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**To:** Resource Protection Committee  
Chair Bruce Saito  
Member Keith Gillless  
Member Mary Rickert

**Date:** May 20, 2013

**Telephone:** (916) 653-8007

**Website:** [www.bof.fire.ca.gov](http://www.bof.fire.ca.gov)

**From:** Edith Hannigan, Board Consultant

**Subject:** General Plan Safety Element Reviews: **City of Calistoga**

Dear Chair Saito, Member Gillless, and Member Rickert,

On April 2, 2013, the City of Calistoga submitted the Safety Element component of their General Plan for review by the Board of Forestry, as required based on their recent revision to the General Plan Housing Element in 2011.

The State Board of Forestry and Fire Protection (BOF/Board) is required to review and make recommendations to the fire safety element of general plan updates in accordance with Government Code (GC) §65302.5. The review and recommendations apply to those general plans with State Responsibility Area (SRA) (Public Resources Code 4125) or Very High Fire Hazard Severity Zones (VHFHSZ) (GC 51175).

The statutory requirements for the Board review and recommendations pursuant to GC 65302.5 (a)(1) and (2), and (b) are as follows:

- *“The draft elements...to the fire safety element of a county’s or a city’s general plan...shall be submitted to the Board at least 90 days prior to... the adoption or amendment to the safety element of its general plan [for each county or city with SRA or VHFHSZ].”*
- *“The Board shall... review the draft or an existing safety element and report its written recommendations to the planning agency within 60 days of its receipt of the draft or existing safety element....”*
- *“Prior to adoption of the draft element..., the Board of Supervisors... shall consider the recommendations made by the Board... If the Board of Supervisors...determines not to accept all or some of the recommendations...,” the Board of Supervisors... shall communicate in writing to the Board its reasons for not accepting the recommendations.*



**BOARD OF FORESTRY AND FIRE PROTECTION**

The Board staff is piloting a new review checklist system with the local Units and the Calistoga Safety Element was reviewed by local staff at the Sonoma Lake Napa Unit. Enclosed is the checklist with Chief Jon Lovie's comments and recommendations for your review.

This item will be on the agendas of the Resource Protection Committee and the full Board meetings in June. At the RPC meeting the item will be discussed and action taken to recommend to the full board either approval of the plan as-is or to make suggested changes.

Enclosed is the Calistoga Safety Element and the completed checklist. The entire Calistoga General Plan can be viewed online here: <http://www.ci.calistoga.ca.us/Index.aspx?page=519>

Thank you for your attention to this matter.

Sincerely,

Edith Hannigan

Enclosures:

Calistoga General Plan Safety Element

General Plan Fire Safety Element Standard Recommendations

CC: George Gentry

## 11 PUBLIC SAFETY ELEMENT

*The Public Safety Element provides information about risks in Calistoga due to natural and created hazards. Its policies are designed to protect the community as much as possible from seismic, flood, geologic and wildfire hazards.*

As required by State law, the Public Safety Element addresses the protection of the community from any unreasonable risks associated with the effects of:

- Geologic hazards, including earthquakes, ground failure and subsidence and slope instability
- Flooding, dam failure, tsunami and seiche
- Wildland fires

This element also contains information and policies regarding hazardous materials, airport safety and general emergency preparedness.

The Public Safety Element establishes mechanisms to reduce death, injuries, damage to property and to address the negative results from public safety hazards like flooding, fires and seismic events. Hazards are an unavoidable aspect of life, and the Public Safety Element cannot eliminate risk completely. Instead, the Element contains policies to create an acceptable level of risk.

### I. GEOLOGIC HAZARDS

#### A. Background Information

##### Calistoga's Basic Geology

The Napa Valley, in which Calistoga is located, lies within the east-central portion of the Coast Ranges geomorphic province, a region characterized by northwest-trending valleys and mountain ranges. This alignment of valleys and ridges has developed in response to folding and faulting along the San Andreas fault system, which includes several faults east and west of Calistoga. Most of the Planning Area is located near the center of the broad alluvial plain that occupies the floor of the Napa Valley, while part of it extends up toward the surrounding hills.

Bedrock in the Calistoga area consists mainly of Sonoma Volcanics, dating from two to seven million years ago. These rocks are mainly interbedded sediment, tuff and rhyolite.<sup>1</sup> Alluvial deposits ranging from two million years old to less than 11,000 years old blanket the Napa Valley floor. These unconsolidated sediments consist of interbedded sand, silt, clay and gravel deposited by the ancestral Napa River and its tributaries.

##### Seismic Activity and Related Geologic Hazards

As is the case for most of California, people and property in Calistoga are subject to risks from seismic activity. Earthquakes have the potential to threaten humans, wildlife and infrastructure. As a result, it is crucial to identify the risks associated with seismic activity and related phenomenon such as liquefaction and collapse of soils.

Earthquakes can give rise to various seismic hazards including ground shaking, liquefaction, ground rupture and the generation of large waves in bodies of water. These seismic hazards can cause damage to structures

and risk the health and safety of citizens, particularly in unreinforced masonry buildings. Seismic hazards vary widely from area to area, and the level of hazard depends on both geologic conditions and the extent and type of land use. There are two common measurements of earthquakes:

- The strength of an earthquake is measured using the Richter Scale, a numerical scale for quantifying earthquake magnitude. The Richter Scale is a logarithmic scale that measures the amount of energy released during an earthquake based on the amplitude of the highest peak recorded on a seismogram.
- The force of an earthquake at a particular place is measured on the Modified Mercalli Scale, which is a subjective ranking of earthquakes’ effects on persons and structures. Lower numbers on the scale indicate less severe shaking.

Table SAF-1 summarizes the Modified Mercalli Scale in relation to the Richter Scale.

**TABLE SAF-1 MODIFIED MERCALLI AND RICHTER SCALES**

Richter Magnitude	Modified Mercalli Category	Expected Modified Mercalli Maximum Intensity at Epicenter
2	I-II	Usually detected only by instruments
3	III	Felt indoors
4	IV-V	Felt by most people; slight damage
5	VI-VII	Felt by all; many frightened and run outdoors; Damage minor to moderate
6	VII-VIII	Everybody runs outdoors; Damage moderate to major
7	IX-X	Major damage
8+	X-XII	Total and major damages

Unlike many other nearby communities, Calistoga has experienced only minor effects from recent major earthquakes, most notably in 1989 with the 7.1 magnitude Loma Prieta earthquake and in 2000 with a smaller 5.2 magnitude earthquake centered nearby in Yountville. Although felt only slightly in Calistoga, the September 3, 2000 Yountville Earthquake was the largest earthquake in this area since 1969. In that year, two earthquakes, magnitude 5.6 and 5.7, struck Santa Rosa about 80 minutes apart. These three events are the only earthquakes with magnitude greater than 5.0 to be felt in the Calistoga area since 1906. While the 1989 Loma Prieta Earthquake (magnitude 6.9) caused widespread damage in many parts of the Bay Area, it was scarcely perceptible in Calistoga.

During the last 200 years, however, several major earthquakes of Richter magnitude 7.0 or greater have occurred along active faults<sup>2</sup> in the San Francisco Region, resulting in loss of life and extensive property damage. The largest earthquake to affect the region was the Great San Francisco Earthquake of 1906, which occurred on the San Andreas Fault. That earthquake caused extensive damage throughout the region. In

<sup>1</sup> Tuff is a rock composed of volcanic ash. Rhyolite is a volcanic flow rock.

<sup>2</sup> An active fault is one that has had surface displacement within approximately the last 11,000 years.

Calistoga, many chimneys were toppled and two brick buildings were destroyed. Table SAF-2 lists significant historic earthquakes felt in Calistoga.

**Table SAF-2 RECORDED EARTHQUAKES FELT IN CALISTOGA**

Year	Date	Description
1868	May 9, 23:30	--
1871	June 21	Severe
	October 21	--
1885	February 5, 23:00	Light shock, continued for a few seconds, not severe
	February 6, 02:00	Lighter than earlier shock
1899	February 10	Quite a heavy shock, no damage, vibrations north to south, no damage.
1904	August 2, 9:50, 9:57	Very slight, no damage
1906	April 18, 05:12	Many chimneys toppled, two brick buildings destroyed (7.8)
1929	September 2, 17:45	--
	September 8, 10:45	Very slight
1931	April 3, 23:45	Feeble
	April 6, 00:07	Feeble
	May 29, 02:43	--
1932	September 22, 12:50	Weak
	September 22, 23:48	IV
	September 23, 03:45	Weak
1952	September 25, 20:35	IV, Buildings creaked, loose objects swayed, light fixtures rattled (3.2)
1958	January 31, 23:08	IV (3.4)
1959	December 15, 18:28	IV (4.1)
1962	February 28, 05:40	IV
1989	October 17, 17:04	Light shock continued for a few seconds, not severe (6.9)
2000	September 3, 01:36	IV (5.2)

Numbers in parentheses are reported Richter Scale magnitudes.

