

APPENDIX J

Hazards

APPENDIX J-1
Alpine Sierra Avalanche Report

AVALANCHE HAZARD STUDY

Alpine Sierra Development

Placer County, CA

July, 2013

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Introduction

This report discusses the results of the site specific Avalanche Hazard Assessment I conducted on the proposed Alpine Sierra subdivision development. This work was conducted at the request of the property owner Chris Nelson. The assessment and this report focus on the areas within the proposed development identified being located in Potential Avalanche Hazard Areas (PAHAs) in the Placer County Avalanche Ordinance and Maps. The County Ordinance defines PAHAs as areas subject to potential avalanche danger with an occurrence probability of greater than one in one hundred (100) per year. These three areas are 1) the intersection of the property entrance and the Alpine Meadows Road, 2) small rock outcroppings in the center of the property, and 3) a forested area in the southeast corner of the property. The intent of the Assessment and Report are to more accurately define the boundaries of these PAHAs than is provided in the County Avalanche Map. The results of the assessment for these areas are discussed below.

The Assessment included both widely accepted practices in avalanche theory and a site specific study of the property. The field survey methods used in the Assessment included terrain analysis, forest cover analysis and vegetation analysis. The Assessment also included a review and analysis of topographic maps and aerial photographs of the area, a review of historical avalanche events in the area, a consideration of the effects of local weather and climate and the author's extensive personal experience in studying and observing avalanches in the area.

Placer County Avalanche Regulatory History

Beginning in the early 1980s Placer County commissioned avalanche studies to define the avalanche hazards within the County and to map these hazards. In 1982 Norm Wilson conducted an evaluation, *Avalanche Hazard Study, Placer County, Fall 1982*. This Study included all areas of the County with potential avalanche terrain with the exception of Squaw Valley. The Study provided both background and discussion on avalanche hazards within the County and mapped areas subject to avalanche hazard. The avalanche hazard zones delineated on the Wilson map used the following criteria:

- Red (high hazard) Zones: Areas where avalanche that could damage standard wood-frame structures and/or bury automobiles are expected to occur with a probability of one chance in twenty per year.
- Blue (moderate hazard) Zones: Areas where avalanche that could damage standard wood-frame structures and/or bury automobiles are expected to occur with a probability of less than one chance in twenty per year, but more than one chance in one hundred per year.
- Yellow (low hazard) Zones: Areas where avalanche that could damage standard wood-frame structures and/or bury automobiles are expected to occur with a probability of less than one chance in one hundred per year.
- White (no hazard) Zones: Areas where, barring cataclysmic or unprecedented events, avalanche will not occur.

The mapping and mapping criteria from this Wilson Avalanche Hazard Study became the basis for the county wide PAHA maps.

In 1987 Placer County commissioned Art Mears to do a second countywide avalanche evaluation. In this evaluation, *Snow-Avalanche Hazard Analysis and Engineering Guidelines, County of Placer, California*, Mears provides a discussion of methods used for determining design avalanche conditions and also avalanche mitigation design criteria. He also provided avalanche hazard maps of the entire county. The Mear's maps used a two hazard zone classification with the following criteria:

- High Hazard (Red) Zone: The reference pressure exceeds 600 lbs/ft² on a large, flat, rigid surface normal to the flow direction.
- Moderate Hazard (Blue) Zone: The reference pressure is less than 600 lbs/ft² on a large, flat, rigid surface normal to the flow direction.

The Mear's Hazard Maps and criteria were not incorporated into the County PAHA Maps or the Avalanche Ordinance.

The Placer County Code in Chapter 12 Article 12.40 Avalanche Management Areas defines and requires the following (partial excerpts)

12.40.010 Purpose.

A. The potential avalanche hazard area, hereinafter referred to as PAHA, is intended to identify those areas where, after investigation and study, the county finds that an avalanche potential exists because of steepness of slope, exposure, snow pack composition, wind, temperature, rate of snowfall, and other interacting factors.

B. Such PAHA is established:

1. To identify those areas with avalanche potential based on approved studies that designate a minimum probability of occurrence greater than 1 in one hundred (100) per year, or where avalanche damage is documented after adoption of the ordinance codified in this article.
2. To give notice to the public of such areas.
3. To minimize health and safety hazards, disruption of commerce, and extraordinary public expenditures.
4. To promote the general public health, safety, and welfare.

12.40.020 Scope

A. These regulations do not apply to existing structures or existing parcels in the PAHA zones except as noted below. Nothing in these regulations is intended to preclude the development of any parcel, provided proper design and construction safeguards are taken.

B. These regulations shall apply to the following activities:

1. Conditional use permits or their modifications.
2. General plan amendments.
3. Rezoning applications.
4. Parcel splits and subdivisions.

12.40.030 PAHA boundaries identified.

A. The PAHA boundaries shall be those specifically identified areas within the county subject to potential avalanche danger, as shown on any study or mapping commissioned by the board of supervisors and maintained by the Placer County planning department to include any amendments authorized through the

appeals process of the county, which designates an occurrence probability greater than one in one (100) per year, or documents avalanche damage after that adoption of this ordinance.

B. Applications for amendments to the PAHA boundaries shall be submitted to the Placer County planning department and processed in the same manner as administrative review permits pursuant to Chapter 30 of the Placer County Code. Approval of boundary amendments will be in a form that may be recorded by the owner.

C. WARNING. Avalanches occur naturally, suddenly, and unpredictably. The PAHAs designated are based on the limited scientific evidence available which is not definitive in nature. The studies and reports do not represent or imply that compliance with the provisions of this article will protect from avalanche danger, nor does it represent or imply that areas outside the PAHA are free from avalanche danger.

12.40.060 Construction requirements.

A. Within any areas designated as a potential avalanche hazard area, a building permit for construction regulated by Section 12.40.020 (Scope), will not be issued for a new building or an addition unless a California licensed architect or engineer experienced in snow design, in conjunction with a recognized avalanche expert or team of experts, certifies that the structure will be safe under the anticipated loads and conditions of an avalanche.

B. The avalanche expert(s) must utilize both widely accepted practices in avalanche theory and a site specific study for the proposed construction. Any study commissioned by the board of supervisors to identify potential avalanche forces must be considered in the site specific study.

C. An expert or team of experts shall mean individuals with existing demonstrable recognition as “experts” among the community of avalanche practitioners. It shall be the responsibility of the project architect/engineer to demonstrate this recognition.

12.40.040 Notice Requirements

A. Duty of Owners. Each owner of real property containing any structure or building within a PAHA area shall post the following notice at a prominent location within the main winter entry area of such structure or building. Such notice may be augmented by the owner to include whether the property is in a high or moderate hazard zone, as long as this information is consistent with the official records retained by the planning department.

Avalanche Path and Runout Delineation

The Placer County Potential Avalanche Hazard Map (PAHA) identifies a number of avalanche paths within the study area. This Map was developed from an Avalanche Hazard Study conducted by Norm Wilson in the early 1980s. The Wilson study did not take into consideration site specific terrain characteristics. Of primary concern in land use planning is a determination of the maximum size avalanche that individual paths can produce (the design avalanche) and the return period of the design avalanche for individual avalanche paths. The Placer County Avalanche Ordinance requires that areas with an avalanche occurrence of greater than one in one hundred (100) be identified. Identifying these areas is the focus of this Study and the accompanying PAHA Map. This Study employed a number of widely accepted methods to identify these areas and to

predict the return probabilities. It is widely accepted that the best methods of determining runout distances and return period of avalanche occurrence is (1) long-term observations of avalanche deposits; (2) observations of damage to vegetation, ground or structures; or (3) searches of the historical record.

Below is a short discussion of the methods used:

Terrain and Forest Cover Analysis

Snow slab avalanches originate on a wide variety of terrain. The main requirement is steepness. Dangerous slab avalanches are most likely to start on slopes in the 30 to 45 degree range. Most large long return period avalanches begin in the steepness range of 30 to 40 degrees. For slopes of less than 30 degrees, shear stress on the bed surface is not enough to cause shear failure and avalanching. For slopes steeper than 45 degrees sluffing routinely prevents slabs from forming. The size, shape, roughness and profile of both the starting zone and track of avalanche paths influences both the potential area of avalanche release, the amount of snow that may release, the amount of snow that may be entrained as the avalanche travels downslope, the velocity of the traveling avalanche and the potential runout distance. The profile and roughness of the runout area of the avalanche path greatly influences how far the “design avalanche” can run.

The effect of forest cover on avalanche formations is well documented. Forest cover effects avalanche formation and movement in several ways. The first is forest cover on steep avalanche prone slopes tends to anchor the snowpack in place and reduces or eliminates the possibility of avalanches occurring. Trees and other natural features such as rock outcroppings create a discontinuity in the snowcover reducing the ability of fractures to propagate through a snow slab. Forest cover also disrupts and collects snowfall. As the snow collected on the trees is shed it results in additional discontinuity in the snow layers. This usually results in age hardening of the snowpack in the area and tends to stabilize the snowpack. Additionally forest cover in the track and runout of avalanche paths reduces both the velocity and volume as the moving snow impacts trees. This can result in a reduced runout distance.

The Terrain and Forest Cover Analysis included both infield observations and measurements. These were conducted both with snow on the ground and in the late spring without snow. Additionally this Analysis included an analysis of detailed topographic maps, slope profiles taken from the topographic maps and an analysis of aerial stereo photographs and oblique photographs. Both historical and current photographs were analyzed.

Vegetation Analysis

The effects of avalanches on forest depend on the geomorphic situation, size of avalanche, type of snow and other factors. During an avalanche large enough to damage established trees damage is caused not only by the impact by the snow, but also by included debris such as broken trees and rock from higher up the slope. Damage may extend from the starting zone to the runout area. Smaller avalanches may merely tilt or break small trees and lateral branches along a trimline up to several feet above the ground level.

The plant species and size present on a site indicate the frequency of avalanching. Paths, which avalanche frequently, have few or no large trees and these are badly damaged. Some large avalanches occur infrequently, but devastatingly, on slopes, which, prior to the slide, were covered in fir and pine forest. There can be evidence of former avalanches, however, in the form of damaged or fallen trees or stands of forest younger than the typical for the area.

For this study the Vegetation Analysis include both field observations of the vegetation and vegetation damage as well as an analysis of the changes to the vegetation over time using aerial stereo photographs.

Weather and Climate Analysis

There are three avalanche climates in North America: maritime, intermountain and continental. The Sierra Nevada Mountains and Alpine Meadows are located in a Maritime climate with a maritime snowpack. Maritime snowpacks tend to be deep, warm and strong; continental snowpacks tend to be thin, cold, and weak; and intermountain climates tend to be in between. Some of the characteristics of a maritime climate and snowpack include:

- Deep snowpacks (over 3 meters).

- Warm temperatures (20 to 40 degrees F).

- High density snow (10 to 20 percent ice by volume).

- Frequent storms with high precipitation rates.

- Most avalanches occur as “direct action” avalanches, i.e., avalanche directly caused by precipitation or wind.

- Avalanches tend to occur during or immediately following storms.

- Weak layers tend to not persist through time.

- Midwinter rain commonly falls and wet avalanches can occur throughout the winter.

Due to it’s location within a maritime climate and snowpack, the primary avalanche risk to the project is large direct action avalanches resulting from intense extended storms with both high rates and large amounts of precipitation and snowfall with accompanying high winds. Mid-winter rain on new snow layers with a deep snowpack could produce deep slabs with both wide fracture lengths and long runout distances.

Large avalanche events are the result of a complicated interaction of terrain variables and weather conditions. Record storms with high winds and large snowfall amounts produce avalanches on only a fraction of the possible avalanche paths. Variations in temperature, wind patterns, rain and snowfall amounts, snowfall intensity, deposition patterns, snow crystal type and snow water content can create different avalanche activity from storm to storm and year to year. Only when viewed over the long term is it possible to observe the variety of weather and terrain combinations that produce avalanches at selected locations.

The Potential Avalanche Hazard Areas

For the purposes of this Study all of the PAHAs identified on the Placer County Avalanche Map were evaluated with the methods described above and are identified on the accompanying PAHA Map. Based on the observational and analytical methods described above this section provides a short description of each avalanche path. Each of these avalanche paths include very complex terrain with many possible avalanche starting

zones. During all but the largest storms many of these paths may produce many small to large avalanches from these individual starting zones that do not include the entire path identified on the PAHA Map. Most avalanches occurring within these paths will stop far short of the maximum runout identified on the PAHA Map, therefore, it is expected that only the largest events may run full track.

The three areas described below are the only areas within the proposed development that are within County PAHAs. There are no residential structures proposed within County PAHA's.

Property entrance: The property entrance at the Alpine Meadows Road is located below and directly across from the Buttress/Don's Nose avalanche path. This large east facing path has a history of producing avalanches that reach the Alpine Meadows Ski Resort parking lot and entrance, the intersection of Ginston Road and the Alpine Meadows Road, and the Alpine Sierra entrance. The path is approximately 1000 vertical feet with avalanches originating near the top of the mountainside and large avalanche events running to Bear Creek. Based on historical avalanche events and personal observations the County's Avalanche Map accurately defines this path and reflects the boundaries of a 1982 avalanche from this slope. This was likely the largest avalanche this slope could produce (the design avalanche). This path is one of several avalanche paths along the Alpine Meadows Road on which Alpine Meadows Ski Resort avalanche control personnel perform avalanche mitigation. Construction of the Alpine Sierra access will not change this PAHA and should not increase the avalanche hazard risk.

Rock outcroppings in center of property: Near the center of the property is a rock outcropping with a short steep northwest facing 140 vertical foot slope. The western half of the slope is forested and the eastern half is an open rocky slope. Because of the slope steepness there is a potential for avalanche formation and release. There is no evidence of avalanche activity on the vegetation and forest cover below this slope. Avalanches originating on this slope should terminate within the forest below the slope above the John Scott Trail Road located in the Bear Creek subdivision. It is expected that the construction of the Alpine Sierra access road across this slope will significantly decrease the runout distance of avalanches from this slope and will also decrease and possibly eliminate any avalanche activity entirely. Just to the east of this outcropping is a smaller, approximately 50 vertical foot, rock outcropping. This potential avalanche path is identified on the accompanying PAHA map and is located on Lot #3. It is also expected that the construction of the Alpine Sierra access road above this small outcropping will significantly decrease the size this path and may eliminate it. The placement and design of a residential structure on this Lot should either avoid this small avalanche path or incorporate the rock outcropping within the structure's design.

Southeast corner of property: Located in the far back southeast corner of the property is a short steep northerly facing slope. The upper end of the slope is composed of a short very steep slope with rock outcroppings and two well defined chutes. Based on the damage to vegetation and forest cover this slope produces avalanche that run down into the forest for approximately 300 vertical feet. Avalanches from this slope have the potential to run to an elevation of approximately 6900ft. This is well above any proposed development on the Alpine Sierra property.

Effects of Forest Cover and Tree Removal

As discussed earlier, forest cover affects both avalanche slab formation and release as well as avalanche run out distances. In the starting zone trees both tend to anchor the snowpack in place and also create a discontinuity in the snow pack reducing the ability of fractures to propagate long distances through the snowpack. Both of these effects can reduce the potential for avalanche slab formation and release. Also, should slab propagation occur these effects result in a decrease in the ability of the slab to continue to propagate decreasing the length of propagation with resulting smaller avalanches. Trees in the avalanche track and runout zones also reduce both the velocity and volume of moving snow as it impacts trees. Generally this results in a reduced runout distance.

Tree density in the forest cover directly influences the effects discussed above. The higher the density of trees the greater the effect. If trees are closely spaced within the forest cover avalanches do not occur. When there are small openings within the forest cover on steep slopes avalanches may release within the openings and travel into the adjacent downslope forest but will be limited in size by the adjacent trees. Generally the larger the openings in the forest cover the larger the avalanches that may be possible.

The Vegetation Management Plan planned for the development includes removal of dead, sick and dying trees and a general thinning of the forest. This will provide for defensible space and long term forest health for the property. There will be no tree removal from the avalanche path effecting the property entrance; only minimal tree removal from the runout of the avalanche paths in the south west corner of the property and no tree removal from the starting zones of these paths; and minimal if any tree removal from the rock outcropping avalanche path in the center of the property. The tree removal from these areas will not change the expected avalanche size or frequency.

Potential Effects of Climate Change

In the coming decades Climate Change could have a effect on the temperature and precipitation patterns in the Sierra Nevada Mountains. Some of the reported possible effects could include an increase in rain versus snow, an increase in cold season rainfall, a decrease in snowfall by up to 40%, higher snow levels, general overall warmer temperatures and earlier snowfed streamflow. Although speculative, should this occur it is likely that it will decrease the overall avalanche potential for the slopes above the proposed Alpine Sierra development with a resulting decrease in avalanche hazard risk. It is likely warmer temperatures with a decrease in snowfall amounts and snowpack levels would result in a stronger snowpack and fewer and smaller avalanche events. It is unlikely these conditions would increase the maximum runouts of the avalanche paths above the proposed Alpine Sierra development.

The effect of these types of climate changes on forest health and wildfire could be considerable. Earlier runoff with rising temperatures may result in longer fire seasons, larger more destructive fires and a general increase in the fire risk. Should future fires damage or destroy significant numbers of trees in the steep slopes above the proposed Alpine Sierra development this could create openings within the forest that may be more prone to slab development and propagation. How this effect might be offset by a stronger snowpack is too speculative to determine. It should be noted that one of the objectives of the Vegetation Management Plan is to reduce the potential for large wildfires.

Potential Avalanche Hazard Map

The accompanying Map identifies the boundaries of the areas within the study area that are subject to avalanche occurrence with a probability greater than one in one hundred (100) per year as required in the Placer County Avalanche Ordinance. This Map includes dry and wet snow avalanches and Rain on Snow triggered avalanche events. The two hazard zones are delineated according to the criteria used by Norm Wilson in developing the County PAHA Map and defined in his Avalanche Hazard Study for Placer County in 1982 and are the basis for the current Placer County PAHA maps. These criteria are:
Red (high Hazard) Zones: Areas where avalanches that could damage standard wood-frame structures and/or bury automobiles are expected to occur with a probability of one chance in twenty per year.

Blue (moderate hazard) Zones: Areas where avalanches that could damage standard wood-frame structures and/or bury automobiles are expected to occur with a probability of less than one chance in twenty per year, but more than one chance in one hundred per year.

The Map also identifies the Wilson Potential Avalanche Hazard Areas.

Conclusions and Recommendations

Based on this site specific study it is recommended that the Placer County PAHA maps be revised to reflect the findings of this study.

The proposed Vegetation Management Plan for the project should have no effect on the existing avalanche zones and should not create any new avalanche zones.

Snow removal and storage from the subdivisions roadways and homesites should not have any effect on avalanche zones.

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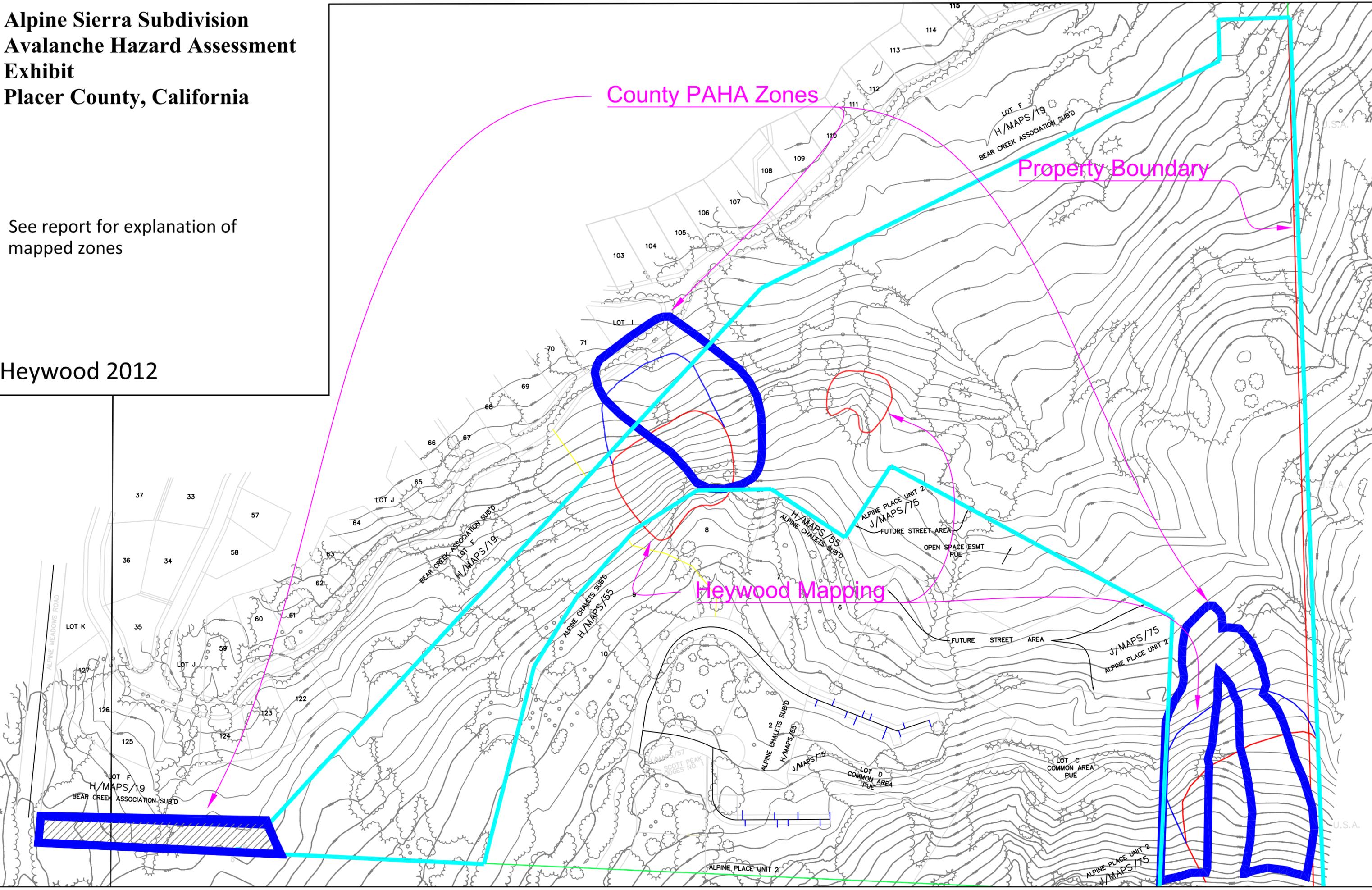
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**Alpine Sierra Subdivision
Avalanche Hazard Assessment
Exhibit
Placer County, California**

See report for explanation of
mapped zones

Heywood 2012



APPENDIX J-2

Alpine Sierra Fuel Management Plan

Alpine Sierra

Forest Management and Fuel Reduction Plan

2014

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Alpine Meadows

The proposed Alpine Sierra Subdivision is located within the picturesque community of Alpine Meadows. Alpine Meadows is located approximately 5 miles northwest of Lake Tahoe, along California State Highway 89. Alpine Meadows consists of several subdivisions, including: Alpine Meadows Estates Association (AMEA), Bear Creek Association (BCA), Chalet, and Juniper Mountain. Each subdivision maintains an organizational structure, such as an HOA to help address community issues. The Alpine Springs County Water District (ASCWD) provides water services to the community and is a central hub for information for valley residents and visitors. The main route to these subdivisions is along Alpine Meadows Road, which stretches from State Highway 89 to Alpine Meadows Ski Area, three miles farther up the road. The community encompasses approximately one square mile within Placer County ⁽¹⁾. The North Tahoe Fire Protection District (NTFPD) provides fire and emergency medical services to the area.

The Alpine Meadows area contains approximately six-hundred and seventy (670) private parcels, interspersed among several open space parcels. Approximately five-hundred (500) homes are found throughout the valley. Bear Creek runs through the community, creating a riparian area near many of the homes. Most of the homes are constructed in the bottom of the canyon, adjacent to Bear Creek. Homes are also situated in the uplands surrounding the creek and along the many small tributary streams that drain into Bear Creek. The community is surrounded by United States Forest Service (USFS) lands.

Weather and Topography

Weather within Alpine Meadows consists of a Mediterranean Climate. This climate consists mainly of hot, dry summers and cold, wet winters. The average annual precipitations (rain) is approximately 20 inches, with a range of .01 – 4.10 inches. Most of the rainfall occurs in the fall and spring, however, summer thunderstorms add to the annual rainfall. Much of the precipitation comes in the form of snow in the winter months. Snowfall can reach 365 inches in the higher reaches of the valley. Most of the snowfall occurs in January. Average annual temperatures range from lows of 37° F – 59° F to highs of 59° F – 81° F. The mean annual temperature is 63° F.

Alpine Meadows is located on the east side of the rugged crest of the Sierra Nevada Mountains. The terrain is highly variable, consisting of flat meadows to steep (sometimes vertical) mountain slopes. Elevations range from 6,185 feet at the mouth of the canyon, near the confluence of Bear Creek and the Truckee River, to 6,835 feet at the Alpine Meadows Resort ski lodge. Mountain peaks above the community are approximately 8,635 feet. These mountain peaks surrounding Alpine Meadows create the approximately 6,000 acre Bear Creek Watershed, which is a tributary to the Truckee River. The Truckee River is a California 303-d listed watershed. Ward Peak and the approximately 8,630 acre Ward Creek Watershed separates Alpine Meadows from the Lake Tahoe Basin to the south (no water from Alpine Meadows flows into Lake Tahoe).

Vegetation Types

Alpine Meadows has several vegetation types. The vegetation communities that occur on site include montane meadow, Lodgepole pine, and Sub-alpine and Upper-Montane forest. These vegetation communities consists of numerous tree and shrub species as well as a herbaceous component including, but not limited to: white fir (*Albus concolor*); red fir (*Abies magnifica*); lodgepole pine (*Pinus contorta*); ponderosa pine (*Pinus ponderosa*); Jeffrey pine (*Pinus jeffreyi*); western white pine (*Pinus monticola*); mountain hemlock (*Tsuga mertensiana*); quaking aspen (*Populus tremuloides*); black cottonwood (*Populus trichocarpa*); willow (*Salix spp.*); western thimbleberry (*Rubus parviflorus*); currant (*Ribes spp.*); gooseberry (*Ribes spp.*); whitethorn (*Ceanothus cordulatus*); manzanita (*Arctostaphylos spp.*); mules ear (*Wyethia amplexicaulis*); tobacco brush (*Ceanothus prostrates*); bitterbrush (*Purshia tridentate*).

Fire and Ecosystem Development

Frequent fires, generally every 7-15 years, have helped develop Sierra Nevada ecosystems. These frequent fires were started by the extensive Native American populations and/or natural causes such as lightning. In the Alpine Meadows region members of the Washoe and Maidu tribes would have ignited and guided fires for a variety of reasons. For example: Alfred Kroeber reported of the Maidu in the Northern Sierra Nevada; “Like most of the Californians who inhabited timbered tracts, the Maidu frequently burned over the country, often annually....Travel was better, view farther, ambushes more difficult, certain kinds of hunting more remunerative, and a crop of grasses and herbs was of more food value than most brush.”⁽²⁾ Further, “The majority of plant species relied on for food and medicine and for making cordage, basketry, and tools thrive only in full sun or partial shade. Ecologically, fire was used to maintain earlier successional stages that these species require.”⁽²⁾

The acreage that was burned by California's earliest humans was significant; the fire scientists Robert Martin and David Sapsis estimate that approximately 6 – 13 million acres of California burned annually under both lightning and indigenous people's fire regime. For example, the “Maidu frequently burned over the country, often annually, eliminating the underbrush, keeping the forests open, and reducing the likelihood of destructive forest fires.”⁽²⁾ This amount and frequency of fire “has influenced ecosystems for millennia, influencing biodiversity, plant reproduction, vegetation development, insect outbreak and disease cycles, wildlife habitat relationships, soil functions and nutrient cycling, gene flow, selection and ultimately, sustainability.”⁽³⁾

These frequent fire regimes have led to important plant adaptations to fire, such as thick bark, burl and stump sprouting, seed germination, and serotinous cones (cones that open and release seeds when they are heated by fire). Many of the trees and shrubs found within Alpine Meadows have some of these unique fire adaptations. For example; “Red fir has thin bark when it is young, making it susceptible to fire. As red fir matures, its bark becomes thicker and it is able to survive most fires. Similarly, mature Jeffrey pine has thick bark, and a slightly thicker bark when young that allows them to survive low –intensity fires... Quaking aspen is the primary hardwood species in the upper montane forest and occurs in small stands where moisture is available. It is a vigorous and profuse sprouter after fire. It becomes increasingly resistant to fire as its diameter increases beyond 6 inches.”⁽⁴⁾

Fire Exclusion and Forest Succession

Although the fire history and plant adaptations are extensive in Alpine Meadows, “It is generally believed today that fires in the Sierra Nevada landscape are less frequent and more severe compared to the patterns presented before the colonial era. The absence of fire in combination with logging and other land management practices has led to a buildup of surface and ladder fuels, particularly in the ecosystems that once experienced low – to moderate – intensity fire regimes. Currently in many places in the Sierra Nevada, small trees and shrubs have become a fire hazard to the natural environment as well as the human inhabitants.”⁽⁵⁾

The lack of fire is apparent in the forest and meadow ecosystems throughout Alpine Meadows. For example, the large expanses of meadow, combined with robust stands of quaking aspen, have been reduced in size by the encroachment of shade tolerant conifer trees. In many areas, quaking aspen is only found as dead trees in the understory of encroaching conifers. Lodgepole pine, the main meadow and aspen encroacher in Alpine Meadows, has thin bark and is often killed by low to moderate intensity fire when it is young. The lack of fire has allowed lodgepole pine to take over the highly fire dependent meadows and quaking aspen stands throughout Alpine Meadows. In addition, all the forest surrounding Alpine Meadows is experiencing increased competition (competition for water, nutrients, light), leading to large amounts of dead and dying trees, as well as an overall reduction of the understory herbaceous vegetation (understory herbaceous vegetation is a critical food source for wildlife). This large amount of

dead and dying trees has led to an unnatural accumulation of fuels on the forest floor that has greatly increased the fire danger. Finally, the lack of fire has led to a forest species composition shift, not only in Alpine Meadows, but throughout much of the Sierra Nevada.

The lack of fire has allowed shade tolerant trees (trees that can grow in the shade), such as white and red fir, to become established in the understory. Historically, periodic low to moderate intensity fire would have killed most of the fir, leaving a smaller percentage to grow maturely. Generally, the resulting forest would have consisted of a more open mixed conifer stand with a higher percentage of pine species overall. Today, white and red fir dominate the low-and-mid-canopy of Alpine Meadows, resulting in a dramatic species composition shift from pine to fir. For example, “Ponderosa pine relies on periodic disturbance for continued dominance in most forest types and tends to have fuel characteristics that encourage burning: resinous needles and well-aerated litterbeds.”⁽⁶⁾ Due to the thick understory of fir, which generally creates significant fuel ladders, the overall fire danger has increased. The historic low to moderate intensity fires that occurred within Alpine Meadows may now be replaced by high intensity stand replacing fires, which are a threat to life and the environment.

Alpine Sierra Subdivision

The proposed Alpine Sierra Subdivision is located on approximately 46 acres in Alpine Meadows. The property is situated primarily on a north facing slope south of Bear Creek. Adjacent property owners include BCA to the north, Chalet HOA to the south and east, and the USFS to the south, east and west. The terrain is primarily moderate, with slopes ranging from approximately 0% - 60%. Elevations range from approximately 6600 ft. to 7000 ft. Bear Creek, which is perennial, traverses the narrow reaches of the property on the north, just south of Alpine Meadows Drive. There is one intermittent (see wetland delineation map below) unnamed tributary stream that flows into Bear Creek north of the property. This creek flows north/northwest and bisects the property on the eastern portion. This creek maintains a narrow riparian plant community, including, willow, thimbleberry, and currant.

The property has several different ecosystem features such as riparian areas, rock outcrops, open meadows, aspen groves, lodgepole pine, and mixed conifer forest. These attributes are scattered throughout the property. Like the rest of Alpine Meadows, the property has experienced extensive fire exclusion. In addition, a lack of forest management, such as thinning, pruning and/or burning to address the effects of fire exclusion have occurred here. This has resulted in the current stand conditions. The majority of the stand is within fuel model 10. (See appendix 1 for a description of the fuel models).

Currently, the forest on the property consists of thick understory fir (white and red) trees with scattered mid and overstory pine and fir trees. This dense understory of shade-tolerant fir is sometimes impenetrable and creates extensive fuel ladders to the mid and upper canopy. Ponderosa pine, Jeffery pine, and western white pine make up a small percentage of the understory tree component. Unlike red and white fir, the pine species are shade intolerant and require large amounts of sun to thrive. Herbaceous vegetation such as thimbleberry, currant and grasses is scattered throughout the understory, but occurring mostly in small pockets/openings where limited light is available.

Mid-canopy trees consist mainly of white and red fir. These trees grow as individuals and thick clumps throughout the property. Ponderosa, Jeffery and western white pine make up a smaller component of the mid-canopy trees. This is the result of being outcompeted by the high percentage of shade-tolerant fir trees that have become established post fire suppression. Lodgepole pine is scattered throughout the property, primarily as individuals. However, lodgepole pine forms a dense stand on the southwest portion of the property. The lodgepole pine in the southwest portion of the property is beginning to encroach upon a fairly young quaking aspen stand. The aspen stand extends beyond the encroaching lodgepole pine but is in poor form and beginning to die out of the stand.

Most of the mid-canopy trees appear healthy. However, throughout the stand many of the trees, including clumps of trees, are suffering from extensive competition. The increased competition in the mid canopy trees is extensive, as the finite amount of growing space, nutrients, and especially water are utilized by each individual tree. This has resulted in a large number of dead and dying trees that are beginning to fall out of the stand. Signs of declining tree health include dead and dying tops, chlorotic (yellowing of needles), increased cone production, and reduced vertical growth. Scattered snags, as well as down trees, are visible throughout the property, leaving the forest prone to wildfire.

Ponderosa pine, Jeffery pine, red fir and white fir make up the overstory. The overstory consists of well-spaced scattered trees as well as dense groves of mature trees. Some of the larger trees have diameters over 70 inches DBH. Most of the overstory trees are heavily encroached upon by shade tolerant fir trees. Throughout the stand it is often difficult to see the bole of the larger trees due to the accumulation of understory and mid-canopy fir trees.

As with the mid-canopy trees, many of the overstory trees appear to be in good health. However, declining health is apparent throughout the stand, likely the result of encroaching and competing fir trees. This is evident by the large numbers of dead and dying trees. The signs of dead and dying trees are similar to those found in the mid-canopy. Large snags and down logs are scattered throughout the property. In addition, many trees have cat faces, healed over scars at the base of the tree, which can be vectors for insects or disease.

Wildfire and disease are the greatest risks to the current stand. Although there are abundant vigorous and healthy trees in all of the canopy layers, the overall health of the forest on this parcel is in a state of decline. The increased pressure for limited resources is causing stress throughout the stand. The current drought conditions and the threat of climate change are added components of this already stressed forest. As the trees continue to compete for limited resources they are at greater risk of the spread of insect and disease. Natural pathogens generally avoid healthy trees and select stressed hosts due to their lack of adequate defense mechanisms. For example, healthy and vigorous trees are often able to use defense mechanisms such as pitching out (releasing sap) to defend from bark beetles.

Dead, dying and down trees in all size classes and species type are observed throughout the stand. This has resulted in an unnatural accumulation of forest fuels. Without the cleansing mechanism of periodic low-moderate intensity fires, such as those that historically occurred here, fuels continue to accumulate throughout the forest. This increased fuel loading has been a problem throughout the country, certainly in the Sierra Nevada (and within the identified parcel). For example, researchers leading the Sierra Nevada Ecosystem Project (SNEP) found that “The increased density of young trees together with increased fuel from fire suppression and tree mortality has created conditions favorable to more intense and severe fires. Moreover, severe fires are more likely to be large because they are more difficult to suppress, although data on large fires in the Sierra indicate that current fire sizes vary greatly among national forests. While we cannot be sure whether more absolute area has burned in severe fires in the twentieth century than in the pre-contact times, it is clear that within those areas that do burn, a greater proportion of fire is high-severity than in the past.”⁽⁷⁾ If / when a fire starts, this statement could certainly be true for the property due to the current stand conditions described above.

Community Fire Safety – Community Protection

The proposed development is within the Wildland Urban Interface (WUI). The WUI is the area where wildland environments and communities converge. Wildland fire is a major concern within the WUI. Communities are often threatened or destroyed due to wildfire that burns adjacent to, or within WUI environments. Dr. Jack Cohen, researcher with the US Forest Service Rocky Mountain Research Station, developed the concept of the home ignition zone (H.I.Z) as a result of home losses due to wildfire in, or

adjacent to the WUI. The H.I.Z is the home and the immediate 100 – 200 feet surrounding the home. The H.I.Z is comprised of four distinctive zones detailed below. Dr. Cohen’s research revealed that approximately “eighty percent of homes with at least thirty feet of defensible space and a fire-resistant roof have survived wildfires. His research indicates that:

The potential for home ignitions during wildfires including those of high intensity principally depends on a home’s fuel characteristics and the heat sources within 100 to 200 feet adjacent to a home.... This relatively limited area that determines home ignition potential can be called the home ignition zone. During a wildland-urban fire a home ignites from two possible sources: directly from flames (radiation and convection heating) and/or from firebrands accumulating directly on the home. Even the large flames of high-intensity crown fires do not directly ignite homes at distances beyond 200 feet. Given that fires adjacent to a home do not ignite it, firebrands can only ignite a home through contact. Thus, the home ignition zone becomes the focus for activities to reduce potential wildland-urban fire destruction. This has implications for reducing home ignition potential before a wildfire as well as implications for emergency wildland-urban fire response strategy and tactics. ⁽⁵⁾

Implementing fire safety measures will help ensure the survivability of homes during a wildfire event. The general principle behind making an area fire safe is to reduce the amount of fuel and modify the arrangement of fuel. This principle can be met by following the fuels reduction / forest management prescription detailed below.

In addition to implementing the fuels reduction / forest management prescription, each home site must provide adequate defensible space. Defensible space is defined by the US Forest Service as “an area either natural or manmade where material capable of causing a fire to spread has been treated, cleared, reduced, or changed to act as a barrier between advancing wildland fire and the loss of life, property, or resources. ⁽⁹⁾ The California Department of Forestry and Fire Protection (CalFire) requires defensible space around homes is a minimum of one hundred (100) feet around structures or to the property line (see below). Assuming modern building practices for California, and providing that defensible space is created and maintained, a home should be able to survive a wildfire without the aid of firefighting resources.

Defensible Space in the Home Ignition Zone

As previously mentioned, the H.I.Z includes four distinct zones. These zones include the *Fire Free Zone*, *Structural Protection Zone*, *Defensible Space Zone*, and *Wildland Fuel Reduction Zone*. Each zone represents a different set of fuel reduction goals. These goals range from eliminating the spread of all fire, to increasing forest health and fire resiliency surrounding a community. Goals for each zone can be met through proper fuels reduction and maintenance as described below.

Each of the four zones will be represented in the Alpine Sierra Subdivision (see Fire Protection Vegetation Management Exhibit). Please note that the exhibit is prepared for Alternative B only: however, the Proponents Proposed Project would not be substantively different as spatial extent of the development is similar. Implementation and maintenance of fuels reduction activities within each zone will be the responsibility of the H.O.A. Initial fuels reduction activities in each zone will be concurrent with the development of the site. Maintenance of fuels reduction work will occur as needed to meet the goals of each zone. The need for maintaining each zone within the development should be reviewed annually.

Fire-Free Zone is a house or structure and five feet beyond. ⁽⁵⁾ The goal of this zone is to eliminate the spread of all fire. This zone is immediately adjacent to a home or structure and should be constructed of non-flammable material. Non-flammable material includes, but is not limited to bare mineral soil, concrete, and gravel. Defensible space practices within this zone include:

- Removal of all flammable material from the area. Flammable material includes, but is not limited to; wood piles, pine needles, and mulch - anything that can carry a ground fire to a house.
- Irrigated plants, so long as they are well watered and not touching the house, can be located within this area.

Structural Protection Zone, combined with the Fire-Free Zone, will make up approximately 24 acres of Alpine Sierra Subdivision. This zone extends from the Fire-Free Zone out to thirty feet. ⁽⁵⁾ This zone is often referred to as the “lean and green” zone. The primary goal of this zone is to create and maintain, through fuels reduction and fire safe landscaping, an environment that minimizes the rate of spread and intensity of any fire. This zone provides a sufficient safety area for fire suppression personnel and resources during a wildfire. In addition, this zone provides a space where flammable material will not threaten a house. Fuels reduction practices within this zone include:

- Vegetative material should be well spaced (crowns should not be touching) and in a healthy condition.
- Remove limbs that overhang structures.
- Reduce vertical and horizontal continuity of trees and shrubs.
- Vegetative fuels should be pruned and kept free of accumulations of dead material.
- Reduce surface and ladder fuels (prune trees approximately 6-10 feet high, or 50% of the live crown for shorter trees (12’ – 20’ trees)).
- Select leave trees as described below.
- Shrubs should be low growing and free of dead materials.
- Thin shrubs so that spacing is approximately 3 times the height of residual shrubs.

Defensible Space Zone will make up approximately 12 acres of Alpine Sierra Subdivision. This zone extends from the Structural Protection Zone out to a distance of one hundred feet or more, or to the property line, whichever is greater. ⁽⁵⁾ The primary goal of this zone is to eliminate crown fire potential and reduce fire intensities to protect habitable structures and critical infrastructure. This goal will be met through a combination of deliberate (site specific) thinning and fuels reduction within this zone. Thinning and fuel reduction practices (guidelines) are similar to those recommended in the *fuels reduction / forest management section* below. However, further reduction of fuels is required to protect structures and eliminate/minimize crown fire potential. Additional practices in this zone include, but are not limited to:

- Reducing surface and ladder fuels up to 90%.
- Removing logs and stumps, unless embedded in the forest floor (remove vegetation and timber litter from around logs and stumps that remain on site).
- Pruning, as previously mentioned, lower branches of leave trees.
- Thinning to enhance the growth of leave trees and to increase species diversity.
- Select leave trees as described below

Wildland Fuel-Reduction Zone will be located on approximately 9 acres of Alpine Sierra Subdivision. This is the last zone, extending from the Defensible Space Zone out an *additional* one hundred to two hundred feet or even much further. ⁽⁵⁾ Within this zone forest health treatments, coupled with fuels reduction should be implemented to enhance and restore the overall ecosystem health and resiliency to fire. Practices such as those described in the *fuels reduction / forest management section* below can be used to meet the goals within the Wildland Fuel-Reduction Zone.

Fuels Reduction / Forest Management

In an effort to modify fire behavior and reduce the potential for high intensity fires, certain fuel reduction activities can be implemented on the landscape. Fuel reduction activities can help increase fire safety and

provide areas of safety during fire suppression efforts. In addition, fuels reduction can enhance the process of restoring ecosystem health and resiliency. When engaging in any restoration activity it is important to take careful actions to ensure a positive outcome (see appendix 2 - *Conservation Principles for Community Wildfire Protection in California's Sierra Nevada*). In addition, it is also very important to seek the guidance of an RPF when implementing a fuels reduction / forest management prescription.

Fuels reduction activities should be focused on several important goals including but not limited to; reducing wildfire threat, making fire-suppression efforts safer and more effective, and improving ecosystem health. These goals can be met by implementing a variety of fuels reduction activities such as thinning, pruning, burning, and more. Due to the symbiotic relationships found throughout this ecosystem, many of the recommendations will address multiple goals. For example, thinning of small diameter trees will help reduce wildfire threat and reduce competition, resulting in increased forest health and safer and more effective firefighting condition. Managing forest for fuels reduction, habitat diversity, and long-term health requires the judgment and consultation of a Registered Professional Forester. The following are recommended steps required to achieve these fuel reduction goals.

Thin trees and shrubs utilizing *variable-density thinning* throughout the stand. Variable-density thinning is sometimes referred to as a ‘skips and gaps’ approach. In such a prescription, some portions of a stand are left lightly or completely unthinned (‘skips’), providing areas with high stem density, heavy shade and freedom from disturbance, while other parts of the stand are heavily harvested (‘gaps’), including removal of some dominant trees, providing more light for subdominant trees and understory plants.⁽⁸⁾ Intermediate levels of thinning are also applied in a typical variable-density prescription.” For example, leave small areas of dense vegetation while creating and or maintaining openings where increased sunlight can reach the ground. Focus thinning on small diameter (generally 10 inch DBH or less) suppressed and/or dead trees, shrubs, and limbs while maintaining wildlife structures. However, retain a wide variety of age, size, and decay classes, including dead and dying vegetation consistent with fuels reduction goals. Leave trees *shall generally* be those of tallest height, largest crown, straightest bole, and greatest vigor that are free of damage due to insects, disease, physical and mechanical causes. Selection criteria for leave trees:

- Select trees that are free from disease and damage.
- Select trees which have a 30%+ live vigorous crown.
- Select trees with the desired species mixture composition provided it is at least 2/3 the height of codominant* trees and meets other selection criteria, such as free from disease and good form.
- Select taller trees with good form (e.g. no two way sweep, no spiral grain, etc.) while maintaining species distribution. However, maintain at least 10% of existing deformed trees (e.g. pistol butts, forked tops, dead tops, etc.) for genetic diversity and wildlife.⁽⁵⁾
- Select healthy and vigorous trees (tree health and vigor should be assessed by an RPF or certified arborist)
- Species selection for leave trees is not determined by specific percentages by species, rather the overall health of leave trees. When selecting “leave trees” the preference is as follows: Please note that these leave tree specifications are in place to increase forest health and habitat diversity, but that situations may arise that would change leave tree selection order. For example, do not select an unhealthy Western white pine over a healthy Jeffery pine.
 - Quaking aspen
 - Willow and other hardwoods
 - Western white pine
 - Jeffery pine
 - Ponderosa pine
 - Lodge pole pine

- Red fir
- White fir
- Release quaking aspen stands by removing competing vegetation. Remove most of the encroaching fir and lodge pole pine trees where aspen is being shaded out.
- Thin leave trees to spacing of approximately 15 feet as measured by the crown.
- Drip line thin around leave trees (clearing of ladder fuels under the drip-line circumference of a leave tree).
- Retain meadow and rock outcrop openings by cutting encroaching conifers and shrubs from openings and edges. Thin trees and shrubs more heavily along meadow edges to minimize wildfire risk and increase size and variability.
- Reduce ladder fuels by thinning (pruning) lower branches of leave trees. This practice can be completed on up to 90% of the leave trees.
- Retain a wide variety of age, size, and decay classes, including dead and dying vegetation, consistent with fuel reduction goals.
- Reduce 40%-60% of fuels on the forest floor, while leaving several large logs per acre to retain moisture and provide wildlife habitat.

*Codominant Trees – Trees with crowns forming the general level of the forest canopy and receiving full light from above, but comparatively little light from the sides. Codominant trees usually have medium sized crowns, but are crowded on the sides.

Slash Treatment

Accumulated slash from restoration treatments will be abundant. Treating this slash (fuel) is important in order to reduce the threat of fire. Burning (hand pile, swamper) and chipping are generally utilized to discard fuels created during projects.

Hand pile burning is the act of gathering slash into piles by hand and then burning the pile. ⁽⁵⁾ Piles are generally about 5 feet high by 5 feet wide. Piles should be placed at least 10 feet away from leave trees, old stumps, and fallen logs. Piles are generally burned in the fall or winter during or following rain/snow. All burning will be accomplished through appropriate Air Quality Management District and Cal Fire permits.

Swamper burning is a method of prescribed fire where fuel is added gradually and continually to a burning pile over the course of a day. ⁽⁵⁾ Like hand pile burning, burn piles should be placed at least 10 feet from leave trees. Burning generally takes place in the fall or winter during or following rain/snow.

Chipping of slash is also an alternative, although access often limits its application on the landscape. During chipping operations slash is fed manually into a mechanized chipper and either scattered onto the forest floor or into a truck and transported to a desired location.

Regardless of what methods are used for slash treatment, it is important that a portion of the cut material be left on site (lopped and scattered) to increase soil productivity and stability.

