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. The Napa County Multi-Jurisdictional Hazard Mitigation Plan is incorporated by reference into the Calistoga Public Safety Element. The Plan can be found on the City of Calistoga website here: Volume 1 and Volume 2.

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 interbeded sediment, tuff and rhyolite.[1] 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

[1] Tuff is a rock composed of volcanic ash. Rhyolite is a volcanic flow rock.

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 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[2] 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 Calistoga, many chimneys were toppled and two brick buildings were destroyed.

Earthquakes are associated with faults. 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. Figure SAF-1 depicts, in red, faults in the in the San Francisco bay area along which historic (during the last 200 years) displacement has occurred. Additional information on local and regional faults is contained in Table SAF-2.

TABLE SAF-2

ACTIVE AND POTENTIALLY ACTIVE FAULTS IN NAPA VALLEY AND THE REGION

Fault	Length (km)	Distance* (km)	Moment Magnitude	Horizontal Acceleration**
Napa Valley Faults				
Cordelia	22	40	6.7	0.08
Green Valley	35	40	6.9	0.09
West Napa	26	24	6.5	0.30
Regional Faults				
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.
* Estimated distance from the city to the fault.
** Expressed as g force, acceleration of gravity.

[2] An active fault is one that has had surface displacement within approximately the last 11,000 years.

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-2. Consequently, the community is at significant risk from earthquake activity.

Figure SAF-1

Recent estimates prepared by the U.S. 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).
- 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 California 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 cross 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.

Figure SAF-2

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.

Five URM buildings have been identified in Calistoga, primarily in the downtown area. One of these is in the process of being, seismically upgraded. The construction type of another 10 buildings needs to be reviewed by a licensed engineer to determine presence or absence of reinforcement.

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. Landsides 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.

Figure SAF-3

The California 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. Four URM buildings (following completion of the current retrofit) pose a high risk of destruction during earthquakes unless retrofitted. The reinforcement status of another 10 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 California 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

Goal SAF-1 Reduce risk to the community from earthquakes and other geologic hazards.

Objective SAF-1.1 Enforce measures related to site preparation and building construction that protect life and property from seismic hazards.

Policy

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

Actions

A1. Adopt each new version of the California 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, to adequately reinforce them.

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. 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.

P4. 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.

Action

A1. As part of site planning review, a geologic/seismic report that includes analysis of soils, 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.

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 2008 Flood Insurance Rate Map

(FIRM) delineates the 100-year floodplain (i.e., floodway and floodway fringe) 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 east to the city limits, between the Napa River and Foothill Boulevard.
- Currently-vacant and publicly-owned land on the northeast side of the Napa River, from privately-owned Camp Street east to the city limits.

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 and sewer lines also cross over the Napa River, as do two bridges.

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 flood hazard areas have been identified along Cyrus Creek and Blossom Creek.

Flood Control Regulations

The floodplain management requirements of the Calistoga Municipal Code (Title 18) include 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.

Figure SAF-4

- 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/Napa Creek 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 are subject to flooding from the Napa River and several creeks.
2. Much of Calistoga could be inundated by a failure of Kimball Dam.

Figure SAF-5

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.

Policy

P1. No construction shall be permitted in the floodway as mapped by FEMA and modified in subsequent site-specific studies without the approval of a variance by the City Council.

Actions

A1. Continue to administer the City's floodplain management regulations.

A2. Encourage property owners in Calistoga to purchase National Flood Insurance to reduce 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 the 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. 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 seriously threatened by a wildfire that led to the evacuation of its residents. The Hanly 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 wildland fire 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.

Fire Hazard Areas

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, most of Calistoga is not subject to wildfires. However, nearly all of the 370 acres 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.

Wildfire Prevention

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 fire area, which have been incorporated into the Calistoga Municipal Code (CMC Chapter 15.36). 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.

When a specific project or development is proposed within the wildland-urban interface fire area and cannot meet the requirements of the building code, a wildland fire protection plan (WFPP) prepared by a license or registered specialist is required to be submitted for review and approval. The protection plan recommendations are then incorporated into conditions of approval for the project or development.

The Fire Department routinely inspects properties and homes in the Very High Fire Hazard Area to enforce vegetation management requirements, and publicizes the chipping program provided by the Napa Communities Firewise Foundation, which encourages the removal of dangerous vegetation. The Department is familiar with the locations of all structures in this Area and available access.

However, the City does not have sufficient staff or funding resources to formally educate Area residents about defensible space planning and construction, fire-safe landscaping, emergency supplies and evacuation, wildfire behavior and "fire hardening" their homes to survive an advancing wildfire.

Wildfire Response

Because of limited local resources, a significant wildfire in Calistoga would require outside support from the County, Cal Fire and nearby cities. A plan to coordinate this potential fire-fighting effort is needed to ensure a timely and effective response.

Wildfire Recovery

Following a significant wildfire, prompt action is needed to avoid erosion, landslides and mudflows, and provide for revegetation. The City does not have a recovery plan to coordinate these efforts.