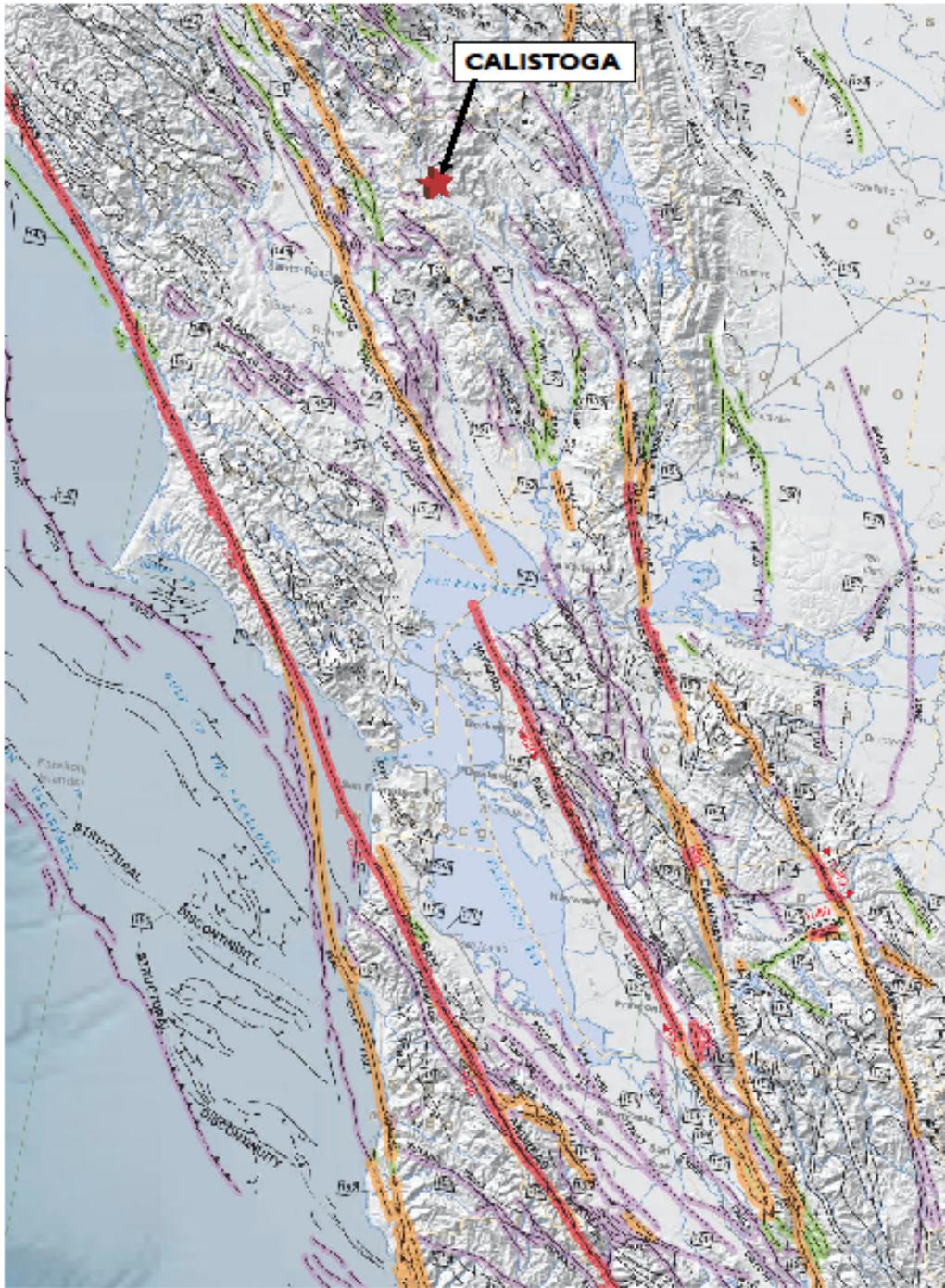
Roman numerals are Modified Mercalli intensities.

“Felt in Calistoga” does not mean the community was the epicenter of the earthquake.

Source: Napa County General Plan

Earthquakes are associated with faults. Major faults in this part of California and significant historic earthquakes are presented in Figure SAF-1. Additional information on local and regional faults is contained in Table SAF-3.

Faults in Napa County roughly parallel the northwest-southeast course of the San Andreas Fault. Principal active faults located nearby are the Cordelia, Green Valley and West Napa faults. No active faults are known to exist in Calistoga. The active fault closest to Calistoga is the West Napa fault, the north terminus of which is approximately 15 miles south of Calistoga. A portion of this fault was the cause of the Yountville earthquake, which shook the area in 2000. Another geological feature, known as the Hunting Creek fault, is actually the northward extension of the Green Valley fault. In addition to these faults, other seismic activity on more distant faults could also cause serious ground shaking in Calistoga.



**Map Reference:**  
California Geological Survey  
2010 Fault Activity Map of California

**FIGURE SAF-1**  
**FAULT ACTIVITY MAP OF CALIFORNIA**  
**NEAR THE SAN FRANCISCO BAY AREA**

**CITY OF CALISTOGA**  
2013 SAFETY ELEMENT UPDATE

TABLE SAF-3  
**ACTIVE AND POTENTIALLY ACTIVE FAULTS IN NAPA VALLEY  
AND THE REGION**

Fault	Length (km)	Distance* (km)	Moment Magnitude	Horizontal Acceleration**
<i>Napa Valley Faults</i>				
Cordelia	22	40	6.7	0.08
Green Valley	35	40	6.9	0.09
West Napa	26	24	6.5	0.30
<i>Regional Faults</i>				
Hayward	80	73	7.1	0.04
Maacama	151	6	7.6	0.70
Healdsburg-Rodgers Creek	80	26	6.9	0.30
San Andreas (Shelter Cove to San Juan Bautista)	420	62	7.8	0.20

Sources: Wesnousky, 1986 USGS Professional Paper 1360.

Wagner, D. L., and E. J. Bortugno, 1982, Geologic Map of the Santa Rosa Quadrangle, California: California Division of Mines and Geology Regional Geologic Map Series Map No. 2A (Geology), 1:250,000.

\* Distance is estimated distance in kilometers from the City to the fault.

\*\* Expressed as g force, acceleration of gravity.

The three main active faults in Napa County are capable of producing earthquakes with a Richter magnitude of up to 6.7. Such an earthquake, which is considered a moderate-sized event, would be capable of producing a substantial amount of damage. There is a high risk of an earthquake occurring in the next 50 years on one of the nearby or regional faults listed in Table SAF-3. Consequently, the community is at significant risk from earthquake activity.

Recent estimates prepared by the US Geological Survey's Working Group on California Earthquake Probabilities indicate that the overall probability of one or more large earthquakes, specifically with a magnitude 7.0 or greater, in the Bay Area is approximately 67 percent in the next 30 years. Such earthquakes are considered most likely to occur on the San Andreas, Rodgers Creek or Hayward faults. Although less information is available for the other active faults in the region, they are also considered active and capable of generating large earthquakes. Assuming that the earthquake epicenter is located on a nearby segment of one of the principal active faults, strong ground shaking intensities of approximately VII to VIII on the Modified Mercalli scale could be expected in the Calistoga area.

Earthquakes can cause a series of specific hazards, each of which is described below.

**Ground Shaking.** Earthquake ground shaking is the source of the most widespread earthquake damage. The intensity of ground shaking can be several times larger on sites underlain by thick deposits of saturated sediments than on bedrock. The amount of ground shaking at a particular site depends on:

- Characteristics of the earthquake source (magnitude, location, and area of causative fault surface).

SAF-5

- Distance from the fault.
- Amplification effects of local geologic deposits.

The US Geological Survey and the Association of Bay Area Governments have worked together to map the likely intensity of groundshaking throughout the Bay Area under various earthquake scenarios. The greatest mapped groundshaking scenario for Calistoga assumes a 6.7 magnitude earthquake on the Maacama Fault. The predicted groundshaking in Calistoga from such an earthquake is mapped in Figure SAF-2.

Liquefaction. Liquefaction occurs when the strength of saturated, loose, granular materials such as silt, sand, or gravel is dramatically reduced as a result of an earthquake. This earthquake-induced deformation transforms a stable material into a temporary fluid-like state in which solid particles are virtually in suspension, akin to quicksand.

Within Calistoga, liquefaction is a significant risk only in portions of the flat areas within the Napa River floodplain. While no record of liquefaction has been found in Calistoga, the problem could occur due to the alluvial nature of valley sediments. This potential risk is routinely assessed during site planning. The Uniform Building Code, adopted by ordinance by the City, specifies investigative measures to be incorporated into site preparation and construction.

