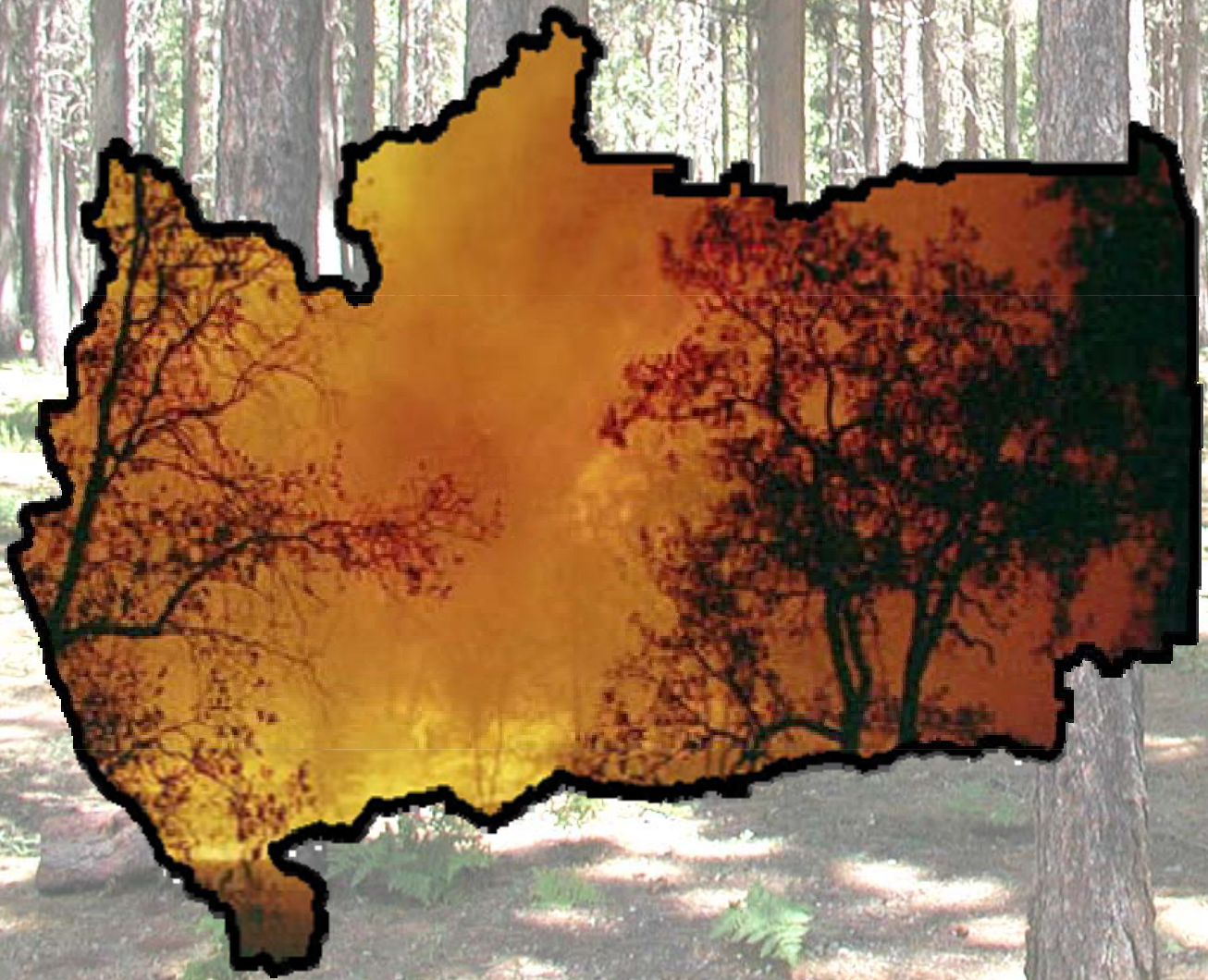
CAL FIRE

Shasta-Trinity Unit
2012 Strategic Fire Plan



UNIT STRATEGIC FIRE PLAN AMENDMENTS

Date	Section Updated	Page Numbers Updated	Description of Update	Updated By

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SIGNATURE PAGE

Unit Strategic Fire Plan developed for the Shasta-Trinity Unit

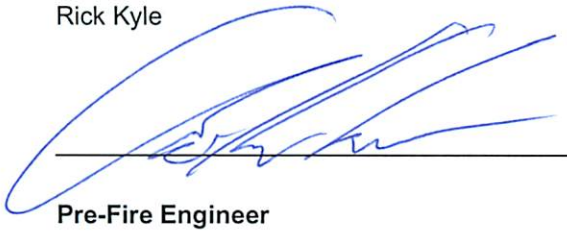
This Plan:

- 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 that all environmental compliance and permitting processes are met as necessary.

5/23/12.

Unit Chief **Date**

Rick Kyle



5/23/12

Pre-Fire Engineer **Date**

Arthur Hernandez

EXECUTIVE SUMMARY

The Shasta-Trinity Unit Strategic Fire Plan is a living document. It is intended to be updated yearly with Addendums, as the Unit makes progress on meeting statewide and Unit priority goals and objectives as identified in the 2010 Strategic Fire Plan for California.

This plan recognizes that fire will occur in California, specific to Shasta and Trinity Counties, and works to answer the question of "how do we utilize and live with that risk of wildfire?" Our goal is to create a state that is more resistant and resilient to the damaging effects of catastrophic wildfire while recognizing fire's beneficial aspects. Our goals are to enhance the protection of lives, property, and natural resources from wildland fire, as well as improve environmental resistance to wildland fire. Community protection includes safeguarding and protecting the public, emergency responders, private property, resources, and other improvements.

The plan is divided into battalions, or geographical boundaries, where fuels, weather, topography, and fire history, specific to each battalion, are identified. Firefighting strategies and tactics are pre-planned and evaluated for success, and actions such as fire prevention education and pre-fire inspections are pursued to educate the public to enhance life safety and fire protection capabilities. Through identifying communities at risk and assets at risk, project areas can be targeted for hazard reduction and mitigation, within monetary and staffing constraints, and collaboration with Stakeholders such as private landowners, Fire Safe Councils, Fire Wise Communities, Resource Conservation Districts, and other federal, state, and local agencies.

