

ALPINE COUNTY GENERAL PLAN



II. SAFETY ELEMENT

*ENTIRE ELEMENT UPDATED
BOARD OF SUPERVISORS RESOLUTION NO. 2021-49,
AUGUST 17, 2021*

INTRODUCTION

Section 65302(g) of the California Government Code requires that the General Plan include a Safety Element for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mudslides and landslides; subsidence and other geologic hazards known to the legislative body; flooding, and wildland and urban fire.

The Safety Element establishes goals, policies and implementation measures intended to avoid or minimize human injury and protect property by reducing the exposure of the community to hazards. It is also intended that an undue financial burden not be placed on the community by allowing development which may have unusually high costs for public services and disaster relief due to the risk from hazards.

The Alpine County Safety Element addresses the following hazards that are known to have potential for causing injury to people or damage to property in the County:

- A. Wildland Fire
- B. Geologic Hazards
- D. Flood
- E. Noise
- F. Hazardous Materials

RELATIONSHIP TO OTHER PLANS

Natural Hazard Mitigation Plan: The Federal Emergency Management Agency (FEMA) now requires local agencies to adopt a Local Hazard Mitigation Plan (LHMP) in order to be eligible for pre-disaster mitigation funds. The Alpine County Multi-Jurisdictional Hazard Mitigation Plan was adopted by the Board of Supervisors on August 7, 2018 (Board of Supervisors Resolution No. R2018-24).

The Alpine County Multi-Jurisdictional Hazard Mitigation Plan (HMP) was developed in accordance with the Disaster Mitigation Act of 2000 (DMA 2000) and followed FEMA's 2011 Local Hazard Mitigation Plan guidance. The HMP incorporates a process where hazards are identified and profiled, the people and facilities at risk are analyzed, and mitigation actions are developed to reduce or eliminate hazard risk. The implementation of these mitigation actions, which include both short and long-term strategies, involve planning, policy changes, programs, projects, and other activities.

Wildfire Risk Mitigation Plan: The Wildfire Risk Mitigation Plan (WRMP) was adopted by the Board of Supervisors on February 16, 2021. The purpose of the WRMP is to reduce wildfire risk in the County and to protect important community resources. The California

Board of Forestry and Fire Protection (CalFire) provided grant funding to prepare the WRMP.

Carson River Watershed Floodplain Management Plan: The purpose of this plan is to create a long-term vision and develop strategies which utilize a “Living River Approach” for meeting floodplain management objectives to reduce flood damage impacts in the Carson River Watershed. The plan reviews regional flood risks and suggests watershed-wide strategies and actions to mitigate and reduce these hazards and risks while maintaining objectives. It also documents regional and local progress on meeting plan objectives

Alpine County Community Wildfire Protection Plan: The Community Wildfire Protection Plan (CWPP) provides a roadmap for the community to mitigate the hazards of wildfire. It outlines the risks and hazards and provides specific recommendations for projects to address those risks. It includes recommended projects to reduce the risk of wildland fire to people and property. It includes the recommendations from the Calaveras County Community Wildfire Protection Plan that are specific to the Bear Valley region of Alpine County.

Alpine County Emergency Operations Plan: The County of Alpine Emergency Operations Plan establishes an Emergency Management Organization and assigns functions and tasks consistent with California’s Standardized Emergency Management System and the National Incident Management System. It provides for the integration and coordination of planning efforts of multiple jurisdictions within Alpine County.

CALFIRE Amador-Eldorado Unit Strategic Fire Plan: The CALFIRE Amador Eldorado Unit encompasses all of Amador, Alpine and El Dorado counties; and portions of Sacramento and San Joaquin counties. The goal of the Amador-El Dorado unit is to reduce the loss of life, property, watershed values and other assets at risk from wildfire through a focused pre-fire management program and increased initial attack success. The Strategic Fire Plan provides direction to CALFIRE staff and communities within the Amador-El Dorado unit to direct resources and commitments toward implementation of the Strategic Fire Plan. It should be noted that although the Amador-Eldorado Unit has administrative responsibility for the entire county, the Tuolumne-Calaveras Unit provides response and program support to the southwest portion of the County which includes Bear Valley and surrounding areas.

Markleeville Structure Defense and Pre-Attack Plan: This plan was created by the CALFIRE Amador Eldorado Unit. It addresses the area from Markleeville west to Grover Hot Springs, including residential areas in the Hot Springs Road corridor area. Calfire staff has indicated a desire to update this plan and to create these plans for the Woodfords and Mesa Vista areas.

WILDLAND FIRE

The wildland fire section is organized into the following sections:

- Goal 20
- General Background & History
- Categories
 - Planning and Capacity Building
 - Land Use
 - Fuel Modification
 - Access
 - Water Supply

GOAL 20: PROTECT THE COMMUNITY FROM UNREASONABLE RISKS ASSOCIATED WITH WILDLAND AND STRUCTURAL FIRES WITHIN THE WILDLAND URBAN INTERFACE IN THE COUNTY.

WILDLAND FIRE - GENERAL BACKGROUND & HISTORY

Response and Mutual Aid: Primary responsibility for wildland fire protection (prevention and suppression) in the County is divided into State Responsibility Area (SRA) and Federal Responsibility Area (FRA). The SRA encompasses all of the private and state-owned land within the County and the FRA encompasses all of the federal land. Calfire has primary responsibility for wildland fire protection within the SRA and the federal land management agencies (U.S. Forest Service and Bureau of Land Management) have primary responsibility for wildland fire protection within the FRA.

