-way Roads	One 10' lane	
	Must connect to 2 lanes at each end	
	Serve no more than 10 dwellings	
	Not to exceed 2640'	
	Turnout at midpoint	
Dead-end Roads	<i>Not to exceed:</i>	
<i><1 acre parcels</i>	800'	
<i>1-4.99 acre parcels</i>	1320'	
<i>5-19.99 acre parcels</i>	2640' with turnaround at 1320' interval	
<i>20+ acre parcels</i>	5280' with turnaround at 1320' intervals	
Driveways	10' wide, 15' vertical clearance	

<i>If >150' but <800'</i>	Turnout at midpoint	
<i>If >800'</i>	Every 400'	
<i>If >300'</i>	Turnaround w/in 50' of all building sites	
Gate Entrances	2' wider than lane	
	30' from roadway	
<i>If one-way</i>	40' turning radius	
STANDARDS FOR SIGNING STREETS, ROADS AND BUILDINGS:		
Sign Symbols	3" letter height	
	3/8" stroke	
	Reflectorized	
	Contrasting color	
Visibility	100' both directions	
Height	Uniform	
Names/Numbers	Required	
Intersections	Signs required	
Access Limit Signage	Nearest intersection or 100' before limit	
Sign Installation	Prior to acceptance	
Addresses	Required	
Address Symbols	3' letter height	
	3/8" stroke	
	Contrasting color	
Address Installation	Permanent posting required at all times	
Visibility	Both directions, even if one-way road	
	Multiple addresses on one post	
	If industrial site, post at intersection	
Hydrants and Fire Valves	Must meet minimum flow as set forth in latest UFC/UBC for new construction	
	ID per latest NFPA requirements	
FUEL MODIFICATION STANDARDS:		
Clearance (Structure)	30' on each side or to property line	
Additional Clearance	30'-100' when needed	
Trees	10' from chimney	

Dead or Dying Wood	Remove if overhangs structure	
Accumulated Vegetation	Clear roof	
Chimney and Stovepipe	Screen <1/2" holes	
Setback <i>If >1 acre</i>	30'	
<i>If <1 acre</i>	Same practical effect	
Disposal	Prior to acceptance	
Greenbelts	Locate strategically-must be approved	
<i>INFORMATION ON PLANS AND SPECIFICATIONS:</i>		
Vicinity Plan	No less than 1"=100'	
	300' radius showing all street widths	
	300' radius hydrant plan / min. flow	
	Location, occupancy class & use of abutting properties	
	Preliminary fuel modification plan	
Fire Protection Info for VHFHSZ (per Government Code 51178)	300' radius showing all street widths	
	300' radius hydrant plan / min. flow	
	Location, occupancy class & use of abutting properties	
	Preliminary fuel modification plan	
	Final fuel modification plan	
<i>STRUCTURAL STANDARDS</i>		
Eaves	1 hour fire rated	
	Fascias required, must be backed by 1 hour or 2" lumber	
Roofs	Class B or better	
Underfloor Areas	Enclosed to ground	
<i>Exception</i>	If exposed materials are 1 hour rated	
Unenclosed Accessory Structures	Non-combustible or 1 hour rated	
<i>Exception</i>	If 100' defensible space, patio roofs > 2"x4" or open lattice > 2"x2" is OK	
Underfloor Areas (Attached Structure)	If over a descending slope, enclose within 6" of ground	
Windows	Tempered or multi-layered glass	
Doors	Non-combustible or solid core > 1-3/4"	
Attic Openings	Not to exceed 144 square inches	
	Noncombustible corrosion-resistant	

	mesh < 1/4" holes	
	Not to be in soffits, eave overhangs, etc.	
	Gable/dormer vents 10' from property line	
Walls	Any habitable space must be 1 hour rated	
Underfloor Areas (Detached Structure)	If over a descending slope, enclose within 6" of ground	
MISCELLANEOUS REQUIREMENTS		
Adoption of Zone	Government Codes 51175-51178	
Description of Zone	Climatic conditions	
	Topography	
	Fuels	
	Accessibility	
	Evacuation	
Rubbish Removal	Required-all types	

Appendix L

STATUTES AND REGULATIONS

This appendix has been designed to present only those laws and regulations, or portions thereof, which pertain more or less directly to structural fire prevention and protection in and near the wildlands. As such, this appendix should only be used as a quick field reference. For full and current text, meaning and proper context of laws and regulations, reference should be made to the applicable codes, manuals, directives, etc.

I. STATE LAWS

A. *Health and Safety Code (HSC)*

Section 13108.5 - Buildings in Fire Hazard Severity Zones

The State Fire Marshal shall propose, and the State Building Standards Commission shall adopt, amend, and repeal regulations for openings into the attic areas of buildings in those fire hazard severity zones, including very high fire hazard severity zones, designated by the Director of Forestry and Fire Protection pursuant to Article 9 (commencing with Section 420 1) of Chapter I of Part 2 of Division 4 of the Public Resources Code, and in very high fire hazard severity zones designated by a local agency pursuant to Chapter 6.8 (commencing with Section 51175) of Part 1 of Division 1 of Title 5 of the Government Code.

Section 13109 - Inspection Authority; Structural.

The State Fire Marshal, his or her deputies, or his or her salaried assistants, the chief of any city or county fire department or fire protection district and their authorized representatives may enter any building or premises not used for dwelling purposes at any reasonable hour for the purpose of enforcing this chapter. The owner, lessee, manager or operator of any such building or premises shall permit the State Fire Marshal, his or her deputies, his or her salaried assistants and the chief of any city or county fire department or fire protection district and their authorized representatives to enter and inspect them at the time and for the purpose stated in this section.

Section 13132.7 – Roofing Regulations.

(a) Within a very high fire hazard severity zone designated by the Director of Forestry and Fire Protection pursuant to Article 9 (commencing with Section 4201) of Chapter 1 of Part 2 of Division 4 of the Public Resources Code and within a very high hazard severity zone designated by a local agency pursuant to Chapter 6.8 (commencing with Section 51175) of Part 1 of Division 1 of Title 5 of the Government Code, the entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any one-year period, every new structure, and any roof covering applied in the alteration, repair, or replacement of the roof of every existing structure, shall be a fire retardant roof covering that is at least class B as defined in the Uniform Building Code, as adopted and amended by the State Building Standards Commission.

(b) In all other areas, the entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any one-year period, every new structure, and any roof covering applied in the alteration, repair, or replacement of the roof of every existing structure, shall be a fire retardant roof covering that is at least class C as defined in the Uniform Building Code, as adopted and amended by the State Building Standards Commission.

(c) Notwithstanding subdivision (b), within state responsibility areas classified by the State Board

of Forestry and Fire Protection pursuant to Article 3 (commencing with Section 4125) of Chapter 1 of Part 2 of Division 4 of the Public Resources Code, except for those state responsibility areas designated as moderate fire hazard responsibility zones, the entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any one-year period, every new structure, and any roof covering applied in the alteration, repair, or replacement of the roof of every existing structure, shall be a fire retardant roof covering that is at least class B as defined in the Uniform Building Code, as adopted and amended by the State Building Standards Commission.