This plan will utilize the seven goals of the Strategic Fire Plan for California and incorporates them into the planning and implementation process and can be summarized as:

- Improved availability and use of information on hazard and risk assessment
- Land use planning: including general plans, new development, and existing Developments
- Shared vision among communities and the multiple fire protection jurisdictions, including county-based plans and community-based plans such as Community Wildfire Protection Plans (CWPP)
- Establishing fire resistance in assets at risk, such as homes and neighborhoods
- Shared vision among multiple fire protection jurisdictions and agencies
- Levels of fire suppression and related services
- Post fire recovery

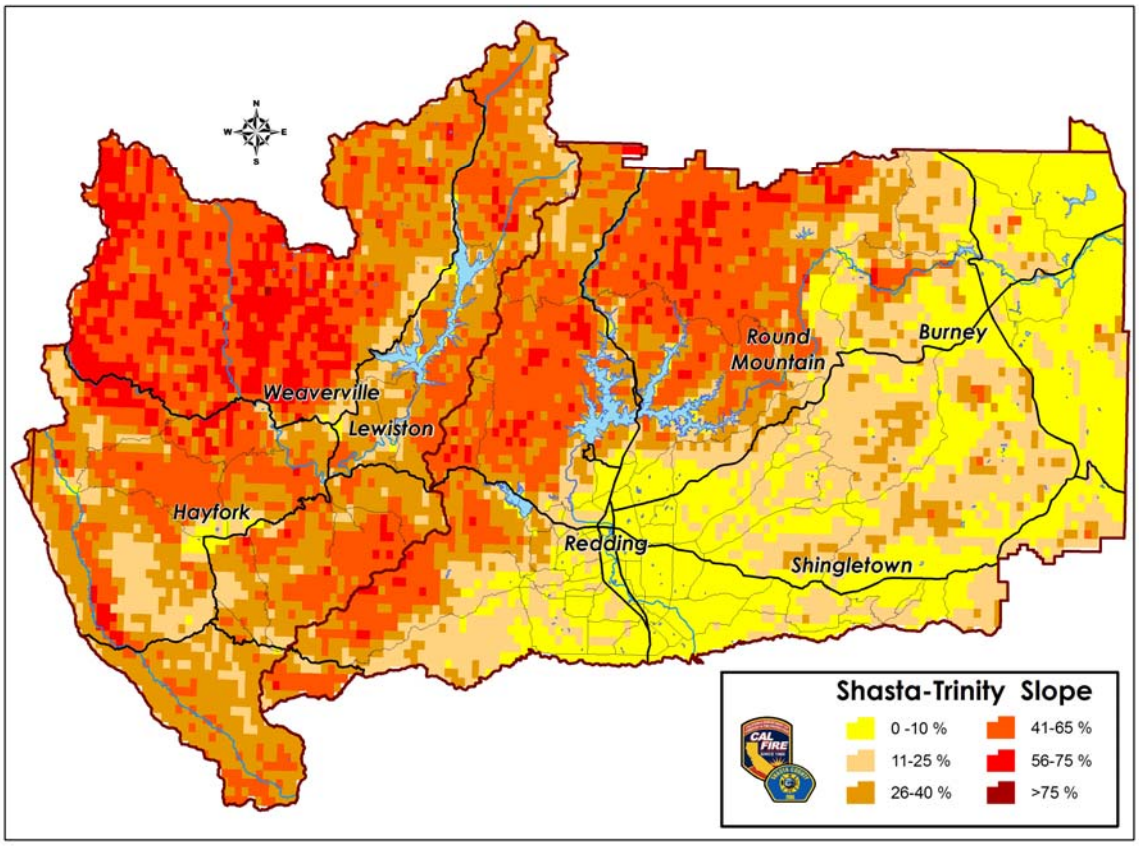
SECTION I: UNIT OVERVIEW

UNIT DESCRIPTION

The Shasta – Trinity Unit is located at the northern end of the Sacramento Valley. It encompasses most of Shasta County and portions of eastern Trinity County. Federal lands administered by the Shasta – Trinity and Lassen National Forest, Bureau of Land Management, Bureau of Indian Affairs, Bureau of Reclamation, and the National Park Service adjoin and are contained within the Unit.

Traveling west to east on Highway 299 from Weaverville to the Lassen County line is approximately 150 miles. South to north on Interstate 5 from Cottonwood to the Siskiyou County line is approximately 75 miles. In these distances there are distinct differences in climate, fuels and topography, all of which affect fire behavior and fire danger rating.

The "Topography – Slope" map indicates the variable nature of the geomorphic regions that intersect within the Unit.



The Unit includes portions of the Great Valley, the Southern Cascade and North Coast Ranges, and the Modoc Plateau. The Eastern slopes of Shasta County gently rise across the toe of the Southern Cascade Range towards the Modoc Plateau while to the West and North the land abruptly rises to the Klamath Mountains. Southern Trinity County and the southwest corner of Shasta County are partially located in the North Coast Range.

Having mountains to the north, west, and east, the Sacramento Valley to the south, and the Pacific Ocean 150 miles to the west makes weather forecasting difficult and produces some unique weather. The CAL FIRE State Responsibility Area (SRA) within the Unit is divided into five distinct NFDRS areas based on climate, topography, and fuels, and modified to match existing Wildland Fire Response Area boundaries. These Fire Danger Rating Areas reflect historical average burning conditions and have been used for fire dispatch and planning in the Unit since 1994. Areas of the Unit not included in the NFDRS areas are in the USFS Direct Protection Area and are mostly in the Interior Timber planning belt.

The Emergency Command Center uses the areas to determine the Fire Danger Rating and Dispatch Levels for the Unit based on daily weather observations taken from a Remote Automatic Weather Station in each area.

Fire Danger Rating Areas

Timber West

This area is the Douglas-fir/Ponderosa Pine forest of the CAL FIRE Direct Protection Area in Trinity County. The area is managed for timber production; therefore logging slash is a common fuel component. Sufficient undergrowth of ceanothus and manzanita is present to require consideration of a live fuel component. Fire Behavior fuel model 10 and NFDRS fuel model G are used in this area. The larger communities within this area are Hayfork, Lewiston, and Weaverville. Smaller communities exist as well as various areas of urbanization. Most of the urbanization lies in the lower elevations of Trinity County in valleys or along streams.

The terrain is very steep; there is a large amount of heavy fuels, and travel times are long in this area.

Trinity County has experienced several catastrophic fires in recent history such as the Lowden fire in 1999 burning 1,945 acres, the Oregon fire in 2001 burning 1,695 acres, the Junction fire in 2006 burning 3,130 acres and the Coffin fire in 2009 burning 1,098 acres damaging not only valuable timberlands, but also causing significant structure and private property loss.

Brush Area

The mid elevations (1,000 – 2,000 ft.) surrounding the Sacramento Valley are merged into the brush area. The area is typically chaparral with chamise and manzanita. These elevations include oak woodland fuels with a high mixture of brushy fuels. Communities include the City of Shasta Lake, Mountain Gate, Shasta, Keswick, and French Gulch.

Most of the lands to the northwest of Redding were void of vegetation by the early 1900's due to copper mining and smelter operations. This area now consists of mostly brush fields that are 50 years old or older. In 2004 the French fire burned 12,675 acres and in 2008, as part of the SHU Lightning Complex the Motion fire consumed 28,330 acres in this general area thereby reducing much of the dead fuel loading. While the fuels in the mountains off the valley floor were reduced by the Motion Fire, the brush fields just off the valley floor were not affected. These areas remain to have sufficient dead fuel and fine fuel to sustain large and damaging fires (Fire Behavior fuel model 4, NFDRS model F).

The lands to the west of Redding located at the base or lower levels of the mountains are covered mostly in brush or oak woodland with a heavy brush under story.

Most of the land west of Redding is highly urbanized which creates a high threat to life and property from wildfire. Subdivisions that were developed prior to 1982 often have narrow one-lane roads and no community water systems. Often the structures have a single access road. Some subdivisions were developed with "Fire Emergency Access" roads, however many of these roads are not maintained and are overgrown to the point of being impassable.