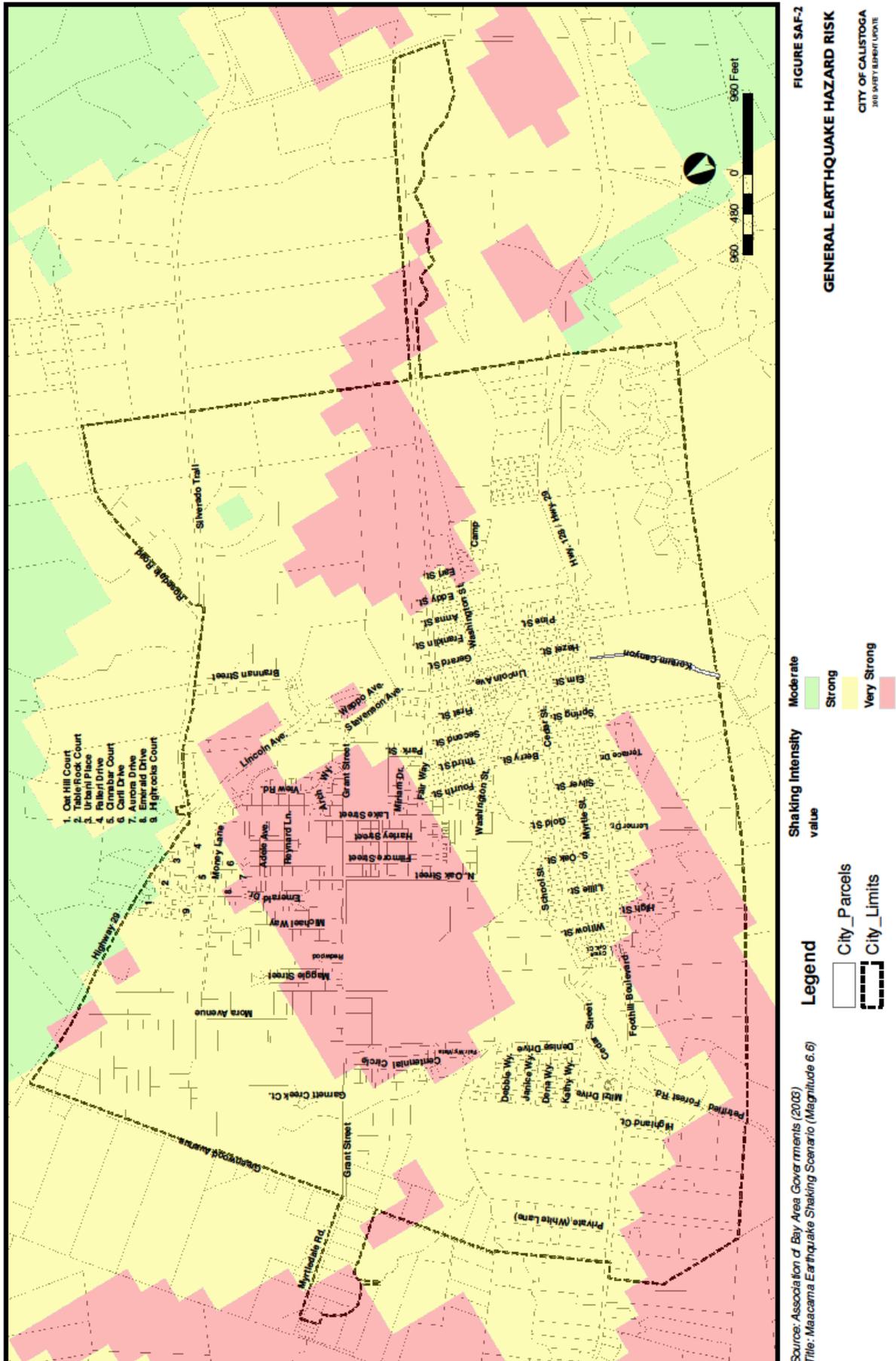
Ground Rupture. Ground rupture due to earthquakes occurs along fault lines. Since no known active faults pass through Calistoga, no portion of the City or its Planning Area is thought to be subject to ground rupture.

Land Subsidence. Land subsidence, or settlement, is a slow-to-rapid downward movement of the ground surface that can be caused by a variety of factors. Typically, significant subsidence occurs only in areas underlain by soft soils such as marsh deposits or in areas susceptible to liquefaction. Because of the depth and composition of alluvium in the Planning Area, land subsidence is likely to be restricted to instant compaction during earthquakes. Because the alluvial materials are relatively thin and granular, the risk of other types of subsidence or settlement is low.

Tsunamis. A tsunami is a large sea wave generated by earthquakes. These waves travel across the ocean at hundreds of miles an hour and are capable of causing waves cresting tens of feet high. Since Calistoga has no ocean frontage, the risk of a tsunami is very low. A tsunami at the Golden Gate opening of the San Francisco Bay, with a run up of twenty feet, is likely to occur only once every 200 years, and even that size tsunami would have no impact on Calistoga. Consequently, no action by the City is required with regard to tsunamis.

Unreinforced Masonry Buildings. Unreinforced masonry buildings, which are brick, stone or concrete buildings built without structural steel reinforcements, represent a particular earthquake hazard since they can easily fail in earthquakes.

State law requires cities to identify potentially hazardous Unreinforced Masonry (URM) buildings, develop mitigation programs to reduce the hazards and submit the results to the State Seismic Safety Commission. Some unreinforced buildings are exempt from the program under the law, including residential buildings with five or fewer living units, buildings owned by the federal or State government, and warehouses or similar buildings with few occupants, unless used for emergency services or supplies. Although historic buildings are also exempt, the Seismic Safety Commission recommends they be included in mitigation programs.



Eight URM buildings have been identified in Calistoga, many of which are in the downtown area. Three of these have been seismically upgraded. The construction type of another nine buildings needs to be verified to determine whether seismic retrofits are required.

### **Soils and Development**

A range of different soil types are found within the Planning Area. Each of the soil types has properties that may affect any development of the site that contains the soil.

Limitations to development due to soil type can range from slight (soil properties are favorable for the specified use; any limitation is minor and easily overcome) to severe (soil properties or site features are so unfavorable or difficult to overcome that a major increase in construction effort, special design or intensive maintenance is required). The Calistoga Planning Area has no soil types that create severe development limitations that could not be addressed through appropriate engineering techniques. Despite this, it remains an important part of the planning approval process to ensure that appropriate soil studies and engineering are carried out prior to development to ensure that soil-type limitations are adequately addressed.

### **Landslides and Ground Failure**

Within and around the Napa Valley, landslides are common on most of the hills and mountains as loose material moves down the slopes. Some of the natural causes of this instability are earthquakes, weak materials, stream and coastal erosion, and heavy rainfall. In addition, certain human activities tend to make the earth materials less stable and increase the chance of ground failure. Activities contributing to instability include extensive irrigation, poor drainage or ground-water withdrawal, removal of stabilizing vegetation and over-steepening of slopes by undercutting them or overloading them with artificial fill. These causes of failure, which normally produce landslides and differential settlement, are augmented during earthquakes by strong ground motion.

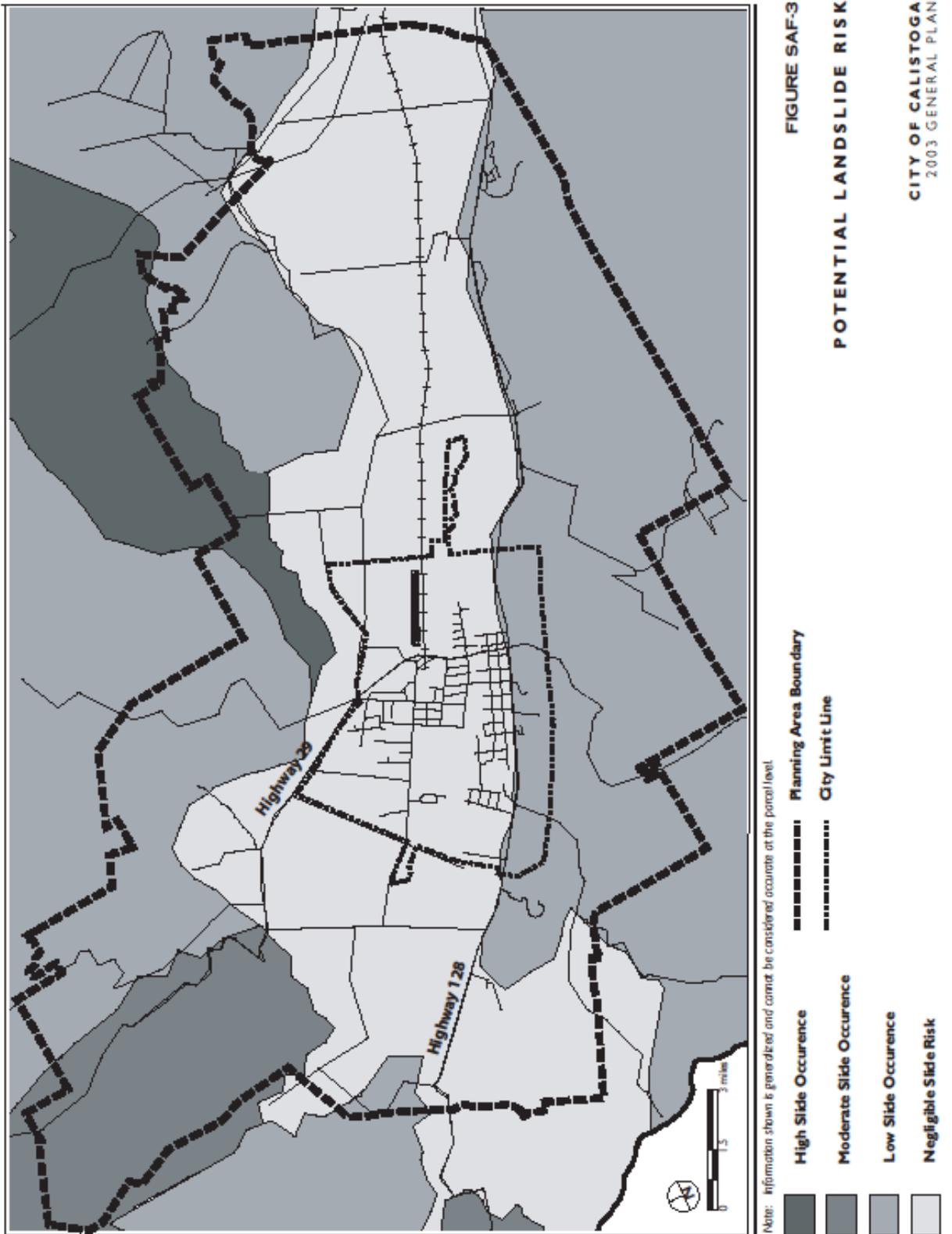
Figure SAF-3 provides a general indication of slope stability. It indicates four levels of slope-stability for Calistoga and its Planning Area. Since a majority of the Planning Area is on the flat valley bottom, it has a negligible slide risk. Land in these areas is generally stable and there is a low risk to life and property from slide occurrence. Most of the lands surrounding the City, where the topography is gently sloping, are areas of low slide occurrence and low risk to life and property.

Small areas near the outer northern, eastern, and western boundaries of the Planning Area have moderate to high slide occurrence risk. Landslides have been experienced in the past 25 years in areas to the southwest of Foothill Boulevard due to excessive rainfall, tree removal and grading. The danger from mudslides, also known as debris flows, is similar to that for landslides.