(d) (1) Notwithstanding subdivision (a), (b), or (c), within very high fire hazard severity zones designated by the Director of Forestry and Fire Protection pursuant to Article 9 (commencing with Section 4201) of Chapter 1 of Part 2 of Division 4 of the Public Resources Code or by a local agency pursuant to Chapter 6.8 (commencing with Section 51175) of Part 1 of Division 1 of Title 5 of the Government Code, the entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any one-year period, every new structure, and any roof covering applied in the alteration, repair, or replacement of the roof of every existing structure, shall be a fire retardant roof covering that is at least class A as defined in the Uniform Building Code, as adopted and amended by the State Building Standards Commission.

(2) Paragraph (1) does not apply to any jurisdiction containing a very high fire hazard severity zone if the jurisdiction fulfills both of the following requirements:

(A) Adopts the model ordinance approved by the State Fire Marshal pursuant to Section 51189 of the Government Code or an ordinance that substantially conforms to the model ordinance of the State Fire Marshal.

(B) Transmits, upon adoption, a copy of the ordinance to the State Fire Marshal.

(e) The State Building Standards Commission shall incorporate the requirements set forth in subdivisions (a), (b), and (c) by publishing them as an amendment to the California Building Standards Code in accordance with Chapter 4 (commencing with Section 18935) of Part 2.5 of Division 13.

(f) Nothing in this section shall limit the authority of a city, county, city and county, or fire protection district in establishing more restrictive requirements, in accordance with current law, than those specified in this section.

(g) This section shall not affect the validity of an ordinance, adopted prior to the effective date for the relevant roofing standard specified in subdivisions (a) and (b), by a city, county, city and county, or fire protection district, unless the ordinance mandates a standard that is less stringent than the standards set forth in subdivision (a), in which case the ordinance shall not be valid on or after the effective date for the relevant roofing standard specified in subdivisions (a) and (b).

(h) Any qualified historical building or structure as defined in Section 18955 may, on a case-by-case basis, utilize alternative roof constructions as provided by the State Historical Building Code.

(i) The installer of the roof covering shall provide certification of the roof covering classification, as provided by the manufacturer or supplier, to the building owner and, when requested, to the agency responsible for enforcement of this part. The installer shall also install the roof covering in accordance with the manufacturer's listing.

(j) (1) No wood roofing materials shall be sold in this state unless:

(A) On and after January 1, 1997, the materials have passed at least one year of the 10-year natural weathering test.

(B) On and after January 1, 1998, the materials have passed at least two years of the 10-year natural weathering test.

(C) On and after January 1, 1999, the materials have passed at least three years of the 10-year natural weathering test.

(D) On and after January 1, 2000, the materials have passed at least four years of the 10-year natural weathering test.

(E) On and after January 1, 2001, the materials have passed at least five years of the 10-year natural weathering test.

(2) The 10-year natural weathering test required by this subdivision shall be conducted in accordance with standard 15-2 of the 1994 edition of the Uniform Building Code at a testing facility recognized by the State Fire Marshal.

(k) The Insurance Commissioner shall accept the use of fire retardant wood roofing material that meets the requirements of this section, used in the partial repair or replacement of nonfire retardant wood roofing material, as meeting the requirement in Section 2695.9 of Title 10 of the California Code of Regulations relative to matching replacement items in quality, color, and size.

B. Government Code

Section 51175 – Fire Prevention.

The Legislature hereby finds and declares as follows:

(a) Fires are extremely costly, not only to property owners and residents, but also to local agencies. Fires pose a serious threat to the preservation of the public peace, health, or safety. Since fires ignore civil boundaries, it is necessary that cities, counties, special districts, state agencies, and federal agencies work together to bring raging fires under control. Preventive measures are therefore needed to ensure the preservation of the public peace, health, or safety.

(b) The prevention of fires is not a municipal affair, as that term is used in Section 5 of Article XI of the California Constitution, but is instead, a matter of statewide concern. It is the intent of the Legislature that this chapter apply to all local agencies, including, but not limited to, charter cities, charter counties, and charter cities and counties. This subdivision shall not limit the authority of a local agency to impose more restrictive fire and panic safety requirements, as otherwise authorized by law.

(c) It is not the intent of the Legislature in enacting this chapter to limit or restrict the authority of a local agency to impose more restrictive fire and panic safety requirements, as otherwise authorized by law.

Section 51176 – Fire Hazard Classification.

The purpose of this chapter is to classify lands in the state in accordance with whether a very high fire hazard is present so that public officials are able to identify measures that will retard the rate of spread, and reduce the potential intensity, of uncontrolled fires that threaten to destroy resources, life, or property, and to require that those measures be taken.

Section 51177 - Definitions.

As used in this chapter:

(a) "Director" means the Director of Forestry and Fire Protection.

(b) "Very high fire hazard severity zone" means an area designated by the director pursuant to Section 51178 that is not a state responsibility area.

(c) "Local agency" means a city, county, city and county, or district responsible for fire protection within a very high fire hazard severity zone.

(d) "Single specimen tree" means any live tree that stands alone in the landscape so as to be clear of buildings, structures, combustible vegetation, or other trees, and that does not form a means of rapidly transmitting fire from the native growth to any occupied dwelling or structure.

(e) "State responsibility areas" means those areas identified pursuant to Section 4102 of the Public Resources Code.

Section 51178 – Identification of Very High Fire Hazard Severity Zones.

(a) The director shall identify areas in the state as very high fire hazard severity zones based on consistent statewide criteria and based on the severity of fire hazard that is expected to prevail in those areas. Very high fire hazard severity zones shall be based on fuel loading, slope, fire weather, and other relevant factors.

(b) On or before January 1, 1995, the director shall identify areas as very high fire hazard severity zones in the Counties of Alameda, Contra Costa, Los Angeles, Marin, Napa, Orange, Riverside, San Bernardino, San Francisco, San Mateo, Santa Barbara, Santa Clara, Solano, Sonoma, and Ventura. This information shall be transmitted to all local agencies with identified very high fire hazard severity zones within 30 days.

(c) On or before January 1, 1996, the director shall identify areas as very high fire hazard severity zones in all other counties. This information shall be transmitted to all local agencies with identified high fire hazard severity zones within 30 days.

Section 51178.5 – Public Review.

Within 30 days after receiving a transmittal from the director that identifies very high fire hazard severity zones, a local agency shall make the information available for public review. The information shall be presented in a format that is understandable and accessible to the general public, including, but not limited to, maps.

Section 51179 – Designation by Local Agency.

(a) A local agency shall designate, by ordinance, very high fire hazard severity zones in its jurisdiction within 120 days of receiving recommendations from the director pursuant to subdivisions (b) and (c) of Section 51178. A local agency shall be exempt from this requirement if ordinances of the local agency, adopted on or before December 31, 1992, impose standards that are equivalent to, or more restrictive than, the standards imposed by this chapter.

(b) A local agency may, at its discretion, exclude from the requirements of Section 51182 an area identified as a very high fire hazard severity zone by the director within the jurisdiction of the local agency, following a finding supported by substantial evidence in the record that the requirements of Section 51182 are not necessary for effective fire protection within the area.