Communities in the Brush Area, west of Redding, include Igo, Centerville, Shasta, Keswick, The City of Shasta Lake, and portions of the City of Redding.

The brush area east of Redding is generally located in rangeland. However urbanization in the brush area exists in the western edge of the communities of Shingletown, Whitmore, Oak Run, Round Mountain, and Montgomery Creek. This area has experienced significant fires in the past and with the current urbanization can expect future fires to be more damaging.

Valley Floor (Grass Area)

This is the south-central part of the Unit extending from the Sacramento River outwards to an approximate elevation of 1000 feet. This is the most urbanized area of the Unit and includes the cities of Anderson, Redding, and the communities of Bella Vista, Cloverdale, Millville, Olinda, and Palo Cedro. The area is typically grassy woodland with blue oak, valley oak, gray pine, and annual grasses. There are also large areas covered by brush types and some of the woodland areas have a dense brush under story.

Significant fires have occurred on the valley floor such as the Canyon fire in 1999 burning 2,579 acres, the Jones fire in 1999 burning 26,202 acres and the Bear fire in 2004 burning 10,441 acres, especially during the North Wind events. Because the primary fuel is annual grasses, each year the fire danger is recurring.

The fine fuels react quickly to weather changes, especially wind. Fire Behavior model 2 and NFDRS model C are used.

Timber East

The Timber East area is the forested area east of Redding. The area extends from the 2,000-foot elevation of the Sacramento Valley to Highway 89. The majority of the area is managed for timber production. This is a mixed species conifer forest that varies from the Timber West Zone in topography, weather and some hardwood species. Slash and brush are part of the fuel component.

Several communities exist within this zone including, Shingletown, Whitmore, Oak Run, Round Mountain, Montgomery Creek, and Burney.

Significant damaging fires have occurred in this area such as the Burney fire in 1988 burning 3,264 acres, Fountain fire in 1992 burning 60,290 acres, resulting in large structure and timber loss and during the 2009 SHU lightning complex, the Chalk, Goose and the Cassel fires burning a total 16,970 acres.

Fire Behavior Fuel Model 9 and NFDRS Fuel Model U are used in this area.

Besides the County boundaries, three incorporated cities lie within the boundaries of the Shasta – Trinity Unit: Anderson, Redding, and the City of Shasta Lake. The remaining communities within the Unit are not incorporated.

Several independent special districts called County Service Areas (CSAs) provide other services such as but not limited to water and sewer. CSA 1 provides funding for fire protection for all the unincorporated areas within Shasta County that are not in a Fire District. Seventeen Special Districts provide services to Trinity County.

The Shasta-Trinity Unit is operated under one Unit headquarters and is located in Redding California. The State Responsibility Area of the Unit is divided into six field battalions, numbered from east of the Unit to the west. During declared fire season, the Shasta – Trinity Unit operates nineteen fire engines, three dozers, twelve hand crews, one Air Tactical Supervisor and two Air tankers. The Shasta – Trinity Unit employs one hundred twenty six permanent fire personnel and one hundred two seasonal firefighters during fire season.

Redding City Fire Department, eleven fire districts, and the Shasta County Fire Department provide local fire protection responsibility for improvements within Shasta County.

Five fire districts, four community service districts, three volunteer fire companies, and one PUD provide local responsibility fire protection within Trinity County.

Shasta – Trinity Unit has dispatch agreements with Shasta County Fire Department, Fall River Mills Fire Protection District, McArthur Fire Protection District, Burney Fire Protection District, Millville Fire Protection District, Cottonwood Fire Protection District, Mountain Gate Community Services District, Shasta Lake Fire Protection District, Happy Valley Fire Protection District, Anderson Fire Protection District, Shasta Community Services District (Old Shasta) and the Shasta College Fire Protection District.

SECTION II: COLLABORATION

COMMUNITY / AGENCIES / FIRE SAFE COUNCILS

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

Plan Development Team:

Organization:	*Representative:*	*Contact Information:*
Western Shasta Resource Conservation District	Mary Mitchell	530-365-7332
		http://www.westernshastarcd.org
Shasta County Fire Safe Council		530-365-7332
Cottonwood Creek Watershed		http://shastacountyfiresafecouncil.org/
Cow Creek Watershed		
French Gulch Area		
Lakehead Area		
Lower Clear Creek Watershed		
Shasta West Watershed		
Shingletown Community		
Stillwater-Churn Creek Community		
Fall River Resource Conservation District	Mike Millington	http://fallriverrcd.org/
		530-336-6591
Hat Creek Valley Fire Safe Council	Don Curtis	
Day Bench Fire Safe Council	Todd Sloat	530-335-6591
Trinity County Fire Safe Council	Pat Frost	530- 623-6004
		http://www.tcrcd.net
Trinity County Resource Conservation District	Pat Frost	530-623-6004
		http://www.tcrcd.net

SECTION III: VALUES

A: VALUES

Assets at Risk (AAR) in the Shasta – Trinity Unit include: citizen and firefighter safety, watersheds and water, timber, wildlife and habitat (including rare and endangered species), rural communities, unique areas (scenic, cultural, and historic), recreation, range, structures, and air quality. The identified AARs enable the Unit and other fire service managers to set priorities for fire management project work.

Assets susceptible to fire damage are identified in the table below. Each AAR has a unique set of stakeholders and involves different public issues **Asset at Risk**	**Public Issue Category**	**Location and ranking methodology**
Hydroelectric power	Public welfare	1) Watershed area up to 20 miles upstream from run of the river power plants, ranked based on plant capacity; 2) cells adjacent to reservoir based plants (low rank); and 3) cells containing canals and flumes (high rank)
Fire-flood watersheds	Public safety Public welfare	Watershed with a history of problems or proper conditions for future problems (south coastal plain, field/stakeholder input), ranked based on affected downstream population
Soil erosion	Environment	Ranking of post-fire erosion potential based on weighted combination of fuel characteristics, soil k-factor, slope, and peak rainfall.
Water storage	Public welfare	Watershed area up to 20 miles upstream from water storage facility, ranked based on water value and dead storage capacity of facility.

Water supply	Public health	1) Watershed area up to 20 miles from water supply facility (high rank); 2) grid cells containing domestic water diversions, ranked based on number of connections; and 3) cells containing ditches that contribute to the water supply system (high rank)
Scenic	Public welfare	Four mile view shed around Scenic Highways and 1/4 mile view shed around wild and scenic rivers, ranked based on potential impacts to vegetation types (tree versus non-tree types)
Timber	Public welfare	Timberlands ranked based on value/susceptibility to damage
Range	Public welfare	Rangelands ranked on potential replacement feed cost by region/owner/vegetation type
Air quality	Public health Environment Public welfare	Potential damages to health, materials, vegetation, and visibility; ranking based on vegetation type and air basin
Historic buildings	Public welfare	Historic buildings ranked based on fire susceptibility
Recreation	Public welfare	Unique recreation areas or areas with potential damage to facilities, ranked based on fire susceptibility
Structures	Public safety Public welfare	Ranking based on housing density and exposure (potential for structure loss in a large fire event)
Non-game wildlife	Environment Public welfare	Public and non government organization (NGO) land holdings specifically for protection of non-game wildlife habitat, ranked based on fire susceptibility.
Game wildlife	Public welfare Environment	Omitted due to lack of methodology/available data
Infrastructure	Public safety Public welfare	Infrastructure for delivery of emergency and other critical services (e.g. repeater sites, transmission lines, transport corridors)
Ecosystem health	Environment	Ranking based on condition class, potential for ecological damage from a severe fire event due to deviation from historical fire return interval

B: COMMUNITIES

Congress, through the FY2001 Appropriation Bill called for a list of "…all urban wildland interface communities, as defined by the Secretaries, within the vicinity of Federal lands that are at high risk from wildfire, as defined by the Secretaries." In the fall of 2000, representatives from CAL FIRE, Forest Service, Bureau of Land Management and the National Park Service developed criteria to select communities at risk.