The Uniform Building Code requires that potential landslide risk be assessed during site planning. The City also routinely requires geotechnical investigations and construction inspections for development.

### ***B. Key Findings***

1. The overall level of risk associated with geological hazards, including ground shaking and other earthquake hazards, liquefaction and landsliding, creates an important planning consideration in all parts of Calistoga.



2. Five URM buildings have been identified; unless retrofitted, they pose a high risk of destruction during earthquakes. The construction type of another nine buildings needs to be verified to determine whether seismic retrofits are required.
3. While construction engineering is generally able to compensate for particular development constraints presented by local soil types, it remains an important responsibility of the City to ensure that soils are adequately investigated and that buildings and sites appropriately engineered prior to development. The use of drought-tolerant plants for landscaping is also an important means of minimizing earth movement due to watering.
4. The Uniform Building Code, which specifies requirements for seismic design, site planning, foundations, and drainage, is the most effective mechanism to address geologic hazards that exist in Calistoga.

***C. Goals, Objectives, Policies and Actions***

<b>Goal SAF-1     Reduce risk to the community from earthquakes and other geologic hazards.</b>
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**Objective SAF-1.1 Enforce measures related to site preparation and building construction that protect life and property from seismic hazards.**

Policies

- P1. All construction in Calistoga shall conform with the Uniform Building Code, which specifies requirements for seismic design, foundations, and drainage.

Actions

- A1. Adopt each new version of the Uniform Building Code to incorporate recent technical knowledge and construction practices that further improve structural safety.
- A2. Work with owners of seismically-unsafe buildings and structures, including unreinforced masonry buildings.

**Objective SAF-1.2 Regulate new land development to prevent the creation of new geologic hazards.**

Policies

- P1. Development in or adjacent to hillside areas shall minimize geologic hazards by undertaking site-specific geotechnical investigations and conducting geotechnical inspections during construction.
- P2. In areas with significant identified geological hazards, development shall be sited and designed to minimize exposure to damage resulting from geological hazards and to minimize the aggravation of off-site geological hazards.
- P3. As part of site planning review, a geologic/seismic report that includes analysis of soils foundation, grading, erosion, and sediment control shall be required under any of the following circumstances:
- When warranted by the results of a geologic/seismic evaluation.

- For new residential developments, roads or highways proposed to be located on parcels which contain identifiable landsliding or slumps.
  - For all proposed structures and facilities open to the public and serving 100 persons or more.
  - For projects proposed in hazardous geologic areas.
- P4. Where alterations such as grading and tree removal are made to hillside sites, rendering slopes unstable, planting of vegetation shall be required to protect structures at lower elevations.
- P5. The use of drought-tolerant plants for landscaping in the hills shall be required as a means to eliminate the need for supplemental watering, which can promote earth movement.

## II. FLOODING AND INUNDATION

### A. *Background Information*

#### **Napa River Flooding**

The Napa Valley is subject to extensive flooding from the Napa River and its tributaries. This flooding occurs primarily due to heavy rains, generally in the period from December through March. Since 1862, more than 27 major floods have plagued the Napa Valley, resulting in significant loss and damage to property. Calistoga experienced major flooding in 1983, 1986, 1995, 1997 and 1998, causing damage to property in developed areas.

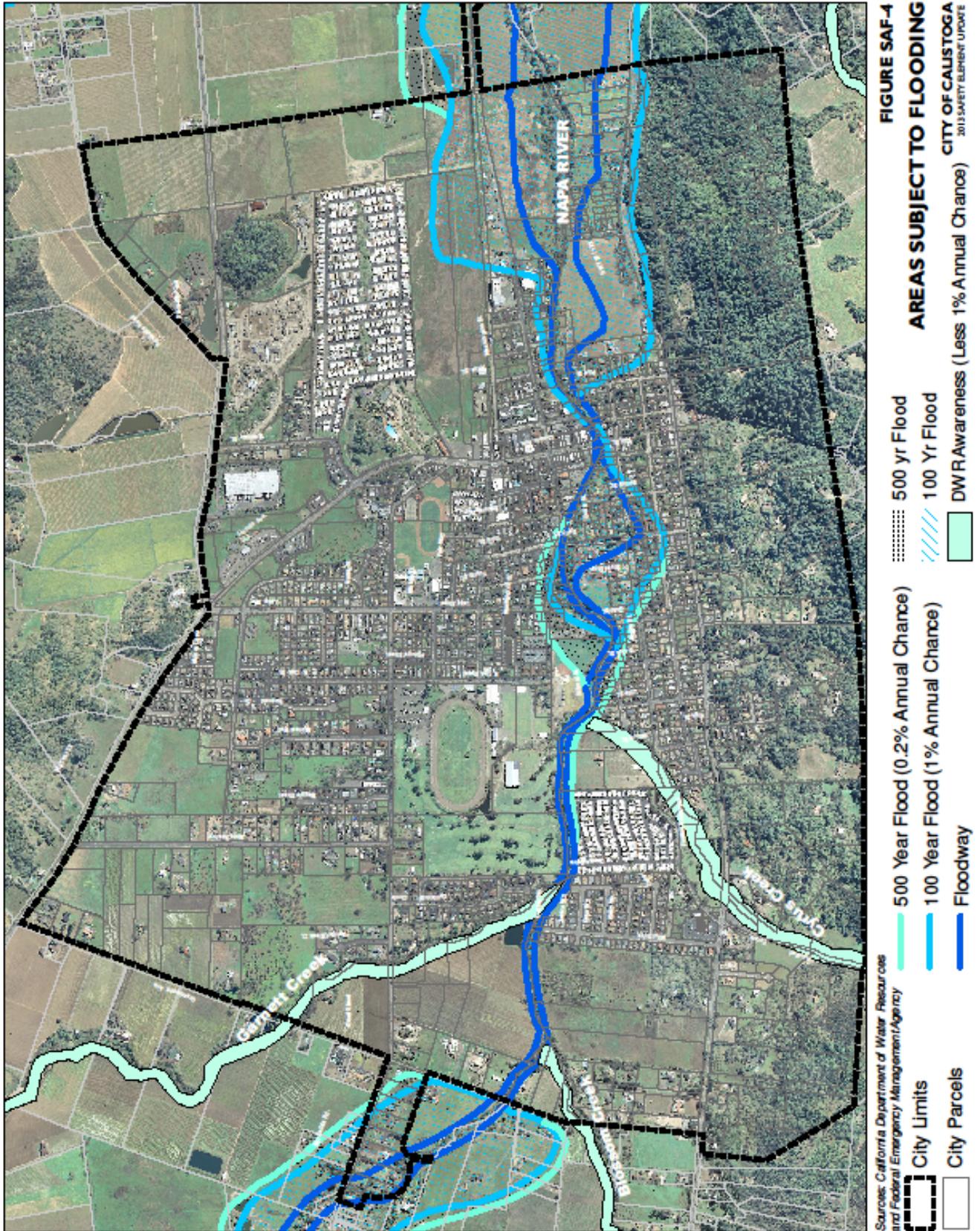
The Federal Emergency Management Agency (FEMA) provides guidance for floodplain management. FEMA manages the National Flood Insurance Program (NFIP), providing insurance to the public in communities that participate in the program. Property owners following FEMA regulations qualify for federal flood insurance coverage.

FEMA uses the concept of the *100-year flood* in its analysis. The 100-year flood represents a flood that is likely to occur only once every 100 years, or, stated another way, which has a one percent chance of occurring during any particular year. This event is also termed the *base flood*. The 100-year floodplain is the area that has a one percent chance of being inundated during any particular 12-month period. This term does not mean that such flooding will only occur once in a century; it is possible that the 100-year flood will occur more often.

The 100-year floodplain is divided into two parts: the floodway and the fringe. The floodway is the channel of a river and the adjacent land areas large enough to convey the 100-year flood with no more than a one-foot rise in water surface. The floodway fringe makes up the rest of the floodplain. Areas of shallow flooding may occur to a depth of up to three feet within the fringe. Within certain constraints, development is typically allowed to encroach in this portion of the floodplain. FEMA's 2006 Flood Insurance Rate Map (FIRM) delineates the 100-year floodplain and floodway for Calistoga (see Figure SAF-4).

The most significant areas within the city limits that are subject to 100-year flooding are:

- Areas around Silver Street, from about Gold Street to Spring Street, between the Napa River and Myrtle Street.



- A crescent-shaped area around Washington Street, starting southeast of Oak Street, rising up Lake Street and Fourth Street, and extending almost to Second Street.
- From Pine Street easterly to the city limits, between the Napa River and Foothill Boulevard.
- From Pine Street easterly to the city limits, between the Napa River and north of Washington Street

Existing development in these areas include single- and multi-family dwellings, bed and breakfast inns and some commercial businesses on lower Washington Street that back up to the river. Public facilities located in these areas include Calistoga Elementary School, the City's corporation yard and the City's wastewater treatment facility, lift stations and storage ponds. Several critical aerial water lines also cross over the Napa River.

Future development in these areas could occur on privately-owned property that is currently zoned for industrial, commercial and residential purposes. No new critical public facilities or roads are planned in these locations.

### **Other Areas Subject to Flooding**

Figure SAF-4 also depicts flood hazard areas that have the potential for development in areas that are not mapped by the NFIP. These floodplains are shown simply as flood prone areas, without specific depths. The intent of the Awareness Floodplain Mapping is to provide the community and residents an additional tool in understanding potential flood hazards currently not mapped as a regulated floodplain. In Calistoga, these flood hazard areas have been identified along Cyrus Creek and Blossom Creek.