(c) A local agency may, at its discretion, include areas within the jurisdiction of the local agency, not identified as very high fire hazard severity zones by the director, as very high fire hazard severity zones following a finding supported by substantial evidence in the record that the requirements of Section 51182 are necessary for effective fire protection within the area.

(d) Changes made by a local agency to the recommendations made by the director shall be final and shall not be rebuttable by the director.

(e) The State Fire Marshal shall prepare and adopt a model ordinance that provides for the establishment of very high fire hazard severity zones.

(f) Any ordinance adopted by a local agency pursuant to this section that substantially conforms to the model ordinance of the State Fire Marshal shall be presumed to be in compliance with the requirements of this section.

(g) A local agency shall post a notice at the office of the county recorder, county assessor, and county planning agency identifying the location of the map provided by the director pursuant to Section 51178. If the agency amends the map, pursuant to subdivision (b) or (c) of this section, the notice shall instead identify the location of the amended map.

Section 51180 – Natural Conditions.

For the purposes of Division 3.6 (commencing with Section 810) of Title 1, vegetation removal or

management, undertaken in whole or in part, for fire prevention or suppression purposes shall not be deemed to alter the natural condition of public property. This section shall apply only to natural conditions of public property and shall not limit any liability or immunity that may otherwise exist pursuant to this chapter.

Section 51181 – Periodic Review.

The director shall periodically review the areas in the state identified as very high fire hazard severity zones pursuant to this chapter, and as necessary, shall make recommendations relative to very high fire hazard severity zones. This review shall coincide with the review of state responsibility area lands every five years and, when possible, fall within the time frames for each county's general plan update. Any revision of areas included in a very high fire hazard severity zone shall be made in accordance with Sections 51178 and 51179.

Section 51182 – Vegetation Management.

(a) Any person who owns, leases, controls, operates, or maintains any occupied dwelling or occupied structure in, upon, or adjoining any mountainous area, forest-covered land, brush-covered land, grass-covered land, or any land that is covered with flammable material, which area or land is within a very high fire hazard severity zone designated by the local agency pursuant to Section 51179, shall at all times do all of the following:

(1) Maintain around and adjacent to the dwelling or structure a firebreak made by removing and clearing away, for a distance of not less than 30 feet on each side thereof or to the property line, whichever is nearer, all flammable vegetation or other combustible growth. This paragraph does not apply to single specimens of trees, ornamental shrubbery, or similar plants that are used as ground cover, if they do not form a means of rapidly transmitting fire from the native growth to any dwelling or structure.

(2) Maintain around and adjacent to the occupied dwelling or occupied structure additional fire protection or firebreaks made by removing all brush, flammable vegetation, or combustible growth that is located from 30 feet to 100 feet from the occupied dwelling or occupied structure or to the property line, whichever is nearer, as may be required by the local agency if the local agency finds that, because of extra hazardous conditions, a firebreak of only 30 feet around the occupied dwelling or occupied structure is not sufficient to provide reasonable fire safety. Grass and other vegetation located more than 30 feet from the dwelling or structure and less than 18 inches in height above the ground may be maintained where necessary to stabilize the soil and prevent erosion.

(3) Remove that portion of any trees that extends within 10 feet of the outlet of any chimney or stovepipe.

(4) Maintain any tree adjacent to or overhanging any building free of dead or dying wood.

(5) Maintain the roof of any structure free of leaves, needles, or other dead vegetative growth.

(6) Provide and maintain at all times a screen over the outlet of every chimney or stovepipe that is attached to any fireplace, stove, or other device that burns any solid or liquid fuel. The screen shall be constructed and installed in accordance with the California Building Standards Code.

(b) A person is not required under this section to maintain any clearing on any land if that person does not have the legal right to maintain the clearing, nor is any person required to enter upon or to damage property that is owned by any other person without the consent of the owner of the property.

Section 51183 - Exemptions.

(a) The local agency may exempt from the standards set forth in Section 51182 structures with exteriors constructed entirely of nonflammable materials, or conditioned upon the contents and composition of the structure, and may vary the requirements respecting the removing or clearing away of flammable

vegetation or other combustible growth with respect to the area surrounding the structures. In no case shall this subdivision be deemed to authorize a local agency to vary any requirement that is a building standard subject to Section 18930 of the Health and Safety Code, except as otherwise authorized by law.

(b) No exemption or variance shall apply unless and until the occupant thereof, or if there be no occupant, then the owner thereof, files with the local agency a written consent to the inspection of the interior and contents of the structure to ascertain whether the provisions of Section 51182 are complied with at all times.

Section 51183.5 – Natural Hazard Disclosure.

(a) A transferor of real property that is located within a very high fire hazard severity zone, designated pursuant to this chapter, shall disclose to any prospective transferee the fact that the property is located within a very high fire hazard severity zone, and is subject to the requirements of Section 51182.

(b) Disclosure is required pursuant to this section only when one of the following conditions is met:

(1) The transferor, or the transferor's agent, has actual knowledge that the property is within a very high fire hazard severity zone.

(2) A map that includes the property has been provided to the local agency pursuant to Section 51178, and a notice is posted at the offices of the county recorder, county assessor, and county planning agency that identifies the location of the map and any information regarding changes to the map received by the local agency.

(c) In all transactions that are subject to Section 1103 of the Civil Code, the disclosure required by subdivision (a) of this section shall be provided by either of the following means:

(1) The Local Option Real Estate Disclosure Statement as provided in Section 1102.6a of the Civil Code.

(2) The Natural Hazard Disclosure Statement as provided in Section 1103.2 of the Civil Code.

(d) If the map or accompanying information is not of sufficient accuracy or scale that a reasonable person can determine if the subject real property is included in a very high fire hazard zone, the transferor shall mark "Yes" on the Natural Hazard Disclosure Statement. The transferor may mark "No" on the Natural Hazard Disclosure Statement if he or she attaches a report prepared pursuant to subdivision (c) of Section 1103.4 of the Civil Code that verifies the property is not in the hazard zone. Nothing in this subdivision is intended to limit or abridge any existing duty of the transferor or the transferor's agents to exercise reasonable care in making a determination under this subdivision.

(e) Section 1103.13 of the Civil Code shall apply to this section.

(f) The specification of items for disclosure in this section does not limit or abridge any obligation for disclosure created by any other provision of law or that may exist in order to avoid fraud, misrepresentation, or deceit in the transfer transaction.

Section 51184 – Environmental Exceptions.

(a) Section 51182 shall not apply to any land or water area acquired or managed for one or more of the following purposes or uses:

(1) Habitat for endangered or threatened species, or any species that is a candidate for listing as an endangered or threatened species by the state or federal government.

(2) Lands kept in a predominantly natural state as habitat for wildlife, plant, or animal communities.

(3) Open space lands that are environmentally sensitive parklands.

(4) Other lands having scenic values, as declared by the local agency, or by state or federal law.

(b) This exemption applies whether the land or water area is held in fee title or any lesser interest. This exemption applies to any public agency, any private entity that has dedicated the land or water areas to one or more of those purposes or uses, or any combination of public agencies and private entities making

that dedication.

(c) This section shall not be construed to prohibit the use of properly authorized prescribed burning to improve the biological function of land or to assist in the restoration of desired vegetation.