The communities in the following list and the designated areas on the "Communities at Risk Map" were selected by this validation process and submitted for inclusion in the National listing of Communities at Risk in March of 2001.

Shasta – Trinity Communities at Risk

Anderson
Bella Vista
Big Bar
Big Bend
Burney
Burnt Ranch
Cassel
Castella
Centerville
Central Valley
Coffee
Cottonwood
Covington Mill
Dana
Del Loma
Denny
Douglas City
Fall River Mills
Forest Glen
French Gulch
Gibson
Glenburn
Hat Creek
Hayfork
Hyampom
Igo
Junction City
Keswick
Lakehead
Lamoine
Lewiston
McArthur
Millville
Montgomery Creek
Mountain Gate
O'Brien
Oak Run
Old Station
Ono
Palo Cedro
Pitville
Platina
Redding
Redding Rancheria
Round Mountain
Shasta
Shingletown
Sims
Trinity Center
Weaverville
Whitmore
Wildwood

Boundaries for the Communities at Risk were created using 1990 census tracts. The 1990 Census did not include names for communities without a Post Office thus many named communities within the unit are contained within the boundary of an adjacent community (example: Jones Valley had to be included with Bella Vista)

Now, there is a process to include a community to the Communities at Risk list, who are not included in the previous selection. (**www.cafirealliance.org)**

Shasta – Trinity Unit communities not listed on the California Fire Alliance list are: Inwood, Lakeshore, Olinda, Pine Grove, Post Mountain, Shasta Lake City (listed as Central Valley), and Viola.

SECTION IV: PRE-FIRE MANAGEMENT STRATEGIES

A: FIRE PREVENTION

- **Ignition Analysis**

It is extremely important to determine how fires are caused, where fires occur, and whether the Unit is meeting the Department's goal of containing 95 percent of all wildfires at 10 acres or less. Determining causal trends can direct the Unit to specific prevention efforts to change that causal trend. The location where the majority of fires occur can help determine where prevention and pre-fire efforts might produce the greatest result.

The ignition workload assessment is derived from data collected from CAL FIRE's California All-Incident Reporting System (CAIRS). This fire reporting system utilizes the National Fire Protection Association (NFPA) Standard 901 coding convention. CAL FIRE has historically classified fire causes into twelve General Causes while the NFPA causal data is collected as causal factors. CAIRS data uses Lat/Long information that points the ignitions to the actual area of origin, instead of cornering the point at a Section/Township/Range corner, making the data much more accurate than the Emergency Activity Reporting System (EARS) used in past years.

The Fire Plan data only uses ignitions that have caused a vegetation fire. The Shasta Trinity Unit collects data for all ignitions including non-vegetation fires such as structure or vehicle fires. Many of these ignitions could have spread to the wildland vegetation, but suppression activity contained the fire to the original material ignited.

- **Specific goals and objectives within Fire Prevention to reduce ignitions in the unit**

The goals of the Fire Prevention Bureau are Education, Information, Planning and Enforcement. The Prevention Bureau objectives to reduce ignitions are to identity and address all ignitions which threaten public safety and lands within our jurisdiction. We identify specific fire cause classifications along researching data then educate and inform the public. During this phase of education we will send out news releases, develop commercials, hand out flyers, and disseminate safety messages.

The Shasta Trinity Unit has experienced a considerable change in the ignitions table (fire starts) within the State Responsibility Area (SRA). Ten years ago, equipment caused fire was on a rise, however; in recent years we have seen an increase in two areas of the fire cause classifications. The first fire cause classification that has been increasing in the last couple of years is debris burn escapes. At the beginning of the fire season (usually prior to May 1st and up to three weeks after) citizens burn their debris piles and for several reasons they loose control of their burning. The Shasta Trinity Unit worked on educating the public on burning safety, informational news releases, along

with verbal warnings and criminal citations. The second area we have experienced an increase in is children playing with fire. Shasta County (including areas within the City of Redding, Anderson, Cottonwood, Happy Valley) saw an increase which doubled years past statistics of ignitions by juveniles. Both CAL FIRE and Redding City Fire Department have programs specifically designed to educate juveniles with the hazards and dangers of playing with fire. Identifying these juveniles through the investigation process was a key component to recognizing the growing problem. Secondly, providing educational information through the Juvenile Fire Starter Program corrected most juveniles (approximately 98% success rate) behavior.

- **Public Resource Code 4291**

The California Public Resource Code 4291 and Government Code 51182, amended by Governor Schwarzenegger signed into law on September 23, 2004, Senate Bill 1369 and became effective January 1, 2005, which increase the minimum clearance (defensible space) requirement from 30' to 100'. It also provides that state law or local ordinance rules or regulations to specify requirements of greater than 100' around buildings because of extra hazardous conditions or where a firebreak of only 100 feet around such building or structure is not sufficient to provide reasonable fire safety.

A defensible space perimeter around buildings and structures provide firefighters a working environment that allows them to protect buildings and structures from encroaching wildfires as well as minimizing the chance that a structure fire will escape to the surrounding wildland. These guidelines apply to any person who owns, leases, controls, operates, or maintains a building or structure in, upon, or adjoining any mountainous area, forest-covered lands, brush-covered lands, grass-covered lands, or any land that is covered with flammable material, and located within a State Responsibility Area (SRA).

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

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

- Properties with greater fire hazards will require more clearing. Clearing requirements will be greater for those lands with steeper terrain, larger and denser fuels, fuels that are highly volatile, and in locations subject to frequent fires.

- Creation of defensible space through vegetation management usually means reducing the amount of fuel around the building or structure, providing separation between fuels, and or reshaping retained fuels by trimming. Defensible space can be created removing dead vegetation, separating fuels, and pruning lower limbs.

- In all cases, fuel reduction means arranging the tree, shrubs and other fuels sources in a way that makes it difficult for fire to transfer from one fuel source to another. It does not mean cutting down all trees and shrubs, or creating a bare ring of earth across the property.

- A homeowner's clearing responsibility is limited to 100 feet away from his or her building or structure or to the property line, which ever is less, and limited to their land. While individual property owners are not required to clear beyond 100 feet, groups of property owners are encouraged to extend clearances beyond the 100 foot requirement in order to create communitywide defensible spaces.