Hazard Trees

Hazard trees refer to trees that have the potential to cause death, injury or property damage if they fail. In general, hazard trees include dead or dying trees, damaged trees, unstable trees (live or dead), and trees with defect that can cause them to fail. The threat and priority of hazard trees increases with increased human occupation. The US Forest Service has designated several zones that prioritize the risk of hazard

trees. These zones include: “*The High Risk Zone*, which includes high use areas with many people, parked vehicles and permanent structures. This zone is the highest priority for regular inspection and treatment. *The Medium Risk Zone*, which includes areas with intermittent use by people and moving vehicles. The priority for inspections in this zone is based on amount and type of use. *The Low Risk Zone*, which includes areas lacking vehicles or structures with low visitor use. Regular inspections and treatments in this zone have low priority.”⁽¹⁰⁾

As previously mentioned, the forest on the property is being impacted by stress and competition for resources. This has resulted in a significant amount of dead and dying trees. As a result, hazard trees are scattered throughout the property. Many of these trees are large diameter white and red fir that will pose a significant threat (high risk zone) when the property is developed. All trees that pose a risk to life and property should be assessed by qualified personal such as certified arborists or Registered Professional Foresters. All identified hazard trees that pose a significant risk to life and property should be removed prior to development. In addition, annual hazard tree assessments by qualified personal should be completed in “high risk zones” following the development of the site.

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Appendix

1.

Fuel: Description of Fuel through Fuel Models

“A fuel model is a standardized description of fuels available to a fire based on the amount, distribution, and continuity of vegetation and wood. Fuel models distinguish between vegetation such as tall and short chaparral, tall and short grass, timber with and without an understory, and oak woodland with and without understory vegetation. They describe the structure (or arrangement) of the vegetation primarily, as well as the kinds of plants that grow in the vegetation. Foresters and Fire managers use fuel models within the Fire Behavior Prediction System (FBPS) called FBPS #1, 4, 8, 9, and 10, etc. Fire behavior prediction models are useful because they forecast how fast a fire will spread, or how damaging the fire might become (in terms of fire intensity), or whether it is likely to torch in the area. Information regarding fuel volumes and fire behavior descriptions is available from the publication *How to Predict the Spread and Intensity of Forest and Range Fires* (Rothermel, Richard C. (1983). General Technical Report INT-143, published by the USDA Forest Service Intermountain Forest and Range Experiment Station.)

Fuel models describe vegetation structure, in addition to typical species composition; structure largely determines the fuel that will actually support the fire. The understory is more important than the overstory. The most significant factor is the amount and distribution of smaller-diameter fuels, because these materials generally spread wildland fires. Another important factor in fuel models is the amount of dead biomass and the ratio of live-to-dead material in terrain with significant brush and numerous tree stands; dead biomass contributes fine fuel litter as well as carries flames more readily”⁽⁵⁾

Fire behavior within fuel model 10 is often very intense due to large amounts of available fuel on the forest floor. Dead fuel loading within fuel model 10 generally consists of approximately 3 tons/acre of 1 hr. fuel (< ¼ inch diameter), 2 tons/acre of 10 hr. fuel (1/4 – 1 inch diameter), and 5 tons/acre of 100 hr. fuel (1-3 inch diameter). In addition, available live fuels can be over 2 tons per acre. Surface fuels generally carry high intensity surface fires that are hard to control. High intensity crown fire and associated spot fires (spot fires are fires that start when lofted burning embers land on dry material and start a new fire) are often associated with fuel model 10 due to the significant amounts of surface and ladder fuels that carry fire to the forest canopy.

2.

Conservation Principles for Community Wildfire Protection in California’s Sierra Nevada

“Fire always has been and always will be an ecological force in the Sierra Nevada. Decades of fire suppression have changed this role, allowing stands to thicken and fuels to accumulate, especially in the foothills and lower montane¹ zone, where developments are increasing. We either manage fire and live with fire on our terms or let fire dictate the terms. The choice is ours.”

— Jan W. van Wagtenonk, *Wildfire* (2006)

¹ Montane: A mountainous region of moist cool upland slopes that occurs below the tree line and is predominantly composed of evergreen trees. It is also described as the lower vegetation belt on mountains that is composed of montane plants and animals.

Most Sierra Nevada residents choose to live here because of the natural beauty. What many of us don't realize is that living within these forests and *wildlands*² carries a responsibility. We need to be good stewards of the land, learning to live in balance with the natural world, of which fire is a significant part. This document summarizes what residents can do to coexist with fire in the Sierra. It will show you how to provide a positive balance among *fire prevention*,³ conservation, and wildlife protection at your Sierra Nevada home. You've chosen to live here, and with your choice comes a stewardship responsibility.

For more information on fire safety in general, please contact your local Fire Safe Council, or go to
www.fire.ca.gov/education_homeowner.php
www.firesafecouncil.org/homeowner/index.cfm
firewise.org/resources/homeowner.htm

Some Basic Concepts to Remember for Living with Fire in the Sierra Nevada

→ **Fire is a dynamic element of the Sierra.** Your property has likely burned before and will burn again. The landscape where you live today may seem “natural.” In fact, it has changed drastically over the last 150 years as we have attempted to manage fire. In preparing your property for fire, you can help restore it to a more ecologically appropriate state. In doing so, you will learn how to be prepared for wildfire—it is not only possible, it's smart. While it is rarely practical to completely “fire proof” your property, there are many steps you can take to survive inevitable wildfire. *For more information see*
http://www.fire.ca.gov/education_content/downloads/live_w_fire.pdf.

→ **One size does not fit all in terms of homeowner fire safety.** Every place is unique. Work with your local *Fire Safe Council*,⁴ fire department, *Cooperative Extension Agent*,⁵ *Registered Professional Forester*,⁶ and/or contractors to design the appropriate *fire-safe practices*⁷ and *defensible space*⁸ for your property. See www.fire.ca.gov/education_100foot.php and www.firesafecouncil.org/homeowner/index.cfm for more information.

² Wildlands: An area of land that is uncultivated and relatively free of human interference. Plants and animals exist in a natural state, thus wildlands help to maintain biodiversity and to preserve other natural values.

³ Fire Prevention: Actions taken by homeowners and community members to lessen wildfires and damage caused by wildfires. Includes education, enforcement, and land management practices.

⁴ Fire Safe Council: Public and private organizations that comprise a council intended to minimize the potential for wildfire damage to communities and homeowners, while also protecting the health of natural resources. Goals are achieved by distributing fire prevention materials, organizing fire safety programs, implementing fuel reduction projects, and more.

⁵ Extension Agent: An employee from the government or a university who provides information to rural communities about agriculture, land management and/or resource management. In California, the University of California Cooperative Extension (UCCE) provides this service. For more information on UCCE, see: <http://ucanr.org/>.

⁶ Registered Professional Forester (RPF): A person licensed in California to manage state or private forestlands and advise landowners on management of their forests. For more information, see: www.bof.fire.ca.gov/licensing/licensing_current_docs.aspx.

⁷ Fire Safe Practices: Activities such as creating defensible space, firebreaks, access to your home, fire-resistant landscapes, changes to your home in terms of material and design, etc., that make your home/property safer in wildfire situations. ⁸ Defensible Space: An area around a home/structure that has been cleared of flammable materials to act as a barrier between wildfires and property, thereby decreasing the risk of damage or loss. This space is now defined as 100 feet around a structure in California.

→ **Your home exists within a larger watershed.**⁸ It is located in the midst of a much larger landscape. Think about where your property is on the *slope*.⁹ Are you on top of a ridge, where fire will easily burn toward your home? Is your slope steep or gentle? Fire moves quickly up steeper slopes, which means that you may need to treat a larger area to create your defensible space. What is below and above you? What direction, or “*aspect*,”¹⁰ does your property face? Generally, south-facing properties are hotter and drier; they can therefore be more susceptible to fire. Are there any natural *firebreaks*¹¹ around you such as streams, rivers, or rocky outcrops where a fire might naturally go out? Do wildlife use or move through your property to get to food, shelter, or water? In what watershed are you located? Do the roads in and out of your property follow ridges or rivers? Look beyond your property lines to understand the ecological perspective of your place. See www.audubon.org/bird/at_home/Explore.html for more information.

→ **Fire can behave both predictably and unpredictably.** We can generally predict fire direction and behavior; it will go the way the wind is blowing and burn as much *fuel*¹² as is available. Predicting the exact time and place where fire will burn is less obvious. As fire moves across the landscape it can climb up into your trees. A key fire safety objective is to prevent that spread. Dead leaves and branches on the ground (*surface fuels*¹³) act as a *wick*¹⁴ to move fire horizontally across the land. Shrubs, small trees, and live branches (*ladder fuels*¹⁵) can carry fire vertically into the larger trees. Too much of these surface and ladder fuels can cause the *overstory*¹⁶ trees to burn up in what is called a “crown fire”—when fire spreads from tree to tree in the forest canopy (or tree tops). One of the main principles in creating defensible space and reducing hazardous fuel conditions is to create physical space between vegetation layers (both vertically and horizontally) so a fire cannot climb easily from the ground into the trees or to your home.

→ **Timing is everything.** There are appropriate times for different actions on your property, much as there are different seasons of work in your garden. Do your defensible space and fuel reduction work well before fire season, to avoid having sparks from equipment start

⁸ Watershed: All of the land that drains water runoff into a specific body of water. Watersheds may be referred to as drainage areas or drainage basins. Ridges of higher elevation usually form the boundaries between watersheds by directing the water to one side of the ridge or the other. The water then flows to the low point of the watershed.

⁹ Slope: A percentage or degree change in elevation over a defined distance that measures the steepness of a landscape.

¹⁰ Aspect: The direction that a slope faces—north, south, east, west, etc.

¹¹ Firebreak: A strip of land that has been cleared of vegetation to help slow or stop the spread of wildfire. It may be a road, trail, or path cleared of vegetation or other burnable materials. A firebreak could also be a stream.

¹² Fuel: All burnable materials including but not limited to living or dead vegetation, structures, and chemicals that feed a fire.

¹³ Surface Fuels: Materials on the ground like needles or low-growing shrubs that provide the fuel for fires to spread on the ground. Surface fuels are generally considered all fuels within six feet of the ground.

¹⁴ Wick: A combustible material that allows fire to travel along a confined path to larger fuel sources. An example would be a wooden fence connected to your home.

¹⁵ Ladder Fuels: Materials such as shrubs or small trees connecting the ground to the tree canopy or uppermost vegetation layer. In forests, this allows fire to climb upward into trees.

¹⁶ Overstory: The topmost trees in a forest which compose the upper canopy layer; compared to the understory, which is the lower woody or herbaceous layer underneath treetops.

fires in dry vegetation. Avoid *grounddisturbing*¹⁷ activities in your forest or wildland when the ground is too wet or when birds and animals are nesting. Don't try to do everything at once—think about your fire safety seasonally: plan your activities in the winter and spring; start clearing when the ground begins to dry (when it's not *saturated*¹⁸) or when there is snow on the ground; finish treatments by early summer before the vegetation is dry; do your defensible space maintenance around and inside your home in the fall; and burn your piles after the rains begin in the winter.

→ **Your house is likely a fuel source.** Many Sierra homes are located in places where a fire can start and spread into surrounding vegetation. The more you prepare your house and other structures, the less you will have to treat the surrounding vegetation. The biggest improvement you can make to reduce your fire risk is to build or remodel your house to resist the millions of tiny *embers*¹⁹ created by *ember-attack*²⁰ from wildfires. When wildfires burn in extreme conditions they send burning firebrands (embers) ahead of them; these firebrands ignite new fires. Using *fire-resistant building materials*²¹ and appropriately designed structures will give you the best chance to survive wildfire. Don't let your home be part of the problem. An interactive source of information to reduce homeowner risk in the wildland-urban interface is provided by the University of California Center for Fire Research and Outreach; it's called the Fire Information Engine Toolkit. See firecenter.berkeley.edu/toolkit/homeowners.html for details on how this web-based program can help you make better decisions to reduce your fire risk.

→ **Know your legal obligations.** Learn the legal requirements regarding defensible space and fire-safe building and construction. Discover how to balance these with the ecological needs of your place.

→ **Firefighters need your help to protect your home.** Make it safe for them and their equipment to get to and from your house. Be sure they can find you with visible road and address signs. Remember that firesafe landscaping and construction greatly improves firefighters' ability to protect your home. See *principle 4C below*, and www.livingwithfire.info/beforethefire/accesszone/index.php for more information.

Conservation Principles

Consider the Conservation Principles below in how you approach your fire safety and defensible space. It's all about balance. It is possible to have an aesthetically pleasing landscape that is fire-safe, supports local plant and animal species, and still provides you with privacy and plantings.

Remember the Vegetation (Native Trees and Other Plants)

a. Discover and monitor your forest and vegetation's dynamic changes.

¹⁷ Ground-Disturbing Activities: Actions that interrupt the natural condition of the ground, such as digging and compaction from heavy equipment.

¹⁸ Saturated: The broad meaning is "full." Saturated soil refers to the point at which the soil is so full of water that no more water can get into (be absorbed by) the soil, and therefore must run off.

¹⁹ Embers: Small glowing or smoldering pieces of wood or other organic debris, often airborne in a fire.

²⁰ Ember Attack: Embers blown by the wind during a firestorm that accumulate at intersections between horizontal and vertical members on the outside of your house, igniting debris and combustible materials. Embers can also enter into openings (e.g., attic vents and other wall openings), igniting debris on the inside of your home.

²¹ Fire-Resistant Building Materials: Materials used in the construction of a house that are resistant to ignition when exposed to radiant heat or flames. Examples include clay tile roofs, metal roofs, and stucco siding.

Plan for the future of your forest. Because you are the conservation steward of your land, your work in the forest will be ongoing. Watch the wild areas on your property and learn from them as they grow and change with your stewardship. Think both in the short term (what will happen this year) and the long term (what will happen over time). Document those changes as the years go by; keep notes and records. Learn how to *monitor*²² the ecological changes on your property and use that information for *adaptive management*²³ of your wildlands. To live with wildfire we need to take the responsibility to manage, adapt, and guide the vegetation around our homes. *For more information see www.dnr.state.mi.us/publications/pdfs/huntingwildlifehabitat/Landowners_Guide/Habitat_Management/Planning/Evaluating_Land.htm.*

b. Act conservatively.

We are manually recreating a more *fire-resilient landscape*.²⁴ In doing this, we need to apply the general concepts of the *precautionary principle*²⁵ while implementing *fuel treatments*²⁶: you can always remove more trees and vegetation at a later time, but you cannot immediately replace what you have cut. The vegetation you leave is ultimately most important. Be sure that what you remove is done with careful planning and consideration to ensure that what you leave standing is healthy and *resilient*.²⁷

Protect native species that share your home.

Look at the native vegetation around your property—or ask a local plant or forestry specialist for help—to see what different plants share your home. There may be plants that are rare. If so, protect them by providing defensible space (while keeping in mind their needs, such as shade). Find out if those plants exist in other areas within your watershed and how they are being managed there. Watch for *invasive weeds*.²⁸ Follow vegetation treatments with invasive weed removal. Minimize the introduction of exotic plant species near your home, especially those that can spread into adjacent wildland areas. Invasive species can change your fire hazard very quickly and be difficult to manage.

²² Monitor: To watch, keep track of, or check regularly for changes—in this case, to the environment.

²³ Adaptive Management: An approach to managing the environment/property that is based on a “learn by doing” technique that adjusts to changing conditions. Adjustments in management change over time as new information is learned.

²⁴ Fire-Resilient Landscape: A natural landscape featuring plants that have adapted to local wildfire conditions, or a domestic outdoor space where appropriate actions have been taken to make it less vulnerable to wildfire and certainly less prone to causing one.

²⁵ Precautionary Principle: A concept that promotes a cautious approach to development and managing the environment when information is uncertain or unreliable. Erring on the side of caution and conservation is encouraged, along with a “Better safe than sorry” attitude.

²⁶ Fuel Treatment: The act of removing burnable materials to lower the risk of fires igniting and to lessen the likelihood of damage to property and communities. Treatments may include creating a defensible space, developing fuelbreaks, initiating prescribed burns, and thinning vegetation.

²⁷ Resilient, Resiliency: The ability of an ecosystem to return to its balanced state after a disturbance.

²⁸ Invasive Weeds: Undesirable plants that are not native and have been introduced to an area by humans. These plants generally have no natural enemies and are able to spread rapidly throughout the new location. Some examples include Himalayan Blackberries, English Ivy, and Scotch Broom.

Avoid unnecessarily introducing water into your landscape, as water will generally help non-native plants out-compete native plants. See www.cnps.org/activities/natives.htm, www.cal-ipc.org, and www.ipm.ucdavis.edu/PMG/weeds_common.html for more information.

c. Keep the oldest and biggest trees.

Generally, most of the oldest trees in the forest are no longer present. If you have old or very large trees, create defensible space around them so they will survive wildfire. This may include raking away thick *duff*²⁹ at the base of the trees. Notice that these trees often have thick bark so they are generally fire-resistant (they have evolved with fire). Think about their protection in terms of building a fire in your woodstove: A big log won't start burning without a lot of smaller kindling (e.g. small trees, shrubs, branches, etc.). In your forest, make sure that the smaller kindling isn't around the bottom of your big trees, and generally the trees will make it through a wildfire on their own. In some cases, you'll need to remove smaller trees that touch the crown of the tallest trees. At the same time, you don't want to remove all of the small trees in your forest. Small trees are the next generation of large trees. Keep enough *regeneration*,³⁰ possibly in small patches, to provide for the future forest, while still providing adequate space between all the trees you keep standing. An additional benefit of keeping your biggest trees is that they can break up the wind as it's moving through, which can slow down fire spread.

Remember the Wildlife

a. Provide local wildlife a place to live.

Become familiar with the animals that share your property. Talk to local wildlife experts and/or bird watchers. Learn what wildlife need in terms of shelter, food, water, and reproduction. Remember that your property is their home too. Find ways to balance your land management activities with their needs, and leave some areas *untreated*³² for the birds and wildlife using them. Protect them as you would your home by creating defensible space while still considering their needs for *cover*.³¹

b. Provide access to food and water.

Protect and retain trees with nests and cavities, or where obvious wildlife feeding or nesting activities are occurring. Leave some plants that have berries or other fruit or *mast*³² used by wildlife. Act especially carefully and leave cover around streams, *seeps*,³³ or other wet areas to keep those areas cool and wet; this will provide wildlife the protective cover they need when they are using those places or moving to and from them. Make sure all natural water

²⁹ Duff: A layer on the forest floor that is made up of decomposing organic matter such as leaves, needles, and small branches.

³⁰ Regeneration: The renewal of trees or forests by planting seedlings, or the direct seeding by humans, wind, birds, or animals after large disturbances like fire. "Regeneration" also refers to the young trees that were naturally seeded or planted. ³² Untreated: Not altered from a natural or original state; e.g. no fuel reduction or defensible space activities.

³¹ Cover: Any plants or organic matter that holds soil in place or grows over and creates shade that provides wildlife with an area to reproduce and find protection from predators and weather.

³² Mast: Nuts or fruits of trees and shrubs such as acorns, walnuts, or berries that collect on the forest floor and are a food source for animals.

³³ Seep: An area where water rises from an underground source to the surface and creates a wet area.

supplies are clean by keeping any poisons and *sediment*³⁴ away from any water that could drain into them.

c. Protect future generations of wildlife.

Find out when local species are nesting and/or breeding and avoid working in and around your wildlands during those times. Learn what kind of habitat local species might use for nesting and breeding, and be sure to protect those areas during your management activities.

d. Value the standing dead trees.

Standing dead trees—or *snags*³⁷—are especially important for wildlife. They provide both shelter and food to many birds and other animals. However, they can also be a wildfire hazard if they are near enough to fall on your home or fall and block an evacuation road during a fire. Balance the needs of wildlife with your need for fire safety. Think about your home within the landscape; if you've got snags in the area, you don't need them next to the house.

e. Conserve rare and endangered species.

One of the bonuses—and responsibilities—of living in the Sierra is living with the many rare and endangered species with which you share habitat. Find out if there are rare or endangered species in your area by talking to your local Cooperative Extension Agent or Forest Service wildlife biologist. Plan your fuel reduction actions around the needs of these species. Often by a fairly minor refinement of your activities, such as timing, technique, or extent, you can protect species while realizing your fuel reduction goals. *For more information, see www.dfg.ca.gov/hcpb/species/t_e_spp/tespp.shtm, www.dfg.ca.gov/habitats/wdp/region-sierra_nevada-cascades/overview.html.*

3. Remember the Soil

a. Maintain the life in your soil.

There is as much or more activity below the ground on your property as there is above the ground. Keep this in mind in terms of what you do above ground. Talk to your Cooperative Extension Agent or local gardeners to find out what *soil types*³⁵ are on your property. Some soil types can tolerate much more *disturbance*³⁶ than others. Minimize activities that could *compact*,³⁷ flood, or poison your soil. The health of your land is directly dependent on the health of your soil. As such, the soil is one of the most valuable assets of your property.

b. Ensure that your soil cover is fire safe.

³⁴ Sediment: Particles of topsoil, sand, and minerals that come from soil erosion or decomposing plants and animals. Wind, water, and ice carry these particles; when the sediment collects in waterways it can destroy fish and wildlife habitat. ³⁷ Snag: A standing dead tree that has usually lost most of its branches. Snags offer essential food and cover for a host of wildlife species.

³⁵ Soil Type: Refers to the different combinations of soil particles and soil composition. Soil can vary greatly within short distances.

³⁶ Disturbance: Various activities that disrupt the normal state of the soil such as digging, erosion, compaction by heavy equipment, etc.

³⁷ Compact: To pack closely or tightly together, as in the fragments of soil being compacted from heavy equipment, thereby limiting the ability of oxygen or water to pass freely.

Replace cover that burns easily (such as dry or dead vegetation) with cover that is less *flammable*³⁸ (e.g. gravel, fleshy green plants, etc.). The objective is to ensure that if and when a fire comes through, it is not so hot that it kills the life in your soil. Rather, it should move through without a lot of fuel to consume in its path. For example, a very light layer of pine needles can help with soil erosion (*see below*), but too much can be a fuel problem.

c. Minimize erosion.

Protect your soil by keeping it covered. Cover helps to prevent *erosion*,³⁹ especially on ground that is not flat; it keeps the soil in place. Don't let soil move across your property, most importantly not into streams or other natural water sources. Keep ground-disturbing activities away from *unstable*⁴⁰ areas and *riparian*⁴¹ areas. Pay special attention on steep slopes. The steeper the slope, the faster the soil can move downhill if it's disturbed, and the faster a fire can climb uphill under the right (or wrong!) conditions

d. Protect your soil after a fire.

Soil can be most fragile after a wildfire. This is often exacerbated when winter rains come soon after a fire. The potential for erosion and loss of soil is huge with this combination of conditions. If you have experienced fire on your property, get cover onto your soil as soon as you can to prevent erosion. Remember, your soil is alive, so help it grow. *See www.ext.colostate.edu/PUBS/NATRES/06308.html for more information.*

4. Remember the People

a. Plan your actions with your neighbors.

Talk to your neighbors. Find out what they are doing on their land. Find ways to cooperate in your land management actions. Your defensible space will likely impact your neighbor's chances of surviving a wildfire and vice-versa. Talk about what to do in an emergency and how to most safely evacuate. Find out if there is a Fire Safe Council (FSC) in your community, and if so, get involved. Help make your community a Firewise community. Coordinated work amongst neighbors will have a greater impact on your individual fire safety. *For more information, see www.firesafecouncil.org, and www.firewise.org.*

b. Find experienced workers and treat them well.

Forestry workers with chainsaws in hand are the actual decision-makers as to what stays or goes—what lives or dies—in your forest. If your objective is to reduce fuels while still maintaining ecological integrity and diversity on a site, your workers must have the knowledge and experience to help you achieve this. Involve the workforce in the design, planning, and monitoring of projects. Talk to your local FSC or neighbors and check references to find reputable contractors. Pay workers well and maybe even bring them chocolate chip cookies; this will achieve better ecological outcomes on the ground. Happy, respected people do the best work

³⁸ Flammable: A quality of a substance that makes it likely to catch fire, be easily ignited, burn quickly and/or have a fast rate of spreading flames.

³⁹ Erosion: The removal of soil over time by weather, wind and/or water such as rain or water runoff from roads.

⁴⁰ Unstable: Land that is lacking stability, or liable to change with activity, such as in the case of steep slopes or crumbly soils.

⁴¹ Riparian: A strip of land along the bank of a natural freshwater stream, river, creek, or lake that provides vast diversity and productivity of plants and animals.

c. Work with your local fire department.

Talk to your local firefighters. Find out what they need to safely get to your house and back out. Make sure that your *access roads*⁴² are safe; maintain your fuel treatments along all roads, both for firefighter safety in protecting your home and your safety in case of evacuation. Let firefighters know where you live and what's on your property; invite them out to see it. Have street and address signs visible so out-of-town firefighters can find you if there is a big fire. Make sure you have a water supply they can find and use. Know where and how to turn off any fuel sources such as natural gas or propane.

These Principles were developed by the following Steering Committee members between September 2006 and June 2007 for the Sierra Nevada Community Conservation and Wildfire Protection Plan Guidebook:

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- Marko Bey, Lomakatsi Restoration Project
- Louis Blumberg, California Forest Initiative Director, The Nature Conservancy
- Susan Britting, PhD
- Kate Dargan, State Fire Marshal, CA Dept. of Forestry and Fire Protection (CAL FIRE)
- Rich Fairbanks, Forest and Fire Program Associate, The Wilderness Society
- Tracy Katelman, ForEverGreen Forestry
- Paul Mason, Legislative Representative, Sierra Club California
- Wayne Mitchell, Asst. Deputy Director, Fire Prevention and Planning, CAL FIRE
- Gary Nakamura, Forestry Specialist, University of California (UC) Cooperative Extension
- Christine Nota, Regional Forester's Representative, US Forest Service Region 5
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- Carl Skinner, Science Team Leader, US Forest Service Pacific Southwest Research Station
- Scott Stephens, Assistant Professor of Fire Science, UC Berkeley
- Craig Thomas, Director, Sierra Forest Legacy
- Jay Watson, Director, California Fire Safe Council
- Vicki Yorty, Executive Director, El Dorado County Fire Safe Council

⁴² Access Roads: Roads that allow entrance into and out of a property.

APPENDIX J-3

Alpine Sierra Emergency Preparedness and Evacuation Plan

Alpine Sierra Subdivision

Emergency Preparedness and Evacuation Plan

Prepared for Placer County

Prepared by
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August 2017

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1.0 INTRODUCTION

1.1 Overview

This Emergency Preparedness and Evacuation Plan (EPEP) has been prepared for the Alpine Sierra Subdivision project. The focus of the EPEP is primarily on emergency preparedness for and response to emergency events, such as fire and avalanche. However, other hazards are also addressed, including seismic, flood protection and hazardous materials.

This EPEP is consistent with the concepts and goals of the Alpine Meadows General Plan, and is intended to be implemented in conjunction with the Alpine Meadows Community Wildfire Protection Plan, the North Tahoe Fire Protection District (NTFPD) Emergency Preparedness and Evacuation Guide, and the Placer County Operational Area East Side Emergency Evacuation Plan.

The project site is located within Alpine Meadows, and encompasses approximately 47.2 acres of land located in the Bear Creek Valley, approximately .25 miles north of the Alpine Meadows Ski Resort. The project site is composed primarily of forest on north-facing slopes ranging in elevation from 6,600 to 7,080 feet above mean sea level (msl). Other than the Alpine Meadows Ski Resort, Alpine Meadows is a primarily residential community, including both permanent year-round homes and second homes used as vacation homes. The project site contains two primary drainage systems--Bear Creek at the western end of the property and an unnamed seasonal stream in the eastern area of the site that flows north/south into Bear Creek. Runoff from the site flows to the northwest toward Bear Creek.

Because the project site is located in a heavily forested area and adjacent to Bear Creek, the project site is susceptible to wildland fires. The project site is classified as a very high fire hazard severity zone on the CalFire Fire Hazard Severity Zones map.¹

In addition, portions of the site are located in low-hazard and high-hazard avalanche paths. As with any project in the Sierra, the project site is also moderately susceptible to earthquakes and other geologic hazards.

1.2 Purpose

This EPEP specifically applies to properties within the Alpine Sierra subdivision boundaries. The EPEP provides a framework for protection of property owners and guests from natural hazards, prevention of fire and exposure to avalanche, seismic events or flooding, and preparation for responding to emergencies if they arise.

1.3 Project Summary

1.3.1 Location

The project site is located within the Alpine Meadows General Plan area of Placer

1 CalFire, *Fire Hazard Severity Zones in SRA, Placer County*, November 7, 2007.

County, which encompasses approximately 3,600 acres south of Squaw Valley and west of the Truckee River, about 12 miles south of the town of Truckee and 5 miles northwest of Tahoe City. The project region is shown in Figure 1-1, Regional Map. The project site consists of five parcels totaling approximately 47.2 acres located north of the Alpine Meadows Ski Resort and generally south of the Bear Creek Association subdivision and John Scott Trail (see Figure 1-2, Project Location, and Figure 1-3, Project Site).

Bear Creek bisects the narrow corridor that composes the westernmost extent of the project site. An unpaved U.S. Department of Agriculture Forest Service (USFS) trail traverses the eastern portion of the site.

The project site is situated in Section 5 of Township 15 North and Range 16 East on the 7.5-minute Tahoe City U.S. Geological Survey topographic quadrangle.

1.3.2 Project Description

The EIR for the Alpine Sierra Subdivision Project considers two options at an equal level of detail—the project as initially proposed by the applicant and a reduced project recommended by staff (Alternative B). The EIR is designed to allow the Planning Commission to adopt either the originally proposed project or Alternative B without additional analysis. The applicant has agreed to accept Alternative B as the preferred project and therefore this EPEP has been prepared to address emergency preparedness for the Alternative B project.² Accordingly, references to the project in the remainder of this document are references to the Alternative B project.

Proposal

The project would develop 38 residential units and 5 secondary dwelling units and one Homeowner's Association caretaker dwelling unit on ±45.5 acres. Three noncontiguous parcels (totaling approximately 1.7 acres) located in the northeast portion of the site would be retained as open space and an additional 14.9-acres of open space would be located within the remainder of the project. The eastern portion of the project site would support 28 residential lots ranging in size from 0.40 to 0.999 acres with an average lot size of 0.65 acres. The western portion of the site would support 10 lots ranging in size from 0.20 to 0.40 acre with an average lot size of 0.29 acres.

Access to the project site would be a single private roadway connecting to Alpine Meadows Road on the west side of project site.³ The site access road is proposed to connect to Alpine Meadows Road near the entrance to the Alpine Meadows Ski Resort. Private secondary roads would internally serve the proposed subdivision. A bridge over Bear Creek and four bridges over a seasonal drainage and culverts over two ephemeral drainages are also proposed. Looped or secondary access to the project site is not available from adjacent properties, but the project would include access easements through the project site to USFS property boundaries in two locations to allow for a connection through USFS lands in the future should the USFS determine that looped access throughout Alpine Meadows could be provided.⁴

2 Should the Planning Commission determine to approve the project as originally proposed, minor revisions to this EPEP would be required to incorporate small differences between the two versions of the Project.

3 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 3-10.

4 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 3-10.



Figure 1-1
Regional Location

Source: Placer County Alpine Sierra Subdivision Draft EIR, 2017.

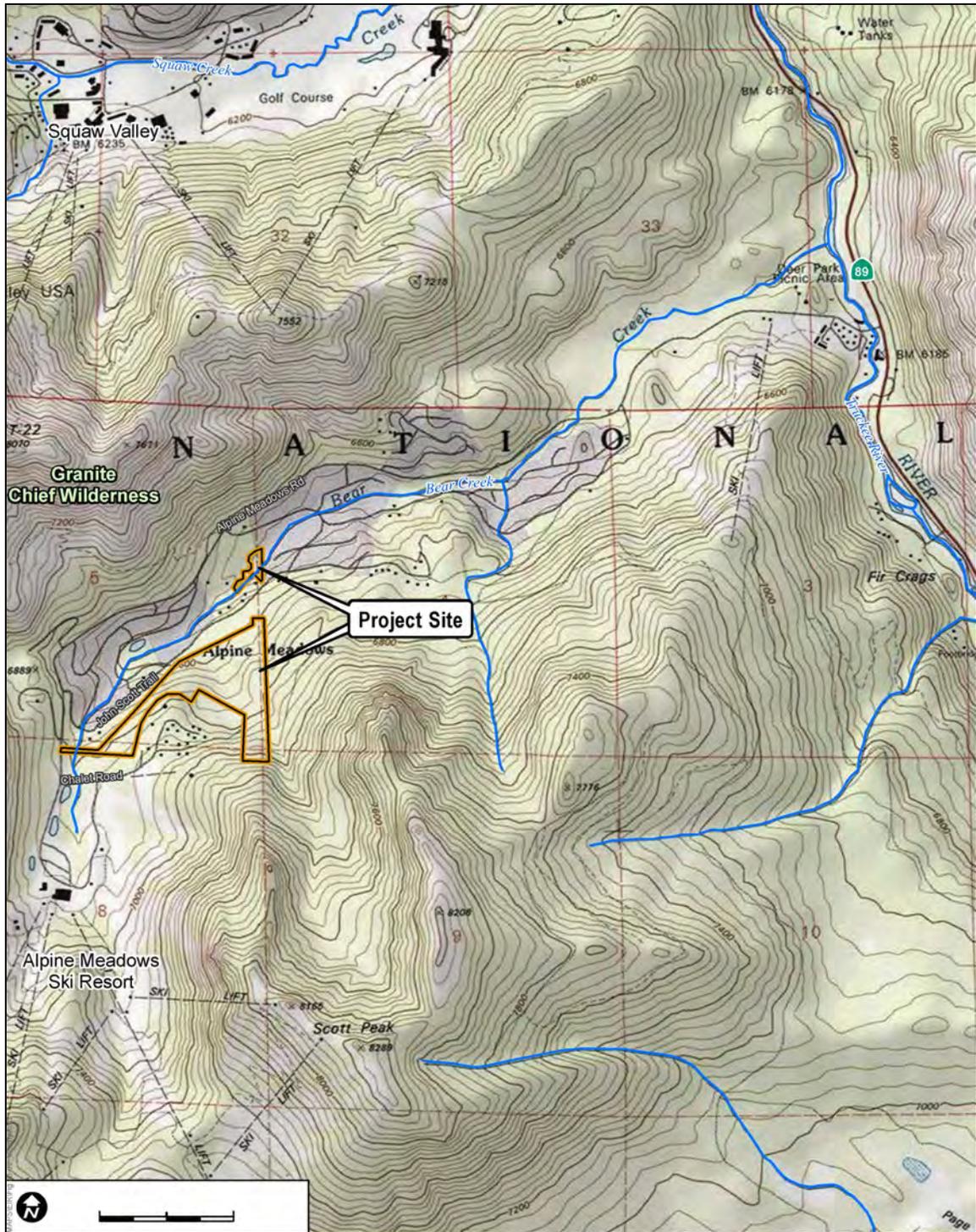


Figure 1-2

Project Location

Source: Placer County Alpine Sierra Subdivision Draft EIR, 2017.

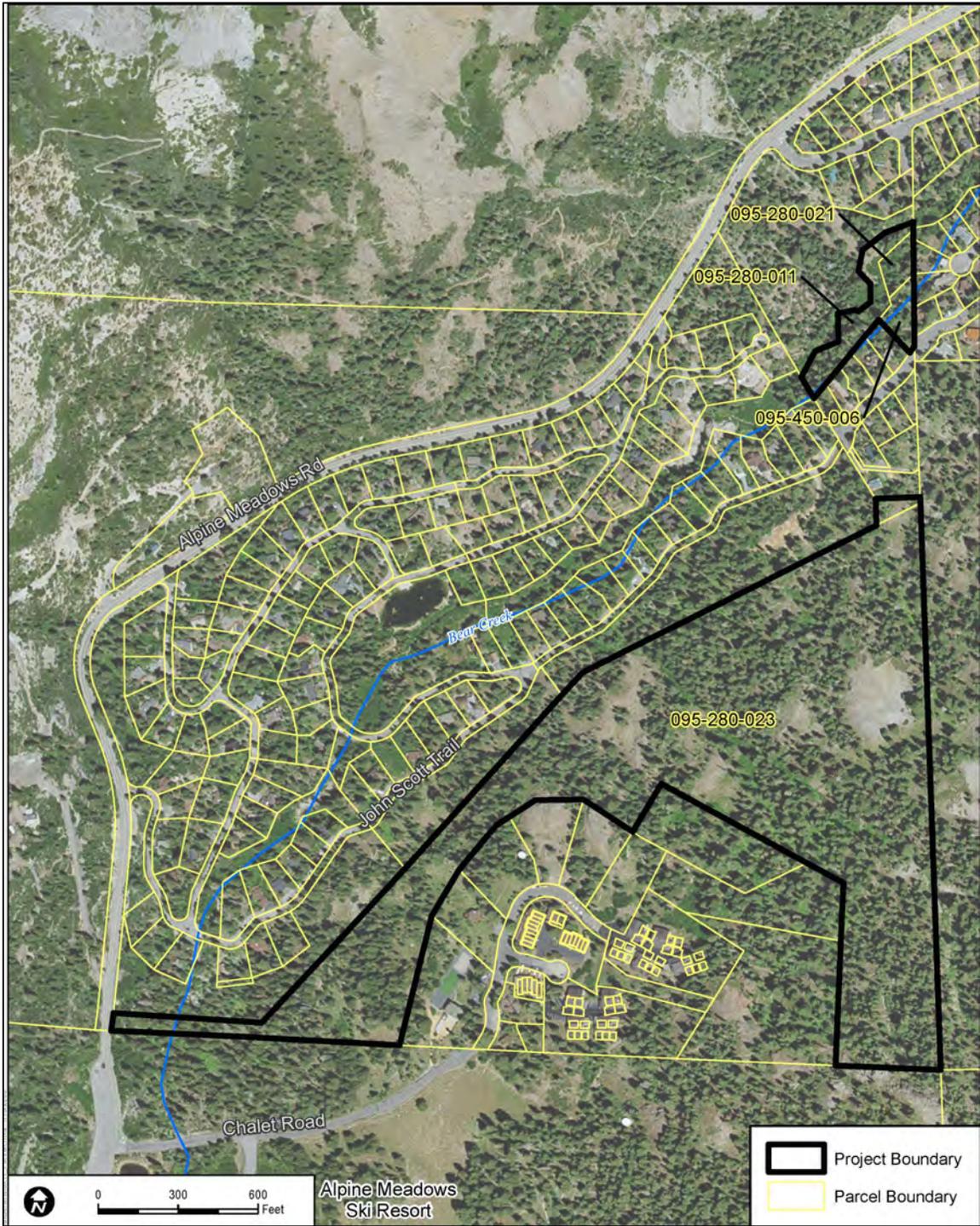


Figure 1-3

Source: Placer County Alpine Sierra Subdivision Draft EIR, 2017.

Project Site

On-site amenities would consist of an HOA lodge, an HOA staff residence, a maintenance and storage facility for snow removal and other equipment, an amenities lot with a hot tub; and a picnic area. Commonly held open space would be interspersed throughout the site, with open space on the project site totaling 14.6 acres.⁵

The proposed project would also include construction of a public trail that would be dedicated to Placer County. The trail would connect to and enhance the existing USFS trail that crosses the eastern portion of the proposed project site.⁶

Proposed site plans incorporate low-impact-development standards to treat stormwater runoff. Drainage systems proposed include the use of cut-off ditches, cross culverts, and level spreaders that would capture and disburse runoff from undeveloped areas.⁷

Portions of the existing USFS easement on the project site would remain in effect, but the portion of the easement that crosses the northeastern portion of the site would be relocated within the site.⁸

The project would create new public utility easements located adjacent to on-site roadways for the new sewer and water lines needed to serve the project, a 20-foot-wide trail easement roughly parallel to Road A, and a 100-foot-wide easement centered on the stream that crosses through the eastern portion of the project site. Additionally each lot frontage would include access easements and snow storage easements that would restrict the placement of driveways for each lot. A 20-foot-wide snow storage easement is also proposed along Road A.⁹

A site plan is shown in Figure 1-4.

Off-Site Improvements

Several off-site improvements are included with the project to increase water supply reliability and pressure throughout the Alpine Springs County Water District (ASCWD) service area and to address fire safety. As identified by ASCWD, the project applicant would be required to provide a fair-share contribution to the cost of upgrading three system-wide pump stations (Booster Pumps B, C, and D) to ensure adequate water supply and pressure to serve the proposed project and to increase water supply reliability and pressure throughout the ASCWD service area.¹⁰

In addition, the project applicant would purchase and donate to ASCWD a standard four-wheel-drive Type 1 pumper truck with a 1,500-gallon-per-minute pump and a 750-gallon water tank, and would implement fire protection measures on site as part of the proposed project.¹¹ Specifically, the proposed project includes a fuel

5 Brad Shirhall, TLA Engineering & Planning, electronic communication to Doug Clyde, Mountain Resort Consulting Services, LLC, October 28, 2016.

6 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 3-10.

7 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 3-11.

8 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 2-4.

9 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 2-4.

10 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 3-11.

11 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 3-11.



Alpine Sierra

Scale 1"=100'

July 19, 2017

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Alternative B



management program to maintain defensible space throughout the project site, and Chapter 7A of the California Building Code will require interior building sprinklers for all habitable structures constructed on site in addition to other fire safety compliance measures such as use of ignition-resistant exterior building materials in accordance with Section 701A of the California Building Code and implementation of defensible space.

2. EXISTING CONDITIONS

The Alpine Meadows General Plan planning area is composed of Bear Creek Valley. The 3,600-acre valley is surrounded by mountains on three sides and contains open fir and pine forests, rock outcroppings, perennial streams, seasonal streams, and ephemeral drainages, which all provide substantial scenic resources. Bear Creek Valley contains several existing residential subdivisions, consisting of year-round residences and vacation homes.

The project site is undeveloped, and there are no structures on site. A USFS trail traverses the eastern portion of the site. The project site contains two primary drainage systems: Bear Creek at the western end of the property and an unnamed seasonal stream in the eastern area of the site that flows north/south into Bear Creek. Other minor ephemeral drainages are located in the northeast portion of the property.

2.1 Topography and Soils

The project site terrain is typical of the Sierra Nevada, with steep slopes located within the project site and surrounding area. Project site elevations range from 6,600 to 7,080 feet msl. Soils on most of the site consist of approximately 4 to 18 inches of silty sand containing organic material (i.e., topsoil). The topsoil is likely underlain by medium-dense to very dense silty sand with gravel, and silty gravel with sand accompanied by cobbles and boulders up to approximately 4 feet in diameter.¹ Soil classifications are shown in Figure 2-1.

The potential for liquefaction and lateral spreading is considered low, and highly plastic, potentially expansive and/or compressible soils were not found at the site.² The Geotechnical Engineering Report prepared for the project site concludes that the majority of the site would be suitable for roadways, utilities and structures; however, cobbles, boulders and near-surface volcanic rock are anticipated to be encountered during excavation, and blasting may be necessary.³ In addition, near-surface soil layers are likely to become saturated during wet seasons, which can affect foundations and other aspects of construction.⁴ The report includes recommendations for addressing such constraints through site design, surface water drainage design, and construction measures.⁵

Although the project terrain is steep, the Geotechnical Engineering Report determined that the site is not prone to landslides or rock fall hazards. However, snow avalanche hazards do exist on limited portions of the project site, as discussed later in this section.

1 Holdrege & Kull, *Geotechnical Engineering Report Update Letter, Alpine Sierra Subdivision*, September

2 Holdrege & Kull, *Geotechnical Engineering Report Update Letter, Alpine Sierra Subdivision*, September 20, 2013, page 5.

3 Holdrege & Kull, *Geotechnical Engineering Report Update Letter, Alpine Sierra Subdivision*, September 20, 2013, page 5.

4 Holdrege & Kull, *Geotechnical Engineering Report Update Letter, Alpine Sierra Subdivision*, September 20, 2013, page 6.

5 Holdrege & Kull, *Geotechnical Engineering Report Update Letter, Alpine Sierra Subdivision*, September 20, 2013, pages 6 through 10.

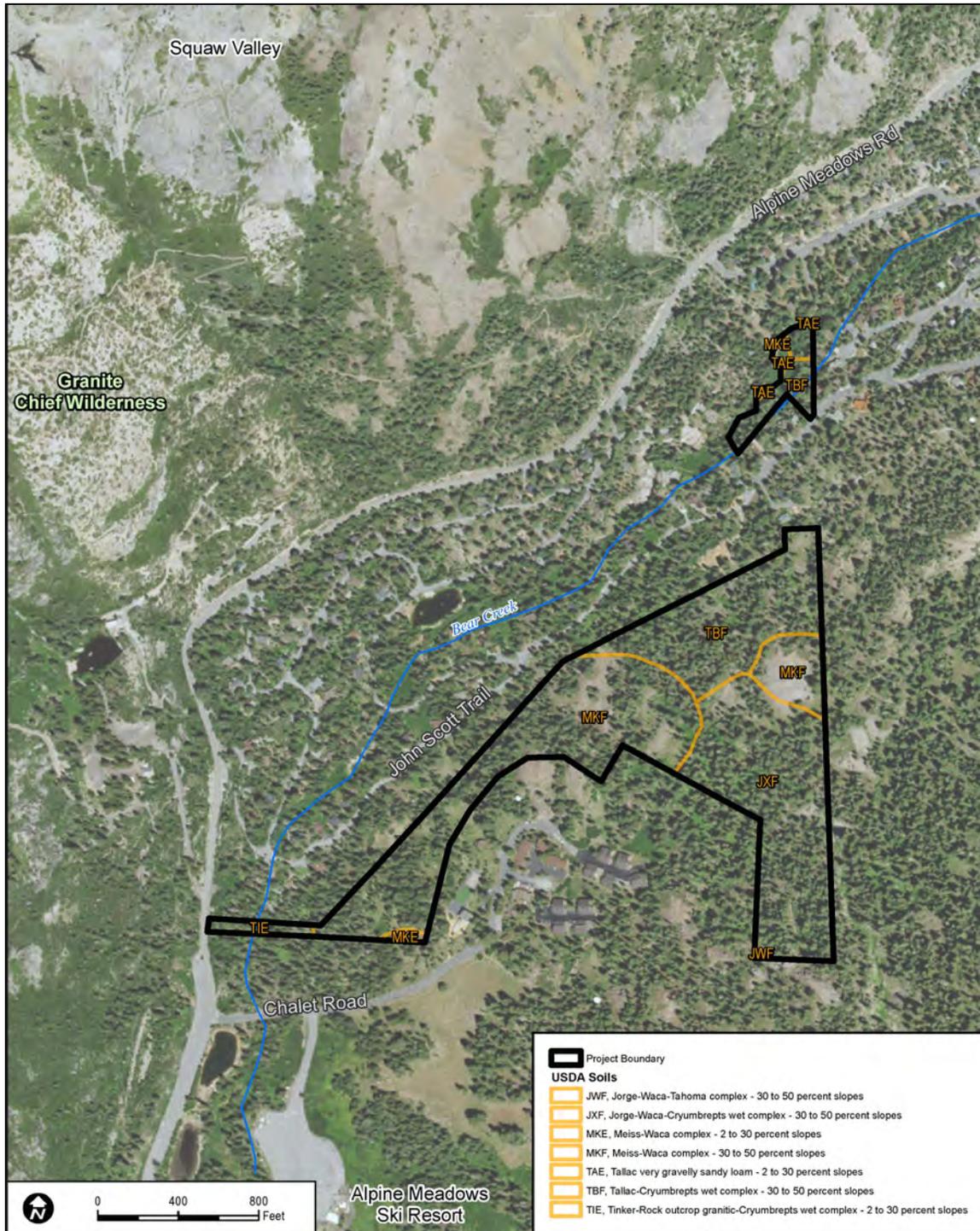


Figure 2-1

Soil Classifications

Source: Placer County Alpine Sierra Subdivision Draft EIR, 2017.

Exposure to seismic activity is addressed in Section 2.11, below.