(d) In the event that any lands adjacent to any land or water area described in subdivision (a) are improved such that they are subject to Section 51182, the obligation to comply with Section 51182 shall be with the person owning, leasing, controlling, operating, or maintaining the occupied dwelling or occupied structure on the improved lands. All maintenance activities and other fire prevention measures required by Section 51182 shall be required only for the improved lands, not the land and water areas described in subdivision (a).

Section 51185 – Penalties for Violations.

(a) A violation of Section 51182 is an infraction punishable by a fine of not less than one hundred dollars (\$100) nor more than five hundred dollars (\$500).

(b) If a person is convicted of a second violation of Section 51182 within five years, that person shall be punished by a fine of not less than two hundred fifty dollars (\$250) nor more than five hundred dollars (\$500).

(c) If a person is convicted of a third violation of Section 51182 within five years, that person is guilty of a misdemeanor and shall be punished by a fine of not less than five hundred dollars (\$500).

Section 51186 – Notification of Violation.

The local agency having jurisdiction of property upon which conditions regulated by Section 51182 are being violated shall notify the owner of the property to correct the conditions. If the owner fails to correct the conditions, the local agency may cause the corrections to be made, and the expenses incurred shall become a lien on the property that is the subject of the corrections when recorded in the county recorder's office in the county in which the real property is located. The priority of the lien shall be as of the date of recording. The lien shall contain the legal description of the real property, the assessor's parcel number, and the name of the owner of record as shown on the latest equalized assessment roll.

Section 51187 – Public Nuisance.

Any violation of Section 51182 may be considered a public nuisance pursuant to Section 38773.

Section 51188 – Conflicting Statutes.

In the instance of conflict between this chapter and any provision of state law that allows a regional planning agency to regulate very high fire hazard severity zones, this chapter shall prevail.

Section 51189 – Space and Structure Defensibility.

(a) The Legislature finds and declares that space and structure defensibility is essential to diligent fire prevention. This defensibility extends beyond the vegetation management practices required by this chapter, and includes, but is not limited to, measures that increase the likelihood of a structure to withstand intrusion by fire, such as building design and construction requirements that use fire resistant building materials, and provide protection of structure projections, including porches, decks, balconies and eaves, and structure openings including attic and eave vents and windows.

(b) No later than July 1, 1996, the State Fire Marshal, in consultation with the Director of Forestry and Fire Protection, shall prepare and adopt a model ordinance that provides for comprehensive space and

structure defensibility, including in very high fire severity zones.

(c) Upon adoption of the model ordinances, the State Fire Marshal shall transmit copies of the ordinance to the appropriate local agencies in every jurisdiction that contains a very high fire hazard severity zone, and to the Director of Forestry and Fire Protection.

(d) The State Fire Marshal shall make every feasible effort to obtain funds from federal, state, local, and other appropriate sources to assist in developing and preparing the model ordinance.

C. *Public Resources Code (PRC)*

Section 4202 - Classification of Zones.

The director shall classify lands within state responsibility areas into fire hazard severity zones. Each zone shall embrace relatively homogeneous lands and shall be based on fuel loading, slope, fire weather, and other relevant factors present.

Section 4203 - Designation of Zones and Fire Hazard Ratings.

(a) The director shall, by regulation, designate fire hazard severity zones and assign to each zone a rating reflecting the degree of severity of fire hazard that is expected to prevail in the zone.

(b) No designation of a zone and assignment of a rating shall be adopted by the director until the proposed regulation has been transmitted to the board of supervisors of the county in which the zone is located at least 45 days prior to the adoption of the proposed regulation and a public hearing has been held in that county during that 45-day period.

Section 4204 - Review of Zones and Maps.

The director shall periodically review zones designated and rated pursuant to this article and, as necessary, shall revise zones or their ratings or repeal the designation of zones. Any revision of a zone or its rating or any repeal of a zone shall conform to the requirements of Section 4203. In addition, the revision or repeal of a zone may be petitioned pursuant to Sections 113 40.6 and 11340.7 of the Government Code.

Section 4205 - Report of Legislative Committees.

The Director of Forestry and Fire Protection shall, not later than December 1, 1995, report to the appropriate committees of the Legislature on the impacts of designating very high fire hazard severity zones pursuant to Article 9 (commencing with Section 420 1) of Chapter I of Part 2 of Division 4, and Chapter 6.8 (commencing with Section 51175) of Part I of Division I of Title 5 of the Government Code, including identifying and recommending how to reconcile any disparities between the different mapping programs.

Section 4290 - Adoption of Building Standards within State Responsibility Areas.

(a) The board shall adopt regulations implementing minimum fire safety standards related to defensible space which are applicable to state responsibility area lands under the authority of the department. These regulations apply to the perimeters and access to all residential, commercial, and industrial building construction within state responsibility areas approved after January 1, 1991. The board may not adopt building standards, as defined in Section 18909 of the Health and Safety Code, under the authority of this section. As an integral part of fire safety standards, the State Fire Marshal has the authority to adopt regulations for roof coverings and openings into the attic areas of buildings specified in Section 13108.5 of the Health and Safety Code. The regulations apply to the placement of mobile homes as

defined by National Fire Protection Association standards. These regulations do not apply where an application for a building permit was filed prior to January 1, 1991, or to parcel or tentative maps or other developments approved prior to January 1, 1991, if the final map for the tentative map is approved within the time prescribed by the local ordinance. The regulations shall include all of the following:

- (1) Road standards for fire equipment access.
- (2) Standards for signs identifying streets, roads, and buildings.
- (3) Minimum private water supply reserves for emergency fire use.
- (4) Fuel breaks and greenbelts.

(b) These regulations do not supersede local regulations which equal or exceed minimum regulations adopted by the state.

Section 4291 - Defensible Space.

Any person that owns, leases, controls, operates, or maintains any building or structure in, upon, or adjoining any mountainous area or forest-covered lands, brush-covered lands, or grass-covered lands, or any land which is covered with flammable material, shall at all times do all of the following:

(a) Maintain around and adjacent to such building or structure a firebreak made by removing and clearing away, for a distance of not less than 30 feet on each side thereof or to the property line, whichever is nearer, all flammable vegetation or other combustible growth. This subdivision does not apply to single specimens of trees, ornamental shrubbery, or similar plants which are used as ground cover, if they do not form a means of rapidly transmitting fire from the native growth to any building or structure.

(b) Maintain around and adjacent to any such building or structure additional fire protection or firebreak made by removing ail brush, flammable vegetation, or combustible growth which is located from 30 feet to 100 feet from such building or structure or to the property line, whichever is nearer, as may be required by the director if he finds that, because of extra hazardous conditions, a firebreak of only 30 feet around such building or structure is not sufficient to provide reasonable fire safety. Grass and other vegetation located more than 30 feet from such building or structure and less than 18 inches in height above the ground may be maintained where necessary to stabilize the soil and prevent erosion.

(c) Remove that portion of any tree which extends within 10 feet of the outlet of any chimney or stovepipe.

(d) Maintain any tree adjacent to or overhanging any building free of dead or dying wood.

(e) Maintain the roof of any structure free of leaves, needles, or other dead vegetative growth.

