

**CAL
FIRE**

Tuolumne-Calaveras Unit



2023

Strategic Fire Plan



Kevin Bohall, DEPUTY CHIEF



2023 Tuolumne-Calaveras Unit Strategic Fire Plan



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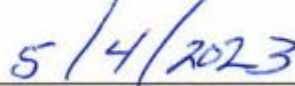


SIGNATURE PAGE

Unit Strategic Fire Plan developed for the Tuolumne-Calaveras Unit:

This plan:

- Was collaboratively developed. Interested parties, Federal, State, City, and County agencies within the Unit have been consulted and are listed in the plan.
- Identifies and prioritizes pre-fire and post-fire management strategies and tactics meant to reduce the loss of values at risk within the Unit.
- Is intended for use as a planning and assessment tool only. It is the responsibility of those implementing the projects to ensure all environmental compliance and permitting processes are met as required.

 Deputy Chief Kevin Bohall	 Date
 Pre-Fire Division Gary Whitson	 Date



2023 Tuolumne-Calaveras Unit Strategic Fire Plan



EXECUTIVE SUMMARY

Through a collaboration of our internal and external stakeholders, the CAL FIRE Tuolumne-Calaveras Unit (TCU) initially developed and continues to update the Unit's Strategic Fire Plan. This methodology allows for a fire plan that will be successful in reducing the loss of life, property, and natural resources from wildland fire. The plan is designed to provide a comprehensive framework of how the Tuolumne-Calaveras Unit will assess our current and anticipated hazards/risks, develop objectives to mitigate those hazards/risks, establish benchmarks for success, develop strategies to meet our objectives, implement those strategies, and facilitate a monitoring system to ensure the plan remains connected to the needs of the Unit and stakeholders.

The Tuolumne-Calaveras Unit is committed to the following goals:

- Continually assess values at risk, including life, property, and our natural resources.
- Actively partner in the promotion and support of fire wise land use planning.
- Seek opportunities for contribution and collaboration with local, county, and regional leaders in developing of fire protection plans.
- Maintain an active Public Information team committed to the promotion of current and future projects/actions which reduce or have reduced our identified hazards and risks.
- Continue integration with all stakeholders to develop a seamless implementation of our plan across the Unit.
- Continually evaluate and mitigate strategy for all our resources (personnel, equipment, and facilities) to provide for the best possible level of service related to the hazards and risks identified.
Adopt site-specific plans to address post-fire recovery.

Through the implementation of the Tuolumne–Calaveras Unit's Strategic Fire Plan, CAL FIRE will be a partner in reducing the cost of fire suppression, property loss, and damage to our ecosystem. Most importantly, the plan will provide for a safer community, thereby reducing injuries and the loss of life to both the public and firefighters.



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SECTION I: UNIT OVERVIEW

A. TUOLUMNE-CALAVERAS UNIT

1. Geographic

The Tuolumne-Calaveras Unit is in Central California, an hour east of Modesto and Stockton, in the foothills of the Sierra Nevada Range; a region known as the Mother Lode. It includes much of Calaveras and Tuolumne Counties, and the eastern portions of San Joaquin and Stanislaus Counties. **(Figure 1)** “The Unit” technically extends down slope from the Forest Service boundary and into the Central Valley as far west as the San Joaquin River near Interstate 5. However, the Unit’s Primary Operational Area (POA) begins at the Local Responsibility Area (LRA) / State Responsibility Area (SRA) boundary a few miles west of the western Calaveras and Tuolumne County lines (running south roughly from Clements, past Woodward Reservoir to Turlock Lake) east to the Forest Service boundary, (throughout this document the phrase “The Unit” refers to that POA). The Unit spans an elevation range from a low of 300 feet among the rolling plains of eastern San Joaquin and Stanislaus Counties to highs of near 5,000 feet in central Tuolumne County, and 6,000 feet in central Calaveras County. The heart of the Unit is cut by a series of generally east-west oriented river canyons creating vast areas of extremely steep and rugged terrain. In the west, the topography is described as rolling hills.

The entire Unit encompasses almost 2.9 million acres. **(Table 1)** There are just over a million acres of SRA lands within the Unit. SRA is defined as forest, brush or grass covered lands where the state is responsible for wildland fire protection. SRA is mainly composed of private land holdings. Lands owned and/or administered by the federal government are designated as Federal Responsibility Areas (FRA). Lands not designated as SRA or FRA, typically fall within an incorporated city, are in agricultural use, or are rural central valley areas that do not otherwise meet the criteria for SRA/FRA designation. These remaining lands are designated as LRA.

There are four major watersheds in the Unit: The Mokelumne, Calaveras, Stanislaus, and Tuolumne River systems. These four systems support seven major reservoirs within the Unit: Camanche Reservoir, Hogan Reservoir, Pardee Reservoir, Tiger Creek Reservoir, New Melones Reservoir, Tulloch Reservoir, and Don Pedro Reservoir. These hydrologic resources in turn support major local and regional communities and industries.

Tuolumne-Calaveras Unit CAL FIRE Acres by Ownership	
Private	2,040,346
US Forest Service	690,017
US Bureau of Land Management	82,190
US Bureau of Reclamation	24,207
State of California	16,443
US Fish and Wildlife Service	10,297
Bureau of Indian Affairs	356
Total Acres	2,869,030

Table 1



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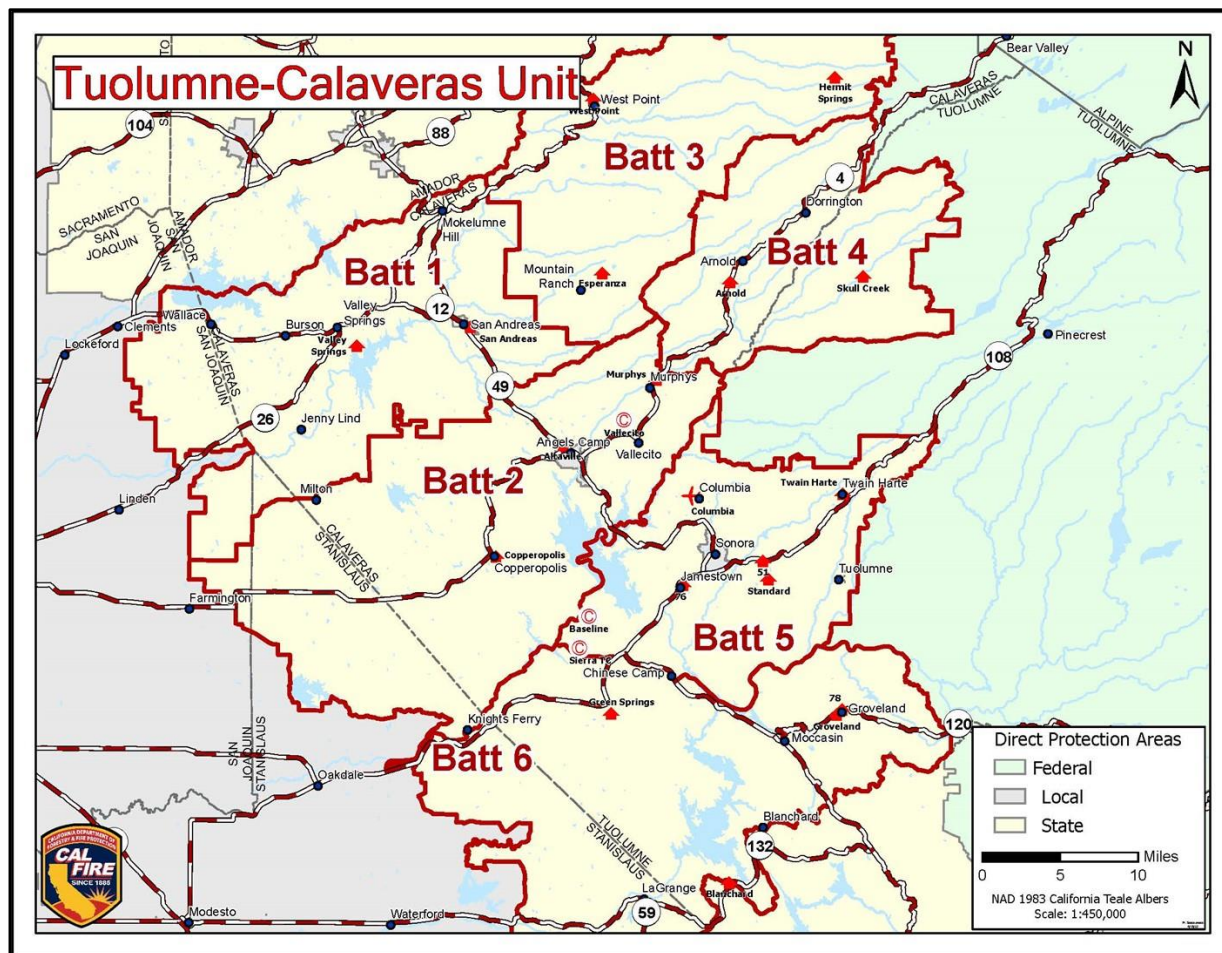


Figure 1

Five highways run east-west in the Unit: 12, 26 and 4 in Calaveras County; 108 and 120 in Tuolumne County, State Highway 49 bisects the Unit from north to south. Many towns and the greatest population densities in the Unit exist on or near these major transportation corridors.

1. Socioeconomic

According to the [2020 U.S. Census Bureau Population Census](#), the population estimates for Calaveras and Tuolumne Counties combined is approximately 101,094 residents. As of July 1, 2022, the [US Census Bureau's Population Estimates Program](#) reports an estimated resident population of 46,563 in [Calaveras County](#) and 54,531 in [Tuolumne County](#). Resident population data represented in the [San Joaquin and Stanislaus County](#) portions of TCU's POA is only a minor contributor, thus are not included in the Unit's estimated resident population totals of this report.

The major industries/employers that support the local economy include health care, government, tourism and recreation, construction, and agriculture, including the timber industry. Sierra Pacific Industries (SPI) operates sawmills at Standard and Chinese Camp in Tuolumne County. American Wood Fibers operates



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a facility on J59 west of Jamestown. These facilities provide an important outlet for forest products in Tuolumne and Calaveras Counties.

2. Fire Environment

Being in the heart of the central Sierra Nevada range, TCU features examples of a wide range of challenging topography, fuels, and weather. These naturally occurring elements have a great deal of influence on the nature of wildland fires within its boundaries. An expanding population increases the potential for large and damaging fires.

The grasslands of the rolling western plains routinely experience extreme summer heat, and significant wind events during the spring and fall months. In these areas, motorized fire suppression equipment can be fully utilized to great success. The brush fields, common throughout the central portions of the Unit, lay over broad expanses of steep hillsides and atop narrow ridgelines between the deepening river canyons. Routine summer temperatures can be extreme, while the topography makes access difficult for motorized equipment. The brush transitions into the mixed oak and conifer zones as the elevation increases and the canyon depth and width increase significantly. Over 38% of the CAL FIRE Direct Protection Areas (DPA) land is covered with these high hazard brush and timber fuels. This mid-elevation area also experiences high summer temperatures and is most affected by the normal diurnal winds associated with the canyon-dominated topography. The higher elevation zone features dense stands of conifer timber, much of which exhibits large accumulations of ground and ladder fuels. Temperatures are routinely moderated due to the elevation; however, wind events in the fall can contribute to potentially challenging fire conditions.

The convergence of significant fire weather conditions, a wide variety of topography and a broad spectrum of fuels has resulted in a long history of large damaging fires within the Unit. Evidence of this is depicted in the Exhibits section at the end of this document.

3. Fire Protection Responsibilities

To reduce fire, protect costs, and increase the efficiency of initial attack operations, CAL FIRE and the federal and local land management agencies have entered agreements that define DPA for each agency. An agency's DPA is the geographic area for which the agency is directly responsible for providing wildland fire protection, regardless of designation. CAL FIRE is mandated by statute to provide wildland fire protection on SRA. The federal government is responsible for wildland fire protection on FRA. Local government entities (city, county, districts) are responsible for wildland fire protection on LRA.



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On a statewide basis, CAL FIRE and the federal agencies attempt to balance the acreage totals of these tradeoffs so that no single agency is protecting more of the other agencies land than the

Tuolumne-Calaveras Unit CAL FIRE Direct Protection Acres 2023	
Calaveras County	623,117
Tuolumne County	386,330
Stanislaus County	175,068
San Joaquin County	59,922
Total CAL FIRE DPA Acres	1,244,437

Table 2

reciprocating agency. In many cases DPA swaps have been agreed to where agency jurisdictions border. This process is guided by the California Master Cooperative Wildland Fire Management Agreement (CFMA); aka “Balancing of Acres” in effect among multiple agencies. Through this agreement, the CAL FIRE Tuolumne-Calaveras Unit and the Stanislaus National Forest (STF) provide direct wildland fire protection on portions of each other’s Responsibility Areas. The Bureau of Land Management (BLM), Bureau of Reclamation (BOR), Army Corps of Engineers and Bureau of Indian Affairs (BIA) are other federal agencies with land holdings within the Tuolumne-Calaveras Unit on which CAL FIRE provides direct protection. These agencies and the United States Forest Service (USFS) are combined in the total number of acres in the table shown. *(Table 2)*

B. UNIT PREPAREDNESS AND FIRE FIGHTING CAPABILITIES

1. CAL FIRE Organization

TCU manages a large “Schedule B” organization throughout the Unit, and a “Schedule A” organization in Tuolumne County. The “Schedule B” program consists of the personnel, facilities and equipment directly funded by state dollars for providing wildland fire protection on SRA lands. The “Schedule A” program offered by CAL FIRE to local government consists, in part, of equipment owned by the local government entity (Tuolumne County). Staffing and administration is provided by CAL FIRE under a contractual agreement. In Tuolumne County, CAL FIRE provides year-round staffing for Six “Schedule A” facilities. TCU is administered by the Unit Chief and a Deputy Chief of Operations, headquartered in San Andreas. The resources in Calaveras County are administered by the Deputy Chief of Operations and includes Vallecito Conservation Camp, and four battalions. *(Table 3)*

Battalion 1 covers from Mokelumne Hill to Wallace on the north, and from Jenny Lind to San Andreas on the south, and includes the Valley Springs and San Andreas CAL FIRE Stations.

Battalion 2 covers the lower Highway 4 corridor from Eastern Stanislaus County to Murphys, and includes the Copperopolis, Altaville and Murphys CAL FIRE Stations.

Battalion 3 includes the upper Highway 26 area including the communities of Glencoe, West Point, Wilseyville, Railroad Flat and Mountain Ranch, and includes the West Point, Esperanza, and Hermit Springs CAL FIRE Stations.



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Battalion 4 covers the upper Highway 4 area from Forest Meadows to Black Springs Road and the area in Tuolumne County north of the Middle Fork Stanislaus River, and includes the Arnold and Skull Creek CAL FIRE Stations and Blue Mountain Lookout.

The resources in Tuolumne County are also administered by the Deputy Chief of Operations and includes two battalions. It encompasses the southeastern portion of Stanislaus County. Columbia Air Attack (fixed wing and helicopter) Base and the Sierra Forestry Training program are administered by a Division Chief.

Battalion 5 covers the Tuolumne County area north of the Tuolumne River and includes the Standard CAL FIRE Station and the Twain Harte CAL FIRE Station and 5 “Schedule A” stations; Station 51 in Mono Village, Station 56 in Mono Vista , Station 79 at Columbia College and Station 76 in Jamestown.

Battalion 6 covers the area south of the Tuolumne River including the Groveland, Blanchard, and Green Springs CAL FIRE Stations as well as two “Schedule A” Station 78 and 63, located in Groveland.

TCU CAL FIRE RESOURCES	
TCU Battalions	6
State Fire Stations	15
Calaveras County Fire Stations	10
Tuolumne County Fire Stations	5
Inmate Conservation Camp	1
Fire Centers	3
Fire Lookouts	2
Air Attack Base	1
Emergency Command Center	1
TCU CAL FIRE OPERATIONAL INITIAL ATTACK RESOURCES	
State Fire Engines-Schedule B	22
Local Government Fire Stations-Schedule A	6
Bulldozers	2
Air Attack Plane	1
Air Tanker Planes	2
Helicopter-CALFIRE HAWK	1
Exclusive Use Type 1 Helicopter	1
Helicopter Support Tender	1
Fire Fighter Type 1 Crews	3
Inmate Type 1 Crews	2
Fire Prevention Law Enforcement Officers	2

Table 3

2. Local Government Fire Organization

CAL FIRE cooperates closely with all the local city and district fire departments within the TCU boundaries. These agencies have primary responsibility for all emergency incidents within their boundaries, except wildland fires (exception: LRA, San Andreas retains wildland fire jurisdiction). CAL FIRE and local agencies apply the concept of “closest available resource” via long standing automatic agreements, to assure the appropriate numbers and types of emergency resources are utilized for every emergency.



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Thus, CAL FIRE engines are responding to all incidents throughout the two counties during the months these engines are staffed.

Similarly, CAL FIRE relies on district and city resources to supplement our wildland fire response. To facilitate this level of cooperation, TCU's Emergency Command Center (ECC) provides contracted dispatching services for all the local city and district fire departments in Tuolumne and Calaveras Counties, and the Bear Valley Fire Department in Western Alpine County.

Calaveras County: The fire districts and one city department in Calaveras County: West Point, Mokelumne Hill, Calaveras Consolidated, San Andreas, Central Calaveras, Copperopolis, Altaville-Melones, Murphys, and Ebbetts Pass Fire Protection Districts; and Angels Camp City Fire Department.

Tuolumne County: The fire districts and one city department in Tuolumne County, including Columbia, Jamestown, Tuolumne, Mi-Wuk Sugar Pine (MWSPCSD), Rancheria Fire Department, and Strawberry Fire Districts; and Sonora City Fire Department. Twain Harte Community Service District (THFD) and Groveland Community Services District (GCSD) are also included. The district's boundaries encompass a relatively small area surrounding the communities they are named for. Several of these fire districts are staffed with a combination of salaried and/or volunteer personnel, and some by volunteers only. Twain Harte Fire, Mi Wuk Fire, Tuolumne City Fire, and Sonora City Fire Departments staff full time salaried personnel.

- **Tuolumne County Fire Department (TCFD):** Much of unincorporated Tuolumne County is situated outside a fire district boundary and is protected by the TCFD; administered by CAL FIRE, under a contractual agreement with the County since 1974. There are 13 Stations in the County Fire Department, including Station 51-Mono Village, Station 53-Ponderosa Hills, Station 54-Long Barn, Station 55-Pinecrest, Station 56-Mono Vista, Station 57-Crystal Falls, Station 58-Cedar Ridge, Station 61-Chinese Camp, Station 63-Smith Station, Station 64-Don Pedro, Station 76-Jamestown, Station 78-Groveland, and Station 79-Columbia College. Station 51-Mono Village, Station 76-Jamestown, and Station 78-Groveland.

The longstanding agreement includes one CAL FIRE Training Officer for approximately 80 volunteer firefighters responding in 33 fire apparatus', including 23 engines, six water tenders, four support apparatus, and other vehicles; under the supervision of volunteer Company Officers, in cooperation with CAL FIRE personnel. Volunteer personnel are required to attend thousands of training and continuing education hours annually, to remain current in their profession. Thus, nurturing a robust working relationship between Tuolumne County Fire Department Volunteers and CAL FIRE personnel, resulting in a long history of effective fire and rescue services in the county.



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- **Fire Prevention Division:** The Fire Prevention Division works to provide a safer community for the citizens of Tuolumne County by preventing the loss of life and property through public education and the enforcement of fire codes, laws, and county ordinances related to fire and life safety. This division also reviews commercial and residential permits ensuring compliance with currently adopted fire and building codes, reviews site development permit applications, development agreements, zone changes, tentative and final maps, tentative and final subdivision maps, and commercial, industrial, and high/low density residential development. Other duties include onsite inspections, responding to citizen complaints, code enforcement, issuing permits, and incident response.
- **Columbia College Fire Department:** TCFD has entered a cooperative fire agreement with the Yosemite Community College District whereby TCFD/CAL FIRE provides a Fire Captain (FC) as a Training Officer and frontline supervisor to the Cadets assigned to the Columbia College Fire Department. Those duties include the management of the day to day operations of the station, including the direct supervision of 15 student firefighters and two fire apparatus. The FC also serves as the Safety Officer and/or Incident Commander, overseeing the Cadets while on scene of emergency incidents.
- **Jamestown Fire Protection District:** Contracting with Tuolumne County to provide one CAL FIRE FC, responsible for administrative, supervision, and Training Officer duties for three Fire Apparatus Engineers for the department. The fire station is staffed with one Type 1 fire engine with a minimum of two paid personnel, supported by TCFD volunteer firefighters.
Groveland Community Services District (GCSD): In 2013, the GCSD entered a cooperative fire protection agreement, with CAL FIRE and Tuolumne County. Station 78 is staffed with a minimum of two paid personnel supported by the districts reserve firefighter program. Administrative duties and Chief Officer coverage are provided by TCFD/CAL FIRE with primary responsibilities assigned to the Groveland Battalion Chief (BC).
Amador Program: As set forth in Public Resources Code section 4144, Tuolumne County, part of the cooperative agreement with CAL FIRE also contracts to provide fire protection services at the Blanchard and Twain Harte CAL FIRE stations during the winter. Known as the “Amador Plan” (named for the county where the program began), this arrangement provides the use of state-owned facilities, equipment, and personnel to the contracting entity that would otherwise be unavailable. The State provides one Company Officer and the contracting entity provides a minimum of one firefighter per day to meet the minimum staffing standard required by CAL FIRE of two personnel on duty.



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SECTION II: COLLABORATION

A. COMMUNITY/AGENCIES/FIRE SAFE COUNCILS

1. Plan Development Team

Representatives involved in the development of the Unit Strategic Fire Plan are included in the following table. Organization and title are indicated below.

Plan Development Team	
Organization	Title
CAL FIRE	Unit Chief- Tuolumne-Calaveras
CAL FIR	Deputy Chief- Tuolumne-Calaveras
CAL FIRE	Division Chief- Prevention/Resources
CAL FIRE	Division Chief- Asst. Co. Fire Warden-TCFD
CAL FIRE	Battalion Chief- Battalions 10
CAL FIRE	Battalion Chief- Emergency Command Center
CAL FIRE	Battalion Chief- Prevention Bureau
CAL FIRE	Forester I- Area Forester/VMP Coordinator
CAL FIRE	Fire Prevention Specialist
CAL FIRE	Captain- Pre-Fire Engineer
Calaveras Foothills Fire Safe Council (CFFSC)	Project Coordinator
Tuolumne Fire Safe Council	President

Table 4

SECTION III: VALUES

A. VALUES

Tuolumne-Calaveras Unit is comprised of many natural and man-made assets vulnerable to wildfires. Fires threaten the natural environment as well as commercial and residential property. Although it is difficult to list these assets in order, life safety of our citizens and firefighters is always the priority during fire control and other emergency operations. Other assets include structures, infrastructure including water and power, rivers and watersheds, air quality, soil, wildlife and associated habitat, recreation areas including tourist attractions, scenic beauty, historical buildings, cultural areas, timber, and rangeland. From the beginning, our mission has been to protect watersheds from the devastating effects of wildfires. In doing so, we provide protection to all assets at risk within the Unit.

- Life Safety:** Given California’s extensive Wildland Urban Interface (WUI), nearly every community located within TCU boundaries is identified as a “Community at Risk,” according to the Office of the State Fire Marshal [“Communities at Risk”](#) list. Additionally, criteria for establishing this list is set forth in [The National Strategy](#); and the responsibility for managing this list falls under the [California State Forester \(CAL FIRE Director\)](#).



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According to population estimates reported by the [2020 U.S. Census Bureau Population Census](#), Tuolumne County's population density is approximately 24.9 persons per square mile. The highest population density in Tuolumne County is along the Highway 108 corridor, between Jamestown and Mi-Wuk Village. Tuolumne City, Columbia, the greater Groveland area, and the southern confines of the Lake Don Pedro area also represent high population densities.

According to population estimates reported by the [2020 U.S. Census Bureau Population Census](#), Calaveras County's population density is approximately 44.7 persons per square mile. High density population areas in Calaveras County is along the upper Highway 4 corridor between Murphys and Big Trees Village; along Highway 26 from Valley Springs to Jenny Lind; and in proximity to O'Byrne's Ferry Road in the Copperopolis area, including the north shore communities of Tulloch Reservoir. Other areas of dense population exist in Angels Camp (LRA), San Andreas (LRA), greater Mountain Ranch, and along Highway 26 in Mokelumne Hill and West Point.

Outside these concentrations, the population west of Highway 49, including CAL FIRE DPA in the eastern margins of Stanislaus and San Joaquin Counties, is widely scattered, mostly in the form of ranches and farms. The area east of Highway 49 also includes scattered residential development.

Population totals in TCU fluctuate significantly throughout the year due to seasonal recreation, travel, and tourism. More specifically, population totals in TCU spike during the summer fire season. In the greater Arnold area in Calaveras County, and the greater Twain Harte area in Tuolumne County, there are many seasonal and vacation rental homes, providing destinations for a significant number of temporary residents and tourists. The greater Groveland area also experiences population growth during the summer months due to the abundance of seasonal and vacation rental homes and its status as "The gateway to Yosemite National Park." These temporary residents and thousands of other visitors to campgrounds, RV parks, and motels throughout the Unit, come during the summer months to take advantage of many recreational and aesthetic opportunities present. With temporary population increases of this nature, there are many impacts on county and state resources, as well as the increased potential for human caused fire ignitions.

In the event of a threatening wildland fire, a key factor in the preservation of human life is for residents and visitors to evacuate quickly and safely. The topographically rugged terrain, and narrow public and private roads create potentially hazardous access/egress routes for much of the residential development throughout the Unit. A swiftly ordered, effective and organized evacuation plan is critical during a wildland fire to assure life safety.

2. Watershed: The recognition that runoff from the mountain coniferous forests, foothill grasslands, and low elevation oak woodlands served as the primary source of water for urban and agricultural development throughout the state was one of the earliest motivations for the creation of what is now



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known as CAL FIRE. It was recognized in the late 1800's that without protection from fire and unsound timber harvest practices the State's water supply could be compromised, and the pace of economic growth and physical development would be stalled.

In March of 1905, the State Legislature created both the California State Board of Forestry and the position of State Forester following the transfer of national forests from the Interior Department to the Forest Service on February 1, 1905. To this day CAL FIRE's core mission has remained constant – protect California's precious watersheds.

Tuolumne-Calaveras Unit is home to three main river watersheds: The [Upper Stanislaus River Watershed](#), covering approximately 904 square miles over northern Tuolumne and southern Calaveras Counties, the [Upper Tuolumne River Watershed](#) draining approximately 1,533 square miles in southern Tuolumne County, and the [Upper Mokelumne River Watershed](#) encompassing 99.4 square miles, located entirely in Calaveras County. Additionally, the [Calaveras River Watershed](#), covers roughly 473 square miles over three counties; however, it is almost exclusively located in Calaveras County, with less than 5% of its watershed shared between San Joaquin and Stanislaus Counties.

Any given watershed contains multiple assets at risk, including:

- **Water and Power:** TCU's watersheds support more than 48 water providers and users who divert, store, or transport water for millions of people locally, throughout the Central Valley, and as far away as the greater San Francisco Bay Area. With the purpose of domestic, commercial, and agricultural use. Similarly, there are nine utility companies generating hydroelectric power in California, with more than 4.8 million megawatt hours of hydroelectricity produced each year by water flowing through TCU's watersheds.
- **Timber:** Today there are more than 920,000 acres of timberland in TCU, both under public and private ownership. Owing over 1.8 million acres in California alone, SPI is the largest private owner of timberland in the Unit. According to recent numbers given by SPI's South Sierra Area Manager, Tim Tate; SPI's current land holdings are 74,402 acres in Calaveras County and 72,159 in Tuolumne County for a combined total of 146,561 acres as of January 1, 2021. In addition to SPI's timberland, there are also many small landowners who own timberland in the Unit.
- **Recreation:** In the Federal DPA, camping, fishing, hunting, off-highway vehicle sports, hiking, bicycling, motorcycle touring, lake and river water sports, skiing, along with many other activities, are having an increasingly positive effect on the local economy. The summer fire season period sees a huge influx of people into the Unit with the intention of enjoying these recreational opportunities, especially on the holiday weekends, and recreational activities can be negatively impacted in the event of significant wildland fire. In the Unit's DPA there are many opportunities for recreation. Several lakes, campgrounds, and RV parks offer recreational options to locals and visitors alike. [Columbia State](#)



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[Historic Park](#) and [Calaveras Big Trees State Park](#) are big attractions throughout the year. Local wineries offer tasting and live music; community street fairs, county fair, local outdoor music festivals, and rodeos are just a few of the popular activities. All are equally important to the economy, and easily disrupted by wildland fire.

- **Wildlife:** Wildlife contributes to the recreational pursuits and economy within the Unit. River and stream fisheries can be severely impacted by wildland fire due to the erosion that often follows. Much of the SPI timberland between the North and Middle forks of the Stanislaus River is a designated State Game Reserve by the [Department of Fish and Wildlife](#).

3. Structures: According to the [2020 U.S. Census Bureau Population Census](#), Tuolumne County had 31,487 housing units and Calaveras County 27,522 housing units. Among individuals and communities, one's house or place of business is likely to be their most valuable material possession. Often, one of the first thoughts on the minds of our initial attack firefighters is the question of whether structures are threatened. The Department has devoted a tremendous amount of training hours, fire behavior research, equipment development, public education, and building practices research toward the goal of reducing structure loss. In fact, the entire scheme for placing, staffing, and dispatching the Department's initial attack forces is focused on a rapid, aggressive initial attack on every fire; due in large part to this modern-era goal of protecting structures by keeping fires as small as possible.

4. Infrastructure: Infrastructure includes transportation systems, communications equipment, water and power delivery systems, and public institutions.