Through the CALIFORNIA MASTER COOPERATIVE WILDLAND FIRE MANAGEMENT AND STAFFORD ACT RESPONSE AGREEMENT, federal and state agencies improve efficiency by facilitating the coordination and exchange of personnel, equipment, supplies, services, information and funds for wildland fire protection. All of Alpine County is within the federal Direct Protection Area (DPA). Consequently, the USFS and BLM have assumed operational responsibility for response to wildland fire within SRA lands in Alpine County. Through this agreement and other mutual aid agreements with fire departments adjoining Alpine County, there is a cooperative multi-jurisdictional response to wildland fire located anywhere in Alpine County.

In many cases the local fire departments are first on the scene and may make an initial attack on a wildland fire. There are three local fire departments in Alpine County. The Bear Valley Public Safety Department covers Bear Valley and the surrounding areas on the west side of Ebbetts Pass. The Eastern Alpine Fire and Rescue covers the portion of Alpine County that is east of the Sierra crest, including the communities of Hung-A-Lel-Ti, Markleeville and Woodfords. The Kirkwood Volunteer Fire Department covers Kirkwood and the surrounding areas west of Carson Pass.

Response to structural fires and other non-wildland fires (vehicle fires, etc.) is the primary responsibility of local fire departments. All the departments rely heavily on volunteer fire fighters. Additionally, response may also be provided through mutual aid by fire departments in adjoining communities outside of Alpine County. These include the East Fork Fire Protection District located in Douglas County Nevada, the Lake Valley Fire Protection District located in the Meyers area in El Dorado County and the Ebbetts Pass Fire Protection District located west of Bear Valley in Calaveras County.

Fire History & Risk Characterization: Wildland fires within the wildland urban interface (“WUI”) where development is interspersed with wild lands pose the greatest threat to lives and property in the County. Sources of data for wildland fire history include the CALFIRE Fire Perimeters Map for 1950-2018 and the USFS Fire Occurrence Location data base and mapping. These two sources were reviewed in preparation of this revision to the Safety Element.

Fire behavior east of the Sierra crest in Alpine County is largely affected by wind patterns and high wind events. The largest and most destructive fires in this part of the County have run from the southwest to the northeast, following the prevailing winds. Two of the largest fires in this area – Acorn (6500 acres in 1987) and Washington (17,000 acres in 2015) followed this pattern. Both of these fires grew quickly due to extremely high winds. West of the Sierra crest slopes and fuel type are more controlling factors for wildland fire in comparison to the east side of the County. Most of the Sierra crest in Alpine County is characterized by relatively sparse vegetation interspersed with extensive areas of exposed granite. Consequently, there is low likelihood of fires crossing the crest. The characterization of wildland fire hazard and the associated risks in Alpine County are more thoroughly described in Section 5.2.10 of the County’s Hazard Mitigation Plan.

Recent fires in Alpine County including the Washington Fire in 2015 south of Markleeville and the Donnell Fire in 2017 south and west of Bear Valley have served to remind the community about the danger of wildland fire. In 2021, the Tamarack Fire grew from 16 acres on July 4 to 68,696 acres by the end of July and encompassed a portion of Douglas County, NV. Other large fires in the surrounding region and throughout California demonstrate the catastrophic results that can occur when wildland fire burns a community.

All of Alpine County is located within the wildland urban interface or WUI. With the exception of the Kirkwood area, almost all of the private land in Alpine County with existing development or potential for future development is located in high or very high fire hazard severity zones. The Hazard Mitigation Plan estimated the risk exposure of existing development within the high and very high wildland fire hazard areas in the County. Eleven hundred residential units are within this area, representing approximately 60% of the housing stock in the County. The situation is similar for non-residential structures, roads, utilities, and essential public facilities. The estimated value in 2016 of all structures within the high and very hazard areas is \$295 million.

SB 1241 mandates that Safety Elements, upon the next revision of the Housing Element on or after January 1, 2014, be reviewed as necessary to address the risk of fire for State Responsibility Areas (SRAs) and very high fire hazard severity zones including review of fire hazard severity zone maps (Government Code § 65302(g)(3)(A)). The most recent revision of the Housing Element was completed in March 2017. The Hazard Mitigation Plan includes a review of the risks with the SRA and the fire hazard severity zones. By incorporation of the Hazard Mitigation Plan into this Safety Element, the requirements of SB1241 (Government Code § 65302(g)(3)(A)) with regard to wildland fire are satisfied.

Fire Insurance: The Insurance Services Office of California provides ratings of the capabilities of local fire departments to respond and fight fires. These “ISO” ratings are reviewed periodically. The ratings are used by insurance companies to help determine rates for the fire protection component of homeowner’s insurance premiums. A lower ISO rating means a greater capability and thus, potentially lower insurance premiums. The rating scale is 1-10 and may vary within a fire department’s response area. Areas within Alpine County have ratings between 4 and 9. Lower rated areas have good resources including a readily available water supply and relatively short response times.

In recent years a number of homeowners in the county have reported cancellation of homeowner’s insurance due to fire risk, and increased premiums to retain their insurance. Options for obtaining homeowner insurance may be limited or expensive.