(f) Provide and maintain at all times a screen over the outlet of every chimney or stovepipe that is attached to any fireplace, stove, or other device that burns any solid or liquid fuel. The screen shall be constructed of nonflammable material with openings of not more than one-half inch in size.

(g) Except as provided in Section 18930 of the Health and Safety Code, the director may adopt regulations exempting structures with exteriors constructed entirely of nonflammable materials, or conditioned upon the contents and composition of same, he may vary the requirements respecting the removing or clearing away of flammable vegetation or other combustible growth with respect to the area surrounding said structures.

No such exemption or variance shall apply unless and until the occupant thereof, or if there be no occupant, then the owner thereof, files with the department, in such form as the director shall prescribe, a written consent to the inspection of the interior and contents of such structure to ascertain whether the provisions hereof and the regulations adopted hereunder are complied with at all times.

Section 4291.1 - Defensible Space; Violation.

(a) Notwithstanding Section 4021, a violation of Section 4291 is an infraction punishable by a fine of not less than one hundred dollars (\$100), nor more than five hundred dollars (\$500). If a person is convicted of a second violation of Section 4291 within five years, that person shall be punished by a fine of

not less than two hundred fifty dollars (\$250), nor more than five hundred dollars (\$500). If a person is convicted of a third violation of Section 4291 within five years, that person is guilty of a misdemeanor and shall be punished by a fine of not less than five hundred dollars (\$500). If a person is convicted of a third violation of Section 4291 within five years, the department may perform or contract for performance of work necessary to comply with Section 4291 and may bill the person convicted for the costs incurred, in which case the person convicted, upon payment of those costs, shall not be required to pay the fine. If a person convicted of a violation of Section 4291 is granted probation, the court shall impose as a term or condition of probation, in addition to any other term or condition of probation, that the person pay at least the minimum fine prescribed in this section.

(b) If a person convicted of a violation of Section 4291 produces in court verification prior to imposition of a fine by the court, that the condition resulting in the citation no longer exists, the court may reduce the fine imposed for the violation of Section 4291 to fifty dollars (\$50).

D. California Code of Regulations

Section 1270 - SRA Fire Safe Regulations – Title14

These regulations shall be known as the "SRA Fire Safe Regulations," and shall constitute the basic wildland fire protection standards of the California Board of Forestry.

Section 1270.01 - Purpose.

These regulations have been prepared and adopted for the purpose of establishing minimum wildfire protection standards in conjunction with building, construction and developments in SRA. A local jurisdiction may petition the Board for certification pursuant to section 1270.03. Where Board certification has not been granted, these regulations shall become effective September 1, 1991. The future design and construction of structures, subdivisions and developments in State Responsibility Area (SRA) shall provide for basic emergency access and perimeter wildfire protection measures as specified in the following articles. These measures shall provide for emergency access; signing and building numbering; private water supply reserves for emergency fire use; and vegetation modification. The fire protection standards which follow shall specify the minimums for such measures.

Section 1270.02 - Scope.

These regulations do not apply to existing structures, roads, streets and private lanes or facilities. These regulations shall apply as appropriate to all construction within SRA approved after January 1, 1991. Affected activities include but are not limited to:

- (a) permitting or approval of new parcels, excluding lot line adjustments as specified in Government Code (GC) section 66412(d),
- (b) application for a building permit for new construction, not relating to an existing structure,
- (c) application for a use permit,
- (d) the siting of manufactured homes (manufactured homes are as defined by the National Fire Protection Association, National Fire Code, section 501A, Standard for Fire Safety Criteria for Manufactured Home Installations, Sites and Communities, chapter 1, section 1-2, Definitions, page 4, 1987 edition and Health and Safety Code sections 18007, 18008, and 19971),
- (e) road construction, including construction of a road that does not currently exist, or extension of an existing road.

Section 1270.03 - Local Ordinances.

Nothing contained in these regulations shall be considered as abrogating the provisions of any ordinance, rule or regulations of any state or local jurisdiction providing such ordinance, rule, regulation or general plan element is equal to or more stringent than these minimum standards. The Board may certify local ordinances as equaling or exceeding these regulations when they provide the same practical effect.

Section 1270.04 - Provisions for Application of These Regulations

This subchapter shall be applied as follows:

- (a) local jurisdictions shall provide the Director with notice of applications for building permits, tentative parcel maps, tentative maps, and use permits for construction or development within SRA.
- (b) the Director shall review and make fire protection recommendations on applicable construction or development permits or maps provided by the local jurisdiction.
- (c) the local jurisdiction shall ensure that the applicable sections of this subchapter become a condition of approval of any applicable construction or development permit or map.

Section 1270.05 - Inspection Authority.

- (a) Inspection shall be made pursuant to section 1270.06 by:
 - (1) the Director, or
 - (2) local jurisdictions that have assumed state fire protection responsibility on SRA lands, or
 - (3) local jurisdictions where these regulations have been implemented through that jurisdiction's building permit or subdivision approval process.
- (b) Reports of violations shall be provided to the CDF Ranger Unit headquarters that administers SRA fire protection in that county.

Section 1270.06 - Inspections.

The inspection authority may inspect for compliance with these regulations. When inspections are conducted, they should occur prior to: the issuance of the use permit; certificate of occupancy; the recordation of the parcel map or final map; the filing of a notice of completion; or the final inspection of any project or building permit.

Section 1270.07 - Exceptions to Standards.

Upon request by the applicant, exceptions to standards within this subchapter and mitigated practices may be allowed by the inspection authority, where the exception provides the same overall practical effect as these regulations towards providing defensible space.

Section 1270.08 - Requests for Exceptions.

Requests for an exception shall be made in writing to the inspection authority by the applicant or the applicant's authorized representative. The request shall state the specific section(s) for which an exception is requested, material facts supporting the contention of the applicant, the details of the exception or mitigating measure proposed, and a map showing the proposed location and siting of the exception or mitigation measure.

Section 1270.09 - Appeals.

Where an exception is not granted by the inspection authority, the applicant may appeal such denial to the

local jurisdiction. The local jurisdiction may establish or utilize an appeal process consistent with existing local building or planning department appeal processes.

Before the local jurisdiction makes a determination on an appeal, the inspection authority shall be consulted and shall provide to that local jurisdiction documentation outlining the effects of the requested exception on wildland fire protection.

If an appeal is granted, the local jurisdiction shall make findings that the decision meets the intent of providing defensible space consistent with these regulations. Such findings shall include a statement of reasons for the decision. A written copy of these findings shall be provided to the CDF Ranger Unit headquarters that administers SRA fire protection in that county.

Section 1271.00 - Definitions.

Accessory building: Any building used as an accessory to residential, commercial, recreational, industrial, or educational purposes as defined in the California Building Code.

Agriculture: Land used for agricultural purposes as defined in a local jurisdiction's zoning ordinances.

Building: Any structure used or intended for supporting or sheltering any use or occupancy that is defined in the California Building Code. For the purposes of this subchapter, building includes mobile homes and manufactured homes, churches, and day care facilities.

CDF: California Department of Forestry and Fire Protection.

Dead-end road: A road that has only one point of vehicular ingress/egress, including cul-de-sacs and looped roads.