2.2 Vegetation

Project site vegetation consists primarily of white fir forest (see Figure 2-2). Other vegetation includes quaking aspens, montane chaparral, montane riparian, and rocky forb–subshrub vegetation. Numerous Jeffrey pine trees also occur on the steep slopes of the project site. Lodgepole pine (*P. contorta* ssp. *murrayana*) and ponderosa pine trees were identified near the Bear Creek drainage. As shown in Figure 2-2, riparian habitat exists primarily along Bear Creek in the narrow corridor on the western side of the project site and along a riverine feature located in the east-central portion of the site. Four pockets of riparian habitat that are not immediately adjacent to drainages also occur in the northeastern portion of the project site. Dominant species identified in riparian areas include mountain alder (*Alnus incana* ssp. *tenuifolia*), redosier dogwood (*Cornus sericea*), and Scouler’s willow (*Salix scouleriana*).⁶

Portions of the white fir forest on site have dense tree canopy, with little understory. In contrast, the riparian corridors support extensive understory vegetation.⁷ The health of trees varies throughout the project site. Most of the white and red fir trees appear healthy, and there are numerous healthy trees present throughout the project site. Nonetheless, the overall health of the forest is considered to be in a state of decline, with trees that are stressed being more susceptible to insect infestation and disease.⁸

2.3 Climate

Alpine Meadows is located east of the crest of the Sierra Nevada and has an overall climatic pattern similar to the surrounding montane area: cool, wet winters and mild, dry summers. Average temperatures range from a minimum of 19°F in January to a maximum of 77.9°F in July.⁹ The annual predominant wind direction is from the south-southwest at 12 miles per hour.¹⁰

Average monthly precipitation is highest in the winter and spring and little to no precipitation occurs in the summer, except for an occasional thunderstorm. Average annual precipitation is approximately 31.5 inches.¹¹

2.4 Existing Land Uses

The project site is located within Alpine Meadows, a community composed primarily of primary residences, vacation homes and a ski resort. The project site is undeveloped, and there are no structures onsite. Single-family residences are located north of the project site, and condominiums and the Stanford Alpine Chalet are located south of the site. The Alpine Meadows Ski Resort is located adjacent to a portion of the southern site boundary, and the resort has a parking area immediately south of the project site. Forested land located

6 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, pages 6-2 and 6-3.

7 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 6-3.

8 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 6-3.

9 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017 page 9-1.

10 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017 page 9-2.

11 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 9-1.

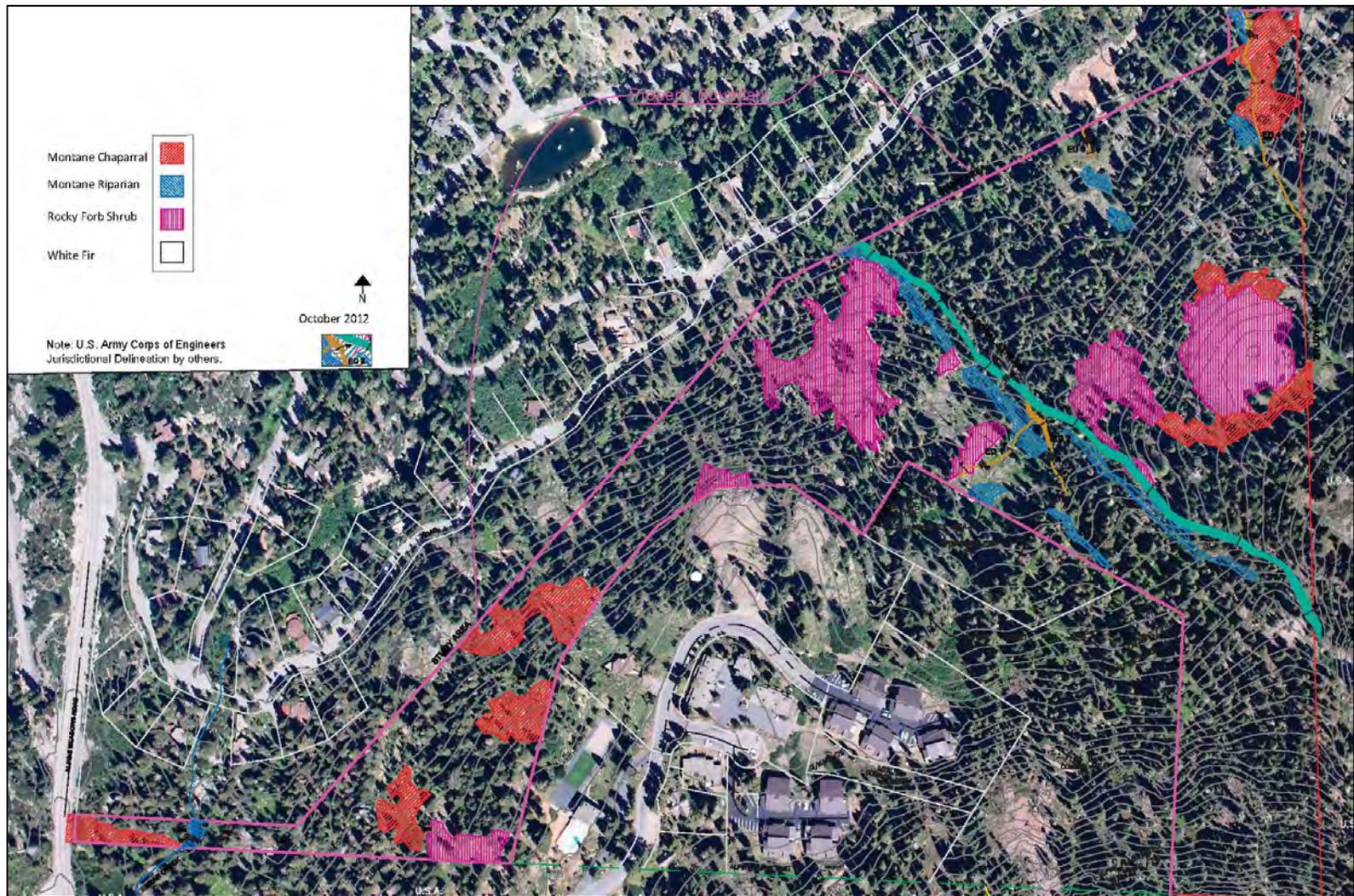


Figure 2-2
 Source: Placer County Alpine Sierra Subdivision Draft EIR, 2017.

Habitat Map

within and adjacent to Alpine Meadows is owned by the U.S. Forest Service.

The project site is zoned for residential development and open space, as shown in Figure 2-3. The proposed project would retain the existing land use designations, with minor revisions to the location of land use boundaries including rezoning a 5.7-acre portion of the site to Open Space due to steep topography. Overall, the project would result in the creation of approximately 4.4-acres of more lands zoned for Open Space than currently exist (see Figure 2-3).

2.5 Fire History and Conditions

In eastern Placer County, the wildland fire hazard extends from early spring to late fall. Fire conditions arise from a combination of hot weather, an accumulation of vegetation, and low moisture content in air and fuel.

Alpine Meadows has not experienced a major fire in recent years. The closest recent fires were the 2014 King fire, discussed below, the Martis fire in 2001, which is located over 5 miles to the east of the project site and burned 14,126 acres, and the 2001 Star fire, which burned 16,761 acres east of the French Meadow Reservoir.¹² Other larger fires in the vicinity include the Donner Ridge fire in 1960, which burned 43,373 acres north of Truckee in 1960 and the Cottonwood fire, which burned 48,056 acres south of Loyalton in 1994.

The 2014 King fire covered over 97,000¹³ acres generally south/southwest of French Meadows Reservoir, over 10 miles southwest of the project site. The King fire was particularly problematic, because it made a run of more than ten miles in the middle of the night¹⁴, heading east toward Squaw Valley and Alpine Meadows. The unusual and extreme fire behavior of the King fire, which was exacerbated by severe drought and very low fuel moisture levels, has provided valuable information to fire managers as the fire behavior deviated from behavior predicted by the fuel model.¹⁵

In the past, fires were one of the natural phenomena that shaped ecosystems within the Sierra, including Alpine Meadows. Forest management practices and development patterns then led to efforts to reduce the extent of forest fires, which in turn led to changes in local ecosystems and the accumulation of fuels. Logging and other land management practices have also contributed, changing the composition of vegetation in ways that can affect increase the risk of fire. For example, Alpine Meadows is surrounded by forest that has experienced increased competition for water, nutrients, and light. As a result, there are large numbers of dead and dying trees, at the same time that shade-tolerant trees are becoming more prevalent, supporting a thicker understory. These factors have led to the accumulation of substantial quantities of fuel that could exacerbate the intensity of a forest fire.¹⁶

12 California Department of Forestry and Fire Protection, *Ignition Management Plan, Battalion 11 and Battalion 15*, <http://cdfdata.fire.ca.gov/pub/fireplan/fpupload/fpppdf1019.pdf>, accessed October 21, 2016

13 CalFire, Incident information, King Fire, October 9, 2014.

14 Squaw Valley Real Estate, LLC, *Emergency Preparedness and Evacuation Plan, The Village at Squaw Valley*, June 28, 2016, page 11.

15 Squaw Valley Real Estate, LLC, *Emergency Preparedness and Evacuation Plan, The Village at Squaw Valley*, June 28, 2016, page 11.

16 Placer County, Alpine Sierra Subdivision Draft EIR, August 2017, page 13-3.

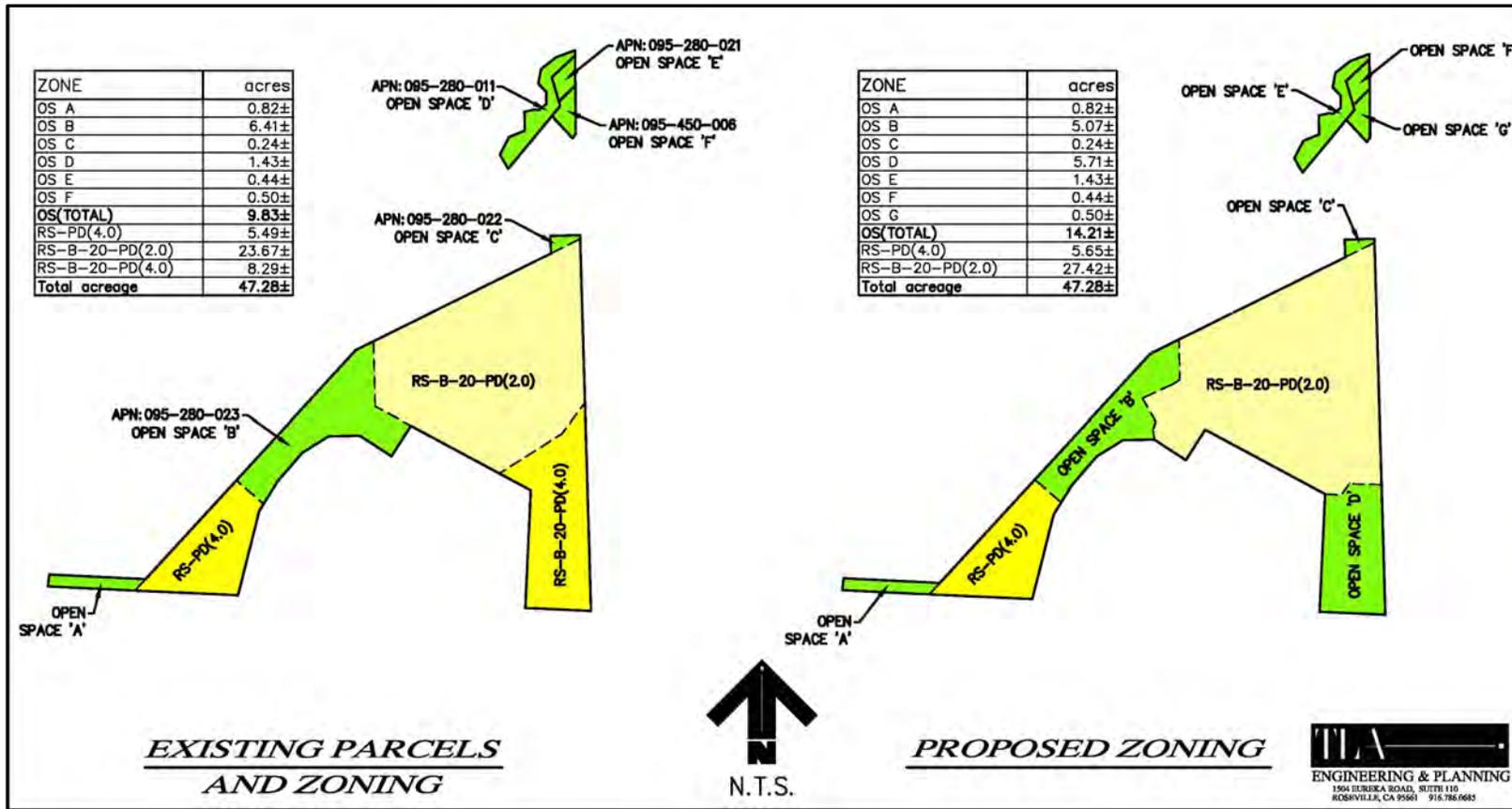


Figure 2-3

Source: Placer County Alpine Sierra Subdivision Draft EIR, 2017.

Existing and Proposed Zoning

2.6 Fire Hazard Severity Zones and State Responsibility Areas

The State Board of Forestry identifies those lands where the California Department of Forestry and Fire Protection (CAL FIRE) has the primary duty for wildland fire prevention and suppression; these lands are commonly known as state responsibility areas (SRAs). Lands are mapped by county in two categories: (1) wildland areas that could contain substantial forest fire risks and hazards (wildland areas or SRAs); and (2) very high fire hazard severity zones. Fire hazard severity zones are measured qualitatively based on vegetation, topography, weather, crown fire potential (tendency to burn upward into trees and tall brush), and ember production and movement.¹⁷ As shown in Figure 2-4, the project site is classified as a very high fire hazard severity zone.¹⁸

2.7 Fire and Emergency Response

The North Tahoe Fire Protection District (NTFPD) provides fire and emergency medical services to Alpine Meadows. The NTFPD serves approximately 31 square miles within the Tahoe Basin, from Brockway in Kings Beach to Tahoma, and also serves the Alpine Meadows area, which is located outside of the Lake Tahoe Basin. Other NTFPD services include education regarding fire prevention and emergency preparedness, fuel management and defensible space regulation, construction plan reviews, construction inspections and code compliance¹⁹. The NTFPD service area includes Alpine Meadows, which covers 6 miles, through a contract with the Alpine Springs County Water District (ASCWD). In addition, the NTFPD has a contract with Meeks Bay Fire Protection District to provide a full-time chief officer and management services.

The NTFPD maintains 6 fire stations staffed by 50 uniformed and support personnel.²⁰ In 2015, the NTFPD responded to over 2,000 calls.²¹ NTFPD operates 7 paramedic ambulances, one of which has the capacity to carry up to 3 injured patients at one time.²² The NTFPD serves approximately 11,000 households and 1,000 businesses.²³

All of the NTFPD safety personnel are qualified as either paramedics or emergency medical technicians, and approximately 78% of the NTFPD's emergency calls have an emergency medical service component.²⁴

Alpine Meadows Fire Station Equipment and Staffing

Alpine Meadows Fire Station 56, located site at 270 Alpine Meadows Road, is the closest station to the project site at approximately 2.5 miles. Fire Station 56 has a type 1 pumper (750 gallon tank/1500 gallon per minute (gpm) pump and a paramedic ambulance. The station maintains 24 hour, 2 firefighter staffing.²⁵

17 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 13-4.

18 CalFire, *Fire Hazard Severity Zones in SRA, Placer County*, November 7, 2007.

19 North Tahoe Fire Protection District, *Annual Report 2015*, pages 3 and 27.

20 North Tahoe Fire Protection District, *About Us*, accessed at <http://www.ntfire.net/about-us/>, April 6, 2016.

21 North Tahoe Fire Protection District, *Annual Report 2015*, page 22.

22 North Tahoe Fire Protection District, *Annual Report 2014*, pages 18 and 19.

23 North Tahoe Fire Protection District, *About Us*, accessed at <http://www.ntfire.net/about-us/>, October 21, 2016.

24 North Tahoe Fire Protection District, *Emergency Medical Services*, accessed at <http://www.ntfire.net/ems/>, October 21, 2016.

25 North Tahoe Fire Protection District, *Insurance Questions FAQ's Regarding ISO Scores, Etc.*, no date, page 3.

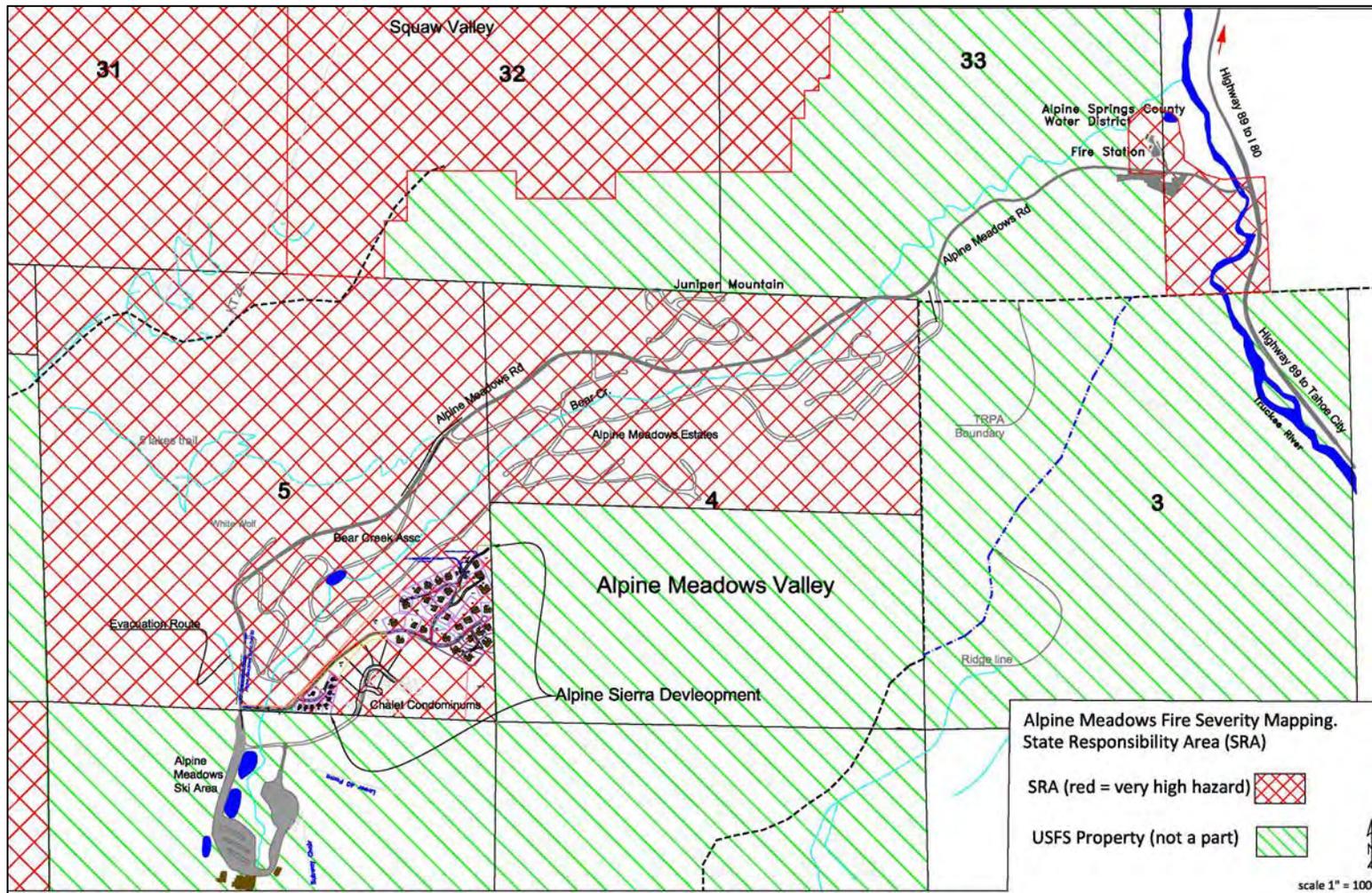


Figure 2-4
Source: CalFire, 2007.

Fire Hazard Severity Zones

Insurance Services Office Rating

The Insurance Services Office (ISO) provides ratings of fire suppression systems in communities throughout the United States. The ratings range from Class 1, which represents exemplary public protection, to Class 10, which indicates that the area's fire-suppression program does not meet ISO's minimum criteria.

The NTFPD has an ISO rating of 4/4Y, due in part to long-term deficiencies in rural areas that don't have water systems that can meet ISO fire flow requirements.²⁶ The NTFPD has a goal of lowering its ISO rating to 3, which will require improvements to fire flow capacity.²⁷

Emergency Dispatch and Initial Incident Response

The NTFPD is dispatched by the CAL FIRE Grass Valley Emergency Command Center. The Grass Valley ECC also dispatches CAL FIRE resources from across the region as well as U.S. Forest Service Tahoe National Forest fire assets. All agencies involved in an active incident are dispatched from the Grass Valley ECC, which ensures that incident response is coordinated to place emergency response resources where they are needed. Emergency response resources include local, state and federal engine companies, hand crews, dozers, air tankers, air tactics coordinators, helitack crews and helicopters/helitankers of various sizes and capacities.²⁸

Mutual Aid

The NTFPD is a member of the Eastern Placer County Joint Powers Authority, along with the Squaw Valley Fire Department, Alpine Springs Community Service District, Northstar Fire Department, Tahoe City Public Utility District, Placer County Service Area 16, Placer County Service Area 21, Meeks Bay Fire Protection District, and Donner Summit Public Utility District. The Joint Powers Authority provides mutual aid and a shared radio repeater and equipment purchases between other member districts. In addition, Squaw Valley and surrounding forested areas are classified as a State Responsibility Area and receive fire protection assistance from the California Department of Forestry and Fire Protection (CAL FIRE).

Eastside Emergency Evacuation Plan

Placer County adopted an update to the East Side Emergency Evacuation Plan in March 2015 to address physical evacuation of one or more communities in unincorporated eastern Placer County. The Plan covers the portion of the county from just west of Cisco Grove to the Nevada State line, but does not include areas that are within the Tahoe National Forest or the Lake Tahoe Basin Management Unit. The Plan prescribes specific responsibilities for first responders and other agencies that would be involved in an emergency evacuation, defines typical evacuation scenarios, establishes incident command responsibilities, and addresses traffic control, transportation, resources and support, communications, care and shelter and animal services. A number of public agencies were involved in the development of the plan, including the Placer County Office of Emergency Services, Placer County Sheriff's Office, the Nevada County Sheriff's Office, Town of Truckee, five eastern Fire Protection Districts/Departments (including NTPFD), California Highway Patrol, US Forest Service, American Red Cross,

²⁶ North Tahoe Fire Protection District, *Annual Report 2015*, page 6.

²⁷ North Tahoe Fire Protection District, *Annual Report 2015*, page 5.

²⁸ Squaw Valley Real Estate, LLC, *Emergency Preparedness and Evacuation Plan, The Village at Squaw Valley*, June 28, 2016, page 15.

and Nevada County Office of Emergency Services.

The full Eastside Emergency Evacuation Plan is provided in Appendix D.

2.8 Current Fire Protection Status

The project site is undeveloped, with no structures, roads or water infrastructure. The NTFPD is responsible for providing fire protection services. The project site is not subject to defensible space or fuel management measures at this time. As discussed above, the forested portions of the project site include thick understories, as well as dead, dying and stressed trees, which contribute to fire risk on the site.

2.9 Law Enforcement

Law enforcement in Alpine Meadows is provided by the Placer County Sheriff's Office. Traffic enforcement along SR 89 is provided by the California Highway Patrol. The substation closest to the project site is located in Tahoe City at 2501 North Lake Boulevard, approximately 8 miles east of Alpine Meadows. The Tahoe Substation covers the portion of Lake Tahoe from the California/Nevada state line on SR 28 west to the Nevada County line in Truckee and south on SR 89 to the El Dorado County line in Tahoma.

The Tahoe Substation has over 40 positions, including one field operations lieutenant, 18 patrol deputy positions, six patrol sergeants, four detectives, one detective sergeant, one problem-oriented deputy (neighborhood disputes and Placer County code violations), one administrative sergeant, two jail deputies, one evidence technician, two community services officers, and five professional staff²⁹. Services provided by the Tahoe Substation include search and rescue coordination, boat patrol, and bike patrol during special events. There are typically three deputies and one sergeant on patrol from this station. To address the increase in visitors to the area, an additional officer is on patrol from this station on the 4th of July. Additional officers are also added for large special events (e.g., concerts). Response times for service calls can range between 5 and 30 minutes, depending on the time of year and the location of an officer in proximity to the call.³⁰

2.10 Transit Routes and Agencies

The Eastside Emergency Evacuation Plan indicates that transit vehicles may be used to evacuate those who do not have their own vehicles. If transit vehicles are available during evacuations, evacuation bus stops would be identified.

Tahoe Area Regional Transit, operated by Placer County Department of Public Works, serves stops along SR-89 at Alpine Meadows Road as part of the Highway 89 Route between Tahoe City and Truckee. This service is operated in both directions every hour from 6:00 a.m. to 7:22 p.m. in the summer and from 6:00 a.m. to 6:30 p.m. in the winter and off seasons. In addition, the Night Rider service operated under contract of the Truckee–North Tahoe Transportation Management Association provides hourly evening service from these stops to Squaw Valley and Tahoe City (and beyond) as late as 2:00

29 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 14-2.

30 Placer County, *Martis Valley West Parcel Specific Plan Draft Environmental Impact Report*, page 17-7.

a.m. during the peak summer and winter months.³¹

In addition to TART, the Squaw Valley Resort operates a private shuttle-- the Squaw Valley–Alpine Express. The shuttle runs every 20 minutes during periods of ski lift operations between the Alpine Meadows base area and the Squaw Valley Village area. This shuttle serves skiers at the two resorts.³²

The North Lake Tahoe Express is another private shuttle service, and connects the North Tahoe area (including Alpine Meadows) to the Reno Tahoe International Airport. Service is provided year-round, although fewer runs are offered in the off season.³³

2.11 Avalanche Hazards

The Alpine Meadows area is located within a maritime snowpack and avalanche climate, which is subject to deep, high-density snow packs and relatively warm temperatures. Most avalanches in this climate are directly caused by precipitation or wind (direct-action avalanches), and avalanches tend to occur during or immediately after storms. Mid-winter rains are common and have the potential to cause wet avalanches.³⁴

Due to its location within a maritime climate, the primary avalanche risk on the project site is associated with large, direct-action avalanches that would result from intense extended storms with high rates and large amounts of precipitation accompanied by high winds. Additional risk could result from mid-winter rain falling on new snow layers with a deep snowpack.

Alpine Meadows Road

Alpine Meadows Road crosses numerous avalanche paths. The sections of road near the Five Lakes Trailhead and near the Alpine Meadows Ski Resort (AMSR) parking lot are exposed to large avalanche paths that frequently threaten the road and the vehicles and travelers using the road. The ski resort implements an Avalanche Mitigation Program (AMP) to reduce the threat of avalanche hazards and to keep the road open as much as possible. The AMP includes the following provisions:

- Avalanche hazard assessment by AMSR avalanche experts;
- Notification of various stakeholders and homeowners along the Alpine Meadows Road, as well as the County Sheriff and NTFPD, that the road will be closed and avalanche mitigation conducted;
- Road closure and sweeping by AMSR in cases where avalanche paths cross the road;
- Implementation of avalanche management measures, such as explosive hand charges, military artillery and/or gas propelled explosive charges;
- Inspection for avalanche debris prior to reopening the road; and
- If avalanche debris is on the road, it will be kept closed until the debris is removed.³⁵

31 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 7-2.

32 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 7-2.

33 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 7-2.

34 Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 13-5.

35 Larry Heywood, *Alpine Meadows Road Avalanche Hazards Considerations*, August 23, 2016, page 1.

Potential Avalanche Hazard Areas (PAHAs)

Placer County has identified three Potential Avalanche Hazard Areas (PAHAs) within the project site³⁶:

- Property entrance at Alpine Meadows Road: The entrance is located below and directly across from the Buttress/Don's Nose avalanche path. This path has produced avalanches that reach the Alpine Meadows Ski Resort parking lot and entrance, the intersection of Ginzton Access Road/Alpine Meadows Road and the project entrance. It is one of several avalanche paths along Alpine Meadows Road that is subject to avalanche control by Alpine Meadows Ski Resort personnel.
- Rock outcroppings in the center of the project site: A rock outcrop located near the center of the project site has a short, steep northwest-facing 140 vertical foot slope, half of which is an open rocky slope. While this area is steep enough to generate avalanche activity, there is no evidence that avalanches have occurred here.
- Southeast corner of project site: A short, steep, north-facing slope located generally east of the existing Alpine Chalet Subdivision contains a steep area with rock outcroppings and two well-defined chutes. Damage to vegetation and forest cover indicates that this slope produces avalanches with the potential to run down the slope (generally westward) for approximately 300 vertical feet, which equates to an elevation of approximately 6,900 feet, which is above the proposed development areas of the project site.

The above PAHAs and avalanche potential in the project site were evaluated by Larry Heywood, a Tahoe avalanche and snow safety expert. Based on this analysis, two of the three slide paths identified as PAHA reflect different boundaries from the County PAHA mapping, as shown in Figure 2-5. These differences do not affect any proposed structures in the project site. In addition, a fourth avalanche path (not on the County PAHA maps) was identified:

- Smaller rock outcropping in center of project site: A smaller rock outcropping is located in the approximate center of Lot 3 (straddling Lot 2 and Lot 3). This area consists of a 50-foot vertical rock outcropping.³⁷

The PAHAs that are located within the project site are shown in Figure 2-5.

2.12 Seismic and Geologic Hazards

Similar to nearly all of California, the project site is located in a potentially active seismic area. Alpine Meadows lies within the Western Nevada Seismic Zone (WNSZ), a poorly defined 150-mile-long shear zone with a system of strike slip and dip slip faults. The WNSZ covers the eastern portion of the Sierra Nevada and the western portion of Nevada, and is designated as a Type C source (i.e., with low rate of slip and low rate of recurrence).³⁸ There are a number of active and potentially active faults that have been

36 Larry Heywood, *Avalanche Hazard Study, Alpine Sierra Development*, July 2013, page 6.

37 Larry Heywood, *Avalanche Hazard Study, Alpine Sierra Development*, July 2013, page 6.

38 Holdrege & Kull, *Preliminary Fault Evaluation Report*, March 10, 2014, page 3.

**Alpine Sierra Subdivision
Avalanche Hazard Assessment
Exhibit
Placer County, California**

See report for explanation of
mapped zones

Heywood 2012

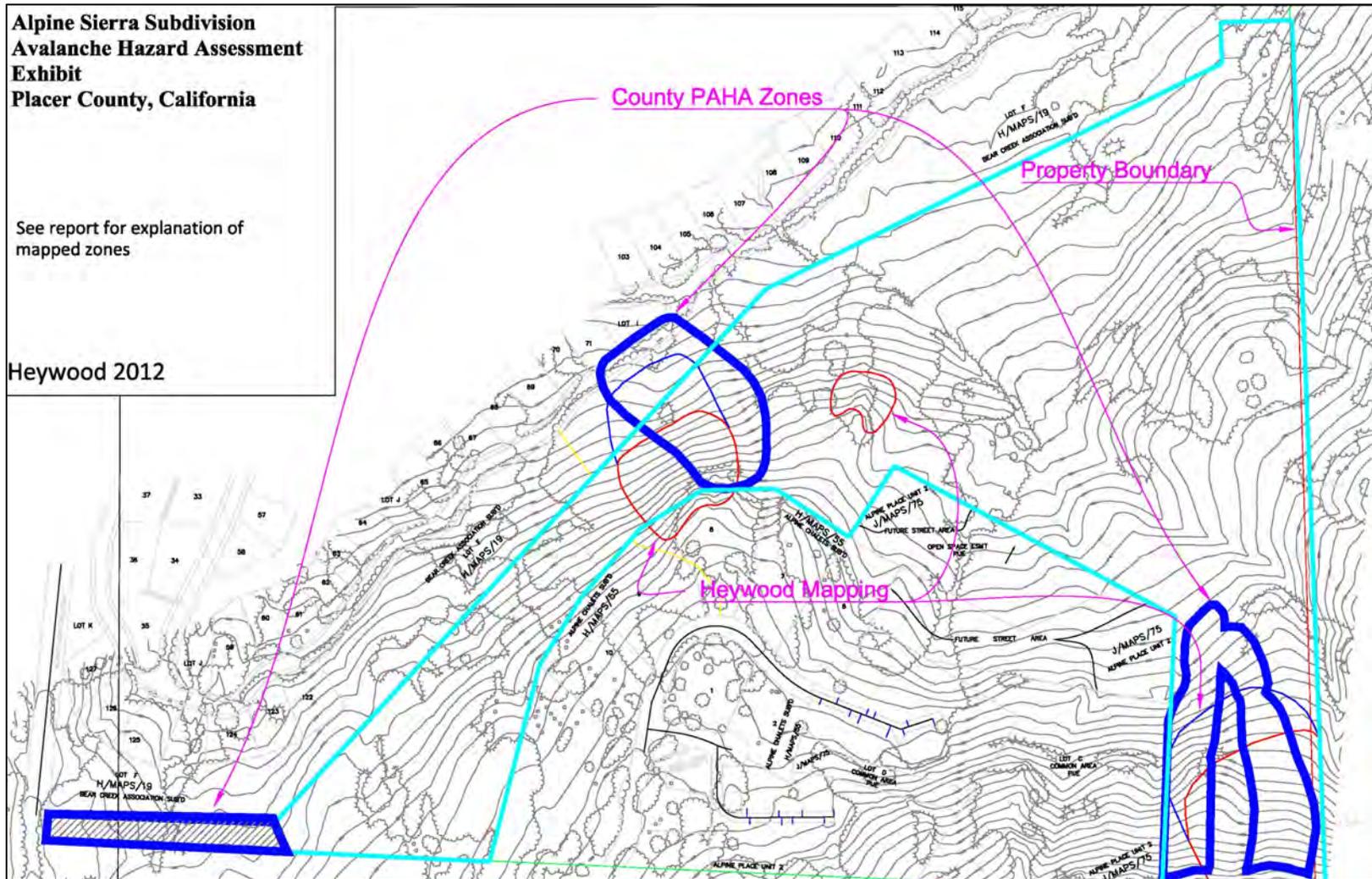


Figure 2-5
Source: Heywood, 2013.

Potential Avalanche Hazard Areas

identified in the vicinity of the fault. The project site has the potential to experience hazards relating to surface rupture or strong ground motion resulting from both regional faults and from faults that trend near or within the project site.

The closest known faults that could cause strong ground shaking at the project site are:

- **Dog Valley Fault** – Active; generally 12 miles northwest of the project site;
- **Polaris Fault** – Active; generally 12 miles to the southeast of the project site;
- **West Tahoe–Dollar Point Fault** – Active; generally 8 miles southeast of the project site;
- **West Tahoe Fault** – Active; generally 8.7 miles southeast of the project site; and
- **Unnamed faults southeast of Truckee** – Active; generally 8 and 10 miles to the northeast of the project site.³⁹

Additionally, the Tahoe Sierra Frontal Fault Zone (TSFFZ) is located in the vicinity of the project site. This fault zone trends sub-parallel to the crest of the Sierra Nevada and runs generally from Lake Tahoe to an area north of Donner Summit. Holdrege & Kull identified the TSFFZ as trending near or through the southwest corner of the project site (see Figure 2-6); another unnamed fault was identified through the northeast corner of the project site (see Figure 2-7)⁴⁰. Based on surface reconnaissance and review of aerial photographs, Holdrege & Kull determined that there were no features indicative of active faulting, and concluded that establishing setbacks along the fault trace through the southwest corner of the project site would not be warranted.⁴¹

The project site is not located within or near an Alquist-Priolo active fault zone.⁴²

2.13 Flood Hazards

The project site is within Bear Creek Valley, which consists of a 3,600-acre watershed that drains to Bear Creek and ultimately into the Truckee River (Placer County 1968). Bear Creek bisects the narrow corridor of the site near Alpine Meadows Road, and the project site drains into two primary systems: Bear Creek and an unnamed seasonal stream in the eastern portion of the project site. The seasonal stream traverses the site from south to north and flows into Bear Creek north of the site. The site is also drained by other minor ephemeral drainages in its northeast end. Runoff from the site generally flows to the northwest toward Bear Creek.⁴³

The project site is not located within the boundary of a 100-year flood hazard area as mapped by the Federal Emergency Management Agency (FEMA) or Placer County⁴⁴. Placer County requires that flood plains be identified for drainages that have not been mapped by FEMA, and that support a tributary area of more than 20 acres. The project site does fall within two drainage ways (Bear Creek and an unnamed seasonal stream) that traverse the proposed project site.⁴⁵ In addition, there is an area in the northeast

39 Holdrege & Kull, *Geotechnical Engineering Report Update Letter, Alpine Sierra Subdivision*, September 20, 2013, page 3.

40 Holdrege & Kull, *Preliminary Fault Evaluation Report*, March 10, 2014, page 7.

41 Holdrege & Kull, *Preliminary Fault Evaluation Report*, March 10, 2014, page 9.

42 Holdrege & Kull, *Preliminary Fault Evaluation Report*, March 10, 2014, page 9.

43 Placer County, *Alpine Sierra Subdivision Draft EIR*, September 2017 p. 3-2.

44 Placer County, *Alpine Sierra Subdivision Draft EIR*, September 2017, page 12-6.

45 Placer County, *Alpine Sierra Subdivision Draft EIR*, September 2017, page 12-7.

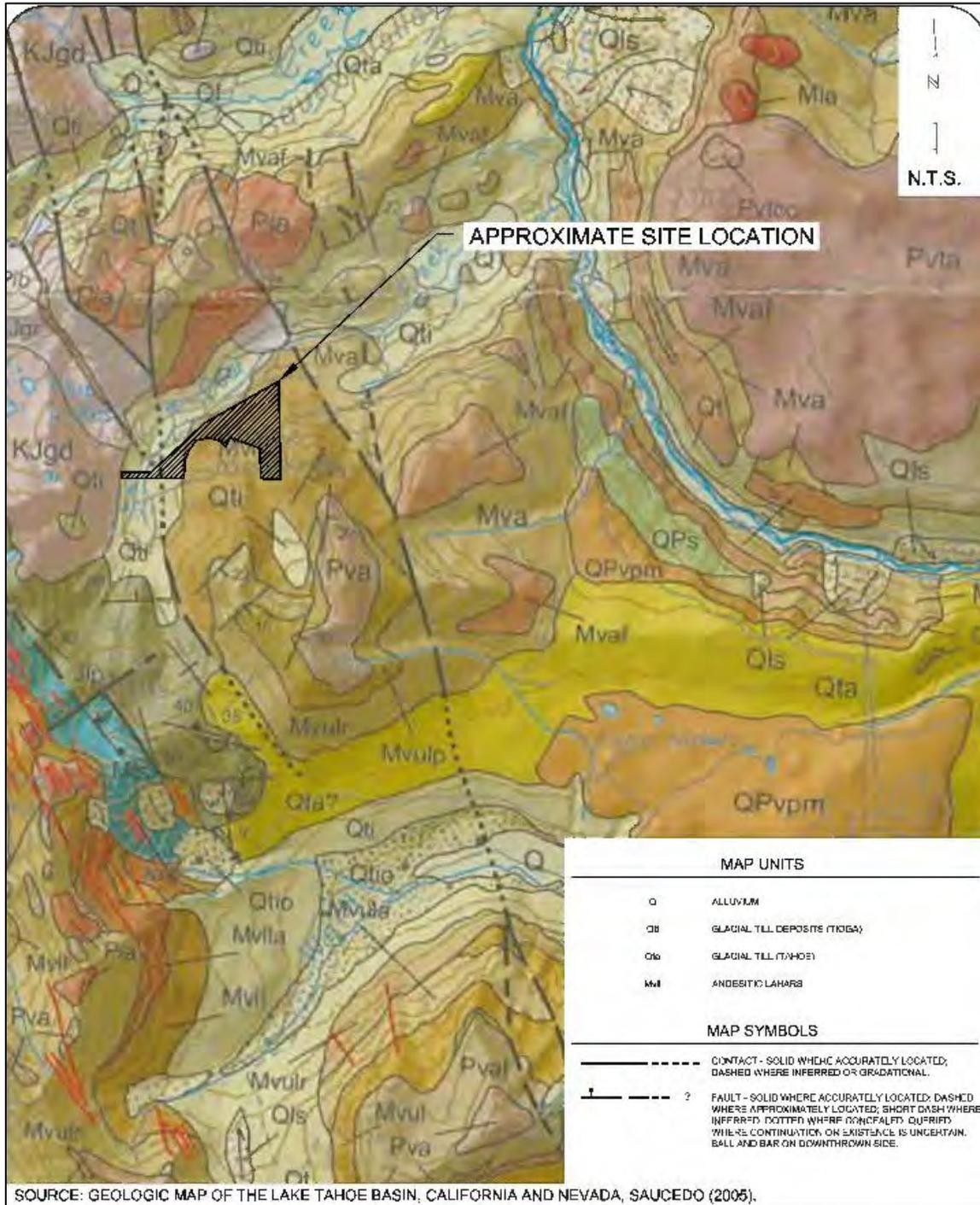


Figure 2-6 Fault Evaluation, Approximate Fault Location #1
 Source: Holdrege & Kull, 2014.

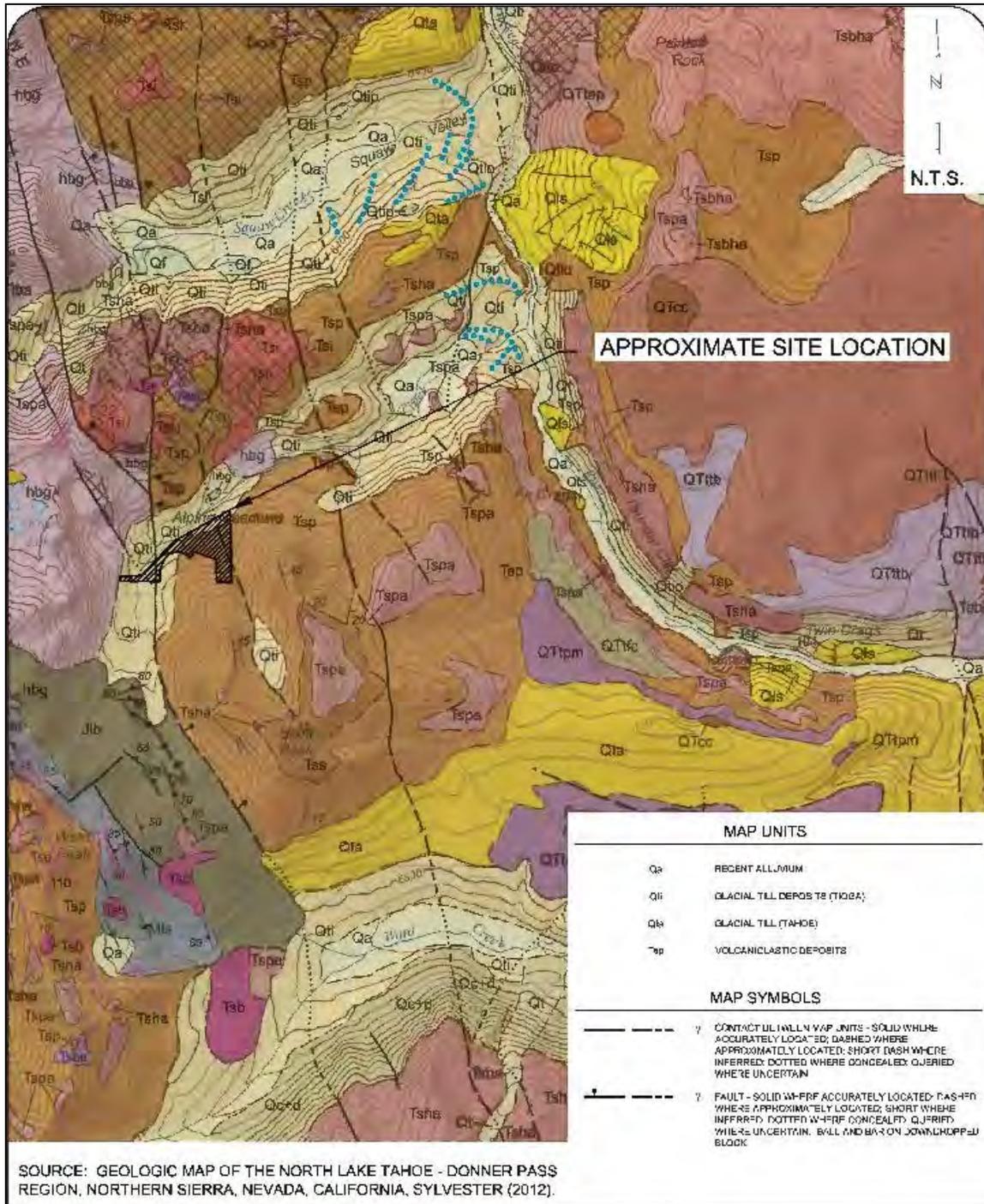


Figure 2-7 Fault Evaluation, Approximate Fault Location #2

Source: Holdrege & Kull, 2014.

portion of the project site (Phase B) that could be subject to small stream flooding and debris flows associated with a nearby stream channel. Debris flows, which are not uncommon in the Bear Creek drainage, are usually confined to the stream channel, until it becomes blocked or is no longer confined.⁴⁶ No project buildings would be located within the stream channel.

2.14 Hazardous Materials

Placer County Environmental Health Department is responsible for responding to hazardous materials incidents within Placer County. Placer County maintains an East Side Haz-Mat team, which is a cooperative effort of the eastern Placer fire departments, with a dedicated Haz-Mat response and command vehicle housed at Truckee Fire Station 96.⁴⁷

Alpine Meadows does not have access to natural gas, so propane is the primary heating fuel for residences and commercial operations.

The project site is not named on a list of hazardous materials sites compiled pursuant to California Government Code Section 65962.5, or any other database of hazardous materials sites.⁴⁸

⁴⁶ Holdrege & Kull, *Geotechnical Engineering Report, Alpine Sierra*, December 11, 2003, pages 3 and 4.

⁴⁷ Placer County, *Martis Valley West Parcel Specific Plan Emergency Preparedness and Evacuation Plan*, June 2016, page 28.

⁴⁸ Placer County, *Alpine Sierra Subdivision Draft EIR*, September 2017 page 13-2.

3.0 REGULATORY REQUIREMENTS

Development of the proposed project will be subject to federal and state laws, county ordinances and regulations and mitigation measures identified in the EIR. The key provisions that would address hazards and emergencies within the plan area are summarized below, and, in some cases, reproduced in the appendices.

3.1 Fire Prevention and Response

3.1.1 California Public Resources Code Section 4291

California Public Resources Code (PRC) Section 4291 sets forth minimum fire safety standards for development in or adjoining mountainous areas and forest-covered lands. Provisions that would apply to proposed project include:

- ▲ Defensible space must be maintained 100 feet from the side, front and rear of a structure, or up to the property line where the property line is less than 100 feet from the structure;
- ▲ Any portion of a tree that extends within 10 feet of the outlet of a chimney or stovepipe must be removed;
- ▲ Any tree, shrub, or other plant adjacent to or overhanging a building must be free of dead or dying wood;
- ▲ The roof of any structure must be free of leaves, needles, or other vegetative materials;
- ▲ Prior to constructing a new building, the owner shall obtain a certification from the local building official that the dwelling or structure, as proposed to be built, complies with all applicable state and local building standards; and
- ▲ Prior to final inspection approval of any building, the Fire Department must inspect the building and the fire suppression facilities to certify that the fire suppression improvements comply with Building Code and fire department service requirements.

Violation of the above provisions may result in a fine. PRC Section 4291 also requires the Department of Forestry and Fire Protection (CalFire) to develop, periodically update and post on the internet a guidance document regarding fuels management. The full text of the measure is provided in Appendix A.

The North Tahoe Fire Protection District (NTFPD) has developed a defensible space program, which implements the provisions of Section 4291. Homeowners are notified of defensible space measures that are required to bring their property into compliance with state law. Homeowners then have 30 days to correct any violations, and then the property is re-inspected. Homeowners who do not comply may be subject to a citation.¹

3.1.2 Government Code Section 66474.2

Before approving a tentative map (or a parcel map where a tentative map is not

¹ North Tahoe Fire Protection District, *Defensible Space/Chipping*, <http://www.ntfire.net/defensible-spacechipping>, accessed October 24, 2016.

required) for an area located in a SRA or a very high fire hazard severity zone, the legislative body of the county must find that the design and location of each lot in the subdivision, and the subdivision as a whole, are consistent with any applicable regulations adopted by CAL FIRE pursuant to PRC Sections 4290 and 4291; structural fire protection and suppression services will be provided to the subdivision by a county, city, special district, or other entity organized solely to provide fire protection services, or CAL FIRE; and ingress and egress meets the road standards for fire equipment access adopted pursuant to PRC Section 4290 and any applicable local ordinance.²

3.1.3 Placer County General Plan

The Placer County General Plan (2013) contains a Public Facilities and Services Element that includes the following policies related to fire protection services that are applicable to the proposed project:

- Policy 4.I.1:** The County shall encourage local fire protection agencies in Placer County to maintain the following minimum fire protection standards (expressed as Insurance Service Organization [ISO] ratings):
- a. ISO 4 in urban areas
 - b. ISO 6 in suburban areas
 - c. ISO 8 in rural areas
- Policy 4.I.2:** The County shall encourage local fire protection agencies in the County to maintain the following standards (expressed as average response times to emergency calls):
- a. 4 minutes in urban areas
 - b. 6 minutes in suburban areas
 - c. 10 minutes in rural areas
- Policy 4.I.3:** The County shall require new development to develop or fund fire protection facilities, personnel, and operations and maintenance that, at a minimum, maintains the above service level standards.
- Policy 4.I.9:** The County shall ensure that all proposed developments are reviewed for compliance with fire safety standards by responsible local fire agencies per the Uniform Fire Code and other County and local ordinances.