WILDLAND FIRE - PLANNING AND CAPACITY BUILDING

20A Policy

Commit adequate resources to continued planning, capacity building and collaboration with other agencies in order to reduce the risks associated with wildland fire and obtain the best possible level of fire protection and emergency response services for all communities in Alpine County.

20A Implementation Measures

20A-1: Essential Public Facilities. Locate new essential public facilities outside of high and very high fire hazard severity zones if feasible. This includes, but is not limited to, schools, fire stations, health services, emergency shelters, emergency operations centers and emergency communications facilities. If essential public facilities must be located in high or very high fire hazard severity zones, incorporate design, construction or other measures to maximize protection and minimize damage in the event of a wildland fire.

20A-2: Funding. The Board of Supervisors should continue to insure stable funding at levels sufficient to provide for adequate fire protection and emergency services to all communities in the County.

20A-3: Insurance ratings. The county shall support efforts by each fire department within the county to obtain lower ISO ratings for structure fires within all fire protection areas.

20A-4: Support aerial attack facilities. The County shall support efforts by wildland fire fighting agencies to utilize the Alpine County airport as a base of operations for aerial attack and associated fire suppression equipment.

20A-5: Service district requirement. The Board of Supervisors should consider an ordinance to require all new development of a certain size (number of residential units, sq. ft. non-residential) or more to establish a new or participate in an existing community service district, county service area, benefit assessment district or other similar organization or entity that will finance, provide, and maintain adequate fire protection and emergency services in the area where the new development is proposed.

20A-6: Maintain Plans. The County shall support efforts to maintain and periodically revise key public safety planning documents including, but not limited to, emergency operations plans, community wildfire protection plans and natural hazard mitigation plans.

20A-7: Codes and Standards. The County shall maintain codes and standards that require new development to meet or exceed the State of California Fire Safe Regulations; and make periodic updates to the applicable building and fire codes which address fire safety and reflect accepted fire safe practices

20A-8: Fire Marshall. Board of Supervisors should evaluate available options and consider establishing the functions of a Fire Marshall within all areas of Alpine County.

20A-9: Hazard Mitigation Plan Action Items. Support Goal 10 of the Hazard Mitigation Plan to reduce the possibility of damage and losses due to wildland fire and its associated action items 10A-10W.

20A-10: Education. Facilitate the education of landowners, residents, visitors and business owners about the risks of living in the wildland urban interface including applicable regulations, prevention measures and pre-planning activities. Provide informational materials in building permit packets, through the fire safe councils and through other venues including the County web site.

20A-11: Burn Area Recovery Plans. Support the efforts of fire protection organizations and property owners to develop burn area recovery plans that include rapid post-fire assessment and implementation actions that encourage salvage of burned trees and reforestation activities, create resilient and sustainable landscapes and restore functioning ecosystems

20A-12: Community Recovery and Resilience Planning. The County should initiate a process to develop recovery plans to help the community recover from a wildland fire

disaster. Recovery plans should address immediate clean up and recovery efforts, re-establishing essential operations across a broad range of community functions (government services, education, health services, business sector, other) and strengthening the long term health and resiliency of the community.

20A-13: Future Facility and Service Needs. The County should project future growth and plan for facilities and emergency services needed for fire protection.

20A-14 Fire Department Training Standards. Fire departments within the County shall be encouraged to utilize the California State Fire Training (SFT) certification program as a training guide for fire department personnel, including volunteer fire fighters.

20A-15 Interagency Collaboration. Continue collaboration and coordination with regional agencies and surrounding fire protection districts on a unified regional response to risks that affect Alpine County and surrounding jurisdictions to include: Enhancing interjurisdictional communication systems; Sharing data and information on developing issues or potential risks; Participating in Operational Area trainings and share response procedures with other first responder entities; Where possible, consolidating grant applications with other area jurisdictions; and coordinating with other planning departments, first responder entities, and emergency services providers on standard operating procedures and protocols to enhance regional benefits

WILDLAND FIRE - LAND USE

Alpine County contains approximately 750 square miles situated astride the Pacific crest and is approximately 96 percent public land. The public lands include lands managed by the U.S. Forest Service, Bureau of Land Management, California Department of Parks and Recreation, California Department of Fish and Wildlife, California Department of Transportation (Caltrans) and Alpine County. Land use in the County is characterized by small communities surrounded by large expanses of agricultural lands, forested areas and brush covered lands. There are some areas of more dispersed and low density rural residential development, mostly located near Woodfords in the northeast part of the County. All of the communities and rural residential development are within the WUI.

Alpine County is the least populated county in California with an estimated permanent population of 1,135 persons in 2020. Most of the population lives near or in the small communities of Hung-A-Lel-Ti, Markleeville, Woodfords, Bear Valley and Kirkwood. Kirkwood is in the moderate hazard zone. The other communities are in the high or very high hazard zones. There are approximately 1,798 residential units in Alpine County; over 1200 of these are located in high or very high wildfire hazard severity zones. Approximately 30% of the housing units in the County are occupied by permanent residents. The remaining 70% are composed of second homes used seasonally and vacation rental properties mostly located at two ski resorts in the County – Bear Valley and Kirkwood.

Essential facilities including fire stations, schools, government offices and centralized infrastructure such as water and wastewater systems are located within or very close to the small communities where most of the county's population resides.