Defensible space: The area within the perimeter of a parcel, development, neighborhood or community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching wildfire or defense against encroaching wildfires or escaping structure fires. The perimeter as used in this regulation is the area encompassing the parcel or parcels proposed for construction and/or development, excluding the physical structure itself. The area is characterized by the establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures.

Development: As defined in section 66418.1 of the California Government Code.

Director: Director of the Department of Forestry and Fire Protection or his/her designee.

Driveway: A vehicular access that serves no more than two buildings, with no more than 3 dwelling units on a single parcel, and any number of accessory buildings.

Dwelling unit: Any building or portion thereof which contains living facilities, including provisions for sleeping, eating, cooking and/or sanitation for not more than one family.

Exception: An alternative to the specified standard requested by the applicant that may be necessary due to health, safety, environmental conditions, physical site limitations or other limiting conditions such as recorded historical sites, that provides mitigation of the problem.

Fire valve: see hydrant.

Fuel modification area: An area where the volume of flammable vegetation has been reduced, providing reduced fire intensity and duration.

Greenbelt: A facility or land-use, designed for a use other than fire protection, which will slow or resist the spread of a wildfire. Includes parking lots, irrigated or landscaped areas, golf courses, parks playgrounds, maintained vineyards, orchards or annual crops that do not cure in the field.

Hammerhead/T: A roadway that provides a "T" shaped, three-point turnaround space for emergency equipment, being no narrower than the road that serves it.

Hydrant: A valved connection on a water supply/storage system, having at least one 2 1/2 inch outlet, with male American National Fire Hose Screw Threads (NH) used to supply fire apparatus and hoses with water.

Local Jurisdiction: Any county, city/county agency or department, or any locally authorized district that issues or approves building permits, use permits, tentative maps or tentative parcel maps, or has authority

to regulate development and construction activity.

Occupancy: The purpose for which a building, or part thereof, is used or intended to be used.

One-way road: A minimum of one traffic lane width designed for traffic flow in one direction only.

Roads, streets, private lanes: Vehicular access to more than one parcel; access to any industrial or commercial occupancy; or vehicular access to a single parcel with more than two buildings or four or more dwelling units.

Roadway: Any surface designed, improved, or ordinarily used for vehicle travel.

Roadway structures: Bridges, culverts, and other appurtenant structures which supplement the roadway bed or shoulders.

Same Practical Effect: As used in this subchapter, means an exception or alternative with the capability of applying accepted wildland fire suppression strategies and tactics, and provisions for fire fighter safety, including:

- (a) access for emergency wildland fire equipment,
- (b) safe civilian evacuation,
- (c) signing that avoids delays in emergency equipment response,
- (d) available and accessible water to effectively attack wildfire or defend a structure from wildfire,

and

- (e) fuel modification sufficient for civilian and fire fighter safety.

Shoulder: Roadbed or surface adjacent to the traffic lane.

State Board of Forestry (SBOF): A nine member board, appointed by the Governor, which is responsible for developing the general forest policy of the state, for determining the guidance policies of the Department of Forestry and Fire Protection, and for representing the state's interest in federal land in California.

State Responsibility Area (SRA): As defined in Public Resources Code sections 4126-4127; and the California Code of Regulations, title 14, division 1.5, chapter 7, article 1, sections 1220-1220.5.

Structure: That which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

Subdivision: As defined in section 66424 of the Government Code.

Traffic lane: The portion of a roadway that provides a single line of vehicle travel.

Turnaround: A roadway, unobstructed by parking, which allows for a safe opposite change of direction for emergency equipment. Design of such area may be a hammerhead/T or terminus bulb.

Turnouts: A widening in a roadway to allow vehicles to pass.

Vertical clearance: The minimum specified height of a bridge or overhead projection above the roadway.

Wildfire: As defined in Public Resources Code sections 4103 and 4104.

Section 1272.00 - Maintenance of Defensible Space Measures.

To ensure continued maintenance of properties in conformance with these standards and measures and to assure continued availability, access, and utilization of the defensible space provided for in these standards during a wildfire, provisions for annual maintenance shall be included in the development plans and/or shall be provided as a condition of the permit, parcel or map approval.

Section 1273.00 - Emergency Acces - Intent.

Road and street networks, whether public or private, unless exempted under section 1270.02(e), shall provide for safe access for emergency wildland fire equipment and civilian evacuation concurrently, and shall provide unobstructed traffic circulation during a wildfire emergency consistent with sections 1273.00 through 1273.11.

Section 1273.01 - Road Width.

All roads shall be constructed to provide a minimum of two nine-foot traffic lanes providing twoway traffic flow, unless other standards are provided in this article, or additional requirements are mandated by local jurisdictions or local subdivision requirements.

Section 1273.02 - Roadway Surface.

The surface shall provide unobstructed access to conventional drive vehicles, including sedans and fire engines. Surfaces should be established in conformance with local ordinances, and be capable of supporting a 40,000 pound load.

Section 1273.03 - Roadway Grades.

The grade for all roads, streets, private lanes and driveways shall not exceed 16 percent.

Section 1273.04 - Roadway Radius.

(a) No roadway shall have a horizontal inside radius of curvature of less than 50 feet and additional surface width of 4 feet shall be added to curves of 50-100 feet radius; 2 feet to those from 100-200 feet.

(b) The length of vertical curves in roadways, exclusive of gutters, ditches, and drainage structures designed to hold or divert water, shall be not less than 100 feet.

Section 1273.05 - Roadway Turnarounds.

Turnarounds are required on driveways and dead-end roads as specified in this article. The minimum turning radius for a turnaround shall be 40 feet from the center line of the road. If a hammerhead/T is used, the top of the "T" shall be a minimum of 60 feet in length.

Section 1273.06 - Roadway Turnouts.

Turnouts shall be a minimum of 10 feet wide and 30 feet long with a minimum 25 foot taper on each end.

Section 1273.07 - Roadway Structures.

(a) All driveway, road, street, and private lane roadway structures shall be constructed to carry at least the maximum load and provide the minimum vertical clearance as required by Vehicle Code sections 35550, 35750, and 35250.

(b) Appropriate signing, including but not limited to weight or vertical clearance limitations, one-way road or single land conditions, shall reflect the capability of each bridge.

(c) A bridge with only one traffic lane may be authorized by the local jurisdiction; however, it shall provide for unobstructed visibility from one end to the other and turnouts at both ends.

Section 1273.08 - One-way Roads.

All one-way roads shall be constructed to provide a minimum of one 10-foot traffic lane. The local jurisdiction may approve one-way roads. All one-way roads shall connect to a two-lane roadway at both ends, and shall provide access to an area currently zoned for no more than 10 dwelling units. In no case, shall it exceed 2640 feet in length. A turnout shall be placed and constructed at approximately the midpoint of each one-way road.

Section 1273.09 - Dead-End Roads.

(a) The maximum length of a dead-end road, including all dead-end roads accessed from the dead-end road, shall not exceed the following cumulative lengths, regardless of the number of parcels served:

- parcels zoned for less than one acre - 800 feet
- parcels zoned for 1 acre to 4.99 acres - 1320 feet
- parcels zoned for 5 acres to 19.99 acres - 2640 feet
- parcels zoned for 20 acres or larger - 5280 feet

All lengths shall be measured from the edge of the roadway surface at the intersection that begins the road to the end of the road surface at its farthest point. Where a dead-end road crosses areas of differing zoned parcel sizes, requiring different length limits, the shortest allowable length shall apply.

