



Cooperative Fire Protection

**NAPA COUNTY FIRE DEPARTMENT  
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Date: November 13, 2001

To: Bruce Wadlington  
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**Re: Fire Safety Analysis  
Lake Berryessa Resort Areas**

The following is offered to your request for information on the fire safety and emergency service analysis of the Lake Berryessa Resort areas. The purpose of this analysis is to provide a compendium of the comprehensive issues and code/regulations, which currently exist within the resort areas.

## **I. Background**

Early in the history of recreational development at Lake Berryessa, decisions were made which resulted in the development of long-term exclusive use trailer villages operated by seven concessionaires. These trailer villages or resort areas now occupy approximately 1500 long-term trailer sites along the lake. Since the late 1950's and early 1960's, when the resorts were developed, regulations and codes have been adopted by the State of California and the County of Napa which require much stricter building and development standards and maintenance requirements for existing structures and premises. These regulations and codes were developed to minimize the loss of life and property from large devastating fires and to provide access to such emergencies for responding personnel.

The primary fire hazard, which is typical for any development in the rural areas of California, is vegetation fires. The general area of Lake Berryessa has experienced past wildfires, which have destroyed numerous homes and many acres of land. The most recent large-scale wildfires in Napa County were the Berryessa Fire in 2000, the Sixteen Fire in 1999 and the Atlas Peak Fire in 1981 which destroyed 61 homes and 23,000 acres of land. Mitigation of this hazard is addressed in the Fire Safe Codes under Public Resources Code (PRC) Sections 4290 and 4291, as well as the Napa County Fire Code (NCFC) 1999 Edition. These mitigations include road access standards, turnouts and turnarounds, on-site fire protection water storage requirements and vegetation clearance requirements for individual structures and roadways. These mitigations would solve the fire and safety problems, which exist today, in part, in all of the resort areas.

## II. Public Resource Code 4291

Figure 1



Many of the resorts do not comply with Public Resource Code (PRC) 4291, which are requirements for defensible space around structures. Defensible space is defined as the area within the perimeter of a parcel, development, neighborhood and community where basic wildland fire protection practices and measures are implemented, providing the key point of defense from an approaching wildfire or defense against an encroaching wildfire or escaping structure

fire. During a recent inspection, dead trees and vegetation were found directly adjacent to trailers and outbuildings (figure 1 and 2) with zero clearance around the structures. Most of the LPG tanks inspected also did not have the required ten feet of clearance required by PRC 4291. PRC 4291 is enforceable for all existing structures in State Responsibility Areas (SRA).



Figure 2

## II. Access and Egress

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 wildfire emergency. CDF recommends two separate points of ingress/egress to each development. Almost all of the resorts on the lake have one point of ingress/egress.

Access is a major fire protection need. Failure to provide a reasonable access for emergency equipment and civilian evacuation concurrently can result in a major loss of life, property and natural resources. Section 15.32.410 of the Napa County Fire Code (NCFC) requires that Fire Apparatus access roads shall have an unobstructed width of not less than 20 feet and an unobstructed vertical clearance of not less than 15 feet. These minimum requirements shall not be obstructed in any manner, including parking of vehicles (figure 3). A fire engine, sitting at an intersection,

Figure 3



waiting for civilians to exit a narrow roadway cannot provide the necessary fire suppression action. Safe access requires street and road networks that limit dead end roads, provide reasonable widths, turnarounds and turnouts.

Figure 4



Many of the roadways in the resorts, due to narrowness, obstacles and turns make them inaccessible to fire engines. The turning radius on many of the roads, make traversing them difficult. Responding fire apparatus has to drive past a road and then turn around to gain access. Dead end roads, within the resorts, also do not comply with today's codes (figure 4). Dead-end roads are required to have turnarounds for large equipment in the form of either a hammerhead T or terminus

bulb, which provide a safe opposite change of direction for emergency equipment. Currently many dead ends roads in the resorts provide no turnarounds and equipment must back down the road to exit. Roadways need to be designed which meet the standards set forth in the Napa County Fire Codes, Public Resource Code 4290 and Napa County Road and Street Standards.