Alpine County has adopted ordinances and development standards that meet or exceed the State of California Fire Safe Regulations. Section 15.10 of the Alpine County Code adopts Public Resource Code Section 4290 Fire Safe Regulations for State Responsibility Areas, commencing with Section 1270.00 through 1276.04, Article 5.5, Chapter 7, Division 1.5, Title 14 California Code of Regulation (CCR 14). Section 8.20 of the Alpine County Code adopts defensible space and fuels reduction standards for lots that meet or exceed California Public Resources Code Section 4291.

Development in many areas of Alpine County was planned, approved and constructed prior to adoption of these ordinances and standards. Consequently, there are many areas that do not conform to the current standards.

20-B Policy

Reduce the exposure to risk from wildland fire to an acceptable level by only allowing development in high or very high fire hazard areas if it can be made safe by planning, construction, or other fire safety measures.

20B Implementation Measures

20B-1: Non-conforming Development. Identify areas of development that do not conform to current Fire Safe Regulations and consider programs and/or measures that would bring these areas closer to conformance.

20B-2: Findings for New Subdivisions. In accordance with California Government Code Section 66474.02, before approving a tentative map, or a parcel map for which a tentative map was not required, for an area located in a state responsibility area or a very high fire hazard severity zone, the approving authority (Community Development Director, Planning Commission or Board of Supervisors) shall make the following findings:

(1) A finding supported by substantial evidence in the record that the subdivision is consistent with regulations adopted by the State Board of Forestry and Fire Protection pursuant to Sections 4290 and 4291 of the Public Resources Code or consistent with local ordinances certified by the State Board of Forestry and Fire Protection as meeting or exceeding the state regulations.

(2) A finding supported by substantial evidence in the record that structural fire protection and suppression services will be available for the subdivision through any of the following entities:

(A) A county, city, special district, political subdivision of the state, or another entity organized solely to provide fire protection services that is monitored and funded by a county or other public entity.

(B) The Department of Forestry and Fire Protection by contract entered into pursuant to Section 4133, 4142, or 4144 of the Public Resources Code.

20B-3 Development in High and Very High Hazard Zones. Recognize that new development will be located in moderate, high and very high fire hazard zones. Accordingly, require that project design meets all applicable codes and standards, and includes design parameters, improvements and conditions of approval that reduces risk to acceptable level.

WILDLAND FIRE - FUEL MODIFICATION

CalFire has assessed the wildland fire hazard in different areas of the county based on a consideration of wildland fuels, terrain, weather, and other relevant factors. Wildland fuels or vegetation are the basic catalyst that supports the combustion process of wildfires. The various fuels have specific characteristics which allow fire behavior analysts to categorize them based on how they burn. The result is the Fire Hazard Severity Zone map for the State Responsibility Area.

CalFire's mapping shows the lands in Alpine County with Moderate, High, and Very High Fire Hazard Severity Zones as described below. This mapping provides only a general picture of the actual fire hazard because there may be local variations in vegetation, slope, and other factors which influence fire. The term "fire behavior" is used to describe the magnitude, direction, and intensity of fire spread.

- Moderate Fire Hazard Severity Zone includes: a) wildland areas of low fire frequency supporting modest fire behavior; and b) developed/urbanized areas with a very high density of non-burnable surfaces and low vegetation cover that is highly fragmented and low in flammability.
- High Fire Hazard Severity Zone includes: a) wildland areas supporting medium to high fire behavior and roughly average burn probabilities; and b) developed/urbanized areas with more limited non-burnable surfaces and moderate vegetation cover.
- Very High Fire Hazard Severity Zone includes: a) wildland areas supporting high to extreme fire behavior resulting from well-developed surface fuels and forests where fire in tree crowns (portions of trees above the trunks) is likely; and b) developed/urbanized areas with high vegetation density and fuel continuity, allowing flame to spread over much of the area with little impediment from non-burnable surfaces. Additional site elements include steep and mixed topography and seasonally extreme conditions of strong winds and dry fuel moistures. The highest fire hazard is found in mountainous areas with dry summers, plenty of fuel, and steep slopes

The County and the community have taken a wide range of measures to reduce fuel loading in order to reduce the risk level of fire within the wildland urban interface. Examples include:

- Maintaining a seasonal biomass collection site at Turtle Rock Park that provides a convenient location for community residents on the east side of the county to dispose of vegetation removed from their properties
- Curbside chipping programs in Bear Valley, Kirkwood and other east side communities
- Fuels reduction along county roads
- Encouraging CalFire to conduct defensible space inspections pursuant to Public Resources Code 4291
- Adopting and implementing an adjacent lot fuels reduction ordinance to further mitigate fire hazard in the county
- Obtaining grant funds to plan for and accomplish fuels reduction on lands within and adjacent to existing communities

The Alpine County Community Wildfire Protection Plan identifies priority fuel reduction projects and potential fire breaks in all communities in Alpine County.

20C. Policy

20C: Reduce fuel loading and encourage healthy forests to help in lowering the risk level for fire within the wildland urban interface.

20C. Implementation Measures

20C-1: Defensible Space. The County shall work with Calfire to assertively implement the defensible space requirements of Public Resources Code 4291. This includes implementation of the requirements for individual lots and a periodic inspection program to monitor compliance and correct deficiencies.

20C-2: Funding. The County, fire safe councils and other community organizations are encouraged to pursue public and private funding to facilitate fuels reduction including assisting private landowners in implementing fuels reduction and defensible space measures.