(b) Where parcels are zoned 5 acres or larger, turnarounds shall be provided at a maximum of 1320 foot intervals.

(c) Each dead-end road shall have a turnaround constructed at its terminus.

Section 1273.10 -Driveways.

All driveways shall provide a minimum 10 foot traffic lane and unobstructed vertical clearance of 15 feet along its entire length.

(a) Driveways exceeding 150 feet in length, but less than 800 feet in length, shall provide a turnout near the midpoint of the driveway. Where the driveway exceeds 800 feet, turnouts shall be provided no more than 400 feet apart.

(b) A turnaround shall be provided at all buildings sites on driveways over 300 feet in length, and shall be within 50 feet of the building.

Section 1273.11 - Gate Entrances.

(a) Gate entrances shall be at least two feet wider than the width of the traffic lane(s) serving that gate.

(b) All gates providing access from a road to a driveway shall be located at least 30 feet from the roadway and shall open to allow a vehicle to stop without obstructing traffic on that road.

(c) Where a one-way road with a single traffic lane provides access to a gated entrance, a 40 foot turning radius shall be used.

Section 1274.00 - Signing and Building Numbering - Intent

To facilitate locating a fire and to avoid delays in response, all newly constructed or approved roads, streets, and buildings shall be designated by names or numbers, posted on signs clearly visible and legible from the roadway. This section shall not restrict the size of letters or numbers appearing on street signs for other purposes.

Section 1274.01 - Size of Letters, Numbers and Symbols for Street and Road Signs

Size of letters, numbers, and symbols for street and road signs shall be a minimum 3 inch letter height, 3/8 inch stroke, reflectorized, contrasting with the background color of the sign.

Section 1274.02 - Visibility and Legibility of Street and Road Signs

Street and road signs shall be visible and legible from both directions of vehicle travel for a distance of at

least 100 feet.

Section 1274.03 - Height of Street and Road Signs.

Height of street and road signs shall be uniform county wide, and meet the visibility and legibility standards of this article.

Section 1274.04 - Names and Numbers on Street and Road Signs

Newly constructed or approved public and private roads and streets must be identified by name or number through a consistent county-wide system that provides for sequenced or patterned numbering and/or non-duplicating naming within each county. All signs shall be mounted and oriented in a uniform manner. This section does not require any entity to rename or renumber existing roads or streets, nor shall a roadway providing access only to a single commercial or industrial occupancy require naming or numbering.

Section 1274.05 - Intersecting Roads, Streets and Private Lanes.

Signs required by this article identifying intersecting roads, streets and private lanes shall be placed at the intersection of those roads, streets, and/or private lanes.

Section 1274.06 - Signs Identifying Traffic Access Limitations.

A sign identifying traffic access or flow limitations, including but not limited to weight or vertical clearance limitations, dead-end road, one-way road or single lane conditions, shall be placed:

- (a) at the intersection preceding the traffic access limitation, and
- (b) no more than 100 feet before such traffic access limitation.

Section 1274.07 - Installation of Road, Street and Private Lane Signs

Road, street and private lane signs required by this article shall be installed prior to final acceptance by the local jurisdiction of road improvements.

Section 1274.08 - Addresses for Buildings

All buildings shall be issued an address by the local jurisdiction which conforms to that jurisdiction's overall address system. Accessory buildings will not be required to have a separate address; however, each dwelling unit within a building shall be separately identified.

Section 1274.09 - Size of Letters, Numbers and Symbols for Addresses.

Size of letters, numbers and symbols for addresses shall be a minimum 3 inch letter height, 3/8 inch stroke, reflectorized, contrasting with the background color of the sign.

Section 1274.10 - Installation, Location and Visibility of Addresses.

(a) All buildings shall have a permanently posted address, which shall be placed at each driveway entrance and visible from both directions of travel along the road. In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter, and the address shall be visible and legible for the road on which the address is located.

(b) Address signs along one-way roads shall be visible from both the intended direction of travel and the opposite direction.

(c) Where multiple addresses are required at a single driveway, they shall be mounted on a single post.

(d) Where a roadway provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest road intersection providing access to that site.

Section 1275.00 - Emergency Water Standards - Intent.

Emergency water for wildfire protection shall be available and accessible in quantities and locations specified in the statute and these regulations, in order to attack a wildfire or defend property from a wildfire.

Such emergency water may be provided in a fire agency mobile water tender, or naturally occurring or man-made containment structure, as long as the specified quantity is immediately available.

Section 1275.01 - Application.

The provisions of this article shall apply when new parcels are approved by a local jurisdiction. The emergency water system shall be available on-site prior to the completion of road construction, where a community water system is approved, or prior to the completion of building construction, where an individual system is approved.

Section 1275.10 - General Standards.

Water systems that meet or exceed the standards specified in Public Utilities Commission of California (PUC) revised General Order # 103, Adopted June 12, 1956 (Corrected September 7, 1983, Decision 83-09-001), section VIII Fire Protection Standards and other applicable sections relating to fire protection water delivery systems, static water systems equaling or exceeding the National Fire Protection Association (NFPA) Standard 123 1, "Standard on Water Supplies for Suburban and Rural Fire Fighting," 1989 Edition, or mobile water systems that meet the Insurance Services Office (ISO) Rural Class 8, 2nd Edition 3-80, standard shall be accepted as meeting the requirements of this article. These documents are available at CDF Ranger Unit Headquarters.

Nothing in this article prohibits the combined storage of emergency wildfire and structural firefighting water supplies unless so prohibited by local ordinance or specified by the local fire agency.

Where freeze protection is required by local jurisdictions, such protection measures shall be provided.

Section 1275.15 - Hydrant/Fire Valve.

(a) The hydrant or fire valve shall be 18 inches above grade, 8 feet from flammable vegetation, no closer than 4 feet nor farther than 12 feet from a roadway, and in a location where fire apparatus using it will not block the roadway.

The hydrant serving any building shall:

(1) be not less than 50 feet nor more than 1/2 mile by road from the building it is to serve, and

(2) be located at a turnout or turnaround, along the driveway to that building or along the road that intersects with that driveway.

(b) The hydrant head shall be brass with 2 1/2 inch National Hose male thread with cap for pressure and gravity flow systems and 4 1/2 inch draft systems. Such hydrants shall be wet or dry barrel as required by the delivery system. They shall have suitable crash protection as required by the local jurisdiction.

Section 1275.20 - Signing of Water Sources.

Each hydrant/fire valve or access to water shall be identified as follows:

(a) if located along a driveway, a reflectorized blue marker, with a minimum dimension of 3 inches shall be located on the driveway address sign and mounted on a fire retardant post, or

(b) if located along a street or road,

(1) a reflectorized blue marker, with a minimum dimension of 3 inches, shall be mounted on a fire retardant post. The sign post shall be within 3 feet of said hydrant/fire valve, with the sign no less than 3 feet nor greater than 5 feet above ground, in a horizontal position and visible from the driveway, or

(2) as specified in the State Fire Marshal's Guidelines for Fire Hydrant Markings Along State Highways and Freeways, May 1988.