Within TCU, several water delivery systems face risk from wildland fire including open water convergence ditches, flumes, tanks, ponds, reservoirs, and pumping facilities. Since 2001 there are two examples of wildland fires damaging water delivery systems: the Darby Fire in 2001, destroyed a significant portion of a flume in the North Fork Stanislaus River Canyon, and the Pattison Fire in 2004, which destroyed a large capacity community storage tank in the Valley Springs area.

Communication equipment is widespread throughout the Unit. It is often located in remote locations, such as mountaintops, resulting in a significant threat from wildfire. Towers, vaults, antennas, and their associated support equipment, such as propane tanks and generators, are threatened by fires. Cell phone towers and equipment have become more common in the lower foothills, often near highways and major county roads.

The Unit is home to six major California highways; 4, 12, 26, 49, 108 and 120, of which two are designated by the [US Department of Transportation Federal Highway Administration](#) as a National Scenic Byway (NSB). Traveling on Highway 4 in eastern Calaveras County; [Ebbetts Pass NSB](#) is designated for its glacially imprinted granite monoliths, ancient redwood forests, and geological outcroppings from prehistoric volcanic activity. Additionally, traveling on Highway 120 in southern Tuolumne County; [Tioga](#)



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[Road/Big Oak Flat Road NSB](#) is designated for its dramatic views of Tuolumne Meadows, many Alpine lakes and streams, glacially carved granite megaliths, and features the highest highway passage in California with an elevation of 9,943 feet, and serves as the primary northern entry point to Yosemite National Park. Both byways offer something for everyone, including photographers, geology enthusiasts, hikers and more, making these routes vital to tourism and the local economy.

Power lines are located throughout the SRA along every highway, county road and private drive, traversing pastures, crossing lakes and river canyons, and cutting long swaths through remote forests and are often threatened by wildfires.

Electrical distribution systems are ubiquitous throughout the unit, and a critically important asset. Power distribution lines and equipment are unique among assets as being both a potential cause of wildland fire and a threat to firefighting operations. Most wildland fires have some potential for damage to this equipment. Disruption of the power distribution system is likely to have a significant impact on the community.

5. Air Quality: The Tuolumne-Calaveras Unit contains portions of the San Joaquin Valley and Mountain Counties Air Basins within its boundaries. The Mountain Counties Air Basin makes up 81% of CAL FIRE DPA within the Unit. Air Quality is an important issue to the local population and governments throughout the region.

During fire season, prevailing southwest, west, and northwest winds tend to blow the smog generated in the Central Valley and greater Bay Area into the Mountain Counties Air Basin. Wildland fire smoke from the federal DPA high country is moved down the river drainages by the daily cycle of air movement into the populated areas of the Unit. Smoke generated from wildfires occurring within the state DPA will cause an immediate and localized threat to air quality. Factor in the potential for low inversion layers on any given summer day and the potential for unhealthy air quality designations within the Unit is quite high throughout the summer.

6. Agriculture:

Calaveras County: According to the [2021 Crop Report](#), the total land area in Calaveras County is 663,680 acres. On this land, there are 98,588 acres of rangeland and 195,323 acres of ranch and farmland use. Additionally, the 2021 report indicates the total agriculture production value of just under 19 million dollars, listing cattle as the leading commodity with 7.9 million dollars in revenue. Most of this activity takes place in the rolling western foothills and rangeland of Battalions 1 and 2. Poultry is listed as the second leading commodity generating 2.7 million dollars. Much of the poultry production occurs in Battalions 1 and 2. The third leading commodity, timber, accounts for just over 2.3 million dollars annually. Much of the timber harvesting takes place in Battalions 3 and 4.



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Tuolumne County: According to the [Tuolumne County General Plan](#), the total land area in Tuolumne County is over 1.4 million acres, with more than one million acres being controlled by the federal government; the largest holdings by the USFS, National Park Service, BLM, and BOR, with the remaining 200,000 acres dedicated to rangeland. Additionally, the Tuolumne County [2020 Crop Report](#) indicates the total agricultural production value of just over 37.8 million dollars, listing livestock and poultry as the leading commodity with 17.8 million dollars in revenue. Most of this activity is in the western grasslands of Battalion 6, with some additional production in Battalion 5. Timber harvesting is listed as the second leading commodity generating well over 12.9 million dollars; much of this production occurs in the eastern portions of Battalions 5 and 6. Finally, listed as the third leading commodity, field crops account for nearly 5.7 million dollars, with production occurring only on private lands.

Proximity to fire prone brush covered lands, susceptibility to high winds, and the influence of human behavior means all the top revenue producing agricultural operations within the Unit are at significant risk from wildland fire. Rangeland grass is the life blood of the cattle industry and is particularly susceptible to loss due to fire beginning in the early springtime and lasting late into the fall. Cattle graze on the lowland ranges until late spring when the grass turns, at which time they are transported to the upper elevations, including leases on USFS lands, or to other areas of the state where they feed before returning in the fall for the local calving season. Wind driven grass fires in the low country and fuels/topography driven fires in the forests can easily destroy hundreds or thousands of acres of valuable feed. Likewise, poultry operations are also at risk from fast running low country grass fires or mid-elevation brush fires due to their remote locations.

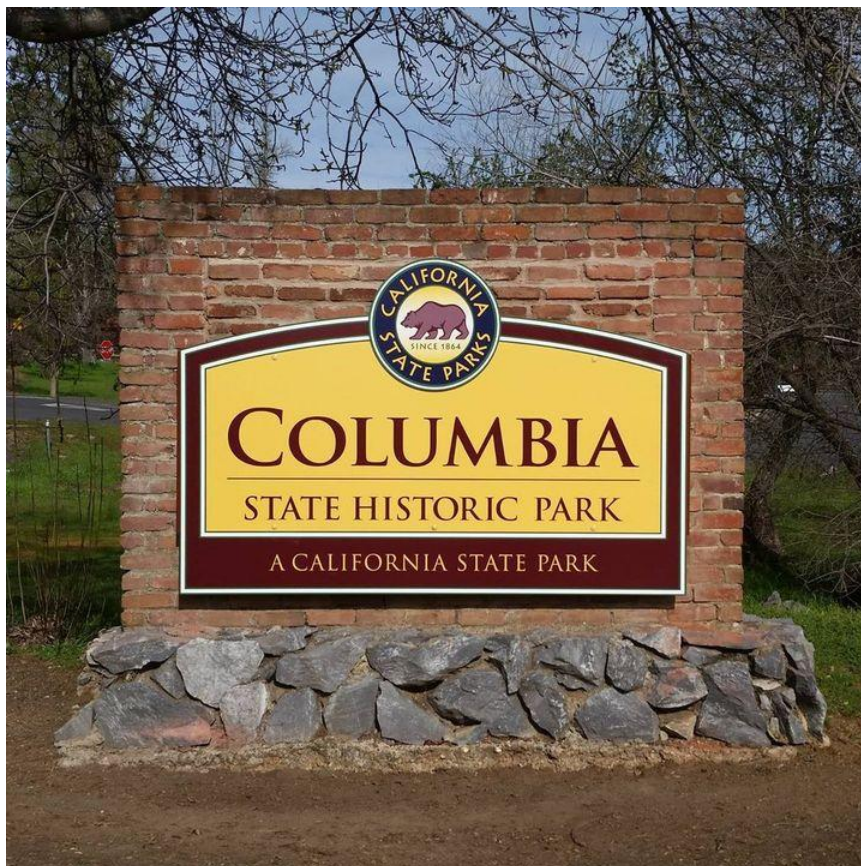
7. Cultural/Historical:

Native American culture has a long and rich history dating back thousands of years in the Tuolumne-Calaveras Unit, to the first known documented encounter of Native perspective in 1806, when Spanish Explorers traveled through Tuolumne County to reach Central California. As a result of their presence, there are many pre-historic archaeological and historic cultural sites located throughout the Unit. Due to the sensitive nature of these sites, they are rarely known to fire control personnel prior to the occurrence of a fire, making it difficult to identify and protect them ahead of time. Regrettably, they are often at greater risk of damage from fire control operations, rather than the fire itself.

The discovery of gold in the late 1840's initiated a wave of European American development throughout the sierra foothills that continues to this day. Because of its rich gold mining history, TCU is home to many historic sites; from the large number of abandoned mine, to remnants of structures and water delivery systems, and entire communities still thriving.



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The largest, most well-known, and heavily visited “Gold Rush” era site is the Columbia Historic State Park, a living community in the restored historic town of Columbia. Designated as a Community at Risk, Columbia is an important historical asset both locally, and throughout the Central California region. Another well-known historic site of the era is the [Knights Ferry Recreation Area](#), located in the SRA of eastern Stanislaus County. Situated on the Stanislaus River, adjacent to Highway 108/120 near the Tuolumne/Stanislaus County border, the park is home to the longest covered bridge west of the

Mississippi, a 330 feet long covered bridge built in 1863. The park also features many historic buildings dating back to the late 1800’s. Beginning late in the 19th century, and still occurring today, logging continues to be a significant industrial activity in the region. As a result, historic artifacts, camp and mill sites, railroad grades, and infrastructure improvements are common throughout the foothills.

B. COMMUNITIES

The following table lists communities located within or adjacent to TCU officially designated as “Communities at Risk” within the National Fire Plan. Through the National Fire Plan, the Communities at Risk list was developed to identify communities that were at risk from the threat of wildland fire. The official California Communities at Risk list includes: 35 communities in Calaveras County, 32 in Tuolumne County, 5 in Stanislaus County and 4 in San Joaquin County. **(Table 5)**

This list does not include the name of every small community or subdivision. Some of the communities listed cover broad geographic areas that encompass what the public would assume to include several separate communities. For example, White Pines would be included in Arnold for this list. Other communities were named based on their old town-site name, not the current subdivision or current commonly known name. The absence of a community from this list does not indicate any unwillingness



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on the part of TCU and its cooperators to engage in efforts to mitigate the perceived wildland fire threats therein.

Calaveras County 2001							
Altaville	Battalion 2	Jenny Lind	Battalion 1	Dorrington	Battalion 4	Vallecito	Battalion 2
Angels Camp	Battalion 2	Milton	Battalion 1	Douglas Flat	Battalion 2	Valley Springs	Battalion 1
Arnold	Battalion 4	Mokelumne Hill	Battalion 1	Forest Meadows	Battalion 4	Wallace	Battalion 1
Avery	Battalion 4	Mountain Ranch	Battalion 3	Ganns	USFS DPA	West Point	Battalion 3
Big Meadows	USFS DPA	Murphys	Battalion 2	Glencoe	Battalion 3	Wilseyville	Battalion 4
Big Trees	Battalion 4	Paloma	Battalion 1	Hathaway Pines	Battalion 4	Burson	Battalion 1
Railroad Flat	Battalion 3	Calaveritas	Battalion 1	Camp Connell	Battalion 4	Campo Seco	Battalion 1
Campo Seco	Battalion 1	Copperopolis	Battalion 2	Cottage Springs	Battalion 4	San Andreas	Battalion 1
Sandy Gulch	Battalion 3	Sheep Ranch	Battalion 3	Sky High	USFS DPA	Tamarack	USFS DPA
Tuolumne County 2001							
Arastraville	Battalion 5	Lake Don Pedro	Battalion 6	Dardanelle	USFS DPA	Sonora	Battalion 5
Buck Meadows	Battalion 6	Long Barn	USFS DPA	East Sonora	Battalion 5	Soulsbyville	Battalion 5
Bumble Bee	USFS DPA	Mather	USFS DPA	Groveland	Battalion 6	Standard	Battalion 5
Cedar Ridge	Battalion 5	Mi-Wuk Village	Battalion 5	Big Oak Flat	Battalion 6	Stent	Battalion 5
Chinese Camp	Battalion 6	Moccasin	Battalion 6	Harden Flat	Battalion 6	Tuolumne	Battalion 5
Cold Springs	Battalion 5	Mono Village	Battalion 5	Jamestown	Battalion 5	Tuolumne Rancheria	Battalion 5
Columbia	Battalion 5	Phoenix Lake	Battalion 5	Jupiter	USFS DPA	Twain Harte	Battalion 5
Confidence	Battalion 5	Sierra Village	Battalion 5	Smith Station	Battalion 6	Cow Creek	USFS DPA
Kennedy Meadows	USFS DPA						

Stanislaus County 2001							
Knights Ferry	Battalion 6	La Grange	Battalion 6	Oakdale	Battalion 6	Riverbank	Battalion 6
Waterford	Battalion 6						
San Joaquin County 2001							
Bellota	Battalion 1	Clements	Battalion 1	Linden	Battalion 1	Lockeford	Battalion 1



Table 5

SECTION IV: PRE-FIRE MANAGEMENT STRATEGIES

A. FIRE PREVENTION

TCU's Fire Prevention Bureau works to protect lives, property, and natural resources from unwanted fires by reactively investigating all wildland fires in CAL FIRE's DPA and utilizing appropriate criminal, code enforcement, civil and administrative procedures to deter activities that lead to unwanted human caused fires. The Fire Prevention Bureau proactively coordinates with public education and information activities to educate the public, as well as other public safety officials, of specific activities that increase fire risk and preventative measures that can be taken to eliminate or lessen the risk.

The communities within the confines of TCU have always been confronted by the threat posed by uncontrolled wildland fire. The structures within the Unit reflect well over 100 years of the evolution of accepted building materials and techniques. Only within the very recent past have structures been designed and built with a focus on reducing the likelihood of ignition due to wildland fire.

Fire control personnel recognize that a wildland fire ignition can quickly result in a fire causing an immediate threat to structures. CAL FIRE's fire control goal is less than 10 acres 95% of the time. Fires can progress rapidly causing significant threat to structures regardless of the size of the fire. Property owners are encouraged to improve structure safety by following the required and/or recommended guidelines to reduce the threat of structure ignition.

The Prevention Bureau in TCU supports four primary means by which the public, in cooperation with Federal, State, and Local Government fire control agencies can reduce the threat posed by direct flame impingement and airborne embers:

1. Fire Hazard Severity Zones and California Building Standards Code
2. Defensible Space
3. Fuel Reduction Program
4. Community Wildfire Protection Plans

1. Engineering & Structure Ignitability

Fire Hazard Severity Zones and California Building Standards Code:

The California Building Commission adopted the WUI codes (Chapter 7A) in 2005, with most the requirements taking effect in 2008. These codes include provisions for ignition resistant construction standards applicable to the WUI, with an emphasis on protecting against airborne embers. During this same period, CAL FIRE initiated a statewide project to update the FHSZ designations within the WUI, using the latest science-based analysis techniques and geographic information system technologies to



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delineate those concentrations of wildland vegetation fuels likely to produce embers when involved in fire. Started with the SRAs in 2005 and concluding with LRAs adjacent to or within the SRA in 2008, FHSZ's were field validated, updated as required, and adopted by local government (county and city governing, and regulatory entities), before official CAL FIRE maps were produced and released to local government. The California Building Standards Code requirements, and the associated FHSZ's have been enacted and are being enforced by local government building officials as development plans work their way through the approval process. The updated zones are also be used by property owners to comply with Natural Hazards Disclosure requirements at the time of a property sale. Local government is encouraged to integrate the updated FHSZ's into the Safety Element of their General Plans.

In 2007, CAL FIRE updated the FHSZs for the entire State Responsibility Area (SRA). Between 2008-2011 the department worked with local governments to make recommendations of the very high FHSZ within LRA Local Responsibility Areas. Currently, CAL FIRE is working on updating new maps with revised zones, which will include:

- Revised zones based on the latest technologies and additional factors such as land use changes, new significant wind event data, and higher spatial detail.
- Addition of LRA – Moderate and LRA – High zones.

Property owners, developers, contractors, building material suppliers, and product designers can find specific wording and answers to questions regarding [California Building Standards Code \(CCR\) Title 24](#), [\(CCR\) Title 19](#), [Public Resource Code \(PRC\) §4290](#) and [PRC §4291](#), [California Code of Regulations \(CCR\) Title 14](#), and other related information at the links provided as well as the [Office of the State Fire Marshal](#). Additionally, there you can find maps depicting TCU's [Local and State Responsibility Area Fire Hazard Severity Zones](#) for Calaveras, Tuolumne, San Joaquin, and Stanislaus Counties.

Defensible Space: Property owners living in SRA are required by Public Resources Code (PRC) §4291 to maintain clearance of flammable vegetation around their property. A property owner's clearance responsibility is limited to 100 feet from structure(s) or to the property line, whichever is closer, and is limited to their lands. However, coordination with adjacent landowners to achieve maximum defensible space is encouraged. In 2022, TCU's Defensible Space Inspectors (DSI) recorded 6,916 inspections. Furthermore, with the passage of AB38, which requires an PRC 4291 inspection prior to a real estate transaction, the Unit has hired a full-time Forestry Technician who completed 713 inspections in 2022. In 2023, the Unit hired an additional full-time Forestry Technician and has funding for a third, limit-term position.

CAL FIRE and the TCU is committed to helping property owners comply with PRC §4291 defensible space clearance requirements by categorizing [defensible space into two zones](#):

Zone 1 extends 30 feet from buildings, structures, decks, etc.



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- Remove all dead plants, grass, and weeds (vegetation).
- Remove dead or dry leaves and pine needles from your yard, roof, and rain gutters.
- Remove branches that hang over your roof and keep dead branches 10 feet away from your chimney.
- Trim trees regularly to keep branches a minimum of 10 feet from other trees.
- Relocate wood piles to Zone 2.
- Remove or prune flammable plants and shrubs near windows.
- Remove vegetation and items that could catch fire from around and under decks.

Create a separation between trees, shrubs and items that could catch fire, such as patio furniture, wood piles, swing sets, etc.

Zone 2 extends 100 feet out from buildings, structures, decks, etc.

- Cut or mow annual grass down to a maximum height of 4 inches.
- Create horizontal space between shrubs and trees.
- Create vertical space between grass, shrubs, and trees.
- Remove fallen leaves, needles, twigs, bark, cones, and small branches. However, they may be permitted to a depth of 3 inches.

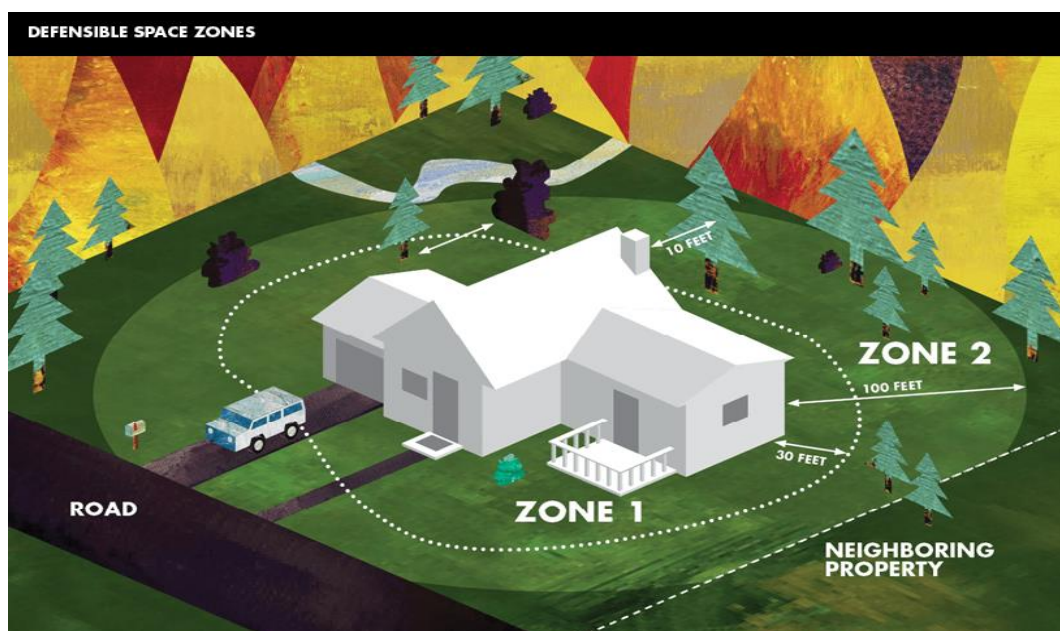


Figure 2

The diagram (**Figure 2**) depicts the two Defensible Space Zones that make up the required 100 feet of defensible space, and requirements can also be viewed at [Readyforwildfire.org](https://www.readyforwildfire.org).

The Fire Prevention Bureau and each Battalion in the Unit is actively engaged in PRC §4291 education and compliance efforts, including: on-site inspections, self-inspection forms, face to face education at the fire stations, participation in community events, close cooperation with Home/Property Owner



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Associations, and collaborative efforts with the local FSC's, Local Government and Federal fire control, and land management agencies. Additionally, with the implementation of AB38 on July 1, 2021, sellers of properties sold in the high or very high fire hazard severity zone must provide documentation to the buyer that the property is in compliance with PRC 4291, or have an agreement where the buyer agrees to obtain documentation of compliance within one year of the close of escrow. TCU now has a permanent Forestry Technician assigned to the Fire Prevention Bureau who completes the inspections throughout the Unit

2. Information and Education

CAL Mapper Program

The CAL Mapper program is a Geographic Information System (GIS) database that is used to collect, manage, and distribute information across its fire plan, forest improvement and other wildland fuels reduction programs.

Fire Prevention Specialist Program

In the 1970's, Fire Prevention Specialists carried out the Unit's fire prevention education work in addition to law enforcement. At the time, each battalion had its own fire prevention aide who performed wildland property inspections under PRC §4291, as well as other fire prevention work. The aides worked for the battalions, rather than the Fire Prevention Bureau. However, the fire prevention aide positions were eliminated in the late 1970's. Eventually the position was reestablished as a Fire Prevention Assistant, ultimately to be upgraded to Fire Prevention Specialists (FPS). Since then, the FPS has been the face of public information and fire prevention education in the Unit. Additionally, the FPS is responsible for managing a large Volunteers in Prevention (VIP) Program and providing guidance and oversight to a significant portion of the Unit's DSI program.

According to CAL FIRE's [VIP Program facts sheet](#), "History has shown that when VIP teams provide fire prevention teaching in grades K-3rd, child-related fires in those areas have dropped by 50 percent. In addition, VIPs educate thousands of children and their parents about fire prevention by participating in fairs, displays, and parades each year." The handout further states, "Volunteers are trained to make preliminary wildland homeowner property inspections for fire safety as required by PRC §4291, and to discuss with homeowner's ways to make their homes fire safe." These facts make it abundantly clear, the need for face to face fire prevention education as California's wildland population continues to increase.

TCU is currently supported by approximately 100 VIPs who perform a wide variety of work under the supervision of the Unit's FPS and battalion personnel. This work greatly expands the reach of the fire prevention message in the Unit, well beyond what the corps of company officers and firefighters could hope to achieve. Most of these volunteers are retired; however, many seasonal firefighters participate



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during the off season to accrue valuable time and experience, to help move them toward their career goals. This dedicated group of VIPs faithfully supports fire prevention education efforts in many school programs, community events, and the DSI program, among others. A brief overview of the VIP program history, a facts sheet detailing the [VIP Program](#), and other information is available for review on the [CAL FIRE](#) website.

4291 Inspection Program/Community Partnerships

TCU's fire prevention program has always included many partners, from the community and other agencies. For example, in the late 1980's and early 1990's, VIPs regularly inspected the Rancho Calaveras subdivision west of Valley Springs, in Battalion 1. They were so effective in educating the relatively sparse population about the necessity and benefits of defensible space, they literally worked themselves out of a job. Property owners did their clearance every year without prompting, and the inspection crew dissolved.

The incorporation of the VIP's into the inspection program has greatly expanded the ability of the agency to educate the population and enforce PRC §4291 regulations. No better current example of that success is found within Battalion 4, the greater Arnold area of Calaveras County. By the late 90's the efforts of VIPs recruited from within Homeowner Associations and elsewhere, under direct supervision of CAL FIRE's company officers, had succeeded in reducing the number of debris burn escapes to near zero in any given year. To this day, the defensible space inspection program has continued to build strong partnerships throughout the Unit's communities. Some examples include:

- **Pine Mountain Lake Association (PMLA):** The PMLA located within the GCSD is another key player. In recent years, they have become increasingly pro-active with their fire prevention activities. They have always had a fire safety officer who was also responsible for defensible space inspections. PMLA requires corner-to-corner clearance on ALL lots, including vacant lots. With only one inspector to patrol 3,337 lots (487 unimproved), the inspection/re-inspection/enforcement process was ineffective. In 2008 PMLA, hired three temporary inspectors to inspect every single lot. The TCU's FPS provides training for these inspectors, using the PowerPoint training materials. Subsequent years have brought further refinements to the program, including stringent deadlines, mandatory compliance, and Association levied fines. When owners do not cooperate, PMLA hires contractors to perform the work, then bill the property owner, assessing administrative costs and a fine. Through these efforts, compliance has increased dramatically.
- **Tuolumne County Superior Court:** Under the terms of PRC §4291, the court levies fines of over \$450 per violation; however, once proof of correction is submitted, the court reduces the fine amount to a flat \$250, regardless of the number of violations originally cited. This incentive has motivated property owners throughout Tuolumne County to comply with defensible space requirements, while continuing to support the credibility of agency and volunteer efforts in the field toward enforcement.



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- **Fireworks Prevention and Enforcement:** According to the CAL FIRE [Fireworks Safety](#) page, there are nearly 300 communities throughout California that allow “Safe and Sane” fireworks. In TCU, Tuolumne County strictly prohibits ALL fireworks. However, the [Calaveras County communities on this list are](#): Angels Camp, Burson, Murphys, San Andreas, Valley Springs, Copperopolis, and Mokelumne Hill, and including the unincorporated areas of the county. Furthermore, in an effort to eliminate all fire starts caused by fireworks in Tuolumne County, the California Department of Transportation (CAL TRANS) also displays the message “Fireworks are illegal in Tuolumne County” on its electronic highway road signs along Highway 108/120, beginning about ten days before the Independence Day holiday.
- **Schools Team Teaching Program:** Perhaps the largest single component of TCU’s fire prevention program is our elementary school program, active within both Calaveras and Tuolumne Counties. Each year team teachers from CAL FIRE, the Volunteers in Prevention, and the USFS, visit approximately 25-30 schools. This group presents roughly 120 fire safety programs to more than 3,000 K-3rd grade students: one or two classes at a time. The team-teaching approach has been used since the 1980’s. Classes are divided into small groups, and kids receive individual attention that encourages even the shyest to interact with a “ranger” or a “firefighter.”
In 2007, a dedicated VIP took over and streamlined the program reservation system, coordinating the annual distribution of program letters to schools throughout both counties of the Unit, including one Mariposa County school that serves Tuolumne County students. The letter explains the program to school officials and invites them to participate. Nearly 100% of the invited schools elected to take advantage of the program.
The program targets kindergarten through 3rd grade students, aged 5 to 9 typically, with age appropriate messages concerning Smokey Bear’s five rules of fire and match safety, use of the 911 system including address and phone number knowledge, and Stop, Drop, and Roll situations.
The importance of the 911 system portion of the program has been growing recently as it has become evident in recent years that at least half the children in this Unit do not know their address or their telephone number. There is anecdotal evidence that even a percentage of local teenagers do not know their street address. We have started emphasizing the importance of this to parents, sending home letters stressing how critical it is for kids to know their address, phone number, and area code. Each school program finishes with an appearance by Smokey Bear and a final review of everything they have learned. Letters that we receive from the students after these programs clearly indicate that the kids have learned and taken to heart the messages that they have heard. This is exemplified further when these youngsters come to our fire prevention booth at the county fairs and other events and can answer correctly when quizzed on the topics presented in their class program months, even years, before. Also, evident at these booth encounters is that many kids from out of the area are quite



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unfamiliar with the fire safety messages our local students have learned since kindergarten. By interesting contrast – even very young children from out of the area almost invariably know their addresses. Another more serious example of the value of these lessons is a recent case where, within days of learning Stop, Drop, and Roll, one kindergartner fell face down into a campfire. She covered her face and rolled out of the fire, while her classmates helped her to roll and even patted dirt on her clothes where they were still burning. The girl escaped with barely visible scarring.

The local team-teaching concept promotes innovation on an everyday basis; the larger and more varied the team, more often new ideas surface. One of the biggest innovations was completed in 2011. As a team effort, the Forest Service side of the VIP team took the lead in developing interactive videos featuring realistic emergency scenarios, with stop-action capability, to aide in teaching proper 911 uses. They filmed a draft of what they wanted, got administrative support, obtained grant funding, lined up the film production department of Modesto Junior College with script- writers, actors, directors, producers – and during the 2011-12 school year the first-ever Interactive 911 Training Video was used locally and state-wide. CAL FIRE is a proud supporting partner and participant in this project.

- **Public Information:** While the Unit FPS is the Unit's Public Information Officer (PIO), the Unit's Resource Management Secretary provides backup relief of the PIO responsibilities. Although the PIO is the initial point of contact for media calls when they hear emergency traffic on their scanners, the Resource Management Secretary is tasked with these duties when the FPS is out of the Unit. Additionally, the Resource Management Secretary also maintains and updates the media contact lists for media outlets within the TCU. This intra-agency cooperation between the Unit's Prevention and Resource Management bureaus has been instrumental in allowing the FPS to focus efforts on the purely Prevention related programs and projects described above, while at the same time streamlining and making more efficient the dissemination of Unit information to the news media and cooperators. The FPS has the primary PIO responsibilities. In January 2017, the Unit also activated social media accounts including Twitter and Facebook. You can find us on Twitter @CALFIRETCU or <https://www.twitter.com/calfiretcu>, and on Facebook at <https://www.facebook.com/calfiretcu/>. With some assistance from the Sacramento PIO staff, TCU continues to develop, maintain, and regularly post information and updates pertaining to the Unit and CAL FIRE. Furthermore, the Unit will continue to complete press releases using traditional methods; however, with the addition of these two platforms, it will allow for an immediate release of information to the media and public, as well as disseminate departmental updates and educational messages throughout the year.
- **Fairs & Community Outreach:** VIPs from both counties join with the Unit's FPS in staffing information booths and static displays at local county fairs, home and garden shows, and other community events that provide information on defensible space, fire safe landscaping, outdoor burning, fire safety in the home, and all aspects of fire prevention relevant to children and adults.