20C-3: Vegetation Management Plans. The County shall require vegetation management plans for all new development that, at a minimum, include provisions for implementation and maintenance of fuels reduction and defensible space; and which meet the minimum clearance standards pursuant to Public Resources Code 4290 (14 CCR 1270). Consideration should be given to maintaining healthy vegetation, minimizing the potential spread of noxious weeds, habitat for wildlife and visual impacts in formulating these vegetation management plans. For purposes of this implementation measure, new development includes parcel maps and subdivisions that create new lots

or building sites, planned developments, conditional use permits and other zoning actions that lead to the entitlement of new structures.

20C-4: Maintenance of Fuel Reduction. The County shall encourage and, where possible, require a means for ongoing maintenance of fuels reduction in areas that have been treated. For areas that require a vegetation management plan pursuant to implementation measure 20B-3, this shall include a requirement for ongoing maintenance of vegetation management plans to be addressed in conditions of approval and/or CC&Rs for the development. A mechanism for enforcement of the maintenance requirements shall also be implemented.

20C-5: Public Lands. The County shall work with public land management agencies to pursue reduced fuel loading to lower risks on public lands in areas both within and surrounding existing communities. Use of prescribed fire and pile burning shall be considered as well as hand and mechanical means.

20C-6: Road Side Fuels Reduction. The County shall make fuels reduction along County roads within existing rights of way a regular part of the ongoing County road maintenance operations. The County shall encourage owners of private roads and driveways to do the same.

20C-7: Support CWPP Fuels Reduction. The County shall work with the fire safe councils and other agencies where applicable to support and help facilitate completion and maintenance of priority fuels reduction projects and fire breaks as identified in the Alpine County Community Wildfire Protection Plan.

WILDLAND FIRE - ACCESS

Providing adequate and safe access to communities and developed areas is a key to reducing the risk of injury or loss of life, and to facilitating ingress and egress for fire suppression and evacuation. The Alpine County Development Standards were adopted in 2014. These standards set minimum requirements for access facilities including roads, lanes and driveways; and ensure compliance with the State of California Fire Safe Regulations (Title 14, California Code of Regulations, Division 1.5, Chapter 7, Subchapter 2, Articles 1-5).

20D Policy

All new development in Alpine County shall be provided with vehicular access meeting or exceeding the requirements of the Alpine County Development Standards

20D Implementation Measures

20D-1: Secondary Access. Any area of new development with potential for five or more residential units and also located within a high or very high fire hazard severity

zone shall have a second means of vehicular ingress and egress connecting to a county collector road or state highway functional classification as listed in the most current version of the Circulation Element of the Alpine County General Plan (currently Figure 1 - Alpine County Functional Classification). The second means of access shall be constructed to the emergency access road standard as described in Section 9.03-6 and Table 9-3 of the Alpine County Development Standards adopted by the Board of Supervisors on September 7, 2014 and as may be amended going forward. Existing roads that are constructed to an equal or higher standard may be utilized to meet the second access requirement where such roads provide a completely separate route connecting to a county collector road or state highway compared to the primary access route. This requirement for second access shall override any lesser applicable requirement that may exist in County development standards and/or SRA Fire Safe Regulations for access.

20D-2: Update Development Standards. County Development Standards shall be updated to reflect the secondary access requirements as set forth in Implementation Measure 20D-1.

20D-3: Evacuation Plans. The Alpine County Sheriff's Office should work with agencies responsible for wildland fire suppression to develop pre-plans for fire risk areas that address civilian evacuation and provide a means to effectively communicate those plans.

20D-4: Inadequate Access and Evacuation Routes. The County shall identify residential areas of the County that have inadequate access and/or inadequate evacuation routes and develop plans to reduce or alleviate the associated risks within these areas.

20D-5: Addressing: Consider a County ordinance to improve and standardize street addressing signs in order to reduce emergency service response times.

WILDLAND FIRE - WATER SUPPLY

The availability of water supply for fire suppression varies among communities within Alpine County. Bear Valley, Hung-A-Lel-Ti, Kirkwood and Markleeville have developed water supply systems with multiple fire hydrants within their service areas. The Eastern Alpine Fire Services Station 91 in Woodfords is served by a small water system that includes 50,000 gallons of storage with the ability to fill water tenders. The South Tahoe Public Utility District C-Line which transports treated wastewater to Alpine County includes several fire hydrants in the Woodfords area. Water from these "purple hydrants" can be used for wildland fire suppression. There are restrictions on using this water for structure fires. Turtle Rock Park and the Alpine Village subdivision in Woodfords have small water systems. Outside of the areas served by water systems with fire hydrants, water for fire suppression is limited or may be non-existent. To help compensate, the local fire departments utilize a system of mobile water tenders and

portable tanks to provide water at the site of a fire. Helicopters deployed by federal or state agencies are often used to deliver water from area lakes and rivers to wildland fires.

Fire suppression water supply requirements for new development in Alpine County are defined by the California Board of Forestry and Fire Protection SRA Fire Safe Regulations, National Fire Protection Association (NFPA) codes and standards, and the Alpine County Development Standards. Combined, these regulations, standards and codes set forth minimum requirements for fire flow, water storage, fire hydrants and other important components of the water system. Alpine County Code Chapter 13.04 defines minimum requirements for domestic and firefighting water supply and distribution systems in new subdivisions. The Alpine County General Plan Land Use Element defines minimum fire flow requirements and information required at each stage of the land use entitlement process (general plan change, zoning change, subdivision) to demonstrate that the minimum fire flow can be provided to new development. This includes information on the proposed method and location of improvements for meeting the fire flow requirement.