### **Flood Control Regulations**

The Floodplain Management chapter of the Calistoga Municipal Code includes the following regulations that are intended to minimize public and private losses due to flood conditions.

- New and substantially-improved residential construction in the floodplain must elevate the lowest floor, including basement, two feet above the base flood elevation.
- New and substantially-improved non-residential construction must comply with the elevation requirement or be flood-proofed below the base flood elevation so that the structure is watertight with walls substantially impermeable to the passage of water, and have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy.
- New construction and substantial improvements with fully enclosed areas below the lowest floor (excluding basements) that are usable solely for parking of vehicles, building access or storage must be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwater.
- New and replacement water supply and sanitary sewage systems must be designed to minimize or eliminate infiltration of flood waters into the systems, and discharge from the systems into flood waters. On-site waste disposal systems must be located to avoid impairment to them, or contamination from them during flooding.
- Encroachments, including fill, new construction, substantial improvement, and other new development, are prohibited within the floodway unless a registered professional engineer certifies that encroachments will not result in any increase in the base flood elevation during the occurrence of the base flood discharge.

### **Flood Control Efforts**

The Napa County Flood Control and Water Conservation District and the US Army Corps of Engineers are implementing the Napa River Flood Protection Project, which is intended to minimize flood dangers on the downstream portions of the Napa River. The project is based on a “living river” strategy that relies on integrated flood control, combining watershed management and ecosystem protection to avert the threat of future flooding. Project features include dike removal, channel modifications, biotechnical bank stabilization, a dry bypass channel, limited set-back levees and floodwalls, bridge relocations, pump stations, utility relocations, building demolition, maintenance roads, and recreation trails.

The project is being partially funded through a half-cent sales tax measure (Measure A) approved by Napa County voters in 1998. By 2018, the sales tax is projected to generate over \$120 million (1998 dollars) for the living river strategy. All sales tax revenues in excess of bond debt service requirements will be allocated to Napa County jurisdictions to finance local watershed projects. During the entire 20-year term of Measure A revenues, Calistoga’s share is expected to be approximately \$11 million, but could vary up or down, depending upon continuously changing sales tax and interest rate assumptions.

Funds from the sales tax have been allocated to Calistoga projects, including flood protection and drainage improvements in the Grant Street area, the replacement of a culvert that had collapsed at Fischer Street and Lake Street, and other critical areas to protect residents and businesses from flooding.

### **Dam Failure**

Calistoga is within the inundation area of the Kimball Reservoir. If the reservoir’s dam were to fail, inundation could occur in the northern part of the Planning Area as far south as Tubbs Lane, as shown in Figure SAF-5. Water from the overflow pond of the Kimball Dam would extend south as far as Tubbs Lane. South of Tubbs Lane, dam failure would cause the Napa River to overflow its banks through the rest of the City. Inundation data for the downstream part of the Planning Area in the event of a Kimball Reservoir failure is unavailable. Measure A funding is being used to stabilize Kimball Reservoir.

### **Seiche**

A seiche is a wave generated in a bay or lake, which can be compared to the back-and-forth sloshing of water in a tub. Seiches can be caused by winds, changes in atmospheric pressure, underwater earthquakes, or landslides into the water. Bodies of water including reservoirs, ponds, and swimming pools are likely to experience seiche waves up to several feet in height during a strong earthquake. The risk of a serious seiche occurring in Calistoga is quite low. Consequently, the City need not include actions with regard to seiche in the Public Safety Element.

### ***B. Key Findings***

1. Areas of the City along the Napa River between Petrified Forest Road and the eastern city limits, and along Cyrus Creek and Blossom Creek are subject to flooding.
2. Parts of Calistoga could be inundated by a failure of Kimball Dam.

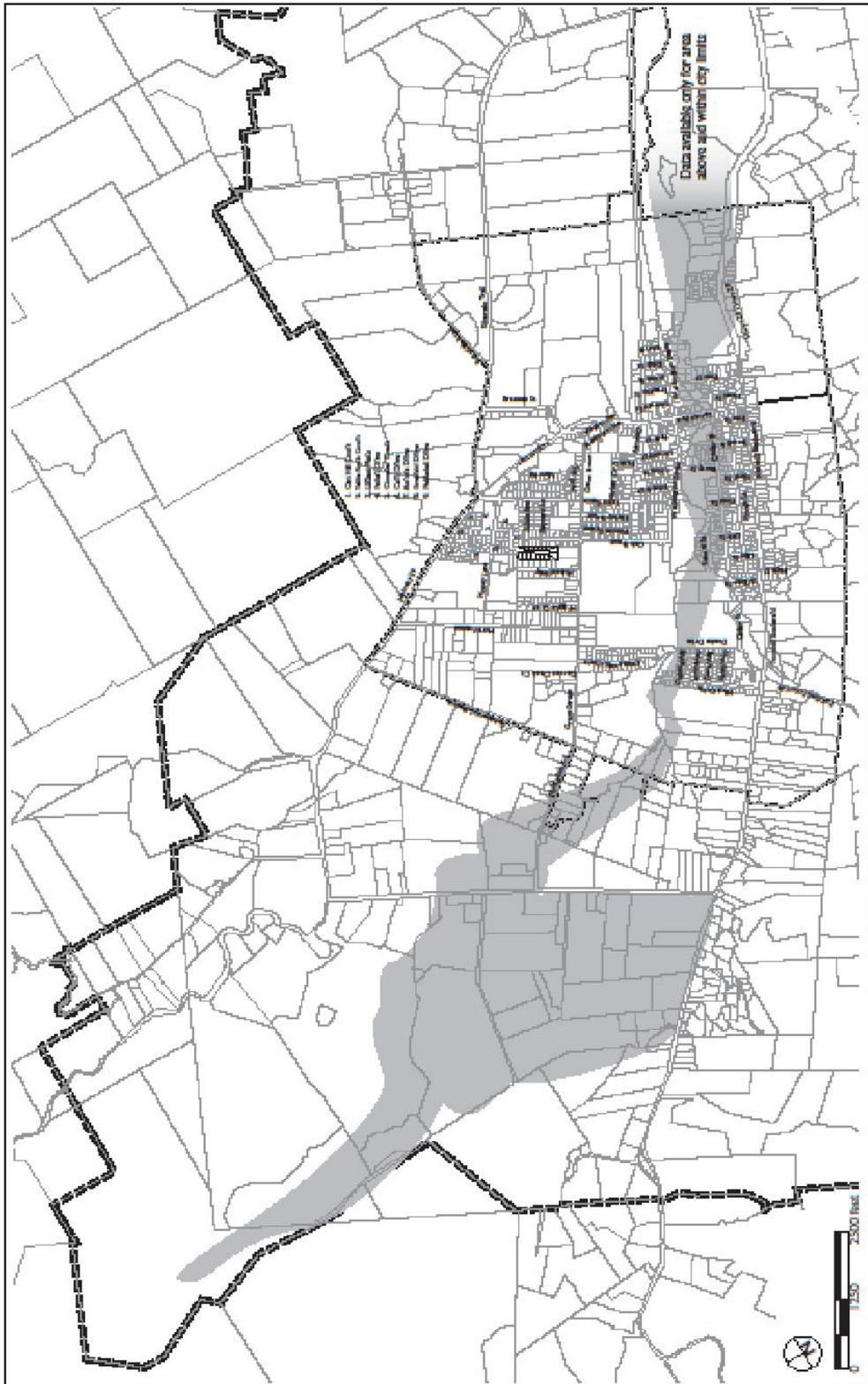


FIGURE SAF-5

PROJECTED KIMBALL DAM INUNDATION AREA

CITY OF CALISTOGA  
2003 GENERAL PLAN

Planning Area Boundary  
City Limit Line

**C. Goals, Objectives, Policies and Actions**

**Goal SAF-2 Reduce hazards related to flooding and inundation.**

**Objective SAF-2.1 Minimize risks of development located in the Napa River floodplain.**

Policies

- P1. No construction shall be permitted in the floodway as mapped by FEMA and modified in subsequent site-specific studies

Actions

- A1. Continue to administer the City's Floodplain Management regulations.
- A2. Encourage property owners in Calistoga to purchase National Flood Insurance, which reduces the financial risk from flooding and mudflows.

**Objective SAF-2.2 Minimize risks associated with potential failure of Kimball Dam.**

Actions

- A1. Maintain an evacuation plan for all land within areas subject to inundation downstream from Kimball Dam that could fail as a result of an earthquake.
- A2. Encourage State and federal governments to develop dam safety programs including the preparation of contingency plans for urbanized areas in the proximity of dams.

**III. WILDLAND FIRES**

This section addresses wildland fires. Additional information and policies regarding urban fires are contained in the Fire Protection Section of the Public Services Element.

**A. Background Information**

With its Mediterranean climate, Calistoga and its Planning Area experience a long, dry summer with high wildland fire hazards. In 1964, the community was threatened by a wildfire that led to the evacuation of its residents. The Hanley Fire destroyed 35 to 45 homes in the Calistoga area and burned 52,000 acres in an area between Mt. Saint Helena, Knights Valley and Santa Rosa.

The risk of wildfire hazard is related to a combination of factors, including winds, temperatures, humidity levels, and fuel moisture content. Of these four factors, wind is the most critical. Steep slopes also contribute to fire hazard by intensifying the effects of wind, and making fire suppression difficult. Features in some parts of the Planning Area, including highly flammable vegetation, warm and dry summers, rugged topography and occasional human presence create a situation that results in potential wildland fires.

To quantify this potential risk, the California Department of Forestry and Fire Protection (CAL FIRE) has developed a Fire Hazard Severity Scale that utilizes the following criteria to evaluate and designate potential fire hazards in wildland areas: fuel loading (vegetation), fire weather (winds, temperatures, humidity levels and fuel moisture contents) and topography (degree of slope).