In addition, the Health and Safety Element of the General Plan includes the following policies regarding fire hazards within Placer County:

- Policy 8.C.1.** The County shall ensure that development in high-fire-hazard areas is designed and constructed in a manner that minimizes the risk from fire hazards and meets all applicable state and county fire standards.
- Policy 8.C.2.** The County shall require that discretionary permits for new development in fire hazard areas be conditioned to include requirements for fire-resistant vegetation, cleared fire breaks, or a long-term comprehensive fuel

² Placer County, *Martis Valley West Parcel Specific Plan Draft Environmental Impact Report*, October 2015, page 17-9.

management program. Fire hazard reduction measures shall be incorporated into the design of development projects in fire hazard areas.

Policy 8.C.3. The County shall require that new development meets state, county, and local fire district standards for fire protection.

Policy 8.C.4. The County shall refer development proposals in the unincorporated county to the appropriate local fire agencies for review for compliance with fire safety standards. If dual responsibility exists, then both agencies shall review and comment relative to their area of responsibility. If standards are different or conflicting, the more stringent standards shall be applied.

Policy 8.C.5. The County shall ensure that existing and new buildings of public assembly incorporate adequate fire protection measures to reduce the potential loss of life and property in accordance with state and local codes and ordinances.

3.1.4 Placer County Ordinances

Fire Code

Placer County has adopted the 2016 California Building Code, Title 24 of the California Code of Regulations, and the 2016 Fire Code (Sections 15.04.700 and 15.04.710 Fire Code Amendment). The Fire Code addresses emergency access, access gates, sprinkler systems, fire alarms within buildings, and construction of access roads to accommodate fire apparatus. The Fire Code requires that an automatic fire sprinkler and/or fire extinguishing system be installed throughout new one- and two-family dwellings and commercial buildings 3,600 square feet and larger.

Zoning Ordinance

Article 17.54, General Development Regulations, Section 17.54.100.C.1.d, of the Placer County Zoning Ordinance (Placer County 2015) states the following:

- At least two vehicle entry/exit points shall be provided or planned for adequate circulation and emergency purposes unless otherwise determined by the planning commission. If two vehicle entry/exit points are required by the commission, these entrances shall be constructed and available for use with the first and all stages of a phased project, unless otherwise determined by the planning commission.

3.1.5 Placer County Office of Emergency Services

Placer County's Office of Emergency Services provides emergency management services in cooperation with local cities and special districts, including fire agencies. During an active incident, such as fire or flood, the Office of Emergency Services helps initiate first responses. The functions of the Office of Emergency Services include emergency planning, response, recovery, and mitigation, including preparation of a Local Hazard Mitigation Plan. The Placer County Local Hazard Mitigation Plan, which was updated in June 2016, is a joint effort between Placer County and 15 other jurisdictions, including the North Tahoe Fire Protection District, and is intended to guide

hazard mitigation planning to reduce the effects of hazard events, including wildfires.³

3.1.6 Alpine Meadows General Plan

The Alpine Meadows General Plan does not provide goals, policies, or objectives relevant to the analysis of impacts related to wildfire.

3.1.7 Community Wildfire Protection Plan

Alpine Meadows is one of the communities covered by the Lake Tahoe Basin Community Wildfire Protection Plan (CWPP). The CWPP summarizes wildfire dangers and issues within the community, catalogs community wildfire protection needs, and identifies corrective action and community projects that will mitigate some of the problems. The goals of the plan are to create fire-adapted communities, restore and maintain fire resilient landscapes and provide effective and efficient wildfire response.⁴

3.1.8 NTFPD Ordinance 3-2013 (Fire Code)

The NTFPD Fire Prevention Code (Ordinance 3-2013) incorporates the most recent California Fire Code, and sections of the 2012 International Fire Code. In addition, the ordinance addresses electronic gate overrides, fire hydrant systems, electrical systems, fire alarms, sprinkler systems, roofing materials, flammable and combustible liquids, and liquid petroleum and natural gas. The Fire Code is provided in Appendix A.

3.1.9 Other NTFPD Programs

The NTFPD has developed a defensible space program, providing information to property owners regarding defensible space requirements and measures, and inspecting properties. Three types of inspections are provided:

- Free Property Inspections: NTFPD staff will meet with residents and help them identify ways to create defensible space around their homes and structures. A report of the inspection findings is provided, along with educational materials regarding ways to comply with the defensible space requirements.
- Educational Inspections: NTFPD staff walk through neighborhoods, and then mail their findings to homeowners in order to educate them about defensible space provisions that need to be addressed.
- Mandatory Compliance Inspections: Homeowners are notified of defensible space measures that are required to bring their property into compliance with State law. Homeowners have 30 days to correct any violations, and then the property is re-inspected. Homeowners who do not comply may be subject to a citation.⁵

The NTFPD also provides an Emergency Preparedness and Evacuation Guide to residents and property owners. The Guide describes defensible space measures, identifies evacuation routes and emergency contacts, and provides recommendations for emergency planning, including an evacuation checklist. In addition to fire, the Guide addresses earthquakes, floods, avalanches and tsunamis (applicable only to Lake

³ Placer County, Alpine Sierra Subdivision Draft EIR, September 2017, page 13-12.

⁴ The Tahoe Fire and Fuels Team, *Lake Tahoe Basin Community Wildfire Protection Plan*, August 2015, page 16.

⁵ North Tahoe Fire Protection District, *Defensible Space/Chipping*, <http://www.ntfire.net/defensible-spacechipping>, accessed October 24, 2016.

Tahoe). The Guide is provided in full in Appendix B.

3.1.10 Alpine Meadows Community Wildfire Protection Plan

The Alpine Meadows Community Wildfire Protection Plan (AMCWPP) was adopted on October 10, 2015 by the Alpine Springs County Water District. The AMCWPP characterizes the fire risks due to forest health, fuel conditions and the built environment (including a Hazard Assessment that rates risk based on defensible space, siding materials, structure enclosure, and street features), and fire protection services in Alpine Meadows. The AMCWPP also recommends measures for homeowners and homeowner associations to take to reduce their fire risk, such as use of appropriate building materials, improved defensible space and fuel reduction. The AMCWPP also includes an evacuation plan that identifies evacuation routes and identifies the Alpine Meadows ski resort parking lot as an evacuation/emergency staging area.

3.1.11 Alpine Springs County Water District Resolution 1-2010

Alpine Springs CWD Resolution 1-2010 provides specifications for installing water infrastructure in new development, such as standards for water lines, relief valves and installation of meters.

3.1.12 EIR Mitigation Measures

The Alpine Sierra Subdivision EIR includes mitigation to ensure that the NTFPD has the resources it requires to provide fire protection services to the proposed project, including additional equipment and adequate water supply and pressure. In addition, mitigation requires will-serve letters from NTFPD and ASCWD, approval of a fuel modification program and a construction traffic management plan to ensure that emergency vehicles can access the project site during construction. The mitigation measures related to fire protection are provided below:

MM 7.4c: Prior to approval of Improvement Plans, the project shall prepare a Construction Traffic Management Plan that shall be subject to approval by the Placer County Department of Public Works and Facilities. The goal of the Construction Traffic Management Plan will be to minimize traffic impacts to public streets and maintain a high level of safety for all roadway users. The plan will include the number and size of trucks per day, expected arrival/departure times, truck circulation patterns, location of truck staging areas, employee parking, and the proposed use of traffic control/partial street closures on public streets. The Construction Traffic Management Plan shall provide for attainment of the following performance standards to the satisfaction of the Department of Public Works and Facilities:

- Delivery trucks shall not idle/stage within the public right-of-way.
- Any lane closures on Alpine Meadows Road shall be limited to a single lane during off-peak hours (8:30 a.m. to 3:30 p.m.).
- All construction employees shall park on site.
- Roadways shall be maintained clear of debris (such as rocks) that could otherwise impede travel and impact public safety.

MM 13.1a: Prior to Improvement Plan approval, all trees that pose a risk to life and property shall be assessed by qualified personnel such as a certified

arborist or Registered Professional Forester to the satisfaction of the Planning Services Division and a Fuel Modification Plan shall be approved by the North Tahoe Fire Protection District. The Fuel Modification Plan shall identify all hazard trees that pose a significant risk to life and/or property and shall include maps indicating the location of trees proposed for removal and the proposed procedures for removal. Locations of hazard trees shall also be indicated on Improvement Plans. All hazard trees within common areas (outside of individual lots) shall be removed with the onsite subdivision improvements. Where hazard trees occur within individual lots, removal of those trees must be included on Improvement Plans for the individual lot.

MM 13.1b: The project applicant shall implement Mitigation Measures 14.1a and 14.1b requiring the applicant to submit will-serve letters from the North Tahoe Fire Protection District and Alpine Springs County Water District to Placer County prior to recordation of the Final Map, to purchase and donate a pumper truck to the North Tahoe Fire Protection District, and to make a fair-share contribution to the Alpine Springs County Water District toward the cost of upgrading three system-wide pump stations.

MM 14.1a: Prior to Improvement Plan approval and recordation of the Final Map, the project applicant shall submit to Placer County a will-serve letter from the North Tahoe Fire Protection District. Further, the project applicant shall purchase and donate to the North Tahoe Fire Protection District a standard four-wheel-drive Type 1 pumper truck with a 1,500-gallon-per-minute pump and a 750-gallon water tank.

MM 14.1b: Prior to Improvement Plan approval and recordation of each Final Map, the applicant shall provide a will-serve letter from the Alpine Springs County Water District (ASCWD) to describe terms under which the District will provide water service to the project. The project applicant shall also make a fair-share contribution toward the cost of upgrading three system-wide pump stations (Booster Pumps B, C, and D) to ensure adequate water supply and pressure to serve the proposed project and to increase water supply reliability and pressure throughout the ASCWD service area. This contribution shall be made to ASCWD prior to recordation of each Final Map.

3.2 Avalanche Regulations

There are no federal or State laws governing development in avalanche zones. The relevant county policies and regulations are provided below.

3.2.1 Placer County General Plan

The relevant policies of the Placer County General Plan with respect to avalanche hazards are listed below.

Policy 8.A.1. The County shall require the preparation of a soils engineering and geologic-seismic analysis prior to permitting development in areas prone

to geological or seismic hazards (i.e., ground shaking, landslides, liquefaction, critically expansive soils, and avalanche).

- Policy 8.H.1:** The County shall maintain maps of potential avalanche hazard areas.
- Policy 8.H.2:** The County shall require new development in areas of avalanche hazard to be sited, designed, and constructed to minimize avalanche hazards.
- Policy 8.H.3:** The County shall not issue permits for new development in potential avalanche hazard areas (PAHA) as designated in the Placer County *Avalanche Management Ordinance* unless project proponents can demonstrate that such development will be safe under anticipated snow loads and conditions of an avalanche.

3.2.2 Alpine Meadows General Plan

The Alpine Meadows General Plan does not provide goals, policies, or objectives relevant to the analysis of impacts related to avalanches.

3.2.3 Avalanche Management Ordinance

Article 12.40 of the Placer County Code addresses Avalanche Management Areas and establishes the Placer County Avalanche Management Ordinance. The Article describes PAHAs as those areas where, after investigation and study, the county finds that an avalanche potential exists because of steepness of slope, exposure, snow pack composition, wind, temperature, rate of snowfall, and other interacting factors. PAHA zones are established to identify those areas with avalanche potential based on approved studies that designate a minimum probability of occurrence greater than one in 100 per year, or where avalanche damage is documented.

Placer County limits construction in PAHAs and will not issue a building permit for construction in a PAHA without certifying that the structure will be safe under the anticipated snow loads and conditions of an avalanche.

3.2.4 EIR Mitigation Measures

The Alpine Sierra Subdivision EIR includes mitigation to address avalanche hazards, including snow removal equipment, and compliance with the recommendations of the Avalanche Hazard Study.

MM 13.2a Prior to recordation of the first small lot Final Map that includes any residential lot in the eastern development pod, the project applicant shall lease or purchase snow removal equipment, which at a minimum shall include a rubber tired, 4-wheel drive, front loader with a minimum 1.5-yard bucket capacity. The snow removal equipment shall be housed within the homeowners' association (HOA) caretaker unit on site. The HOA shall submit evidence annually to the Placer County Planning Division verifying that a full-time HOA caretaker qualified to conduct snow removal activities has been retained and is residing on site.

MM 13.2b Prior to the issuance of grading/building permits on Lots 2 and 3, the project engineer shall revise the site plans to ensure that the design of Lots 2 and 3 comply with the recommendations found in the Avalanche

Hazard Study. These recommendations include avoidance of the small avalanche path on site or the incorporation of the rock outcropping into the structural design of these lots to hinder snow buildup on the rock. The design of Lots 2 and 3 shall comply with Section 12.40.060 of the Placer County Code.

3.3 Seismic and Geologic Hazards

3.3.1 California Building Code

In California, seismic hazards are addressed primarily through building code requirements intended to ensure that new construction is built to withstand seismic activity likely to occur within the area being developed. The California Building Code (CBC) (California Code of Regulations, Title 24) is based on the International Building Code (IBC). The IBC Seismic Zone Map of the United States places Placer County, including the Project area, within Seismic Hazard Zone III, which corresponds to an area that may experience damage due to earthquakes having moderate intensities of V or more on Modified Mercalli Scale, which corresponds to maximum momentum magnitudes of 4.9 or greater. The CBC has been modified for California conditions with more detailed and/or more stringent regulations. Specific minimum seismic safety and structural design requirements are set forth in Chapter 16 of the CBC. The CBC identifies seismic factors that must be considered in structural design. Chapter 18 of the CBC regulates the excavation of foundations and retaining walls, while Chapter 18A regulates construction on unstable soils, such as expansive soils and areas subject to liquefaction.⁶

3.3.2 Placer County General Plan

The relevant policies of the *Placer County General Plan* (2013) with respect to geologic and seismic hazards are listed below:

- Policy 8.A.1.** The County shall require the preparation of a soils engineering and geologic seismic analysis prior to permitting development in areas prone to geological or seismic hazards (i.e., ground shaking, landslides, liquefaction, critically expansive soils, and avalanche).
- Policy 8.A.2.** The County shall require submission of a preliminary soils report, prepared by a registered civil engineer and based upon adequate test borings, for every major subdivision and for each individual lot where critically expansive soils have been identified or are expected to exist.
- Policy 8.A.7.** In areas subject to severe ground shaking, the county shall require that new structures intended for human occupancy be designed and constructed to minimize risk to the safety of occupants.
- Policy 8.A.9.** The County shall require that the location and/or design of any new buildings, facilities, or other development in areas subject to earthquake activity minimize exposure to danger from fault rupture or creep.

⁶ Placer County, *Draft Environmental Impact Report, Village at Squaw Valley Specific Plan*, May 2015, page 12-15.

Policy 8.A.10. The County shall require that new structures permitted in areas of high liquefaction potential be sited, designed, and constructed to minimize the dangers from damage due to earthquake induced liquefaction.

Policy 8.A.11. The County shall limit development in areas of steep or unstable slopes to minimize hazards caused by landslides or liquefaction.

3.3.3 Alpine Meadows General Plan

The Alpine Meadows General Plan does not provide goals, policies, or objectives relevant to the analysis of impacts related to geology, soils, and seismicity.

3.3.4 EIR Mitigation Measures

The Alpine Sierra Subdivision EIR includes mitigation to ensure that the proposed project is designed and constructed in a manner that minimizes risks associated with soils and geologic constraints. The mitigation measure addressing these constraints is provided below:

MM 11.2b The Improvement Plan submittal shall include a final geotechnical engineering report produced by a California Registered Civil Engineer or Geotechnical Engineer. The report shall incorporate the specific recommendations in the Geotechnical Engineering Report and the Geotechnical Engineering Report Update identifying construction and design standards that would protect structures from the effects of soil saturation and shall address and make recommendations on the following:

- a. Road, pavement, and parking area design
- b. Structural foundations, including retaining wall design
- c. Grading practices
- d. Erosion/winterization
- e. Special problems discovered on site (i.e., groundwater, expansive/ unstable soils)
- f. Slope stability
- g. Fault rupture

Once approved by the Engineering and Surveying Division (ESD), two copies of the final report shall be provided to the ESD and one copy to the Building Services Division for its use. It is the responsibility of the developer to provide for engineering inspection and certification that earthwork has been performed in conformity with recommendations contained in the report.

If the soils report indicates the presence of critically expansive or other soils problems that, if not corrected, could lead to structural defects, a certification of completion of the requirements of the soils report will be required for subdivisions prior to issuance of Building Permits. This certification may be completed on a lot-by-lot basis or on a tract basis. This requirement shall be so noted on the Improvement Plans; in the Covenants, Conditions, and Restrictions (CC&Rs); in the Development

Notebook; and on the Informational Sheet filed with the Final Subdivision Map(s).

3.4 Flood Regulations

3.4.1 National Flood Insurance Act

The Federal Emergency Management Agency (FEMA) is tasked with responding to, planning for, recovering from and mitigating against disasters. Formed in 1979 to merge many of the separate disaster related responsibilities of the federal government into one agency, FEMA is responsible for coordinating the federal response to floods, earthquakes, hurricanes, and other natural or man-made disasters and providing disaster assistance to states, communities and individuals. The Federal Insurance and Mitigation Administration within FEMA is responsible for administering the National Flood Insurance Program (NFIP) and administering programs that provide assistance for mitigating future damages from natural hazards. Established in 1968 with the passage of the National Flood Insurance Act, the NFIP is a federal program enabling property owners in participating communities to purchase insurance as a protection against flood losses in exchange for state and community floodplain management regulations that reduce future flood damages. Participation in the NFIP is based on an agreement between communities and the federal government. If a community adopts and enforces a floodplain management ordinance to reduce future flood risk to new construction in floodplains, the federal government will make flood insurance available within the community as a financial protection against flood losses. This insurance is designed to provide an insurance alternative to disaster assistance to reduce the escalating costs of repairing damage to buildings and their contents caused by floods. Placer County participates in the NFIP by adopting and enforcing floodplain management ordinances to reduce future flood damage.

3.4.2 FEMA Community Rating System

The Federal Insurance and Mitigation Administration (a division of FEMA) has a voluntary program for recognizing and encouraging community floodplain management activities that exceed National Flood Insurance Program (NFIP) standards. Under the Community Rating System, NFIP policy holders within participating communities receive discounts on their flood insurance premiums. Ratings range from 1 to 9, with 1 being the highest and receiving the greatest discount. Most communities enter with a rating of 9 or 8, with discounts of 5 or 10 percent, respectively. Placer County is rated 5, so policyholders within the County receive a 25 percent discount.

3.4.3 Placer County General Plan

The Placer County General Plan includes the following flood-related policies:

Policy 4.E.11. The County shall require new development to adequately mitigate increases in stormwater peak flows and/or volume. Mitigation measures should take into consideration impacts on adjoining lands in the unincorporated area and on properties in jurisdictions within and immediately adjacent to Placer County.

- Policy 4.F.1.** The County shall require that arterial roadways and expressways, residences, commercial land industrial uses and emergency facilities be protected, at a minimum, from a 100-year storm event.
- Policy 4.F.2.** The County shall recognize floodplains as a potential public resource to be managed and maintained for the public's benefit.
- Policy 4.F.4.** The County shall require evaluation of potential flood hazards prior to approval of development projects. The County shall require proponents of new development to submit accurate topographic and flow characteristics information and depiction of the 100-year floodplain boundaries under fully developed, unmitigated runoff conditions.
- Policy 4.F.5.** The County shall attempt to maintain natural conditions within the 100-year floodplain of all rivers and streams except under the following circumstances.
- Where work is required to manage and maintain the stream's drainage characteristics and where such work is done in accordance with the Placer County Flood Damage Prevention Ordinance, California Department of Fish and Wildlife regulations, and Clean Water Act provisions administered by the U.S. Army Corps of Engineers.
- Policy 4.F.8.** The County shall, where possible, view flood waters as a resource to be used for waterfowl habitat, aquifer recharge, fishery enhancement, agricultural water supply, and other suitable uses.
- Policy 4.F.10.** The County shall preserve or enhance the aesthetic qualities of natural drainage courses in their natural or improved state compatible with flood control requirements and economic, environmental, and ecological factors.
- Policy 4.F.13.** The County shall continue to implement and enforce its Grading, Erosion and Sediment Control Ordinance and Flood Damage Prevention Ordinance.
- Policy 4.F.14.** The County shall ensure that new storm drainage systems are designed in conformance with the Placer County Flood Control and Water Conservation District's Stormwater Management Manual and the county's Land Development Manual.

3.4.4 Alpine Meadows General Plan

The Alpine Meadows General Plan does not include policies specific to flood control.

3.4.5 Placer County Flood Control & Water Conservation District

The Placer County Flood Control and Water Conservation District formulates regional strategies for flood control management. According to the Placer County Flood Control and Water Conservation District website, "the primary purpose of the District is to protect lives and property from the effects of flooding by comprehensive, coordinated flood prevention planning". This is frequently accomplished with the use of BMPs and

engineered structures. The Placer County Flood Control and Water Conservation District's Stormwater Management Manual presents policies, guidelines, and specific development criteria for stormwater management. The manual addresses the following elements that must be included in a construction project to mitigate impacts related to stormwater:

- Drainage structure planning and design to avoid damages to structures or improvements during the 100-year event and prevent inundation of developed or to-be-developed portions of private property during the 10-year event;
- Use of detention basins to reduce post-project runoff rates and/or volumes to up to 90% of pre-project levels;
- Floodplain Management Plan;
- System Monitoring Program; and
- Operations and Maintenance Program.

The Placer County Land Development Manual contains a storm drainage section that supplements the Stormwater Management Manual. This section of the Land Development Manual provides objectives and standards that seek to provide a uniform drainage system throughout the County, with primary consideration for avoiding property damage and maintaining natural conditions. The Land Development Manual's storm drainage section identifies minimum requirements for drainage reports and Improvement Plans, and establishes minimum criteria and standards for drainage infrastructure design and maintenance.

3.4.6 Placer County Code

Placer County Flood Damage Prevention Ordinance (Placer County Code Article 15.52) addresses floodplain management. The ordinance limits construction within the 100-year floodplain to prevent damage to structures and to limit the effect of development on base flood elevations.

3.4.7 EIR Mitigation Measures

The EIR includes mitigation to ensure that drainage facilities are designed to County standards, and the risk of flooding is minimized. The text of the mitigation measures is provided below:

MM 12.1b: As part of the Improvement Plan submittal process, the preliminary Drainage Report provided during environmental review shall be submitted in final format. The final Drainage Report may require more detail than that provided in the preliminary report, and will be reviewed in concert with the Improvement Plans to confirm conformity between the two. The report shall be prepared by a Registered Civil Engineer and shall, at a minimum, include: A written text addressing existing conditions, the effects of the proposed improvements, all appropriate calculations, watershed maps, changes in flows and patterns, and proposed on- and off-site improvements and drainage easements to accommodate flows from this project. The report shall identify water quality protection features and methods to be used during construction, as well as long-term post-construction water quality measures. The final Drainage Report shall be prepared in conformance with the requirements of Section 5 of the Land Development Manual and the

Placer County Storm Water Management Manual that are in effect at the time of improvement plan submittal.

- MM 12.3a:** The Improvement Plans shall indicate construction of a new on-site stormwater drainage system that shall discharge to either an existing swale or channel or to an erosion control device designed to create a sheet flow condition.
- MM 12.3b:** The Improvement Plan submittal and final Drainage Report shall provide details showing that storm water run-off shall be reduced to pre-project conditions at all discharge points from the property. The ESD may, after review of the project final drainage report, delete this requirement if it is determined that drainage conditions do not warrant installation of this type of facility. Increased flows directly into Bear Creek shall be no more than 2 cubic feet per second. Retention/detention facilities shall be designed in accordance with the requirements of the Placer County Storm Water Management Manual that are in effect at the time of submittal, and to the satisfaction of the Engineering and Surveying Division (ESD) and shall be shown on the Improvement Plans. Maintenance of detention facilities by the homeowner's association, property owner's association, property owner, or entity responsible for project maintenance shall be required. No retention/detention facility construction shall be permitted within any identified wetlands area, floodplain, or right-of-way, except as authorized by project approvals.
- MM 12.4a:** On the Improvement Plans and Informational Sheet(s) filed with the appropriate Final Subdivision Map(s), show the limits of the future, unmitigated, fully developed, 100-year flood plain (after grading) for Bear Creek and the un-named tributary on the east side of the project and designate same as a building setback line unless greater setbacks are required by other conditions contained herein.
- MM 12.4b:** On the Improvement Plans and Informational Sheet(s) filed with the appropriate Final Subdivision Map(s) show finished house pad elevations to be a minimum of two feet above the 100-year floodplain line (or finished floor -three feet above the 100-year floodplain line). The final pad elevation shall be certified by a California registered civil engineer or licensed land surveyor and submitted to the Engineering and Surveying Department. This certification shall be done prior to construction of the foundation or at the completion of final grading, whichever comes first. No construction is allowed until the certification has been received by the Engineering and Surveying Department and approved by the floodplain manager. Benchmark elevation and location shall be shown on the Improvement Plans and Informational Sheet(s) to the satisfaction of Development Review Committee.
- MM 12.4c:** The Improvement Plans for the construction of the on site subdivision roads shall include the construction of a roadway bridges spanning the 100 year floodplain limits.

MM 12.4d: In order to protect site resources, no grading activities of any kind may take place within the 100-year flood plain of the seasonal stream and of Bear Creek, unless otherwise approved as a part of this project. All work shall conform to provisions of the County Flood Damage Prevention Regulations (Section 15.52, Placer County Code). A standard note to this effect shall be included on the Improvement Plans. The location of the 100-year flood plain shall be shown on the Improvement Plans.

3.5 Hazardous Materials Regulations

Federal laws require planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and if such materials are accidentally released, to prevent or mitigate injury to health or the environment. EPA is the agency primarily responsible for enforcement and implementation of federal laws and regulations pertaining to hazardous materials. Applicable federal regulations are primarily contained in CFR Titles 29, 40, and 49. Hazardous materials, as defined in the CFR, are listed in 49 CFR 172.101. The CFR includes laws related to the use, removal, and disposal of hazardous materials. Part 61 applies to removal of regulated asbestos containing materials in renovations and demolitions of commercial buildings. Management of hazardous materials is governed by the following laws.⁷

The U.S. Department of Transportation regulates transport of hazardous materials between states and is responsible for protecting the public from dangers associated with such transport. The federal hazardous materials transportation law, 49 USC 5101 et seq. (formerly the Hazardous Materials Transportation Act 49 USC 1801 et seq.) is the basic statute regulating transport of hazardous materials in the United States. Hazardous materials regulations are enforced by the Federal Highway Administration, the Federal Railroad Administration, and the Federal Aviation Administration.⁸

Propane distribution systems are regulated under Title 49 of the CFR. The California Public Utilities Commission's Utilities Safety Branch administers the propane safety program, scheduling each jurisdictional system for a safety audit at least once every five years to assure compliance with the federal pipeline safety regulations adopted by the California Public Utilities Commission under General Order 112-E.⁹

No mitigation measures for hazardous materials impacts were identified in the EIR, and no additional measures beyond existing regulations are needed to address the project's use of or potential exposure to hazardous materials.

7 Placer County, *Draft Environmental Impact Report, Village at Squaw Valley Specific Plan*, May 2015, page 15-8.

8 Placer County, *Draft Environmental Impact Report, Village at Squaw Valley Specific Plan*, May 2015, page 15-8.

9 Placer County, *Draft Environmental Impact Report, Village at Squaw Valley Specific Plan*, May 2015, page 15-9.

4.0 FIRE PREVENTION AND EMERGENCY PLANNING

This section addresses steps to be taken in the planning, design and construction of the Alpine Sierra subdivision to minimize hazards and to prepare for and respond to emergencies. In addition, ongoing measures to reduce the risk of fire and other hazards are identified. The measures identified below are based on California state law, Placer County regulations, Environmental Impact Report (EIR) mitigation, North Tahoe Fire Protection District (NTFPD) codes, and best practices.

4.1 Fire Protection Plan

4.1.1 Water Supply and Fire Flow

Project infrastructure will be designed and constructed to provide adequate pressure for peak water demand, including fire flows. The project water distribution system, including fire hydrants, shall be designed to meet Alpine Springs County Water District (ASCWD) standards for peak pressure and fire flows.

The project has obtained a will-serve letter from the ASCWD stating that they will provide water, sewer, garbage and fire services to the project, as long as the project proponent enters into an agreement with the ASCWD that includes the following provisions:

- Fund a standard 4x4 Type I fire apparatus (new pumper truck) with 1,500 gpm pump and 750 gallon water tank. The truck must be fully equipped per NFPA 1901 and NTFPD standards and ready for service. This measure is consistent with EIR Mitigation Measure 7.4a.
- Obligate future home owners within the project to continue implementing defensible space and the Forest Health Management Plan (discussed below) in perpetuity at the direction of ASCWD. If homeowners do not do so, they must allow the ASCWD to perform the work at homeowner expense.
- Enhanced building standards must be used in building construction, including fire sprinklers and fire-safe building materials.
- Management of all lands within the project boundaries as defensible space, and, to the greatest extent possible, modification of fuel types to a lower level of risk than found in the surrounding forest.
- Burial of all propane tanks within the project site.
- Provision of new easements and improvements to existing ASCWD domestic and fire flow water infrastructure on the project site to the benefit of the ASCWD.
- Funding of the project's share of upgrades to the three system-wide pump stations. This measure would implement EIR Mitigation Measure 7.4b, and would improve water pressure system-wide.
- Dedication of access easements to ASCWD on either end of the project site that will allow ASCWD to improve emergency access to both residents and the ski resort if at some time in the future the USFS and/or BCA agree to granting

easements for emergency access.¹

The applicant has agreed to the above measures.²

4.1.2 Emergency Access

The County Zoning Ordinance requires at least two vehicle entry/exit points unless otherwise determined by the County Planning Commission. At present, only one access road to the project site is contemplated. Because a second access to the project site is not feasible, other components of the project will be enhanced to ensure that residents and guests would be safe if they remained within the project site during a fire, avalanche or other emergency. These measures include:

- Internal roads will be maintained by a live-in manager funded by the Homeowners Association (HOA).
- An onsite maintenance facility will include a shop for maintaining onsite snow removal equipment.
- Home construction will use fire-resistant building materials.
- The entire project site will be treated and managed as defensible space.
- HOA buildings will be designed, constructed and operated to serve as Shelter-in-Place facilities for project occupants. There will be two HOA buildings—a lodge and a caretakers residence. One of these buildings will be constructed with Phase B of the project, and the second will be constructed with Phase C.
- Easements will be recorded for emergency vehicle access (EVA) through the project site to United States Forest Service (USFS) property boundaries in two locations to allow for a connection through USFS lands in the future should the USFS determine that looped access throughout Bear Creek Valley could be provided.
- As required by Mitigation Measure 14.1.c, a Construction Traffic Management Plan will be prepared to ensure that construction traffic does not block emergency access/egress.

These measures are discussed in more detail, below.

4.1.3 Building Fire and Ignition Resistance and Fire Protection Systems

Fire resistant exterior building materials have been specified for all project residences, which, combined with defensible space measures, will minimize the potential for residences to be vulnerable to fire. The following specifications will be included in all residential buildings:

- Ignition and ember resistant building materials;
- Sprinklers under eaves and decks;
- Interior sprinklers;
- Fire-safe landscaping adjacent to buildings;
- Ember-resistant venting; and

1 John M. Collins, General Manager, Alpine Springs County Water District, letter to Alexander Fisch, Senior Planner, Placer County, regarding *Will Serve Letter for Alpine Sierra Subdivision*, February 7, 2014.

2 Douglas Clyde, Mountain Resort Consulting Services, LLC, letter to John Collins, General Manager, Alpine Springs County Water District, October 17, 2013.

- Class A or metal roofs.

Shelter-in-place structures will be built to a higher standard of fire resistance, including:

- Exteriors shall be constructed of ignition-resistant materials in accordance with 701A of the California Building Code;
- Air-filtration and ventilation systems shall be designed to accommodate residents when out-door air quality is compromised due to smoke etc.;
- Smoke control shall include filtered air with positive pressurized building interiors;
- Exterior sprinklers shall be installed;
- Emergency power and heat shall be provided;
- Ember resistant venting shall be used; and
- Roofs shall be Class A construction.

The layout of the Shelter In Place facilities is discussed in Section 4.1.8, below.

4.1.4 Defensible Space/Fuel Maintenance

The Alpine Sierra Forest Management and Fuel Reduction Plan (Appendix C) identifies measures to be taken to reduce and manage fuel levels within the project site. The plan includes several zones, which will be treated as follows.

- *Fire Free Zone*: Area including a residence and all areas within 5 feet of the residence. In this zone, all flammable material must be removed. Well-irrigated plants may be placed in this zone as long as they do not touch the residence.
- *Structural Protection Zone*: All areas within 30 feet of the Fire Free Zone. Fuels reduction practices within this zone will include the following:
 - Vegetative material shall be well spaced (crowns should not be touching) and in a healthy condition.
 - Remove limbs that overhang structures.
 - Reduce vertical and horizontal continuity of trees and shrubs. Space conifer trees approximately 30 feet from crowns.
 - Vegetative fuels should be pruned and kept free of accumulations of dead material.
 - Reduce surface and ladder fuels (prune trees approximately 6–10 feet high, or 50% of the live crown for trees under 12 feet tall.
 - Selectively leave trees as described in Appendix C.
 - Shrubs should be low growing and free of dead materials.
 - Thin shrubs so that spacing is approximately 3 times the height of residual shrubs.
- *Defensible Space Zone*: Extends 100 feet from the Structural Protection Zone or to the property line, whichever is greater. Subject to fuels reduction practices including the following:
 - Reducing overall fuel continuity of trees and shrubs;
 - Reducing surface and ladder fuels;

- Pruning lower branches of leave trees;
 - Thinning to enhance the growth of leave trees and to increase species diversity; and
 - The fuels reduction, thinning, and pruning activities will be carried out in accordance with the forest management actions described for the Wildland Fuel Reduction Zone below.
- *Wildland Fuel Reduction Zone:* extends to the property boundaries from the Defensible Space Zone. Fuel reduction actions in this zone will include the following:
- Thin trees and shrubs utilizing variable-density thinning throughout the stand.
 - Selection criteria will be used to identify trees to be retained during forest thinning. Trees to be retained will meet the specific criteria provided in Appendix C:
 - Retain a diversity of all species throughout the site while reducing the overall percentage of red and white fir.
 - Retain riparian vegetation (aspen, willow, and herbaceous plants such as thimbleberry).
 - Focus thinning on suppressed and/or dead trees, shrubs, and limbs while maintaining some snags and other wildlife structures.
 - Release quaking aspen stands by removing competing vegetation. Remove most of the encroaching fir and lodgepole pine trees where aspen is being shaded out.
 - Thin residual trees to spacing of approximately 15 feet between tree crowns.
 - Drip line thin around leave trees (clearing of ladder fuels under the drip-line circumference of a leave tree.).
 - Reduce ladder fuels by thinning (pruning) lower branches of leave trees. This practice can be completed on up to 90% of the retained trees.
 - Create small openings and/or increase the size of current openings. Retain meadow and rock outcrop openings by cutting encroaching conifers and shrubs from openings and edges. Thin trees and shrubs more heavily along meadow edges to minimize wildfire risk.
 - Retain a wide variety of age, size, and decay classes, including dead and dying vegetation and snags, consistent with fire hazard reduction goals.
 - Retain some deformed trees (e.g., pistol butts, forked tops, dead tops) for genetic diversity and wildlife.
 - Reduce by 40% to 60% of fuels on the forest floor while leaving several large logs per acre to retain moisture and provide wildlife habitat.

Project CC&Rs shall specify that future homeowners will continue the defensible space and forest health management activities in perpetuity under the direction of the ASCWD.

4.1.5 Fire Apparatus

The project applicant will purchase and donate to ASCWD a standard four-wheel-drive Type 1 pumper truck with a 1,500-gallon-per-minute pump and an 750-gallon water tank,

as requested by the ASCWD³. As required by Mitigation Measure 4.7a, the apparatus shall be provided to the ASCWD prior to recordation of the first Final Map.

4.1.6 Wildfire Education and Public Communication

Because the project will be made up of single-family homes, rather than a hotel or lodging with a single owner, education and communication activities will be the responsibility of the HOA. Staff and/or the governing board of the HOA will be the primary contact with local emergency service providers, and will maintain communication with property owners regarding emergency preparedness. At a minimum, the HOA shall undertake the following:

- Provide NTFPD Emergency Preparedness and Evacuation Guide and the Alpine Sierra Emergency Preparedness and Evacuation Plan to all homeowners and include reference to the Guide in CC&Rs.
 - Coordinate with NTFPD and other emergency service providers.
 - Encourage homeowners to subscribe to Placer Alert and Nixle Connect.
 - If and when technology becomes easily available, the HOA shall install a reverse 911 system that can be operated by HOA staff.
 - Encourage residential property owners to keep the NTFPD Guide in a convenient location with other materials provided to renters and guests.
 - The HOA manager shall provide public safety updates and fire-related information on the HOA website, in HOA newsletters and at HOA meetings, as needed.
 - Request that the NTFPD and County Sheriff attend the annual HOA meeting to provide information of ongoing concerns and/or new programs.
 - Distribute to homeowners NTFPD meeting schedule.
 - Maintain an up-to-date electronic distribution system for notices with current member email and/or text addresses per regulations in the Davis-Sterling Act for California HOAs.
 - Maintain an official website, and put a trigger notice (e.g., pop-up or screen background change) on the website during an emergency.
 - Board members and/or staff shall meet with NTFPD staff when issues arise, e.g., drought, wild fire, in order to be proactive.

4.1.7 Evacuation Plan

As discussed previously, a second access to the project site is not feasible. With only one access, there may be situations in which the single access road is unusable and/or access to SR 89 via Alpine Meadows Road is not possible or advisable. Therefore, this EPEP emphasizes creating a development that minimizes the risk of fire, ensures that residents and guests are prepared for emergencies, and can safely accommodate residents and guests during emergencies, such as wildfire or avalanche.

- Preparedness
 - Fuel Maintenance and Defensible Space: The Alpine Sierra Forest Management and Fuel Reduction Plan, described in Section 4.1.4, above, will ensure that the risk of fire originating and/or spreading within the project site is minimized. If a wildfire does occur, the reduction in fuels will reduce the

³ John M. Collins, General Manager, Alpine Springs County Water District, letter to Alexander Fisch, Senior Planner, Placer County, regarding *Will Serve Letter for Alpine Sierra Subdivision*, February 7, 2014.

- intensity of fire within the project area.
- Education: Property owners and occupants will be provided information regarding fire prevention and emergency preparedness, and what steps to take should either evacuation or shelter-in-place become necessary (see Section 4.1.6). In addition, the HOA Board and staff shall be familiar with the procedures outlined in the East Side Evacuation Plan (Appendix D) and the NTFPD Evacuation Guide (Appendix B), and any future revisions/updates to those document;
- Communication: Communication protocols will be put into place and maintained by the HOA. In addition, homeowners will be encouraged to sign up for emergency alert systems, such as Placer Alert (see Section 4.1.6).
- Coordination: The HOA will be responsible for maintaining communication with emergency service providers and disseminating updated information to property owners on an ongoing basis, and during emergencies.
- Emergency Response: If an event occurs that could result in the need for evacuation or shelter in place, the HOA will keep property owners and occupants apprised of the status of the emergency through the website and/or social media. The HOA will cooperate with emergency service providers to ensure that occupants are aware of the timing of an imminent evacuation and/or need to shelter. Specific steps to be taken include:
 - Provide a link to the County Office of Emergency Services and/or other emergency service providers' website during the emergency event;
 - HOA staff shall use onsite equipment to keep roads clear between homes and connecting to Alpine Meadows Road and the HOA facilities that would be used to shelter-in-place;
 - HOA staff may provide assistance to emergency services providers, at the direction of the Incident Commander or other EMS personnel, such as providing information to property owners and/or occupants regarding nearby incidents, voluntary evacuations, mandatory evacuations, or other pertinent information.
 - Staff shall use communication protocols to inform and update residents and guests of potential for evacuation or shelter in place;
 - If evacuation is not feasible or appropriate, HOA staff shall ensure that the HOA Shelter-in-Place facilities are open, and coordinate activities at the facilities (see also Section 4.1.7).

Evacuation Route

The evacuation route from the project site to SR 89 is shown in Figure 4-1. Residents would travel from internal roads to the main access road, and then to Alpine Meadows Road. From the project access, Alpine Meadows Road would be used to travel to SR 89, where emergency service providers would direct vehicles to turn north (toward Truckee and Interstate 80) or south (toward Lake Tahoe). Signs indicating the evacuation route shall be located throughout the subdivision.

When a potential evacuation is considered imminent, the HOA shall post one or more variable message signs in locations that are easily visible to most residents and guests.

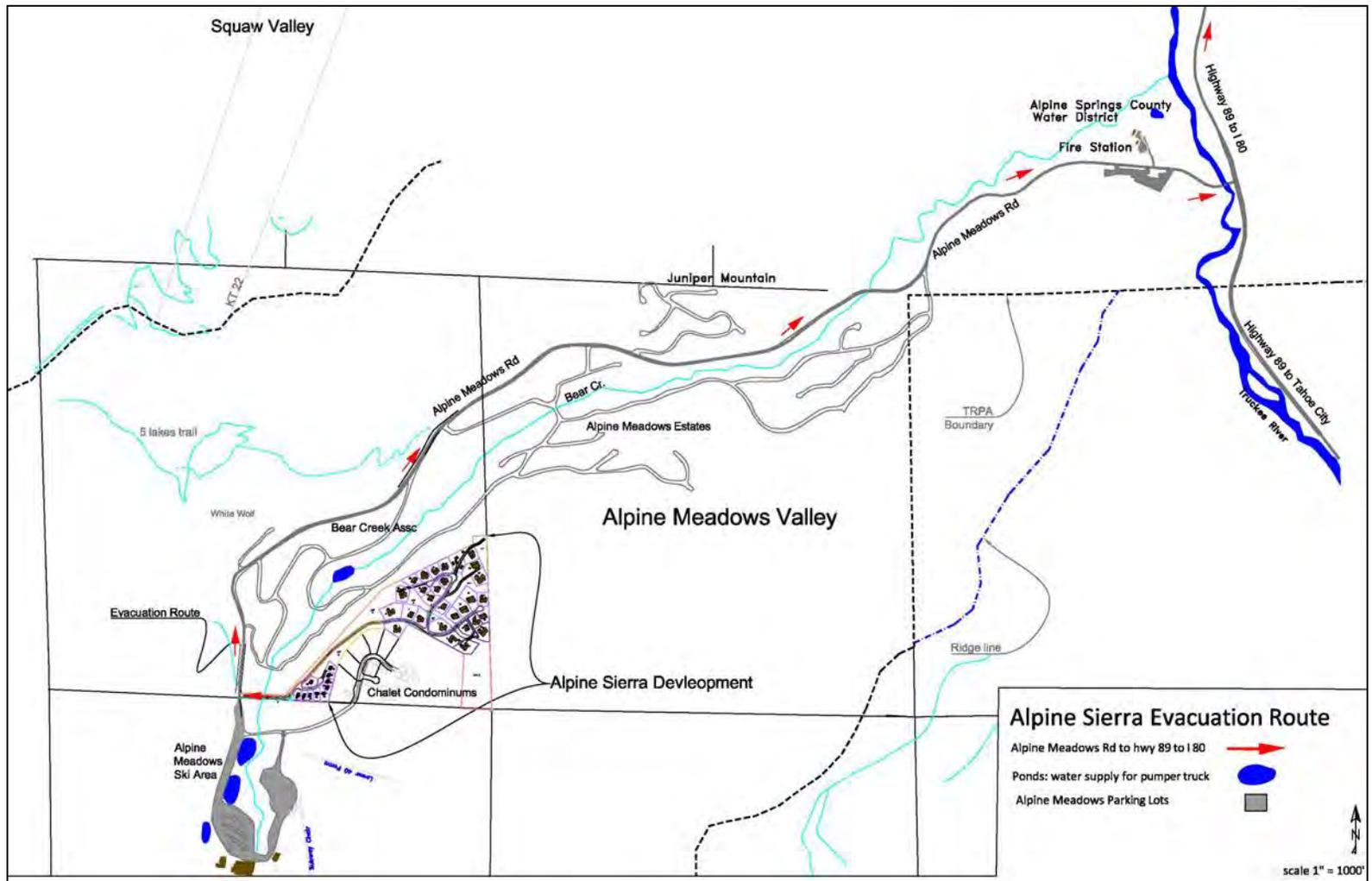


Figure 4-1

Evacuation Route: SR 89

4.1.8 Shelter-in-Place for Fire

The Shelter-in-Place facilities will consist of two buildings located in the north-east corner of the project site (see Figure 4-2)—the HOA lodge and the HOA maintenance building. The environment in which both of these buildings are located will be maintained as the Structural Protection Zone in the Alpine Sierra Forest Management and Fuel Reduction Plan. This Zone is managed such that fuels are reduced to the extent that crown fires will not propagate within this treatment area. In addition, due to the road clearing, the equipment yard and natural clearings, there will be an additional level of tree removal in proximity to these buildings that will exceed those dictated by the Structural Protection Zone. In short, there will be limited trees, if any, within a 100-foot radius of these buildings. In addition to this Zone protection, the buildings will be fire “hardened” as noted in the standards below and will have adequate space to contain more than the expected average occupancy of the project.

Shelter-In-Place Building Standards and Features

The Shelter-in-Place structures will consist of two HOA buildings, which will be constructed to Type 1⁴ or similar standards. These two buildings will be fully sprinkled and constructed of noncombustible materials with some minor allowances for interior trim finishes as allowed in the California Building Standards Code (Code).⁵ These buildings will be built to Assembly occupancy standards, which is substantially more stringent than the Residential standards within the Code. In addition to these requirements, these structures will be provided with exterior sprinklers, ember resistant venting, and separate ventilation for mechanical equipment.

The Code, the International Building Code and Fire Codes focus on built-in fire protection features such as automatic sprinkler systems, fire-resistance-rated building materials, applications and assemblages to prevent fire spread, and properly designed egress systems. These systems are designed to protect the occupants from fires within the structures. In addition, as discussed above, the HOA buildings will be designed to protect occupants from fire threats from outside the structure through the following means.

The exterior of the Shelter-in-Place buildings will be designed and constructed with all noncombustible materials and have air filtration and ventilations systems designed to handle a shelter-in-place situation wherein a large number of people may be gathered inside the building and a potentially hazardous atmosphere (i.e. air quality) persists outside the building. Occupancy duration during a shelter-in-place event is expected to be less than 2 hours. The maximum occupancy for shelter use for each building shall be determined by the local Fire Marshall and the normal maximum occupancy and the shelter maximum occupancy shall be clearly posted.

The standard occupancy rate for Assembly Occupancy is 15 square feet (sq. ft.) of habitable space per person. The HOA lodge building will be 1500 sq ft. and the Maintenance building will be 1350 sq ft. Total capacity with allowances for non-habitable space within these building is approximately 170 people based on this capacity standard. The average occupancy of residential development in Alpine Meadows is 2.23

4 Type 1 building class is essentially a high-rise structure classification and is composed of noncombustible structure as well as finishes.

5 The Model Code for the California Building Code is the International Building Code.

people per household, so the anticipated project population would be 109 people, well below the 170-person capacity of the two Shelter-in-Place buildings.

Shelter-in-Place buildings will be clearly identified as “Emergency Shelter-In-Place” areas in this EPEP, which will be provided to all project residents.

These two buildings will include onsite electrical generators to provide emergency backup power in the event of a power outage. The generators will be kept in a shed or other shelter. Water supply for the period of shelter is readily available by gravity from the Alpine Springs County Water Districts tank system. Emergency supplies, including food, bottled water, blankets, and first aid supplies shall be kept on-site and replaced as needed. All property owners will receive an information packet that identifies the Shelter-in-Place location and the situations in which shelter-in-place may be used.