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- **Camp Smokey:** Is a California State Fair project that TCU has annually supported for many years through the involvement of the Unit's FPS. Known as "Camp Smokey," this interagency fire prevention education exhibit at the California State Fair is much more than an "exhibit." At Camp Smokey, thousands of children and adults learn about fire safety in the home, how to get out of a burning house, the difference between good fire and bad in the environment, how to play nice in the woods, and of course, who Smokey Bear is. Even though this event is far beyond the confines of the Unit, we regard it as an important element of our own Prevention program in that it reaches tens of thousands of people every year, any one of whom might learn to prevent a fire or save a life in our Unit.

B. VEGETATION MANAGEMENT

1. Resource Management: Gary Whitson – Division Chief/Unit Forester

Forest Practice Overview

CAL FIRE Area Foresters work with private landowners, foresters, and licensed timber operators to ensure timber harvesting on private property is conducted in compliance with the California Forest Practice Rules. CAL FIRE is the lead agency and works with other agencies such as the Department of Fish and Wildlife, Regional Water Quality Control Board, and California Geological Survey to evaluate Timber Harvest Plans (THPs) when they are in the review process. Once the THPs are approved, CAL FIRE Foresters conduct active inspections to ensure timber operations are being conducted in accordance with the rules, and follow-up inspections to ensure the THPs have been properly implemented. Tuolumne County has two sawmills, a shavings mill, bark plant, and biomass plant. The presence of this infrastructure encourages forest management on private property.

Hazard Fuel Reduction/Risk Mitigation

Resource Management staff works with BCs, Conservation Camp, Fire Centers, Fuels Crew, FSCs, landowners, private contractors, and other cooperators to complete fuel reduction projects throughout the Unit. The Tuolumne-Calaveras Unit primarily uses three mechanisms to fund and perform strategic fuel reduction work in the Tuolumne-Calaveras Unit: State funded Fire Prevention Grant Programs, the Vegetation Management Program (VMP), and internal funding sources.

- **Fire Prevention Grants Program:** CAL FIRE's Fire Prevention Grants Program provides funding for local projects and activities that address the risk of wildfire and reduce wildfire potential to forested and forest adjacent communities. Funded activities include hazardous fuel reduction, fire prevention planning, and fire prevention education with an emphasis on improving public health and safety while reducing greenhouse gas emissions. Eligible applicants include state agencies, Native American tribes, local government, FSC's and other non-profits.
- **The Vegetation Management Program (VMP):** The VMP is a program that allows landowners to contract with CAL FIRE to use prescribed fire and other means to accomplish fire protection and



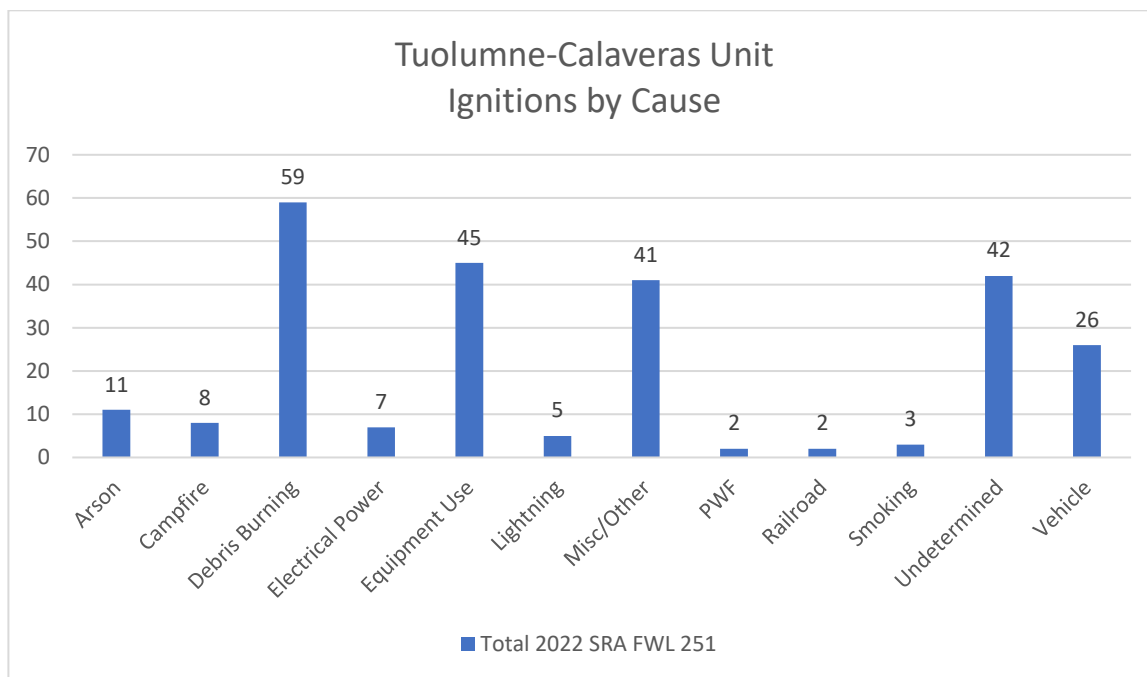
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resource management goals. VMPs have been successful in reducing fuels, as well as providing live fire and line cutting training for CAL FIRE engines, crews, and dozers.

- **Internally Funded Projects:** Each year TCU receives money to complete fuel reduction projects. Set rates are established for hand crews, engines, and equipment. Although some new fuel breaks have been constructed using this funding, the Unit has typically used this funding to conduct maintenance on existing fuel breaks.

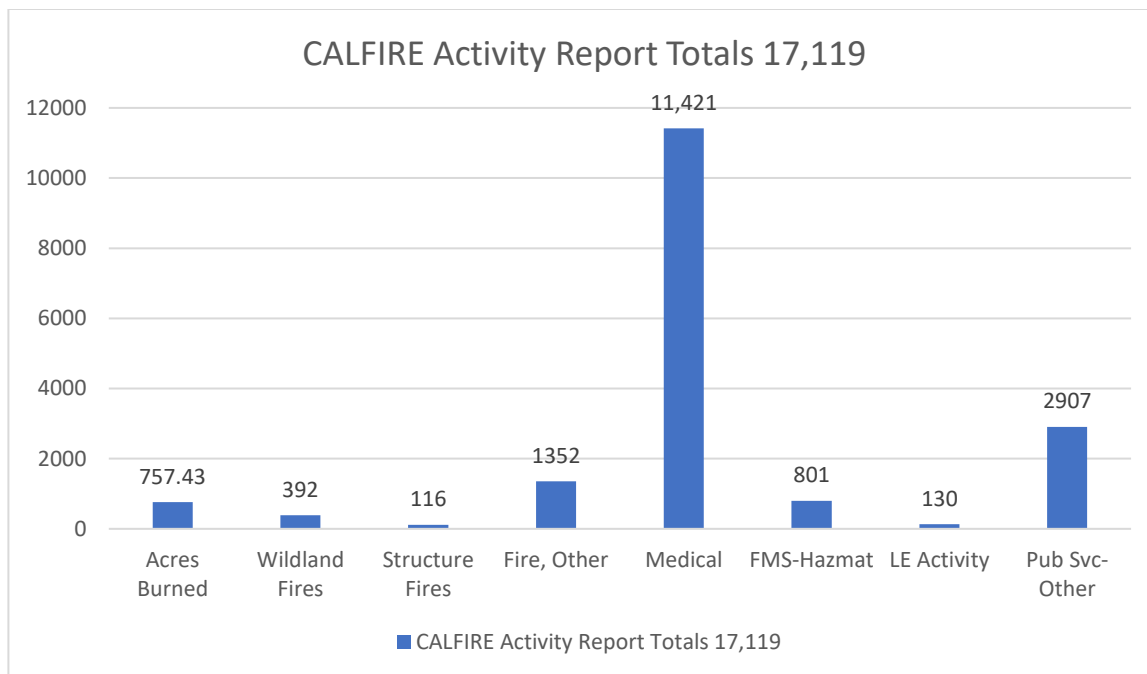
2. TCU Charts for Ignitions/Incidents 2022



This above chart represents the “Ignitions by Cause” for TCU in 2022 Red Book. This data supersedes all other tabulations.



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The above chart is from Crystal Reports and does not supersede the Red Book's data.



SECTION V: UNIT PRE - FIRE MANAGEMENT TACTICS

A. DIVISION / BATTALION / PROGRAM PLANS

1. BATTALION 1 SAN ANDREAS BATTALION: Matt Harrison- Battalion Chief

Battalion 1 Overview

The San Andreas Battalion consists of 229,486 acres, in north-western Calaveras and eastern San Joaquin Counties. The elevation ranges from 200 feet in the western plains to 2500 feet in the eastern foothills of Calaveras County. In its eastern third, the battalion is bisected by multiple east-west drainages and have a history of supporting fire spread. In the western two-thirds, the battalion is divided by two prominent ridgelines that run north-south: The northern half of the Hogback Mountain and the less prominent northern extent of Gopher Ridge.

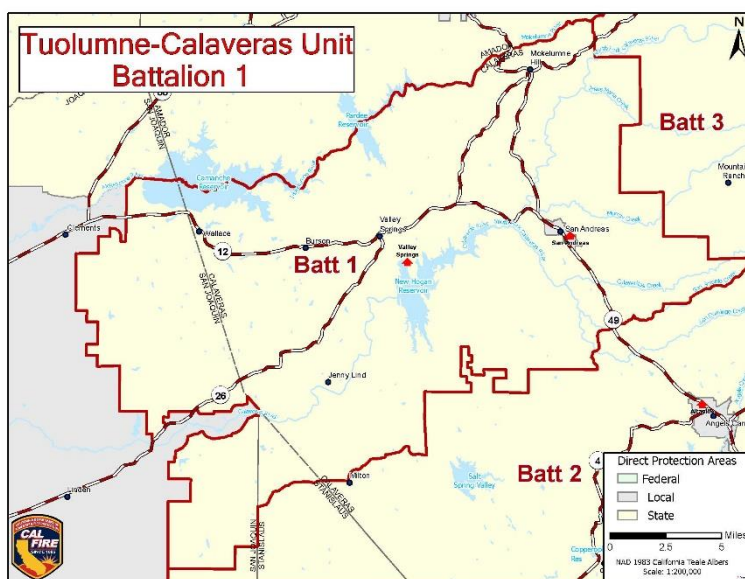


Figure 3

The battalion is comprised of two Forest Fire Stations (FFS): Battalion Headquarters FFS; a two (2) engine station located in San Andreas along with the Unit Headquarters, and a second FFS in Valley Springs; a one (1) engine station located near New Hogan Reservoir.

The primary local government fire protection is provided by three Fire Protection Districts: Calaveras Consolidated (greater Valley Springs area), San Andreas and Mokelumne Hill. In addition, East Bay Municipal Utilities District (EBMUD) also provides fire control on and adjacent to their lands.

Apart from the community of San Andreas, the entire battalion is SRA/DPA comprised of relatively small private land holdings. There are no large commercial or federal timber lands. Two federal agencies have land within the battalion. BLM owns parcels in the Bear Mountain range, as well as in the eastern foothills near the San Andreas and West Point Battalion boundaries. In the Valley Springs area, the Army Corps



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of Engineers owns the land along the shores of New Hogan Reservoir. All federal lands are designated State DPA. EBMUD owns large tracks of land in the north of the battalion bordering Camanche and Pardee reservoirs and stretches of the Mokelumne River.

In addition to providing protection for life and property, Battalion 1 provides protection for critical watershed values. The major watersheds in the battalion are the Calaveras River and its primary tributaries: Jesus Maria, Murray, Willow, Calaveritas and San Antonio Creeks – the primary sources for New Hogan Reservoir. The battalion also provides protection to the Mokelumne River watershed and the two reservoirs it feeds, Pardee and Camanche. The value of these watersheds reaches far beyond the boundaries of the battalion and the Tuolumne-Calaveras Unit.

Most of the eastern third of the battalion has been designated as Very High Fire Hazard Severity Zone (VHFHSZ) lands. The western two-thirds feature zones designated Moderate, High, and Very High with the Moderate designation dominating.

The western two-thirds of the battalion (lower) falls within the Foothills West Fire Danger Rating Area (FDRA), while the eastern third (upper) falls within the Foothills East FDRA.

Battalion 1 Assessment Summaries

Assets at Risk, Fuels, Weather and Fire History

Primary Assets at risk within the battalion cannot be listed by priority, due to the intrinsic value placed upon private citizen's assets. However, listed below are assets at risk that have been considered, relating to Pre-Fire Management within the San Andreas Battalion:

- **Life Safety:** As is the case throughout much of CAL FIRE's jurisdiction, within minutes of any wildland fire start individual homes or entire subdivisions are likely to be threatened. The need for fire defense improvements, concerted educational campaigns, safe access/egress routes and a coordinated initial response remains the priority in the minds of battalion personnel.
- **Residential and Commercial Development:** The list of "Communities at Risk" face considerable threat from wildland fire. The areas with the highest density population and residential construction are in the lower areas of the battalion. The most populated area in the battalion is a seven-mile-wide north-south swath extending from Camanche Reservoir along the northern county line and battalion boundary to Jenny Lind, south of Highway 26. The Pattison Fire Complex of 2004 burned within this area, resulting in a loss of seventeen homes. However, many rural homes are also located in the upper (eastern) area of the battalion and face a significant threat, due to the history of major fires in that geographical area. The entire battalion was predominantly ranch land before development started to increase in the open areas over the last 50 plus years. The oldest rural residential development dates from the 1940's-1960's and is often on multi-acre parcels. Thus, outdated design features such as shake roofs, wood siding, wood decks, and large single pane windows are common in these areas.



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Rapid development over the last 20 plus years has led to the addition of many new homes throughout the battalion, either in subdivision style configuration or as individual ranchette style homes scattered throughout. The newer subdivision style developments, closer to the community centers, typically feature higher density development on small lots like those found in more urban environments. Though these newer subdivisions in the lower battalion feature newer materials such as stucco or concrete siding, tile roofing and double pane windows, they are still at risk, often due to being sited in hazardous locations. This rate and kind of development is expected to continue, but will incorporate the latest Chapter 7A building codes, resulting in more ember resistant/fire safe structures.

- **Fricot City and Mokelumne Hill:** These two communities are located on terrain directly above major drainages. As such they face a significant threat from wildland fire. Each has evacuation challenges relating to population density and poor road systems. Neither has seen a significant amount of new residential development in recent years.
- **Watershed:** Watershed protection and enhancement is key in developing a sufficient water supply for human consumption. The Calaveras River and its primary tributaries: Jesus Maria, Murray, Willow, Calaveritas and San Antonio Creeks run through the center of the battalion and constitute the primary water source for New Hogan Reservoir. The Calaveras River system and the Mokelumne watershed support assets important to an area far beyond the battalion and Unit boundary. The Mokelumne River watershed is the water source for Pardee and Camanche Reservoirs and provides 90% of the water to EBMUD. EBMUD's water system serves approximately 1.3 million people in a 331-square-mile area of Alameda and Contra Costa Counties, including the major cities of Oakland and Berkeley and east to Walnut Creek and the San Ramon Valley.
- **Recreation Values:** Tourism and recreation is an important element of the economy threatened by wildfire within the battalion. The reservoirs mentioned above, along with the primary watersheds supporting them, include significant recreational opportunities: Army Corps of Engineer campgrounds and boating facilities; privately owned RV parks and campgrounds; hiking, equestrian and mountain bike trails; fisheries and hunting grounds, among others.
- **Agricultural Values:** The large cattle ranches in the western portion of the battalion depend on the annual grass crop to feed their livestock. The expansion of vineyards, orchards and other crop lands in the west continues to slowly take land out of SRA designation. Horse ranches are a growing component of the local agriculture industry also at risk from wildland fire.

After the Butte Fire in 2015, the landscape in the eastern third of the battalion drastically changed. Areas that were covered in brush had now been cleared. Because of legislation allowing for commercially grown medical marijuana and the destruction of the Butte Fire, lands generally covered in brush were being transformed into medical marijuana grows. An urgency ordinance passed by the Calaveras County Board of Supervisors in 2016 allowed for these grows to occur. During the early



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portions of the urgency ordinance, CAL FIRE conducted inspections pursuant to PRC §4119. During these inspections, inspectors found multiple sites were converting timberlands unlawfully, in violation of multiple PRC and Health and Safety (H&S) codes. Throughout the county, a handful of fires were contributed to the grows. In addition to the increased ignitions, suppression efforts are now cautiously executed to ensure personnel safety in areas of grows based on the possibility of illicit or illegal activities. In early 2018, the county issued a ban of commercially grown marijuana. On October 22, 2019, the Calaveras County Board of Supervisors adopted an ordinance regulating the cultivation of cannabis. The new ordinance allows eligible individuals and business entities to apply for a permit to engage in commercial cultivation on parcels of 20 acres or more that are zoned U, RA, A1, AP and GF. It also allows for consideration of a conditional use permit for cultivation on parcels between 10 and 20 acres in the same zones. This issue needs to be constantly monitored due to the ever-changing political environment in the county.

- **Community Infrastructure:** Water storage and delivery systems (see Watershed above); electrical distribution equipment; telecommunications systems; transportation networks; schools.

Transportation infrastructure ranks as a critical asset in need of protection. Portions of three state highways bisect the battalion: Highways 12, 26 and 49, while thousands of miles of county and private roads spread throughout the battalion. Though road surfaces themselves are only rarely damaged by wildfire, the supporting infrastructure can easily be damaged. Even when no physical damage is suffered the disruption of traffic caused by fire control operations can cause a range of negative impacts from short delays to significant disruptions.

Telecommunications is another critical element of the infrastructure present within the battalion. Several government agencies and private communications companies take advantage of the topography within the battalion for the location of communications system facilities. These installations are by necessity placed in threatened locations atop ridges and mountains.

Schools are also at risk as they are often chosen for use as evacuation centers, making them especially important in the event of a significant wildland fire.

- **Fuels:** The primary fuels within this battalion include manzanita, chamise, toyon, oak, gray pine, and various grasses. Much of the brush is over-mature and exceeds six feet in height. Fuel loading in much of the upper (eastern) portion of the battalion is heavy. Historical data indicates that fires in the upper portions of this battalion, with this type of fuel loading, are difficult to contain and exhibit potential for large and damaging fires. The lower elevations of this battalion have a combination of chaparral brush, oak woodland, bull pine, and grass. Though the fuel loading is generally lower here, the population density is greater, thus increasing the threat to life and property. Much of the fuel bed in the lower elevations is broken up by the road system and grasslands found throughout this area.



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- **Weather:** Typical fire season temperature patterns range from lows in the upper 50's to highs in the 90's. Periods of triple digit highs from 100°-110° are not uncommon and can last from days to weeks. Relative humidity runs in the mid-teens to mid-twenties during daylight hours, often with poor overnight recovery. Periods of extreme heat are occasionally accompanied by single digit humidity. Prevailing wind is generally from the north along the Highway 49 corridor, from west to northwest out west of Hogback Mountain on the western plains and west/up canyon during the day in the drainages of the eastern portion of the battalion. Overnight, a strong down-canyon wind across the ridge tops adjacent to the Mokelumne River drainages is common. August and September often bring the threat of thunderstorm activity, but it is not unusual to experience thunderstorms at any time throughout the summer season. As is the case throughout the Sierra Nevada front country, the typical summer weather is ideal for wildland fire. Periods of north wind events occur which have resulted in damaging fires such as the Pattison Complex Fires of 2004. In addition, weather patterns can be drastically different from one portion of the battalion to the other during these wind events.
- **Fire History:** Historical fire data on large damaging fires within Battalion 1 reveals fires typically occur at the lower end of drainages located in the upper (eastern) battalion, east of Highway 49. These fires follow terrain and fuels, burning up slope/drainage into the western portions of Battalions 3 or 4. On September 9, 2015, the Butte Fire started in Amador County and quickly spread along the Mokelumne River drainage in the eastern portion of the battalion into Calaveras County. Due to the terrain and fuels in this area, the fire burned a total of 70,868 acres (approximately 67,000 acres in Calaveras County), destroyed 534 residences and 4 commercial properties. The Butte Fire is a clear example of the potential of large damaging wildfires in this area, due to a combination of heavy fuel loading and extreme topographic features. This fire behaved much different than previous fires in the area, making a strong progression from north to south. Fire behavior was so extreme, it is estimated that fire's growth on September 11, 2015 was 32,754 acres in a single burn period. Like most fires occurring in this area, containment primarily ensues because of changing in fuels, topography, and/or weather. This offers fire suppression resources the opportunity to attack the head and flanks of the fire. The Butte Fire is the single largest, and most damaging fire occurring in Calaveras County to date. Large wind driven grass fires are not uncommon in the lower western-most grassland areas of the battalion. But these have typically occurred in lightly populated agricultural areas. The Pattison Fire in 2004 added a new dimension to the history of large damaging fires within the battalion. It occurred in the lower elevation western portion of the battalion, but instead of burning lightly populated agricultural lands, it spread through portions of the densely populated greater Valley Springs area. Pushed by 20 mph winds the Pattison Fires grew at extreme rates of spread through a variety of fuel models, taxed fire resources to their limits and destroyed seventeen homes on its way to a final size of 2,483 acres.

Battalion 1 Mitigation Efforts



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Due to the topographic and fuel differences within the San Andreas Battalion, mitigation prescriptions are organized into three geographic designations: The upper battalion (higher elevation east); the lower battalion (lower elevation west); and battalion wide efforts.

The Pattison Fire of 2004 has demonstrated a need for an aggressive fire prevention plan throughout the battalion emphasizing education and mitigation of hazards on private and public property. As advances in alternative methods of fuel removal/modification become available, these will be studied and used if determined to be viable.

Defensible Space Inspections: Removing fuels around structures, in compliance with PRC §4291 requirement provides the single most effective action for increasing structure survivability during a wildfire. An aggressive inspection program can provide firefighters with defensible space for structure protection operations.

- **PRC §4291 Inspections:** Utilizing engine company personnel, with DSIs, areas identified as high hazard will have the greatest emphasis. A blanket approach for specific locations within the battalion is being considered, along with a public relations campaign focusing on notification of possible inspections as well as information relating to minimizing hazards around the residence.

Fuel Reduction/Breaks: Utilizing historical fire data, fuel breaks will be constructed in areas identified as favorable to stop future fires before they become catastrophic. Control burns will be conducted as needed in conjunction with these projects to accomplish the goal of fuel modification from a brush model to grass with oak over story model.

- **West Murray Creek Road Maintenance Project:** This road serves as the only secondary evacuation route from the Doster Road/Whiskey Slide Road area to San Andreas. This route was used by fire suppression resources during the 2015 Butte Fire to gain access to the fire, and then also to evacuate residents and fire suppression resources after Whiskey Slide Road became impassable due to fire impingement. As the primary fire access road to the Doster Road/Whiskey Slide area, annual maintenance on the project is critical to ensure the safety of residents and first responders.
- **Mokelumne Hill Fire Defense Project Fuel Break:** The historic community of Mokelumne Hill lies on the Mokelumne River canyon rim above Highway 49 and is extremely vulnerable to wildfires. In early 2011 Mokelumne Hill Fire Defense Project Fuel Break project received approval for a Western States WUI Grant. After gaining nearly 100% landowner participation, work began on the fuel break in late 2012. The fuel break was constructed adjacent to Mokelumne Hill, along the canyon rim, providing a measure of protection against the threat of wildland fires below. Highway traffic, along with increased recreational activities in the river canyon added to the likelihood of human caused ignitions; making dense brush, mixed oaks, and pine fire fuels below the town even more hazardous, if left untreated. In 2015, as the Butte Fire burned towards Mokelumne Hill, this project was acknowledged for its vital role in shielding the small community from total devastation. The reduced fuel area also provided a



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key location for crews to deploy a defensive firing operation, protecting the community of Mokelumne Hill from what is historically known as the single largest wildfire in Calaveras County. As a result of the existing fuel break, fire crews successfully defended structures along the Mokelumne River drainage, resulting in zero residential structures being destroyed. Completed work on the project includes approximately 30 acres of treated fuels, creating a shaded fuel break below the community of Mokelumne Hill. The project is currently on an annual maintenance schedule.

- **MacNider Road Maintenance Project:** The only through-road access immediately adjacent to the south shore of east Hogan Reservoir, and the north and west slopes of the Bear Mountains. Annual maintenance ensures its effectiveness as the primary fuel break separating the grass lands of the lower battalion from the steep brush, and oak covered slopes of the Bear Mountains. The road also serves as the primary fire access road to the south and east shore of the lake as well as the Bear Mountains. Annual work on this project includes grading, culvert maintenance, and roadway brushing, as necessary.
- **New Hogan 2019 Vegetation Management Project (VMP):** The New Hogan 2019 VMP collectively encompasses three fuels reduction units owned by multiple landowners. Each unit was identified for fuels treatment due to proximity to densely populated areas between State Highway 26 and New Hogan Reservoir in the Rancho Calaveras area. In addition to proximity, each unit contains a high density of native chaparral species, where much of the brush exceeds six feet in height. Treatment of this fuel loading with a combination of heavy equipment, hand thinning and broadcast burning will continue to alleviate threat from damaging wildfire to the residential subdivision adjacent to the VMP.
- **PAWS Fuels Reduction Project:** The PAWS VMP is located immediately northwest of the community of San Andreas. This area is currently being treated through annual broadcast burning to reduce the risk of damaging wildfire by creating a buffer on the northwest boundary of town. Secondary benefits include reduction of invasive and noxious weeds including Yellow Star Thistle. CAL FIRE, in cooperation with Central Sierra Cooperative Extension, gather data from the VMP to track and analyze the effects of prescribed fire on the control of invasive and noxious weeds.
- **Andreas Vista Fuels Reduction Project:** Treatment began on this project in the spring of 2021. A portion of the area treated was utilized during the 2015 Butte Fire as primary control line, effectively stopping fire spread into the community of San Andreas. The primary objective of the project is to create a defensible fuel break along Andreas Vista Drive and a portion of West Murray Creek Road. At completion, this fuel break will serve as another defensible location in the event future wildfires occur east of the community of San Andreas. Secondary benefits are improved ingress/egress for citizens who live in the immediate area in the event of any emergency.
- **Old Toll Road Fuels Reduction Project:** Treatment Began on this project in the fall of 2021. The primary objective of the project is to create a defensible fuel break from North to South along Old Toll



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Road between the community of Mokelumne Hill and Highway 49. This project is also adjacent to the previously established Mokelumne Hill Fire Defense Project Fuel Break. At completion, this fuel break will serve as another defensible location in the event future wildfires occur north of the community of Mokelumne Hill. Secondary benefits are improved ingress/egress for citizens who live in the immediate area in the event of any emergency.

- **Central Hill Vegetation Management Project (VMP):** The Central Hill 2023 VMP encompasses various fuels reduction units owned by multiple private landowners throughout Northwestern Calaveras County. Each unit was identified for fuels treatment due to proximity to values at risk, including the Community of San Andreas, Jenny Lind, and Valley Springs. In addition to proximity, each unit contains a high density of native chaparral species, where much of the brush exceeds six feet in height. Treatment of this fuel loading with a combination of heavy equipment, hand thinning and broadcast burning will continue to alleviate threat from damaging wildfire communities and values at risk adjacent to the VMP.

Battalion 1 Public Education

- **Fire Prevention Signs:** Post fire prevention signs year-around, to better educate the public on fire hazards and methods of prevention. Additional signs are needed along the Highway 49 corridor and Mountain Ranch Road. Additional signs displaying seasonal fire prevention messages are needed. Current signs are located at State Highway 49, north of Mokelumne Hill; State Highway 26 and Ospital Road at the Calaveras County line; State Highway 12 west of Wallace at the Calaveras County line, and the Unit Headquarters on Pope Street facing Mountain Ranch Road.
- **Wildfire & Evacuation Planning Brochure:** With coordination from the Calaveras County Sheriff's Department and the CFFSC, a Wildfire and Evacuation Planning Brochure was developed to aid residents in the event they are threatened by an approaching wildland fire. Following CAL FIRE's "Ready Set Go" information, residents are provided information on what to do before, during, and after evacuations and wildland fires occur.
- **Campfire permits:** Another important opportunity to make an educational contact with members of the local and visiting population.

Battalion 1 Law Enforcement

- **Cause Determination and Code Enforcement:** A collective effort by Company Officers and Law Enforcement (LE) staff, as needed to determine a cause for all wildland ignitions. Accurate cause determination impacts several programs beyond the confines of the battalion (fire history, fire plan, funding for example) and can be crucial to the subsequent ability of LE staff to issue citations for violations of the various PRC and PC codes, including debris burning, arson, power line clearance, and equipment related violations, among others.



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- **Law Enforcement Support of Inspections Program:** Continued close cooperation between battalion inspectors and the Unit's LE staff is essential in the event citations are needed to gain compliance with PRC §4291 requirements.