- Homeowners who do fuel reduction activities that remove or dispose of vegetation are required to comply with all federal, state or local environmental protection laws and obtain permits when necessary. Environmental protection laws include, but are not limited to, threatened and endangered species, water quality, air quality, and cultural/archeological resources. For example, trees removed for fuel reduction that are used for commercial purposes require permits from the California Department of Forestry and Fire Protection (CAL FIRE). Also, many counties and towns require tree removal permits when cutting trees over a specified size. Contact your local resource or planning agency officials to ensure compliance.

CAL FIRE is dedicated to public safety and Defensible Space Inspections. CAL FIRE inspects private properties with structures to educate and advise the public in making their structures compliant with the 100' defensible space requirements giving their homes a better chance of survival in the event of a wildfire. These inspections are done year round, with the majority of the inspections done in the late winter and early spring months, giving homeowner's time to mitigate non compliance issues around homes and structures before the summer months when the fire danger higher.

http://www.fire.ca.gov/communications/downloads/fact_sheets/DefensibleSpaceFlyer.pdf

http://www.fire.ca.gov/cdfbofdb/pdfs/4291finalguidelines2_23_06.pdf

Fire Protection Planning

The Fire Safety Standards are codified in the Shasta County Development Standards as Chapter 6. The Development Standards are uniformly applied throughout the County. Other agencies may elect to enforce stricter standards. However, the Fire Safety Standards are the minimum level of fire protection planning allowed. The Standards incorporate elements of Title 19, Title 24, and Public Resources Code 4290 and Government Code sections 51175-51189. The current Standards adopted in 2004 primarily address access and water. The standards are applied to all new land divisions within Shasta County when projects are submitted to the County for review. Due to the Cooperative Fire Agreement, the Unit Chief is appointed as the County Fire Warden. The Board of Supervisors delegates authority to the Fire Warden to enforce the Fire Safety Standards for all new land divisions within the County. This authority is, in turn, delegated to the Fire Marshal of the Shasta County Fire Department. The Fire Marshal works closely with the Planning Department and is an integral component of the review process. Applicable conditions are applied to each project to ensure conformity with the Fire Safety Standards. Once projects are approved by the Planning Commission and/or Board of Supervisors, the Fire Marshal inspects work completed to ensure it meets the conditions applied to the project.

Structure Ignitability and WUI

Starting January 2008, the new 2007 California Building Code (CBC) became effective. For products to be used in the Wildland Urban Interface (WUI) there are some regulations that required building products to comply with specific standards.

In an effort to provide the home owners, industries, designers, local fire and building officials a readily list of “compliance WUI products”, the State Fire Marshal has publishing the “WUI Products Handbook”.

All products published in this handbook have been reviewed and verified their compliance in accordance with the new 2007 CBC by SFM staff. All products published in the WUI Products Handbook are “approved” by the SFM. They are not “Listed” unless a SFM Listing number is attached. It should be noted that products are not in the WUI Products Handbook may still comply with the standards since it is not a requirement for any products to be in the WUI Products Handbook.

http://osfm.fire.ca.gov/strucfireengineer/pdf/bml/wuiproducts.pdf

The California Building Commission adopted the Wildland-Urban Interface (WUI) codes in late 2005. The majority of the new requirements took effect in 2008 and has been updated in the 2010 California Building code. These new codes include provisions for ignition resistant construction standards in the wildland urban interface. The updated fire

hazard severity zones will be used by building officials to determine appropriate construction materials for new buildings in the wildland urban interface. The updated zones will also be used by property owners to comply with natural hazards disclosure requirements at time of property sale. It is likely that the fire hazard severity zones will be used by local government as they update the safety element of general plans. The new building standard for the Fire Hazard Severity Zones will be enforced by the Building Official as projects go through the plan checking process. To best assist them in determining if a product meets the code requirements, the State Fire Marshal's Building Materials Listing program (BML) is accepting applications for materials for listing or for the review of meeting the standards. These materials will be posted on the SFM BML website at:

http://osfm.fire.ca.gov/strucfireengineer/pdf/bml/wuiproducts.pdf

, and the Wildland Urban Interface Building Codes page of the Wildland Hazards and Building Codes at:

http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland_codes.php

The SFM listing service provides building authorities, architectural and engineering communities, contractors, and the fire service with a reliable and readily available source of information.

Since the materials under Wildland Urban Interface Building Codes (except roof wood shakes and shingles) are not required by law to be listed by the SFM, the listings for these products are strictly voluntary. Materials not listed by the SFM may still qualify for use provided they met all the requirements under Chapter 7A. If not listed on the SFM site, all documentation and testing certificates showing compliance must be submitted to the building official having jurisdiction for final approval.

Information regarding all Wildland Urban Interface issues can be downloaded at:

http://www.fire.ca.gov/fire_prevention/fire_prevention_wildland.php

Code Enforcement

Within Shasta County, each fire protection Authority Having Jurisdiction (AHJ) is responsible for conducting fire safety inspections and code enforcement. The Shasta County Fire Department conducts inspections of all non-residential occupancies falling within its jurisdiction. The target interval for inspections is every three years. Any complaint regarding alleged violations of the Uniform Fire Code is investigated immediately. The Fire Marshal's office coordinates and conducts the Fire Safety Inspections.

Shasta County has adopted the 2010 Uniform Fire Code, Residential Code, and Uniform Building Code for all new construction and inspections in the jurisdiction. The Fire Marshal's office works closely with the County Building Department to ensure applicable fire safety codes are applied. (See APPENDICES C)

INFORMATION AND EDUCATION

The Shasta – Trinity Unit has an education program that is geared to educating the citizens of Shasta and Trinity counties as a whole. There are three major components to the fire prevention and education programs.

- School programs – SHU prevention staff, utilizing both paid and volunteer personnel participate in school programs on an annual basis reaching out to nearly 5,000 children and young adults, also included in this demographic are a number of programs addressing children with special needs. Teaching children about the dangers of fire play and the consequences of such actions is important in preventing wildland fires resulting from children or young adults playing with fire.

- Juvenile Fire Setter Program – In cases where children or young adults have been playing with fire and staff is able to identify those persons, they are enrolled in a juvenile fire setter intervention class (JFSI). The JFSI is key in identifying the reasoning behind the fire play and ensuing consequences will help to mitigate the recurrence of such activity.

- Public and community information events or programs – Using venues such as home and garden shows, earth day festivals and other community oriented events, SHU Prevention Staff are able to educate residents of all ages regarding fire safety and prevention of fire. The emphasis at these events is educating the residents of the need for defensible space, but at the same time advising of the factors that can ignite a fire while achieving that defensible space. Fires can be ignited by equipment (i.e. mowers, trimmers, etc.) that produces heat, ignites duff, or causes sparks. In addition, staff has educated the general public at these events on other ways fires start including dooryard debris burning regulations (when applicable) and outdoor fire safety when recreating in the wildland.

The use of these information and education components is key to raising public awareness of how fires start and how they can be prevented. In addition, fire prevention staff are members of the Shasta County Fire Prevention Officers Association where ideas and collaboration in the fire prevention help to educate the public.