20E Policy

Improve water supplies for fire protection in developed areas within the wildland urban interface.

20E Implementation Measures

20E-1: Plan for water supplies. The county shall encourage long range planning for improved water supplies for fire protection throughout the county. This planning process should involve the fire safe councils, local area residents, existing water service providers, fire departments, CalFire and other agencies with responsibility for fire protection.

20E-2: Funding. The county, existing water service providers and/or fire safe councils shall pursue public and private funding to improve water supply for fire protection throughout the county.

GEOLOGIC HAZARDS

The geologic hazards of greatest potential in Alpine County include those associated with avalanche, earthquake/seismic shaking and landslide/slope failure. All of these are described in detail in the County's Hazard Mitigation Plan.

GOAL 21: PROTECT NEW AND EXISTING STRUCTURES AND LAND USES FROM GEOLOGIC HAZARDS IN ORDER TO AVOID OR MINIMIZE LOSS OF LIFE, INJURY, PROPERTY DAMAGE, AND ECONOMIC AND COMMUNITY DISRUPTION.

GEOLOGIC HAZARDS - AVALANCHE

Alpine County is located along the crest of the Sierra Nevada. The county's elevation ranges from a low of about 4800 feet to high elevations in excess of 11,000 feet. Steep slopes and heavy winter snowfall are common in the higher elevations. The combination of steep slopes and high snowfall creates a potential danger for snow avalanches throughout the winter months in Alpine County.

Avalanche risk and actual avalanches frequently cause temporary closures of Highway 88 in the Carson Pass and Carson Spur areas. Avalanches can also occur in the Bear Valley and Kirkwood areas, and in backcountry areas popular for outdoor winter recreation. A recent avalanche in 2017 caused property damage to single family homes in the East Meadows area of Kirkwood. The characterization of avalanche hazard and the associated risks in Alpine County are more thoroughly described in Section 5.2.1 of the County's Hazard Mitigation Plan.

21A Policy

Locate and design all new development to prevent or minimize to the fullest extent possible the threat due to avalanche

21A Implementation Measures

21A-1 Assess Avalanche Hazard. All developments intended for human use or occupation shall assess avalanche hazards where there is a potential risk from avalanches. The following conditions are indicative of a potential risk: significant accumulation of snow; treeless or sparsely vegetated slopes exceeding 30% slope gradient; gullies, and bowls exceeding 30 percent slope gradient; and any locations with a history or evidence of avalanche occurrence within or immediately adjacent to the proposed development area.

GEOLOGIC HAZARD - EARTHQUAKE/SEISMIC SHAKING

Alpine County's mountainous terrain lies within the area of the North American and Pacific tectonic plate activity. There have been earthquakes as a result of this activity in the past, and there will continue to be earthquakes in the future. The eastern side of the County is situated along the eastern slope of the Sierra Nevada and is more prone to earthquake and seismic shaking than other areas of the County. There is a moderate to high probability (highly likely as 80 – 100% chance of occurrence) of an earthquake in Alpine County, but a moderate to low risk associated with this natural hazard. The characterization of earthquake and seismic shaking hazard and the associated risks in Alpine County are more thoroughly described in Section 5.2.5 of the County's Hazard Mitigation Plan.

21B Policy

The potential risks associated with earthquake and seismic shaking shall be addressed in considering new development.

21B Implementation Measures

21B-1 Seismic Activity Notation. Any parcel map, or subdivision map, subdividing lands near the potentially active faults located along the eastern escarpment of the Sierra Nevada as shown on shall contain a notation warning that said area may be subject to seismic activity.

21B-2 Geologic Report for Seismic Risk. All new development proposed within or adjacent to a Alquist Priolo "Special Study Zone" as identified on the Official Map prepared by the California Geologic Survey shall require a geologic report addressing potential risks of earthquakes and seismic shaking. Human occupied structures shall not be constructed across traces of active faults as identified in a required geologic report.

GEOLOGIC HAZARD - LANDSLIDE/SLOPE FAILURE

Alpine County's terrain and climate combine to create conditions conducive to landslide. Landslides are categorized into groups using two variables; the type of movement and the type of material that is involved. Type of movement is categorized into three groups:

- falls
- slides, and
- flows

The amount of water usually is the defining ingredient when classifying the movement. In falls, very little water is present, whereas in flows there is a lot of water involved.

Landslides that occur within Alpine County are most often experienced as part of a larger, more widespread natural hazard event. Landslides can take place as a result of severe storms, floods, and earthquakes. They can also happen as an aftermath to wildland fires. The characterization of earthquake and seismic shaking hazard and the associated risks in Alpine County are more thoroughly described in Section 5.2.8 of the County's Hazard Mitigation Plan.

21C Policy

Locate and design all new development to prevent or minimize to the fullest extent possible the threat due to landslide and slope instability.

21C Implementation Measures

21C-1 Assess Landslide and Slope Instability. Require soils and geologic investigations that address potential landslide and slope instability as part of the review required for any parcel map, subdivision map or use permits that involve earth disturbance; and in or adjacent to any areas of known or potential slope instability.