A 100'x100' area will be kept clear of snow during emergencies, to serve as a helicopter landing site in case someone using the Shelter In Place facility requires evacuation for health reasons. The landing site will be in proximity to the HOA buildings, as shown in Figure 4-3.

A site plan for the Shelter In Place facilities is provided in Figure 4-3.

Permanent, easily visible signs identifying the shelter-in-place facilities shall be installed where prominent. In addition, signs indicating the route to the shelter-in-place facility shall be located throughout the subdivision.

Phase A Shelter In Place

The Shelter-in-Place facilities described above will be constructed prior to recordation of a Final Map for Phases B or C. In the interim, if a wildfire requires taking refuge, it is anticipated that Phase A residents will take refuge at the Alpine Meadows Ski Resort parking lots, pending confirmation from the USFS and the operators of Alpine Meadows Ski Resort. This approach is consistent with the Alpine Meadows Community Wildfire Protection Plan, which identifies the parking lot as a staging area for evacuations (Alpine Meadows Evacuation Map 1). The parking lots cover approximately 14 acres, which is large enough to accommodate approximately 1600 cars on a winter peak day. The vehicles from Phase A residents would total up to 20 vehicles (assuming up to 10 residences with 2 vehicles each). As shown in Figure 4-4, the parking lots will be accessed via either the project access road and Alpine Meadows Road, or by a walking path that connects the Phase A area and the parking lots. The lots would be less than ¼ mile from the Phase A residences, so walking would be an option if necessary.

At their widest point the paved parking lots are approximately 600 feet across. This width is more than adequate for safety in an outside area of temporary refuge. Further, the lots are surrounded primarily by shrubs and very sparse trees on the west side due lack of soils and avalanche terrain. In addition, the area to the east is a significant wetland that would only result in a grass fire in the driest period of the year.

Snow removal equipment for Phase A will be stored on an extension of the main road, approximately 200'feet east of the Phase A homesites. An uncovered asphalt pad will be provided for storage of the loader. A power drop and small shed will store fuel, other fluids needed for maintenance of the loader, tools and supplies. The shed would be a

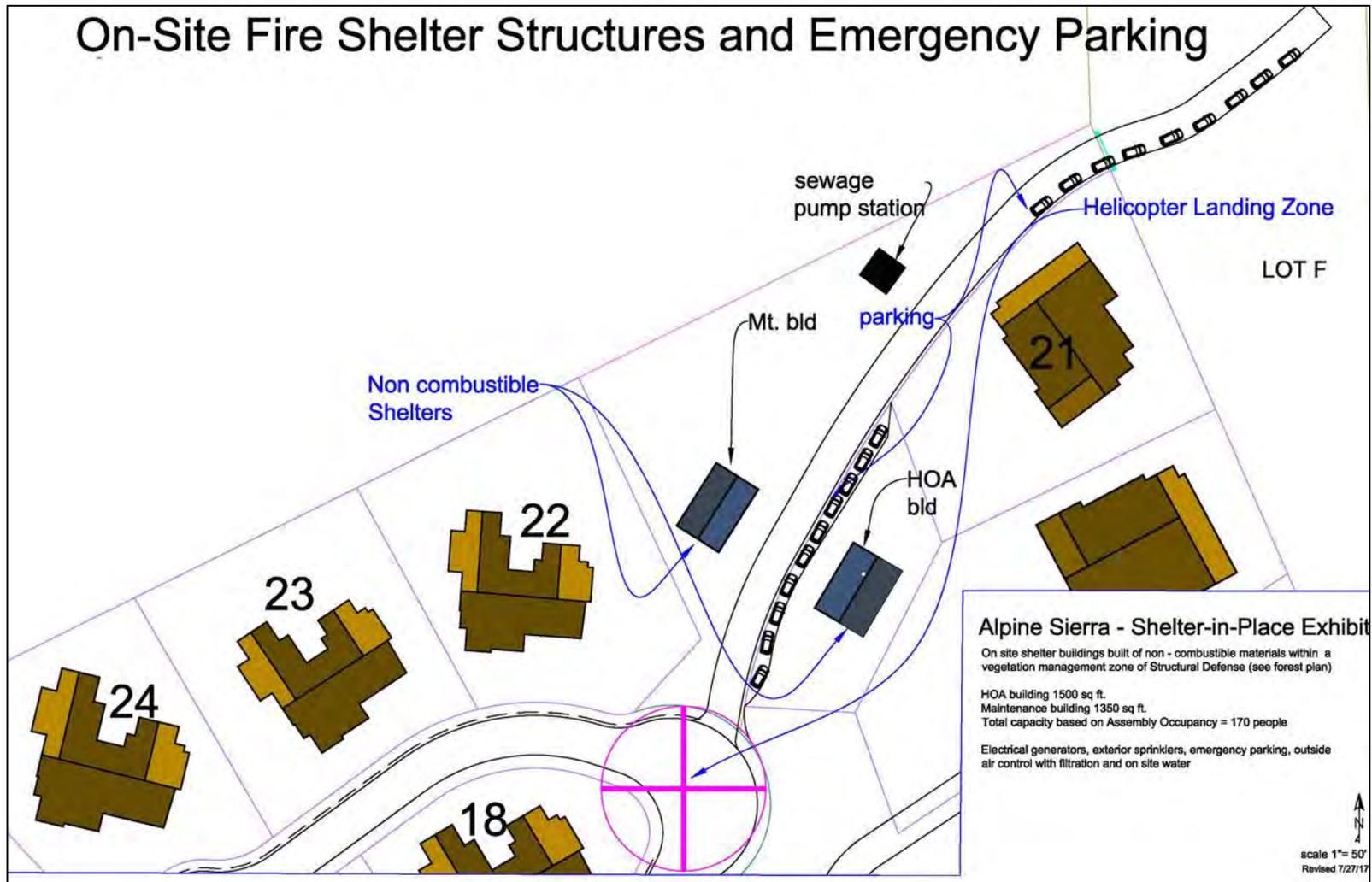


Figure 4-3

Alpine Sierra - Phase 1 directions to Area of Refuge

Alpine Meadows Parking Lots surrounded by very sparse trees and riparian and wetland vegetation

Ponds are an on site water source for fire fighting equipment

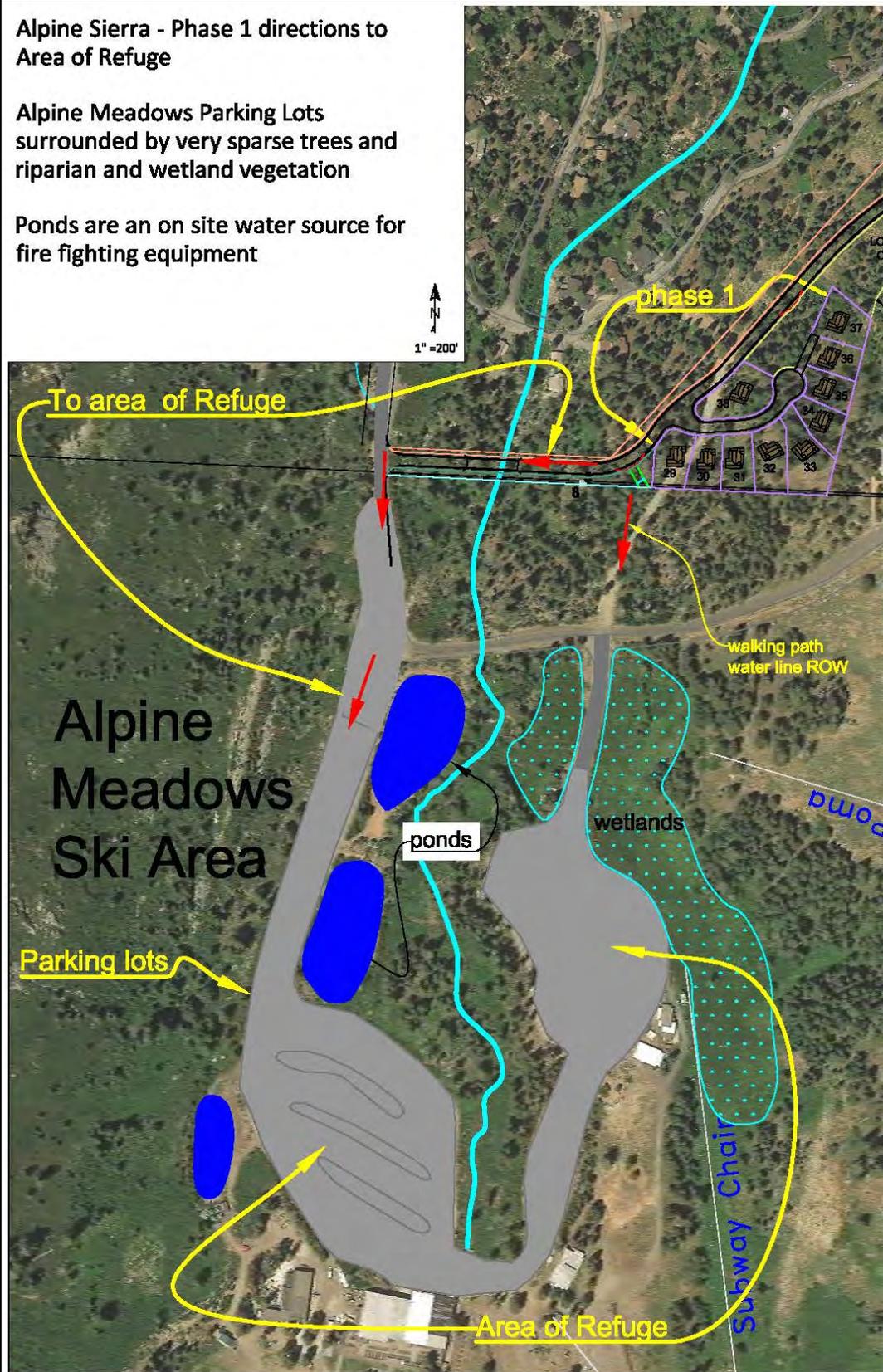


Figure 4-4

Phase 1 Area of Refuge

maximum of 120 square feet. The materials stored in the shed would be limited to those needed to maintain the loader for daily operation. Up to 100 gallons of diesel fuel would be stored in the shed, as well as small quantities of lubricants and other fluids. Refueling would be done by standard equipment service trucks as needed.

During Phase A, snow removal and equipment maintenance would be provided through a service contract rather than an onsite caretaker.

When the road is extended to Phase B, the loader and associated fuel, tools and fluids will be relocated to the HOA facility site, and the asphalt pad and storage shed will be removed.

4.2 Avalanche Protection Measures

As discussed in Section 2, there are potential avalanche paths within the project site, including the property entrance and a steep slope in the southeast corner of the project site. Alpine Meadows Road is also subject to avalanches (see Figure 1-4). The risks from avalanche therefore include road closures when Alpine Meadows Road and/or the project entrance is closed due to an avalanche, and potential damage to structures, if any, located in an avalanche path.

4.2.1 Onsite Avalanche Hazards

The project would be designed to avoid damage from avalanches. Mitigation Measure 13.2b requires that development on parcels that could be affected by avalanche (Lots 2 and 3) be sited to avoid the avalanche path and/or incorporate the rock outcropping into the building design in order to hinder the buildup of snow on the outcropping. In addition, any structures located in a Potential Avalanche Hazard Area must comply with the County's Avalanche Management Ordinance, which requires that structures in avalanche paths be engineered and constructed to withstand the anticipated snow loads and conditions of the avalanche that could occur within the specific PAHA.

Onsite road closures due to avalanche will be cleared by HOA staff. The HOA will maintain snow removal equipment and ensure that staff is qualified to conduct snow removal activities, as required by Mitigation Measure 13.2a. If an avalanche does cover the access road, HOA staff will therefore be able to remove that snow.

4.2.2 Alpine Meadows Road

Avalanche management and the clearance of Alpine Meadows Road will not be the responsibility of the HOA or Project. However, the HOA staff will maintain contact with the Alpine Meadows Ski Resort and/or emergency service providers during periods when there is a potential for avalanches to occur, and provide updates to property owners and occupants through the website and social media. If an avalanche does close Alpine Meadows Road, the HOA staff shall keep occupants apprised of the anticipated time that the road will reopen.

During periods when Alpine Meadows Road is closed by avalanche, it is anticipated that occupants will shelter within their homes until the road is clear. Nonetheless, the HOA facilities will be made available to residents and guests during road closures. In addition, a portion of the HOA parking lot will be kept clear of snow, in case a medical helicopter must evacuate injured or sick individuals. In addition, the HOA will maintain an over-the-

snow vehicle capable of traveling off road in deep snow. This vehicle must be able to transport people needing assistance to the Alpine Estates subdivision and/or community center.

4.3 Seismic Protection Measures

All buildings will be constructed in compliance with building code standards that address seismic activity. All fault systems adjacent to the project site have been identified and no known active faults occur within the project boundaries. In addition, as required by Mitigation Measure 11.2b, the Improvement Plan submittal will include a final geotechnical report that incorporates specific measures addressing site conditions.

4.4 Flood Protection Measures

Site layout and project construction will comply with State and County flood control regulations, including the County Flood Damage Prevention Ordinance and the Flood Control and Water Conservation District's Stormwater Management Manual. In addition, the project will implement mitigation measures from the EIR, including:

- Submittal of a Final Drainage Report that conforms to the Placer County Land Development Manual and Stormwater Management Manual (Mitigation Measure 12.1b);
- Showing 100-year floodplain (post grading) of Bear Creek and the un-named tributary on the east side of the project site (Mitigation Measure 12.4a);
- Finished house pad elevations will be a minimum of 2-feet above the 100-year floodplain (Mitigation Measure 12.4b); and
- Project bridges spanning 100-year floodplain (Mitigation Measure 12.4c).

Project design and construction will also implement the recommendations of the Geotechnical Reports (Holdrege & Kull, 2003, 2014), including provisions for addressing debris flow.

4.5 Hazardous Materials Measures

All handling, storage and transport of hazardous materials will comply with federal, State and local laws and regulations. As required by the ASCWD, propane tanks will be buried. No additional measures are needed.

Alpine Sierra Subdivision

Emergency Preparedness and Evacuation Plan

APPENDICES

- A. Applicable Fire Codes and Ordinances and Programs
 - California Public Resources Code Section 4291
 - NTPFD Ordinance 13-2013 (Fire Code)
 - CalFire General Guidelines for Creating Defensible Space
- B. NTPFD Emergency Preparedness and Evacuation Guide
- C. Alpine Sierra Forest Management and Fuel Reduction Plan
- D. Eastside Emergency Evacuation Plan

APPENDIX 5 "

Applicable Fire Codes and Ordinances

California Public Resources Code Sections 4290 and 4291

4290. (a) The board shall adopt regulations implementing minimum fire safety standards related to defensible space which are applicable to state responsibility area lands under the authority of the department. These regulations apply to the perimeters and access to all residential, commercial, and industrial building construction within state responsibility areas approved after January 1, 1991. The board may not adopt building standards, as defined in Section 18909 of the Health and Safety Code, under the authority of this section.

As an integral part of fire safety standards, the State Fire Marshal has the authority to adopt regulations for roof coverings and openings into the attic areas of buildings specified in Section 13108.5 of the Health and Safety Code. The regulations apply to the placement of mobile homes as defined by National Fire Protection Association standards. These regulations do not apply where an application for a building permit was filed prior to January 1, 1991, or to parcel or tentative maps or other developments approved prior to January 1, 1991, if the final map for the tentative map is approved within the time prescribed by the local ordinance. The regulations shall include all of the following:

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

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

CA PRC Section 4291

4291. (a) A person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining a mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or land that is covered with flammable material, shall at all times do all of the following:

(1) Maintain defensible space of 100 feet from each side and from the front and rear of the structure, but not beyond the property line except as provided in paragraph (2). The amount of fuel modification necessary shall take into account the flammability of the structure as affected by building material, building standards, location, and type of vegetation. Fuels shall be maintained in a condition so that a wildfire burning under average weather conditions would be unlikely to ignite the structure. This paragraph does not apply to single specimens of trees or other vegetation that are well-pruned and maintained so as to effectively manage fuels and not form a means of rapidly transmitting fire from other nearby vegetation to a structure or from a structure to other nearby vegetation. The intensity of fuels management may vary within the 100-foot perimeter of the structure, the most intense being within the first 30 feet around the structure. Consistent with fuels management objectives, steps should be taken to minimize erosion. For the purposes of this paragraph, "fuel" means any combustible

material, including petroleum-based products and wildland fuels.

(2) A greater distance than that required under paragraph (1) may be required by state law, local ordinance, rule, or regulation. Clearance beyond the property line may only be required if the state law, local ordinance, rule, or regulation includes findings that the clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. Clearance on adjacent property shall only be conducted following written consent by the adjacent landowner.

(3) An insurance company that insures an occupied dwelling or occupied structure may require a greater distance than that required under paragraph (1) if a fire expert, designated by the director, provides findings that the clearing is necessary to significantly reduce the risk of transmission of flame or heat sufficient to ignite the structure, and there is no other feasible mitigation measure possible to reduce the risk of ignition or spread of wildfire to the structure. The greater distance may not be beyond the property line unless allowed by state law, local ordinance, rule, or regulation.

(4) Remove that portion of a tree that extends within 10 feet of the outlet of a chimney or stovepipe.

(5) Maintain a tree, shrub, or other plant adjacent to or overhanging a building free of dead or dying wood.

(6) Maintain the roof of a structure free of leaves, needles, or other vegetative materials.

(7) Prior to constructing a new building or structure or rebuilding a building or structure damaged by a fire in an area subject to this section, the construction or rebuilding of which requires a building permit, the owner shall obtain a certification from the local building official that the dwelling or structure, as proposed to be built, complies with all applicable state and local building standards, including those described in subdivision (b) of Section 51189 of the Government Code, and shall provide a copy of the certification, upon request, to the insurer providing course of construction insurance coverage for the building or structure. Upon completion of the construction or rebuilding, the owner shall obtain from the local building official, a copy of the final inspection report that demonstrates that the dwelling or structure was constructed in compliance with all applicable state and local building standards, including those described in subdivision (b) of Section 51189 of the Government Code, and shall provide a copy of the report, upon request, to the property insurance carrier that insures the dwelling or structure.

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

(c) (1) Except as provided in Section 18930 of the Health and Safety Code, the director may adopt regulations exempting a structure with an exterior constructed entirely of nonflammable materials, or, conditioned upon the contents and composition of the structure, the director may vary the requirements respecting the removing or clearing away of flammable vegetation or other combustible growth with respect to the area surrounding those structures.

(2) An exemption or variance under paragraph (1) shall not apply unless and until the occupant of the structure, or if there is not an occupant, the owner of the structure, files with the department, in a form as the director shall prescribe, a written consent to the inspection of the interior and contents of the structure to ascertain whether this section and the regulations adopted under this section are complied with at all times.

(d) The director may authorize the removal of vegetation that is not consistent with the standards of this section. The director may prescribe a procedure for the removal of that vegetation and make the expense a lien upon the building, structure, or grounds, in the same manner that is applicable to a legislative body under Section 51186 of the Government Code.

(e) The Department of Forestry and Fire Protection shall develop, periodically update, and post on its Internet Web site a guidance document on fuels management pursuant to this chapter. Guidance shall include, but not be limited to, regionally appropriate vegetation management suggestions that preserve and restore native species, minimize erosion, minimize water consumption, and permit trees near homes for shade, aesthetics, and habitat; and suggestions to minimize or eliminate the risk of flammability of nonvegetative sources of combustion such as woodpiles, propane tanks, decks, and outdoor lawn furniture.

(f) As used in this section, "person" means a private individual, organization, partnership, limited liability company, or corporation.

4291.1. (a) Notwithstanding Section 4021, a violation of Section 4291 is an infraction punishable by a fine of not less than one hundred dollars (\$100), nor more than five hundred dollars (\$500). If a person is convicted of a second violation of Section 4291 within

five years, that person shall be punished by a fine of not less than two hundred fifty dollars (\$250), nor more than five hundred dollars (\$500). If a person is convicted of a third violation of Section 4291 within five years, that person is guilty of a misdemeanor and shall be punished by a fine of not less than five hundred dollars (\$500).

If a person is convicted of a third violation of Section 4291 within five years, the department may perform or contract for the performance of work necessary to comply with Section 4291 and may bill the person convicted for the costs incurred, in which case the person convicted, upon payment of those costs, shall not be required to pay the fine. If a person convicted of a violation of Section 4291 is granted probation, the court shall impose as a term or condition of probation, in addition to any other term or condition of probation, that the person pay at least the minimum fine prescribed in this section.

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

4291.3. Subject to any other applicable provision of law, a state or local fire official, at his or her discretion, may authorize an owner of property, or his or her agent, to construct a firebreak, or implement appropriate vegetation management techniques, to ensure

that defensible space is adequate for the protection of a hospital, adult residential care facility, school, aboveground storage tank, hazardous materials facility, or similar facility on the property. The firebreak may be for a radius of up to 300 feet from the facility, or to the property line, whichever distance is shorter.

**NORTH THAOE FIRE PROTECTION DISTRICT
ORDINANCE NO. 03 – 2013**

AN ORDINANCE FOR THE NORTH TAHOE FIRE PROTECTION DISTRICT AMENDING THE FIRE PREVENTION CODE OF THE DISTRICT PERTAINING TO THE AMENDMENT AND ADOPTION OF THE 2013 EDITION OF THE CALIFORNIA BUILDING STANDARDS CODE (TITLE 24, CALIFORNIA CODE OF REGULATIONS), PART 9 (2013 CALIFORNIA FIRE CODE) INCLUDING APPENDICES B, C, D, F, I, K, AND SPECIFIC SECTIONS OF THE 2012 INTERNATIONAL FIRE CODE AS PUBLISHED BY THE INTERNATIONAL CODE COUNCIL; REPEALING ORDINANCE NO. 1 – 2011 OF THE NORTH TAHOE FIRE PROTECTION DISTRICT AND ALL OTHER ORDINANCES AND PARTS OF THE ORDINANCES IN CONFLICT THEREWITH.

WHEREAS, fire protection districts are generally required to adopt the State Building Standards; and

WHEREAS, fire protection districts are allowed to make amendments to those state standards when justified by local topographical, climatic and geographical conditions; and

WHEREAS, contemporaneously herewith the Board of Directors has made such findings and directed that they be submitted to the State forthwith;

NOW, THEREFOR BE IT ORDAINED BY THE NORTH TAHOE FIRE PROTECTION DISTRICT, AS THE GOVERNING BOARD OF THE DISTRICT AS FOLLOWS:

Section 1. That Ordinance No.01 – 2011 of the North Tahoe Fire Protection District is repealed.

Section 2. That Ordinance No. 03 – 2013 is hereby adopted as the Fire Prevention Code of this District in word and figures as follows.

Ordinance No. 03-2013

**Fire Prevention Code of the
North Tahoe Fire Protection District**



Adopted November 20, 2013

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FIRE PREVENTION CODE

Chapter 1

FIRE CODE ADOPTED

In addition to CFC Chapter 1; IFC Chapter 1 Division II Adopt Entire Chapter as amended (amended sections listed below)

101 CFC Amended. Subject to the particular additions, deletions and amendments hereinafter set forth in this ordinance, the rules, regulations, provisions, and conditions set forth in that certain code entitled the 2013 California State Code, including appendices B, C, D, F, I, and K, and specific sections of the International Fire Code, 2012 Edition, published by the International Code Conference, and the whole thereof, a full copy of which is on file with the fire chief in book form and which, as so filed, is referred to, adopted and made part hereof as fully and for all intents and purposes as though set forth herein at length, shall be and the same is established and adopted as the rules, regulations, provisions, and conditions to be observed and followed to govern the maintenance of buildings and premises; to safeguard life, health, property and public welfare by regulating the storage, use and handling of dangerous and hazardous materials, substances, and processes and by regulating the maintenance of adequate egress facilities on any premises within the fire protection district; providing for issuance of permits and collection of fees therefore; and providing penalties of violation of such code; and subject to said additions, deletions and amendments hereinafter, shall be known and referred to as the Fire Prevention Code of and for the North Tahoe Fire Protection District.

Section 104.7

Approved materials and equipment

104.7.2 – Technical Assistance Amended. To determine the acceptability of building design, Fire Department access, technology, processes, products, procedures, facility hazardous materials control, fire and life safety, material acceptability and uses relating to the design, operation, occupancy of a building or premises subject to the review and inspection of the Department, the Chief is authorized to require the owner or the person in possession or control of the building or premises to provide payment for services related to such review and inspection a monetary deposit. Such monetary deposit will be required by the Department, which will cover any and all cost to the Department for the retention of a fire and life safety consulting or engineering firm for the purposes of plan review, inspections and or technical reports. Such deposits will be used to cover actual costs incurred by the Department for services. The owner, or person in possession or control of the building or premises, prior to occupancy shall pay amounts for services, which are in excess of the deposit. Amounts of deposit in excess of service cost shall be refunded.

Such services shall be carried out by a qualified firm or organization with experience and expertise in fire protection engineering, hazard specific specialists, laboratories or fire safety consulting firms or organizations acceptable to the Chief. All work shall be carried out under the direction of the Chief and shall analyze the fire safety properties of the design, operation or use of the building or premises and the facilities and appurtenances situated thereon, to recommend necessary changes to the Chief.

The Chief is authorized to require design submittals to bear the stamp and signature of a professional engineer or licensed state contractor in the fields of fire alarm design and installation and/or fire sprinkler design and installation.

Section 114

Limitations of Rights

114.1 General. There is reserved, to the Board of Directors of the North Tahoe Fire Protection District, the right to amend, modify, supplement, revoke in whole, or in part, any of the provisions contained or incorporated herein, at any time and from time to time.

114.2 Limitations of rights. Nothing herein contained shall be deemed to limit or restrict the rights, duties or obligations given, granted or opposed upon this District by the laws of the State of California now in effect or hereinafter adopted.

Section 105.6

LP-Gas

105.6.27 – Amended. An operational permit is required for:

1. Storage and use of LP-Gas

~~**Exception:** A permit is not required for individual containers with a 500-gallon (1893-L) water capacity or less or multiple container systems having an aggregate quantity not exceeding 500 gallons (1893-L), serving occupancies in Group R-3.~~

Section 108.14

Board of appeals established

108.1 – Amended. The appeal process adopted in Article 15.04.710.C, PCC shall be used and is reprinted in its entirety as follows for reference:

In order to determine the suitability of alternate materials and type of construction and to provide for reasonable interpretation of the provisions of this code, there is hereby appointed a board of appeals consisting of the board of directors of each fire protection district for matters within their jurisdiction and the Placer County Building Board of Appeals in the remaining areas of the County. The Chief shall be an ex-officio member of the Board and shall act as secretary to the Board. The Board shall adopt reasonable rules and regulations for conducting its investigations and shall render all decisions and findings in writing to the chief with a duplicate copy to the appellant and may recommend to the Executive Body such new legislation as is consistent therewith.

Section 109.4

Violations penalties

109.4 – Amended. Unless otherwise noted in this Code, persons who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the approved construction documents or directive of the Fire Chief, or of a permit or certificate used under provisions of this Code, shall be guilty of a misdemeanor, punishable by a fine of not less than one hundred dollars (\$100.00), and not to exceed five hundred dollars (\$500.00) or by imprisonment for a term not less than six months, or by both such fine and imprisonment. Each day that a violation continues after due notice has been served shall be deemed a separate offense.

109.4.1 – Amended. Any violation of this Code or the Placer County Fire Code shall be deemed a public nuisance. In the event that a public nuisance is not abated in accordance with the Fire Chief's order, the Fire Chief may, upon securing approval of the Board of Directors of the North Tahoe Fire Protection District, proceed to abate the nuisance by force account, contract, or any other method deemed most expedient by the Board. Cost of said abatement may be charged to the property in a manner provided in the Placer County Code or such other laws as may be applicable.

Section 113.2

Schedule of permit fees

113.2 – Amended. The Fire Chief shall charge and receive such fees and charges for services and permits as set forth in the current ordinance setting fees for cost recovery of Fire and Life Safety activities and is incorporated herein by reference.

Section 114

Reserving of Rights

114.1 General. There is reserved, to the Board of Directors of the North Tahoe Fire Protection District, the right to amend, modify, supplement, revoke in whole, or in part, any of the provisions contained or incorporated herein, at any time and from time to time.

114.2 Limitation of Rights. Nothing herein contained shall be deemed to limit or restrict the rights, duties or obligations given, granted or opposed upon this District by the laws of the State of California now in effect or hereinafter adopted.

Chapter 2

DEFINITIONS

Add and/or amend the following definitions to Section 202 of the California Fire Code:

APPROVED shall mean as accepted by the Fire Chief of said District or their authorized representative, or as approved pursuant to the standards now existing or hereafter adopted by the District.

CORPORATION or DISTRICT COUNSEL - shall mean the attorney for the North Tahoe Fire Protection District.

DISTRICT shall mean the North Tahoe Fire Protection District and all areas within the exterior boundaries thereof as now or hereafter established.

EXECUTIVE BODY shall mean the Board of Directors of the North Tahoe Fire Protection District.

FIRE CHIEF shall mean the Chief of the North Tahoe Fire Protection District or his/her duly authorized representative.

JURISDICTION shall mean all areas within the North Tahoe Fire Protection District.

PERSON(S) shall mean and include all persons, firms, associates, organizations, corporations, individuals or other agency.

SHALL is mandatory and **MAY** is permissive.

Chapter 3

GENERAL REQUIREMENTS

In addition to CFC Chapter 3; IFC Chapter 3 Adopt only those sections that are listed below:

303.2, 303.3, 303.4, 303.5,

305, 307, 308, 310, 311.1,

311.2, 311.3, 311.4,

313 (with amended exception No. 3 to read “storage of equipment utilized for maintenance purposes is allowed in approved locations when the aggregate fuel capacity of the stored equipment does not exceed 10 gallons (38L)”)

Chapter 5

FIRE SERVICE FEATURES

In addition to CFC Chapter 5; IFC Chapter 5 Adopt only those sections that are listed below:

503, 505, 506, 507.2,

507.5.2, 509

Section 506.1

Key Boxes

506.1.1 – Amended. Any structure which has access controlled by an electric gate shall have a key operated override switch installed for fire department access. The switch shall be a Knox System type key switch with "Fire Department" decal.

506.1.3 Key boxes for buildings with automatic sprinkler systems. Any building or complex of buildings, in which an automatic sprinkler system is installed, shall be provided with a Knox Box®, mounted in an approved location, containing appropriate keys for fire department access. This section applies to all new installations and existing installations, as required by the Fire Chief.

Section 507.5

Fire Hydrant Systems

507.5.4.1 Snow removal. No person shall place, push or dump snow on or around any fire hydrant or fire department connection, and a minimum of fifteen (15) foot clear space shall be maintained to the front and sides of any hydrant or fire department connection.

507.5.7 Installation and location of fire hydrants. Installation of any fire hydrant shall comply with the following:

1. Prior to the installation of any fire hydrant, the location thereof shall first be approved by the Fire Chief.
2. All fire hydrants so installed, and to be maintained hereunder, must be of frost-proof type; approved by North Tahoe Fire Protection District. Fire Hydrant shall mean a hydrant supplied by a six (6) inch or larger branch line, one or more pumper connection four and one-half (4½) inch and two (2) or more two and one-half (2½) inch outlets, capable of supply required fire flow for at least 2 hours.

OUTLETS: Two 2-1/2" NST (National Standard Thread). The steamer (pumper) nozzle shall be compatible with 5" Storz hose coupling. The steamer nozzle shall be an integral part of the hydrant and furnished by the manufacturer or authorized distributor.

3. Each fire hydrant shall be installed in a public street or road unless otherwise approved. Street valves shall be located no closer than five (5) feet from the hydrant unless otherwise approved. Minimum size of main or branch for hydrant shall be six (6) inches including street valve.
4. Whenever possible, fire hydrants shall be installed on the downhill side, or fill side, of the road or street. At four-way intersections of any road or street, where there are no drainage ditches or similar obstructions, a hydrant shall be installed on the corner and the steamer or five (5) inch outlet shall be directed toward the center line of the intersection. Guard posts or bollards shall be installed when necessary as required by the Fire Chief and shall include a receptacle for a snow stake as required by the Department.
5. All dead end mains shall be avoided and looped.
6. The developer shall submit to the District a set of water improvement plans showing that the development will be provided with a water system for firefighting, and proper fire flows prior to the submission of a final map to the County of Placer. The District shall have fifteen (15) days in which to act upon such water improvement plans. Plans shall show the location of hydrants, size of mains, location and storage capacity.

7. All fire hydrants installed must meet the height specifications heretofore: the lowest outlet must be a minimum of thirty (30) inches and a maximum of forty-two (42) inches from finished grade level at the base of the fire hydrant to the center line of the steamer outlet.
8. Any new hydrant or any hydrant which is repainted shall be painted Federal Safety Yellow or approved equivalent color. The District may at its option additionally require that each hydrant then be color coded as to flow per National Fire Protection Association standards. When installed any guard post or bollard shall be painted the same base color as the hydrant, which it protects.

Section 509.2

Fire Protection and Utility Equipment Identification and Access

509.2.1 Electrical Main Power Disconnect Switch. Any new structure or remodel with a main power disconnect switch that is inaccessible to fire department personnel due to location or to climatic conditions, shall be required to install a remote electrical main power disconnect switch at a location approved by the Fire Chief.

509.2.2 Auxiliary Power Generator. Any new structure or remodel that has electrical power supplied by a secondary or auxiliary power unit with automatic start-up and/or automatic power transfer capabilities shall have an auxiliary power disconnect switch accessible to fire department personnel. The auxiliary power disconnect switch shall be located within three feet of the main power disconnect switch and identified with a permanently mounted, weather proof label marked "AUXILIARY POWER DISCONNECT".

Chapter 9

FIRE PROTECTION SYSTEMS

Section 901

General

901.4.7 Application to New and Existing Structures. The District assumes no responsibility for installation, maintenance, operation or monitoring of the system the same being solely that of the owner of the structure. The provisions of this Chapter, and, or those requirements in the California Fire Code relating to automatic sprinkler systems shall apply to a structure, and the

entire structure shall be made to comply with these provisions, under any of the following circumstances:

1. When a building permit is issued for a new structure, or a new structure where no permit is required unless plans were previously approved by the District prior to the effective date of this chapter, or any structure found to have been constructed after the effective date of this chapter, without a permit when a permit would have been required; or
2. When there is a change in use in all, or a portion, of an existing structure which would cause occupancy classification to change to a Group A, E, H, I, R-1, R-2; or
3. When a building permit is issued to allow additions to be made to an existing structure so as to: (1) increase the Total Fire Area of the original structure greater than fifty percent (50%) and (2) the aggregate square footage of the existing building and the addition exceeds the square footage threshold in section 2.4 (a) of the North Tahoe Fire Prevention Code or 3600 square feet for R3 occupancies including attached garage.

901.11 Fire Alarms Required. All valves controlling the water supply for automatic sprinkler systems and water-flow switches on all sprinkler systems shall be electrically supervised. Valve supervision and water-flow alarm and trouble signals shall be distinctly different and shall be automatically transmitted to an approved central station, including R-3 occupancies when a sprinkler system of more than 100 heads is installed.

901.12 Fire Alarms Regulated. All fire alarm systems installed or maintained in the North Tahoe Fire Protection District shall be installed and maintained in accordance with the requirements of this article.

1. All devices and equipment shall be constructed, installed and maintained in conformity with National Fire Protection Association Standard 72 for central station signaling systems. All smoke detectors as required in the California Building Code for residential structures shall be interconnected so as to sound an alarm throughout the entire structure should a single detector be activated.
2. When a fire alarm is required, shop drawings as required by NFPA 72 are required to be submitted for review prior to installation of such systems.
3. All fire alarm systems shall be supervised in a manner acceptable to the Fire Chief.
4. Upon recommendation of the Fire Chief, the Board of Directors may adopt by resolution such additional rules and regulations relating to the installation, maintenance, and use of fire alarm systems as are consistent with good practices.
5. Every required fire alarm system shall be maintained in good working order and shall be repaired and/or restored to such within twenty-four (24) hours after activation or failure.
6. Any building or complex of buildings with an automatic fire alarm system shall be provided with a Knox Box, mounted in an approved location, containing appropriate keys for fire department access. This section applies to all new installations and existing installations as required by the Fire Chief.

901.13 Fire Alarm Vendor Regulations. Fire alarm vendors shall comply with the following:

1. Upon demand, each vendor shall provide the Fire Chief with the address of each building, place, or premises within the District for which the permittee sells or installs a fire alarm system.
2. Each vendor who installs or services a fire alarm system shall clearly instruct the subscriber in person, and in writing, in the proper use and operation of the fire alarm system, especially those factors which could cause false alarms.
3. A vendor at all times shall maintain its equipment in good state of repair at no cost to the Department.
4. Any person, firm or corporation providing service under the authority of this article shall provide repair service to its subscribers within twenty four (24) hours after notification that there is trouble with the fire alarm system, or the system has malfunctioned.
5. Each vendor shall display to the Fire Chief, upon request, the permittee's records of inspection and repair of any fire alarm system.
6. Each vendor shall notify the monitoring center whenever a subscriber's fire alarm system is under service or repair.

901.14 Nuisance Alarms. Any fire alarm of which continuous activation is determined by the Fire Chief to be a nuisance alarm will subject the owner of such fire alarm to a one hundred dollar (\$100.00) fine.

Section 902

Definitions

Add and/or amend the following definitions to Section 902 of the California Fire Code:

VENDOR shall mean any business operated by a person, firm, or corporation who engages in the activity of alerting, installing, leasing, maintaining, repairing, replacing, selling or servicing fire alarm systems.

APPROVED shall mean accepted by the Fire Chief and in accordance with the requirements of the Underwriters Laboratories, Inc., the Factory Mutual Engineering Corporation, The National Bureau of Standards, the National Fire Protection Association, or the State Fire Marshal.

AUDIBLE ALARM shall mean an alarm system, which when activated generates an audible sound on the premises.

FALSE ALARM shall mean an alarm signal, either silent or audible, prompting a response to be made by the Fire Department when an emergency situation for which the alarm system was intended does not exist.

FIRE ALARM SYSTEM shall mean any manual or automatic means of detecting fire, and transmitting alarms of fire from private premises and shall include all types of interior fire alarms systems and auxiliary fire alarm systems approved by the District.

LOCAL FIRE ALARM SYSTEM shall mean any fire alarm system designed solely to provide an alarm of fire within the protected premises.

SUBSCRIBER shall mean a person who owns or leases property or premises on which an alarm system has been installed or is proposed to be installed or who contracts or proposes to contract with an alarm business for the leasing, servicing, or maintaining of an alarm system, and who has or will have the authority to cause the alarm system to be serviced, repaired, or removed after the system is installed.

Section 903.1

Automatic Sprinkler Systems

903.1.2 Non-freezing. All automatic fire sprinkler systems shall be of the anti-freeze type or other approved non-freezing (including air filled) type of system.”

Section 903.2

Where Required

903.2.1.1(1) – Amended. The fire area exceeds 1,500 square feet

903.2.1.2(1) – Amended. The fire area exceeds 1,500 square feet

903.2.1.3(1) – Amended. The fire area exceeds 1,500 square feet

903.2.1.4(1) – Amended. The fire area exceeds 1,500 square feet.

903.2.2 – Renumbered to 903.2.2.1

903.2.2 – Amended. Group B. An automatic sprinkler system shall be provided throughout buildings containing a Group B occupancy where the Group B total fire area exceeds 1,500 square feet.

903.2.3(1) – Amended. Throughout all Group E fire areas greater than 1500 square feet in area.

903.2.4 – Amended. Group F. An automatic fire sprinkler system shall be provided throughout all the buildings containing Group F occupancies if one of the following conditions exists.

903.2.4(1) – Amended. A Group F fire area exceeds 1500 square feet.

903.2.7(1) – Amended. A Group M fire area exceeds 1500 square feet.

903.2.9 – Amended. Group S. An automatic sprinkler system shall be provided though out all buildings containing Group S occupancy, when the Group S occupancy total fire area exceeds 1,500 square feet or one of the following exists.

903.2.18.1 Group U. Where the total fire area exceeds 3,600 square feet.

Section 903.4

Sprinkler System Supervision and Alarms

903.4.4 Residential occupancies. All residential occupancies require audible notification in all sleeping rooms of a sprinkler waterflow alarm. This notification must be at least 75db at pillow height.

Chapter 49

REQUIREMENTS OF WILDLAND-URBAN INTERFACE FIRE AREAS

Section 4905

Wildfire Protection Building Construction

4905.4 Roof Covering Standard. All new construction, including additions, requires a Class A roof covering or assembly. All re-roofing requires Class A roof covering or assembly as a minimum. Re-roofing in excess of fifty (50) percent of an existing structure within any one-year period will necessitate that the entire roof be a Class A roof covering or assembly as a minimum. Class B or C fire retardant treated and/or non-treated wood shake or shingles are not approved as a roof covering material for Class A assembly.

Chapter 50

HAZARDOUS MATERIAL – GENERAL PROVISIONS

Section 5001

General

5001.7 Liability for damage. Any damages or cost resulting from the careless handling, spill or discharge of any hazardous materials shall constitute a debt against any such person, firm or corporation causing said spill or discharge. This debt is collectible by the Fire Chief in the same manner as in the case of an obligation under contract, expressed or implied.

Chapter 57

FLAMMABLE AND COMBUSTIBLE LIQUIDS

Section 5701

General

5701.6 Above Ground Storage. Any above ground storage must be approved, in writing, by the District. This section shall not be applicable to portable containers suitable for such storage of 5 gallons or less.

Section 5704.2

Tank Storage

5704.2.9.6.1 – Amended. Storage of Class I and Class II flammable liquids in aboveground tanks outside of buildings is prohibited unless approved by the Fire Chief. When permitted by the Fire Chief, all aboveground tank or vault installations for the storage of Class I, II or III flammable and combustible liquids shall comply with those requirements as set forth by the California Fire Code. The CFC shall also apply to installations other than motor vehicle fuel-dispensing stations, where above ground storage is required.

Chapter 61

LIQUEFIED PETROLEUM & NATURAL GASES – Amended

Section 6102

Definitions

Add and/or amend the following definitions to Section 902 of the California Fire Code:

INSTALLATION shall mean a storage tank designed for the containment of liquefied petroleum gas, or meter assembly regulating natural gas, for use by a customer for residential, commercial, or industrial purposes, together with appurtenant pipes, risers, gauges, and related equipment.

LPG Liquefied petroleum gas.

SUPPLIER shall mean any person or business, which sells, at retail, LPG, or any company, which supplies natural gas, for residential, commercial or industrial use.

INTERRUPTION OF SERVICE (shall only apply to LPG installations) shall mean the service shall be considered to be interrupted whenever service is discontinued because of hazardous condition, change in size or type of service, whenever the tank, meter, regulator(s), valve or other exterior service supply components are removed, replaced, or repaired, whenever the service is relocated, whenever the building, tank piping or components are damaged to the extent that the servicing utility, fire or building department considers the service to be potentially hazardous.

Normal refilling of an empty or partially empty tank, and routine maintenance of interior appliances, shall not be considered as an interruption of service.

Section 6104.2

Maximum Capacity Within Established Limits

6104.2 – Amended. Within the limits established by law restricting the storage of liquefied petroleum gas for the protection of heavily populated areas, principal business district, or congested commercial areas ~~heavily populated or congested areas~~, the aggregate capacity of any one installation shall not exceed a water capacity of 2,000 gallons (7570 L).

Section 6112

Requirements for New Installations

6112.1 Requirements for LPG installations. Any new LPG installation shall comply with the following:

1. A permit is required by this Code for individual LPG containers of 125 gallons or greater. At the time of application by any person for a permit to install an LPG system as required by this Code, the applicant shall submit a LPG plot plan to the District for approval and shall contain the following:
 - a. Stamp of approval of the prospective LPG supplier.
 - b. Tank location showing distances to structure and edge to edge of pavement or other identifying mark.
 - c. Tank capacity in US gallons.
 - d. Location of riser pipe at building.
 - e. Property boundaries.
 - f. An outline of all existing/proposed buildings on the lot and a depiction of the roof ridge line of any building to be supplied with LPG
2. Two stage regulator systems shall be installed on all LPG installations in accordance with manufacturer's instructions. All first stage regulators and connecting pigtailed shall be installed under a protective valve cover on tank. All regulators installed under this cover shall be listed and approved for this use and position of mounting. A connector providing flexibility shall be used to connect the first stage regulator to the main service valve on the tank. All copper pigtailed shall be internally tinned and use only forged flare nuts.

3. The riser from the yard piping shall be a minimum of Schedule 80 and shall be located not more than 3 inches horizontally from the walls of the tank, and swing joints will be used above and below tank level to provide for tank movement (street elbows shall not be used). An approved flexible alternative is preferred in lieu of rigid steel pipe for the tank riser. This shall include but not be limited to plastic (PE), copper tubing, stainless steel. **ALL FLEXIBLE MATERIAL USED FOR THE TANK RISER SHALL BE SHEATHED IN AN APPROVED STEEL COVER FOR PROTECTION.** As swing joints are eliminated in an approved flexible alternative, sufficient slack must be maintained to allow for tank movement and/or expansion and contraction of the alternative material. All plastic pipe shall be buried at least 18" below finished grade. An electrically continuous corrosion resistant tracer wire (min. AWG 14) or tape shall be buried with the plastic pipe to facilitate locating. One end shall be brought above ground at the building wall or riser and the other end shall be brought above ground at the tank.
4. The second stage regulator and riser pipe shall be installed on the gable end of the building, as close as practical to the building wall, unless this is not feasible due to structural or topographical constraints. An approved gas shutoff valve rated for a minimum of 125 PSI shall be installed immediately prior to the second stage regulator. An approved gas shut off sign or other identifier shall be installed directly above the gas shut off valve, on the building in a visible location within three (3) feet of the eaves of the roof or roof line if no eaves are present. If the second stage regulator or a combination first/second stage regulator is used at the tank, then an approved gas shut off valve shall be located at the building.
5. A protective cover shall be installed over the second stage regulator and meter (if installed) at the building. The minimum design for the protective cover shall be equal to, or greater than, the Building Design Load (determined by the building department), and shall be securely supported to the ground or diagonally to the building wall. When supported to the ground, the footing for the supports shall be founded 6 inches below finished grade. Pre-cast concrete piers may be used in lieu of poured footings, provided they are placed on stable soil. If second stage regulator/meter assemblies could be subject to vehicle damage, then minimum of 3" steel crash post filled with concrete shall be installed for protection. Crash posts shall have a minimum depth in the ground of 24", embedded in concrete.
6. Observation and inspection, if any, by the District shall not constitute an approval of the work of installation of the aforementioned protective cover, nor shall it be deemed to create any liability or responsibility on the part of the District for the design or construction of the protective cover, nor to any third party or entity whatsoever.
7. The riser pipes for the yard piping shall not be embedded in concrete, asphalt or other rigid substance. Such substance placed around a riser shall be held back at least 3 inches from all sides of the pipe. All exposed exterior gas piping used for runs along walls or roofs shall be minimum schedule 40 steel pipe supported and secured by approved straps at intervals not to exceed four (4) feet.

8. LPG tanks shall be permanently marked by a square or other approved equal stake of wood or other material with a minimum dimension of 2" X 2" or a cross sectional width of 2", nominal lumber.
9. Such stakes shall be of sufficient height to rise above the anticipated snow depth, with the minimum height being 10 feet. The snow stakes shall be yellow in color and will be placed on the opposite side of the tank from the riser, and directly opposite the tank valves. The top six twelve inches of the stake shall be painted orange. The side of the stake adjacent to the tank shall continue with the orange color a minimum of 18 inches from the top of the stake.
10. Installation and maintenance of all tank stakes shall be the responsibility of the LPG supplier. No tank shall be filled or serviced unless staked as provided in this chapter. The designated supplier stake colors shall be those listed in ~~Appendix A~~.
11. Any supplier supplying propane to a tank must affix a label or other means of identification to the inside of the tank valve protective cover. The label or other device must be waterproof and contain the supplier's name and emergency telephone number.
12. All LPG tanks shall be placed on approved concrete supports. Acceptable tank supports shall include, but not be limited to: Pre-cast reinforced concrete pads, reinforced concrete slab, or pre-cast reinforced concrete saddles. Use of un-reinforced cinder building blocks is specifically prohibited. If saddles are used they shall contact a minimum of 110 degrees of the tank circumference. Asphalt impregnated felt of not less than 3/8" thickness shall be installed between the container and the concrete saddle. Supports may be poured in place in lieu of prefabricated supports. If poured in place it shall be a minimum of 4 inches thick and reinforced with not less than WWF 6X12, W16 by W26 or 4 #3 rebar in each direction. In areas where tank may be subject to shifting snow, unstable ground or other hazardous condition, the Fire Chief may require additional tank supporting, securing or protection.