Fuel Reduction

The Forest Practice Program provides several functions, including enforcement of laws that regulate logging on privately-owned lands in California through the Forest Practice Act to preserve and protect our fish, wildlife, forests and streams. The Forest Practice Act provides several timber harvesting permits which facilitate fuel reduction around homes, property and communities. These permits include Harvesting Dead, Dying or Diseased Exemption, 150 foot Fire Hazard Removal Exemption (around habitable structures), removal of Substantially Damaged Timber, Forest Fire Prevention Exemption, Woody Debris Slash Removal Exemption, Fuel Hazard Reduction Emergency Notice, as well as Sanitation Salvage and Fuelbreak/ Defensible Space Timber Harvest Plans.

The Vegetation Management Program (VMP) offers similar fuel reduction plans but focusing on prescribed burning. Through prescribed burning and other fuel reduction methods, the risk of wildfire can be diminished. Prescribed burns remove the thick underbrush in wildland areas in a controlled manner rather than through destruction from a wildfire. Fuel reduction not only improves the growing conditions of native plant and wildlife species but, a treated site can act as a fire break, stopping a wildfire in its tracks, or providing firefighters with safe areas to make a stand against a fire. Specialized CAL FIRE personnel coordinate with landowners to determine sites and create plans for prescribed burns. CAL FIRE works with other cooperators, such as the Air Quality Management District and wildlife agencies, to ensure burning is done with minimal impact on air quality or biological diversity.

Suppression Repair

Our Department's 7000 manual outlines the standard protection measures for Suppression Repair. 7013.11.3 states: "The Pattern for mitigation measures rest in large part on the standards in the Forest Practice Regulation. These are the same standards that CDF foresters enforce on private logging operations." The Forest Practice Program (through the staff Forester I, II and III's) often provides lead on Suppression Repair activities. To the extent possible and practical, indirect damages to soil, streams, fish habitat, and private property should be minimized but with due consideration for fire suppression requirements.

Vegetation Management Program coordinators are also familiar with Suppression Repair activities, have a strong knowledge base on local concerns and issues, and often the preplanning and implementation aspect of a VMP project reduces the need for post-fire suppression repair.

Forest and Range Health

The goal of forest management under the Forest Practice Program in relation to the Forest Practice Act falls into four objectives:

1. Achieve a balance between growth and harvest over time.
2. Maintain functional wildlife habitat with a planning watershed.
3. Retain or recruit late and diverse seral stage habitat components for wildlife.
4. Maintain growing stock, genetic diversity and soil productivity.

Likewise, the goal of any VMP project is to meet the criteria of the California Environmental Quality Act (CEQA).

CAL FIRE foresters and VMP coordinator's diversity in education, training and background experience help strengthen our Departments ability to help local landowners, communities and Counties manage the health of their forests and rangelands. The Forest Practice Program and the Vegetation Management Program work with other cooperators such as the Department of Fish and Game, Regional Water Quality Control Boards, US Fish and Wildlife Service, as well as others to provide solid and balance perspectives to forest and rangeland health.

State law (Public Resource Code 4789) requires the California Department of Forestry and Fire Protection to periodically assess California's forest and rangeland resources. The Forest Practice Program and the Vegetation Management Program utilize the information provided by Fire and Resource Assessment Program (FRAP), which identifies emerging resource issues on wildlands, analyzes the results of different types of land use and management on wildland conditions, reviews and evaluates policies by federal, state, and local agencies as they relate to wildland protection, and identifies and analyzes policy options for the Board of Forestry and Fire Protection. The program has established a statewide geographic information system (GIS) of biological, physiographic, demographic, and other types of data needed to address CAL FIRE’s mission, including information on vegetation, wildlife, soils, watersheds, fire behavior, and ownership.

SHU Battalion 1

Battalion Overview:

Shasta-Trinity Unit Battalion 1 is located in the Northeast corner of the Shasta Trinity Unit. The Battalion is comprised of state, federal and local firefighting resources. Battalion 1 borders the USFS Lassen National Forest to the south, the USFS Shasta Trinity National Forest to the northwest, the Modoc National Forest to the northeast, the CAL FIRE Siskiyou Unit to the north and the CAL FIRE Lassen Modoc Plumas Unit to the east. Within Battalion 1's Direct Protection Area (DPA), there is a mixture of private property, National Forest, BLM, and State land. There are two BLM wilderness study areas (WSA's) comprising of approximately 30,000 acres. In the Fall River valley there are 3 local responsibility areas (LRA) that border the state DPA. They are protected by the Shasta County Fire Department (administered by CAL FIRE SHU), Fall River Fire District and the McArthur Fire District.

Battalion Resources:

Fire Protection within the Battalion is largely made up of volunteer and seasonal staffing within Cal Fire and Shasta County Fire. Two of the three Fire Districts within the Battalion have some full time paid staffing with a strong volunteer backup.

- **CAL FIRE**

Battalion 1 consists of two seasonal schedule B stations. Burney Station 14 houses two type III schedule B engines, a type II initial attack bull dozer, a Forester 1 and a Battalion Chief. Big Bend Station 19 housed one type III schedule B engine and is co located with a Type III engine from the USFS Shasta Trinity National Forest. Soldier Mountain Lookout is also located and maintained by the Battalion. Soldier Mountain lookout is staffed by local emergency hire citizens during times of severe fire hazard.

- **Shasta County Fire Department**

The Shasta County Fire Department, administered by Cal Fire has 5 volunteer fire companies in Battalion 1. The communities protected by these companies are Cassel, Hat Creek, Old Station, Soldier Mountain/Dana and Big Bend. Each station housed a type II engine, a type III engine, water tender and transport capable rescue vehicle.

- **Districts and Municipality**

There are three Fire Protection Districts with in the Battalion, they are the communities of Fall River, McArthur and Burney. Fall River and McArthur Fire Districts both have portions of their districts that are SRA. All of the Burney Fire Protection Districts fall within the SRA.

Wildland and Urban Interface:

Battalion 1 is largely comprised of private timberland with Sierra Pacific, Roseburg Forest Products, Beatty & Associates and Fruit Growers being the largest land holders. There are several small communities with mostly residential structures spread out in the SRA. The town of Burney is the largest town in the Battalion with several commercial properties as well a few thousand residential structures all in the urban interface.

Fuels-Weather-Topography:

Most of Battalion 1 is comprised of eastside pine and mixed brush (in the old burns). The north end of the battalion through the Pit River drainage and into Big Bend is more of a mixed conifer fuel type, depending on the exposure.

Under normal summer high pressure, the fire activity will diminish after dark. The normal wind pattern is a west to southwest push during the afternoon, and there are many occasions we will get a significant down canyon wind after midnight down the Pit River canyon and down the west slope of Hatchet Mountain. On a normal year we can expect to have two or three significant lightning busts with the potential of starting 50+ fires within the Battalion. Normal lightning storms will begin in the late afternoon and last until approximately midnight. Most storms will begin somewhat dry with increasing moisture into the evening hours. Storms that occur early in the day have a greater potential to produce extended or major attack incidents.