Wildland fire hazards in the Planning Area are shown in Figure SAF-6. As shown in this figure, Calistoga’s low-lying, flat areas are outside of the wildland fire hazard risk zone. However, nearly all of the area south of Foothill Boulevard, which is characterized by steep, wooded slopes, is located within the very high fire hazard severity zone, while the area north of the Silverado Trail/Lincoln Avenue intersection is primarily classified in the high fire hazard severity zone.

New development in very high and high fire hazard severity zones is required by state law to utilize fire-resistant building materials and provide adequate access for emergency vehicles. California Fire Code Chapter 49 establishes fire safety requirements for new construction in the wildland-urban interface that have incorporated into the Calistoga Municipal Code. New construction in these zones is required to adhere to guidelines for defensible space, vegetation management in a fire-safe manner, financial responsibility for maintenance of landscaping and open parcels (forest), and other measures. In addition, a wildfire behavior model is required to specify building setbacks and fire resistive ratings.

***B. Key Finding***

1. The majority of the City is classified as being at low risk from wildland fires because of its flat topography and reduced vegetation. However, higher wildfire hazards exist south of Foothill Boulevard and in steeply sloping areas surrounding the City.

***C. Goals, Objectives, Policies and Actions***

<b>Goal SAF-3    Protect lives and property from wildland fire hazard.</b>
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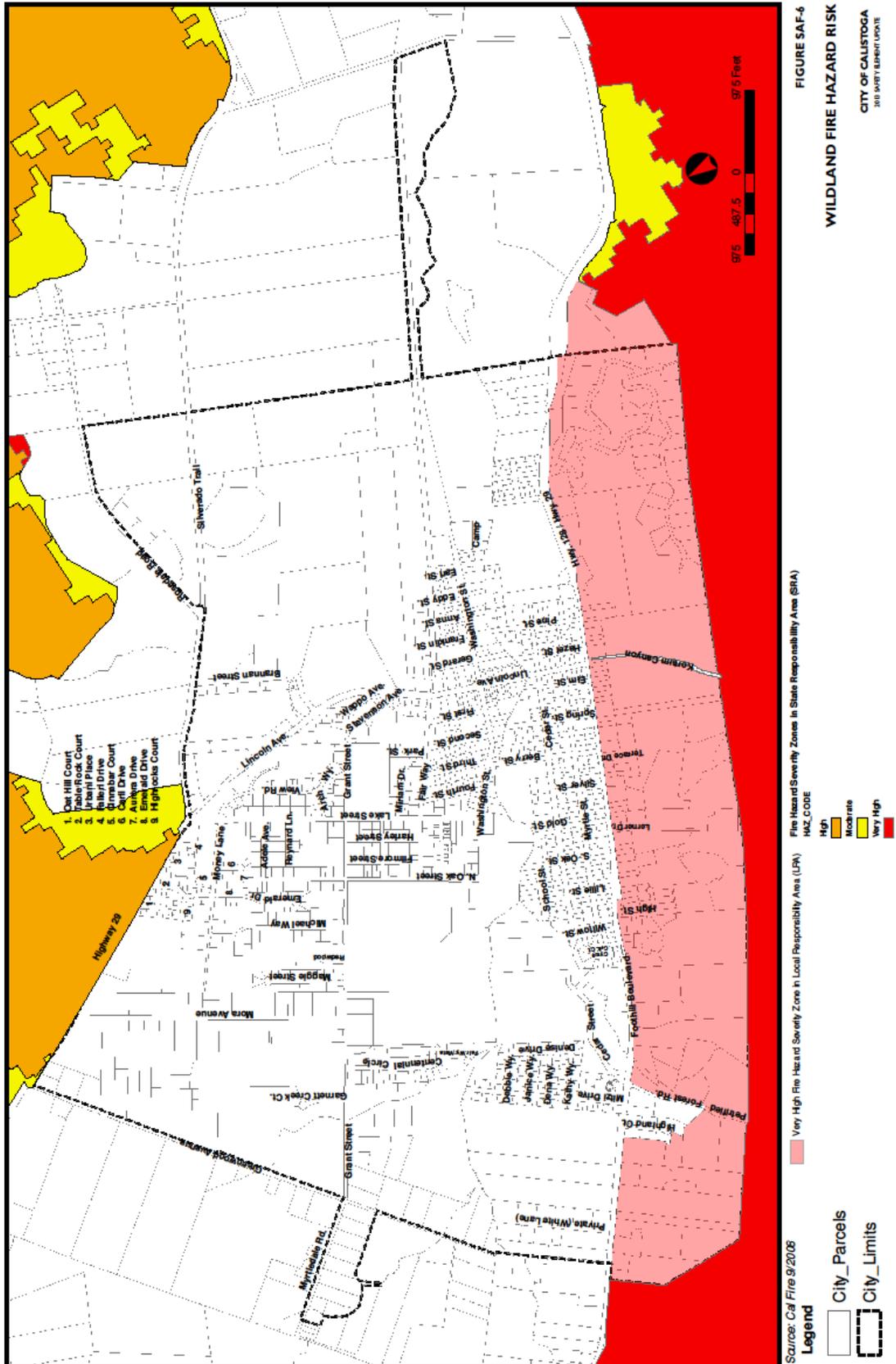
**Objective SAF-3.1 Plan new developments with wildland fire hazards in mind.**

Policies

- P1. All development in high and very high fire hazard severity zones shall meet the State’s minimum “defensible space” clearance requirements.
- P2. Plans for development in areas of potential wildland fire hazard shall be reviewed for their incorporation of design measures to reduce wildland fire risk.
- P3. New roadways and driveways in wildland fire hazard areas shall be designed and constructed to be adequate in terms of width, radius, and grade to facilitate access by fire-fighting apparatus.

Actions

- A1. Continue to enforce wildland fire control measures.



## IV. HAZARDOUS MATERIALS AND WASTE

### A. Background Information

Under State law, planning for the management of hazardous waste is the responsibility of county governments. Napa County is in the process of creating a Hazardous Waste Management Plan to address:

- Waste reduction and onsite treatment.
- Siting of off-site hazardous waste facilities.
- Public and industry education.
- Cleanup of contaminated sites.
- Emergency response procedures.

The Napa County Department of Environmental Management maintains an up-to-date list of known hazardous waste sites within the County. In 2013, there were six known hazardous waste sites within the City of Calistoga, which are shown in Table SAF-4. Information on this list is shared by the City with members of the public who may be concerned about these sites, particularly when they are for sale or lease by prospective purchasers or tenants.

**TABLE SAF-4 LOCATION AND STATUS OF  
KNOWN CONTAMINATED SITES WITHIN CITY LIMITS**

Name	Address	Contamination Status
Calistoga Auto Body	1020 B Foothill Blvd	Mitigated
Conoco Phillips	1202 Foothill Blvd	Mitigated
Calistoga Depot	1458 Lincoln Ave	Mitigated
Fast & Easy Market	1108 Lincoln Avenue	Mitigated
The Customer Company	940 Petrified Forest Road	Mitigated
City Police Facility	1235 Washington Street	Mitigated

Source: Napa County Environmental Health Division, GIS Public Browser, accessed 3/8/13

Cleanup of sites that exceed State standards for contamination by toxic materials is required prior to development or reuse of the site. No cleanup requirement exists where there is no potential for site disturbance, such as grading. The cleanup process is monitored by the State Department of Health Services

### B. Key Findings

1. Under State law, the County of Napa is responsible for hazardous materials and wastes. The County is currently preparing a Hazardous Waste Management Plan. Once this County-wide plan has been completed, its recommendations should be adopted as necessary by the City.
2. There are six known hazardous waste sites in Calistoga, all of which have been remediated.

*C. Goals, Objectives, Policies and Actions*

**Goal SAF-4    Protect the community from the harmful effects of hazardous materials.**

**Objective SAF-4.1 Minimize Calistoga residents' exposure to the harmful effects of hazardous materials and waste.**

Actions

- A1. Monitor the development by the County of the Napa County Hazardous Waste Management Plan with regard to its effects on Calistoga.
- A2. Adopt the Hazardous Waste Management Plan once it is completed by the County.
- A3. Coordinate with the County Office of Emergency Services on the implementation of the Napa County Hazardous Materials Emergency Response Plan.
- A4. Consider the potential for the production, use, storage, and transport of hazardous materials when reviewing new development, issuing business permits and approving changes in business operations. Provide for reasonable controls on such hazardous material use.

**IV. AIRPORT SAFETY**

***A. Background Information***

The Gliderport is currently closed. However, the Land Use Element contains policy language related to re-establishment of its use. If it were to reopen, State law establishes safety standards related to both its operation and to land use decisions in the area. Prior to reopening, the State would have to recertify the gliderport and the operators would have to submit a general plan to the Napa County Airport Land Use Commission (ALUC) for certification. Safety standards applicable to the Gliderport are contained in the ALUC Land Use Compatibility Plan and the California Airport Land Use Planning Handbook.

The ALUC is charged by the State with ensuring that airports operate safely by avoiding operational conflicts and encroachment of urban uses in needed safety zones. When the Gliderport was in operation, planes were required to take off towards the southwest, away from the populated part of Calistoga, and to land from the same direction. The ALUC also maintained the clear zone around the gliderport. A clear zone is the area at the end of a runway where no development is permitted. This zone, which provides an unobstructed landing area, is considered a necessary precaution in the event of engine failure or other problems upon take off. The length required of a clear zone depends on the type of planes that fly at a particular airport. The planes that flew to and from the gliderport were small aircraft that did not require as large a clear zone as larger commercial airports. A new clear zone would be established if the Gliderport were to reopen for aviation use.