B. Key Findings

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

Figure SAF-6

2. Residents within the Very High Fire Hazard Area need to be educated about wildfire prevention and mitigation, and be involved in these efforts.
3. A plan to coordinate the response to a significant wildfire is needed.
4. A plan for impact minimization and recovery after a significant wildfire is needed.

C. Goal, Objectives, Policies and Actions

Goal SAF-3 Protect lives and property from wildland fire hazard.

Objective SAF-3.1 Plan new developments with wildland fire hazards in mind.

Policies

P1. Plans for development in the Very High Fire Hazard Area shall be reviewed for their incorporation of design measures to reduce wildland fire risk.

P2. New roadways and driveways in the Very High Fire Hazard Area shall be designed and constructed to be adequate in terms of width, radius and grade to facilitate access by fire-fighting apparatus.

Action

A1. Enforce wildland fire control measures required by the Fire Code.

Objective SAF-3.2 Achieve a full understanding of local wildfire threats and behavior, and appropriate mitigation actions.

Policy

P1. The City shall be fully informed about potential wildfire risks and how wildfires are likely to behave.

Action

A1. Prepare a community wildfire risk assessment that identifies likely severe-case wildfire characteristics; identifies sub-standard conditions, such as existing structures that do not conform to contemporary fire standards, inadequate access and insufficient water flow; and actions that could be taken to avoid wildfires and minimize wildfire damage.

Objective SAF-3.3 Promote fire-wise behavior within the Very High Fire Hazard Area.

Policies

P1. Provide opportunities for residents within the Very High Fire Hazard Area to be informed about wildfire prevention and response.

P2. Support efforts to organize residents within the Very High Fire Hazard Area to promote fire-wise practices.

Actions

A1. As resources are available, educate residents about defensible space planning and construction, fire-safe landscaping, fire-wise construction, emergency supplies and evacuation, wildfire behavior and

"fire hardening" their homes to survive an advancing wildland fire through workshops and providing information.

A2. As resources are available, work to establish a Fire Safe Council and the preparation of a community action plan that prioritizes hazard mitigation actions and provides a sustained program of wildfire mitigation.

A3. Support events that involve residents in vegetation clean-up.

A4. Seek fire safety grants to fund wildfire mitigation activities such as vegetation management.

Objective SAF-3.4 Respond to wildfires in an effective and coordinated manner.

Policies

P1. Maximize the use of outside resources in responding to wildfires.

P2. Maintain effective communications during major mutual aid incidents.

Actions

A1. Work with Cal Fire to develop a coordinated plan that effectively addresses wildfires in the city and its environs.

A2. Participate in countywide local hazard mitigation planning efforts and the implementation of fire hazard mitigation actions.

A3. Continue to implement state and federal communication and interoperability guidelines and maintain sufficient communication equipment.

Objective SAF-3.5 Minimize post-wildfire damage and promote recovery.

Policies

P1. Be prepared to minimize damage after a wildfire from erosion, landslides and mudflows.

P2. Promote appropriate revegetation after a wildfire.

Actions

A1. Seek funding for and prepare a burn area recovery plan that provides for revegetation; control of noxious weeds; restoration of native species and wildlife habitats; minimizes flooding, sediment flows and landslides; protects water quality and reduces other risks.

A2. Plan for the disposal of debris and ash, building inspections, and building and grading permits post-wildfire.

IV. HAZARDOUS MATERIALS AND WASTE

A. Background Information

The State Water Resources Control Board maintains an up-to-date database of known hazardous waste sites. In March 2013, there were two sites within the city, both of which involve clean up of former leaking underground fuel tanks. Information on this database 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.

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 California Department of Toxic Substances Control.

B. Key Finding

1. There are two known hazardous waste sites in Calistoga, both of which are being remediated.

C. Goal, Objective 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. 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.

A2. Work with property owners to remediate hazardous waste sites.

V. AIRPORT SAFETY

Calistoga is 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.

VI. EMERGENCY PREPAREDNESS

A. Background Information

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 Department's primary emergency services responsibilities are to:

- Administer 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 and administer 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.

During certain emergencies, the Emergency Operations Center is opened at the fire station and is operated in accordance with the Standardized Emergency Management System, a statewide system that manages response to multi-agency and multi-jurisdiction emergencies. The Emergency Response Plan for the City of Calistoga Water System further provides a standardized response and recovery protocol for emergencies and disasters that affect the community's water supply.

B. Key Finding

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

C. Goal, Objectives, Policies and Actions

Goal SAF-5 Prepare Calistoga for emergencies.

Objective SAF-5.1 Prepare City emergency procedures in the event of potential natural or man-made disaster.

Policy

P1. Foothill Boulevard/Highway 128 and Lincoln Avenue/ Highway 29 shall be designated as emergency evacuation routes.

Action

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

Objective SAF-5.2 Promote public safety through public education programs.

Actions

A1. Support earthquake preparedness activities such as strapping water heaters, organizing periodic city-wide 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. Prepare and distribute a city 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.