Flood Hazard

Alpine County is located almost entirely within the mountainous Sierra Nevada. Precipitation and snow melt from the Sierra Nevada runs off through high-relief, deeply-cut river canyons that are interspersed with meadows and flat areas. On the east side of the County, the West Fork of the Carson River flows into the Carson Valley where a more traditional floodplain exists. The characterization of flood hazard and the associated risks in Alpine County are more thoroughly described in Section 5.2.6 of the County's Hazard Mitigation Plan. Information on past flood events in the County can also be found in Section 5.2.6. The U.S. Geological Survey (USGS) also has information on flood history of the Carson River available at Flood Chronology of the Carson River Basin, California and Nevada Web Site:

Two types of flood events are typical to Alpine County. Each type of flood event causes associated water, erosion, and sediment damage within the watersheds where the flood event transpires. The two types of flooding are:

- Wet-mantle or rain-on-snow flood
- Dry-mantle or flash flood

Wet-mantle and rain-on-snow are typically winter or early spring occurrences and are generally widespread in nature. Characteristically, wet-mantle and rain-on-snow flooding develops when warm rains fall on already saturated ground. Particularly devastating are flood events where heavy snows precede warmer rain events, causing the mantle of snow to melt and run off in conjunction with the rain. Rain on snow flooding has resulted in property and infrastructure damage in Bear Valley and in the Markleeville/Woodfords areas of the County.

Dry-mantle flood events are a result of intense summer thunderstorms and are much more localized in nature. Dry-mantle flooding is not widespread, as is the case of wet-mantle and rain-on-snow events. Severe flash floods are much more likely to occur over recent burn areas which exist in Alpine County. This thunderstorm related flooding can be a major concern as severe local rain and hail can create conditions for flash-flooding and considerable threat to life and property. No historical record is available for dry-mantle flood events.

An additional source of potential flooding is dam failure. Most dams in Alpine County are remote from the populated area of the county. The remote location of dams shields

residents from the potential hazards associated with dam failure and the resulting inundation. An exception is the Reba Dam in the community of Bear Valley. This dam creates Bear Lake. Dam failure and the resultant inundation of downstream areas is a hazard to the community. The characterization of dam failure hazard and the associated risks in Alpine County are more thoroughly described in Section 5.2.3 of the County's Hazard Mitigation Plan.

Additional sources of information on flood hazards in Alpine County include the following:

National Flood Insurance Rate Maps: All of Alpine County is currently designated as Zone D - an area of undetermined but possible flood hazards. More detailed mapping under the direction of the Federal Emergency Management Agency (FEMA) is in progress for the West Fork of the Carson River from Woodfords downstream to the California-Nevada state line; and for Bear Creek, Bloods Creek and other minor drainages in the Bear Valley area.

DWR Awareness Floodplain Mapping Program: This program conducted by the California Department of Water Resources (DWR) identifies flood hazard areas that are not mapped by FEMA's National Flood Insurance Rate maps. Awareness floodplain maps are updated more frequently and can be targeted and prepared for a community. Information on flood risks for a specific location can be found at the California Office of Emergency Services (Cal OES) My Hazards web page:

DWR Dam Inundation Maps: The California Department of Water Resources (DWR) Division of Safety of Dams (DSOD) reviews and approves inundation maps prepared by licensed civil engineers and submitted by dam owners for extremely high, high, and significant hazard dams and their critical appurtenant structures. Inundation maps approved by DSOD are a tool used to develop emergency action plans, and the maps are intended to provide general information for emergency planning. Dam inundation maps are in place for the following lakes/reservoirs in Alpine County: Bear Lake, Lake Alpine, Upper Blue Lake, and Utica Reservoir. Additional dams in Alpine County without inundation maps are also shown.

Agencies with a role and/or responsibility for flood management and/or flood emergency response in Alpine County include the California Department of Water Resources (DWR), California Office of Emergency Services (Cal OES), Alpine County Sheriff's Office, Carson Water Sub-Conservancy District and the Federal Emergency Management Agency (FEMA).

22A Policy

Locate and design all new development to minimize risk from flood occurrence.

22A Implementation Measures

22A-1 Floodplain Development Regulations. Adopt and maintain updated floodplain development regulations in order to minimize public and private losses due to flood conditions in specific areas by legally enforceable regulations, methods, and provisions applied uniformly throughout the community to all publicly and privately-owned land within flood prone, mudslide [i.e. mudflow] or flood related erosion areas.

22A-2 Inundation From Dam Failure. No living quarters or areas for overnight accommodations shall be allowed at ground level within areas possibly subject to flood inundation due to possible dam failure.

22A-3 Dam Failure & Emergency Plans. Dam failure hazard assessments and emergency plans shall be prepared before any development is approved which may subject persons or property to hazards associated with dam failure.

22A-4 Flash Flood Notation. Any parcel map, or subdivision map subdividing lands near drainage courses in Alpine County shall contain a notation warning that said area is possibly subject to flash flood occurrence.

22A-5 Essential Public Facilities. Locate new essential public facilities outside flood hazard areas if feasible. This includes, but is not limited to, schools, fire stations, health services, emergency shelters, emergency operations centers and emergency communications facilities. If essential public facilities must be located in areas of flood hazard, incorporate design, construction or other measures to maximize protection and minimize damage from flooding.