Battalion 1 Cooperators Mitigation Efforts

- **Calaveras Foothills Fire Safe Council:** Since 2001 the CFFSC has been fully engaged in the planning and implementation of several successful countywide fuel reduction and public education efforts including: the production and distribution of public education materials, and programs; identification, planning and implementation of numerous on the ground fuel reduction projects; and the rewrite of the CWPP.
- **Public Roadways Fire Break Phase 4:** The CFFSC will reduce brush, small trees, and hanging ladder fuels along identified roadways within Calaveras County. This County Road Fire Break Management Project, implemented in cooperation with the Calaveras County Public Works Department, will help in the following ways:
 - Lessen wildfire intensity along the roadways in the event of a fire, providing safe ingress and egress routes for emergency personnel and equipment as well as citizens involved in the evacuation process.
 - Creates more advantageous fire control points to stop wildfires due to fire intensity interruption, reduction of spot fires to the opposite roadside and a fuel bed conducive to backfiring and direct suppression tactics.
 - Create enhanced vehicle view along the roadway.
 - Brush clearing along easements is typically to the property line or approximately 100 feet. Reduction is done by a crew utilizing hand and power tools. The brush is immediately chipped in a mechanical chipper and the grindings are redistributed back onto the roadway easement. This provides ground cover that temporarily inhibits growth of new fuel.
- **Calaveras County:** The County is a valuable partner in battalion efforts to improve fire safety for residents and visitors. Access to Public Works staff and equipment has been instrumental in the success of several projects over the years. In 2016-2017, the Calaveras County Board of Supervisors ratified a new CWPP.
- **Yard Waste Program:** Since 2003 disposal of forest fuels has been made much easier for residents, thanks to the county's Yard Waste Disposal program. This program allows homeowners to take all yard debris (brush, grass, pine needles, etc.) to local transfer stations for a nominal fee. The program has been very successful and encourages defensible space while improving air quality.

East Bay Municipal Utility District: Pardee & Camanche Reservoirs

- Annual fire road/trail mowing: 110.6 miles per year



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-
- Annual Disking: 18.7 miles per year
 - Annual mowing in campgrounds and other recreation areas: 387 acres
 - Fuel modification due to grazing: 13,604 acres
 - Heavy fuels modification: 15 acres
 - Removal of downed trees and excess brush around the mobile home park
 - Fuel Wood Program – Woody Fuels Management Program
 - Annual Fire Training of employees: 16 to 24 hours per year
 - Annual Fire Extinguisher Training for concession employees
 - Annual Fire Safety Audit of District facilities
 - Red Flag Protocol – Minimum of two Rangers on patrol during Red Flag events
 - Prescribed burns
 - Fire Prevention Plans for Concessionaires



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2. BATTALION 2 ANGELS CAMP BATTALION: BJ Imlach - Battalion Chief

Battalion 2 Overview

The Angels Camp Battalion extends over 278,628 acres of the southwest and south-central portions of Calaveras County, the San Joaquin Valley at about 100 feet elevation, east approximately 48 miles into the Sierra Nevada foothills up to around 2500 feet elevation. In its eastern third, it is bisected by multiple east-west drainages that have a history of supporting fire spread. In the western two-thirds, it is bisected by a set of unique geographic features – two prominent ridgelines that run north-south: the southern end of the Bear Mountains, and Gopher Ridge. Bisecting the battalion is Highway 4 west to east, and State Highway 49, north to south.

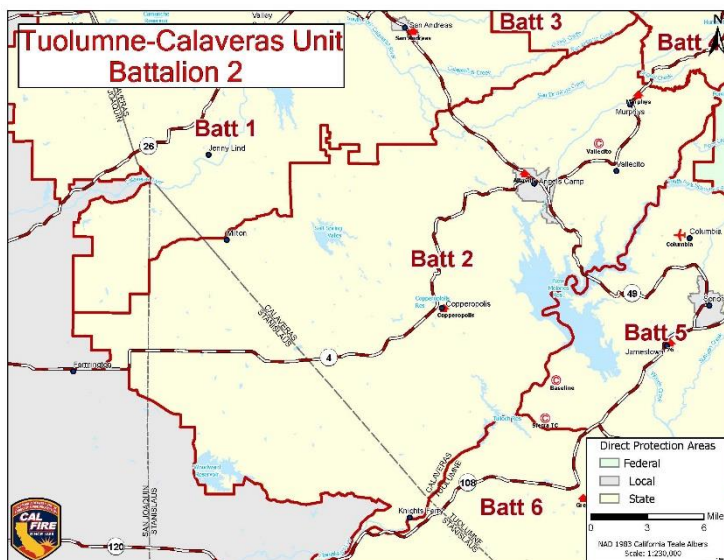


Figure 3

The battalion’s fire control organization is comprised of three stations: Copperopolis FFS - a one (1) engine station in the west; Altaville FFS - the Battalion Headquarters, a two (2) engine, one (1) bulldozer station serving the center of the battalion; Murphys FFS - a one (1) engine station on Highway 4 in the east. Also, located within the battalion boundaries, not part of the battalion organization, is Vallecito Conservation Camp, located just off Highway 4 about midway between Angels Camp and Murphys. Battalion responsibilities also include maintenance of Fowler Peak Lookout, located in the Bar XX subdivision.

The major communities in the battalion are positioned on or near the Highway 4 corridor, including: the greater Copperopolis area; subdivisions adjacent to the north shore of Tulloch Reservoir; Angels Camp (the only incorporated city); Vallecito; Douglas Flat; Murphys and its adjacent subdivisions. The communities of Murphys, Angels Camp and the Tulloch/Copperopolis areas are growing rapidly. Much of the oldest residential development outside the community centers dates to the 60’s and is often on multi-acre rural style parcels. Newer development such as that around Murphys, Angels Camp and the greater Copperopolis area often feature higher density development like those found in more urban environments. The entire battalion is SRA/DPA comprised of relatively small private land holdings with no large commercial timber lands. There are some relatively small federal holdings: BLM and BOR along the shores of New Melones Reservoir and the Stanislaus River; and BLM north of Murphys extending across the Battalion 2/3 boundary. All federal lands are designated State DPA. CAL FIRE has designated approximately half of the battalion as Very High Fire Hazard Severity Zone (VHFHSZ), and the remaining



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half as High Fire Hazard Severity Zone (HFHSZ), mostly the western and central portions. Relatively large swaths of territory in the Bear Mountains, along Gopher Ridge and in the eastern third of the battalion are designated as VHFHSZ. A small swath in the greater Copperopolis area, and some of the western most boundary areas are designated as moderate. In addition to providing protection for life and private property, Battalion 2 provides protection for critical watershed and recreational values.

The major watershed in the battalion is the Stanislaus River and its northern tributaries, the primary source for New Melones Reservoir and Tulloch Reservoir. Important smaller watersheds include San Antonio and San Domingo Creeks, both tributaries of the Calaveras River system, supporting New Hogan Reservoir in Battalion 1; and Angels Creek which supports New Melones Reservoir. Dozens of small, mostly seasonal creeks originating in the Bear Mountains and along Gopher Ridge provide water to Salt Spring Valley Reservoir in the west and Tulloch Reservoir in the south. Protection of these watersheds provides benefits that reach far beyond the boundaries of the battalion and the Unit.

Primary local government fire protection is provided by six (6) fire districts and one (1) city department. Angels City provides service within the city limits of Angels Camp. The Copperopolis FPD, the largest district in the battalion, includes everything west of the Bear Mountains to the Stanislaus County line apart from a portion of territory protected by Calaveras Consolidated Fire. The Altaville-Melones FPD, the second largest district provides services in the heart of the battalion surrounding Angels City. In the east, the Murphys FPD protects Murphys and a large swath of territory south to the county line, and north to the Battalion 2/3 boundary. Very small portions of the eastern most perimeter of Battalion 2 is protected by the Ebbetts Pass FPD and Central Calaveras FPD.

Battalion 2 Assessment Summaries

Assets at Risk, Fuels, Weather and Fire History

There are several significant assets at risk within Battalion 2 including homes and businesses; watershed resources including water collection and distribution infrastructure; electrical power generation and distribution infrastructure; communications infrastructure; recreational resources; and historical and archeological sites.

- **Life Safety:** The population centers within Battalion 2 can be characterized as widely dispersed high density communities and subdivisions; ranging from the greater Tulloch Reservoir area in the southwest and the greater Copperopolis area in the west central portion of the battalion to the greater Angels Camp/Altaville area straddling Highway 49 and east up Highway 4 to Murphys. The need for fire defense improvements, concerted educational campaigns, safe access/egress routes and a coordinated initial response remains utmost in the minds of battalion personnel.
- **Residential and Commercial Development:** The list of officially designated "Communities at Risk" in the battalion includes: Altaville, Angels Camp, Copperopolis, Douglas Flat, Milton, Murphys, and Vallecito (including the significant associated subdivisions within those community's sphere of



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influence). The County General Plan and zoning laws have allowed several large, modern, high density subdivisions such as Greenhorn Creek and Saddle Creek, as well as several less dense developments such as those in Pennsylvania Gulch, Copper Cove and the Bar XX, Circle XX, and the Diamond XX subdivisions. Several of the older developments date back to the 1940's through 1960's and outdated design features such as shake roofs, wood siding, wood decks, and large single pane windows are common in these areas. Though the newer subdivisions feature newer materials such as stucco and concrete siding, tile roofing and double pane windows, they are still at risk, often due to being sited in hazardous locations. As development continues the new Chapter 7A building codes will result in more spark resistant and fire safe structures.

- **Watershed:** The broad spectrum of watershed values noted elsewhere may be less obvious but are none the less important within and far beyond the battalion boundary. Salt Spring Valley Reservoir is supported by many small creeks draining the east side of Gopher Ridge and the west side of the Bear Mountain range. Angels Creek drains the central portion of the battalion and supports New Melones Reservoir. The San Domingo Creek drainage cuts a path through the north-eastern portion of the battalion on its way to New Hogan Reservoir in Battalion 1.
- **Recreation Values:** The large reservoirs previously mentioned, along with the primary watersheds supporting them, include significant recreational values – everything from developed BOR campgrounds and boating facilities, to hiking and mountain bike trails, fisheries, and hunting grounds. Even wine tasting and wildflower viewing are growing in popularity. BLM lands, inherently important as watershed, are also utilized for their recreational opportunities, including hunting and fishing.
- **Agricultural Values:** The large cattle ranches in the western portion of the battalion depend on the annual grass crop to feed their livestock. Vineyards, orchards, and horse ranches are a growing component of the local agriculture industry also at risk from wildland fire. Despite the loss of some acres to development agriculture remains an economically significant asset.
- **Community Infrastructure:** Water storage and delivery systems; electrical distribution equipment; telecommunications systems; transportation networks; schools.

Domestic and agricultural water collection and distribution systems including the Calaveras County Water District, Union Public Utility District, and the Stockton East Water District, are critical assets. These systems rely on a significant system of ditches and flumes to transport water throughout the battalion.

The balance of the battalion is serviced by individual domestic water wells. With the enactment of PRC §4290, water delivery for fire protection is addressed by an optional formula. Although some residents have chosen to install on-site water tanks, many new developments have opted to pay the in-lieu fee



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to fund the Calaveras County Fire Service Water Tender program. On-site tanks are minimal and there is not currently a system to guarantee functionality of the existing tanks.

Telecommunications is another critical element of the infrastructure present within the battalion. Several government agencies and private communications companies take advantage of the topography within the battalion for the location of communications system facilities. These are expensive installations that are by necessity placed in threatened locations atop ridges and mountains. The most noteworthy may be the multiple installations on Fowler Peak in the Bear Mountain range overlooking Angels Camp, to the northern point of New Melones Reservoir, and west to Copperopolis. Schools are also at risk as they are often chosen for use as evacuation centers, making them especially important in the event of a significant wildland fire.

Electrical distribution systems are ubiquitous throughout the battalion, and a critically important asset. The watersheds in the battalion supply water to many local, regional, and state-wide power generation systems, including the Calaveras Public Utility District, and Northern California Power Authority. Disruption of the power distribution system is likely to have a significant impact on the community.

Transportation infrastructure ranks as a critical asset in need of protection. Portions of two state highways bisect the battalion; Highways 4 and 49. Thousands of miles of county and private road spread throughout the battalion. While road surfaces themselves are only rarely damaged by wildfire, the supporting infrastructure can easily be damaged. Even when no physical damage is suffered the disruption of traffic caused by fire control operations can cause a range of negative impacts from short delays to significant disruptions.

- **Fuels:** Approximately 75% of the battalion features grass and oak-woodland fuels; almost everything west of Highway 49; the exception being a mosaic of brush fields on the slopes of Gopher Ridge and the Bear Mountain. The grass and oak woodland dominated west transitions to a brush dominated fuel model as one climbs east from Highway 49. As one moves, further into the eastern portions of the battalion the brush begins to mix with stands of oak and conifer, eventually becoming dominated by the mixed conifer forest model along the eastern battalion boundary.

The effects of long-term drought has effected live oaks, black oaks, and gray pines, adding significantly to the amount of down-dead fuels. This in turn increases the availability of ladder fuels the difficulty of fire control through the creation of fuel “jackpots” that burn at a high intensity.

- **Weather:** Typical fire season temperature patterns in the battalion reflect lows in the 60’s and highs in the 90’s to the 100’s. Relative humidity runs in the mid-teens to mid-twenties during daylight hours often with poor overnight recovery. Prevailing wind is generally from the west. North wind events usually result in an increase in fire activity and it is not uncommon to experience an east wind event. Late August and September bring the threat of thunderstorm activity and it is not uncommon for dry



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lightning to occur over the Bear Mountain Range and Gopher Ridge. These natural ignition causes mixed with high temperatures and low humidity's can produce large late season fire incidents.

- **Fire History:** Large fire occurrence in the battalion has been on roughly a 10-year cycle. The areas of concern during a large fire will be in and around the town of Murphys, and the subdivisions of Bar XX, Circle XX, and Diamond XX.

Battalion 2 Mitigation Efforts

History has shown that all assets within the battalion have the potential to experience the threat of wildfire at some time or another. The best way to address this will be to prioritize Battalion 2 mitigation efforts based on the following criteria:

- Priority One – Occupied residential and commercial structures.
- Priority Two – Grass and rangeland utilized for cattle and sheep production.
- Priority Three – Watershed protection.

The western areas and communities in Battalion 2, below the 2000 feet elevation, consist of scattered ranches and farms, or are in rural subdivision configurations, such as the “XX” and Copper Cove subdivisions. The size of these developed parcels, typically larger than the “urban” sized parcels of the newest subdivisions and in many cases over five acres, provides the opportunity to implement the required 100 feet fuel removal well within the property boundary. The fuel model for these areas is predominately grass, and oak woodlands. The ranchlands are often grazed off by midsummer, significantly inhibiting the spread of fire, and supplementing the clearance work done around structures. However, within the subdivisions no such benefit is realized, so a concerted effort toward promoting PRC §4291 compliance remains important in the west.

In those areas of the battalion above the 2000 feet elevation, typically east of Highway 49, the heavier brush fuels are reaching their most vulnerable state by midsummer. The result is a particularly significant fire threat to the various assets in these WUI areas, such as the greater Murphys area.

Defensible Space Inspections: Removing fuels around structures provides the single most effective action for increasing structure survivability during a wildfire. An aggressive inspection program can provide firefighters with defensible space for structure protection operations. Achieving initial compliance with the 100 feet and related requirements involves a great deal of effort on the part of CAL FIRE engine company personnel doing the inspections. It starts with educating the property owners and continues with on-site consultations over the course of multiple inspection visits to the same property.

- **PRC §4291 Inspections:** As part of the Unit wide effort to increase compliance with and enforcement of PRC §4291 requirements, three areas within Battalion 2 are targeted for onsite inspection by engine company personnel.
 1. Altaville FFS personnel will be active in the Bar XX subdivision and areas adjacent to New Melones reservoir.



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2. Murphys FFS personnel are targeting the Murphys Pines and Darby subdivisions and immediately adjacent parcels.
3. Copperopolis FFS personnel will be working within the Copper Cove subdivision along with the Diamond XX and Circle XX subdivisions.

All targeted areas present challenges to fire control operations should any fire become established within them. The Murphys Pines and Darby area subdivisions were planned and built out from the 1960's to the 1980's. Both feature road system designs allowing only single roadway ingress and egress. In addition, the construction materials and techniques used pre- dates ignition resistant building construction standards. The Bar XX subdivision presents similar challenges - narrow roads hindering ingress and egress, a mix of mostly widely scattered older homes and ranchettes, narrow driveways, dense brush fuels and rolling terrain near New Melones reservoir. In the Copperopolis area, the Copper Cove, Diamond XX and Circle XX subdivisions feature light flashy fuels over rolling terrain, one way in/out vehicle access, proximity to both a highway corridor with an active fire history and steep terrain with heavy fuels.

Fuel Reduction/Breaks: Due to the lack of large landowners, such as SPI and the USFS, landscape scale fuel reduction projects like fuel breaks are more difficult to identify and implement. Thus, the battalion focuses fuel reduction efforts on the residential parcels within Communities at Risk by way of PRC §4291 enforcement. To supplement PRC §4291 enforcement the battalion continues to pursue, and support fuel reduction efforts initiated by the local FSC, Fire Districts and individual ranch and residential property owners.

- **Murphys Fuel Break Project:** This project is currently in the active phase. This fuel break is being constructed along the ridge between the community of Murphys and the San Domingo Creek Drainage. It is approximately 5 miles long encompassing approximately 300 acres of fuels treatment. Currently, this has been identified as a 2020 Governor's priority project.
- **Murphys to Forest Meadows:** This project is funded by a CAL FIRE California Climate Investments (CCI) Fire Protection Grant. A large fuel break will be constructed on the south side of Highway 4 from Murphys, east to Forest Meadows. The project is sponsored by the Calaveras Resource Conservation District.
- **Fricot City Fuel Break:** This Project is in the development stage. The proposed fuel break would begin in the town of Sheep Ranch and extend to the grass rangelands of Calaveritas. The proposed fuel break will encompass portions of the Butte Fire containment lines of 2015.
- **Bar XX Fire Defense Project:** An active project as of early 2012, consisting of 3 treatments:
 - **Whittle VMP:** This 1500-acre VMP protects the infrastructure along Fowler Peak and provides fuel reduction between New Melones Reservoir, and the community of Angels Camp. The treatment includes broadcast burning, pile burning, and mechanical treatment of the fuels.



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- **Bar XX Safe Access/Egress Enhancement:** To improve the safety of responding emergency personnel and retreating residents, CAL FIRE Hand Crews brushed 25 feet per side off the center line of the road system throughout the subdivision. In addition to improved access/egress, these treated roads may serve as control lines or aid the development of anchor points from which fire line construction can begin. This project was completed in early 2013.
- **Bear Mountain Shaded Fuel Break:** Construction of a Shaded Fuel Break along the ridge line of Bear Mountain near the Fowler Peak Lookout. This fuel break provides direct protection to multiple high-value communications installations including public safety repeaters mounted on the lookout, an FAA radar site and numerous privately owned telephone and miscellaneous communications service repeaters. This treatment also provides a temporary refuge site for residents of Stallion Road who have just the one access/egress option and could be prevented from evacuating to Highway 4 due to fire activity and/or incoming emergency resources. Ongoing maintenance through the Whittle VMP.
- **Calaveras County Roads Fuel Reduction Project:** This project maintains work completed under the Proposition 40 program. CAL FIRE hand crews work with the County Road Department to cut and chip brush along the road right-of-way of primary roads in Calaveras County.
- **Melones Bureau of Reclamation control burn:** This project is in Cooperation with the Bureau of Reclamation and CAL FIRE. The 250-acre control burn is intended for fuel reduction, training, and mitigation of noxious weeds.

Battalion 2 Public Education

- **Campfire Permits:** Another important opportunity to make an educational contact with members of the local and visiting population.
- **Roadside Sign Program:** Battalion staff will continue promoting the fire prevention message regarding equipment caused fires via the 4x8 roadside signs. One additional signboard has been installed on Copper Cove Drive to better carry this message to the residents of Copper Cove, Saddle Creek, and Oak Canyon. In addition, we are working with CAL TRANS to secure a location on State Highway 4 at the Calaveras/Stanislaus County line for an additional sign. Being a primary entry point for commuters, part-time residents, and visitors to Calaveras County, this stretch of highway experiences a very large volume of traffic, making it an excellent point from which to publicize our fire prevention messages. Another sign on Highway 49 south of Angels Camp is used to announce outdoor debris burning related messages. This annual program occurs during fire season.
- **Calaveras County Fair and Jumping Frog Jubilee:** Battalion personnel continue their participation in the educational programs at the fair: helping to staff the CAL FIRE booth; participating with Smokey Bear; static engine displays etc. This is an annual event.



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- **School Fire Prevention Programs:** Battalion personnel continue to support and participate in annual school fire prevention programs in the battalion to increase fire safety education and awareness.

Battalion 2 Law Enforcement

- **Cause Determination and Code Enforcement:** A collective effort by Company Officers and LE staff, as needed to determine a cause for all wildland ignitions. Accurate cause determination impacts several programs beyond the confines of the battalion (fire history, fire plan, funding for example) and can be crucial to the subsequent ability of LE staff to issue citations for violations of the various PRC and PC codes, including debris burning, arson, power line clearance, and equipment related violations, among others.
- **Law Enforcement Support of Inspections Program:** Continued close cooperation between battalion inspectors and the Unit's LE staff is essential in the event citations are needed to gain compliance with PRC §4291 requirements.

Battalion 2 Cooperators Mitigation Efforts

- **Calaveras Foothills Fire Safe Council:** Since 2001 the CFFSC has been fully engaged in the planning and implementation of several successful countywide fuel reduction and public education efforts including: the production and distribution of public education materials, and programs; identification, planning and implementation of numerous on the ground fuel reduction projects; and the rewrite of the CWPP.
- **Seniors and Disabled Defensible Space Program:** The CFFSC offers a program designed to aid seniors and the disabled in attaining compliance with PRC §4291 requirements for 100 foot clearances around structures. The CFFSC hires contractors to accomplish this at no cost to the resident.
- **Door-to-Door Chipper Program:** The CFFSC will offer free chipping services for residents throughout Calaveras County. The CFFSC provides a contract chipping crew for the disposal of brush and woody debris around resident's homes in prioritized high fire-risk areas. Residents cut and stack slash along public roads and contract chipping crews chip the piles. The program assists residents in meeting the California vegetative clearance requirements of PRC §4290 and PRC §4291.
- **Calaveras County:** The County is a valuable partner in battalion efforts to improve fire safety for residents and visitors. Access to Public Works staff and equipment has been instrumental in the success of several projects over the years. In 2016-2017, the Calaveras County Board of Supervisors ratified a new CWPP.
- **City of Angels Camp:** The Angels Camp Fire Department has a "Fire Hazard Abatement Plan" like the PRC §4291 requirements concerning defensible space clearances around structures. Their inspection and enforcement efforts are completed each year by the end of May. Residents are subject to a citation for noncompliance after June 1st. In June of 2012, the city adopted a Residential Debris Burning ordinance requiring residents to obtain a "door yard" burning permit from May through the end



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of the declared fire season. Burn procedural and safety rules and regulations continue in effect after fire season, however no permit is required. The City also has a fireworks ordinance outlining the proper use of Safe and Sane fireworks within the City. The city also has an ordinance regulating the use of fireworks within the city limits. The specifics of the city's weed abatement and fireworks regulations can be found here, under [Title 8 Health and Safety](#).

- **Stanislaus County/Modesto Fire Department:** The Modesto Fire Department and Knights Ferry MACT are currently working together and have developed a Fire Safe Council in Stanislaus County. The East Stanislaus Fire Safe Council has secured grant funding through the CAL FIRE (CCI) Wildfire Prevention Grant Program for a proposed hazardous fuel reduction project in the community of Knights Ferry.



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3. BATTALION 3 WEST POINT BATTALION: Steven Hewlett - Battalion Chief

Battalion 3 Overview

The West Point Battalion consists of approximately 175,670 acres located in the northeast portion of Calaveras County. The battalion ranges in elevation from 1,600 feet in the west to 6,800 feet at its eastern boundary and is bisected by multiple east-west river drainages.

The battalion's fire control organization is comprised of three Fire Stations (FFS) and one Fire Lookout. West Point FFS, a two (2) engine station, is the battalion Headquarters located in the community of West Point; Esperanza FFS, a one (1) engine station, is located 1 mile east of the

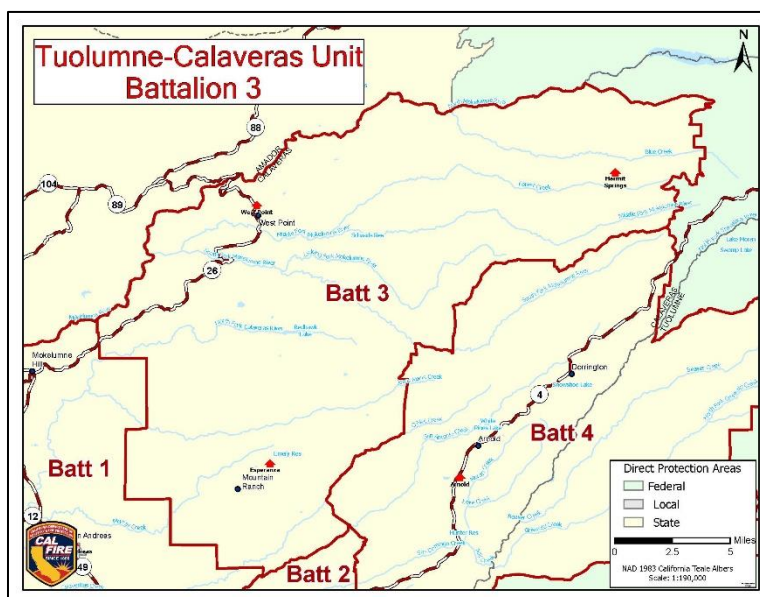


Figure 4

community of Mountain Ranch. Sierra Vista Lookout is located within the response area of Esperanza FFS northwest of the town of Mountain Ranch; and Hermit Springs FFS, a one (1) engine station, located 18 miles east of West Point at the 6,000 feet elevation on SPI land, at the battalion's eastern DPA edge adjacent to STF.

Battalion 3 is served by three primary transportation corridors: State Highway 26, Ridge Road and Winton Road running west to east through its northern portion, the combination of Railroad Flat and Mountain Ranch Road running generally north to south through the center of the battalion and Sheep Ranch Road in the southern portion of the battalion.

There is a significant forest road system on SPI and STF lands east and south of West Point, between the North Fork Mokelumne River south to the north side of Blue Mountain, all within the battalion's DPA. In past years, the battalion has benefitted from several long, intact, and contiguous traditional sections of the Ponderosa Way, which runs from north to south through the western portion of the battalion from the North Fork Mokelumne River all the way to Calaveritas Creek. However, damage to the bridges from the Butte Fire in 2015 and the subsequent weather-related damage to the road surface itself have rendered much of Ponderosa Way impassable in Battalion 3.

The primary developed communities in the battalion are West Point, Wilseyville, Glencoe, Railroad Flat, Mountain Ranch and Sheep Ranch. These population centers are in the western half of the battalion along the roadways previously mentioned. Battalion 3 has no incorporated cities, and many of the towns are relatively small with most of the battalion's population spread across a wide expanse of territory.



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The western half of the battalion includes several large parcels of BLM lands in the Mokelumne River drainages, and in the Calaveras River and Calaveritas Creek drainages, straddling both the eastern boundary with Battalion 1 and northern boundary with Battalion 2.

The eastern half of the battalion is an intermix of private commercial timberland owned by SPI along with portions of STF, Calaveras Ranger District, BLM lands, and private parcels.

All Federal lands within the battalion are designated as CAL FIRE DPA under the CFMA. Furthermore, the entire battalion has been designated by CAL FIRE as having a VHFHSZ rating. It has also been categorized as having a High Fire Hazard rating by the USFS.

TCU's West Point Battalion protects life and private property and provides vital economic and natural resource protection to critical watershed, timber, and recreational values.

The battalion protects a sizeable portion of the Mokelumne and Calaveras River watersheds, including the North, South and Licking Forks of the Mokelumne River and the North Fork of the Calaveras River.

The Mokelumne River watershed provides water to Tiger Creek, Pardee and Camanche Reservoirs and is the primary water source for the EBMUD. The Calaveras River watershed provides the primary water source for New Hogan Reservoir. Several significant tributaries of the above rivers, which may be smaller in volume, but often equal in length, also bisect the battalion, including Murray, Jesus Maria, Forest, and Blue Creeks.

The commercial timberlands in the battalion have supported a logging industry for decades and continue to play a vital role in the local and state economy. Active logging on SPI lands within the battalion and associated activities within the surrounding commercial forested lands are still active and routine.

Natural resource and recreation values are important resources under CAL FIRE's protection within Battalion 3. Hunting, fishing, hiking, cycling, and OHV activities are active during the summer season when both public lands and private SPI lands are fully accessible to the public. Jamboree type concert, barbeque and RV group events occur regularly on several large private ranches within the SRA in various locations in the battalion.

Local government fire protection within Battalion 3 is provided by three (3) fire districts. Central Calaveras Fire Rescue Protection District provides local government fire protection to the west end of the battalion serving the communities of Mountain Ranch, Glencoe, Railroad Flat and Sheep Ranch. West Point Fire District protects the north and central areas of the battalion including the communities of West Point, Wilseyville, Lily Valley and Upper Blue Creek. Ebbetts Pass Fire Protection District (EPFPD) is responsible for the extreme eastern portion of the battalion.

Battalion 3 Assessment Summaries



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Assets at Risk, Fuels, Weather and Fire History

There are many significant assets at risk in the West Point Battalion. These include rural communities on private parcels, homes, and businesses. There are critical downstream urban watershed resources which include water collection and distribution infrastructure and hydro-electric power generation and distribution infrastructure. There are major private commercial timber holdings and transportation and communications infrastructure. Also included are significant parcels of federally owned public lands comprised of watershed, timber, wildlife habitat and recreational resources along with historic and pre-historic sites.

- **Life Safety:** The western half of the battalion is characterized by a handful of small communities that function as the hubs for a widely dispersed population. The eastern half, being private and federal timberland, is sparsely populated. The need for fire defense improvements, concerted educational campaigns, safe access/egress routes and a coordinated initial response remains utmost in the minds of battalion personnel.
- **Residential and Commercial Development:** Officially designated "Communities at Risk" in the battalion include West Point (including the Lilly Valley and Blue Creek Subdivisions), Wilseyville, Glencoe, Railroad Flat, Mountain Ranch, and Sheep Ranch.