Speed bumps have been installed on many of the roadways within the resorts. The number and the size of the speed bumps make for slow progression for the fire engines when they are responding to emergencies within the resorts. Height and width of the speed bumps must allow for emergency equipment to transverse at a reasonable speed.

### **III. Addressing and Street Signs**

The resorts also lack uniform addressing and street signs. The Napa County Fire Code Section 15.32.380 and 15.32.390 require that addresses shall be provided for all new and existing buildings in such a position as to be plainly visible and legible from the street or road. PRC 4290 also has signing and building numbering requirements to facilitate locating a fire and to avoid delays in response. Many of the addressing and street signs currently in the resorts are either non-existent or non-compliant with state and local codes. Addressing and Street signing requirements can be found in CFC Article 9, NCFC for existing and new construction and PRC 4290 and Napa County Road and Street Standards for newly constructed roads and buildings.

### **IV. Water Supply**

Water supply is a major concern of the fire service in rural settings such as Lake Berryessa. Unfortunately, when the resorts were designed there were very little, if any, allowances for water supply for fire protection. This has led to water supply problems on every fire in the resort areas. Resorts either have a limited number of hydrants or none at all. PRC 4290 and NCFC dictate today's standards for new construction, which require a water supply capable of supplying the required fire flow for fire protection.

## V. Resorts

The following are lists of specific problems found at each resort during a recent inspection.

### A. Putah Creek Resort

1. Signing and building numbering
2. Dead-end roads without turnarounds
3. Limited hydrant system/insufficient water supply
4. Fire access roadways blocked by parked vehicles
5. One way roads without turnouts
6. Turning radius of roadways

### B. Rancho Monticello

1. Road widths
2. Speed bumps
3. Water supply/no hydrant system
4. Defensible space around structures and improvements
5. Inadequate trailer spacing
6. Signing and building numbering
7. Dead-end roads without turnarounds
8. Turning radius of roadways

### C. Berryessa Marina

1. Road widths
2. Inadequate water supply/no hydrant system
3. Inadequate trailer spacing
4. Dead-end roads without turnarounds
5. Signing and building numbering
6. Turning radius of roadways

### D. Spanish Flat Resort

1. Signing and building numbering
2. Road widths
3. Inadequate water supply/no hydrant system
4. Turning radius of roads

### E. Steele Park Resort

1. Signing of roads
2. Limited hydrant system/insufficient water supply

### F. Pleasure Cove Resort

1. Signing and building numbering
2. Speed bumps
3. Inadequate water supply/no hydrant system
4. Inadequate trailer spacing
5. Turning radius of roadways

### G. Markley Cove Resort

1. Inadequate water supply/no hydrant system
2. Road widths
3. Signing and building numbering
4. Dead-end roads with no turnarounds

## **VI. Recommendations**

Significant fire and life safety problems exist in most of the resort areas. All of the fire and safety problems plaguing those resorts fall into two categories; those that exist due to the lack of fire safe planning and development when recreation development began at Lake Berryessa, or those that exist due to lack of maintenance and enforcement of fire safe practices.

The maintenance issues can be remedied with a limited amount of time and resources. Those remedies would include creating and maintaining defensible space and enforcing fire access road requirements by limiting parking on or about the roadways. The planning and development issues will require significant changes in the roadway and water systems in the resorts.

The recommendation of the California Department of Forestry and Fire Protection and the Napa County Fire Department is to bring the resorts up to the current code standards and regulations. These would include, but not be limited to, road access standards, turnouts and turnarounds, on-site fire protection water storage and hydrant systems and a uniform address and road signing system.

I hope that this provides you with the information you need to for the Visitor Services Plan effort. Should you have any further questions, please feel free to contact me. Thank you for all of your time and assistance.

Sincerely,

David Shew  
Napa County Fire Marshal

By: Gabrielle Avina  
Napa County Assistant Fire Marshal  
Fire Captain