6112.2 Requirements for natural gas installations. Any new LPG installation shall comply with the following:

1. The meter assembly shall be installed on the gable end of the building, as close as practical to the building wall, unless this is not feasible due to structural or topographical constraints.
2. A protective cover, designed to be equal to or greater than the Building Design Load (determined by the building department), approved by the supplier, shall be installed over the meter assembly, securely supported to the ground or diagonally to the building wall. When supported to the ground, the footing for the supports shall be founded 6 inches below finished grade. Pre-cast concrete piers may be used in lieu poured footings, provided they are placed on stable soil.

Section 6113

Requirements for Existing Installations

6113.1 General. The provisions of this subsection shall apply to any existing installations when such installation is subject to retrofit or the interruption of service.

6113.2 Installations in non-compliance with this ordinance. No supplier shall provide LPG service to any non-conforming installation or any installation that has been marked or "Red Tagged" by the department.

6113.3 Requirements for existing LPG installations. Existing LPG installations shall comply with the following:

1. Installations shall be brought into conformance with section 6112.1 with the exception of sections 6112.1 (1). Should a problem arise which requires multiple site inspections by this District, a fee may be charged to the supplier for those inspections.
2. If it is impractical to install swing joints below grade due to existing concrete or other constraints, swing joints shall be installed above ground.

6113.4 Requirements for existing natural gas installations. Existing natural gas installations shall comply with the following:

1. Installations shall be brought into in conformance with sections 6112.2 (2).

Section 6114

Violations

6114.1 Violations. It shall be unlawful for a LPG supplier to provide service to a LPG installation, which does not comply with the provisions in section 6112 or 6113.

6114.1.1 Failure to provide cover. Failure by the customer to provide a cover as required for a natural gas meter assembly is a violation of this code and will subject the customer to a one hundred dollar (\$100.00) fine.

This Ordinance shall take effect and be in force from and after its approval as required by law.

Adopted by the following vote by the Board of Directors of the North Tahoe Fire Protection District.

AYES:

ABSTAIN:

NOES:

ABSENT:

Chairman of the Board, North Tahoe Fire Protection District

ATTEST:

Clerk to the Board of Directors

General Guidelines for Creating Defensible Space

State Board of Forestry and Fire Protection (BOF)
California Department of Forestry and Fire Protection

Adopted by BOF on February 8, 2006
Approved by Office of Administrative Law on May 8th, 2006



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A. Purpose of Guidelines

Recent changes to Public Resources Code (PRC) 4291 expand the defensible space clearance requirement maintained around buildings and structures from 30 feet to a distance of 100 feet. These guidelines are intended to provide property owners with examples of fuel modification measures that can be used to create an area around buildings or structures to create defensible space. A defensible space perimeter around buildings and structures provide firefighters a working environment that allows them to protect buildings and structures from encroaching wildfires as well as minimizing the chance that a structure fire will escape to the surrounding wildland. These guidelines apply to any person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining any mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or any land that is covered with flammable material, and located within a State Responsibility Area.



Effective defensible space

The vegetation surrounding a building or structure is fuel for a fire. Even the building or structure itself is considered fuel. Research and experience have shown that fuel reduction around a building or structure increases the probability of it surviving a wildfire. Good defensible space allows firefighters to protect and save buildings or structures safely without facing unacceptable risk to their lives. Fuel reduction through vegetation management is the key to creating good defensible space.

Terrain, climate conditions and vegetation interact to affect fire behavior and fuel reduction standards. The diversity of California's geography also influences fire behavior and fuel reduction standards as well. While fuel reduction standards will vary throughout the State, there are some common practices that guide fuel modification treatments to ensure creation of adequate defensible space:

- Properties with greater fire hazards will require more clearing. Clearing requirements will be greater for those lands with steeper terrain, larger and denser fuels, fuels that are highly volatile, and in locations subject to frequent fires.
- Creation of defensible space through vegetation management usually means reducing the amount of fuel around the building or structure, providing separation between fuels, and or reshaping retained fuels by trimming. Defensible space can be created removing dead vegetation, separating fuels, and pruning lower limbs.
- In all cases, fuel reduction means arranging the tree, shrubs and other fuels sources in a way that makes it difficult for fire to transfer from one fuel source to another. It does not mean cutting down all trees and shrubs, or creating a bare ring of earth across the property.
- A homeowner's clearing responsibility is limited to 100 feet away from his or her building or structure or to the property line, which ever is less, and limited to their land. While individual property owners are not required to clear beyond 100 feet, groups of property owners are encouraged to extend clearances beyond the 100 foot requirement in order to create community-wide defensible spaces.
- Homeowners who do fuel reduction activities that remove or dispose of vegetation are required to comply with all federal, state or local environmental protection laws and obtain permits when necessary. Environmental protection laws include, but are not limited to, threatened and endangered species, water quality, air quality, and cultural/archeological resources. For example, trees removed for fuel reduction that are used for commercial purposes require permits from the

California Department of Forestry and Fire Protection. Also, many counties and towns require tree removal permits when cutting trees over a specified size. Contact your local resource or planning agency officials to ensure compliance.

The methods used to manage fuel can be important in the safe creation of defensible space. Care should be taken with the use of equipment when creating your defensible space zone. Internal combustion engines must have an approved spark arresters and metal cutting blades (lawn mowers or weed trimmers) should be used with caution to prevent starting fires during periods of high fire danger. A metal blade striking a rock can create a spark and start a fire, a common cause of fires during summertime.

Vegetation removal can also cause soil disturbance, soil erosion, regrowth of new vegetation, and introduce non-native invasive plants. Always keep soil disturbance to a minimum, especially on steep slopes. Erosion control techniques such as minimizing use of heavy equipment, avoiding stream or gully crossings, using mobile equipment during dry conditions, and covering exposed disturbed soil areas will help reduce soil erosion and plant regrowth.

Areas near water (riparian areas), such as streams or ponds, are a particular concern for protection of water quality. To help protect water quality in riparian areas, avoid removing vegetation associated with water, avoid using heavy equipment, and do not clear vegetation to bare mineral soil.

B. Definitions

Defensible space: The area within the perimeter of a parcel where basic wildfire protection practices are implemented, providing the key point of defense from an approaching wildfire or escaping structure fire. The area is characterized by the establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures.

Aerial fuels: All live and dead vegetation in the forest canopy or above surface fuels, including tree branches, twigs and cones, snags, moss, and high brush. Examples include trees and large bushes.

Building or structure: Any structure used for support or shelter of any use or occupancy.

Flammable and combustible vegetation: Fuel as defined in these guidelines.

Fuel Vegetative material, live or dead, which is combustible during normal summer weather. For the purposes of these guidelines, it does not include fences, decks, woodpiles, trash, etc.

Homeowner: Any person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining any mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or any land that is covered with flammable material, and located within a State Responsibility Area.

Ladder Fuels: Fuels that can carry a fire vertically between or within a fuel type.

Reduced Fuel Zone: The area that extends out from 30 to 100 feet away from the building or structure (or to the property line, whichever is nearer to the building or structure).

Surface fuels: Loose surface litter on the soil surface, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches that have not yet decayed enough to lose their identity; also grasses, forbs, low and medium shrubs, tree seedlings, heavier branches and downed logs.

C. Fuel Treatment Guidelines

The following fuel treatment guidelines comply with the requirements of 14 CCR 1299 and PRC 4291. **All persons using these guidelines to comply with CCR 1299 and PRC 4291 shall implement General Guidelines 1., 2., 3., and either 4a or 4b., as described below.**

General Guidelines:

1. Maintain a firebreak by removing and clearing away all flammable vegetation and other combustible growth within 30 feet of each building or structure, with certain exceptions pursuant to PRC §4291(a). Single specimens of trees or other vegetation may be retained provided they are well-spaced, well-pruned, and create a condition that avoids spread of fire to other vegetation or to a building or structure.
2. Dead and dying woody surface fuels and aerial fuels within the Reduced Fuel Zone shall be removed. Loose surface litter, normally consisting of fallen leaves or needles, twigs, bark, cones, and small branches, shall be permitted to a depth of 3 inches. This guideline is primarily intended to eliminate trees, bushes, shrubs and surface debris that are completely dead or with substantial amounts of dead branches or leaves/needles that would readily burn.
3. Down logs or stumps anywhere within 100 feet from the building or structure, when embedded in the soil, may be retained when isolated from other vegetation. Occasional (approximately one per acre) standing dead trees (snags) that are well-space from other vegetation and which will not fall on buildings or structures or on roadways/driveways may be retained.
4. Within the Reduced Fuel Zone, one of the following fuel treatments (4a. or 4b.) shall be implemented. Properties with greater fire hazards will require greater clearing treatments. Combinations of the methods may be acceptable under §1299(c) as long as the intent of these guidelines is met.

4a. Reduced Fuel Zone: Fuel Separation

In conjunction with General Guidelines 1., 2., and 3., above, minimum clearance between fuels surrounding each building or structure will range from 4 feet to 40 feet in all directions, both horizontally and vertically.

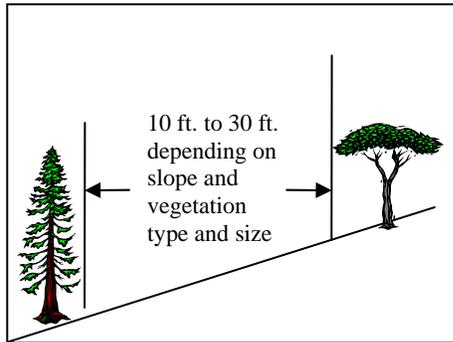
Clearance distances between vegetation will depend on the slope, vegetation size, vegetation type (brush, grass, trees), and other fuel characteristics (fuel compaction, chemical content etc.). Properties with greater fire hazards will require greater separation between fuels. For example, properties on steep slopes having large sized vegetation will require greater spacing between individual trees and bushes (see Plant Spacing Guidelines and Case Examples below). Groups of vegetation (numerous plants growing together less than 10 feet in total foliage width) may be treated as a single plant. For example, three individual manzanita plants growing together with a total foliage width of eight feet can be “grouped” and considered as one plant and spaced according to the Plant Spacing Guidelines in this document.



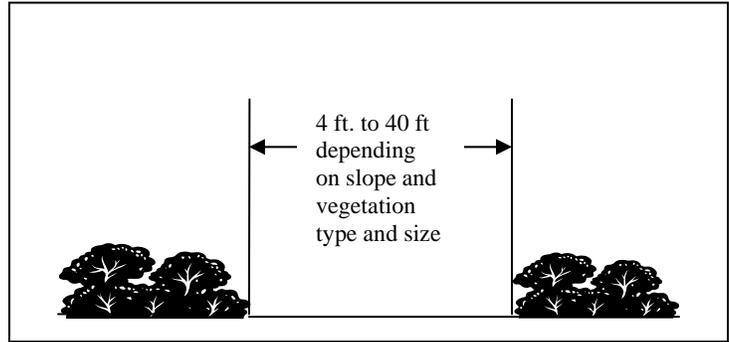
Grass generally should not exceed 4 inches in height. However, homeowners may keep grass and other forbs less than 18 inches in height above the ground when these grasses are isolated from other fuels or where necessary to stabilize the soil and prevent erosion.

Clearance requirements include:

- Horizontal clearance between aerial fuels, such as the outside edge of the tree crowns or high brush. Horizontal clearance helps stop the spread of fire from one fuel to the next.



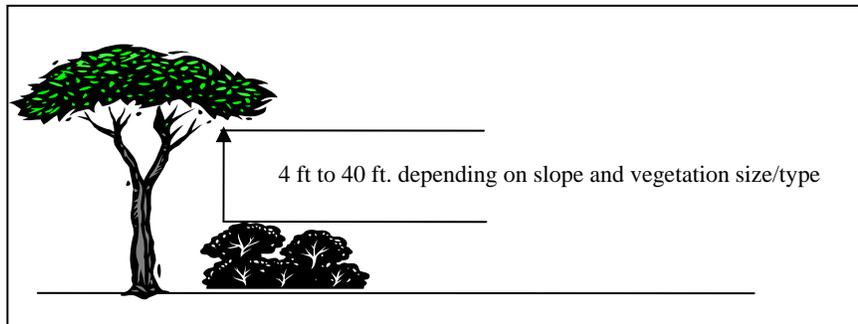
Trees



Shrubs

Horizontal clearance between aerial fuels

- Vertical clearance between lower limbs of aerial fuels and the nearest surface fuels and grass/weeds. Vertical clearance removes *ladder fuels* and helps prevent a fire from moving from the shorter fuels to the taller fuels.



Vertical clearance between aerial fuels



Effective vertical and horizontal fuel separation
Photo Courtesy
Plumas Fire Safe Council.

Plant Spacing Guidelines

Guidelines are designed to break the continuity of fuels and be used as a “rule of thumb” for achieving compliance with Regulation 14 CCR 1299.

Trees	Minimum horizontal space from edge of one tree canopy to the edge of the next	
	Slope	Spacing
	0% to 20 %	10 feet
	20% to 40%	20 feet
Greater than 40%	30 feet	
Shrubs	Minimum horizontal space between edges of shrub	
	Slope	Spacing
	0% to 20 %	2 times the height of the shrub
	20% to 40%	4 times the height of the shrub
Greater than 40%	6 times the height of the shrub	
Vertical Space	Minimum vertical space between top of shrub and bottom of lower tree branches: 3 times the height of the shrub	

Adapted from: Gilmer, M. 1994. California Wildfire Landscaping

Case Example of Fuel Separation: Sierra Nevada conifer forests

Conifer forests intermixed with rural housing present a hazardous fire situation. Dense vegetation, long fire seasons, and ample ignition sources related to human access and lightning, makes this home vulnerable to wildfires. This home is located on gentle slopes (less than 20%), and is surrounded by large mature tree overstory and intermixed small to medium size brush (three to four feet in height).

Application of the guideline under 4a. would result in horizontal spacing between large tree branches of 10 feet; removal of many of the smaller trees to create vertical space between large trees and smaller trees and horizontal spacing between brush of six to eight feet (calculated by using 2 times the height of brush).



Case Example of Fuel Separation: Southern California chaparral

Mature, dense and continuous chaparral brush fields on steep slopes found in Southern California represents one of the most hazardous fuel situations in the United States. Chaparral grows in an unbroken sea of dense vegetation creating a fuel-rich path which spreads fire rapidly. Chaparral shrubs burn hot and produce tall flames. From the flames come burning embers which can ignite homes and plants. (Gilmer, 1994). All these factors results in a setting where aggressive defensible space clearing requirements are necessary.



Steep slopes (greater than 40%) and tall, old brush (greater than 7 feet tall), need significant modification. These settings require aggressive clearing to create defensible space, and would require maximum spacing. Application of the guidelines would result in 42 feet horizontal spacing (calculated as 6 times the height of the brush) between retained groups of chaparral.

Case Example of Fuel Separation: Oak Woodlands

Oak woodlands, the combination of oak trees and other hardwood tree species with a continuous grass ground cover, are found on more than 10 million acres in California. Wildfire in this setting is very common, with fire behavior dominated by rapid spread through burning grass.

Given a setting of moderate slopes (between 20% and 40%), wide spacing between trees, and continuous dense grass, treatment of the grass is the primary fuel reduction concern. Property owners using these guidelines would cut grass to a maximum 4 inches in height, remove the clippings, and consider creating 20 feet spacing between trees.



4b. Reduced Fuel Zone: Defensible Space with Continuous Tree Canopy

To achieve defensible space while retaining a stand of larger trees with a continuous tree canopy apply the following treatments:

- Generally, remove all surface fuels greater than 4 inches in height. Single specimens of trees or other vegetation may be retained provided they are well-spaced, well-pruned, and create a condition that avoids spread of fire to other vegetation or to a building or structure.
- Remove lower limbs of trees (“prune”) to at least 6 feet up to 15 feet (or the lower 1/3 branches for small trees). Properties with greater fire hazards, such as steeper slopes or more severe fire danger, will require pruning heights in the upper end of this range.



Defensible Space retaining continuous trees



Photo Courtesy Plumas Fire Safe Council.



Defensible space with continuous tree canopy by clearing understory and pruning

Authority cited: Section 4102, 4291, 4125-4128.5, Public Resource Code. Reference: 4291, Public Resource Code; 14 CCR 1299 (d).

EMERGENCY PREPAREDNESS

AND EVACUATION GUIDE



**ALL OUTDOOR FIRES
PROHIBITED DURING
FIRE SEASON**

FOR MORE INFO, CONTACT YOUR FIRE DEPT.

BROUGHT TO YOU BY:
NORTH TAHOE FIRE PROTECTION DISTRICT
MEEKS BAY FIRE PROTECTION DISTRICT

FUNDING PROVIDED BY:
CAL FIRE GRANT



Greetings Community Members,

Every community has certain natural and manmade hazards, and the Tahoe Basin is no different. Experts in various fields strive to identify these hazards and emergency services managers work to develop response and mitigation strategies. Whether you are visiting for the day or have lived here for decades, you are residing in a high-sierra environment that is prone to rapidly changing weather and extreme seasonal variations, which combined with the Lake Tahoe Basin's unique landscape makes for a myriad of potential hazards. This Emergency Preparedness and Evacuation Guide has been developed to assist you in preparing for specific emergency situations. Please take a few minutes to familiarize yourself with the guide and the index as it has three main components, **emergent**, **evacuation** and **educational**. The emergent section contains guidance pertaining to an immediate threat, the evacuation map identifies potential routes out of the area (in an emergency law enforcement officials will provide specific routing based on the emergency) and the education section has detailed information and hazard specific planning suggestions. Your local fire districts, the State Forestry & Fire Protection agency and county emergency managers are constantly updating emergency plans and we need you to do the same. Have a family emergency and communications plan that does not rely on local utilities, which may not be available during an emergency. After reviewing this guide and developing your family or businesses emergency plan, this guide has been provided to you in a convenient plastic sheath with a magnet for you to place in a prominent location (such as the outside of the refrigerator or filing cabinet) where it can be readily accessed during an emergency.



Michael Schwartz North Tahoe Fire PD George Morris III CAL FIRE NEU Tim Alameda Meeks Bay Fire PD

The North Tahoe and Meeks Bay Board of Directors and staff want you to be as prepared as possible during an emergency. Check our agencies web sites and follow us on social media for valuable tips and up to date information. Your questions are welcome and input is valued, so please contact us via the information on the back cover as needed.

Stay safe and be prepared,

Michael Schwartz
Fire Chief, NTFPD

George Morris III
Fire Chief, NEU – Unit CAL FIRE

Timothy Alameda
Fire Chief, MBFPD



**EMERGENT
INFORMATION**



**EVACUATION
INFORMATION**



**EDUCATIONAL
INFORMATION**

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HIGHWAY 267
TO INTERSTATE 80

HIGHWAY 89
TO INTERSTATE 80

HIGHWAY 28
TO HIGHWAY 431

N
**LAKE
TAHOE**

IF YOU LEAVE YOUR HOME

- > If you leave your home **turn on a porch light and secure your residence.**
- > **Drive slowly,** first responders and emergency equipment might be on the roadway. If you must drive through smoke – turn on your headlights and stay as far to the right as possible.

A	B	F
TO HIGHWAY 50	TO INTERSTATE 80	FIRE STATION
C	D	S
TO INTERSTATE 80	TO HIGHWAY 431	SHERIFF
EVACUATION ROUTES		

EVACUATION ROUTES

Local officials have pre-determined four routes to drive out of the North Tahoe Fire Protection District and Meeks Bay Fire Protection District to be used in the event of a disaster. The type of emergency will determine which route will be used. Officials will notify residents through the use of media, telephone and if possible, by first responders.

- > **Evacuation Route A**
Highway 89 towards South Shore to Highway 50
- > **Evacuation Route B**
Highway 28 towards Tahoe City then north on Highway 89 to Interstate 80
- > **Evacuation Route C**
Highway 28 towards Kings Beach then Highway 267 to Interstate 80
- > **Evacuation Route D**
Highway 28 to Highway 431

Plan at least two ways out of your neighborhood and mark the route on this map.

EL DORADO
COUNTY

HIGHWAY 89
TO HIGHWAY 50



Since no single method of communication is failsafe, regional public safety officials use a combination of four methods to keep the public informed during an emergency.

- › 1. Local government Public Information Officers (PIO) gather key information from the Incident Commander, first responders and elected officials, producing press releases that are then disseminated to social media and are broadcast by local media outlets and on NTFPD AM station 1630 to keep the public informed during an emergency.
- › 2. Emergency Managers can initiate the Emergency Alert System (EAS). This system interrupts local radio and television broadcasts with emergency alerts for instructions to the public.
- › 3. First Responders and credentialed volunteers (CEIT & CERT) will assist in alerting citizens of impending hazards by door to door canvassing of neighborhoods, answering phone calls at fire stations, providing information tables at local markets, directing traffic in evacuations.
- › 4. The e-Emergency Notification Phone System can be used to automatically telephone residents and relay emergency information.

The Emergency Notification Phone System is a computer system that calls telephones in particular geographic areas, and plays a recorded message. However, there are two issues to consider, availability of electric utility power, and ability of the system to contact a particular type of telephone.

In an emergency, the electric utility power may fail at any time. This means that any telephone that relies on power to function will not work.

The Emergency Notification Phone System can only contact hardwired telephones (so-called “wire line” or “PSTN” phones) which are serviced by SBC, AT&T, or another local telephone company. You may also pre-register cell phone numbers with emergency alert services through Placer or El Dorado County.

In an Emergency, tune to the EAS Local Primary Stations:

NTFPD 1630AM	KUNR 88.7FM	KOWL 1490AM	KRLT 93.9FM	KTKE 101.5FM
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FOLLOW US on Facebook at www.ntfire.net 

ENROLL IN Placer County Alert, www.placer-alert.org/

ENROLL IN El Dorado County Alert, www.ready.edso.org/

TUNE IN for North Tahoe Fire Critical Emergency Information on 1630AM Radio (WQMS 260)

PHONE NUMBERS AND WEB SITES

WHEN THERE IS AN ACTIVE EMERGENCY, PLEASE TUNE IN TO 1630AM ON YOUR RADIO DIAL.

ANY LIFE-THREATENING EMERGENCY CALL 911.

	North Tahoe Fire Protection District	530-583-6911	www.ntfire.net
	Meeks Bay Fire Protection District	530-525-7548	www.meeksbayfire.com
	Placer County Sheriff's Office	530-583-6300	www.placer.ca.gov/Departments/Sheriff.aspx
	El Dorado County Sheriff's Office	530-621-5655	www.edcgov.us/Sheriff/
	Placer County Office of Emergency Services	www.placer.ca.gov/Departments/CEO/Emergency.aspx 530-886-5300 (During major incident responses) 530-886-4600 (During non-incident periods)	
	El Dorado County Office of Emergency Services	www.edcgov.us/Government/Sheriff/Divisions/Support/Office_of_Emergency_Services_(OES).aspx 530-626-4911	
	American Red Cross (Sacramento Office)	916-993-7070	www.redcross.org/ca/sacramento
	National Weather Service	775-673-8100	www.weather.gov/reno
	Caltrans	530-426-7600	www.dot.ca.gov
	USFS-Lake Tahoe Basin Management Unit	530-543-2600	www.fs.usda.gov/lbmu/
	CAL FIRE-Auburn Nevada-Yuba-Placer Unit	530-889-0111	www.readyforwildfire.org
	California – Governor's Office of Emergency Services	916-845-8510	www.caloes.ca.gov/

MAKE A PLAN IF YOU MUST LEAVE YOUR HOME

- Begin evacuation immediately** when the official warning is issued. Your life might be in danger, do not waste time leaving your home.
- Have a place to go** such as the home of a family member or friend, or a shelter. Plan your route before the disaster.
Listen to the radio for updates on the situation.
- Notify family or friends** of your plans, if possible. Tell them when you are leaving and where you are going.
- Use travel routes** specified by local officials (see attached map for routes). Know where you are going before you leave.
- Bring extra cash**. Banks may be closed, ATMs may not work.
- Take your disaster supplies kit**.
- Secure and lock** your home before you leave.
- Bring toys**, books and games for entertainment.
- If driving in smoke**, turn on headlights, move as far to the right as possible and drive slowly.
- When you arrive** at a shelter make sure you register with official personnel.
- Don't panic**, drive slowly and arrive safely at your destination.



MAKE A PLAN IF YOU MUST STAY AND SHELTER IN PLACE.

- › **If evacuation routes are blocked** you will be required to stay in your home during the fire. If you shelter in place, stay away from windows, move to an interior room or hallway. If the house does catch fire there will still be time to get out. Do not try and leave until the fire has passed and you can safely drive to a shelter location.
- › **Have your disaster supplies kit** in hand, including pet supplies.
- › You need to **store at least a three-day supply** of water for each person in your household. Stored water should be changed every six months.
- › **Notify family or friends** of the situation if possible.
- › **Work with neighbors** to develop a neighborhood plan that keeps everyone informed.
- › Listen to your battery operated **radio for emergency updates**.
- › Once you have decided to stay, **remain in your home** until the emergency is over.

PRE-EVACUATION PREPARATION STEPS

When an evacuation is anticipated, follow these checklists (if time allows) to give your home the best chance of surviving a wildfire:

OUTSIDE

- › Gather up flammable items from the exterior of the house and bring them inside (patio furniture, children's toys, door mats, trash cans, etc.) or place them away from house.
- › Turn off propane tanks.
- › Move propane BBQ appliances away from structures.
- › Connect garden hoses to outside water valves or spigots for use by firefighters. Fill water buckets and place them around the house.
- › **Don't** leave sprinklers on or water running; they can affect critical water pressures.
- › Leave exterior lights on so your home is visible to firefighters in the smoke or darkness of night.
- › Put your Emergency Supply Kit in your vehicle.
- › Back your car into the driveway with vehicle loaded and all doors and windows closed. Carry your car keys with you.
- › Have a ladder available and place it at the corner of the house for firefighters to quickly access your roof.
- › Seal attic and ground vents with pre-cut plywood or commercial seals.
- › Monitor your property and the fire situation. Don't wait for an evacuation order if you feel threatened and need to leave.
- › Check on neighbors and make sure they are preparing to leave.

INSIDE THE HOUSE

- › Shut all windows and doors, leaving them unlocked.
- › Remove flammable window shades and curtains. Close metal shutters.
- › Move flammable furniture to the center of the room, away from windows and doors.
- › Shut off gas at the meter. Turn off pilot lights.
- › Leave your lights on so firefighters can see your house under smoky conditions.
- › Shut off the air conditioning.

ANIMALS

- › Locate your pets and keep them secure nearby.
- › Prepare animals for transport and think about moving them to a safe location early.



TAKE ACTION IMMEDIATELY WHEN WILDFIRE STRIKES.

Follow these steps as soon as possible to get ready to go!

1. Review your Evacuation Checklist.
2. Ensure your Emergency Supply Kit is in your vehicle.
3. Cover up to protect against heat and flying embers. Wear long pants, long-sleeve shirt, heavy shoes/boots, cap, dry bandana for face cover, goggles or glasses. 100% cotton is preferable.
4. Locate your pets and take them with you.

WHEN TO EVACUATE

Leave as soon as evacuation is recommended by fire officials to avoid being caught in fire, smoke or road congestion. Don't wait to be ordered by authorities to leave. Evacuating early also helps firefighters keep roads clear of congestion, and lets them move more freely to do their job. In an intense wildfire, they may not have time to knock on every door. If you are advised to leave, don't hesitate!

- › Officials will determine the areas to be evacuated and escape routes to use depending upon the fire's location, behavior, winds, terrain, etc.
- › Law enforcement agencies are typically responsible for enforcing an evacuation order. Follow their directions promptly.
- › You will be advised of potential evacuations as early as possible. You must take the initiative to stay informed and aware. Listen to your radio/TV for announcements from law enforcement and emergency personnel.
- › You may be directed to temporary assembly areas to await transfer to a safe location.

The terms "Voluntary" and "Mandatory" are used to describe evacuation orders. However, local jurisdictions may use other terminology such as "Precautionary" and "Immediate Threat." These terms are used to alert you to the significance of the danger. All evacuation instructions provided by officials should be followed immediately for your safety.



Prepare to care for yourself, your family and pets for a duration of at least three days and up to seven days. The best time to assemble a disaster supplies kit is well before you need it. Most of these items are already in your home, it is matter of assembling them before a disaster occurs.

- › Water – One gallon per person and per pet for each day. Store water in unbreakable containers. Identify the storage date and replace every six months.
- › Food – A supply of non-perishable packaged or canned foods with a hand-operated can opener.
- › Anti-bacterial hand wipes or gel.
- › First Aid Kit, a first aid book and required prescription medications.
- › Blankets or sleeping bags – at least one per person.
- › Battery-powered radio, flashlight and plenty of extra batteries.
- › Fire extinguisher – ABC type.
- › Credit cards, cash and change.
- › An extra set of car and house keys.
- › Extra pair of eyeglasses.
- › Toothbrush, toothpaste, shampoo and toilet paper.
- › A list of family physicians.
- › A list of important family information including phone numbers.
- › Special items for infants, elderly, or disabled family members.

SANITATION SUPPLIES

- › Large plastic trash bags for waste, tarps and rain ponchos.
- › Large trash cans.
- › Bar soap and liquid detergent.
- › Household bleach.
- › Rubber gloves.

Stocking up now on emergency supplies can add to your family's safety and comfort during and after a disaster. Store enough supplies for at least three days, preferably as many as seven days.



RED FLAG WARNINGS

The National Weather Service (NWS) offices issue [Fire Weather Watches](#) and [Red Flag Warnings](#) for critical fire weather patterns that contribute to the extreme fire danger and/or fire behavior.

[A Fire Weather Watch](#) is used to alert agencies to the high potential for development of a Red Flag event in the 12-72 hour time frame. The Watch may be issued for all or selected portions of a fire weather zone. A watch may be issued in the first 12 hour time period only for an expected dry thunderstorm event.

[Red Flag Warning/Fire Weather Watches](#) in discussions and headlines – In the discussion portion of the Fire Planning Forecast (FWF), NWS offices will mention critical weather patterns that might lead to conditions approaching or exceeding Red Flag criteria through the extended forecast. This will assist fire agencies in their allocating and moving resources in anticipation of increased fire activity. Fire Weather Watches and Red Flag Warnings will be headlined in spot forecasts, the fire weather narrative, and appropriate zone sections within the fire weather planning forecast. The headline will be in the same format as on the RFW product itself.

WHEN A WILDLAND FIRE OCCURS

- › [Stay calm and do not panic.](#) You will think more rationally if you remain calm. Keep family members and pets together. Wear long pants, long sleeved shirts made from natural fibers, and boots or sturdy shoes for protection from the heat. If advised to evacuate, DO SO IMMEDIATELY. Drive slowly, turn on your vehicle headlights and stay as far to the right of the road as possible.



WHAT IS DEFENSIBLE SPACE?

The term defensible space refers to the area between a home and an oncoming wildfire where the vegetation has been managed to reduce the wildfire threat and allow firefighters to effectively defend the house. Defensible space improves the likelihood of a home surviving in the event of a wildfire.

STEP ONE:

Determine the size of an effective defensible space.

STEP TWO:

Remove dead vegetation.

STEP THREE:

Create a separation between trees and shrubs.

STEP FOUR:

Remove ladder fuels.

STEP FIVE:

Create a Lean, Clean and Green Area extending 5 feet to 30 feet from the house.

STEP SIX:

Create a noncombustible area at least 5 feet wide around the base of the house.

STEP SEVEN:

Maintain the Defensible Space Zone.

Please visit LivingWithFire.info to learn more about the above steps.

NONCOMBUSTIBLE AREA – ZONE ONE:

Zone One extends 30 feet out from buildings, structures, decks, etc. This area needs to have a very low potential for ignition from flying embers. Remove all dead or dying vegetation. Trim tree canopies regularly to keep their branches a minimum of 10 feet from structures and other trees. Remove dried leaves and pine needles from your yard, roof, and rain gutters. Relocate woodpiles or other combustible materials into Zone Two. Remove combustible material and vegetation from around and under decks. Remove or prune vegetation near windows. Remove “ladder fuels” (low vegetation that allows a fire to spread from the ground to the tree canopy). Reduce the height of low-level vegetation and/or trim low tree branches.



LEAN, CLEAN AND GREEN AREA – ZONE TWO:

Zone Two extends 30 to 100 feet out from buildings, structures, and decks. You can minimize the chance of fire jumping from plant to plant or other combustibles by removing dead material and removing, separating, and/or thinning vegetation. The minimum spacing between vegetation is three times the dimension of the plant or other combustibles.

Please visit ReadyForWildfire.org to learn more about wildfire prevention and defensible space.

SEVERE WEATHER SAFETY TIPS – TO SAVE YOUR LIFE!

FACT: Hundreds of people die each year in the United States due to lightning, flash floods, powerful thunderstorm winds, and winter storms or winter cold. Additionally, thousands of people are injured by these weather events each year. Will it happen to you?

FACT: If you are aware of what weather event is about to impact your area, you are more likely to survive such an event. To stay on top of the weather, utilize NOAA Weather Radio All Hazards receiver units that can be purchased at most electronic stores. Make sure the model you purchase has a battery-backup. The programmable types allow you to selectively screen out those county warnings you are not interested in. Most homes have a smoke detector; shouldn't your home also have a weather radio?

WHAT YOU CAN DO BEFORE SEVERE WEATHER STRIKES:

1. Develop a disaster plan for you and your family at home, work, school, and when outdoors. The American Red Cross offers planning tips and information on putting together a disaster supplies kit at <http://www.redcross.org>.
2. Identify a safe place to take shelter. Information on how to build a Safe Room in your home or school is available from the Federal Emergency Management Agency at <http://www.ready.gov/shelter>.
3. Know the county in which you live or visit – and in what part of that county you are located. The National Weather Service issues severe weather warnings on a county basis, or for a portion of a county. Local counties within our area include Placer, El Dorado, Nevada, and Washoe.
4. Keep a highway map nearby to follow storm movement from weather bulletins.
5. Have a NOAA Weather Radio All Hazards receiver unit with a warning alarm tone and battery back-up to receive warning bulletins.
6. National Weather Service (NWS) watches and warnings are also available on the Internet. Select your local NWS office at <http://www.weather.gov>, go to the NWS Home Page at <http://www.nws.noaa.gov>, or for Reno, go to <http://www.wrh.noaa.gov/rev/>.
7. Listen to commercial radio or television/cable TV for weather information.
8. Check the weather forecast before leaving for extended periods outdoors. Watch for signs of approaching storms.
9. If severe weather threatens, check on people who are elderly, very young, or physically or mentally disabled. Don't forget about pets.

IS IT A WATCH OR IS IT A WARNING?

A watch is intended to provide lead time for those who need to set their plans in motion. A watch means that hazardous weather is possible in and close to the watch area.

A warning means that weather conditions pose a threat to life or property; people in the path of the hazard need to take protective action.

These terms are used for Thunderstorms, Flashfloods, Fire Weather and Winter Storms.

WINTER STORMS – WATCHES & WARNINGS

Winter Storm Watch – Conditions are favorable for hazardous winter weather conditions including heavy snow, blizzard conditions, significant accumulations of freezing rain or sleet, and dangerous wind chills. The watches are usually issued 12 to 36 hours in advance.

Winter Storm Warning – Hazardous winter weather conditions that pose a threat to life and/or property are occurring, imminent, or likely. The term winter storm warning is used for a combination of two or more of the following winter weather events: heavy snow, freezing rain, sleet, and strong winds. The following event-specific warnings are issued for a single weather hazard: blizzard warning, heavy snow warning or ice storm warning.

Snow Advisory – Snowfall roughly half the amount required for a winter storm warning.

Blizzard Warning – Sustained winds or frequent gusts of 35 miles per hour or greater with considerable falling and/or blowing snow. Visibility will be reduced to 1/4 mile or less for a period of three hours or more.

EVACUATION TERMS

Evacuation Advisory – An advisory is issued when there is reason to believe that the emergency will escalate and require mandatory evacuations. An advisory is meant to give residents as much time as possible to prepare transportation arrangements.

Voluntary Evacuation – Is used when an area is going to be impacted and residents are willing and able to leave before the situation gets worse. This is helpful for residents with medical issues, people with pets and those who will have difficulty making travel arrangements. Under this evacuation order you do not have to leave the area.

Mandatory Evacuation – You MUST leave the area IMMEDIATELY, your life is in danger. Under these circumstances the situation is severe and you may not have time to gather special belongings or paperwork, every minute you delay could increase your danger. Please do not take this order lightly; it is for your safety. Remember to follow any instruction you receive from a law enforcement or fire officer.

WHAT TO EXPECT WITH AN AVALANCHE

Snow avalanches are a natural phenomena resulting from the interaction of site-specific weather, terrain, and snowpack conditions. Because these factors are constantly changing, precise prediction of when destructive avalanches will occur is limited.



BEFORE AN AVALANCHE

- › Most avalanches occur on slopes with inclinations between 30° and 45°. Slopes on leeward sides of windy ridges are likely areas for large accumulations of wind blown snow to form slabs. If there are no terrain features or trees to anchor the snow in place, these slopes become “starting zones” for slab avalanches.

DURING AN AVALANCHE

- › Warn those around you of the impending slide.
- › Try and get out of the way if possible; if on skis, move out diagonally. If on a snowmobile, move downhill.
- › Drop anything in your hands that will drag you down. Use a “swimming” motion thrusting upward to try and stay near the surface of the snow.
- › Try to keep your arms and hands moving so the instant the avalanche stops you can make an air pocket in front of your face by punching the snow around you before it sets.
- › If you are in a house, try and move to the opposite side of the structure of the slide and find a door or window to make an escape.

AFTER AN AVALANCHE

- › The INSTANT the avalanche stops try to maintain an air pocket in front of your face by using your hands and arms to punch in the snow and make a pocket of air. Most deaths are due to suffocation, the snow will set very quickly.
- › If you are lucky enough to be near the surface, try and stick out an arm or a leg so that rescuers can find you.
- › Do not panic, keep your breathing steady to help preserve your air space and help your body conserve energy.
- › If someone around you is caught in an avalanche, watch as they are carried downhill, paying particular attention to the last point you saw them. If possible mark the spot so that rescuers can reduce search time.

WHAT TO EXPECT DURING A FLOOD EVENT

Flash floods, abundant rain, and rain-on-snow events are the three types of flood phenomena that occur throughout the state. At Lake Tahoe these events cause small creeks to overflow and homes in low lying areas can experience some localized flooding.

BEFORE A FLOOD

- › *Check drains and drainage* to divert water away from your home. Build barriers and landscape around your home or buildings to reduce or stop floodwaters and mud from entering. Seal lower walls with waterproofing compounds and install “check valves” in sewer traps to prevent flood water from backing up into drains.

DURING A FLOOD

- › *Listen for updates from the radio and television*. Know the location for sandbags and sand. Move valuables out of the path of water or mud. Contact local authorities and notify them of the location of the flooding. If necessary, turn off utilities before problems escalate.
- › *If water is diverted* check with neighboring properties to ensure that additional damage is not occurring.

AFTER THE FLOOD

- › *Prior to entering a building, check for structural damage*. Check the foundation walls and posts. Make sure it is not in danger of collapsing. Watch for electrical shorts or live wires before making certain that the main power switch is turned off. Remove all floodwaters from under structures as soon as possible.



WHAT TO EXPECT IN AN EARTHQUAKE

During an earthquake the “solid” earth moves like the deck of a ship. The actual movement of the ground is seldom the direct cause of death or injury. Most casualties result from falling objects and debris because the shocks can shake, damage or demolish buildings. Earthquakes may also trigger landslides, cause fires and disrupt utilities.

BEFORE AN EARTHQUAKE

- › [Check your home for potential hazards.](#) Place large and heavy objects on lower shelves. Securely fasten shelves to walls. Brace or anchor high or top-heavy objects. Strap water heaters to keep them from falling.
- › [Know where and how to shut off electricity, gas, and water](#) at main switches and valves. Have the proper tools close by so that there is no delay when it is time to shut off the utilities.
- › [Hold occasional drills](#) so each member of your household knows what to do in an earthquake.
- › Have your Disaster Supply Kit [ready and accessible.](#)

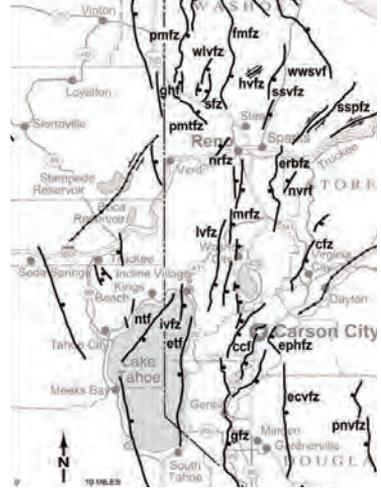


Image courtesy of University of Nevada Seismology Department

WHAT TO DO DURING AN EARTHQUAKE

- › [First and foremost, stay calm.](#) Think through the consequences of any action you take.
- › [If you are inside, stay inside;](#) take cover under a heavy desk or table. Stand under a supported doorway or along an inside wall away from any windows.
- › [If you are outside, stay there;](#) stay away from tall buildings, look up and watch for falling objects. If you are in a moving car, safely stop the car and remain inside.

WHAT TO DO AFTER AN EARTHQUAKE

- › [Check yourself and people nearby for injuries.](#) Provide first aid if needed. Be prepared for additional earthquake shocks called “aftershocks”. These are smaller than the main shock, some may be large enough to cause additional damage or bring weakened structures down.
- › [Check gas, electric, and water lines.](#) If damaged, shut off valves. Turn off appliances. Do not light matches or candles. Check for natural gas leaks by odor only. If a gas leak is detected, open all windows and doors, leave immediately and do not re-enter the building until a utility official says it is safe.
- › [Check your home for damage,](#) approach chimneys with caution. If there is any question of safety leave your home and do not re-enter until the item can be checked. Open any closet or cupboard cautiously due to falling objects.
- › [Do not flush toilets](#) until sewer lines are checked.
- › [Check with neighbors](#) to see if your assistance is needed.

TSUNAMI AT LAKE TAHOE?

Earthquake-caused large waves in a lake or closed body of water is called seiche (pronounced say'sh). The word originates in a Swiss French dialect word that means "to sway back and forth". Due to Lake Tahoe's size, depth and close proximity to earthquake faults it is at risk for a seiche. A large earthquake could cause a wave up to 33 feet in height to come ashore at any location around the lake. These waves could move back and forth across the lake for many hours.



WHAT TO DO AFTER AN EARTHQUAKE

- > ***If you are close to the lake*** or on the beach during an earthquake, move immediately to higher ground. ***If a seiche occurs it will happen quickly.***
- > ***If you live in a home near the lake,*** move away from windows and doors that face the lake. If possible move to an upstairs location. Do not go outside after an earthquake until you are certain that there is no seiche approaching.
- > ***If you are ordered to evacuate,*** don't waste time, take an evacuation kit and leave. Do not return until the authorities have given the all clear.

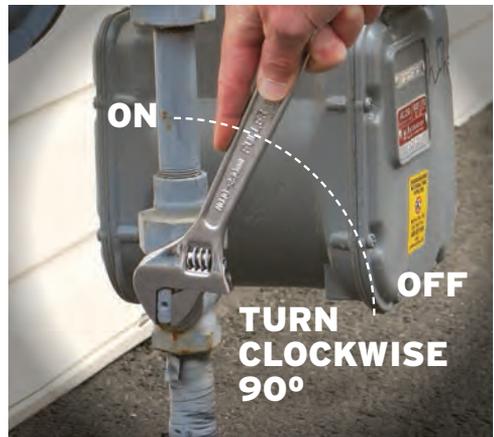
MAKE A FAMILY EMERGENCY PLAN

- › **Meet with household members** – Explain the dangers to children and your emergency plans. Work with them as a team to prepare your family to deal with emergencies.
- › **Discuss** what to do about power outages and personal injuries.
- › **Post emergency telephone numbers** near telephones.
- › **Learn** how to turn off the water, gas and electricity at your home.
- › **Decide where to meet** – in the event of an emergency; you may become separated from family members. Choose a place right outside your home in case of a sudden emergency, like a fire. Choose a location outside your neighborhood in case you cannot return home.
- › **Choose an “Out-of-Town” contact** – Ask an out-of-town friend or relative to be your contact in the event of a disaster. Everyone must know the contact’s phone number. It is often easier to make a long distance phone call than a local call from a disaster area.
- › **Teach children** how to make long distance telephone calls.
- › **Complete a family communications plan** – Your plan should include contact information for family members, work and school.
- › **Escape routes and safe places** – In a fire or other emergency, you may need to evacuate very quickly. Be ready to get out fast. Be sure everyone in your family knows the best escape routes out of your home as well as where the safe places are in your home for each type of disaster. Draw a Home Family Escape Plan with your family outlining two escape routes from each room.

HOW TO TURN OFF GAS

Make sure all family members know how and when to shut off the gas supply.

- › **If you smell gas** after an earthquake, shut off the main gas valve.
- › **Use a wrench** to turn the valve either way until it is perpendicular to the pipe.
- › **Attach the wrench** to the gas meter with a wire.



DEVELOP A PET PLAN

In the event of a disaster, if you must evacuate, the most important thing you can do for your pets is to evacuate them, too. If you are away from your home when your neighborhood is evacuated you will not be allowed back to retrieve your pet, so make arrangements with neighbors before a disaster strikes.



Pets are not allowed at public shelters for health and space reasons, so arrangements must be made in advance for pets. Pets might not be allowed in hotels or motels so planning is crucial.

- › Make sure that your [pets are current on their vaccinations](#). Pet shelters may require proof of vaccines.
- › Keep a [collar with identification](#) on your pet and have a leash on hand to control your pet.
- › If possible, have a properly-sized [pet carrier for each animal](#).
- › Have a supply of [pet food, water and any required medications](#).

Animals brought to a pet shelter are required to have a proper identification collar, proper identification on all belongings, leash, food bowl, food and water.

SPECIAL NEEDS AND VULNERABLE POPULATIONS

Certain individuals in the community may have special problems to deal with in a disaster, including the elderly, people with medical conditions, and people with certain disabilities (mobility, visually impaired, hearing impaired, developmental or cognitive disabilities). If you have a family member who is one of these individuals, there are special considerations to think about and plan for before a disaster occurs.

If the family member has medications or equipment that they are dependent on, plan to bring those items with you if an evacuation is necessary. Shelters will not have additional medication or medical equipment available. Documentation about insurance and medical conditions should also accompany the person.

Plan ahead for transportation needs for family members with special needs. Transportation for the general public in an emergency evacuation may not be suitable for their situation.

If the family member has special dietary needs, bring these special foods and supplements with you.

Many special needs populations are easily upset and stressed by sudden and frightening changes. Plans should be made to ensure that a caregiver or trusted family member is able to stay with them at all times during an evacuation.

NORTH TAHOE FIRE PROTECTION DISTRICT

**PHYSICAL ADDRESS:
STATION 51
222 FAIRWAY DRIVE
TAHOE CITY, CA 96145**

**TEL 530-583-6913
FAX 530-583-6909**

**MAILING ADDRESS:
P.O. BOX 5879
TAHOE CITY, CA 96145**

**WEBSITE:
WWW.NTFIRE.NET**  

**MICHAEL SCHWARTZ,
FIRE CHIEF**

MEEKS BAY FIRE PROTECTION DISTRICT

**PHYSICAL ADDRESS:
8041 EMERALD BAY RD.
TAHOMA, CA 96142**

**TEL 530-525-7548
FAX 530-525-4502**

**MAILING ADDRESS:
PO BOX 128
TAHOMA, CA 96142**

**WEBSITE:
WWW.MEEKSBAYFIRE.COM**

**TIM ALAMEDA,
FIRE CHIEF**



Appendix C

Alpine Sierra

Forest Management and Fuel Reduction Plan

2014

**Prepared by
David Jaramillo
Registered Professional Forester # 2839
Whole Earth Forestry**

Alpine Meadows

The proposed Alpine Sierra Subdivision is located within the picturesque community of Alpine Meadows. Alpine Meadows is located approximately 5 miles northwest of Lake Tahoe, along California State Highway 89. Alpine Meadows consists of several subdivisions, including; Alpine Meadows Estates Association (AMEA), Bear Creek Association (BCA), Chalet, and Juniper Mountain. Each subdivision maintains an organizational structure, such as an HOA to help address community issues. The Alpine Springs County Water District (ASCWD) provides water services to the community and is a central hub for information for valley residents and visitors. The main route to these subdivisions is along Alpine Meadows Road, which stretches from State Highway 89 to Alpine Meadows Ski Area, three miles farther up the road. The community encompasses approximately one square mile within Placer County ⁽¹⁾. The North Tahoe Fire Protection District (NTFPD) provides fire and emergency medical services to the area.