Battalion 1 is located in the Casecade mountain range. The majority of the Battalion has been shaped over millions of years by volcanic events. The Battalion lies between Mount Shasta to the north and Mount Lassen to the south. There are several lava flows and cinder cones in the south end of the Battalion. The Pit River drainage runs through the center of the Battalion with very steep and narrow canyons.

Battalion Fire History:

Battalion 1 has a significant fire history of both lightning and human-caused fires. The majority of the fires burn from the southwest under a normal summer time high pressure in the afternoon. In recent times there have been several major fires that have threatened the community of Burney including; the Tamarack Fire (1986), Burney Fire

(1988), Burney Fire (1992) and the Fountain Fire (1992). The Battalion has also experienced lightning sieges that have included multiple major fires in 1990, 1999, 2008 and 2009.

Fuels Reduction / Battalion Projects and Priorities:

There are two active fire safe councils within Battalion 1. The Hat Creek Fire Safe Council covers the Hat Creek Valley through the community of Cassel north to the Burney Falls State Park. Hat Creek Fire Safe Council operates under the Western Shasta Resource Conservation District (RCD). The Day Road Fire Safe Council covers Day Road in both SHU and LMU. The Day Road Fire Safe Council operates under the Fall River RCD. There are hopes to start a fire safe council in the Burney area; they are working with the Fall River RCD.

Battalion 1 personnel have been completing LE-100 inspections in most areas of the battalion at least 6 years. The Hat Creek Fire Safe Council has successfully completed several shaded fuel breaks in and around the community of Cassel. Battalion 1 has a proven Lightning Plan, and is updated regularly due to lightning potential, with an established Incident Command Post held the Battalion Headquarters in Burney. Other emergency pre-plans, consisting of roads, addresses, and assets at risk within Battalion 1, have been established, and are monitored for changes annually. Both Hat Creek and Day Bench Fire Safe Councils have exceptional pre-plan maps for public use.

SHU Battalion 2

Battalion Overview:

The Shasta-Trinity Unit's Battalion 2 is located along the southeast shores of Shasta Lake east of Interstate 5 in Jones Valley, across the southern boundary of the community of Big Bend to the Chalk Mountain, south across HWY 299E, just east of Hatchet Mountain, and south along Tamarack Road to the Whitmore area, west toward Millville along Whitmore Road, around Palo Cedro, north along the Redding City boundary, and back to Jones Valley. All of Battalion 2 is under State Direct Protection Area (DPA) on State Responsibility Area (SRA) lands.

Battalion Resources:

Battalion 2 consists of four CAL FIRE Stations as well as three Shasta County Volunteer Fire Companies, under the supervision of Battalion Chief Ken Lowe.

- **CAL FIRE**

Shasta College Station 73 provides service for Northern Shasta County in the communities of Bella Vista, Jones Valley, Lakehead and the areas in and around the Shasta College Fire District as a year round contract with CAL FIRE. The Station has one CAL FIRE Type III engine which is staffed 24 hours a day with a minimum of one CAL FIRE Fire Officer and one CAL FIRE firefighter during Amador months, and department staffing during declared fire season. Three CAL FIRE stations are open 24 hours for the duration of fire season, each with a type III engine. Diddy Wells Station 74 protects the communities from Bella Vista to Round Mountain and from Shasta Lake to Oak Run. Hillcrest Station 75 covers life and property from Round Mountain to Burney, also from Big Bend to Oak Run. Buckhorn Station 34 is located between the communities of Oak Run and Whitmore, and protects from Hillcrest to the Millville Plains, to Ingot Canyon. Sugar Pine Conservation Camp is a 6 crew camp and located West of Ingot Canyon.

Shasta County Fire Department

Volunteer Fire Companies include the Oak Run Volunteer Fire Company 30, Bella Vista Volunteer Fire Company Station 33, and Montgomery Creek Volunteer Fire Company 71. Battalion 2 SCFD Companies each house a Type II fire engine, a Type III fire engine, a Rescue, and one Water Tender.

Wildland and Urban Interface:

Battalion 2 is comprised of commercial, residential, agricultural, and highway uses, including State Highway 299 East. Assets at risk include, but not limited to: Private lands; Watersheds that extend into the Sacramento River; Commercial properties that include Shasta College, downtown Bella Vista, Round Mountain, Montgomery Creek, and Oak Run, including grocery stores, restaurants, traveler services including gasoline and propane fueling facilities, medical facilities, a major Pacific Gas & Electric substation and two sets of 500kv transmission lines, numerous public schools, churches, and the Phillips Mill (Historical landmark); Private timber lands including Roseburg, Sierra Pacific Industries, Fruit Growers Association, Beatty & Associates lands are present along the east end of Battalion 2 within the SRA; USFS lands along and Lake Shasta protected by State DPA.

Fuels-Weather-Topography:

Fire fuels along the southwest area of Battalion 2 include grass and oak woodland, which carry fire quickly and upslope within the foothills and wildland urban interface within the communities of Oak Run, Hillcrest, and Whitmore. There is a predominate brush belt within the 1000-2000 foot elevations including Diddy Wells and Oak Run, that transition into mixed pine and oak in the communities of Hillcrest, and Oak Run.

Weather is generally warm and dry during the day with moderate humidity recovery at night. Peak summer temperatures average 85 to 95 degrees with temperatures reaching in excess of 110 degrees for 2 to 5 day periods. The average relative humidity is 15 to 35%. Gradient winds are generally out of the West, southwest 5 to 12 mph. Occasional light east winds occur in the morning then shifting to more W/SW flow in the afternoon and can reach speeds of 15 to 20 mph., generally up slope and up canyon. North wind events occur periodically throughout the fire season and can reach in the 10 to 40 mph range with associated higher gusts. These winds frequently switch to the Northeast and strengthen after dark, with occasional stronger winds reaching 50 mph in the Hillcrest – Round Mountain area between 2 A.M. to after sunrise.

Battalion Fire History:

Battalion 2 has experienced several catastrophic wildfires, historically. While fires caused by lightning have destroyed several thousand acres within the Battalion in the last few years, most fires have been created by humans, and were predominately wind-driven, destroying structures and private property. Burn patterns indicative of the west-east drainages and local up-canyon winds influenced by the valley heating, have scarred the landscape with historical fires such as the Fountain Fire in 1992, which burned 60,290 acres with significant structure and timber loss. Both the Jones fire in 1999, which burned 26,202 acres, and the Bear fire in 2004 that destroyed 10,441 acres, were wind-driven, and human-caused. LE-100 inspections have become an integral part of pre-fire season operations intended to educate property owners of the

benefits to preparing their homes against the potential for catastrophic loss due to wildfire.

Fuels Reduction / Battalion Projects and Priorities:

Battalion 2 experienced an overwhelming participation with stakeholders to suppress wildfires and save structures during the 2008 Siege. Pre-plans to ranches and private industry lands have been collaborated and in place to speed suppression efforts for emergency personnel, ultimately saving life and property. Battalion pre-plans are in place to identify helicopter landing zones for medical emergencies, safety zones for firefighters, evacuation points and routes for citizens, water sources for catastrophic fires, staging areas for firefighting equipment, and augmentation to initial attack resources. A lightning plan is maintained, and was utilized in 2008 and 2009 to organize and deploy firefighters to over 100 fires collectively.