Noise

Government Code 65302(f) sets forth requirements for a noise element to be included in the General Plan. A noise element shall identify and appraise noise problems in the community. The noise element shall analyze and quantify, to the extent practicable, as determined by the legislative body, current and projected noise levels for all of the following sources:

- (A) Highways and freeways.
- (B) Primary arterials and major local streets.
- (C) Passenger and freight online railroad operations and ground rapid transit systems.
- (D) Commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation.
- (E) Local industrial plants, including, but not limited to, railroad classification yards.
- (F) Other ground stationary noise sources, including, but not limited to, military installations, identified by local agencies as contributing to the community noise environment.

Due to the lack of sizeable industrial operations, the County's small population and topography, existing noise emissions in Alpine County are generally limited to transportation facilities and corridors. Recreation and tourism in the County create higher levels of noise at these facilities and corridors than would otherwise exist. The County airport presently receives very limited use and is located three miles from the nearest developed area. It is therefore not included as a significant noise producing transportation facility.

As part of an update to the Alpine County General Plan in 1993, noise contours for Alpine County were prepared by Brown-Buntin Associates. The noise contours shows existing and projected noise levels along County transportation corridors. The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model (FHWA-RD-77-108) was used to develop the contours. Short-term traffic noise measurements were taken at various sites in the County and were used in verifying the noise contours developed using the FHWA model. More detailed information is contained in the Data Base created to support the 1993 General Plan update.

Section 12.1, Noise, in the data base discusses the noise contours and provides a community noise exposure inventory which shows noise levels in the more populated areas in the County. Land use patterns and the extent of development in the County have not changed significantly since 1993. Accordingly, the information in the Data Base is still considered valid today.

Alpine County Code Section 18.68.090 contains the County's noise ordinance. The ordinance establishes maximum noise level standards and addresses noise-sensitive developments. This code section was last updated in 2009.

23A Policy

Preserve the character of the county's quiet small rural communities by maintaining existing ambient noise levels and preventing new land uses that would result in significant adverse impact from noise to existing communities.

23A Implementation Measures

23A-1 Noise Ordinance. Maintain a noise ordinance with noise level standards that are consistent with the above stated policy.

23A-2 Review Proposed Development. All land use and development proposals shall be reviewed for compliance with noise and land use compatibility standards. Design changes and/or mitigation measures shall be considered as needed to achieve compliance with the standards.

Hazardous Materials

There are no large generators of hazardous waste in the County and no producers of hazardous materials. The majority of waste generated in the County is from households, small businesses, ski resorts, and vehicle maintenance facilities operated by Caltrans, U.S. Forest Service, Alpine Unified School District, ski resorts and the County. The characterization of hazardous materials and the associated risks in Alpine County are more thoroughly described in Section 5.2.7 of the County's Hazard Mitigation Plan.

The Alpine County Hazardous Waste Management Plan adopted in 1988 identified four potential sites in the County for hazardous waste storage and transfer facilities, 1) the Mud Lake Road Area, 2) the County Maintenance Yard, 3) The County Airport, and 4) Harvey Reservoir and nearby private lands. No such facilities have been constructed in the County. The county-operated recycling drop off facility in Woodfords at the County Maintenance Yard does except small quantities of used motor oil.

Locally, regulation of hazardous materials and hazardous waste is a shared responsibility of Alpine County and the California Environmental Protection Agency (CAL-EPA). The Alpine County Health Department is designated by CAL-EPA as a Certified Unified Program Agency (CUPA) with certain authorities delegated to it by CAL-EPA.

There is one federal Superfund Site in Alpine County. The Leviathan Mine is an abandoned open-pit sulfur mine located on the eastern slope of the Sierra Nevada in the vicinity of Monitor Pass at approximately the 7,000-foot elevation, 6 miles east of Markleeville. The mine site comprises approximately 250 acres of land surrounded by the Humboldt-Toiyabe National Forest, and is only accessible by vehicle a few months a year.

Major environmental problems at the Leviathan Mine originated during open-pit sulfur mining that occurred from 1951 through 1962. During this period the mine provided a source of sulfur to dissolve copper from relatively low-grade ore at a mine near Yerington, Nevada. In 1962 large scale mining operations at Leviathan ceased. No significant mining activities have taken place since. Early clean-up measures began in the mid-1980s and the site was added to the federal "National Priority List" in 1999 making it a federal Environmental Protection Agency (EPA) "Superfund Site" and the only recognized contaminated site in the County. Under the authority of the federal superfund law (Comprehensive Environmental Response, Compensation, and Liability Act or "CERCLA"), the U.S. Environmental Protection Agency closely coordinates cleanup plans and activities with all of the stakeholders, including local and state agencies from California and Nevada, the U.S. Forest Service, the U.S. Fish and Wildlife Service, and the site's potentially responsible parties. In addition, the Washoe Tribe is strongly involved at the site to ensure that their unique traditional tribal uses of the area's resources are protected.

24A Policy

Protect citizens and property from damage by hazardous materials including but not limited to harmful chemicals, radiation levels, gases, explosives and hazardous waste.

24A Implementation Measures

24A-1 Proper Handling of Hazardous Waste. Ensure the hazardous waste materials used in business and industry are properly handled and that information on their handling and use is available to fire and police protection agencies.

24A-2 Maintain CUPA Status. Continue to work cooperatively with the California Environmental Protection Agency on regulation of hazardous materials including maintaining the Certified Unified Program Agency (CUPA) status provided that there is sufficient funds available and technical capability to continue this program.

24A-3 Transportation Routes. Oppose designation of any transportation routes through Alpine County for hazardous waste that could create responses to hazardous waste spills or related incidents that are beyond the resources of the local emergency response agencies