The Alpine Meadows area contains approximately six-hundred and seventy (670) private parcels, interspersed among several open space parcels. Approximately five-hundred (500) homes are found throughout the valley. Bear Creek runs through the community, creating a riparian area near many of the homes. Most of the homes are constructed in the bottom of the canyon, adjacent to Bear Creek. Homes are also situated in the uplands surrounding the creek and along the many small tributary streams that drain into Bear Creek. The community is surrounded by United States Forest Service (USFS) lands.

Weather and Topography

Weather within Alpine Meadows consists of a Mediterranean Climate. This climate consists mainly of hot, dry summers and cold, wet winters. The average annual precipitations (rain) is approximately 20 inches, with a range of .01 – 4.10 inches. Most of the rainfall occurs in the fall and spring, however, summer thunderstorms add to the annual rainfall. Much of the precipitation comes in the form of snow in the winter months. Snowfall can reach 365 inches in the higher reaches of the valley. Most of the snowfall occurs in January. Average annual temperatures range from lows of 37° F – 59° F to highs of 59° F – 81° F. The mean annual temperature is 63° F.

Alpine Meadows is located on the east side of the rugged crest of the Sierra Nevada Mountains. The terrain is highly variable, consisting of flat meadows to steep (sometimes vertical) mountain slopes. Elevations range from 6,185 feet at the mouth of the canyon, near the confluence of Bear Creek and the Truckee River, to 6,835 feet at the Alpine Meadows Resort ski lodge. Mountain peaks above the community are approximately 8,635 feet. These mountain peaks surrounding Alpine Meadows create the approximately 6,000 acre Bear Creek Watershed, which is a tributary to the Truckee River. The Truckee River is a California 303-d listed watershed. Ward Peak and the approximately 8,630 acre Ward Creek Watershed separates Alpine Meadows from the Lake Tahoe Basin to the south (no water from Alpine Meadows flows into Lake Tahoe).

Vegetation Types

Alpine Meadows has several vegetation types. The vegetation communities that occur on site include montane meadow, Lodgepole pine, and Sub-alpine and Upper-Montane forest. These vegetation communities consists of numerous tree and shrub species as well as a herbaceous component including, but not limited to: white fir (*Albus concolor*); red fir (*Abies magnifica*); lodgepole pine (*Pinus contorta*); ponderosa pine (*Pinus ponderosa*); Jeffrey pine (*Pinus jeffreyi*); western white pine (*Pinus monticola*); mountain hemlock (*Tsuga mertensiana*); quaking aspen (*Populus tremuloides*); black cottonwood (*Populus trichocarpa*); willow (*Salix spp.*); western thimbleberry (*Rubus parviflorus*); currant (*Ribes spp.*); gooseberry (*Ribes spp.*); whitethorn (*Ceanothus cordulatus*); manzanita (*Arctostaphylos spp.*); mules ear (*Wyethia amplexicaulis*); tobacco brush (*Ceanothus prostrates*); bitterbrush (*Purshia tridentate*).

Fire and Ecosystem Development

Frequent fires, generally every 7-15 years, have helped develop Sierra Nevada ecosystems. These frequent fires were started by the extensive Native American populations and/or natural causes such as lightning. In the Alpine Meadows region members of the Washoe and Maidu tribes would have ignited and guided fires for a variety of reasons. For example: Alfred Kroeber reported of the Maidu in the Northern Sierra Nevada; “Like most of the Californians who inhabited timbered tracts, the Maidu frequently burned over the country, often annually....Travel was better, view farther, ambuscades more difficult, certain kinds of hunting more remunerative, and a crop of grasses and herbs was of more food value than most brush.”⁽²⁾ Further, “The majority of plant species relied on for food and medicine and for making cordage, basketry, and tools thrive only in full sun or partial shade. Ecologically, fire was used to maintain earlier successional stages that these species require.”⁽²⁾

The acreage that was burned by California's earliest humans was significant; the fire scientists Robert Martin and David Sapsis estimate that approximately 6 – 13 million acres of California burned annually under both lightning and indigenous people's fire regime. For example, the “Maidu frequently burned over the country, often annually, eliminating the underbrush, keeping the forests open, and reducing the likelihood of destructive forest fires.”⁽²⁾ This amount and frequency of fire “has influenced ecosystems for millennia, influencing biodiversity, plant reproduction, vegetation development, insect outbreak and disease cycles, wildlife habitat relationships, soil functions and nutrient cycling, gene flow, selection and ultimately, sustainability.”⁽³⁾

These frequent fire regimes have led to important plant adaptations to fire, such as thick bark, burl and stump sprouting, seed germination, and serotinous cones (cones that open and release seeds when they are heated by fire). Many of the trees and shrubs found within Alpine Meadows have some of these unique fire adaptations. For example; “Red fir has thin bark when it is young, making it susceptible to fire. As red fir matures, its bark becomes thicker and it is able to survive most fires. Similarly, mature Jeffrey pine has thick bark, and a slightly thicker bark when young that allows them to survive low –intensity fires... Quaking aspen is the primary hardwood species in the upper montane forest and occurs in small stands where moisture is available. It is a vigorous and profuse sprouter after fire. It becomes increasingly resistant to fire as its diameter increases beyond 6 inches.”⁽⁴⁾

Fire Exclusion and Forest Succession

Although the fire history and plant adaptations are extensive in Alpine Meadows, “It is generally believed today that fires in the Sierra Nevada landscape are less frequent and more severe compared to the patterns presented before the colonial era. The absence of fire in combination with logging and other land management practices has led to a buildup of surface and ladder fuels, particularly in the ecosystems that once experienced low – to moderate – intensity fire regimes. Currently in many places in the Sierra Nevada, small trees and shrubs have become a fire hazard to the natural environment as well as the human inhabitants.”⁽⁵⁾

The lack of fire is apparent in the forest and meadow ecosystems throughout Alpine Meadows. For example, the large expanses of meadow, combined with robust stands of quaking aspen, have been reduced in size by the encroachment of shade tolerant conifer trees. In many areas, quaking aspen is only found as dead trees in the understory of encroaching conifers. Lodgepole pine, the main meadow and aspen encroacher in Alpine Meadows, has thin bark and is often killed by low to moderate intensity fire when it is young. The lack of fire has allowed lodgepole pine to take over the highly fire dependent meadows and quaking aspen stands throughout Alpine Meadows. In addition, all the forest surrounding Alpine Meadows is experiencing increased competition (competition for water, nutrients, light), leading to large amounts of dead and dying trees, as well as an overall reduction of the understory herbaceous vegetation (understory herbaceous vegetation is a critical food source for wildlife). This large amount of

dead and dying trees has led to an unnatural accumulation of fuels on the forest floor that has greatly increased the fire danger. Finally, the lack of fire has led to a forest species composition shift, not only in Alpine Meadows, but throughout much of the Sierra Nevada.

The lack of fire has allowed shade tolerant trees (trees that can grow in the shade), such as white and red fir, to become established in the understory. Historically, periodic low to moderate intensity fire would have killed most of the fir, leaving a smaller percentage to grow maturely. Generally, the resulting forest would have consisted of a more open mixed conifer stand with a higher percentage of pine species overall. Today, white and red fir dominate the low-and-mid-canopy of Alpine Meadows, resulting in a dramatic species composition shift from pine to fir. For example, “Ponderosa pine relies on periodic disturbance for continued dominance in most forest types and tends to have fuel characteristics that encourage burning: resinous needles and well-aerated litterbeds.”⁽⁶⁾ Due to the thick understory of fir, which generally creates significant fuel ladders, the overall fire danger has increased. The historic low to moderate intensity fires that occurred within Alpine Meadows may now be replaced by high intensity stand replacing fires, which are a threat to life and the environment.

Alpine Sierra Subdivision

The proposed Alpine Sierra Subdivision is located on approximately 46 acres in Alpine Meadows. The property is situated primarily on a north facing slope south of Bear Creek. Adjacent property owners include BCA to the north, Chalet HOA to the south and east, and the USFS to the south, east and west. The terrain is primarily moderate, with slopes ranging from approximately 0% - 60%. Elevations range from approximately 6600 ft. to 7000 ft. Bear Creek, which is perennial, traverses the narrow reaches of the property on the north, just south of Alpine Meadows Drive. There is one intermittent (see wetland delineation map below) unnamed tributary stream that flows into Bear Creek north of the property. This creek flows north/northwest and bisects the property on the eastern portion. This creek maintains a narrow riparian plant community, including, willow, thimbleberry, and currant.

The property has several different ecosystem features such as riparian areas, rock outcrops, open meadows, aspen groves, lodgepole pine, and mixed conifer forest. These attributes are scattered throughout the property. Like the rest of Alpine Meadows, the property has experienced extensive fire exclusion. In addition, a lack of forest management, such as thinning, pruning and/or burning to address the effects of fire exclusion have occurred here. This has resulted in the current stand conditions. The majority of the stand is within fuel model 10. (See appendix 1 for a description of the fuel models).

Currently, the forest on the property consists of thick understory fir (white and red) trees with scattered mid and overstory pine and fir trees. This dense understory of shade-tolerant fir is sometimes impenetrable and creates extensive fuel ladders to the mid and upper canopy. Ponderosa pine, Jeffery pine, and western white pine make up a small percentage of the understory tree component. Unlike red and white fir, the pine species are shade intolerant and require large amounts of sun to thrive. Herbaceous vegetation such as thimbleberry, currant and grasses is scattered throughout the understory, but occurring mostly in small pockets/openings where limited light is available.

Mid-canopy trees consist mainly of white and red fir. These trees grow as individuals and thick clumps throughout the property. Ponderosa, Jeffery and western white pine make up a smaller component of the mid-canopy trees. This is the result of being outcompeted by the high percentage of shade-tolerant fir trees that have become established post fire suppression. Lodgepole pine is scattered throughout the property, primarily as individuals. However, lodgepole pine forms a dense stand on the southwest portion of the property. The lodgepole pine in the southwest portion of the property is beginning to encroach upon a fairly young quaking aspen stand. The aspen stand extends beyond the encroaching lodgepole pine but is in poor form and beginning to die out of the stand.

Most of the mid-canopy trees appear healthy. However, throughout the stand many of the trees, including clumps of trees, are suffering from extensive competition. The increased competition in the mid canopy trees is extensive, as the finite amount of growing space, nutrients, and especially water are utilized by each individual tree. This has resulted in a large number of dead and dying trees that are beginning to fall out of the stand. Signs of declining tree health include dead and dying tops, chlorotic (yellowing of needles), increased cone production, and reduced vertical growth. Scattered snags, as well as down trees, are visible throughout the property, leaving the forest prone to wildfire.

Ponderosa pine, Jeffery pine, red fir and white fir make up the overstory. The overstory consists of well-spaced scattered trees as well as dense groves of mature trees. Some of the larger trees have diameters over 70 inches DBH. Most of the overstory trees are heavily encroached upon by shade tolerant fir trees. Throughout the stand it is often difficult to see the bole of the larger trees due to the accumulation of understory and mid-canopy fir trees.

As with the mid-canopy trees, many of the overstory trees appear to be in good health. However, declining health is apparent throughout the stand, likely the result of encroaching and competing fir trees. This is evident by the large numbers of dead and dying trees. The signs of dead and dying trees are similar to those found in the mid-canopy. Large snags and down logs are scattered throughout the property. In addition, many trees have cat faces, healed over scars at the base of the tree, which can be vectors for insects or disease.

Wildfire and disease are the greatest risks to the current stand. Although there are abundant vigorous and healthy trees in all of the canopy layers, the overall health of the forest on this parcel is in a state of decline. The increased pressure for limited resources is causing stress throughout the stand. The current drought conditions and the threat of climate change are added components of this already stressed forest. As the trees continue to compete for limited resources they are at greater risk of the spread of insect and disease. Natural pathogens generally avoid healthy trees and select stressed hosts due to their lack of adequate defense mechanisms. For example, healthy and vigorous trees are often able to use defense mechanisms such as pitching out (releasing sap) to defend from bark beetles.

Dead, dying and down trees in all size classes and species type are observed throughout the stand. This has resulted in an unnatural accumulation of forest fuels. Without the cleansing mechanism of periodic low-moderate intensity fires, such as those that historically occurred here, fuels continue to accumulate throughout the forest. This increased fuel loading has been a problem throughout the country, certainly in the Sierra Nevada (and within the identified parcel). For example, researchers leading the Sierra Nevada Ecosystem Project (SNEP) found that “The increased density of young trees together with increased fuel from fire suppression and tree mortality has created conditions favorable to more intense and severe fires. Moreover, severe fires are more likely to be large because they are more difficult to suppress, although data on large fires in the Sierra indicate that current fire sizes vary greatly among national forests. While we cannot be sure whether more absolute area has burned in severe fires in the twentieth century than in the pre-contact times, it is clear that within those areas that do burn, a greater proportion of fire is high-severity than in the past.”⁽⁷⁾ If / when a fire starts, this statement could certainly be true for the property due to the current stand conditions described above.

Community Fire Safety – Community Protection

The proposed development is within the Wildland Urban Interface (WUI). The WUI is the area where wildland environments and communities converge. Wildland fire is a major concern within the WUI. Communities are often threatened or destroyed due to wildfire that burns adjacent to, or within WUI environments. Dr. Jack Cohen, researcher with the US Forest Service Rocky Mountain Research Station, developed the concept of the home ignition zone (H.I.Z) as a result of home losses due to wildfire in, or

adjacent to the WUI. The H.I.Z is the home and the immediate 100 – 200 feet surrounding the home. The H.I.Z is comprised of four distinctive zones detailed below. Dr. Cohen’s research revealed that approximately “eighty percent of homes with at least thirty feet of defensible space and a fire-resistant roof have survived wildfires. His research indicates that:

The potential for home ignitions during wildfires including those of high intensity principally depends on a home’s fuel characteristics and the heat sources within 100 to 200 feet adjacent to a home.... This relatively limited area that determines home ignition potential can be called the home ignition zone. During a wildland-urban fire a home ignites from two possible sources: directly from flames (radiation and convection heating) and/or from firebrands accumulating directly on the home. Even the large flames of high-intensity crown fires do not directly ignite homes at distances beyond 200 feet. Given that fires adjacent to a home do not ignite it, firebrands can only ignite a home through contact. Thus, the home ignition zone becomes the focus for activities to reduce potential wildland-urban fire destruction. This has implications for reducing home ignition potential before a wildfire as well as implications for emergency wildland-urban fire response strategy and tactics. ⁽⁵⁾

Implementing fire safety measures will help ensure the survivability of homes during a wildfire event. The general principle behind making an area fire safe is to reduce the amount of fuel and modify the arrangement of fuel. This principle can be met by following the fuels reduction / forest management prescription detailed below.

In addition to implementing the fuels reduction / forest management prescription, each home site must provide adequate defensible space. Defensible space is defined by the US Forest Service as “an area either natural or manmade where material capable of causing a fire to spread has been treated, cleared, reduced, or changed to act as a barrier between advancing wildland fire and the loss of life, property, or resources. ⁽⁹⁾ The California Department of Forestry and Fire Protection (CalFire) requires defensible space around homes is a minimum of one hundred (100) feet around structures or to the property line (see below). Assuming modern building practices for California, and providing that defensible space is created and maintained, a home should be able to survive a wildfire without the aid of firefighting resources.

Defensible Space in the Home Ignition Zone

As previously mentioned, the H.I.Z includes four distinct zones. These zones include the *Fire Free Zone*, *Structural Protection Zone*, *Defensible Space Zone*, and *Wildland Fuel Reduction Zone*. Each zone represents a different set of fuel reduction goals. These goals range from eliminating the spread of all fire, to increasing forest health and fire resiliency surrounding a community. Goals for each zone can be met through proper fuels reduction and maintenance as described below.

Each of the four zones will be represented in the Alpine Sierra Subdivision (see Fire Protection Vegetation Management Exhibit). Please note that the exhibit is prepared for Alternative B only: however, the Proponents Proposed Project would not be substantively different as spatial extent of the development is similar. Implementation and maintenance of fuels reduction activities within each zone will be the responsibility of the H.O.A. Initial fuels reduction activities in each zone will be concurrent with the development of the site. Maintenance of fuels reduction work will occur as needed to meet the goals of each zone. The need for maintaining each zone within the development should be reviewed annually.

Fire-Free Zone is a house or structure and five feet beyond. ⁽⁵⁾ The goal of this zone is to eliminate the spread of all fire. This zone is immediately adjacent to a home or structure and should be constructed of non-flammable material. Non-flammable material includes, but is not limited to bare mineral soil, concrete, and gravel. Defensible space practices within this zone include:

- Removal of all flammable material from the area. Flammable material includes, but is not limited to; wood piles, pine needles, and mulch - anything that can carry a ground fire to a house.
- Irrigated plants, so long as they are well watered and not touching the house, can be located within this area.

Structural Protection Zone, combined with the Fire-Free Zone, will make up approximately 24 acres of Alpine Sierra Subdivision. This zone extends from the Fire-Free Zone out to thirty feet. ⁽⁵⁾ This zone is often referred to as the “lean and green” zone. The primary goal of this zone is to create and maintain, through fuels reduction and fire safe landscaping, an environment that minimizes the rate of spread and intensity of any fire. This zone provides a sufficient safety area for fire suppression personnel and resources during a wildfire. In addition, this zone provides a space where flammable material will not threaten a house. Fuels reduction practices within this zone include:

- Vegetative material should be well spaced (crowns should not be touching) and in a healthy condition.
- Remove limbs that overhang structures.
- Reduce vertical and horizontal continuity of trees and shrubs.
- Vegetative fuels should be pruned and kept free of accumulations of dead material.
- Reduce surface and ladder fuels (prune trees approximately 6-10 feet high, or 50% of the live crown for shorter trees (12’ – 20’ trees)).
- Select leave trees as described below.
- Shrubs should be low growing and free of dead materials.
- Thin shrubs so that spacing is approximately 3 times the height of residual shrubs.

Defensible Space Zone will make up approximately 12 acres of Alpine Sierra Subdivision. This zone extends from the Structural Protection Zone out to a distance of one hundred feet or more, or to the property line, whichever is greater. ⁽⁵⁾ The primary goal of this zone is to eliminate crown fire potential and reduce fire intensities to protect habitable structures and critical infrastructure. This goal will be met through a combination of deliberate (site specific) thinning and fuels reduction within this zone. Thinning and fuel reduction practices (guidelines) are similar to those recommended in the *fuels reduction / forest management section* below. However, further reduction of fuels is required to protect structures and eliminate/minimize crown fire potential. Additional practices in this zone include, but are not limited to:

- Reducing surface and ladder fuels up to 90%.
- Removing logs and stumps, unless embedded in the forest floor (remove vegetation and timber litter from around logs and stumps that remain on site).
- Pruning, as previously mentioned, lower branches of leave trees.
- Thinning to enhance the growth of leave trees and to increase species diversity.
- Select leave trees as described below

Wildland Fuel-Reduction Zone will be located on approximately 9 acres of Alpine Sierra Subdivision. This is the last zone, extending from the Defensible Space Zone out an *additional* one hundred to two hundred feet or even much further. ⁽⁵⁾ Within this zone forest health treatments, coupled with fuels reduction should be implemented to enhance and restore the overall ecosystem health and resiliency to fire. Practices such as those described in the *fuels reduction / forest management section* below can be used to meet the goals within the Wildland Fuel-Reduction Zone.

Fuels Reduction / Forest Management

In an effort to modify fire behavior and reduce the potential for high intensity fires, certain fuel reduction activities can be implemented on the landscape. Fuel reduction activities can help increase fire safety and provide areas of safety during fire suppression efforts. In addition, fuels reduction can enhance the

process of restoring ecosystem health and resiliency. When engaging in any restoration activity it is important to take careful actions to ensure a positive outcome (see appendix 2 - *Conservation Principles for Community Wildfire Protection in California's Sierra Nevada*). In addition, it is also very important to seek the guidance of an RPF when implementing a fuels reduction / forest management prescription.

Fuels reduction activities should be focused on several important goals including but not limited to; reducing wildfire threat, making fire-suppression efforts safer and more effective, and improving ecosystem health. These goals can be met by implementing a variety of fuels reduction activities such as thinning, pruning, burning, and more. Due to the symbiotic relationships found throughout this ecosystem, many of the recommendations will address multiple goals. For example, thinning of small diameter trees will help reduce wildfire threat and reduce competition, resulting in increased forest health and safer and more effective firefighting condition. Managing forest for fuels reduction, habitat diversity, and long-term health requires the judgment and consultation of a Registered Professional Forester. The following are recommended steps required to achieve these fuel reduction goals.

Thin trees and shrubs utilizing *variable-density thinning* throughout the stand. Variable-density thinning is sometimes referred to as a ‘skips and gaps’ approach. In such a prescription, some portions of a stand are left lightly or completely unthinned (‘skips’), providing areas with high stem density, heavy shade and freedom from disturbance, while other parts of the stand are heavily harvested (‘gaps’), including removal of some dominant trees, providing more light for subdominant trees and understory plants. ⁽⁸⁾ Intermediate levels of thinning are also applied in a typical variable-density prescription.” For example, leave small areas of dense vegetation while creating and or maintaining openings where increased sunlight can reach the ground. Focus thinning on small diameter (generally 10 inch DBH or less) suppressed and/or dead trees, shrubs, and limbs while maintaining wildlife structures. However, retain a wide variety of age, size, and decay classes, including dead and dying vegetation consistent with fuels reduction goals. Leave trees *shall generally* be those of tallest height, largest crown, straightest bole, and greatest vigor that are free of damage due to insects, disease, physical and mechanical causes. Selection criteria for leave trees:

- Select trees that are free from disease and damage.
- Select trees which have a 30%+ live vigorous crown.
- Select trees with the desired species mixture composition provided it is at least 2/3 the height of codominant* trees and meets other selection criteria, such as free from disease and good form.
- Select taller trees with good form (e.g. no two way sweep, no spiral grain, etc.) while maintaining species distribution. However, maintain at least 10% of existing deformed trees (e.g. pistol butts, forked tops, dead tops, etc.) for genetic diversity and wildlife. ⁽⁵⁾
- Select healthy and vigorous trees (tree health and vigor should be assessed by an RPF or certified arborist)
- Species selection for leave trees is not determined by specific percentages by species, rather the overall health of leave trees. When selecting “leave trees” the preference is as follows: Please note that these leave tree specifications are in place to increase forest health and habitat diversity, but that situations may arise that would change leave tree selection order. For example, do not select an unhealthy Western white pine over a healthy Jeffery pine.
 - Quaking aspen
 - Willow and other hardwoods
 - Western white pine
 - Jeffery pine
 - Ponderosa pine
 - Lodge pole pine
 - Red fir

- White fir
- Release quaking aspen stands by removing competing vegetation. Remove most of the encroaching fir and lodge pole pine trees where aspen is being shaded out.
- Thin leave trees to spacing of approximately 15 feet as measured by the crown.
- Drip line thin around leave trees (clearing of ladder fuels under the drip-line circumference of a leave tree).
- Retain meadow and rock outcrop openings by cutting encroaching conifers and shrubs from openings and edges. Thin trees and shrubs more heavily along meadow edges to minimize wildfire risk and increase size and variability.
- Reduce ladder fuels by thinning (pruning) lower branches of leave trees. This practice can be completed on up to 90% of the leave trees.
- Retain a wide variety of age, size, and decay classes, including dead and dying vegetation, consistent with fuel reduction goals.
- Reduce 40%-60% of fuels on the forest floor, while leaving several large logs per acre to retain moisture and provide wildlife habitat.

*Codominant Trees – Trees with crowns forming the general level of the forest canopy and receiving full light from above, but comparatively little light from the sides. Codominant trees usually have medium sized crowns, but are crowded on the sides.

Slash Treatment

Accumulated slash from restoration treatments will be abundant. Treating this slash (fuel) is important in order to reduce the threat of fire. Burning (hand pile, swamper) and chipping are generally utilized to discard fuels created during projects.

Hand pile burning is the act of gathering slash into piles by hand and then burning the pile. ⁽⁵⁾ Piles are generally about 5 feet high by 5 feet wide. Piles should be placed at least 10 feet away from leave trees, old stumps, and fallen logs. Piles are generally burned in the fall or winter during or following rain/snow. All burning will be accomplished through appropriate Air Quality Management District and Cal Fire permits.

Swamper burning is a method of prescribed fire where fuel is added gradually and continually to a burning pile over the course of a day. ⁽⁵⁾ Like hand pile burning, burn piles should be placed at least 10 feet from leave trees. Burning generally takes place in the fall or winter during or following rain/snow.

Chipping of slash is also an alternative, although access often limits its application on the landscape. During chipping operations slash is fed manually into a mechanized chipper and either scattered onto the forest floor or into a truck and transported to a desired location.

Regardless of what methods are used for slash treatment, it is important that a portion of the cut material be left on site (lopped and scattered) to increase soil productivity and stability.

Hazard Trees

Hazard trees refer to trees that have the potential to cause death, injury or property damage if they fail. In general, hazard trees include dead or dying trees, damaged trees, unstable trees (live or dead), and trees with defect that can cause them to fail. The threat and priority of hazard trees increases with increased human occupation. The US Forest Service has designated several zones that prioritize the risk of hazard trees. These zones include: “*The High Risk Zone*, which includes high use areas with many people, parked

vehicles and permanent structures. This zone is the highest priority for regular inspection and treatment. *The Medium Risk Zone*, which includes areas with intermittent use by people and moving vehicles. The priority for inspections in this zone is based on amount and type of use. *The Low Risk Zone*, which includes areas lacking vehicles or structures with low visitor use. Regular inspections and treatments in this zone have low priority.”⁽¹⁰⁾

As previously mentioned, the forest on the property is being impacted by stress and competition for resources. This has resulted in a significant amount of dead and dying trees. As a result, hazard trees are scattered throughout the property. Many of these trees are large diameter white and red fir that will pose a significant threat (high risk zone) when the property is developed. All trees that pose a risk to life and property should be assessed by qualified personal such as certified arborists or Registered Professional Foresters. All identified hazard trees that pose a significant risk to life and property should be removed prior to development. In addition, annual hazard tree assessments by qualified personal should be completed in “high risk zones” following the development of the site.

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Appendix

1.

Fuel: Description of Fuel through Fuel Models

“A fuel model is a standardized description of fuels available to a fire based on the amount, distribution, and continuity of vegetation and wood. Fuel models distinguish between vegetation such as tall and short chaparral, tall and short grass, timber with and without an understory, and oak woodland with and without understory vegetation. They describe the structure (or arrangement) of the vegetation primarily, as well as the kinds of plants that grow in the vegetation. Foresters and Fire managers use fuel models within the Fire Behavior Prediction System (FBPS) called FBPS #1, 4, 8, 9, and 10, etc. Fire behavior prediction models are useful because they forecast how fast a fire will spread, or how damaging the fire might

become (in terms of fire intensity), or whether it is likely to torch in the area. Information regarding fuel volumes and fire behavior descriptions is available from the publication *How to Predict the Spread and Intensity of Forest and Range Fires* (Rothermel, Richard C. (1983). General Technical Report INT-143, published by the USDA Forest Service Intermountain Forest and Range Experiment Station.)

Fuel models describe vegetation structure, in addition to typical species composition; structure largely determines the fuel that will actually support the fire. The understory is more important than the overstory. The most significant factor is the amount and distribution of smaller-diameter fuels, because these materials generally spread wildland fires. Another important factor in fuel models is the amount of dead biomass and the ratio of live-to-dead material in terrain with significant brush and numerous tree stands; dead biomass contributes fine fuel litter as well as carries flames more readily”⁽⁵⁾

Fire behavior within fuel model 10 is often very intense due to large amounts of available fuel on the forest floor. Dead fuel loading within fuel model 10 generally consists of approximately 3 tons/acre of 1 hr. fuel (< ¼ inch diameter), 2 tons/acre of 10 hr. fuel (1/4 – 1 inch diameter), and 5 tons/acre of 100 hr. fuel (1-3 inch diameter). In addition, available live fuels can be over 2 tons per acre. Surface fuels generally carry high intensity surface fires that are hard to control. High intensity crown fire and associated spot fires (spot fires are fires that start when lofted burning embers land on dry material and start a new fire) are often associated with fuel model 10 due to the significant amounts of surface and ladder fuels that carry fire to the forest canopy.

2.

Conservation Principles for Community Wildfire Protection in California’s Sierra Nevada

“Fire always has been and always will be an ecological force in the Sierra Nevada. Decades of fire suppression have changed this role, allowing stands to thicken and fuels to accumulate, especially in the foothills and lower montane¹ zone, where developments are increasing. We either manage fire and live with fire on our terms or let fire dictate the terms. The choice is ours.”

— Jan W. van Wagtenonk, *Wildfire* (2006)

Most Sierra Nevada residents choose to live here because of the natural beauty. What many of us don’t realize is that living within these forests and *wildlands*² carries a responsibility. We need to be good stewards of the land, learning to live in balance with the natural world, of which fire is a significant part. This document summarizes what residents can do to coexist with fire in the Sierra. It will show you how to provide a positive balance among *fire prevention*,³ conservation, and wildlife protection at your Sierra Nevada home. You’ve chosen to live here, and with your choice comes a stewardship responsibility.

For more information on fire safety in general, please contact your local Fire Safe Council, or go to

www.fire.ca.gov/education_homeowner.php
www.firesafecouncil.org/homeowner/index.cfm
firewise.org/resources/homeowner.htm

Some Basic Concepts to Remember for Living with Fire in the Sierra Nevada

¹ Montane: A mountainous region of moist cool upland slopes that occurs below the tree line and is predominantly composed of evergreen trees. It is also described as the lower vegetation belt on mountains that is composed of montane plants and animals.

² Wildlands: An area of land that is uncultivated and relatively free of human interference. Plants and animals exist in a natural state, thus wildlands help to maintain biodiversity and to preserve other natural values.

³ Fire Prevention: Actions taken by homeowners and community members to lessen wildfires and damage caused by wildfires. Includes education, enforcement, and land management practices.

◦ **Fire is a dynamic element of the Sierra.** Your property has likely burned before and will burn again. The landscape where you live today may seem “natural.” In fact, it has changed drastically over the last 150 years as we have attempted to manage fire. In preparing your property for fire, you can help restore it to a more ecologically appropriate state. In doing so, you will learn how to be prepared for wildfire—it is not only possible, it’s smart. While it is rarely practical to completely “fire proof” your property, there are many steps you can take to survive inevitable wildfire. *For more information see http://www.fire.ca.gov/education_content/downloads/live_w_fire.pdf.*

◦ **One size does not fit all in terms of homeowner fire safety.** Every place is unique. Work with your local *Fire Safe Council*,⁴ fire department, Cooperative *Extension Agent*,⁵ *Registered Professional Forester*,⁶ and/or contractors to design the appropriate *fire-safe practices*⁷ and *defensible space*⁸ for your property. See www.fire.ca.gov/education_100foot.php and www.firesafecouncil.org/homeowner/index.cfm for more information.

◦ **Your home exists within a larger watershed.**⁸ It is located in the midst of a much larger landscape. Think about where your property is on the *slope*.⁹ Are you on top of a ridge, where fire will easily burn toward your home? Is your slope steep or gentle? Fire moves quickly up steeper slopes, which means that you may need to treat a larger area to create your defensible space. What is below and above you? What direction, or “*aspect*,”¹⁰ does your property face? Generally, south-facing properties are hotter and drier; they can therefore be more susceptible to fire. Are there any natural *firebreaks*¹¹ around you such as streams, rivers, or rocky outcrops where a fire might naturally go out? Do wildlife use or move through your property to get to food, shelter, or water? In what watershed are you located? Do the roads in and out of your property follow ridges or rivers? Look beyond your property lines to understand the ecological

⁴ Fire Safe Council: Public and private organizations that comprise a council intended to minimize the potential for wildfire damage to communities and homeowners, while also protecting the health of natural resources. Goals are achieved by distributing fire prevention materials, organizing fire safety programs, implementing fuel reduction projects, and more.

⁵ Extension Agent: An employee from the government or a university who provides information to rural communities about agriculture, land management and/or resource management. In California, the University of California Cooperative Extension (UCCE) provides this service. For more information on UCCE, see: <http://ucanr.org/>.

⁶ Registered Professional Forester (RPF): A person licensed in California to manage state or private forestlands and advise landowners on management of their forests. For more information, see: www.bof.fire.ca.gov/licensing/licensing_current_docs.aspx.

⁷ Fire Safe Practices: Activities such as creating defensible space, firebreaks, access to your home, fire-resistant landscapes, changes to your home in terms of material and design, etc., that make your home/property safer in wildfire situations. ⁸ Defensible Space: An area around a home/structure that has been cleared of flammable materials to act as a barrier between wildfires and property, thereby decreasing the risk of damage or loss. This space is now defined as 100 feet around a structure in California.

⁸ Watershed: All of the land that drains water runoff into a specific body of water. Watersheds may be referred to as drainage areas or drainage basins. Ridges of higher elevation usually form the boundaries between watersheds by directing the water to one side of the ridge or the other. The water then flows to the low point of the watershed.

⁹ Slope: A percentage or degree change in elevation over a defined distance that measures the steepness of a landscape.

¹⁰ Aspect: The direction that a slope faces—north, south, east, west, etc.

¹¹ Firebreak: A strip of land that has been cleared of vegetation to help slow or stop the spread of wildfire. It may be a road, trail, or path cleared of vegetation or other burnable materials. A firebreak could also be a stream.

perspective of your place. See www.audubon.org/bird/at_home/Explore.html for more information.

° **Fire can behave both predictably and unpredictably.** We can generally predict fire direction and behavior; it will go the way the wind is blowing and burn as much *fuel*¹² as is available. Predicting the exact time and place where fire will burn is less obvious. As fire moves across the landscape it can climb up into your trees. A key fire safety objective is to prevent that spread. Dead leaves and branches on the ground (*surface fuels*¹³) act as a *wick*¹⁴ to move fire horizontally across the land. Shrubs, small trees, and live branches (*ladder fuels*¹⁵) can carry fire vertically into the larger trees. Too much of these surface and ladder fuels can cause the *overstory*¹⁶ trees to burn up in what is called a “crown fire”—when fire spreads from tree to tree in the forest canopy (or tree tops). One of the main principles in creating defensible space and reducing hazardous fuel conditions is to create physical space between vegetation layers (both vertically and horizontally) so a fire cannot climb easily from the ground into the trees or to your home.

° **Timing is everything.** There are appropriate times for different actions on your property, much as there are different seasons of work in your garden. Do your defensible space and fuel reduction work well before fire season, to avoid having sparks from equipment start fires in dry vegetation. Avoid *grounddisturbing*¹⁷ activities in your forest or wildland when the ground is too wet or when birds and animals are nesting. Don’t try to do everything at once—think about your fire safety seasonally: plan your activities in the winter and spring; start clearing when the ground begins to dry (when it’s not *saturated*¹⁸) or when there is snow on the ground; finish treatments by early summer before the vegetation is dry; do your defensible space maintenance around and inside your home in the fall; and burn your piles after the rains begin in the winter.

° **Your house is likely a fuel source.** Many Sierra homes are located in places where a fire can start and spread into surrounding vegetation. The more you prepare your house and other structures, the less you will have to treat the surrounding vegetation. The biggest improvement you can make to reduce your fire risk is to build or remodel your house to resist the millions of tiny *embers*¹⁹ created by *ember-attack*²⁰ from wildfires. When wildfires burn in extreme

¹² Fuel: All burnable materials including but not limited to living or dead vegetation, structures, and chemicals that feed a fire.

¹³ Surface Fuels: Materials on the ground like needles or low-growing shrubs that provide the fuel for fires to spread on the ground. Surface fuels are generally considered all fuels within six feet of the ground.

¹⁴ Wick: A combustible material that allows fire to travel along a confined path to larger fuel sources. An example would be a wooden fence connected to your home.

¹⁵ Ladder Fuels: Materials such as shrubs or small trees connecting the ground to the tree canopy or uppermost vegetation layer. In forests, this allows fire to climb upward into trees.

¹⁶ Overstory: The topmost trees in a forest which compose the upper canopy layer; compared to the understory, which is the lower woody or herbaceous layer underneath treetops.

¹⁷ Ground-Disturbing Activities: Actions that interrupt the natural condition of the ground, such as digging and compaction from heavy equipment.

¹⁸ Saturated: The broad meaning is “full.” Saturated soil refers to the point at which the soil is so full of water that no more water can get into (be absorbed by) the soil, and therefore must run off.

¹⁹ Embers: Small glowing or smoldering pieces of wood or other organic debris, often airborne in a fire.

conditions they send burning firebrands (embers) ahead of them; these firebrands ignite new fires. Using *fire-resistant building materials*²¹ and appropriately designed structures will give you the best chance to survive wildfire. Don't let your home be part of the problem. An interactive source of information to reduce homeowner risk in the wildland-urban interface is provided by the University of California Center for Fire Research and Outreach; it's called the Fire Information Engine Toolkit. See firecenter.berkeley.edu/toolkit/homeowners.html for details on how this web-based program can help you make better decisions to reduce your fire risk.

- **Know your legal obligations.** Learn the legal requirements regarding defensible space and fire-safe building and construction. Discover how to balance these with the ecological needs of your place.

- **Firefighters need your help to protect your home.** Make it safe for them and their equipment to get to and from your house. Be sure they can find you with visible road and address signs. Remember that firesafe landscaping and construction greatly improves firefighters' ability to protect your home. See *principle 4C below*, and www.livingwithfire.info/beforethefire/accesszone/index.php for more information.

Conservation Principles

Consider the Conservation Principles below in how you approach your fire safety and defensible space. It's all about balance. It is possible to have an aesthetically pleasing landscape that is fire-safe, supports local plant and animal species, and still provides you with privacy and plantings.

Remember the Vegetation (Native Trees and Other Plants)

a. Discover and monitor your forest and vegetation's dynamic changes.

Plan for the future of your forest. Because you are the conservation steward of your land, your work in the forest will be ongoing. Watch the wild areas on your property and learn from them as they grow and change with your stewardship. Think both in the short term (what will happen this year) and the long term (what will happen over time). Document those changes as the years go by; keep notes and records. Learn how to *monitor*²² the ecological changes on your property and use that information for *adaptive management*²³ of your wildlands. To live with wildfire we need to take the responsibility to manage, adapt, and guide the vegetation around our homes. *For more information see www.dnr.state.mi.us/publications/pdfs/huntingwildlifehabitat/Landowners_Guide/Habitat_Management/Evaluating_Land.htm.*

b. Act conservatively.

²⁰ Ember Attack: Embers blown by the wind during a firestorm that accumulate at intersections between horizontal and vertical members on the outside of your house, igniting debris and combustible materials. Embers can also enter into openings (e.g., attic vents and other wall openings), igniting debris on the inside of your home.

²¹ Fire-Resistant Building Materials: Materials used in the construction of a house that are resistant to ignition when exposed to radiant heat or flames. Examples include clay tile roofs, metal roofs, and stucco siding.

²² Monitor: To watch, keep track of, or check regularly for changes—in this case, to the environment.

²³ Adaptive Management: An approach to managing the environment/property that is based on a “learn by doing” technique that adjusts to changing conditions. Adjustments in management change over time as new information is learned.

We are manually recreating a more *fire-resilient landscape*.²⁴ In doing this, we need to apply the general concepts of the *precautionary principle*²⁵ while implementing *fuel treatments*²⁶: you can always remove more trees and vegetation at a later time, but you cannot immediately replace what you have cut. The vegetation you leave is ultimately most important. Be sure that what you remove is done with careful planning and consideration to ensure that what you leave standing is healthy and *resilient*.²⁷

Protect native species that share your home.

Look at the native vegetation around your property—or ask a local plant or forestry specialist for help—to see what different plants share your home. There may be plants that are rare. If so, protect them by providing defensible space (while keeping in mind their needs, such as shade). Find out if those plants exist in other areas within your watershed and how they are being managed there. Watch for *invasive weeds*.²⁸ Follow vegetation treatments with invasive weed removal. Minimize the introduction of exotic plant species near your home, especially those that can spread into adjacent wildland areas. Invasive species can change your fire hazard very quickly and be difficult to manage.

Avoid unnecessarily introducing water into your landscape, as water will generally help non-native plants out-compete native plants. See www.cnps.org/activities/natives.htm, www.cal-ipc.org, and www.ipm.ucdavis.edu/PMG/weeds_common.html for more information.

c. Keep the oldest and biggest trees.

Generally, most of the oldest trees in the forest are no longer present. If you have old or very large trees, create defensible space around them so they will survive wildfire. This may include raking away thick *duff*²⁹ at the base of the trees. Notice that these trees often have thick bark so they are generally fire-resistant (they have evolved with fire). Think about their protection in terms of building a fire in your woodstove: A big log won't start burning without a lot of smaller kindling (e.g. small trees, shrubs, branches, etc.). In your forest, make sure that the smaller kindling isn't around the bottom of your big trees, and generally the trees will make it through a wildfire on their own. In some cases, you'll need to remove smaller trees that touch the crown of the tallest trees. At the same time, you don't want to remove all of the small trees in your forest. Small trees are the next generation of large trees.

²⁴ Fire-Resilient Landscape: A natural landscape featuring plants that have adapted to local wildfire conditions, or a domestic outdoor space where appropriate actions have been taken to make it less vulnerable to wildfire and certainly less prone to causing one.

²⁵ Precautionary Principle: A concept that promotes a cautious approach to development and managing the environment when information is uncertain or unreliable. Erring on the side of caution and conservation is encouraged, along with a “Better safe than sorry” attitude.

²⁶ Fuel Treatment: The act of removing burnable materials to lower the risk of fires igniting and to lessen the likelihood of damage to property and communities. Treatments may include creating a defensible space, developing fuelbreaks, initiating prescribed burns, and thinning vegetation.

²⁷ Resilient, Resiliency: The ability of an ecosystem to return to its balanced state after a disturbance.

²⁸ Invasive Weeds: Undesirable plants that are not native and have been introduced to an area by humans. These plants generally have no natural enemies and are able to spread rapidly throughout the new location. Some examples include Himalayan Blackberries, English Ivy, and Scotch Broom.

²⁹ Duff: A layer on the forest floor that is made up of decomposing organic matter such as leaves, needles, and small branches.

Keep enough *regeneration*,³⁰ possibly in small patches, to provide for the future forest, while still providing adequate space between all the trees you keep standing. An additional benefit of keeping your biggest trees is that they can break up the wind as it's moving through, which can slow down fire spread.

Remember the Wildlife

a. Provide local wildlife a place to live.

Become familiar with the animals that share your property. Talk to local wildlife experts and/or bird watchers. Learn what wildlife need in terms of shelter, food, water, and reproduction. Remember that your property is their home too. Find ways to balance your land management activities with their needs, and leave some areas *untreated*³² for the birds and wildlife using them. Protect them as you would your home by creating defensible space while still considering their needs for *cover*.³¹

b. Provide access to food and water.

Protect and retain trees with nests and cavities, or where obvious wildlife feeding or nesting activities are occurring. Leave some plants that have berries or other fruit or *mast*³² used by wildlife. Act especially carefully and leave cover around streams, *seeps*,³³ or other wet areas to keep those areas cool and wet; this will provide wildlife the protective cover they need when they are using those places or moving to and from them. Make sure all natural water supplies are clean by keeping any poisons and *sediment*³⁴ away from any water that could drain into them.

c. Protect future generations of wildlife.

Find out when local species are nesting and/or breeding and avoid working in and around your wildlands during those times. Learn what kind of habitat local species might use for nesting and breeding, and be sure to protect those areas during your management activities.

d. Value the standing dead trees.

Standing dead trees—or *snags*³⁷—are especially important for wildlife. They provide both shelter and food to many birds and other animals. However, they can also be a wildfire hazard if they are near enough to fall on your home or fall and block an evacuation road during a fire. Balance the needs of wildlife with your need for fire safety. Think about your

³⁰ Regeneration: The renewal of trees or forests by planting seedlings, or the direct seeding by humans, wind, birds, or animals after large disturbances like fire. “Regeneration” also refers to the young trees that were naturally seeded or planted. ³² Untreated: Not altered from a natural or original state; e.g. no fuel reduction or defensible space activities.

³¹ Cover: Any plants or organic matter that holds soil in place or grows over and creates shade that provides wildlife with an area to reproduce and find protection from predators and weather.

³² Mast: Nuts or fruits of trees and shrubs such as acorns, walnuts, or berries that collect on the forest floor and are a food source for animals.

³³ Seep: An area where water rises from an underground source to the surface and creates a wet area.

³⁴ Sediment: Particles of topsoil, sand, and minerals that come from soil erosion or decomposing plants and animals. Wind, water, and ice carry these particles; when the sediment collects in waterways it can destroy fish and wildlife habitat. ³⁷ Snag: A standing dead tree that has usually lost most of its branches. Snags offer essential food and cover for a host of wildlife species.

home within the landscape; if you've got snags in the area, you don't need them next to the house.

e. Conserve rare and endangered species.

One of the bonuses—and responsibilities—of living in the Sierra is living with the many rare and endangered species with which you share habitat. Find out if there are rare or endangered species in your area by talking to your local Cooperative Extension Agent or Forest Service wildlife biologist. Plan your fuel reduction actions around the needs of these species. Often by a fairly minor refinement of your activities, such as timing, technique, or extent, you can protect species while realizing your fuel reduction goals. *For more information, see www.dfg.ca.gov/hcpb/species/t_e_spp/tespp.shtm, www.dfg.ca.gov/habitats/wdp/region-sierra_nevada-cascades/overview.html.*

3. Remember the Soil

a. Maintain the life in your soil.

There is as much or more activity below the ground on your property as there is above the ground. Keep this in mind in terms of what you do above ground. Talk to your Cooperative Extension Agent or local gardeners to find out what *soil types*³⁵ are on your property. Some soil types can tolerate much more *disturbance*³⁶ than others. Minimize activities that could *compact*,³⁷ flood, or poison your soil. The health of your land is directly dependent on the health of your soil. As such, the soil is one of the most valuable assets of your property.

b. Ensure that your soil cover is fire safe.

Replace cover that burns easily (such as dry or dead vegetation) with cover that is less *flammable*³⁸ (e.g. gravel, fleshy green plants, etc.). The objective is to ensure that if and when a fire comes through, it is not so hot that it kills the life in your soil. Rather, it should move through without a lot of fuel to consume in its path. For example, a very light layer of pine needles can help with soil erosion (*see below*), but too much can be a fuel problem.

c. Minimize erosion.

Protect your soil by keeping it covered. Cover helps to prevent *erosion*,³⁹ especially on ground that is not flat; it keeps the soil in place. Don't let soil move across your property, most importantly not into streams or other natural water sources. Keep ground-disturbing activities away from *unstable*⁴⁰ areas and *riparian*⁴¹ areas. Pay special attention on steep

³⁵ Soil Type: Refers to the different combinations of soil particles and soil composition. Soil can vary greatly within short distances.

³⁶ Disturbance: Various activities that disrupt the normal state of the soil such as digging, erosion, compaction by heavy equipment, etc.

³⁷ Compact: To pack closely or tightly together, as in the fragments of soil being compacted from heavy equipment, thereby limiting the ability of oxygen or water to pass freely.

³⁸ Flammable: A quality of a substance that makes it likely to catch fire, be easily ignited, burn quickly and/or have a fast rate of spreading flames.

³⁹ Erosion: The removal of soil over time by weather, wind and/or water such as rain or water runoff from roads.

⁴⁰ Unstable: Land that is lacking stability, or liable to change with activity, such as in the case of step slopes or crumbly soils.

⁴¹ Riparian: A strip of land along the bank of a natural freshwater stream, river, creek, or lake that provides vast diversity and productivity of plants and animals.

slopes. The steeper the slope, the faster the soil can move downhill if it's disturbed, and the faster a fire can climb uphill under the right (or wrong!) conditions

d. Protect your soil after a fire.

Soil can be most fragile after a wildfire. This is often exacerbated when winter rains come soon after a fire. The potential for erosion and loss of soil is huge with this combination of conditions. If you have experienced fire on your property, get cover onto your soil as soon as you can to prevent erosion. Remember, your soil is alive, so help it grow. *See www.ext.colostate.edu/PUBS/NATRES/06308.html for more information.*

4. Remember the People

a. Plan your actions with your neighbors.

Talk to your neighbors. Find out what they are doing on their land. Find ways to cooperate in your land management actions. Your defensible space will likely impact your neighbor's chances of surviving a wildfire and vice-versa. Talk about what to do in an emergency and how to most safely evacuate. Find out if there is a Fire Safe Council (FSC) in your community, and if so, get involved. Help make your community a Firewise community. Coordinated work amongst neighbors will have a greater impact on your individual fire safety. *For more information, see www.firesafecouncil.org, and www.firewise.org.*

b. Find experienced workers and treat them well.