Calistoga is also within the distant flight path of Travis Air Force Base in Solano County. Travis Air Force Base is approximately 40 miles from Calistoga so the altitudes at which its aircraft fly over Calistoga area do not constitute a particular hazard.

**B. Key Findings**

1. The Gliderport is currently closed. Should it revert to its use as an airport, safety concerns related to airport operations will have to be addressed.

**C. Goals, Objectives, Policies and Actions**

<b>Goal SAF-5 Minimize risks associated with potential future aircraft operations at the Gliderport.</b>
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**Objective SAF-5.1 Regulate land use within the vicinity of the Gliderport site.**

Policies

- P1. All construction in Calistoga shall be consistent with any required setbacks and height restrictions for the Gliderport as promulgated by the Airport Land Use Commission.

Actions

- A1. If Gliderport operations are reinstated, adopt an airport safety ordinance to address height limitations, building locations, approach zone(s) and land use restrictions for the lands affected by the operation of the airport for property designated for airport use.

**V. EMERGENCY PREPAREDNESS**

**A. Background Information**

As required by State law, Calistoga has established emergency preparedness procedures to respond to a variety of natural and man-made disasters that could confront the community. The City's Fire Department coordinates various tasks associated with an emergency, such as an earthquake or flood, including mitigation, preparedness, response, and recovery. The main emergency services responsibilities of the Department are to:

- Establish effective preparation activities through training and education for City government and the public in order to prepare for emergencies and disasters.
- Identify potential disaster situations and provide mitigation solutions.
- Design and practice effective response plans for emergencies or disasters.
- Design effective recovery activities that include both public and private sectors, including coordination with local jurisdictions, the County, the State, and federal agencies for both financial and material resources.
- Supplement operating procedures of City departments and provide for coordination between these departments in emergency situations.
- Provide for the continuity of government during emergencies.

**B. Key Finding**

1. Emergency preparedness is an important City function that should be maintained and enhanced.

*C. Goals, Objectives, Policies and Actions*

**Goal SAF-6 Prepare Calistoga for emergencies.**

**Objective SAF-6.1 Prepare City emergency procedures in the event of potential natural or man-made disaster.**

Policies

- P1. Foothill Boulevard/Highway 128 and Lincoln Avenue/Highway 29 are designated emergency evacuation routes.

Actions

- A1. Conduct periodic mock exercises using emergency response systems to test the effectiveness of City procedures.

**Objective SAF-6.2 Promote public safety through public education programs.**

Actions

- A1. Support earthquake preparedness activities such as strapping water heaters, organizing periodic citywide earthquake drills, providing first aid training and disaster preparedness classes to neighborhood groups, encouraging residents and businesses to stockpile emergency food, water and medical supplies.
- A2. Publicize and distribute the City's Emergency Services Plan to the general public and affected agencies.
- A3. Encourage schools, mobile home park associations and other interested groups to teach first aid and disaster preparedness.

# General Plan Fire Safety Element

## Standard Recommendations

May 9, 2013

(Working document)

State Board of Forestry and Fire Protection



### Contents

Purpose and Background

Methodology for Review and Recommendations

Standard List of Recommendations

**Purpose and Background:** The State Board of Forestry and Fire Protection (BOF/Board) is required to review and make recommendations to the fire safety element of general plan updates in accordance with Government Code (GC) §65302.5. The review and recommendations apply to those general plans with State Responsibility Area (SRA) (Public Resources Code 4125) or Very High Fire Hazard Severity Zones (VHFHSZ) (GC 51175).

The statutory requirements for the Board review and recommendations pursuant to GC 65302.5 (a)(1) and (2), and (b) are as follows:

- *“The draft elements...to the fire safety element of a county’s or a city’s general plan...shall be submitted to the Board at least 90 days prior to... the adoption or amendment to the safety element of its general plan [for each county or city with SRA or VHFHSZ].”*
- *“The Board shall... review the draft or an existing safety element and report its written recommendations to the planning agency within 60 days of its receipt of the draft or existing safety element....”*
- *“Prior to adoption of the draft element..., the Board of Supervisors... shall consider the recommendations made by the Board... If the Board of Supervisors...determines not to accept all or some of the recommendations...,” the Board of Supervisors... shall communicate in writing to the Board its reasons for not accepting the recommendations.*

**Methodology for Review and Recommendations:** The Board established a standardized method to review the safety element of general plans. The methodology includes 1) examining the general plan for inclusion of factors that are important for mitigation of fire hazard and risks, and 2) making recommendations related to these factors. The evaluation factors and recommendations were developed using CAL FIRE technical documents and input from local fire departments.

Enclosed are the entire set of recommendations suggested by the Board’s for any entity. Each entity should evaluate their general plan using the factors and include the appropriate recommendations from the list as part of the general plan.  
flow chart here?

# Standard List of General Plan Safety Element Recommendations

## 1.0 Wildfire Protection Planning

- 1.1 General Plan (GP) References and Incorporates County or Unit Fire Plan:  Yes  Partial  No

**Recommendation:** Identify, reference or create (if necessary) a fire plan for the geographic scope of the General Plan. General Plan (GP) should incorporate the general concepts and standards from any county fire plan, fire protection agency (federal or state) fire plan, and local hazard mitigation plan.

**Recommendation:** Ensure fire plans incorporated by reference into the GP contain evaluations of fire hazards, assessment of assets at risk, prioritization of hazard mitigation actions, and implementation and monitoring components.

## 2.0 Land Use Planning:

- 2.1 Goals and policies include mitigation of fire hazard for future development.  Yes  Partial  No

**Recommendation:** Establish goals and policies for specific ordinances addressing evacuation and emergency vehicle access; water supplies and fire flow; fuel modification for defensible space; and home addressing and signing.

**Recommendation:** Develop fire safe development codes used as standards for fire protection for new development in State Responsibility Area (SRA) within the entity's jurisdiction that meet or exceed statewide standards in 14 California Code of Regulations Section 1270 et seq.

**Recommendation:** Adopt, and have certified by the BOF, local fire safe ordinances which meet or exceed standards in 14 CCR § 1270 for State Responsibility Area.

**Recommendation:** Specify the local ordinances, code sections, or regulations addressing the above standards, particularly any ordinances that address right-of-way, easement, and other reasonable offsite and onsite improvements for a division of land which qualifies for a Parcel Map rather than a Tentative/Final Map under the Subdivision Map Act.

- 2.2 Disclosure of wildland urban interface hazards including Fire Hazard Severity Zones designations:  Yes  Partial  No

**Recommendation:** Specify whether the entity has a Very High Fire Hazard Severity Zones (VHFHSZ) designation pursuant GC 51175 and include a map of the zones that clearly indicates any area designated VHFHSZ.

**Recommendation:** Adopt CAL FIRE recommended Fire Hazard Severity Zones including model ordinances developed by the Office of the State Fire Marshal for establishing VHFHSZ

areas.

**Recommendation:** Discuss and/or include local fire hazard maps.

- 2.3 The design and location of new development provides for adequate infrastructure for the safe ingress of emergency response vehicles and simultaneously allows civilian egress during an emergency: Yes Partial No

**Recommendation:** Develop a policy that approval of parcel maps and tentative maps is conditional base on meeting zoning requirements, including road widths and fire safe development codes.

**Recommendation:** Develop pre-plans for fire prone areas that address civilian evacuations to temporary safety locations.

- 2.4 When approving parcel maps and use permits, consideration is given to providing adequate water supply infrastructure that meets zoning needs. Yes Partial No

**Recommendation:** Develop a policy that approval of parcel maps is conditional based on meeting zoning requirements and fire safe development codes.

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### 3.0 Housing/structures and neighborhoods:

- 3.1 Incorporation of current fire safe building codes. Yes Partial No

**Recommendation:** Adopt building codes for new development in State Responsibility Areas or incorporated areas with VHFHSZ that are established by the Office of the State Fire Marshal in Title 19 and Title 24 CCR, referred to as the “Wildland Urban Interface Building Codes”.

- 3.2 Identification and actions for substandard fire safe housing and neighborhoods relative to fire hazard area. Yes Partial No

**Recommendation:** Identify and map existing housing structures that do not conform to contemporary fire standards in terms of building materials, perimeter access, and vegetative hazards in VHFHSZ or SRA by fire hazard zone designation.

**Recommendation:** Identify plans and actions to improve substandard housing structures and neighborhoods. Plans and actions should include structural rehabilitation, occupancy reduction, demolition, reconstruction, neighborhood –wide fuels hazard reduction projects, community education, and other community based solutions.

**Recommendation:** Identify plans and actions for existing residential structures and neighborhoods, and particularly substandard residential structures and neighborhoods, to be improved to meet current fire safe ordinances pertaining to access, water flow, signing, and vegetation clearing.

- 3.3 Consideration of occupancy category effects on wildfire protection. Yes Partial No

**Recommendation:** Ensure risks to uniquely occupied structures, such as seasonally occupied homes, multiple dwelling structures, or other structures with unique occupancy characteristics, are considered for appropriate and unique wildfire protection needs.

- 3.4 Fire engineering features for structures in VHFHSZ. Yes Partial No

**Recommendation:** Ensure new development proposals contain specific fire protection plans, actions, and codes for fire engineering features for structures in VHFHSZ. Examples include codes requiring automatic sprinklers in VHFHSZ.

#### 4.0 **Conservation and Open Space:**

- 4.1 Identification of critical natural resource values relative to fire hazard areas. Yes Partial No

**Recommendation:** Identify critical natural resources and other “open space” values within the geographic scope of the GP. Determine maximum acceptable wildfire size, fire prevention plans, emergency response plans and initial attack suppression success rates for protection of these areas and values.