There has historically been fragmented growth throughout the west half of the battalion. Subdivisions that can be classified as modern and high density are rare, with an average parcel size of five (5) acres. Communities within the battalion can generally be classified as rural and older with much of the development dating back to the 1940's through 1960's. Outdated design features such as shake roofs, wood siding, wood decks, and large single pane windows are common in Battalion 3. Wood frame construction remains the primary preference for new development construction. However, newer building codes should result in more ember resistant and fire safe structures into the future.

Evolving laws in the State and an abundance of available land after the Butte Fire in 2015 led to a boom in commercial (both legal and illegal) marijuana production, primarily in the western areas of the battalion. This boom has brought with it all manner of both land conversion and structural development. Conversions and developments range from fully code compliant and permitted to completely illicit/illegal, and many combinations in between.

- **Watershed:** The broad spectrum of watershed values noted above may be less obvious but are tremendously important within and far beyond the battalion boundary. The Mokelumne River watershed is the water source for Pardee and Camanche Reservoirs and provides 90% of the water that goes to EBMUD. EBMUD's water system serves approximately 1.3 million people in a 331-square-mile area of Alameda and Contra Costa Counties, including the major cities of Oakland and Berkeley and east to Walnut Creek and the San Ramon Valley. This watershed also provides for electric power through the Tiger Creek Reservoir and related infrastructure as a component of Pacific



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Gas & Electric's hydro- electric distribution system. The watersheds in Battalion 3 also supply water to the Amador Water Agency, Stockton East Water District, Calaveras Public Utility District, and the Calaveras County Water District. The South Fork and Licking Forks of the Mokelumne are the primary water sources for the Calaveras Public Utilities District (CPUD), with their intake just south of the confluence of the South and Licking Forks where water is pumped into Jeff Davis Reservoir located in the Railroad Flat area. The North Fork Calaveras River is a primary water source for New Hogan Reservoir. Calaveras County Water District and the Stockton East Water District (SEWD) utilize New Hogan for water storage and delivery. Calaveras County Water District (CCWD) utilizes the Bear Creek and Forest Creek Drainages.

- **Recreation Values:** The same critical importance holds true in the western portion of Battalion 3 where CAL FIRE provides direct wildfire protection to the large areas of BLM lands along the main stem of the Mokelumne River adjacent to the community of Glencoe. Inherently important as watershed, BLM lands may be most utilized for their recreational opportunities, including hunting and fishing. This section of the Mokelumne River watershed is currently being managed by BLM in anticipation of future potential Wild and Scenic River designation. There is also long-term plan for the creation of a major trail along this stretch of the river that would connect to a system designed to link the Pacific Coast Trail with the Sierra Crest Trail.

Additional large tracks of BLM lands protected by CAL FIRE in Battalion 3 include the North fork of the Mokelumne River east of the community of West Point to the Tiger Creek Reservoir, the Middle Fork of the Mokelumne River along Silver Mountain, as well as BLM parcels around the North Fork of the Calaveras River, and south of the community of Mountain Ranch south to Calaveritas Creek.

- **Agricultural Values:** Much of the high elevation timberland in the eastern half of the battalion is used via lease agreements as summer range by low country cattle ranchers. Marijuana cultivation is currently prevalent battalion wide. With changing laws and turnover in the County Government, the future impacts of marijuana cultivation are yet unknown.
- **Community Infrastructure:** Water storage and delivery systems, electrical distribution equipment; telecommunications systems; transportation networks; schools.

Water delivery systems within the battalion are critical assets. Calaveras County Water District services the West Point and Wilseyville area. Calaveras Public Utilities District services the communities of Railroad Flat and Glencoe. The community of Mountain Ranch has a single storage tank and hydrant located near Senders Market. The balance of the battalion is serviced by individual wells. With the enactment of PRC §4290, water delivery for fire protection is addressed by an optional formula. Although some residents have chosen to install on-site water tanks, most new development has opted to pay the in-lieu fee to fund the Calaveras County Fire Service Water Tender program. There are minimal tanks onsite; however, there is no system in place to guarantee their functionality.



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Schools are also at risk as they are often chosen for use as evacuation centers, making them especially important in the event of a significant wildland fire.

Telecommunications is another critical element of the infrastructure present within the battalion. Several government agencies and private communications companies take advantage of the topography within the battalion for the location of communications system facilities. These are expensive installations that are, by necessity, placed in threatened locations on ridges and mountains. Electrical distribution systems are ubiquitous throughout the battalion, and a critically important asset. Power distribution lines and equipment are unique among assets as being both a potential cause of wildland fire and a threat to firefighting operations. Disruption of the power distribution system is likely to have a significant impact on the community.

- **Commercial Timber Resources:** SPI owns large tracks of valuable commercial timber land within the SRA in the eastern half of the battalion. The STF also owns many acres managed for commercial timber among other uses. BLM parcels comprise most of the remaining portions of the eastern high-elevation zones in Battalion 3, with some interspersed private parcels. These private and Federal timber lands are directly linked to the viability of the above-mentioned watersheds, water collection and distribution systems, recreation values, and the economies of Calaveras and surrounding counties. When considered as a broad interconnected system one can begin to see the critical importance of the wildland fire protection provided by the CAL FIRE within the West Point Battalion.
Fuels: Except for two small blocks (downtown West Point and the west end of Spink Rd), the entire West Point Battalion has been designated by CAL FIRE as a VHFHSZ. At the lowest elevations of the battalion, there is a mix of brush, grass, and oak woodlands. There are timber fuel models with heavy brush understory at the mid and higher elevations. This mixture of fuels grass with an over story of brush and brush with an over story of timber, creates a highly volatile fuel situation. The grass and brush fuel models act as the primary ladder fuels that carry fire vertically into the over story. The high potential for vertical fire spread, that is caused by the increased understory fuel loading, increase both fire intensity and spotting potential. The effects of long-term drought has effected live oaks, black oaks, and gray pines, adding significantly to the amount of down-dead fuels. This in turn increases the availability of ladder fuels the difficulty of fire control through the creation of fuel “jackpots” that burn at a high intensity.
- **Weather:** When normal Central Valley summer heat waves begin to subside, Battalion 3 eventually receives the beneficial effects from the “Delta Breeze” about 24 hours after its fire dampening effects are felt in the San Joaquin Valley and the lower elevations of the Unit. This extends the effects of high hazard fire weather patterns a full one day longer than the lower elevations experience.



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In the upper elevations of the battalion, it is not uncommon to experience relative humidity in the low teens to the single digits from the middle of September until the rainy season begins. Correspondingly, the 10-hour fuel moistures can stay below 5% for much of the fall season.

Battalion 3 frequently experiences east and north wind events at the higher elevations. During these dry wind events, high winds coupled with low humidity develop with little or no warning. The Mokelumne River drainages typically come under the greatest influence from these events. A late season, east wind driven fire event most likely represents the greatest threat for major timber fire growth in the battalion. The Power Fire on the north side of the Mokelumne River drainage on the El Dorado National Forest burned approximately 13,000 acres and destroyed a large area of both public and private timberland in 2004 under this fall east wind condition.

- **Fire History:** As with all battalions in the Tuolumne-Calaveras Unit, the West Point Battalion has had its share of large and damaging wildfires, including:
 - The Butte Fire in September of 2015 has been the largest and most damaging fire in TCU's history. The fire started on the north side of the Mokelumne River and soon crossed into Calaveras County on the Battalion 1/3 border. The fire burned a total 70,868 acres. Approximately 42,000 of those acres were in Battalion 3's boundary.
 - The Moore Fire (2001) located in Moore Creek on the North Fork of the Mokelumne River burned approximately 579 acres of timber.
 - The Leonard Fire (2001) burned the battalion's western boundary burning about 5,188 acres.
 - The Lightning #14 Fire (1996) in the Swiss Ranch area burned approximately 2,647 acres.
 - The Old Gulch Fire (1992) burned on the southern boundary of the battalion south of Mountain Ranch burning approximately 17,419 acres.
 - The Railroad Flat Complex (1988) consisting of the Bridge (6,690 acres) and Mason (4,050 acres) Fires located to the East of Rail Road Flat and Mountain Ranch burning a total of 10,740 acres.

.Battalion 3 Mitigation Efforts

Calaveras County's General Plan, Zoning Ordinances, and Building Codes govern development in the battalion. The common 5 acre and greater parcel size required to maintain the rural character of the West Point Battalion contributes to the limited ability to effectively modify fuels over large geographical areas on private parcels in the more populated western half of the battalion.

Battalion 3 will continue to focus on the following approaches to reducing the wildland fire threat in and around the battalion's various "Communities at Risk:"

- **Strategic Planning:** Property owners and the natural resources within the battalion both benefit from the strong working relationships in place between CAL FIRE, its local government and forest agency



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cooperators and large landowners, both public and private. This is and will remain the foundation for the battalion's wildfire prevention and pre-fire mitigation efforts.

- **Community Wildfire Protection Plan:** CAL FIRE is partnered with the CFFSC in maintaining its CWPP for wildland fire mitigation efforts within the West Point Battalion.
- **Structure Protection Plans:** Personnel in Battalion 3 originally compiled Structure Protection Plans in 2002. The plans are updated frequently and cover all the significant communities with the battalion.

Defensible Space Inspections: Removing fuels around structures provides the single most effective action for reducing structure ignitability and increasing structure survivability during a wildfire. An aggressive inspection program can provide firefighters with defensible space for structure defense operations. As stated previously, much of the battalion is divided into parcels of five acres or larger. The size of the parcels provides the opportunity to implement the required 100 feet fuel removal within the property boundary in many situations. Due to the rural character of the battalion, however, a large amount of time and effort is required to contact and educate property owners as to what is required, and then to perform inspections that often require multiple re-inspections. The emphasis of the battalion defensible space program since 2009 has mostly been on public education. After several years of increasingly successful public education efforts and corresponding increases in defensible space compliance, Battalion 3 will continue public education through the PRC §4291 inspection process.

- **PRC §4291 Inspections:** The battalion will continue to coordinate CAL FIRE PRC §4291 inspection program efforts with the CFFSC fuels reduction activities to support the overall removal and reduction of fuels around structures on private parcels in and around communities at risk within the battalion.

Battalion 3 Public Education

- **Roadside Sign Program:** There are three highway wildland fire prevention sign locations within the battalion. These all-weather signs provide messages in support of CAL FIRE's "Ready for Wildfire," and 100 feet defensible space requirement programs.
- **School Programs:** Battalion 3 personnel will continue to support the Unit's Fire Prevention Specialist elementary school fire safety and fire prevention message programs.
- **West Point Lumberjack Days and Mountain Ranch Day:** Battalion 3 personnel will continue to participate in the annual parades and activities associated with these community events. During both these events West Point, Glencoe, Railroad Flat and Mountain Ranch communities can view CAL FIRE's wildland fire prevention messages on display.

Battalion 3 Law Enforcement

- **Cause Determination and Code Enforcement:** A collective effort by Company Officers and LE staff, as needed to determine a cause for all wildland ignitions. Accurate cause determination impacts several programs beyond the confines of the battalion (fire history, fire plan, funding for example) and can be crucial to the subsequent ability of LE staff to issue citations for violations of the various PRC



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and PC codes, including debris burning, arson, power line clearance, and equipment related violations, among others.

- **Law Enforcement Support of Inspections Program:** Continued close cooperation between battalion inspectors and the Unit's LE staff is essential in the event citations are needed to gain compliance with PRC §4291 requirements.

Battalion 3 Cooperators Mitigation Efforts

- **Calaveras Foothills Fire Safe Council:** Since 2001 the CFFSC has been fully engaged in the planning and implementation of several successful countywide fuel reduction and public education efforts including: the production and distribution of public education materials, and programs; identification, planning and implementation of numerous on the ground fuel reduction projects; and the rewrite of the CWPP.
- **Fuel Reduction / Breaks:** Fuel break construction and maintenance, cooperative fuels reduction projects and VMPs take an economy of scale approach to protect values at risk by modifying strategic wildland fire fuels along the long, continuous dominant ridgelines in Battalion 3. Large private timber holdings and federal land ownership along the rim of the North Fork of the Mokelumne River are basically contiguous from Rich Gulch, Glencoe, and West Point, through Blue Creek and on to Moore Creek near Hermit Springs. Large strategic contiguous land holdings also exist in areas east of the communities of Railroad Flat and Mountain Ranch along the South Fork of the Mokelumne River, Summit Level Road, and the vicinity of Blue Mountain. These contiguous parcels provide significant opportunities for cooperative projects of landscape scale to protect both the communities and the watersheds in the battalion from the devastating effects of large and catastrophic wildland fires.
- **Collaboration:** SPI, STF, BLM, CAL FIRE, and CALAM along with the CFFSC have initiated several significant cooperative fuels reduction projects (see below), including proposed and completed fuel break construction, fuels treatment areas and VMPs.

As an on-going battalion priority, CAL FIRE is working closely with our forest agency cooperators, including BLM and STF, and has determined the best sustainable locations for fuel breaks and fuels treatment areas in the battalion. The focus will be on landscape scale fuels reduction efforts to these identified and agreed upon strategic locations. BLM is currently in the National Environmental Policy Act (NEPA) process for several near-future collaborative fuels reduction projects.

- **Maintenance:** As additional sections of fuel breaks and fuels treatment areas are proposed and then completed in the future, those portions completed previously will require maintenance. Continued maintenance is critical to maintain the effectiveness of any given treated area. Continued availability of funding and crews, along with long term inter-agency relationships are critical.
- **Roadside Brushing:** Access for wildland fire suppression resources, firefighter safety, and egress for citizen evacuation and effective traffic control requires an on-going commitment to roadside brushing



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and maintenance along all major roadway corridors within Battalion 3. Roadside brushing for wildland fire hazard reduction in the battalion has been and will continue to be accomplished through the cooperative efforts of CAL FIRE and its partners in this effort including Calaveras County, CFFSC, the STF and SPI.

- **The Winton/Schaad's VMP:** Elements of this project date back more than ten years. This project has consisted of fuel reduction treatments on SPI property along Winton Road, and around the Lily Valley Estates subdivision. The original project was designed to utilize controlled burning as well as mechanized and/or hand treatment fuel removal methodologies on multiple plots of varying acreages. It is designed to take advantage of potential fuel, weather, and resource limitations; by providing for multiple available options during any given season within the scope of the plan.
- **Timber Harvest Plans:** Fuels reduction and fuel break construction along Winton Road and the dominant ridge east of West Point to Hermit Springs has also been enhanced through the private enterprise efforts of SPI. Through several THPs specifically designed to reduce forest fire hazard and support fuels reduction and fuel break construction efforts, SPI has assisted in reducing overall wildland fire hazard in this area of Battalion 3.
- **Bureau of Land Management:** A strong partnership exists between the CAL FIRE West Point Battalion and the BLM Mother Lode Field Office- Fuels Management Personnel; supporting fuels reduction efforts in Battalion 3. Our mutual goal is the creation and maintenance of several significant fuel breaks over the next five years, including: Tiger Creek South, Sandy Gulch and Woodhouse Mine, and the South Fork Mokelumne Fuel Break. These fuel breaks are designed to protect both the Mokelumne River Watershed and the communities of Glencoe, West Point and Wilseyville and serve as the foundation of fuel break efforts in the western portion of the battalion.
- **Tiger Creek Fuel Break:** Provides an anchor point on the west end of the Winton/Schaad's VMP, connecting it to the Mokelumne River, providing landscape scale integration by connecting to the Antelope/Oakes Ridge Fuel Break in Amador County, in Amador Eldorado Unit to the north. Work is currently underway on Oakes Ridge. Tiger Creek South is still in the planning phase.
- **Sandy Gulch and Woodhouse Fuel Reduction:** These fuel breaks create 200 feet of clearance between BLM land and private residences along Sandy Gulch Lane and Woodhouse Mine Road. Work on this project is complete.
- **South Fork Mokelumne Fuel Break:** This fuel break will cross the South Fork of the Mokelumne River and connect Highway 26 to Independence Road. It will be the first fuel break in the South Fork drainage. This project was funded, and more than 40 acres have been treated to date. The Cal AM group of citizen activists have been instrumental in project development and securing grant funding.



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- **Summit Level Fuel Break:** This fuel break will utilize portions of the Butte Fire contingency line to connect Hathaway Pines to Rail Road Flat. In cooperation with SPI, USFS, STF and private landowners to connect the fuels project.
- **Calaveras Foothill Fire Safe Council:** The CFFSC and the Central Calaveras Fire Protection District have secured grant funding and have begun work on a GIS based preplan project that will encompass a large portion of the southwest portion of Battalion 3. CAL FIRE has provided input into the functionality of the final product.
- **Stanislaus National Forest (STF):** A strong partnership has been forged between CAL FIRE in the West Point Battalion and the STF Calaveras Ranger District fire and fuels management personnel.
- **Cooperative Mitigation Projects:** Efforts in the eastern portion of Battalion 3 have included:
 - Moore Creek drainage fuels reduction
 - Blue Creek Subdivision road brushing projects
- **Joint Prescribed Fire Project:** Efforts are underway to establish a joint prescribed fire project on STF lands directly adjacent and integral to the Winton/Schaad's VMP in cooperation with SPI, with the goal of ultimately connecting the VMP with the STF Moore Creek Fuel break.
- **Wilseyville Homeowners Association Fuel Reduction:** The fuel break was completed in the spring of 2016 and maintenance work continues
- **Lakewood Pines Homeowners Association:** This project was started and completed in 2018. The project provided a shaded fuel break for the homes in the association and surrounding community. The project also developed a water source that can now be used for firefighting operations.
- **Sheep Ranch Fuel Break:** This project is in the planning phase. The idea is to connect Sheep Ranch Road and Fricot City Road with a shaded fuel break below the town. This would provide defensible space for community and maintain existing fire breaks that are starting to become grown over.

Calaveras County: The County is a valuable partner in battalion efforts to improve fire safety for residents and visitors. Access to Public Works staff and equipment has been instrumental in the success of several projects over the years, none more so than the road brushing projects.



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4. BATTALION 4 ARNOLD BATTALION: Dennis Lange - Battalion Chief

Battalion 4 Overview

The Arnold Battalion consists of 136,516 acres, covering the southeast portion of Calaveras County, and a significant portion of north-eastern Tuolumne County. The battalion includes a wide geographic area, with elevations ranging from 1400 feet to 6800 feet and is bisected by multiple east-west drainages that have a history of supporting fire spread. Also, bisecting the battalion is State Highway 4, designated a State of California Scenic Byway. In addition to providing protection for life and private property, the Arnold

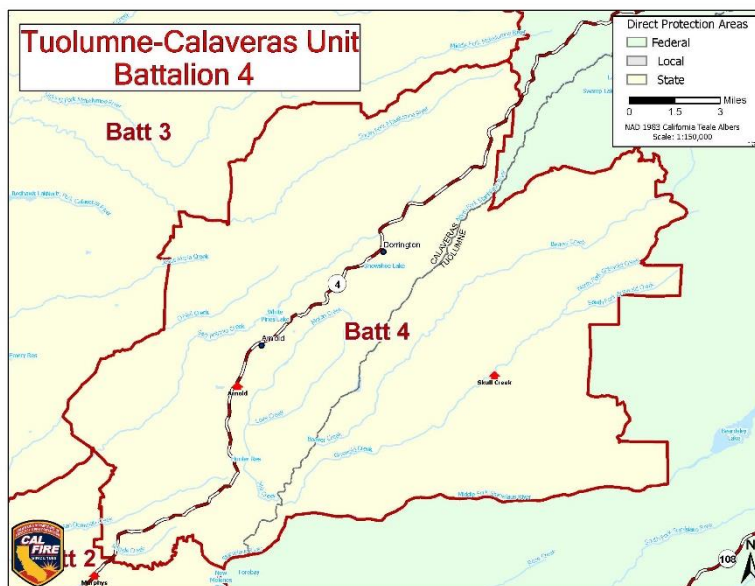


Figure 5

Battalion provides resource protection for critical watershed, significant timber, and important recreational values. The battalion protects portions of the Calaveras, Mokelumne, and Stanislaus River watersheds. Protection of these watersheds provides benefits that reach far beyond the boundaries of the battalion and the Tuolumne–Calaveras Unit. The commercial timberland in the battalion has supported an active logging industry since the mid-nineteenth century, playing a vital role in the local and state economy for 150 years. The scenic beauty of the area supports a vibrant year-round local tourism industry that caters to all types of outdoor enthusiasts. The battalion also protects Calaveras Big Trees State Park, the longest continuously established tourist destination in the State and a highly visited park that features magnificent groves of Giant Sequoia, Cedar, Sugar Pine and Douglas-Fir. The overwhelming majority of the battalion has been designated by CAL FIRE as having a VHFHSZ rating. It has also been categorized as having a High Fire Hazard rating by the USFS. With exception of a small portion of its western lower elevation areas, the battalion lies within the Unit’s Sierra FDRA.

Battalion 4 Assessment Summaries

Assets at Risk, Fuels, Weather and Fire History

There are multiple assets at risk within the battalion. Homes and businesses, watershed resources including major commercial timber holdings, water collection and distribution infrastructure, electrical power generation and distribution infrastructure, communications infrastructure, recreational resources, and historical and archeological sites. The following list reflects those assets that will be considered in pre-fire planning for the battalion:



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- **Life safety:** A very large percentage of the population of the greater Arnold area is comprised of temporary residents. Many vacation homes exist in the upper Highway 4 corridor which leads to intermittent increases in population throughout the year in response to summer recreation opportunities, holiday weekends and the ski season.
- **Residential and Commercial Development:** Battalion 4 assets include all communities along the Highway 4 corridor. Officially designated “Communities at Risk” in the battalion include Arnold, Avery, Big Trees Village, Camp Connell, Cottage Springs, Dorrington, Forest Meadows, and Hathaway Pines. Included in and/or adjacent to these communities are numerous subdivisions and commercial developments. These communities include a wide variety of residential development: modern subdivisions featuring mid-sized homes on small urban-sized lots; large modern luxury homes on multi-acre lots within a subdivision or individually located in a purely rural setting; mobile and manufactured homes in parks and/or on multi-acre rural parcels; and widely scattered 50 plus year old homes, among others. Given the long history of development, a wide variety of building materials and design features are present. The oldest structures in the battalion are often at significant risk due to threatening locations and non-fire safe construction practices. Mid-slope, chimney and ridge-top locations and outdated design features such as shake roofs, wood siding, wood decks, and large single pane windows are common. The newer development features many improvements in construction materials (double pane windows and fire resistant roofs and siding for example) but often remain at significant risk due to dense concentrations of structures on small parcels carved out of dense forest and brush fuels, often on steep terrain. Both newer and older residential communities feature many steep and narrow roads and driveways. Development will undoubtedly continue in the interface, but will incorporate the latest Chapter 7A building codes, resulting in more ember resistant/fire safe structures.
- **Watershed:** The most significant watershed asset is the production of water. The battalion provides protection to critical watersheds, including the South Fork Mokelumne River headwaters; South Fork Calaveras River headwaters, consisting of San Antonio and San Domingo Creeks, among others. These watersheds support New Hogan Reservoir. South of Highway 4 is the Stanislaus River North and Middle Fork systems, including Griswold, Beaver, Soap and Skull Creeks, among a significant number of others. The Stanislaus River watershed supplies water to New Melones Reservoir and Tulloch Reservoir. The watersheds all support assets important to an area far beyond the battalion and Unit boundary, including water storage for local and regional domestic use, industrial and agricultural use; recreational opportunities; power generation; and wildlife habitat, among others.
- **Recreation Values:** Another watershed asset is recreation. Fishing, hunting, motor sports, hiking, biking, and other activities are having an increasingly positive effect on the local economy. Arguably, the most important influence of recreation on the battalion is the impact of the ski season on commerce in the greater Arnold area. Not only do thousands of skiers pass through on any given weekend, but



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thousands also reside in and around Arnold on winter weekends and over holidays. The summer season also sees huge influxes of people into the greater Arnold area, especially on the traditional 3-day holiday weekends.

- **Agricultural Values:** Agriculture in Calaveras County provides greater than 25 million dollars' worth of products each year. The Arnold Battalion plays a large part in that production. Though not as numerous or significant as in the lower elevation battalions, agriculture related assets, including timber, orchards, vineyards, and cattle grazing, are present and economically important.

- **Community Infrastructure:** Water storage and delivery systems (flumes, tanks & reservoirs); electrical distribution equipment; telecommunications system; roads and bridges; schools.

There are various water delivery systems within the battalion, including a major flume spanning over 27 miles and operated by the Utica Power Authority. The Calaveras County Water District and the Blue Lake Springs Mutual Water Company also operate facilities within Battalion 4. Several government agencies and private communications companies take advantage of the topography within the battalion for the location of communications system facilities. Power transmission lines are also present. Traveling on Highway 4, in eastern Calaveras County; Ebbetts Pass is a vital transportation link, providing access for tourism and recreation throughout the battalion, to the high country and the eastern side of the Sierra Nevada's.

Schools are also at risk as they are often chosen for use as evacuation centers, making them especially important in the event of a significant wildland fire.

- **Calaveras Big Trees State Park:** Located just east of Arnold along Highway 4, the park features ancient old growth Sierra Redwoods (Giant Sequoia) groves, as well as large stands of old growth Sugar Pine and Cedar, among others. The park is a destination location for many, and accounts for some of the highest volume of visitors annually throughout the state parks system. The tourism and recreation the park provides is a crucial component to the economy of the surrounding communities in Calaveras County.

- **Commercial Timber Resources: Private and Federal:** Another important watershed asset is the commercial timber. Most commercial timber resources within these watersheds is owned and managed by SPI. Their large holdings between the North and Middle Forks of the Stanislaus River, historically known as the Standard Block, was considered the most valuable stand of virgin Sugar Pine in the world during the middle of the last century. A significant number of acres belonging to the USFS are also within the battalion.

- **Fuels:** Much of the battalion has been designated by CAL FIRE as a VHFHSZ. It has also been categorized as having a High Fire Hazard rating by the USFS. Fuels in the battalion range from dense stands of mature brush mixed with oak woodlands at the lower elevations, mixed conifer forests dominated by ponderosa pines in the mid-range elevations and fir and lodge pole pine dominated



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stands at the upper elevations. Fuel Models 1 (grass), 2 (oak woodland), 4 (heavy brush), 6 (medium brush), and 10 (heavy timber) are all present. This variety of fuels coupled with the rugged topography creates a highly volatile fire environment that has promoted extreme fire behavior on several occasions over past decades.

Over years of drought have led to an epidemic of over 131 million dead and dying trees throughout the Central Sierras. Calaveras County was listed among a group of ten Sierra Counties by the California Tree Mortality Task Force as a “high-priority county.” The Arnold Battalion has not been spared of the effects. The main culprit is the Western Pine Beetle. There are large swaths of land throughout the battalion covered in dead conifer trees. While the wet winter of 2017-2018 significantly slowed the movement of the insects, there remains many tens of thousands of dead trees within the battalion. Additionally, in the higher elevations of the battalion, we are beginning to see the increased activity of the bark beetle which is beginning to affect the fir species. The increased tree death significantly increases the risk of a catastrophic wildfire.

- **Weather:** Summer (fire season) weather in the battalion is characterized by periods of high heat ranging from 90°-105° with relative humidity ranging from 10-24%. The battalion experiences frequent summer heat waves where the temperature may remain in the high 90's for several days. As the normal summer heat waves begin to subside, the battalion receives the beneficial effects from the delta breeze about 24 hours after its effects are felt in the San Joaquin Valley and the lower elevation portions of the Unit. This extends the effects of high hazard weather patterns one day longer than the lower elevations experience. In the upper elevations of the battalion, it is not uncommon to experience relative humidity in the low teens from the middle of September until the rainy season. Correspondingly, 10-hour fuel moistures can stay below 5% for much of the fall. The battalion frequently experiences east and north wind events at the higher elevations during the fall. During these events, high winds coupled with low humidity develop with little or no warning. The Mokelumne and Stanislaus River drainages typically come under the greatest influence from these events as is evident by a handful of large fires that have occurred after the official close of fire season in the fall.
- **Fire History:** Despite the relatively low number of ignitions and acres burned that occur on an annual basis, the Arnold Battalion has a history of large and damaging wildfires, most recently the Ramsey (2012), Mineral (2004), Armstrong #1 and #2 (2004), Sourgrass (2002), Darby (2001), and Old Gulch (1992) fires. Additionally, while the destructive and historic Butte Fire (2015) did not burn into the battalion, it did burn to the battalion boundary where a large fuel break was created during the incident. This fuel break is planned to be maintained going forward from near the town of Murphys up to Summit Level Road. In some cases, these fires originated in low country battalions (Old Gulch, Darby) and have spread eastward up the drainages that dominate the topography. These fires have been terrain and fuel driven and containment has occurred primarily due to changes in fuels and topography or



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moderation in weather conditions. In other instances, fires have occurred in response to wind events in the Mokelumne and Stanislaus River drainages.

Battalion 4 Mitigation Efforts

Other than lightning, there is no consistent and statistically significant fire cause trend in the battalion. County General Plan and Zoning Codes provide the governing rules for development. Within the densely populated areas of the battalion small parcel sizes limit the ability to modify fuels over broad expanses of terrain. Large private land ownership intermingled with USFS lands provides greater opportunity for large scale cooperative fire prevention projects. Battalion 4 will continue to focus on its successful two prong approach to reducing the wildland fire threat: PRC §4291 defensible space inspections and cooperative fuel reduction projects; while continuing, and increasing our involvement in planning, education, and enforcement.

Defensible Space Inspections: Removing fuels around structures provides the single most effective action for increasing structure survivability during a wildfire. An aggressive inspection program can provide firefighters with defensible space for structure protection operations. The battalion has developed a model program utilizing VIP assistance to implement a vigorous home inspection program. Battalion personnel continue to work with the media in developing community awareness of PRC §4291 requirements.