Forestry workers with chainsaws in hand are the actual decision-makers as to what stays or goes— what lives or dies—in your forest. If your objective is to reduce fuels while still maintaining ecological integrity and diversity on a site, your workers must have the knowledge and experience to help you achieve this. Involve the workforce in the design, planning, and monitoring of projects. Talk to your local FSC or neighbors and check references to find reputable contractors. Pay workers well and maybe even bring them chocolate chip cookies; this will achieve better ecological outcomes on the ground. Happy, respected people do the best work

c. Work with your local fire department.

Talk to your local firefighters. Find out what they need to safely get to your house and back out. Make sure that your *access roads*⁴² are safe; maintain your fuel treatments along all roads, both for firefighter safety in protecting your home and your safety in case of evacuation. Let firefighters know where you live and what's on your property; invite them out to see it. Have street and address signs visible so out-of-town firefighters can find you if there is a big fire. Make sure you have a water supply they can find and use. Know where and how to turn off any fuel sources such as natural gas or propane.

These Principles were developed by the following Steering Committee members between September 2006 and June 2007 for the Sierra Nevada Community Conservation and Wildfire Protection Plan Guidebook:

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- Marko Bey, Lomakatsi Restoration Project
- Louis Blumberg, California Forest Initiative Director, The Nature Conservancy
- Susan Britting, PhD
- Kate Dargan, State Fire Marshal, CA Dept. of Forestry and Fire Protection (CAL FIRE)

⁴² Access Roads: Roads that allow entrance into and out of a property.

- Rich Fairbanks, Forest and Fire Program Associate, The Wilderness Society
- Tracy Katelman, ForEverGreen Forestry
- Paul Mason, Legislative Representative, Sierra Club California
- Wayne Mitchell, Asst. Deputy Director, Fire Prevention and Planning, CAL FIRE
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- Craig Thomas, Director, Sierra Forest Legacy
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PLACER OPERATIONAL AREA
EAST SIDE
EMERGENCY EVACUATION PLAN

1. GENERAL

This is a plan for conduct of a physical evacuation of one or more communities in the unincorporated Placer County area on the eastern side of the County that is necessitated by a larger incident, most probably a forest fire or flood. For the purposes of this plan, the “eastern side” comprises all of Placer County from just west of Cisco Grove to the Nevada State line not including the areas within the Tahoe National Forest and the Lake Tahoe Basin Management Unit. The dense forests, rugged terrain, and the scarcity of roads in the area – problems that present difficulties for first responders and residents/transients alike - complicate any evacuation.

Whereas the potential exists for severe winter storms, mass casualty incidents or floods on the eastern side, forest fire remains the greatest single threat to communities. For all but the wettest of months, homes and businesses in wildland-urban interface areas are particularly susceptible to fire damage and destruction. During fire season, the combination of dense forests, heavy fuel loads, low humidity, potential for high winds and the steep terrain in the Sierra Nevadas can rapidly turn even small fires into lethal, major disasters. Despite a record of very successful evacuations in the past, the limited number of roads in the area always makes evacuations problematic. The need to quickly execute a rapid evacuation of residents, businesses, transients, and even pets, requires detailed planning, de-confliction of response actions, and cooperation between first responders and supporting agencies alike.

Therefore, in order to meet this planning challenge, the Placer County Sheriff’s Office (PCSO), Nevada County Sheriff’s Office (NCSO), Town of Truckee, the five eastern Fire Protection Districts/Departments, California Highway Patrol (CHP), USDA Forest Service (USFS), American Red cross (ARC), Placer County Office of Emergency Services (PCOES), Nevada County Office of Emergency Services (NCOES) and other state and federal contributing agencies developed this plan to help increase preparedness, and facilitate the efficient and rapid evacuation of threatened communities in the far eastern end of the County. While focusing on fire-induced evacuations, the plan remains applicable to all evacuations in general.

2. PURPOSE

This plan prescribes specific responsibilities for first responders, County staff and other state, federal and non-profit contributing agencies for conducting an emergency evacuation of one or more communities as part of a larger natural disaster or human-caused incident on the east side of Placer County.

3. ASSUMPTIONS

- a. An evacuation order is given coincident with first response/initial attack.
- b. Evacuation of the entire eastern side of the County is not required.
- c. Most, but not all, of the roads and pre-designated shelter and evacuation centers on the eastern side are available for use.
- d. Mutual aid resources for all disciplines are available.
- e. There will be limited County emergency management organization support in the initial stages of an incident.

4. SCOPE

This plan applies to an evacuation of one or more communities due to a disaster or incident, response to which affects all public jurisdictions on the eastern side. It also applies to evacuations necessitated by incidents that start in the Tahoe National Forest or the Lake Tahoe Basin Management Unit that threaten County areas. Portions of this plan and agency responsibilities delineated herein are applicable for requests for mutual aid from adjacent Counties impacted by similar incidents or events.

For planning purposes, “evacuation” begins upon the order of the Incident Commander and concludes upon IC release of the area to general reentry. Evacuee support and damage/safety assessment activities occurring after completion of the initial evacuation but prior to general reentry are more correctly the subject of incident specific plans. However, some activities are referred to in this plan for clarity in illustrating the relationship between “incident command” as exercised by first responders and “emergency management” as exercised by the County through the Emergency Management Organization (EMO).

5. AUTHORITIES AND REFERENCES

This Plan complies with the Placer County Emergency Operations Plan (EOP), the California Emergency Plan and legal authorities in the California Emergency Services Act, and is developed by authority of Placer County Code, Chapters 2 and 9.

6. CONCEPT OF OPERATIONS

- a. **Initial Response:** Initial response to a disaster or incident occurring on the eastern side is by local, state and federal resources using Unified Command methodology. Upon assessment of the incident and in consultation with other responding agencies, Incident Command (IC) makes the decision that the incident has the real potential of becoming too great to handle or is actually beyond the capability of available resources, and therefore orders an evacuation. The IC directs that notifications be made, and directs promulgation of evacuation notices throughout affected areas via emergency notification systems and television and

radio stations. As the incident is both multi-jurisdictional and multi-disciplinary, the

IC requests OES response to provide incident emergency management. Subsequently, OES activates those members of the Emergency Management Organization (EMO) needed to support the evacuation and the greater incident, and ensures either an incident EOC on the eastern side or the EOC in Auburn is made operational.

The following functions are normally present in typical evacuation scenarios:

- ***Evacuation Alerts, Warnings and Orders:***

Dissemination of evacuation alerts, warnings and orders are the responsibility of law enforcement. The Placer County Sheriff's Office (PCSO), assisting law enforcement, and other personnel as available commence evacuation notifications using all means such as door to door visits, and use of handheld, vehicular and helicopter mounted public address systems. The IC notifies dispatch as well to disseminate instructions and warnings via the emergency notification system (Everbridge) and assigns Incident PIO to provide the same evacuation instructions to the media (listed at Attachment B) for emergency broadcast.

- ***Evacuation Emergency Medical Services (EMS)***

Emergency medical services for an evacuation are provided by all fire protection districts through engine-company Advanced Life Support (ALS) and the Truckee (TFPD) and North Tahoe Fire Protection Districts (NTFPD) ambulance service. Ambulance Mutual Aid is requested through the single ordering point established by the IC. The Placer County Medical/Health Operational Area Coordinator (MHOAC) receives requests for medical mutual aid and, if unable to fill the request locally, will forward it to the Regional Disaster Medical Health Coordinator (RDMHC) for action. Requests for aerial evacuation are made from the ICP to dispatch. NTFPD and TFPD also provide Advanced Life Support (ALS) medical transport, i.e., ambulance evacuation/transportation of the medically fragile from health care facilities or homes.

- ***Evacuation Emergency Public Information***

Public information about the evacuation will be disseminated at the direction of the IC, most often through the Incident PIO. In the event of a fast-moving fire or other life-threatening situation, the Incident PIO, a member of the Tahoe PIO Team or a member of the Auburn PIO Team should be assigned to begin notifications. Using IC guidance, this person will draft, obtain approval and then disseminate the message to critical media. (Attachment B).

Once the County EOC is operational, public information officers from all agencies establish a Joint Information Center (JIC) in which advisories, warnings, traffic updates, press releases, etc. are written, edited, assembled, and, after approval of the IC, released to the public and the media. The JIC also collects and disseminates information gathered from government agencies, businesses or schools regarding evacuation centers (locations where evacuees can get information on the evacuation) and emergency shelters (with overnight provisions), pet disposition, provision of security in evacuated areas, etc. Radio and television stations interrupt regular programming to broadcast emergency instructions as appropriate. Residents and visitors will be encouraged to also monitor instructions provided over the air, on car radios, on-line, or social media. Lastly, the EOC will maintain an emergency evacuation information message on the Public Information hotline at (530) 886-5310 in Auburn, and (530) 584-1590 on the eastern side, as well as on the County website.

- ***Evacuation and Reentry***

In Unified Command, the decision to evacuate or to prioritize evacuations of multiple areas is made after consultation between Incident Commanders. Execution of the actual evacuation order is by PCSO, with assistance from all other responding law enforcement, if and as available. Individuals will be strongly encouraged to evacuate, however those who refuse evacuation will be allowed to shelter-in-place. During enforcement of the evacuation, law enforcement will encourage family, friends and neighbors to assist any who require assistance (medically fragile, aged, etc). Volunteers, if available, may also be employed to assist those needing help to include assisting those without vehicles get to evacuation bus stops when and if Tahoe Area regional Transit (TART) or Tahoe Truckee Unified School District (TTUSD) or other buses or means of public transport are used.

To facilitate a rapid and effective evacuation, the IC will identify all directly threatened and potentially threatened areas for evacuation. Evacuation centers and emergency shelters for the evacuees have been pre-coordinated and contact information determined (Attachment A). Upon consultation with OES and American Red Cross, Unified Command will select the emergency shelters and evacuation centers to be used. The decision is based on the threat and the probability that the facilities and routes of ingress and egress will remain out of danger. Pending OES arrival at the incident, the senior County representative coordinates with ARC and HHS to ensure designated facilities are put into operational order.

Reentry during active response: The Incident Commander is the sole authority for allowing individual reentry into any secured incident area, either on an unlimited or escorted basis, during active response operations. Most often requests for reentry are by homeowners wishing to recover pets or family items, but, as law enforcement maintains incident site security for any

and all incidents, any IC decision on reentry is made after full consultation with law enforcement.

Reentry after active response: Although not the main focus of this plan, upon transition from initial or extended response to remediation of the incident area, general reentry will only be allowed after completion of safety and damage assessments by numerous agencies such as DPW-Roads, Environmental Health, Building Department, and law enforcement/fire forensic investigators, etc. The Damage/Safety Assessment Teams determine the state of damage and threats to public safety from unstable structures such as fire/flood damaged and now unsupported chimneys and walls as well as from other threats such as damaged or weakened roadways, downed lines or fire weakened trees or telephone/power poles. Environmental Health as an example has the responsibility for determining the presence of hazardous materials resulting from burned structures or of contaminants left by receding floodwaters, etc. These assessments will determine, prior to any IC decision, that the area is safe or hazards are clearly marked allowing for unrestricted access by the general public.

- ***Incident Command and Emergency Management***

Tactical employment of fire, law and emergency medical resources, as well as the decision to warn, or evacuate or shelter-in-place is the purview of the IC, and is executed from the Incident Command Post (ICP). Evacuation orders issued during an active emergency response are coordinated under the direction of Incident Commanders acting in Unified Command. It is imperative that all agencies affected by the response, or having critical infrastructure affected or potentially affected by the incident, or which act solely in a support role, initially respond and send representation to the ICP. All agencies should self-refer to the ICP whenever possible rather than waiting on a request to do so.

Note: Attachment E is a guide for both fire and law incident commanders who are considering or ordering an emergency evacuation. The Attachment contains general information on the technical aspects of ordering an evacuation as well as a check list for incident commanders.

Upon the opening of an incident Emergency Operations Center (EOC) by the County, the IC may release some of agency representatives to the EOC. The senior County representative on-scene or OES meets with the Unified Command to better understand the direction the incident is taking and ascertain the best location for an incident EOC, and potentially, an incident base. With that information, the senior County representative also consults with ARC to ensure any requested County support or facility owner/manager concerns are addressed to facilitate the opening and operation of shelters and evacuation centers.

Once alerted, the local Emergency Management Organization (EMO) reports to and works from the incident EOC to provide emergency management and County coordinated support. Upon arrival on-scene, OES assumes direction of active emergency management of the incident from the incident EOC. The EMO maintains communications with the Auburn EOC (if activated) as well as with regional and state agencies, assisting agencies, and the ICP. It coordinates non-tactical matters such as emergency care and shelter, animal services, provision of DPW traffic control assets, damage and safety assessments, evacuation centers and Local Assistance Centers used during recovery, etc. It is through the EMO that the decision to issue a proclamation of local emergency is made and information needed for preparation is provided. Locations that can potentially be used for an incident EOC have been pre-designated and are listed at Attachment D.

- ***Traffic Control***

CHP is primarily responsible for traffic control, however, other agencies such as the Sheriff's Office and the Department of Public Works can and often do assist on an as-needed basis. Potential issues include access and egress for emergency vehicles and evacuees alike, and minimizing or preventing unauthorized traffic entering the affected area. The Unified Command establishes evacuation priorities, and CHP further designates the supporting routes. Placer County Department of Public Works (DPW) and CAL TRANS support traffic control with traffic control implements and personnel, as requested.

The primary roads in the area, Interstate 80 (I-80) and State Highways 28, 89 and 267 comprise the major evacuation routes. Depending on the location and movement of the incident, the Unified Command designates which is or are to be used for evacuation and which for emergency vehicle ingress and egress. When necessary, surface streets will also be designated for evacuees and for emergency vehicle traffic. A map of the major road networks is at Attachment A.

- ***Transportation***

Once students and school sites are secured, school or Tahoe Area Regional Transit (TART) buses may be utilized for evacuations, if required. This may be a viable option during severe winter storms when roads are not passable to normal vehicular traffic. Other buses besides those mentioned above, if available in the area, will also be considered for use. Contact information for buses is at Attachment B.

There may also be instances where boats could be used for ferrying evacuees

across or down the lake due to lakeside road destruction or landslides that close the roads. The U.S. Coast Guard Station Lake Tahoe may be contacted for assistance in coordinating this resource.

- **Resources and Support**

Discipline-specific mutual aid for fire, law enforcement and emergency medical services is requested through the single resource ordering point at the ICP. Requests for additional or other resources such as animal services, public works, Red Cross, etc. are requested through (1) agency or OES representatives at the ICP, (2) Dispatch, or (3) once established, through the incident EOC. Requests unable to be filled locally are processed and forwarded by the activated EOC to the State Regional EOC (REOC) for fulfillment by regional, state, or federal resources.

- **Communications**

Responders, mutual aid resources and contributing agencies use existing radio communications systems on frequencies coordinated through PSAPs. Additional mobile communications support is available and is requested either through Dispatch or directly from the Communications Coordinator in the EOC. Cellular and satellite phones, as available with local agencies and personnel as well as with responding and supporting agencies, are used as local service and prevailing weather allows. Amateur radio operators, living or working on the eastern slope and in the Auburn area are also available and will be requested by OES to support any major incident involving an evacuation. Requests for Government Emergency Telecommunications Service (GETS), used to prioritize emergency communications traffic when local communications are overwhelmed, are requested by Incident Command or by the EMO Communications Coordinator.

- **Care and Shelter**

The Division of Human Services in the Department of Health and Human Services (HHS) coordinates mass care shelters as delineated in the Emergency Operations Plan (EOP). The American Red Cross (ARC) normally opens and operates one or more pre-designated shelters and evacuation centers (Attachment C), but County staff responsibility remains with Human Services. Shelters will be selected based on near- and long-term site security (based the direction of movement of fire or flooding, etc.) and ease of access.

The Medical/Health Operational Area Coordinator is a position jointly held by the Public Health Officer and the Executive Director of Sierra-Sacramento Valley EMSA (S-SV), responsible during an evacuation for assessing immediate medical needs, coordinating medical evaluations and all other

tasks assigned by the Health and Safety Code. Mental health counseling of evacuees is coordinated by the Adult System of Care Division of HHS.

- **Animal Services**

Shelters to accommodate pets/domestic animals (hereinafter “pets”) will be set up by Animal Services. However, care and evacuation of pets remains the responsibility of the pet owner. Animal Services coordinates emergency evacuation and care of pets when owners are precluded from entering an area or if pets have had to be abandoned due to the incident or the owner’s absence. Pet volunteer organizations may also be available to assist in sheltering. Pets evacuated will be transported to designated areas and held in more permanent custodial care until the incident is resolved or the animal(s) is/are claimed by owners. Local facilities will be designated and promulgated to the public by Animal Services at the time of the incident. Owners able to transport their own pets or animals during an emergency, but who still require temporary shelter, will be directed by Animal Services via traffic control, road signage or public service announcements to emergency holding areas.

- b. **Extended Response:** Unified Command continues in the field in response to the incident. The EMO operates from an incident EOC on the eastern side or from the EOC in Auburn depending on the needs of the incident. The principal focus of extended response concentrates on those activities necessary to ensure rapid reentry and comprise, among other things, damage and safety assessments and preparation and coordination with local, state and federal officials for set up and operation of Local Assistance Centers/Disaster Recovery Centers.

7. Evacuation Responsibilities by Agency

As an evacuation is only one aspect of a larger incident, all Departments and agencies listed below retain responsibility for completing EOP-listed tasks in addition to these evacuation-specific responsibilities.

A. Eastern Side Special Districts

1) Fire Protection Districts/Fire Departments

- Provide Advanced Life Support (ALS) emergency medical services, i.e., engine company ALS
- Provide ALS transport (NTFPD and TFPD only)
- Assist law enforcement with alerts, warning and evacuations as available
- Provide technical fire and geographic area expertise to Unified Command

2) Tahoe Truckee Unified School District

- Open and support use of requested school(s) for use as emergency shelters or evacuation centers.
- Provide school buses to assist in incidents/evacuations, as requested.

B. Placer County Agencies**1) Placer County Deputy CEO – Tahoe**

- Senior County representative at incident pending arrival of Program Manager, OES, or designee.
- In consultation with OES and the IC and considering the physical characteristics of the incident, select location for Incident EOC. Coordinate sites for emergency shelters/evacuation centers and ensure their operational status.
- Serve as Incident EOC Director pending arrival of OES, and direct EMO members of County staff on eastern side to report to EOC.

2) Office of Emergency Services (OES)

- Provide County emergency management support of the evacuation as part of a larger, more significant incident such as forest fire, flood, etc.
- Activate the Emergency Management Organization in Auburn or at the Incident EOC on the Eastern Slope, as appropriate. This includes County Public Information Lead/Team if activation hasn't already occurred
- Coordinate with Local, State (CalOES, CALFIRE, CHP, CAL TRANS, etc.) and federal agencies as well as other public and private entities, if deployed, for support and to provide current incident operational information.
- Consider long-term ramifications of the evacuation and begin planning for return of evacuees.
- Begin planning and coordination for incident recovery.

3) Placer County Sheriff's Office (PCSO)

- Alert and warn all persons and businesses to be evacuated, including the use of the emergency notification system, as required.
- Implement evacuation – notify residents and businesses, and certify areas as clear of inhabitants, transients, those using recreational facilities, etc.
- Provide mobile communications support for the evacuation, as requested.
- Provide Search and Rescue team support as requested to support the evacuation or evacuees.

4) Public Information Officer (PIO)

- Coordinate and prepare advisories, warnings, updates and evacuation orders for broadcast to responding agencies, school authorities, media, and the public.
- Include evacuation information in Joint Information Center (JIC) operations and provide it to media, the public, and other jurisdictions.

5) Department of Health & Human Services (HHS)**◆ Human Services Division**

Provide or coordinate with ARC and other agencies for the opening and operation of shelters for evacuees.

◆ **Adult System of Care**

Provide or coordinate mental health services for evacuees

◆ **Environmental Health**

- As a member of Damage and Safety Assessment Teams, provide technical, environmental health expertise to IC for determining advisability of allowing reentry into evacuated areas during active response operations.
- Coordinate or provide testing of evacuated areas for hazardous materials, environmental health hazards and infectious diseases.

◆ **Animal Services**

- Provide or arrange transport and care of abandoned pets and those unable to be transported by their owners.
- Coordinate and manage holding areas for pets of evacuees for those unable to care for their pets or those in emergency shelters

6) Department of Public Works - Tahoe

- Assist evacuation with traffic closure level analysis and traffic control equipment, as requested
- Provide evacuation support (vehicles, personnel, etc.) as requested.
- Assist with maintaining County road access as requested in matters such as clearing downed trees, snow and mudslide removal and flood affect abatement.
- Participate in Safety and Damage Assessment Teams, as needed.

7) Planning Department – Tahoe

Land Use Manager for Tahoe Area is second in order of seniority among Placer County agency heads on the eastern side.

8) Building Department – Tahoe

Participate in Safety and Damage Assessment Teams, as needed

9) Facility Services Department

Participate in Safety and Damage Assessment Teams, as needed

C. State Agencies

1) California Highway Patrol

- Provide evacuation traffic control.
- Determine primary and alternate evacuation routes.
- Assist PCSO, as requested, in alerting, warning and evacuations.

2) California Department of Transportation (CALTRANS)

Assist CHP as requested with traffic control

3) California State Parks

Provide disposition and status of visitors and staff in park facilities before, during and after an evacuation.

D. USDA Forest Service

Provide disposition of visitors and staff in forests before, during and after an evacuation.

E. Other Agencies**1) American Red Cross**

Open and operate emergency shelters or evacuation centers, as necessary, and coordinate local volunteer support of the shelters.

2) Sierra-Sacramento Valley Emergency Medical Services Agency (S-SV)

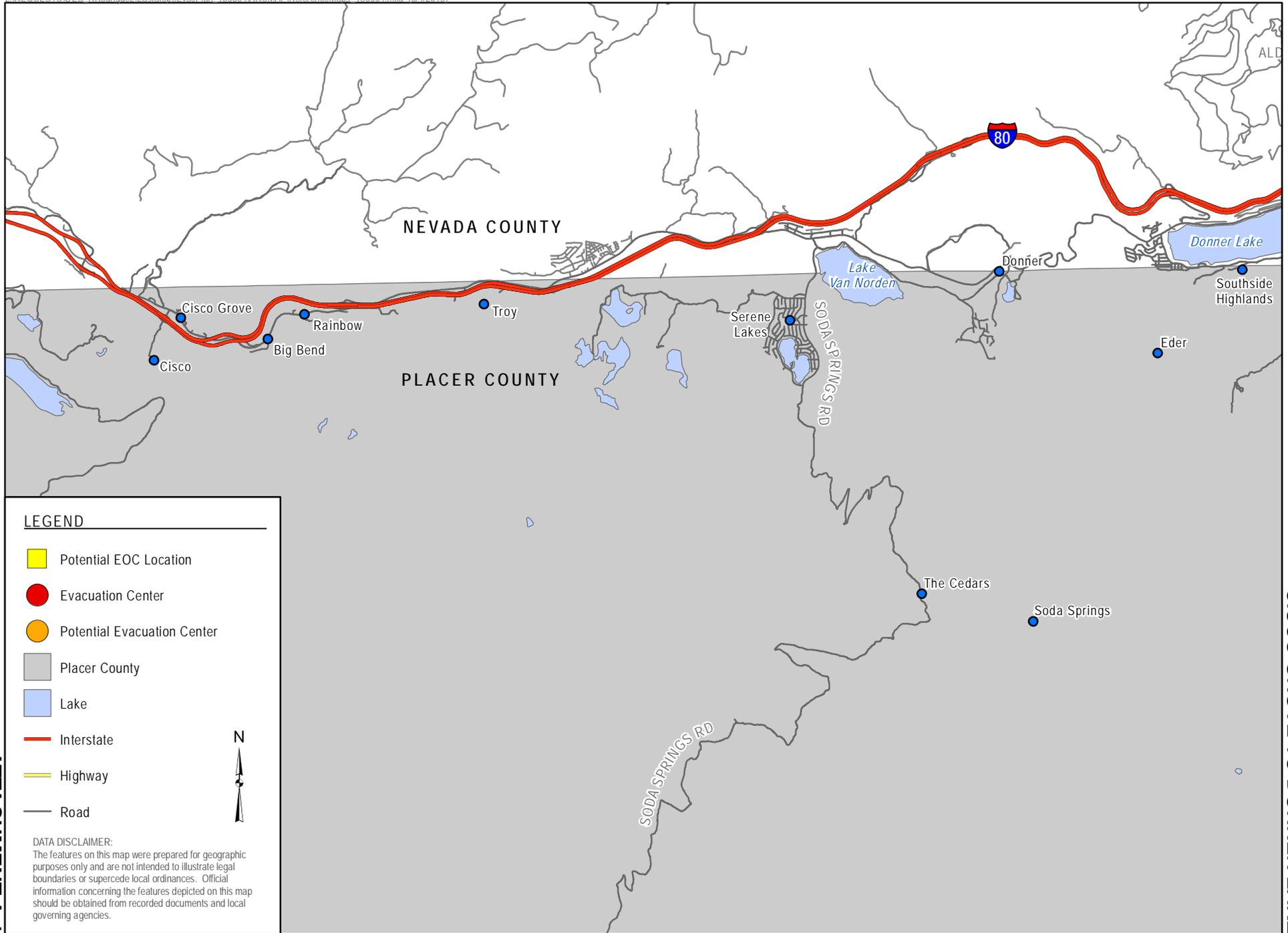
In conjunction with the Placer County Public Health Officer, execute all Medical Health Operational Area Coordinator tasks regarding provision of medical care for evacuees, coordination of medical and health resources, etc. per provisions of the Public Health and Safety Code, Sections 1797.150-153.

3) Out of County Mutual Aid Providers

Law enforcement, fire and emergency medical services mutual aid providers in Nevada and El Dorado Counties and the State of Nevada are requested to maintain familiarity with this plan to provide mutual aid as requested.

Attachments:

- A.** Maps: Road Networks and Key Emergency Facility Locations
- B.** Important Phone Numbers/Contact Information including Media
- C.** Contact Information for Shelters and Evacuation Centers
- D.** Alternate EOC Locations
- E.** Immediate Emergency Evacuation Guidelines for Incident Commanders

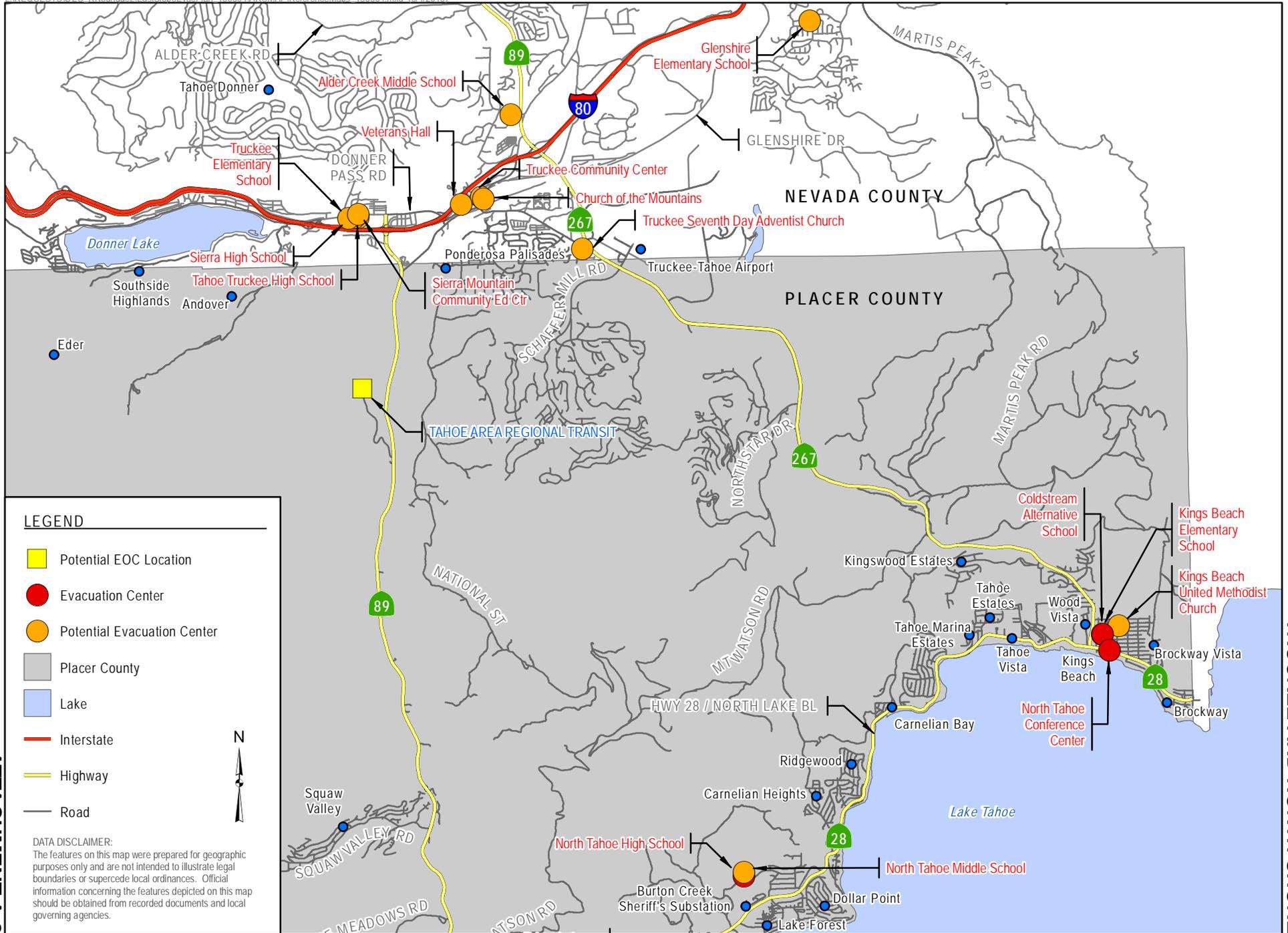


LEGEND

-  Potential EOC Location
-  Evacuation Center
-  Potential Evacuation Center
-  Placer County
-  Lake
-  Interstate
-  Highway
-  Road



DATA DISCLAIMER:
The features on this map were prepared for geographic purposes only and are not intended to illustrate legal boundaries or supersede local ordinances. Official information concerning the features depicted on this map should be obtained from recorded documents and local governing agencies.

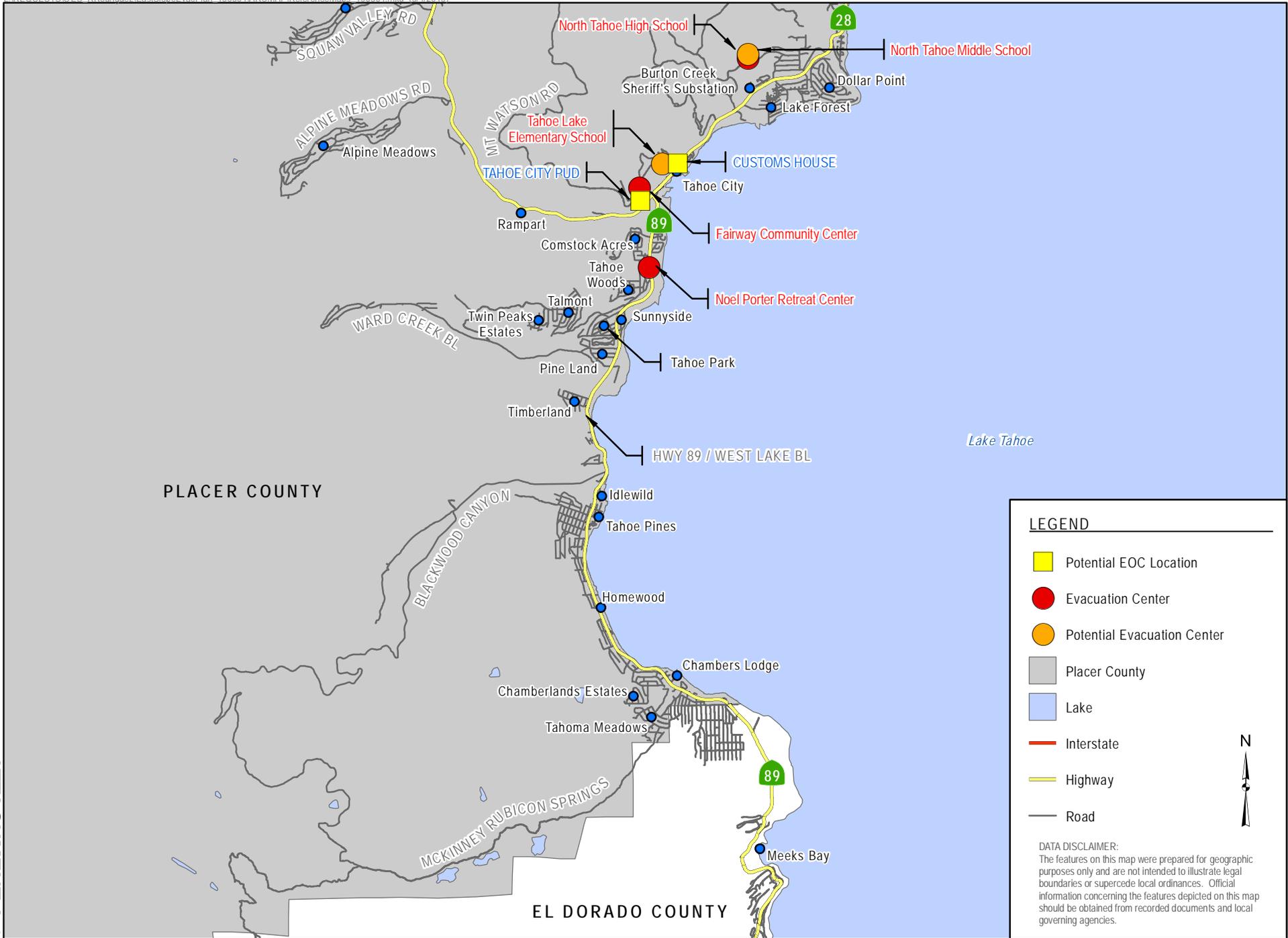


LEGEND

- Potential EOC Location
- Evacuation Center
- Potential Evacuation Center
- Placer County
- Lake
- Interstate
- Highway
- Road



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ATTACHMENT A-3

WEST SHORE TO MEEKS BAY

ATTACHMENT B - EMERGENCY CONTACT INFORMATION

(All Numbers are (530) except as noted)

<u>AGENCY</u>	<u>OFFICE</u>	<u>Emergency/ After Hours/Weekends</u>
American Red Cross (ARC) - Tahoe	916-993-7070	391-8234
Alpine Springs County Water District	583-2342	866-696-9608
CA Dept. of Fish & Game (DF&G)	916-358-2882	888-334-2258
CAL FIRE - Truckee FFS BC - Troy Adamson Dispatch: ECC-Grass Valley	582-9471 477-0641(ofc)	477-5761
CA State Parks - Tahoma	525-7232	916-358-0333 (Dispatch)
CALTRANS - District 3	582-7500	582-7550 (Dispatch)
CHP - Truckee Area	582-7500 (Public)	582-7550 (Dispatch)
Lake Tahoe Basin Mgmt. Unit-North	543-2600	642-5170 (ECC-Camino)
Meeks Bay FPD (El Dorado County) Office Chief - Tim Alameda	525-7548 525-7548	581-6335 448-4365
North Lake Tahoe FPD (Nevada)	775- 831-0351	775 - 831-0587
North Tahoe Fire Protection District Chief: Mike Schwartz	583-6911	583-6911 x 605 448-2524
North Tahoe Public Utility District Office GM: Cindy Gustafson	583-3796 546-4212	546-4212 546-4212
Northstar Community Service District Fire Dept Fire Chief: Mark Shadowens Gen Mgr.	562-1212 562-0747 x101	562-1212 308-1241
Placer County		
(Contact all through Sheriff's Dispatch if unable to call direct)		
Placer County Fire	889-0111	477-5761 (ECC-Grass Valley)
CEO Rep-Tahoe: Jennifer Merchant	546-1952	308-1243
OES	886-4600	
Emergency Operation Center (Auburn)	866-5300 <u>(DURING ACTIVATION ONLY)</u>	
OES Duty Officer	886-4600	886-5375 (Dispatch)
PIO -Tahoe: Robert Miller	889-4080	308-2013
HHS - Tahoe	546-1900	

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Environmental Health	581-6240	
Animal Services	546-4260	308-1017 or 886-5375 (Dispatc
Sheriff's Office - Auburn Dispatch	886-5375	
Sheriff's Office - Tahoe	581-6300	
Tahoe Dispatch	886-5375	
Tahoe- Capt.: Denis Walsh	581-6312	
Public Works - Tahoe	581-6230	
Liberty Utilities	800-782-2506	
Reg'l Emer Mgr.: Blaine Ladd	721-7363	
Squaw Valley Fire Department	583-6111	
Chief: Pete Bansen	583-6111	523-6025
Duty Officer	583-6111	
Squaw Valley Pub Service District	583-4692	866-411-6917 (On Call)
General Manager: Mike Geary	583-4692 x 211	587-5223
Tahoe Area Regional Transit	550-1212	308-1020
Transit Manager Frank Silva	550-1212	308-1020
Tahoe City Public Utility District	583-3796	546-1215
GM: Cindy Gustafson	583-3796	546-1215
After Hours Answering Service		546-1215
Tahoe National Forest	265-4531	477-5761 (ECC-Grass Valley)
Tahoe-Truckee Sanitation Agency	587-2525	587-2525 ()
Tahoe-Truckee Unified School District	582-2500	
Superintendent Dr.Rob Leri	582-2555	626-523-1267
Placer County - continued		
Truckee		
Town Mgr.: Tony Lashbrook	550-7700	582-2901
PIO: Alex Terrazas	550-7700	265-7880
Police Dispatch	550-2320	265-7880
Truckee Donner PUD	587-3896	
Truckee Fire Protection District	582-7850	
Chief: Bob Bena		308-2703
Truckee Tahoe Airport District	587-4540	
Truckee Sanitary District	587-3804	
US Coast Guard	583-4433	583-0911
US FS - Tahoe National Forest	265-4531	
US FS - Lake Tahoe Basin Mgmt. Unit	543-2600	

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**Washoe County Sheriff's - Incline
Office
Dispatch**

**775 - 328-4110
775 - 765-9276**

**Water Quality Ctl Board-Lahontan
Admin Officer**

**542-5400 542-5400
542-5428 542-5400**

Media Contacts: (All numbers are 24x7)

Sierra Sun Newspaper	583-3488	
KTHO radio - South Lake Tahoe	543-0590	
KTKE radio - Truckee	587-9999	550-0371
KRLT radio - South Lake Tahoe	775-580-7130	775-586-9399
KKTO radio - Tahoe City/Reno	916-278-8900	
KUNR radio- Reno/Truckee	775-682-6064	775-784-1867
KOH radio AM - Reno (EAS)	775-325-9178	775-789-6700
KTVN - TV Reno	775 - 858-2222	775-861-4290
KOLO - TV Reno	775 - 858-8888	

**Cable Television Carriers
Southern link Communications
Charter**

**587-6100
775-348-2772**

**ATTACHMENT C
EMERGENCY SHELTERS AND EVACUATION CENTERS**

Kings Beach

North Tahoe Event Center
8318 North Lake Boulevard
Kings Beach 96143
564-4212 Office
564-4212 After Hours
POC: William Selter/ Chief Engineer

Kings Beach Elementary
8125 Steelhead
Kings Beach 96143
546-2605 Office
530-546-2605 After Hours
POC: Kyle Mohagen/ Principal

Kings Beach United Methodist Church
8425 Dolly Varden Avenue
Kings Beach 96143
546-2290 Office
775-831-4200 After Hours
POC: Sandy Barnstead/ Pastor

Tahoe City:

Noel Porter Retreat Center
855 Westlake Boulevard
Tahoe City 95145
583-3014 Office
386-2834 After Hours
POC: Jenny Liem/ Executive Director

North Tahoe Middle School
2945 Polaris Road
Tahoe City 96145
581-7050 - Office
386-4310 After Hours
POC: Theresa Rensch/ Principal

North Tahoe High School
2945 Polaris Road
Tahoe City 96145
581-7000 Office
362-2438 After Hours
POC: Joann Mitchell/Principal

Tahoe Lake Elementary School
375 Grove Street
Tahoe City 96145
583-3010 Office
582-2577 After Hours
POC: Mark Button/Head of Facilities

Fairway Community Center
330 Fairway Center
Tahoe City, CA 96145
583-3796 Office
546-1215 After Hours Answering Service
POC: Cindy Gustafson /General Manager
546-1215 After Hours (TCPUD)

ATTACHMENT C (CONTINUED)

Truckee:

Alder Creek Middle School

10931 Alder Drive
(530) 582-2750 - Office
(530) 308-7711 - John Britto
(530) 587-4851 - Kathy Valle

Glenshire Elementary School

10990 Dorchester Drive
(530) 582-7675 - Office
(530) 308-7711 - John Britto
(530) 587-4851 - Kathy Valle

Sierra High School

11661 Donner Pass Road
(530) 582-2640 - Office
(530) 308-7711 - John Britto
(530) 587-4851 - Kathy Valle

Church of the Mountains

10069 Church Street
(530) 587-4407 - Office
(530) 550-9964 - Jeff Hall (Pastor)

Truckee Seventh Day Adventist Church

11662 Brockway Road
(530) 587-5067 - Office

Tahoe Truckee High School

11725 Donner Pass Road
582-2600 - Office
308-7711 - John Britto
587-4851 - Kathy Valle

Truckee Elementary School

11911 Donner Pass Road
582-2650 - Office
308-7711 - John Britto
587-4851 - Kathy Valle

Truckee Community Center

10046 Church Street
682-7720 -Office
582-5970

Veterans Hall

10214 High Street
(530) 682-7720 - Office
(530) 582-5970 - Steve Randall

Sierra Mountain Comm Ed Ctr (TTUSD)

11603 Donner Pass Road
(530) 582-2640 - Office
(530) 308-7711 - John Britto
(530) 587-4851 - Kathy Valle

ATTACHMENT D

POTENTIAL EOC LOCATIONS

* Primary location

(All phones are Area Code 530)

Custom House (Conference Room)*

775 North Lake Blvd
Tahoe City
581-6200 Office
581-6204 Fax
886-5375 After Hours/Disbatch

Tahoe Area Regional Transit

870 Cabin Creek Road
Truckee
550-1212 Office
550-0266 Fax
308-1020 After Hours

Tahoe City PUD

221 Fairway Drive
Tahoe City
583-3796 Office
583-1475 Fax
546-1215 After Hours Answering Service

Attachment E

Immediate Emergency Evacuation Guidelines

To be used by first-arriving fire and law enforcement on a threat to health and public safety causing consideration of an immediate emergency evacuation

1. **Identify map *control features* and event condition *trigger points* for directly affected or potentially affected areas.**
 - ***Control features*** are grid lines or map symbols for such things as schools, churches, hospitals, railroads, or other easily identifiable objects or landmarks.
 - ***Trigger points*** - are resource, weather or incident specific conditions that once arrived at are cause for immediate action. Examples are nearness of a fire to a structure or landmark, increasing wind speeds at a fire, approach of a rain storm, or the lack of needed resources. Any one of these can cause either an Evacuation *Order* to be issued or an Evacuation *Warning* to be changed to an Evacuation *Order*.

2. **Law enforcement and fire Incident Commanders collaborate and issue, through Dispatch, an evacuation warning, order or shelter in place order:**
 - **Evacuation Warning:** To warn the residents and the public in a potentially threatened area being considered for evacuation (Advise both the public and the media, and use map grids or *control features* to identify the limits of the area).
 - **Evacuation Order:** To evacuate areas under immediate threat (use map grids or *control features* to identify the specific area).
 - **Shelter In Place Order:** To direct residents to remain in place (issued due to hazardous conditions such as narrow roads, poor visibility, toxic gases, etc.)

3. **Use Traffic Control Points (TCP) and Closure “levels”:**
 - **Level 1** - Residents only; Escorts may be required.
 - **Level 2** - Closed to all traffic except fire, law, emergency medical services, and critical resources, e.g., public works, power, telecommunications, etc. Escorts may be required.
 - **Level 3** - Closed to all traffic except fire and law.
 - **Level 4** - Closed to all traffic. Area blocked or not safe even for fire or law.

Examples of warning or evacuation orders:

- **“An Evacuation Warning has been issued for the Alpine Meadows Subdivision as a Potential Threat Area.** No closures are in affect at this time, however if the fire reaches Secret Town Canyon, an **Evacuation Order** will be issued and **Level 1** road closure implemented. Affected area is grids A3, A4 B3, B4, C3, and A5 of the Compass Map 2002 Placer County Street and Road Atlas.”

- **“An Evacuation Order has been issued for the Sunnyside/Timberland area as an Immediate Threat Area.** **Level 3** road closure is in affect (closed to traffic except fire and law). Affected area is all area south of Ward Creek Boulevard/Pineland Drive and north of Blackwood Canyon Road. Two TCPs are set up on West Lake Boulevard – one at Pineland Drive and one at Blackwood Canyon Road ”

EVACUATION CHECK LIST

- Use standardized map symbols and grid identifiers if possible
- Determine and consider direction of spread/threat
- Notify and update dispatch (PCSO, ECC – Grass Valley or Camino)
- Notify Duty Chief
- Request PCSO Sergeant (or higher) for evacuation, if not already present
- Establish Incident Command Post (ICP) with law, fire, others
- Request County OES and PIO resources
- If evacuation is significant, form Evacuation Branch and designate director
- Assess threat with other ICs and request appropriate fire and law resources
- Establish evacuation task force of fire/rescue, medical (ambulance) and law enforcement to evacuate non-ambulatory civilians in the threat area.
- Establish resource staging area(s)
- Determine threatened areas and road closure level
- Request dispatch use emergency notification system (Everbridge (Placer County), CodeRED (Nevada County), Nixle (Town of Truckee), etc.) to notify affected area, if necessary
- Identify trigger points and action to be taken when reached
- Establish traffic control points (use CAL TRANS, DPW, etc., if available)
- Establish evacuations routes
- Identify and establish evacuation centers
- Identify and establish potential “safe haven” locations
- Contact Media for information dissemination (use PIO if at scene, if not utilize dispatch). Instruct media to inform the public to call 911 if unable to evacuate.
- Establish MCI or Medical Group, as needed
- Notify Red Cross or appropriate agency
- Consider logistics, e.g. food, water, sanitation, blankets, shelters, counselors
- Request animal evacuation groups, if necessary
- Consider transport (school or public buses) for large groups (campers, church groups, senior citizen centers, etc.)
- Request DPW or CALTRANS keep roads physically cleared of obstacles and wrecks
- Assess feedback from command staff and field; Assess future incident potential
- Brief public officials, politicians, media, etc. as required/requested

Distribution:

American Red Cross
Alpine Springs County Water District
CA Department of Fish & Game
CAL FIRE – NYP Ranger Unit
CAL FIRE – Truckee FFS
CA Highway Patrol (CHP)
CA State Parks – Tahoma Office
CA Transportation (CALTRANS) – District 3
Meeks Bay Fire Protection District
Nevada County:

- Sheriff's Office
- Office of Emergency Services
- Town of Truckee

North Lake Tahoe Fire Protection District (Nevada)
North Tahoe Fire Protection District
North Tahoe Public Utilities District
Northstar Community Service District
Placer County:

- County Executive Office including
 - Asst Dir, Emergency Services
 - County Executive Officer Rep at Tahoe
- Facility Services
- Health and Human Services (HHS) including
 - Adult System of Care
 - Animal Services
 - Environmental Health
 - Human Services
- Office of Emergency Services (OES)
- Planning Department including
 - Tahoe Office
- Public Information Officer (PIO)
- Public Works including
 - Senior Engineer – Tahoe
 - Tahoe Area Regional Transit
- Sheriff's Office including
 - Field Operations and Auburn Dispatch
 - Tahoe Captain

Liberty Utilities
Squaw Valley Public Service District
Tahoe City Public Utility District
Tahoe-Truckee Sanitation Agency
Tahoe-Truckee Unified School District
Truckee – Town
Truckee Donner Public Utility District
Truckee Fire Protection District
Truckee Sanitary District
Truckee Tahoe Airport
US Coast Guard – Tahoe

Distribution (Continued)

US Forest Service

- Lake Tahoe Basin Management Unit
- Tahoe National Forest – Truckee

Washoe County, Nevada Sheriff's Office – Incline