- 4.2 Inclusion of resource management activities to enhance protection of open space and natural resource values. Yes Partial No

**Recommendation:** Develop plans and action for vegetation management that provides fire damage mitigation and protection of open space values. Plans should address protection of natural resource financial values, establishment of fire resilient natural resources, protection of watershed qualities, and protection of endangered species habitats. Actions should consider prescribed burning, fuel breaks, vegetation thinning and removal

**Recommendation:** Establish goals and policies for reducing the wildland fire hazards within the entity’s boundaries and on adjacent private wildlands, federal lands, vacant residential lots, and greenbelts with fire hazards that threaten the entity’s jurisdiction.

- 4.3 Mitigation for unique pest, disease and other forest health issues leading to hazardous situations. Yes Partial No

**Recommendation:** Establish goals and policies that address unique pest, disease, exotic species and other forest health issues in open space areas for purposes of reducing fire hazard and supporting ecological integrity.

- 4.4 Integration of open space into fire safety effectiveness. Yes Partial No

**Recommendation:** Establish goals and policies for incorporating systematic fire protection improvements for open space. Specifics policies should address facilitation of safe fire suppression tactics, standards for adequate access for firefighting, fire mitigation planning with agencies/private landowners managing open space adjacent to the GP area, water sources for fire suppression, and other fire prevention and suppression needs.

- 4.5 Urban forestry plans relative to fire protection. Yes Partial No

**Recommendation:** Ensure residential areas have appropriate fire resistant landscapes and discontinuous vegetation adjacent to open space or wildland areas.

**Recommendation:** Evaluate and resolve existing laws and local ordinances which conflict with fire protection requirements. Examples include conflicts with vegetation hazard reduction ordinances and listed species habitat protection requirements.

## 5.0 Circulation and Access:

- 5.1 Adequacy of existing and future transportation system to incorporate fire infrastructure elements. Yes Partial No

**Recommendation:** Establish goals and policies for proposed and existing transportation systems to facilitate fire infrastructure elements such as turnouts, helispots and safety zones.

- 5.2 Adequate access to high hazard wildland/open space areas. Yes Partial No

**Recommendation:** Establish goals and policies for high or very high fire hazard severity zones adequate access that meets or exceeds standards in 14 CCR 1270 for lands with no structures, and maintain conditions of access in a suitable fashion for suppression access or public evacuation.

- 5.3 Standards for evacuation of residential areas in high hazard areas. Yes Partial No

**Recommendation:** Goals and policies should be established to delineate residential evacuation routes and evacuation plans in high or very high fire hazard residential areas.

- 5.4 Incorporate a policy that provides for a fuel maintenance program along roadways in the agency having jurisdiction. Yes Partial No

**Recommendation:** Develop an adaptive vegetation management plan that considers fuels, topography, weather (prevailing winds and wind event specific to the area), fire ignitions and fire history.

## 6.0 Defensible Space

- 6.1 Geographic specific fire risk reduction mitigation measures using fuel modification. Yes Partial No

**Recommendation:** Include policies and recommendations that incorporate fire safe buffers and greenbelts as part of the development planning. Ensure that land uses designated near high or very fire hazard severity zones are compatible with wildland fire protection strategies/capabilities.

- 6.2 Fuel Modification around homes. Yes Partial No

**Recommendation:** Establish ordinances in SRA or VHFHSZ for vegetation fire hazard reduction around structures that meet or exceed the Board of Forestry and Fire Protection's Defensible Space Guidelines for SRA and the Very High Fire Hazard several zones, including vacant lots.

See [http://www.bof.fire.ca.gov/pdfs/Copyof4291finalguidelines9\\_29\\_06.pdf](http://www.bof.fire.ca.gov/pdfs/Copyof4291finalguidelines9_29_06.pdf)

**Recommendation:** Reduce fuel around communities and subdivisions, considering fuels, topography, weather (prevailing winds and wind event specific to the area), fire ignitions and fire history.

6.3 Fire suppression defense zones. Yes Partial No

**Recommendation:** Establish goals and policies that create wildfire defense zones for emergency services including fuel breaks, back fire areas, or other staging areas that support safe fire suppression activities.

**Recommendation:** Establish goals and policies that identify structures (or other critical/valuable assets) that have adequate fuel modification or other fire safe features that provide adequate fire fighter safety when tactics call for protection of a specific asset (i.e. which houses are safe to protect).

## 7.0 **Emergency Services:**

7.1 Map/description of existing emergency service facilities and areas lacking services, specifically noting any areas in SRA or VHFHSZs. Yes Partial No

**Recommendation:** Include descriptions of emergency services including available equipment, personnel, and maps of facilities.

**Recommendation:** Initiate studies and analyses to identify appropriate staffing levels and equipment needs commensurate with the current and projected emergency response environment.

7.2 Assessment and projection of future emergency service needs. Yes Partial No

**Recommendation:** Ensure new development includes appropriate facilities, equipment, personnel and capacity to assist and support wildfire suppression emergency service needs. Future emergency service needs should be:

- Established consistent with state or national standards.
- Developed based on criteria for determining suppression resource allocation that includes elements such as identified values and assets at risk, ignition density, vegetation type and condition, as well as local weather and topography.
- Local Agency Formation municipal services reviews for evaluating level of service, response times, equipment condition levels and other relevant emergency service information.

7.3 Adequacy of training. Yes Partial No

**Recommendation:** Establish goals and policies for emergency service training that meets or exceeds state or national standards.

7.4 Inter-fire service coordination preparedness/mutual aid and multi-jurisdictional fire service agreements. Yes Partial No

**Recommendation:** Adopt the Standardized Emergency Management Systems for responding to large scale disasters requiring a multi-agency response. Ensure and review mutual aid/automatic aid and other cooperative agreements with adjoining emergency service providers.

**8.0 Post Fire Safety, Recovery and Maintenance:**

The post fire recommendations address an opportunity for the community and landowners to re-evaluate land uses and practices that affect future wildfire hazards and risk. They also provide for immediate post-fire life and safety considerations to mitigate potential losses to life, human assets and critical natural resources.

- 8.1 Reevaluate hazard conditions and provide for future fire safe conditions. Yes Partial No

**Recommendation:** Incorporate goals and policies that provide for reassessment of fire hazards following wildfire events. Adjust fire prevention and suppression needs commensurate for both short and long term fire protection needs.

- 8.2 **Recommendation:** Develop burn area recovery plans that incorporate strategic fire safe measures developed during the fire suppression, such as access roads, fire lines, safety zones, and fuelbreaks, and helispots.

- 8.3 Restore sustainable landscapes and restore functioning ecosystems. Yes Partial No

**Recommendation:** Develop burn area recovery plans, evaluation processes and implementation actions that encourage tree and biomass salvage, reforestation activities, create resilient and sustainable landscapes, and restore functioning ecosystems.

- 8.4 Incorporate wildlife habitat/endangered species considerations. Yes Partial No

**Recommendation:** Establish goals and policies for consideration of wildlife habitat/endangered species into long term fire area recovery and protection plans, including environmental protection agreements such as natural community conservation plans.

- 8.5 Native species reintroduction. Yes Partial No

**Recommendation:** Incorporate native species habitat needs as part of long term fire protection and fire restoration plans.

- 8.6 Evaluation of redevelopment. Yes Partial No

**Recommendation:** In High and Very hazardous areas, ensure redevelopment utilizes state of the art fire resistant building and development standards to improve past 'substandard' fire safe conditions.

- 8.7 Long term maintenance of fire hazard reduction mitigation projects. Yes Partial No

**Recommendation:** Provide polices and goals for maintenance of the post-fire-recovery projects, activities, or infrastructure.

- 8.8 Post fire life and safety assessments. Yes Partial No

**Recommendation:** Develop frameworks for rapid post-fire assessment and project implementation to minimize flooding, protect water quality, limit sediment flows and reduce other risks on all land ownerships impacted by wildland fire.

**Recommendation:** Identity flood and landslide vulnerability areas related to post wildfire conditions.

**Recommendation:** Establish goals and policies that address the intersection of flood /landslide/post fire burn areas into long term public safety protection plans. These should include treatment assessment of fire related flood risk to life, methods to control storm runoff in burn areas, revegetation of burn areas, and drainage crossing debris maintenance.

**Recommendation:** Encourage rapid post-fire assessment, as appropriate, and project implementation to minimize flooding, protect water quality, limit sediment flows and reduce other risks on all land ownerships impacted by wildland fire.

**9.0 Terrorist and homeland security impacts on wildfire protection:**

These recommendations are included to address fire protection needs related to terrorist acts or other homeland security preparedness and response actions. Both preparedness and incident response can adversely impact fire protection. Adverse effects include substantially decreasing emergency resources' availability, responsiveness and effectiveness by diverting resources, interrupting communications, or restricting emergency access.

- 9.1 Communication channels during incidents. Yes Partial No

**Recommendation:** Establish goals and policies consistent with the Governor's Blue Ribbon Fire Commission of 2005 for communications and interoperability. Example goals and policies should address fire personnel capability to communicate effectively across multiple frequency bands and update and expansion of current handheld and mobile radios used on major mutual aid incidents.

- 9.2 Emergency response barriers. Yes Partial No

**Recommendation:** Identify goals and policies that address vital access routes that if removed would prevent fire fighter access (bridges, dams, etc.). Develop an alternative emergency access plan for these areas.

- 9.3 Prioritizing asset protection from fire with lack of suppression forces. Yes Partial No

**Recommendation:** Identify and prioritize protection needs for assets at risk in the absence of response forces.

**Recommendation:** Establish fire defense strategies (such as fire ignition resistant areas) that provide adequate fire protection without dependency on air attack and could serve as survivor safety zones for the public or emergency support personnel.

End Standard Recommendations (version 5/9/2013)

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