Section 1276.00 - Fuel Modification Standards - Intent.

To reduce the intensity of a wildfire by reducing the volume and density of flammable vegetation, the strategic siting of fuel modification and greenbelts shall provide

(1) increased safety for emergency fire equipment and evacuating civilians; and

(2) a point of attack or defense from a wildfire.

Section 1276.01 - Setback for Structure Defensible Space.

(a) All parcels 1 acre and larger shall provide a minimum 30 foot setback for buildings and accessory buildings from all property lines and/or the center of a road.

(b) For parcels less than 1 acre, local jurisdictions shall provide for the same practical effect.

Section 1276.02 - Disposal of Flammable Vegetation and Fuels.

Disposal, including chipping, burying, burning or removal to a landfill site approved by the local jurisdiction, of flammable vegetation and fuels caused by site development and construction, road and driveway construction, and fuel modification shall be completed prior to completion of road construction or final inspection of a building permit.

Section 1276.03 - Greenbelts.

Subdivisions and other developments, which propose greenbelts as a part of the development plan, shall locate said greenbelts strategically, as a separation between wildland fuels and structures. The locations shall be approved by the inspection authority.

Section 1280 - Fire Hazard Severity Zones

The fire hazard severity zones and the rating reflecting the degree of severity of fire hazard that is expected to prevail in those zones, shall be designated by the Director and delineated on a series of maps on file in the Sacramento Office of the Department of Forestry, 1416 Ninth Street, Room 1653-10. The maps are entitled "Maps of Fire Hazard Severity Zones in the State Responsibility Area of California," dated August 1984.

II. FEDERAL REGULATIONS

U. S. Forest Service Title 36 Code of Federal Regulations (36 CFR)

Section 261.52 - Fire. When provided by an order, the following are prohibited:

- (a) Building, maintaining, attending or using a fire, campfire, or stove fire.
- (b) Using an explosive.
- (c) Smoking.
- (d) Smoking, except within an enclosed vehicle or building, a developed recreation site, or while stopped in an area at least three feet in diameter that is barren or cleared of all flammable material.
- (e) Going into or being upon an area.
- (f) Possessing, discharging or using any kind of firework or other pyrotechnic device.
- (g) Entering an area without any firefighting tool prescribed by the order.
- (h) Operating an internal combustion engine except on a road.
- (i) Welding, or operating an acetylene or other torch with open flame.
- (j) Operating or using any internal or external combustion engine without a spark arresting device properly installed, maintained and in effective working order, meeting either: (1) Department of Agriculture, Forest Service Standard 5100-1a; or (2) the appropriate Society of Automotive Engineers (SAE) recommended practice J335(b) and J350(a).
- (k) Violating any state law specified in the order concerning burning, fires or which is for the purpose of preventing, or restricting the spread of fires.

Note: By authority of this regulation several California statutes have been adopted as Federal Regulations on National Forest land. See below.

Order No. 91-1.

Fire Restrictions—Pacific Southwest Region

Pursuant to 36 CFR 261.50 (a) and (b), each of the following is prohibited on lands, Forest Development Roads or Trails under my jurisdiction:

1. Building, maintaining, attending or using a fire, campfire or stove fire in any area outside a developed recreation site. 36 CFR 261.52(a).
 - (a) In Zone A as defined in California Public Resources Code 4413.
 - (b) In Zone B as defined in California Public Resources Code 4413, from May 1 until the date the hazardous fire conditions have been proclaimed abated for the year.
2. Using an explosive. 36 CFR 261.52(b)
3. Smoking, except within an enclosed vehicle or building, a developed recreation site, a designated smoking area, or while stopped in an area at least three feet in diameter that is barren or cleared of all flammable material. 36 CFR 261.52(d).
 - (a) In Zone A as defined in California Public Resources Code 4413.
 - (b) In Zone B as defined in California Public Resources Code 4413, from May 1 until the date the hazardous fire conditions have been proclaimed abated for the year.
4. Possessing, discharging or using any kind of firework or other pyrotechnic device. 36 CFR 261.52(f).
5. Welding or operating any acetylene or other torch with open flame. 36 CFR 261.52(i).
 - (a) In Zone A as defined in California Public Resources Code 4413.
 - (b) In Zone B as defined in California Public Resources Code 4413, from May 1 until the date that the hazardous fire conditions have been proclaimed abated for the year.
6. Operating or using any internal or external combustion engine on any timber, without a spark

arresting device properly installed, maintained and in effective working order meeting either: (1) Department of Agriculture, Forest Service Standard 5100-1a; or (2) appropriate Society of Automotive Engineers (SAE) Recommended Practice J335(b) and J350(a). Motor trucks, truck tractors, buses and passenger vehicles, except motorcycles, are not subject to the provisions if the exhaust system is equipped with a muffler as defined in the California Vehicle Code. 36 CFR 261.52(j).

7. Violating any of the following California State Forest and Fire Laws on National Forest Boundary, or adjacent thereto, when such act or omission affects, threatens, or endangers property of the United States administered by the Forest Service. 36 CFR 261.52(k).

Public Resources Code:

- ✓ 4291 - Reduction of Fire Hazards Around Buildings
- ✓ 4292 - Powerline Hazard Reduction
- ✓ 4293 - Powerline Clearance Required
- ✓ 4296.5 - Railroad Rights-of-way Clearance
- ✓ 4373 - Minimum Requirements for Rubbish Dumps (under permit)
- ✓ 4374 - Minimum Requirements for Rubbish Dumps
- ✓ 4423 - Written Permit Required for Burning
- ✓ 4427 - Clearance and Tools Required
- ✓ 4428 - Firefighting Tools Required on Industrial Operations
- ✓ 4429 - Industrial Camp Tool Cache
- ✓ 4430 - Steam-operated Engine Equipment Requirements
- ✓ 4431 - Gasoline Power Saw - Clearance and Equipment Required
- ✓ 4438 - Forest Product Waste Disposal (enclosed)
- ✓ 4439 - Forest Product Waste Disposal (open)
- ✓ 4440 - Forest Product Waste Storage
- ✓ 4446 - Incinerator Standards

Pursuant to 36 CFR 261.50(e), each of the following are exempt from this Order:

- a. Persons with a permit specifically authorizing the otherwise prohibited act or omission.
- b. Any Federal, State, or local officer, or member of an organized rescue or fire fighting force in the performance of an official duty.

This order supersedes Order 83-2, issued August 16, 1983. These Prohibitions are in addition to the General Publications in 36 CFR Part 261. This Order may be made more restrictive by temporary orders issued by the Regional Forester or a Forest Supervisor during periods of fire danger.

Executed in San Francisco, California this 24th day of July 1991.

/s/ Laurence Bembry
for Ronald E. Stewart
Regional Forester
Pacific Southwest Region

Violation of these prohibitions is punishable by a fine of not more than \$5,000.00 for an individual, or \$10,000.00 for an organization, or imprisonment for not more than six months or both. See Title 18, U.S. Code Section 3571.