Fuel Reduction/Breaks: A network of fuel breaks has been completed in cooperation with STF, Calaveras Big Trees State Park, and SPI. Since CAL FIRE does not control these lands. To date, cooperative fuel breaks have been constructed around portions of Lakemont Pines, Hathaway Pines, Blue Lake Springs, Big Tree's Village, and the McKay's Road and Love Creek Road area. These cooperative projects serve a dual purpose in that they protect homes from encroaching wildfires while protecting wildland areas from fires starting in adjacent subdivisions. Additional efforts are ongoing and planned in the Blue Lake Springs, Avery, Forest Meadows, Last Chance, Hanford Hill, Fullen Road and around critical infrastructure sites of Blue Mountain and Skull Creek Fire Station.

- **South Park VMP:** This is a fuels reduction project approximately 490 acres in size. Averaging 300 feet wide, the shaded fuel break separates Calaveras Big Trees State Park from SPI and USFS ground south of the north fork Stanislaus River. This fuel break starts and stops at the river east and west of the park boundary and is a segment of several other active projects to provide a continuous break south of Highway 4 in Murphys east to Highway 4 and Cottage Springs. The park is working in conjunction with CAL FIRE and SPI to widen the South Park VMP by thinning and burning within the park boundary along South Rim Road.
- **Forest Meadows Fuel Break:** A fuel break is proposed in three phases starting from the west of the Forest Meadows area and around Darby Knob and wraps around the area to the east up and around the community. The goal is to remove hazardous fuels and provide emergency evacuation in and around the Forest Meadows Owners Association. This includes removing dead and dying trees,



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removing ladder fuels in critical locations on parcels in and adjacent to FMOA boundaries to reduce wildfire intensity and rate of spread, improve emergency evacuation routes, and create and/or maintain fuel breaks in strategic locations. This will protect more area from fires coming out of the adjacent drainages and provide a safer location for fire crews to work.

- **Blue Lake Springs Fuel Break:** A fuel break along the ridge that separates Moran Road and Love Creek is progressing. SPI is completing a timber harvest in this location with the goal of developing a shaded fuel break condition upon completion of harvest. This project would provide additional protection to the more densely populated portions of the battalion.
- **Fullen Road Fuel Break:** The CFFSC is maintaining and improving the Fullen Road Fuel Break near the community of Avery. The project is funded by a CAL FIRE CCI Fire Prevention Grant.
- **Summit Level Road Fuel Break:** As part of the contingency process for the Butte Fire a multi dozer blade wide fire line/fuel break was constructed north of Arnold and into the West Point Battalion along Summit Level Road. This fuel break runs from the Mineral Mountain area to the Summit Level area. Further efforts to maintain this fuel break are ongoing with cooperators including SPI and the USFS.

Strategic Planning: A close working relationship has been developed in recent years between CAL FIRE and several stakeholders including the USFS, SPI, EPFPD, Calaveras Big Trees State Park, and homeowner associates, to name a few. Strategic Planning is a significant issue of concern to all.

- **Structure Protection Plans:** Plans have been developed for all developed community areas within the battalion, identifying hazards, topography, evacuation routes and tactical information.
- **County Ordinance Application:** Engage County Building and Public Works officials to support the enforcement of County ordinances which have been adopted as functional equivalents to PRC §4290, with regards to water supply, road standards, signage, and fuel modification.
- **Fire Lookout Staffing:** An ongoing effort to secure the restoration of funding for Blue Mountain Lookout. The loss of Blue Mountain Lookout staffing several years ago, reduced CAL FIRE's ability to quickly detect wildfires and dispatch appropriate resources. The lookout is now currently staffed during periods of peak fire danger (wind events, lightning, and periods of high probability of fire ignitions that maybe human caused i.e. 4th of July, etc.).

Battalion 4 Public Education

A variety of education methods are routinely employed in Battalion 4, including:

- **Fire Prevention Signs:** Road-side fire prevention signs remain posted year around, carrying a variety of seasonally appropriate messages, to better educate the public on fire hazards and methods of prevention. Messages will target causes identified in the ignition management analysis.
- **Campfire Permits:** Another important opportunity to make an educational contact with members of the local and visiting population.



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- **School Fire Prevention Programs:** Battalion personnel will continue to support and participate in annual school fire prevention programs in the battalion and along the Highway 4 corridor to increase fire safety education and awareness.
- **Volunteer in Fire Prevention PRC §4291 Inspections:** Battalion personnel enlist the assistance of local homeowner associations to create VIP programs and conduct 4291 inspections within the Arnold community. This process assists the battalion in ensuring homes follow defensible space standards and allowing HOA communities to enforce their respective HOA bylaws. This practice has been successful in ensuring residential structures within the battalion comply and allowing battalion personnel to focus on residential structures outside of HOA's.

Battalion 4 Law Enforcement

- **Cause Determination and Code Enforcement:** A collective effort by Company Officers and LE staff, as needed to determine a cause for all wildland ignitions. Accurate cause determination impacts several programs beyond the confines of the battalion (fire history, fire plan, funding for example) and can be crucial to the subsequent ability of LE staff to issue citations for violations of the various PRC and PC codes, including debris burning, arson, power line clearance, and equipment related violations, among others.
- **Law Enforcement Support of Inspections Program:** Continued close cooperation between battalion inspectors and the Unit's LE staff is essential in the event citations are needed to gain compliance with PRC §4291 requirements.

Battalion 4 Cooperators Mitigation Efforts

Calaveras Foothills Fire Safe Council: Since 2001 the CFFSC has been fully engaged in the planning and implementation of several successful countywide fuel reduction and public education efforts including: the production and distribution of public education materials, and programs; identification, planning and implementation of numerous on the ground fuel reduction projects; and the rewrite of the CWPP.

Stanislaus National Forest (STF), USFS: For many years, the Battalion 4 BC has worked closely with his counterparts from the Calaveras District of the STF. Coordination of fuel reduction efforts continues to be a high priority given that several large subdivisions within the greater Arnold area are immediately adjacent to USFS lands. Though most these Federal lands are designated as State DPA they remain the responsibility of the USFS for all other land management issues, including forest fuel treatment projects.

- **Treatment Strategies:** Efforts are ongoing to plan and carry out fuel reduction projects. The Calaveras District's fuel treatment strategies are designed to reintroduce fire, reduce fuel levels, and mitigate the consequences of large damaging wildfires. These strategies allow managers to set priorities that protect fire fighters, the public, property, and natural resources. In general, landscape level fuel treatment strategies are designed to limit wildfire extent, modify fire behavior, and improve



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ecosystems. Fire and fuel management relies on a combination of strategies for modifying wildland fire behavior, achieving Fire Management Plan goals, and re-introducing fire across broad landscapes:

- Strategically placed area treatments.
- Defensible fuel profile and fuels reduction zones adjacent to communities and areas of high value.
- Wildland Fire Use.
- **Management Goals:** Fire managers use these strategies for prioritizing projects over the entire Forest to determine priority areas for fuel treatment. The fuel management goals include:
 - Protect life and property in the WUI zone.
 - Provide for firefighter and public safety.
 - Improve forest health and fire resiliency.
 - Reduce fire severity and level of resource damage.
 - Adhere to the directions, standards, and guidelines in the Land and Resource Management Plan.
 - Protect sensitive habitat.

Calaveras Big Trees State Park: The California Department of Parks and Recreation State Park (DPR) has an aggressive fuel treatment program aimed at restoring the role of fire in park ecosystems while preserving and protecting the unique features of the park. State Park officials have conducted several fuel reductions projects at Calaveras Big Trees State Park. The largest single project was a 115-acre fuel break constructed along the boundary shared with the Blue Lake Springs subdivision and on the ridge forming the upper watershed boundary of Moran Creek. Most of the other related projects conducted in the park are aimed at restoring forest stand conditions to reflect a natural fire regime, although the end results are essentially the same as a specific fuel reduction/fuel break project. This allows DPR to contribute to the effort to create a fire safe community, while also meeting its responsibility to preserve natural systems within the park. Additional projects include 45 acres treated (as part of a black oak woodland restoration project) along the ridge connecting Blue Lake Springs and Big Trees Village subdivisions, three separate projects to thin understory trees and reduce ground fuels along the Highway 4 corridor through the park, (approximately 80 acres), and an ongoing effort to restore the forest community of the South Grove Natural Preserve. In addition, approximately 45 acres of several smaller projects have been conducted to reduce fuel loadings that are particularly heavy, but that are not necessarily part of a strategic plan. CAL FIRE has assisted the State Parks with vegetation management control. In total, the partnership was able to complete 60 acres. DPR continues to plan fuel reduction burns in their sphere of influence, with their most ambitious goal of treating 1300 acres of timber in the South Grove of the Park. In addition, they have planned prescribed burns in other portions of the park.

Sierra Pacific Industries (SPI): As the largest single landowner in the battalion, SPI is an obvious partner for collaborative projects. Currently, SPI has a completed THP operation along the boundary of the Big Trees Village subdivision and on additional parcels near Moran Road and Love Creek areas. SPI also



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has a planned timber harvest in the North Griswold Creek area. As part of this THP a fuel break of 81 acres is proposed at the same location. In support of these efforts CAL FIRE personnel continue to maintain our targeted inspection program in areas that are adjacent to SPI land, to reduce the threat of wildfires spreading from developed subdivisions onto SPI timberlands.

Ebbetts Pass Fire Protection District (EPFPD): The EPFPD has been a long-time supporter of CAL FIRE's fuel reduction plans. Their weed abatement ordinance targets unimproved lots ¼ acre or less. An EPFPD prevention officer typically responds to referrals and/or citizen complaints. Using an LE-100 style inspection process, the ordinance is enforced year-round. This ordinance is especially important to CAL FIRE, as we have no legal authority to apply the PRC §4291 fuel reduction and defensible space regulations to unimproved parcels. CAL FIRE supports the efforts of EPFPD by providing technical assistance to the district upon request, and through an aggressive PRC §4291 inspection program on improved lots.

Blue Lake Springs HOA Perimeter Fire Safety Project: The Homeowners Association, in collaboration with CAL FIRE, EPFPD, USFS, SPI, Calaveras Big Trees State Park, CFFSC, adjacent HOA's and other private property owners, has designed a project with the goal of creating a shaded fuel break around the subdivision's perimeter. The intent is to prevent wildland fire from leaving or entering the 1500 lot subdivision; provide fire control resources access and anchor points; and to support ongoing efforts within the subdivision to motivate compliance with PRC §4291 requirements. Approximately 45 acres are targeted for treatment. This project is active. Tuolumne-Calaveras Unit is active in dedicating personnel and equipment to this project.

Big Trees Village/Snowshoe Springs HOA's: The Homeowner Associations of two contiguous subdivisions, Big Trees Village (BTV) and Snowshoe Thompson, located in the Camp Connell/Dorrington WUI, seek to protect approximately 2,400 structures from wildfire spreading from the adjacent forests, and conversely to protect those forests from structure fires spreading from within those subdivisions to those surrounding forests.

- **Collaboration:** The two subdivisions are surrounded by the following land managers: Calaveras Big Trees State Park to the west, SPI to the south, USFS to the east, and CAL TRANS to the north (Highway 4). BTV and Snowshoe Thompson HOA's continue to work collaboratively with these land managers to enhance wildland fire safety.
- **Inspections:** BTV is an active participant in CAL FIRE's VIP program. Annually residents from within BTV, who have been certified by CAL FIRE as VIPs, conduct a thorough inspection which is submitted to CAL FIRE for follow up enforcement. The BTV VIP committee then works with CAL FIRE on follow-up inspections to ensure compliance. Also, BTV-POA has education material on its website to teach its property owners about the 100 foot clearance requirements.



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- **Big Trees Village Fuel Reduction Project:** Fuels reduction on 20 acres of land that is situated on the rim of the Stanislaus River Canyon which would assist in protecting 2500+ residential and commercial structures within the Big Trees Village subdivision. Crews cut, piled, and burned brush and small trees on approximately 20 acres owned by the Big Trees Village Homeowner's Association. This project is complete.

Forest Meadows Homeowners Association: The association produced a CWPP in 2007 that examines vegetation conditions, terrain, and climatic influences within the development and on appropriate adjacent lands. It addresses the impact of infrastructure (roads, trails, utility corridors, etc.) on fire behavior and examines the response situation.

- **Pistole Hazardous Fuel Reduction and Commercial Thinning:** Designed to supplement existing protective measures within the Forest Meadows subdivision, this 40-acre Treatment Area is located a short distance west of the subdivision. An additional benefit was improved forest health within the parcel. Plans called for mechanical mastication to remove brush, poison oak and mixed conifer and black oak 2nd growth, followed by hand pruning, to create a shaded fuel break. Following the removal of hazardous fuels, commercial sized understory was removed to reduce canopy cover and lessen the threat of crown fire. CFFSC provided the funding mechanism and project administration within the framework of the Calaveras County CWPP. This project is complete.

Fire Wise Communities: Nine of the 13 Homeowner's Associations on the Highway 4 corridor hold Fire Wise status including Big Trees POA, Blue Lake Springs West, Blue Lake Springs HOA, Country Houses HOA, Forest Meadows, Grizzly Ridge HOA, Lakemont Pines HOA, Meadowmont Subdivision, Meadowview Townhouses HOA, Mill Woods, and Pinebrook Subdivision.

Calaveras County Fuel Waste Program: Disposal of forest fuels has been made much easier for residents, thanks to the county's Fuel Waste Disposal program. Under this program, homeowners may take all unwanted yard debris (brush, grass, pine needles, etc.) to local transfer stations and dump these materials for a nominal fee. The program has been very successful in encouraging compliance with fuel reduction around structures while improving air quality because of less "dooryard" burning by residents.

Western Alpine County: While not part of the Tuolumne-Calaveras Unit's administrative boundaries, Western Alpine County is within the Arnold Battalion's circle of influence. The community of Bear Valley is actively addressing concerns regarding forest fuel accumulations. The homeowner's association with the help of a Registered Professional Forester continues to implement treatment projects on common areas within the Bear Valley subdivision with the intent of reducing fuel loading. In addition, the County Public Works Department continues efforts to reduce fuel accumulations along the public road right-of-way using various grant funds.



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5. BATTALION 5 TWAIN HARTE BATTALION: Paul Karpus - Battalion Chief

Battalion 5 Overview

The Twain Harte Battalion covers approximately 147,547 acres of northern Tuolumne County, from the Stanislaus River/Battalion 2 boundary in the north, to the Tuolumne River/Battalion 6 boundary on the south. O’Byrne’s Ferry Rd. and Highway 120 between Tulloch Reservoir and Don Pedro Reservoir serve as the western boundary. Along its north and east perimeter, the battalion adjoins the STF and DPA boundary east of the communities of Tuolumne City, Twain Harte, Mi-Wuk Village, Long Barn,

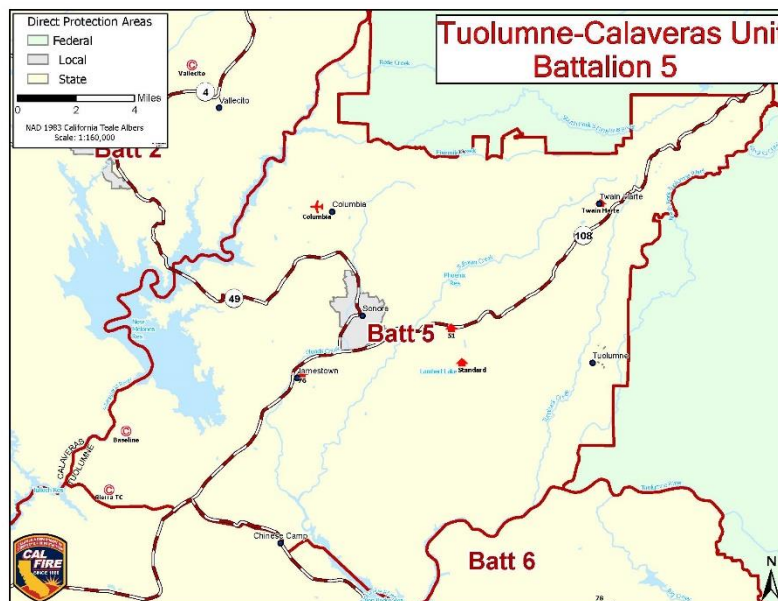


Figure 6

and north of Columbia. Elevation ranges from a low of 550 feet at the O’Byrne’s Ferry Bridge on the west side to over 5,100 feet in the east. State Highway 108 splits the battalion nearly perfectly in half as it runs west to east. The battalion’s fire control organization consists of two FFS: Standard, a two (2) engine station serving the western half of the battalion, located just minutes east of Sonora, and Twain Harte Station, the Battalion Headquarters, a two (2) engine station serving the higher elevation eastern half of the battalion. Also, operating within the Battalion 5 boundary is a portion of the TCFD under the direction of the CAL FIRE Assistant Chief/ Assistant County Fire Warden.

CAL FIRE and TCFD maintain strong working relationships with nine fire agencies also providing services within the battalion’s operational area: Sonora City; Strawberry, Twain Harte, Tuolumne City Fire and Columbia Fire Districts; Tuolumne Band of Mi-Wuk Indians Rancheria Fire Department. Additionally, joint operations with Jamestown and Columbia College FD, through cooperative fire protection agreements. Despite being the Unit’s second smallest battalion geographically, the population is the highest. The population center for the battalion is on the Highway 108 corridor from Jamestown to Long Barn. The main communities in the battalion are Jamestown, Sonora, Columbia, Tuolumne City, Twain Harte, Mi-Wuk Village and Long Barn. Sonora is the only incorporated city. Many vacation homes exist in the upper Highway 108 corridor which leads to intermittent increases in population throughout the year in response to summer recreation opportunities, holiday weekends and the ski season. Commercial development has responded to the population density and features many major retail stores typical of more urban valley locations, in addition to the small businesses seen throughout the Unit.



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The overwhelming majority of battalion lands are privately owned; only a relatively small number of acres are owned by the Federal Government or major property owners. SPI owns a swath of commercial timber land in the north-eastern most corner of the battalion, north of Highway 108. Two Federal agencies are large landowners: BOR manages lands surrounding New Melones Reservoir; BLM manages various tracts of noncontiguous land interspersed throughout the battalion.

In addition to providing protection for life and private property, the Twain Harte Battalion provides resource protection for critical watershed, timber, and recreational values. The battalion provides protection to regionally significant watersheds, including very large portions of the Tuolumne and Stanislaus River systems. Water collected from these watersheds, and stored in area reservoirs, is critically important to an area stretching far beyond the battalion and Unit boundary, for use as domestic, industrial, and agricultural supply, recreational opportunities, power generation, and wildlife habitat.

Approximately two thirds of the battalion have been designated by CAL FIRE as VHFHSZ lands mostly in the north, east and southern areas. A large swath in the west that extends into the heart of the battalion is designated as High. Smaller portions scattered through this area are designated Moderate.

Battalion 5 Assessment Summaries

Assets at Risk, Fuels, Weather and Fire History

Rural and urban style residential development; small-town and suburban style commercial development; critical watershed; water collection and distribution infrastructure; commercial timber; power generation facilities; communications infrastructure; utility and power distribution infrastructure; agriculture; highway and railroad transportation infrastructure; individual historic buildings and whole towns; archaeological sites; recreation infrastructure.

Battalion 5 contains the largest population of any battalion in the Unit, which results in the greatest density of WUI classified area. The battalion correspondingly experiences a high number of ignitions and unwanted fire annually. If history is any indication, as population and development continue to rise, the battalion will see a corresponding increase in fire activity.

- **Life Safety:** Being the most densely populated area of the entire Unit means that within minutes of any wildland fire start individual homes or entire subdivisions are likely to be threatened. The need for fire defense improvements, educational campaigns, safe access/egress routes and a coordinated initial response remains utmost in the minds of battalion personnel.
- **Residential and Commercial Development:** Battalion 5 assets at risk include all communities along the Highway 108 corridor, and several more beyond. Those officially designated as “Communities At Risk” include Arastraville, Cedar Ridge, Chinese Camp, Cold Springs, Columbia Historic State Park, Confidence, East Sonora, Jamestown, Long Barn, Mi-Wuk Village, Mono Vista, Phoenix Lake, Sierra Village, Sonora, Soulsbyville, Standard, Stent, Tuolumne, Tuttletown, and Twain Harte. Included in some of these communities, or pending official designation are Big Hill, Crystal Falls, and Sugar Pine.



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Also, included in and adjacent to these communities are numerous subdivisions and commercial developments. Wildfire presents a significant threat to life and property within the community.

The communities in Battalion 5 include a wide variety of residential development: modern subdivisions featuring mid-sized homes on small urban-style lots; large modern luxury homes on multi-acre lots within a subdivision or individually located in a purely rural setting; mobile and manufactured homes in parks and/or on multi-acre rural parcels; widely scattered 50+ year old homes; working agricultural operations, among others. Given the long history of development, a wide variety of building materials and design features are present. The oldest structures in the battalion are often at significant risk due to threatening locations and non-fire safe construction practices. Mid-slope, chimney and ridge-top locations and outdated design features such as shake roofs, wood siding, wood decks, and large single pane windows are common. The newer development features many improvements in construction materials (double pane windows and fire resistant roofs and siding for example) but often remain at significant risk due to dense concentrations of structures on small parcels carved out of dense forest and brush fuels, often on steep terrain. Both newer and older residential communities feature many steep and narrow roads and driveways. Development will undoubtedly continue in the interface, but will incorporate the latest Chapter 7A building codes, resulting in more ember resistant/fire safe structures.

- **Watershed:** Watershed protection and enhancement is key in developing a sufficient water supply for human consumption. In the northwest, the battalion includes several small tributaries originating south of the South Fork and main stem of the Stanislaus River just east of New Melones Reservoir, including Five Mile Creek. The Stanislaus River supplies water to New Melones, Tulloch and Woodward reservoirs. Several northern tributaries of the Tuolumne River including Woods, Sullivan, Curtis, and Turnback Creeks cut through the center of the battalion with year-round flows. The Tuolumne River watershed supplies water to Don Pedro Reservoir and Turlock Lake.

Locally, these waters have two primary uses: domestic supply and recreation. The importance of a sustainable domestic water supply cannot be overstated. The primary water district, Tuolumne Utilities District (TUD) supplies water throughout the battalion. TUD facilities include historic ditches and flumes, dating back to the California Gold Rush, to a modern above ground tank network, pumping facilities, and surface storage, such as Phoenix Lake and several smaller reservoirs connected to the ditch system.

Water-based recreation is also critically important to the economy and lifestyles of Unit communities. Therefore, protection of these watersheds is imperative, both locally and far beyond the boundaries of the battalion and Unit.

- **Recreation Values:** Tourism and recreation is one of the most significant elements of the economy threatened by wildfire within the battalion. The reservoirs mentioned above, along with the primary



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watersheds supporting them, include significant recreational opportunities: BOR campgrounds and boating facilities; privately owned RV parks and campgrounds; hiking, equestrian and mountain bike trails; fisheries and hunting grounds, among others. The battalion is a draw to many types of recreationists for its local resources, as well as being a stopping place for thousands of tourist's traveling to or from Yosemite National Park and the other high-country recreation areas adjacent to the battalion.

- **Agricultural Values:** The large cattle ranches in the western portion of the battalion depend on the annual grass crop to feed their livestock. Vineyards, orchards, and horse ranches are a growing component of the local agriculture industry also at risk from wildland fire. Despite the loss of some acres to development agriculture remains an economically significant asset. Historical fires predating the Department annually burned these lands destroying feed and improvements.

Another fascinating cultural resource found in and about Tuolumne County's ranch lands are the remnants of the miles of rock wall "fences" and rock corrals used by settlers in the 1800's. Easily seen throughout the pasture lands in the western portion of the battalion, these stone features are always at risk for damage as a result of firefighting operations, therefore special care and consideration must be taken to protect these time-tested structures when wildfires occur.

- **Commercial Timber Resources:** Another important asset is privately owned commercial timberland. Though small in terms of acres within the battalion, the economic influence of the timber industry on battalion communities has been significant for decades.

- **Community Infrastructure:** Water storage and delivery systems (see Watershed above); electrical distribution equipment; telecommunications systems; transportation networks; and schools.

Electrical distribution systems are ubiquitous throughout the battalion, and a critically important asset. Disruption of the power distribution system is likely to have a significant impact on the community.

Telecommunications is another critical element of the infrastructure present within the battalion.

Several government agencies and private communications companies take advantage of the topography within the battalion for the location of communications system facilities. These are expensive installations that are by necessity, placed in threatened locations on ridges and mountains.

Transportation infrastructure is as a critical asset in need of protection. Portions of three State Highways bisect the battalion: 108, 49 and 120. The Sierra Railway operates on a line through the battalion that terminates at the SPI mill in Standard, California. Thousands of miles of county and private road spread throughout the battalion. While road surfaces themselves are only rarely damaged by wildfire, some supporting infrastructure is vulnerable. Even when there is no damage, the disruption of traffic caused by fire control operations can create short delays to significant disruptions.

Schools are also at risk as they are often chosen for use as evacuation centers, making them especially important in the event of a significant wildland fire.



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- **Fuels:** Fuel models range from grassland and oak woodland with scattered brush fields in the western portion of the battalion, to brush and timber in the east. Each of the thirteen Fire Behavior Prediction System fuel models are represented in the battalion, with fuel models 1 (short grass), 3 (tall grass), and 4 (chaparral) dominating.

The effects of a series of annual low elevation snow falls starting in 2006 through 2011 remain a consideration for the fuels between the 1,500 feet and 3,000 feet elevations. These events primarily affect the live oak, black oak, and bull pine, breaking off their branches and tops. This adds significantly to the number of dry dead and down fuels in the under story and, in turn, increases the availability of “ladder fuels.” This increased dead fuel loading increases the difficulty of fire control through the creation of fuel “jackpots” that burn with high intensity.

Most recently, over 129 million trees across California have died due to record drought conditions exacerbated by bark beetle infestation. This tree mortality and large fuel load has created an increased wildfire threat to a large area of Battalion 5 including but not limited to the communities of Cedar Ridge, Twain Harte, Mi Wuk, Long Barn, Confidence and Tuolumne City. This increases the chances of rapid fuel driven fire spread, short- and long-range spotting, trees, branches, and tops falling during firefighting operations and the need to support early and immediate evacuation of civilians.

- **Weather:** Typical fire season temperature patterns range from lows in the upper 50’s to highs in the 90’s. Periods of triple digit highs from 100°-110° are not uncommon and can last from a couple days to a couple weeks. Relative humidity runs in the mid-teens to mid-twenties during daylight hours often with poor overnight recovery. Periods of extreme heat are occasionally accompanied by single digit humidity. Prevailing wind is generally from the southwest and west during the day, accentuating the normal up-canyon flow due to the orientation of the major drainages. Overnight, strong down-canyon winds across the ridge tops adjacent to the Stanislaus and Tuolumne River drainages are common. August and September often bring the threat of thunderstorm activity, but it is not unusual to experience thunderstorms at any time throughout the summer season. As is the case throughout the Sierra Nevada front country, the typical summer weather is ideal for wildland fire.
- **Fire History:** The battalion has a long history of large damaging fires that occurred before accurate records began being collected after World War II. This damage was an annual event despite the efforts of an emerging fire protection system that was beginning to take shape in the early 1900’s. By 1927 the Division of Forestry had been formally created, though the devastation and destruction of many summer wildfires remained. Local newspapers frequently recounted fire incidents, describing in detail the wildfires that consumed many thousands of acres of Tuolumne County. The fire protection structure at the time was one State Forest Ranger, supported by a team of volunteer Wardens. Firefighting work crews were generally comprised of Pacific Gas & Electric employees, ranchers, lumbermen, and other able-bodied adults, summoned by the State Forest Ranger.



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Since 1951, 75% of large damaging fires in Tuolumne County occurred between mid-June and mid-August. An even narrower focused data analysis shows, the timeframe occurring in the first three weeks of July, as being likely to have a fire escape the “initial attack” response.

Battalion 5 Mitigation Efforts

Battalion 5 is engaged in a wide variety of efforts aimed at reducing the threat to area assets posed by wildland fire. CAL FIRE’s primary partner in these efforts is the Tuolumne Fire Safe Council (TFSC).

Defensible Space Inspections: Removing fuels around structures provides the single most effective action for increasing structure survivability during a wildfire. An aggressive inspection program can provide firefighters with defensible space for structure protection operations. Battalion personnel continue to work with the media improving community awareness of PRC §4291 requirements and benefits.

Fuel Reduction/Fuel Breaks: Battalion 5 communities have benefitted from a long and vigorous history of cooperation between CAL FIRE and the Tuolumne FSC, along with other community groups. Several projects have been undertaken recently to mitigate the risk of fire in Battalion 5.

- **Ponderosa-Mira Monte Fuel Break:** The Mt. Havalia Fuel Break in Tuolumne to the top of the community of Ponderosa Hills along the rim of the North Fork Tuolumne River canyon. The project was funded by a CAL FIRE, Fire Prevention Grant and sponsored by the Tuolumne FSC.
- **Mt. Havalia VMP:** This VMP provides for broadcast burning to maintain the Mt. Havalia Fuel Break in the community of Tuolumne. The project is located along the rim of the North Fork Tuolumne River canyon. This fuel break is in a strategic location used during the Stanislaus Complex Fire in 1987 and the Rim Fire in 2013.
- **Shiloh VMP:** This VMP provides for broadcast burning to maintain a shaded fuel break adjacent to the community of Sierra Village. The project area is in a strategic location on the edge of the North Fork Tuolumne River canyon.
- **Highway 108 Fuel Break:** This fuel break consists of fuel reduction within the right of way of Highway 108 from Soulsbyville to Twain Harte. Maintenance of this fuel break was completed in cooperation with CAL TRANS and the California Conservation Corps.
- **Rim Contingency Line:** During the Rim Fire in 2013, a contingency line was constructed along the North Fork Tuolumne River canyon from Tuolumne to Long Barn. CAL FIRE crews have been actively maintaining segments of this fuel break near the community of Tuolumne.
- **Cattle Drive Shaded Fuel Break:** CAL FIRE crews conducted maintenance work on this fuel break in the Columbia area. The project runs from Experimental Mine Road to Yankee Hill Road, on the edge of the South Fork Stanislaus canyon.
- **Sierra Outdoor School to Cedar Ridge Fuel Break:** This fuel break is along a critical evacuation route for the community of Cedar Ridge, as well as the Sierra Outdoor School and Old Oak Ranch



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Christian Camp. CAL FIRE conducts periodic maintenance of this fuel break. Most recently, CAL FIRE removed large decks of tree mortality logs that could impede ingress and egress in the event of a fire.

- **Sardella Training Burn:** CAL FIRE and the Sardella Ranch continue to work together to use approximately 100 acres of the ranch as an annual training burn site to teach firing techniques.
- **Big Hill Road Shaded Fuel Break:** CAL FIRE recently completed maintenance on the Big Hill Road fuel break. Big Hill Road is a major collector road, and the project should improve ingress and egress in the event of a fire.
- **Lyons Bald Mountain to Ivy Court:** This fuel break ties from Lyons Bald Mountain Road to Ivy Court in Sonora. The project was funded by a CAL FIRE, Fire Prevention grant and sponsored by the Tuolumne FSC. The project is located on a strategic ridge and should help protect the community of Sonora in the event of a fire.

Battalion 5 Public Education

A variety of education methods are routinely employed in Battalion 5, including:

- **Fire Prevention Signs:** Four roadside fire prevention sign holders are located in the battalion. These two-sided signs have been located on Tuolumne Road across from the Standard CAL FIRE Station, Highway 49 just south of the “Pedro Y” (between Columbia and Sonora) and just west of the Sullivan Creek bridge on Highway 108 in east Sonora, and on Highway 108 at the west entrance to Twain Harte at Plainview Road. These new signs have enabled CAL FIRE to reach a larger segment of the local population on the need to take preventative measures to reduce wildfires. In 2015, easy to read National Fire Danger Rating System colored riders were also produced that hang below the main fire prevention signs to provide additional fire prevention messaging to the public. The program, dating back to the 1950’s, was originally designed as a tool to educate the motoring public on wildfire and defensible space fire safety. Even with the advent of new technology and media, this program remains an effective way to keep CAL FIRE’s fire prevention message in the public eye. Major funding for maintenance of the existing sign and installation of new signs is provided by State Fire Prevention Fee in 2015 through a grant to the Tuolumne FSC.
- **Fire Wise Communities:** The National Firewise USA recognition program provides a collaborative framework to help neighbors in a geographic area get organized, find direction, and take action to increase the ignition resistance of their homes and community, and to reduce wildfire risks at the local level. Battalion 5 personnel conduct risk assessments for communities that voluntarily look for assistance. Any community that meets a set of voluntary criteria on an annual basis and retains an “In Good Standing” status may identify itself as being a Firewise Site.
- **Education Materials:** The Tuolumne FSC has been successful in obtaining grant funding to continue a very aggressive Public Education and Fire Prevention Program. All the council’s public education documents received grant funding in 2015 to update and reprint various publications.



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- **Community Outreach:** The FSC and battalion personnel continue to seek opportunities to meet with community groups such as service clubs, homeowner associations, and hobby clubs to seek input on fuel reduction programs and delivery of the agency's fire prevention and PRC §4291 related messages. Participation at the Tuolumne County Fair, the local Home and Garden Show and other large public events continue to be important opportunities to spread the messages. Presentations are made to homeowner associations upon request.
- **Red Flag Alert Program:** An analysis of historic fire causes in Battalion 5 shows that except for lightning, most fires could have been prevented. Public awareness of extreme fire danger and burning conditions is key to reducing the number of fires starts due to debris burning, campfires, equipment use, vehicles and smoking. Department policy mandates the Red Flag Program; see Handbook 9000, Sections 9011, 9012, and 9013.

In 1975, the Department produced a film that described a program called the Red Flag Fire Alert to combat and prevent catastrophic wildfires. The historical film's central ideal was that "prevention was cheaper than suppression" and that most fires were caused accidentally, usually through carelessness, and that the program would serve as an effective fire prevention and detection tool. An added benefit through the program was that potential arsonists might be deterred through the increased awareness and observation. The four stages of the program are: Fire Weather Watch issued by National Weather Service, 12-72 hours in advance for impending fire weather; Fire Weather Warning issued by National Weather Service, 12-24 hours in advance, for extreme fire weather conditions occurring or about to occur; Alert/Public Warning, through media releases and visible display of red flags and patrols; and Cancellation of Alert, after threat has passed.

Battalion 5 Law Enforcement

- **Cause Determination and Code Enforcement:** A collective effort by Company Officers and LE staff, as needed to determine a cause for all wildland ignitions. Accurate cause determination impacts several programs beyond the confines of the battalion (fire history, fire plan, funding for example) and can be crucial to the subsequent ability of LE staff to issue citations for violations of the various PRC and PC codes, including debris burning, arson, power line clearance, and equipment related violations, among others.
- **Law Enforcement Support of Inspections Program:** Continued close cooperation between defensible space inspectors and the Unit's LE staff is essential in the event citations are needed to gain compliance with PRC §4291 requirements.

Battalion 5 Cooperators Mitigation Efforts

Tuolumne Fire Safe Council (TFSC): Since the creation of the Council in 2001, the working relationship with CAL FIRE has steadily evolved from one of only planning and concepts to a partnership that is now implementing projects and reducing fuels in areas deemed strategically important. Both the Tuolumne



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FSC and CAL FIRE staff are committed to not only continuing this productive working relationship but enhancing it further with new and ongoing opportunities as they occur. The depth of this collaboration is evident in the project and program details below.

The Tuolumne FSC is fully integrated and consulted on all aspects of pre-fire planning, funding development, project implementation, and public education in the Twain Harte Battalion. In addition to a large number of on-the-ground fuel reduction projects, the Council is instrumental in the success of several other particularly noteworthy efforts, including: the Highway 108 Strategic Fire Planning Group; the implementation of the initial and current update of the Tuolumne County CWPP; and the ongoing production and distribution of high quality Public Education materials that are distributed to the public by all of the fire agencies in Tuolumne County.

Tuolumne Firewise Communities / USA

Firewise Communities / USA is a national program sponsored by the National Fire Prevention Association (NFPA). Initiated at the grass roots level, the program empowers homeowners to help protect their neighborhood.

The Tuolumne Firewise USA Program encourages local solutions for safety by involving homeowners in taking individual responsibility for preparing their homes from the risk of wildfire. The program provides resources to help homeowners learn how to adapt to living with wildfire while encouraging and empowering neighbors to work together to act now to reduce their wildfire risk and prevent losses. There are 18 Firewise communities in Tuolumne County that work directly with CAL FIRE personnel to develop a written plan to better prepare their neighborhood for wildfire. CAL FIRE personnel from Twain Harte and Standard stations work with each firewise community in the battalion to educate homeowners how to better protect their neighborhoods from wildfire.



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6. BATTALION 6 GROVELAND BATTALION: John Zuniga - Battalion Chief

Battalion 6 Overview

The Groveland Battalion consists of 258,910 acres, covering the southwest portion of Tuolumne County and eastern Stanislaus County, making it the second largest battalion geographically. It is the only battalion in the Unit to stretch from the LRA boundary to the FRA boundary. Spreading across a wide variety of terrain and fuel models the battalion is bounded by the Tuolumne River canyon, Highway 120/49, O’Byrne’s Ferry Rd, and the lower Stanislaus River on the north. The southern boundary follows the

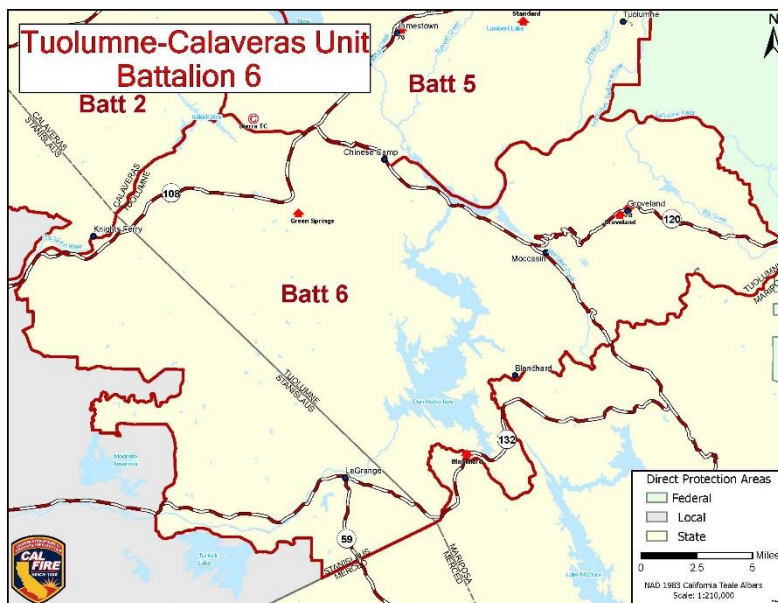


Figure 7

Mariposa and Merced County lines. The western boundary follows the LRA/SRA line south from Highway 108/120 at Lancaster Rd. along the east sides of Modesto and Turlock Reservoirs to the Merced County line. In the east, the battalion abuts STF. Elevations range from 250 feet in the west to over 4000 feet on the east side. State Highways 120, 108, 49, and 132 cross the battalion. Highway 120 is the northern access route to Yosemite National Park, Tioga Pass, and Highway 395. On average 6,100 cars travel daily on Highway 120 for roughly 2.2 million cars annually.

The battalion’s fire control organization consists of three Schedule “B” CAL FIRE Stations: The Battalion Headquarters located in Groveland, a two (2) engine station, serving the upper elevation eastern third of the battalion; Blanchard Station a one (1) engine station serving the south and western third; and Green Springs Station a one (1) engine station serving the north and western third. Through “Amador” agreements with Tuolumne County, funding is provided to maintain staffing at the Blanchard CAL FIRE Station during the winter preparedness period.

Despite being the Unit’s second largest battalion geographically, the population is relatively small. The population centers for the battalion lie along the Highway 120 corridor east of Highway 49 in the greater Groveland area, and along the Highway 132 corridor between Don Pedro Reservoir and Lake McClure (Mariposa County). A significant percent of the Groveland area residences are vacation homes; and there are many motels, RV parks and campgrounds, which lead to increases in population throughout the year in response to summer recreation opportunities, holiday weekends and the ski season. Commercial development has responded to the needs of the full-time population as well as catering to the needs of



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tourists, a significant number of whom take advantage of the Groveland area services and accommodations while traveling to and from Yosemite National Park.

The overwhelming majority of battalion lands are privately owned; however, the Federal Government does have significant holdings. BLM has large tracts in the Red Hills, the Moccasin Creek drainage, and the Priest Grade and Jackass Ridge areas, among others. STF has a smaller number of acres within the battalion along the eastern boundary and in the extreme southeast corner, south of Highway 120. All federal lands within the battalion are State DPA. The city and county of San Francisco owns and operates several acres under control of Hetch Hetchy Water & Power (HHW&P).

In addition to providing protection for life and property, the Groveland Battalion provides resource protection of critical watershed, timber, and recreational values. The Tuolumne River watershed provides water and hydroelectric power for a large portion of the Central Valley as well as San Francisco through its Hetch-Hetchy project. The entire battalion is attractive to many types of outdoor enthusiasts.

Approximately 2/3 of the battalion, virtually everything east of J59, has been designated by CAL FIRE as a VHFHSZ. The hills west of J59 are a mix of High and Moderate FHSZs.



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Battalion 6 Assessment Summaries

Assets at Risk, Fuels, Weather and Fire History

Primary assets at risk within the battalion cannot be listed by priority due to the intrinsic value placed upon private citizen's assets. However, listed below are assets at risk that have been considered, relating to Pre-Fire Management within the Groveland Battalion:

- **Life safety:** As always, life safety is the priority during fire control and other emergency operations. In addition, there are numerous additional assets at risk associated with the human presence in the Groveland Battalion: homes, businesses, watersheds, water collection and distribution infrastructure, electric power generation and distribution infrastructure, recreational resources and infrastructure, commercial timber, communications and transportation infrastructures, and historical and archeological sites.
- **Residential and Commercial Development:** The list of officially designated as "Communities at Risk" include: Big Oak Flat, Chinese Camp, Groveland, and Moccasin. Also, threatened by wildfire are smaller communities, subdivisions, and commercial developments, including: Pine Mountain Lake, Second Garrotte, Priest, Blanchard (Don Pedro) and La Grange.
Some structures in the battalion's older developments are at risk due to threatened locations and non-fire safe construction. Mid slope, chimney, and ridge top locations with outdated design features such as shake roofs, wood siding and decks, large single pane windows are common in these areas. In the newer developments, many improvements in fire safe construction are present; however, they remain at significant risk due to terrain and fuel type.
- **Watershed:** The battalion provides protection for a portion of the Tuolumne River system, starting just above the confluence of the North Fork and main stem, at the DPA boundary. As a critical source of water and hydroelectric power for the central valley and much of the greater San Francisco Bay Area, the Tuolumne River is also the sole source of water for the community of Groveland. Water from the Tuolumne River is collected and stored in three area reservoirs - Don Pedro, Modesto, and Turlock, where it is used for recreation and irrigation by Modesto and Turlock Irrigation Districts. Big Creek, a Tuolumne River tributary, also falls under the protection of Battalion 6. Critical as a source of domestic water supply to the Pine Mountain Lake subdivision, it also fills Pine Mountain Lake providing aesthetic and recreational value.

The largest entity utilizing the Tuolumne River watershed is HHW&P. They provide 260 million gallons of water daily to the greater Bay Area and produce power from three powerhouses located within or near the battalion. Their distribution and water lines run through the entire length of the battalion. Their administration, electrical power generating, water collection and distribution, and residential infrastructure make up much of the Moccasin community.



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- **Recreational Interests:** Tourism and recreation may be the most significant element of the economy threatened by wildfire within Battalion 6. Highway 120 brings tens of thousands of people into, and through Battalion 6 annually. The marquee destination, Yosemite National Park, located just east of the battalion, receives over 4 million visitors annually. A large percentage of those visitors, along with residents, use a wide variety of recreation assets available within the battalion along the way including fishing, lake and river sports, hiking, cycling, and touring, just to name just a few.
Also at risk to wildfires are a series of federally managed river parks straddling the lower Stanislaus River, including the Knights Ferry Recreation Area featuring a 330 feet long covered bridge built in 1863, and many historic buildings dating back to the late 1800's.
- **Agricultural Values:** Agricultural production is second only to tourism and recreation in terms of economic importance to the area within Battalion 6. The top three agriculture assets in the battalion are poultry, cow and calf production, and grazable rangeland. All three of these are in the western portion of the battalion among the rolling foothills. Almond and walnut farming are also gaining in popularity in the west, along the SRA/LRA boundary. Over time, orchard development and expansion has caused the SRA line to be moved eastward.
- **Community Infrastructure:** Municipal water systems, electrical distribution, telecommunications, transportation, bridges and schools: A unique asset in Battalion 6 is the presence of the Sierra Railroad, which operates a freight and passenger concessions between Oakdale and Standard, passing through much of the northern end of the battalion. Several government agencies and private communications companies take advantage of the topography within the battalion for the location of communications system facilities.
Schools are also at risk as they are often chosen for use as evacuation centers, making them especially important in the event of a significant wildland fire.
- **Red Hills Land Management Area:** Managed by BLM; this unique resource consists of 7,100 acres (slightly more than 11 square miles) of federal public land located near the intersection of State Highways 49 and 120, just south of the historic town of Chinese Camp. The entire Red Hills Management Area has been designated as an Area of Critical Environmental Concern by the Federal Government. The purpose of the designation is to protect the rare plant species found there, the unusual serpentine soils that provide habitat for unique flora of the area, habitat for the rare minnow known as the Red Hills roach and to protect bald eagle wintering habitat. The area is rich in historic cultural resources including a road dating back to 1849, a railroad grade dating from the 1890's, evidence of Native American culture, and occupation by Chinese immigrants.
- **Timber Resources:** Most timber in the battalion is in the hands of small private landowners. The USFS timber lands upslope is at risk from fires starting within the battalion, and vice versa.



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- **Fuels:** Battalion 6 is unique in that it is the only battalion in the Unit to extend from the LRA boundary in the west to the FRA/DPA boundary with the USFS in the east. Most the battalion has been designated by CAL FIRE as a VHFHSZ. The fuels in the battalion transition from west to east with the increasing elevation; from fuel model (1) grass rangeland, to fuel model (2) grass and oak woodland, to fuel model (4) mature chamise stands, culminating in stands of fuel model (10) mixed woodland and timber. These varieties of fuel, combined with the rugged terrain of much of the battalion, create a volatile fire environment that has produced many large and damaging fires over the decades. The continuing effects of a series of annual low elevation, heavy snow falls in 2006, 2010, 2011, 2021, and 2022 remain a consideration for the fuels between the 1,500 feet and 3,000 feet elevations. These events primarily affect the live oak, black oak, and gray pine, breaking off their branches and tops. This adds significantly to the number of dry dead and down fuels in the under story and, in turn, increases the availability of “ladder fuels.” This increased dead fuel loading increases the difficulty of fire control through the creation of fuel “jackpots” that burn with high intensity. Beginning in 2015, species of pine beetles have attacked and killed a large portion of the mixed pine at the lower elevations. This includes the Ponderosa Pine and Gray Pine species commonly found in the lower elevations down to 1,000 feet. This is and will continue to add to the standing dead, and dead and down fuel components in the Battalion.
- **Weather:** Typically, fire season temperatures range from lows in the upper 50’s to highs in the 90’s. Periods of temperatures in the triple digits are not uncommon and can last for several days. Relative humidity runs in the mid-teens to mid-twenties during the daylight hours, often with poor recovery in the overnight hours. Periods of extreme heat are occasionally accompanied by single digit humidity. Prevailing winds out of the northwest in the lower elevations below Highway 120, are affected by topography in the upper elevations; they are also greatly influenced by the Tuolumne River drainage. Above 3,000 feet the temperatures are often a few degrees cooler and lack the delta influence the lower elevations receive. In late August and September, the upper elevations of the battalion experience thunderstorm activity in the afternoons, making conditions conducive to wildland fires.
- **Fire History:** The battalion does have a history of large fires: Moccasin 1992, Rogge, and Ackerson fires 1996, Creek 2001, Serpentine 2008, Rim 2013, Marshes 2016, and Moc 2020 to name a few. Much of these larger and damaging fires share a commonality in that they have started in the lower elevations west of Groveland and Big Oak Flat, in the Moccasin Creek drainage. By burning upslope in a north to north east direction fires have routinely threatened those communities.

Battalion 6 Mitigation Efforts

Battalion 6 is engaged in a wide variety of mitigation efforts aimed at reducing the threat of wildfire to battalion assets. This is being done in collaboration with many cooperators including the Southwest Inter



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Face Team (SWIFT), Tuolumne and Mariposa Fire Safe Councils, USFS, BLM, PMLA, and HHW&P, among others. It is a two-pronged approach of defensible space inspections and fuel breaks.

Defensible Space Inspections: Removing fuels around structures provides the single most effective action for increasing structure survivability during a wildfire. An aggressive inspection program can provide firefighters with defensible space for structure protection operations. The battalion has developed a model program utilizing VIP assistance to implement a vigorous home inspection program. From 2009 to 2011 the battalion conducted over 10,500 inspections annually, far exceeding the Unit's inspection target. Battalion personnel continue to work with the media in developing community awareness of PRC §4291 requirements and its benefits.

- **Lake Don Pedro Community:** The goal is for 100% compliance so residences in that community can stand alone in the typically fast-moving fires in the area. An example was the 1,400 acre La Grange fire in June 2008, driven by 20 mph winds. A few small outbuildings were destroyed; however, residential structures survived because of homeowner's adherence to the inspection program.
- **Green Springs:** A small community, largely surrounded by agricultural land that has been owned by families for generations. This community has been creating defensible space long before the term was invented. Spot inspections are conducted in a yearly rotation.
- **Greater Groveland Area:** Home to a large development at Pine Mountain Lake, the PMLA, in cooperation with CAL FIRE, conducts a rigorous PRC §4291 inspection program that is more stringent than required by statute. The areas outside of Pine Mountain Lake range from densely clustered town settings and smaller subdivisions, to widely spaced ranches and agricultural use. Battalion personnel in cooperation with the GCSD plan to inspect all areas within this portion of the battalion on an annually rotating schedule. In 2020, the GCSD received a \$15,000 grant from the California Firefighters Foundation in collaboration with a Pacific Gas & Electric's wildfire grant program to hire (2) temporary DSIs. The DSIs conducted over 800 LE-100 inspections on properties in the greater Groveland area. These inspections and the homeowner's compliance provide significant protection and a greater chance of survival. During the 2800-acre Moc Fire, the adjacent inspected properties were defensible, freeing up key firefighting forces to concentrate on extinguishment of the fire.

Fuel Reduction/Breaks: A network of fuel breaks have been established in cooperation with USFS, SWIFT, Tuolumne Fire Safe Council, and CAL FIRE. To date, fuel breaks have been constructed around the ridgelines that perimeter the greater Groveland/Big Oak Flat area. Numerous other fuel breaks have been strategically located within this perimeter for targeted hazard areas and as secondary reinforcement. These efforts will provide protection to homes in these areas and future efforts to maintain these projects are planned.



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- **Rim Truck Trail Fuel Break (RTT):** From Indian Creek, west and southwest to a tie-in with the Ponderosa Fuel Break near Tip Top Peak, called the Pine Mountain Lake section. It is approximately 15 miles in length and was completed by the BLM in 2017. A portion of the Crook Ranch VMP (see below) project, intended as a maintenance activity on this section RTT. The portion from Crook Ranch to the intersection of Highway 120 and Ferretti Road was funded by National Disaster Resilience Competition (NDRC). The fuel break is 90% complete with mastication as of 3/1/2023. There are several landowners who chose not to participate in the project causing several small untreated portions in the fuel break. The USFS is continuing to pile and burn along their section of the fuel break along Ferretti Road to Highway 120, as of 3/1/2023.
- **Corcoran/ Rim Truck Trail West Fuel Break:** The proposed Corcoran Fuel Break is approximately 179 acres in size and located to the northwest of the community of Big Oak Flat. This fuel break will link the existing Tip Top fuel break with the Rim Truck Trail West fuel break. The proposed fuel break will protect the communities of Big Oak Flat, Pine Mountain Lake, and Groveland from a large, damaging fire coming from the Priest Grade area. Funding for this project was awarded by the NDRC. The fuel break is 100% complete with mastication as of 3/1/2023 from Tip Top through to the Crook Ranch on Old Wards Ferry Road.
- **Ponderosa Fuel Break:** Highway 120 south and east to the Mariposa County line. This is also called the Jackass section and work has continued this piece following the Creek Fire in 2001. Crews from CAL FIRE's Baseline Fire Center and Sierra Training Center continue to maintain the system that is approximately 12 miles in length. With the loss of the inmate fire crews, and a multitude of other projects CALFIRE TCU has not done any work on this section in nearly three plus years. A small amount of the fuel break was reopened during the Moc Fire in 2020.
- **Wagner-Humbug Fuel Break:** This 65-acre segment continues to build a defensible fuel break around the outlying communities of Groveland and Pine Mountain Lake. The masticated treatment area and bug kill removal reinforces the Rim Truck Trail, protecting the Big Humbug Creek watershed. This project was retreated in 2021 with hand cutting, pile burning, and mastication and was completed in January 2022. Mastication, pile burning, and thinning were completed on this section in the winter and spring of 2021-2022. This small section ties together a gap in the main fuel break system between the Gookin VMP and the Rim Truck Trail East.
- **Wagner Ridge Fuel Break:** Several agencies share responsibilities for the section of the fuel break that runs easterly from a tie with the Ponderosa Fuel Break south of Big Oak Flat to the Mariposa County Line. Small sections of the Wagner Ridge Fuel Break were established during the Creek Fire of 2001. What remains of the total five miles is approximately two miles of minor construction, and three miles of follow-up maintenance. The STF and BLM have responsibilities regarding meeting the needs of completing this fire defense system. A CAL FIRE grant could be sponsored by the YFFSC



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to treat the portions of this project on private lands. In 2016 BLM completed work on the section from Black Rd. to Harper Rd. in the Big Oak Flat section. This project is funded by NDRC.

- **Highway 120 Fuel Break:** A shaded fuel break was created along Highway 120 from the Tenaya Elementary School to the east entrance to Old Highway 120. 58 acres were treated by masticating, cutting, piling, and burning by a private masticator and CAL FIRE hand crews from Baseline Conservation Camp. This fuel break compliments work done along Highway 120 on Forest Service property and green belts in the adjacent Pine Mountain Lake community. Fuel reduction work along the highway was completed in 2010 and served as a contingency line during the Rim Fire in 2013.
- **Highway 120 Corridor Fire Break and Fuels Reduction Project:** The completed project created an approximate 360-acre fuel break within Pine Mountain Lake greenbelts and on adjacent properties. The area contains mixed conifer and brush. The project includes areas where over stocking creates a situation where fire can be carried in the over story trees as a "crown fire." A combination of commercial thinning, pre-commercial thinning and brush removal was conducted under this project.
- **Big-Long Fuel Reduction Project:** The Big-Long Fuel Reduction Project consists of shaded fuel breaks along two ridges in the Big Creek and Long Gulch areas near Groveland. The project is approximately 52 acres in size and compliments fuel reduction work completed in green belt areas in Pine Mountain Lake. Mastication work sponsored by the YFFSC was conducted by a private masticator, and hand crew work was completed by crews from the Tuolumne County Jail. A CAL FIRE forester completed the California Environmental Quality Act (CEQA) work for the YFFSC on this project. The fuel break links Big Creek Shaft Road off Highway 120 with Clinton Road off Ferretti Road. Work on the eastern segment of the fuel break was funded by a Resource Advisory Committee (RAC) grant through the Forest Service. The eastern segment of this project was completed by the YFFSC in 2014. To date, work has not begun on the western segment.
- **Smith Station Road Shaded Fuel Break:** The 50-acre project area lies along a two-mile portion of Smith Station Road in southern Tuolumne County, approximately seven miles southeast of Groveland. The project runs along both sides of Smith Station Road from State Highway 120 south to the Tuolumne-Mariposa County line. This shaded fuel break is part of a strategic fire defense system, designated by SWIFT in their strategic wildfire protection plan. The shaded fuel break consists of removing brush and thinning small trees to shaded fuel break standards.
- **Andersen California Forest Improvement Program (CFIP):** The Andersen property is approximately 39 acres in size. It is located on Clements Road near Groveland, along the Rim Truck Trail. The property is approximately a quarter of a mile above the Wild and Scenic boundary for the Tuolumne River and was partially burned during the 1987 Stanislaus Complex Fire. The Graham Fire of 2012 was adjacent to the property. Due to fire history in the area, the landowners wanted to create and maintain fire safe conditions and long-term forest health on the property. In 2006, 35 acres were



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tractor piled, burned, sprayed with herbicide, and planted. In 2013, 30 acres were treated with a follow-up herbicide treatment and 20 acres were interplanted. The CFIP reimbursed landowners at a cost share rate of 75%. Work was completed in March of 2013 by private contractors with oversight from CAL FIRE Foresters. Funding for the Anderson CFIP was through Proposition 40. No additional maintenance work has been conducted on this project since it was completed in March of 2013.

- **Jones Hill Fuel Break CCI Grant:** Is approximately 50 acres in size and located within the GCSD property line. The fuel break will protect the communities of Big Oak Flat, Pine Mountain Lake and Groveland. The overall project area is within the Groveland SRA. This project benefits approximately 3,500 habitable structures and protects critical water and sewage facility operations. 25 acres of this project was completed in 2021. Only half the project was completed due to a shortage of funds. A new grant has been awarded and will help finish this project as well as complete some fuels reduction work around GCSD critical infrastructure.
- **Gookin VMP:** This 157-acre project is in a strategic area of the Rim Truck Trail as it is near the community of Groveland and adjacent to the Tuolumne River Canyon. The portion of the Pine Mountain Fuel Break adjacent to the project area has been actively maintained and the project will augment fuel reduction efforts in the area. In the spring of 2018, ninety-two acres were broadcast burned at low intensity to consume the noxious weed, the Medusa Head. An additional 11 acres of dense brush has been masticated. Periodic planned prescribed fires are planned over the next several years. The Gookin VMP has now been combined with the 730-acre PML VMP.
- **Crook Ranch VMP:** This 2288-acre project is a multi-faceted project as it ties in with the Rim Truck Trail Fuel Break protecting the Community of Groveland and the Pine Mountain Lake subdivision. The project increases the effectiveness of the Rim Truck Trail/Pine Mountain Lake Fuel Break which extends from the northeast. The use of this fuel break proved to be effective as it was used during the Rim Fire of 2013. The site was utilized for a Region C-234 class historically, and a separate 200-acre burn was conducted in the fall of 2019, for noxious weed control. The noxious weed burning of Medusa Head and Star Thistle, will increase the grazing capacity of the rangeland. The owners continue to improve on the project with mastication and burning of large plots of live oak brush within the project boundaries. Due to low grass crops from lack of rain fall no burning has been conducted or has been planned from 2020 through 2022.
- **Pine Mountain Lake VMP:** The PML VMP is comprised of 730 acres, including multiple partials owned by 4 different landowners. The Gookin VMP has now been combined into this new VMP. The project was approved in the fall of 2022 with fuels reduction work beginning immediately. As of 3/1/2023 fuels reduction via hand and machine cutting, piling, and burning has been completed on 35 acres. CALFIRE FF hand crews, CCC fire crews, CCC regular work crews, engine companies, TCU HFEO's, and the TCU Fuels crew have worked on this project. All the fuels work so far has



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concentrated in the Big Creek drainage below the Pine Mountain Lake Dam. For 2023 there are plans to broadcast burn 200-400 acres of mostly grass-oak woodland. The intent of this project is to create a true blackened defensible line and fuel break annually. This VMP connects the Crook VMP, Gookin VMP, Rim Truck West, and Wagner-Humbug fuel breaks all together as part of the defensible line and fuel break system around the communities in Groveland.

Strategic Planning: Since 1999, Battalion 6 communities have benefitted from the efforts of the SWIFT, a collaborative effort to provide coordination and direction to agency and community efforts to reduce the threat of catastrophic wildland fire in southern Tuolumne, and northern Mariposa Counties. Working closely under the SWIFT banner are the Tuolumne-Calaveras and Madera–Mariposa-Merced Units of CAL FIRE, STF, BLM, Tuolumne and Mariposa County Fire Departments, HHW&P, and Yosemite Foothills, Tuolumne and Mariposa County FSCs, Yosemite National Park, and representatives from other agencies and community groups. SWIFT remains an important participant in the planning and coordination of fuel reduction and fire defense planning for the eastern portions of the battalion. In addition to numerous fuel breaks, one important outcome of SWIFT activity is the development of a detailed Wildland Fire Pre-Attack map, for use by fire control personnel and community groups.

Battalion 6 Public Education

A variety of methods are routinely employed in Battalion 6, including:

- **Fire Prevention Signs:** Road-side fire prevention signs remain posted year around, carrying a variety of seasonally appropriate messages, to better educate the public on fire hazards and methods of prevention. Messages will target causes identified in the ignition management analysis.
- **Community Outreach:** Battalion personnel continue to seek opportunities to meet with community groups such as service clubs and homeowner associations to seeking input on fuel reduction programs and delivery of the agency’s fire prevention and PRC §4291 related messages. Interaction with the Tuolumne County Farm Bureau, for example, remains a priority as an opportunity to meet with local ranchers to exchange contact information and discuss ways to protect valuable rangeland and infrastructure from wildfire.
- **School Fire Prevention Programs:** Battalion personnel will continue to participate in the Unit’s “Team Teaching” program, to promote fire prevention, awareness, and safety to school age children.
- **Campfire Permits:** Another important opportunity to make an educational contact with members of the local and visiting population.

Battalion 6 Law Enforcement

- **Cause Determination and Code Enforcement:** A collective effort by Company Officers and LE staff, as needed to determine a cause for all wildland ignitions. Accurate cause determination impacts several programs beyond the confines of the battalion (fire history, fire plan, funding for example) and can be crucial to the subsequent ability of LE staff to issue citations for violations of the various PRC



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and PC codes, including debris burning, arson, power line clearance, and equipment related violations, among others.

- **Law Enforcement Support of Inspections Program:** Continued close cooperation between battalion inspectors and the Unit's LE staff is essential in the event citations are needed to gain compliance with PRC §4291 requirements.

Battalion 6 Cooperators Mitigation Efforts

Hetch-Hetchy Water & Power (HHW&P): The supplier of domestic water and power to the City of San Francisco, HHW&P is actively engaged in efforts to reduce the threat of fire to the watersheds from which they draw their highly valuable products.

- **Priest Reservoir Water Quality Protection:** Continued fuel treatment work around Priest Reservoir to protect water quality and provide wildfire protection to water and power infrastructure.
- **HHW&P Transmission Line Hazard Reduction:** On going work to reduce fuels under various power lines for both power line protection during a wildfire incident and reduce the potential of fire start from line contacts; approximately 13 miles with an average width of 100 feet from Moccasin to the South Fork of the Tuolumne River.

Pine Mountain Lake Association (PMLA): Is a densely populated residential development with 3,564 lots, 739 of which are unimproved. In the last five years, they have become increasingly pro-active with their fire prevention activities. PMLA requires corner-to-corner clearance on ALL lots, including vacant lots; stricter than the PRC §4291 regulations. Beginning in 2008 PMLA has hired 3 temporary inspectors to inspect every single lot. The Unit's Fire Prevention Specialist provides training for these inspectors. The Association imposes strict deadlines and levies their own fines as needed in cases of non-compliance. The Association is also engaged in fuel reduction efforts on community greenbelt lands in cooperation with the local FSC. In its effort to gain Firewise Community certification, PMLA has completed the Firewise Community Assessment and plans on applying to the Firewise Communities/USA Recognition Program in 2020. As of 3/1/2023, there are 4 Firewise Communities within PMLA, of which only 1 has completed the entire process and is approved with the other three still in an organizing mode. Of 1,207 acres of green belt, common areas, wildlife refuge and stream beds, 475 acres have been treated as of 2011. During 2010 and 2011, 7,000 cubic yards of slash have been burned; 4,000 cubic yards of slash have been chipped; 10,000 cubic yards of composting material was worked in 2010.

In 2015, the PMLA was awarded \$244,000 from an SRA Grant. A combination of commercial thinning in some areas and pre-commercial thinning and brush removal in designated fuel breaks is prescribed. An estimated 96 acres of commercial thinning and 262 acres of fuel breaks along the southern border of Pine Mountain Lake were completed and continued to be funded by the Homeowners Association. Additional fuel breaks to the west and east bordering the Pine Mountain Lake Community were funded in 2020.



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Contractors hand treated and masticated 81 acres to help reduce threat of a wildland fire entering the Pine Mountain Lake community.

7. BATTALION 9 EMERGENCY COMMAND CENTER: Eric Campbell – Battalion Chief

Battalion 9 Overview

The Tuolumne-Calaveras Unit Emergency Command Center (TCU ECC) provides Command and Control dispatching for SRA, LRA, and portions of FRA within the Counties of Tuolumne, Calaveras, San Joaquin, Stanislaus and Alpine. This includes all local government fire agencies in Tuolumne and Calaveras Counties and Bear Valley Fire in Alpine County. The TCU ECC also serves as the CAL OES operational area dispatch center for Tuolumne and Calaveras County local government agencies.

The TCU ECC is staffed by six FCs, seven Communications Operators (CO), one Communications Supervisor, one Research Data Specialist II, one Office Technician and one BC. During the transition and peak period, there are at least three personnel on the Command floor during the day. During the Winter Preparedness period, there are at least two personnel on the Command floor. There is one FC filling the role of the Unit Duty Officer each shift.

The TCU ECC monitors weather and fire danger conditions 365 days a year with the Weather Information Management System (WIMS). WIMS uses data from two Remote Automated Weather Stations to calculate National Fire Danger Rating System indices. These indices are used to set dispatch levels in the Unit. Dispatch levels have standard response plans attached to them that increase resources dispatched as the fire danger increases. Dispatch levels are assessed at 1000, 1200, 1400 and 1600 Hrs. A working group consisting of the Fuels BC, the Research Data Specialist II (RDS II) and a CO are tasked with writing and verifying the Fire Danger Operating Plan. The Fire Danger Operating Plan will use the data collected in WIMS and perform statistical analyses to identify relationships between weather and fuel conditions, and fire occurrence in the Unit. This plan is updated at a minimum of every three years and a tool Unit Management can use to make fire business decisions, such as staffing levels, staffing pattern initiation/cancelation and burn restrictions.

The TCU ECC, with assistance from the Unit Hired Equipment Coordinator and the Unit Training Bureau, maintains an Emergency Resource Directory (ERD) which contains information to support any given incident. Information in the ERD includes ICS qualifications for personnel, supplies, and vendors. The TCU ERD is updated annually in the early spring. The Unit ERD supports the use of the Hired Equipment Management System (HEMS) and the Interagency Resource Ordering Capability (IROC).

The TCU ECC also has a separate Expanded Dispatch floor that allows ECC personnel to branch off complex incidents. TCU Expanded Dispatch will be staffed with an adequate number of qualified personnel to support the incident needs. The Expanded Dispatch floor has similar communication and computer capabilities as the primary command floor. Expanded Dispatch can be staffed with trained personnel from the Unit or an ECC Support Team can be ordered through South Ops.



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8. MOTHERLODE FIRE CENTER: John Fredrick – Battalion Chief

Fuels Battalion Overview

Motherlode Fire Center is in Downtown Sonora, Tuolumne County. Stationed there is the Tuolumne Calaveras Fuels Crew. Staffing for the Fuels Crew consists of 1 Battalion Chief, 1 Fire Captain, 1 Fire Apparatus Engineer, 1 Heavy Fire Equipment Operator, 1 Heavy Equipment Operator, 1 Forestry Assistant II, and 9 Forestry Technicians.

The Fuels Crew manages several pieces of equipment to help reduce the fuel loading. This consists of 1 utility with tank and pump, 1 crew transport vehicle, 2 chippers, 1 low bed, 1 transport, 1 excavator, 1 skid steer. The attachments for the equipment range from masticators, rakes, log grapplers and blades. Some other equipment used by the Fuels Crew is a side by side and terra torch used to access inaccessible areas of the Unit.

The primary mission for the Units Fuels Crew is to work on our Fuel Breaks and Vegetation Management Programs. This ranges from fuel reduction using the mechanical equipment by either chipping or pile burning. Another large task of the Fuels Crew is setting up and implementing several of the Units broadcast burns. This ranges from the line construction to the actual implantation of the fire. The Fuels Crew works in coordination with other Hand crews and Fire Engines on these projects to ensure it is completed within the prescription.

Most of the control burns are completed in the Spring and Fall months due to the Units climate. In 2022 the Tuolumne Calaveras Unit completed a total of 1,365.9 broadcast burned acres.

The Fuels Crew and Fuels Battalion works closely with other State and Federal Agencies to help complete our Units goal in reducing fuel loading. The Fuels Battalion is also starting to help and support the newly founded Motherlode Prescribe Burn Association. The goal is to give the knowledge and support to the Motherload PBA and teach them how to properly use prescribed burns on local landowners' property. The PBA interactions through meetings and field visits ensure the right procedures, permits and prescription are being taught, which have led to successful PBA prescribe fires.

9. BASELINE FIRE CENTER: Brad Niven and Brenton Brown – Battalion Chiefs

Baseline Fire Center Overview

Baseline Fire Center is located in the southwestern corner of Tuolumne County, west of Jamestown, California. Baseline provides hand crews for initial attack and extended attack wildland fires, and support unit's fuels reduction projects.



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Staffing at Baseline Fire Center consists of one Assistant Chief, one Battalion Chief, 7 Fire Captains, 6 Fire Apparatus Engineers, 2 Cook 1's, 2 Cook 2's, 2 Heavy Fire Equipment Operators, 1 Waste water Sewage Plant Operator, 1 Staff Services Analyst and 80 Fire Fighter 1's.

Co-located with Baseline Fire Center are the Mother Lode Fire Center hand crews. Staffing consists of 1 Battalion Chief, 3 Fire Captains, 3 Fire Apparatus Engineers and 40 Fire Fighter 1's.

We work with local community stakeholders such as Groveland Community Services District, Tuolumne Utilities District, The City and County of San Francisco's Hetch -Hetchy Water & Power. State entities such as California State Parks & Federal entities such as The United States Forest Service, the Bureau of Reclamation, and the Bureau of Land Management to complete fuels reduction projects to their goals as well.

Baseline Fire Center is also home to the Unit's training bureau. The Mike Spear Training Center consists of a large classroom, 2 conference rooms and the training staff offices. The classroom is essential for providing training to Baseline & Mother Lode staff year-round.

10. STOCKTON-DELTA FIRE CENTER: Kevin Mancebo and Luke Stephens – Battalion Chiefs

Stockton-Delta Fire Center Overview

Stockton-Delta Fire Center is a California Conservation Corps (CCC) facility, which is shared with CAL FIRE at 7000 S. Newcastle RD, Stockton, California. Together, Stockton-Delta provides the Tuolumne-Calaveras Unit and the State of California with two type 1 hand crews for wildland fires, non-wildland emergencies, and support the Tuolumne-Calaveras Unit's fuel reduction projects.

At the Stockton-Delta Fire Center the California Conservation Corps operates four grade hand crews in addition to the two joint CCC/CALFIRE type 1 fire hand crews.

CAL FIRE staffing at Stockton-Delta Fire Center consists of one Assistant Chief, two Battalion Chiefs, seven Fire Captains, six Fire Apparatus Engineers, one Staff Service Analyst, and one Heavy Equipment Mechanic.

California Conservation Corps (CCC) Staffing at Stockton Delta Consist of one District Director, one Conservationist Supervisor, one Administrative Officer II, two Conservationist II (C-2), ten Conservationists I (C-1), one Management Service Tech, one Office Technician, one Maintenance Mechanic, one Supervising Cook, one Cook Specialist II, five Residential Supervisors and one hundred and four Corpmembers.



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Minimum daily staffing for the two CCC/CAL FIRE Crews consist of one CAL FIRE Captain, one CCC Conservationist I (C-1), one CAL FIRE Fire Apparatus Engineer, as well as a minimum of 12 and maximum of 17 CCC Corpsmembers.

In addition to emergency responses, Stockton-Delta Fire Center provides fire defense, fuel reduction and maintenance of critical infrastructure for local government agencies such as Tuolumne County Road and Building Departments, Calaveras County Road and Building departments, multiple school districts within Tuolumne and Calaveras Counties, Tuolumne Utilities District (TUD), and Calaveras County Water District (CCWD). We also assist with Fire Defense, Fuel Reduction and Prescribed Fires for the following State and Federal Cooperators; Big Trees State Park, United State Forest Service (USFS), Bureau of Reclamation (BOR), Bureau of Land Management (BLM), and Army Corps of Engineers.

11. VALLECITO CONSERVATION CAMP: Keven Patton – Assistant Chief

Vallecito Conservation Camp Overview

Vallecito Conservation Camp is in Calaveras County, approximately 5 miles outside of the town of Angels Camp, California. The camp opened in 1958, and is operated by CAL FIRE and the California Department of Corrections and Rehabilitation. Vallecito is capable of supporting five crews, but in recent years, a decline in eligible inmates has resulted in a reduction of available crews. Vallecito Camp currently has two hand crew available for fuel reduction and fire line assignments. The fire crews work on grade projects five days a week year-round. Vallecito works with local community stakeholders such as the Northern California Power Authority, Big Trees State Park, Army Corp of Engineers, and the County of Calaveras. In addition to the fire crews, Vallecito staffs a mobile kitchen unit, provides fire hose pressure testing and repair, and houses a hose cache for the unit.

Staffing at Vallecito consists of one Assistant Chief, 10 Fire Captains an Office Technician and a Water and Sewage Plant Operator

12. TUOLUMNE COUNTY FIRE DEPARTMENT: Mario Torres - Battalion Chief

Tuolumne County Fire Overview

Tuolumne County Fire Department (TCFD) and Groveland Community Service District, through a cooperative fire protection Schedule “A” agreement with California Department of Forestry and Fire Protection (CAL FIRE), provides for the preservation of life and property through emergency medical response, rescue, extrication, fire control and life safety/fire inspections to over 2,200 square miles and approximately 55,000 residents of Tuolumne County. These TCFD/ GCSD stations encompass both Battalion 5 and 6 areas within Tuolumne County.



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For the calendar year 2022, there were 6,431 total incidents within the TCFD jurisdiction, compared to 6,099 in 2021 for a 5.2% increase. This is an increase 35% from ten years ago when TCFD responded to 4,179 incidents. Of those incidents in 2022, there were 4,541 calls for medical assistance, 596 fires, 246 hazardous materials/fire standby, and 1,048 other incidents.

The TCFD is funded for 53.5 full-time equivalent positions. Forty-nine and a half of those through the cooperative fire protection agreement with CAL FIRE (Schedule A and Amador) and other agreements with Mariposa County and Columbia College. Those positions include an Assistant Chief, Battalion Chief, 2 Training/Safety Captains, 3.5 Emergency Command Center positions, 41 Engine personnel, and 1 Heavy Equipment Mechanic. The four remaining positions are County employees and consist of an Assistant to Department Head and 3 Fire Prevention Division positions which are supervised by the Assistant Chief.

TCFD engine staffing includes five Type I paid staffing engines: Mono Village Station 51, Mono Vista Station 56, Jamestown Station 76, Columbia College Station 79, and Groveland Station 63. CAL FIRE also contracts with Groveland Community Services District to staff a single Type I fire engine in Groveland at Station 78. Station 51 and Station 78 are staffed with two engines that operate 24/7 by CAL FIRE company officers and are supported by TCFD volunteers. Station 79 and Station 76 are single engine station staffed 24/7 by CAL FIRE company officers, supported by TCFD Volunteers & Resident Firefighters; All volunteer stations are in the communities of Mono Vista, Ponderosa Hills, Long Barn, Pinecrest, Soulsbyville, Crystal Falls, Chinese Camp and Cedar Ridge. CAL FIRE and TCFD maintain strong working relationships with nine fire agencies also providing services within the battalion's operational area: Sonora City; Strawberry, Twain Harte, Tuolumne City Fire and Columbia Fire Districts; Tuolumne Band of Mi-Wuk Indians Rancheria Fire Department.

Through what's commonly known as an Amador Agreement, another form of cooperative fire protection agreement allowed through the Public Resources Code, Tuolumne County contracts with CAL FIRE to provide fire protection for when CAL FIRE is out of declared "fire season." Tuolumne County provides funding to staff Twain Harte CAL FIRE Station and through another agreement with Mariposa County, provides for services at the Blanchard CAL FIRE Station (TCFD Station 64).



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APPENDIX A: PRE - FIRE PROJECTS



PRE-FIRE PROJECTS
Tuolumne-Calaveras Unit
01/01/2022-05/01/2023

Project Name	Project Type	Project Status
Alderson CFIP	CFIP	Planned
Amaro Burn Pile Project	Fire Plan	Complete
Anderson CFIP	CFIP	Planned
Apple Valley Estates Fuel Reduction	Fire Plan	Planned
Army Corp - Hogan Lake	Fire Plan	Active
Arnold-Avery Hazardous Fuels Reduction and Fuel Break Maintenance	Fire Plan	Complete
Bader CFIP	CFIP	Complete
Baker VMP	VMP	Planned
Balmain Confidence TUO	CFIP	Complete
Bar XX Fire Defense Project	Fire Plan	Active
Bear Valley Common Area Fuels Reduction Phase 2	Fire Plan	Complete
Bear Valley Fuel Reduction	Fire Plan	Complete
Beyersdorf CFIP	CFIP	Complete
Big Hill/Old Oak Ranch	Fire Plan	Active
Brunk CFIP	CFIP	Complete
Calaveras County Community Wildfire Prevention Program	Fire Plan	Active
Calaveras County Roadways Road Clearance	Fire Plan	Active
Campstool CFIP	CFIP	Complete
Central Calaveras Fire and Rescue District Wildland Fire Pre-Attack Plan Phase 2	Fire Plan	Active
Central Hill VMP	VMP	Approved
Columbia College Fuel Reduction	Fire Plan	Active
Critical Equipment Mobilization Resources	Fire Plan	Active
Crook CFIP	CFIP	Complete
Crook Ranch VMP	VMP	Active
CSHP Fuel Reduction Grant	Fire Plan	Active
Donovan Fuels Reduction	Fire Plan	Complete
Duenke CFIP	CFIP	Active
EBMUD - East Bay Municipal District	Fire Plan	Active
Ellis VTP	VTP	Active
Forest Meadows Fuel Break	Fire Plan	Active
Fort Mountain Ranch CFIP	CFIP	Active
Fort Mountain Ranch CFIP	CFIP	Complete



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Gookin VMP	VMP	Active
Hammer CFIP	CFIP	Complete
Hazardous Fuel Reduction Program	Fire Plan	Active
Hazardous Fuel Reduction/Maintenance and Tree Mortality Removal	Fire Plan	Active
High Hazards Fuel Reduction for Protection of Private Habitable Structures	Fire Plan	Active
Hogan Fireworks Burn	Fire Plan	Active
Ina Davies CFIP	CFIP	Complete
Jones Hill GCSD	Fire Plan	Active
Jungemann CFIP	CFIP	Active
Kramer CFIP	CFIP	Active
Kramer CFIP	CFIP	Complete
Krumeich CFIP	CFIP	Complete
Lane CFIP	CFIP	Complete
Love Creek CFIP	CFIP	Active
Love Creek LLC CFIP	CFIP	Active
Lyons Bald Mountain/Ivy Ct. Shaded Fuel Break	Fire Plan	Complete
Lyons CFIP	CFIP	Complete
MacNider Fire Road	Fire Plan	Active
Manly CFIP	CFIP	Complete
Manuel CFIP	CFIP	Active
Manuel CFIP 2020	CFIP	Active
Mauzy CFIP	CFIP	Complete
Melones BOR FR	Fire Plan	Active
Mill Woods Fuel Reduction 2018	Fire Plan	Complete
Moke Hill Cemetery	Fire Plan	Active
Mokelumne Hill Fuel Break	Fire Plan	Active
Montgomery-Lower	Fire Plan	Planned
Montgomery-Upper	Fire Plan	Planned
Mountain Boy Mine Fuel Break	Fire Plan	Planned
Mt. Elizabeth Shaded Fuel Break	Fire Plan	CMP/MNT
Mt. Havalia Shaded Fuel Break	Fire Plan	Active
Murphys Fuel Break	Fire Plan	Active
Murphys-to-Forest Meadows WUI Fuel Break	Fire Plan	Active
NDRC Fuel Break Projects	Fire Plan	Active
New Hogan VMP	VMP	Active
Pack Trail Fire Safety Project 2	Fire Plan	Complete
Pack Trail Shaded Fuel Break	Fire Plan	Complete
PAWS VMP	VMP	Active
Penning CFIP	CFIP	Complete
Pine Mountain Lake VMP	VMP	Planned
Ponderosa Fuels Reduction	Fire Plan	Active



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Ponderosa-Mira Monte Shaded Fuel Break	Fire Plan	Active
Rambling Hills Fuel Break	Fire Plan	Complete
Rim Fire Contingency	Fire Plan	Active
Rude CFIP	CFIP	Complete
Sardella Ranch Training Burn	Fire Plan	Active
Schaad CFIP	CFIP	Active
Schaezlein CFIP	CFIP	Complete
Seastrom CFIP	CFIP	Complete
Shiloh VMP	VMP	Active
Smith-Cain CFIP	CFIP	Complete
Storch CFIP	CFIP	Complete
Swartzell CFIP	CFIP	Complete
Tanner CFIP	CFIP	Complete
Tawonga CFIP	CFIP	Active
Taylor CFIP	CFIP	Complete
Tuolumne County Firewise Education Program	Fire Plan	Complete
Tuolumne County Hazardous Fuel Reduction Program	Fire Plan	Active
Tuolumne County Prevention Signs	Fire Plan	Complete
Tuolumne County Roads Project	Fire Plan	Active
Tuolumne Utility District	Fire Plan	Planned
USFS - Calaveras County	Fire Plan	Active
VanHoven Trust CFIP	CFIP	Active
Wagner NTMP CFIP	CFIP	Complete
Wagner-Humbug Fuel Break	Fire Plan	Complete
Whittle VMP	VMP	Active
Winton Training Burn	Fire Plan	Active
Winton/Schaad's VMP	VMP	Active
Woodhouse Mine Fuel Reduction	Fire Plan	Active
Wooster Fuels Reduction Project	Fire Plan	Complete
Yosemite Fitch Ranch Shaded Fuel Break	Fire Plan	Complete
Zellers CFIP	CFIP	Active



APPENDIX B: UNIT GOALS AND OBJECTIVES

Goals

The Tuolumne Calaveras Unit has developed its fire plan to align with the CAL FIRE Strategic Plan. The focus of these goals is to identify and evaluate wildland fire hazards and recognize life, property, and natural resource assets at risk, including watershed, habitat, social and other values of functioning ecosystems. The Unit's specific goals target anticipation and reduction of wildfires within the Unit are as follow:

- Develop strong relationships with all stakeholders and agencies within the Unit.
- Engage and participate with local stakeholder groups (i.e., fire safe councils and others) to validate and prioritize the assets at risk.
- Increase awareness, knowledge and actions implemented by individuals and communities to reduce human loss and property damage from wildland fires, such as defensible space and other fuels reduction activities, fire prevention and fire safe building standards.
- Increase the number and effectiveness of defensible space inspections and promote an increasing level of compliance with defensible space laws and regulations by CAL FIRE staffing as available, public, and private organizations.
- Develop a method to integrate fire and fuels management practices with landowner priorities and multiple jurisdictional efforts within local, state, and federal responsibility areas.
- Conduct incident analysis to evaluate Unit success in achieving the 95% threshold of keeping fires less than 10 acres in size.
- Utilize prevention operations to reduce ignitions within the Unit.
- Utilize CAL FIRE resources, as well as public and private sector resources, for fuels reduction activities, including ongoing maintenance. Vallecito Camp, Baseline Fire Center, Stockton Delta Fire Center, and Sonora Fire Center are key contributors to the success of TCUs ongoing VMP, Fuel Breaks, and Fuel reduction projects.
- Educate landowners, residents and business owners about the risks and their incumbent responsibilities of living in the Mother Lode with fire, including applicable regulations, prevention measures and preplanning activities.



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SUPPLEMENT 2023

1. Annual Report of Unit Accomplishments

Battalion 1

- Andreas Vista Fuel Break was completed this year.
- Completed prescribed burning on PAWS VMP.
- Completed broadcast burning on the New Hogan VMP.
- Completed dozer piling and burning on the Central Hill VMP.
- Completed prescribed burns at the Mokelumne Hill Cemetery, San Andreas ball field, & Hogan Reservoir.
- Conducted maintenance on the Mokelumne Hill Shaded Fuel Break.
- Conducted road grading on McNider truck trail fire access road.
- Conducted road grading on West Murray Creek fire access road.
- Identifying new VMP locations.

Battalion 2

- Completed the New Melones Bureau of Reclamation spring prescribed burn approximately 135 acres
- Made significant progress on the Murphys Shaded Fuel Break
- Completed a spring prescribed burn on the Whittle VMP approximately 49 acres to protect the Fowler peak infrastructure.
- Completed a fall prescribed burn on the Whittle VMP, appropriately 525 acres.
- Completed prescribed burns on the Whittle VMP.

Battalion 3

- Completed multiple prescribed burns on the Winton-Schaad VMP.

Battalion 4

- Conducted pile burning in cooperation with Calaveras Big Trees State Park
- Completed prescribed burns in cooperation with Calaveras Big Trees State Park
- Completed Fuel Reduction around Skull Creek Fire Station
- Completed Fuel Reduction around Arnold Fire Station

Battalion 5

- Conducted maintenance on the Baker/ Rude portion of Rim Fire Contingency fuel break
- Completed prescribe burning on the Mt Havalia VMP to maintain the Mt Havalia fuel break
- Completed prescribed burning on the Shiloh VMP
- Completed prescribed burning on the Sardella Training Burn



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- Completed Fuel Reduction work on Columbia State Park
- Assisted the Stanislaus National Forest with the Herring Creek Prescribe Fire Burn
- Assisted the Tuolumne Fire Safe Council with Pile Burning Mitigation on the Miramonte Fuel break

Battalion 6

- Completed the Wagner-Humbug fuel break.
- Completed Fuel Reduction on the Groveland Fire Station

Tuolumne County Fire Department

- Receiving nearly \$9 million dollars through a FEMA SAFER Grant to staff two schedule A stations for 36 months with 3.0 staffing. These stations are Groveland and Columbia. These were opened in March 2023.
- An additional staffed engine was approved by the Board of Supervisors. This is currently at Mono Village as the second engine and we're working on plans for a permanent location at Station 56 in Spulsbyville. This was opened in March 2023.
- The Board approved funding a schedule A Battalion Chief starting January 2023.
- A Hazardous Vegetation Management Ordinance was approved by the BOS improving on PRC4291 by better addressing road and driveway clearance as well as adjoining property.
- Received multiple other grants:
 - CCI for \$132,302 for fuels reduction and treatment
 - OTS for \$82,949 for rescue equipment
 - VFC for \$20,000 for communications equipment
- Participated in multiple public education community events.
- Purchased three 2009 Pierce Saber type 1 fire engines from Mariposa County Fire Department.
- Purchased one 2019 Spartan type 1 fire engine from Harrah's Northern California.
- Installed/added to vehicle exhaust systems at TCFD Jamestown Station 76, TCFD Mono Village Station 51, and GCSD Groveland Station 78.
- Have two type two model 34 fire engines, two type 1 water tenders, and one type 6 fire engine on order for delivery next fiscal year.

Overall Unit Accomplishments

- 2021/2022 fiscal year total treated acres: 4,830.1 acres
- 2022/2023 fiscal year total treated acres to date 3/31/23: 387.2 acres
- 2021/2022 fiscal year broadcast burn acres: 2,754.8 acres
- 2022/2023 fiscal year broadcast burn acres to date 3/31/23: 809.3 acres
- Approval of unit's first VTP, Ellis.
- Receival of two additional Firefighter 1 crews, MLC1 and MLC2



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UNIT STRATEGIC FIRE PLAN AMENDMENTS

Date	Section Updated	Page	Description of Update	Updated By
March 2023	Battalion 1-6, Pre-Fire Management Plans	All	Minor edits and updates	Unit BC's
April 2022	Battalion 1-6, Pre-Fire Management Plans	All	Text and/or formatting revisions throughout the entire document	C.Deal M.Anderson
April 2022	All Tables	All	Updated	C.Deal M.Anderson
April 2022	Pre-Fire Project Descriptions by Battalion	All	Minor edits and updates	C.Deal M.Anderson
April 2022	Unit Accomplishments	Pg. 99-100	Updated	C.Deal M.Anderson