There are many natural and man made features that may serve as fire breaks including roads, highways, streams, and irrigated pastures. Local, State, and Federal budgetary constraints have led small local community fire safe councils within the battalion to merge their efforts for project work under the umbrella of the Shasta County Fire Safe Council, administered under the direction of the Western Shasta Resource Conservation District (WSRCD). The WSRCD has established a fire plan for areas within Battalion 2 that include the Cow Creek Strategic Fuel Reduction Plan**.** The goal of this plan is to reduce the destruction and associated costs from wildfire by creating shaded fuel breaks, increase homeowner and fire department access and egress, watershed restoration, and public information and education on developing Fire Wise communities. Several shaded fuel breaks along county roads and Hwy 299E surrounding the communities of Oak Run, Hillcrest, Montgomery Creek, Round Mountain, are initiated by the WSRCD.

In 2008, California experienced an overwhelming influx of lightning-caused fires that taxed firefighters at every level, increasing the recognition and importance of structural defensive space, addressing, and access, as well as the apparent benefit of pre-fire projects that proved to slow and/or stop fires at existing breaks.

SHU Battalion 3

Battalion Overview:

The Shasta-Trinity Unit's Battalion 3 (Shingletown - Whitmore Battalion) is comprised of an integrated, multi agency workforce of State, Local and Federal firefighting resources which provide wildland fire protection to southeastern Shasta County under cooperative agreements. Battalion 3 is located at the north end of the Sacramento Valley in southeastern Shasta County. It's bordered on the west by the Sacramento River and runs east paralleling the Tehama County border until reaching Lassen County which is the eastern boundary. Battalion 3 includes the communities of Manton, Millville, Shingletown, Whitmore and Viola. There is one independent Fire District within the Battalion serving the community of Millville. The eastern portion of Battalion 3 consists of Federal Responsibility Area (FRA) and is administered by the Lassen National Forest and the Lassen National Park. While statutory responsibility for all wildland fires within Lassen National Forest is federal direct protection area (DPA), all other types of incidents including medical aids, traffic collisions and structure fires is the responsibility of Shasta County Fire Department (SCFD) administered by CAL FIRE. The Lassen National Park has sole responsibility for all incidents within the park boundaries. Battalion 3 also includes Latour State Forest administered by CAL FIRE. This is a demonstration forest consisting of 9000+ acres of mainly conifer commercial timberland.

Battalion Resources:

Fire Protection within the Battalion 3 is made up of career paid staffing from CAL FIRE, United States Forest Service and National Park Service. Volunteer firefighters make up a large majority of the firefighting work force in all the unincorporated communities consisting of Millville Fire Protection District and Shasta County Fire Department.

- **CAL FIRE**

Battalion 3 consists of two career fire stations.

- Shingletown Fire Station 22 is staffed with 2 Type III Schedule B engines during the peak fire season months, while in the winter months the staffing is reduced to one engine under Amador contract with Shasta County Fire Department (SCFD)and is staffed 2/0 effective.
- Whitmore Fire Station 35 is staffed with 1 Type III Schedule B engine during the peak fire season months and is closed during the off season.
- Battalion 3 also administers Latour Butte Lookout which is staffed with career or retired firefighters during times of severe fire danger.

- **Shasta County Fire Department**

The Shasta County Fire Department is administered by CAL FIRE. Volunteer Fire Companies within Battalion 3 include the following;

- Shingletown Volunteer Fire Company Station 20 utilizing 2 Type II Engines, 1 Type III Engine, 2 Type 1 Water Tenders and 3 Rescues.
- Whitmore Volunteer Fire Company Station 31 utilizing 1 Type II Engine, 1 Type III Engine, 2 Type II Water Tenders and 1 Rescue.

Fire Protection District

Independent Fire Protection Districts within Battalion 3 include the following;

- Millville Fire Protection District Station 21 utilizing 2 Type II Engines, 1 Type III Engine, 1 Type I Water Tender and 1 Rescue.

Wildland and Urban Interface:

Battalion 3 is largely comprised of residential, rangeland and commercial timberland. The community of Shingletown is the largest residential area within Battalion 3. It's mainly a bedroom community for people who work in the Redding/Anderson area as well as a retirement community. Large subdivisions of 200+ homes in the area include Shasta Forest Village, Starlite Pines and Lake McCumber. The smaller community of Whitmore, along with Shingletown presents the greatest threat for a catastrophic Wildland Urban Interface (WUI) fire due to population density and fuel loading. Large ranches exist in the front country. A number of these ranches exceed 5000+ acres. Private commercial timberlands comprise the eastern third of the battalion and include large land owners such as Sierra Pacific Industries and Beaty & Associates.

Fuels-Weather-Topography:

Fuels within Battalion 3 transition from grass/oak woodland in the Sacramento Valley and Millville Plains to brush to mixed hardwood/conifer to pure conifer stands. Fuel models 1, 4, 10 and 11 are examples. At lower elevations, open areas of annual grasses are interspersed with 15 to 50 year old stands of decadent brush (chaparral). These fuel's dead to live ratio average approximately 20%. Annual chaparral live fuel moistures vary from 120% to less than 75% in late summer. Fuels transition from chaparral to mixed hardwood/conifer stands at approximately 2500 feet. Above 4500 feet you'll find continuous stands of short needled conifer. Current mixed hardwood/conifer and solid conifer stands have occasional pockets of dead trees due to bug and snow kill.

The climate is characterized as Mediterranean with hot and dry summers. Temperatures average in the summer in the Sacramento Valley over 100 degrees and the higher elevations near 90 degrees. The relative humidity averages from 10-25 % in the afternoon, and is often followed by poor nighttime humidity recovery in the mid to upper elevations. Rainfall during the summer is normally less than 1 in. The winters

are cool and wet. Average rainfall in the valley averages around 30 in. and in the higher elevations 35-50 in. Latour State Forest can see as much as 12-15 ft. of snow pack in a good winter. Normal gradient winds are from the southwest and average between 6-12 mph in the mid-afternoon. These winds can be enhanced by an on shore or southerly flow which can increase speed to 12-18 mph at times. The humidity with this type of wind in Battalion 3 tends to only increase a few percent due to the distance from the ocean. Foehn or North wind events often occur during the late summer and early fall. On the eastern side of Shasta County this wind is normally the strongest toward the end of the wind event and occurs at night when the normal gradient winds enhance the northeast wind flow of the Foehn wind. These winds are also enhanced and funneled by the alignment of the main drainages within the battalion that run from the northeast to the southwest. Peak winds during these wind events can reach 50+ mph. Examples of these Foehn wind driven fires include the 1988 Fern Fire and the 2003 Whitmore Fire.

The elevation ranges between 375 ft. at the Sacramento River up into the Cascade Range and Latour Butte Lookout at 6740 ft. Topography varies greatly within Battalion 3. The west side of the battalion consists of mainly the Sacramento Valley with rolling grass/oak woodland with small drainages. As the elevation increases to the east the topography gradually becomes more rugged. The main drainages within the battalion consist of Cow Creek, Bear Creek and Battle Creek.

Battalion Fire History:

Battalion 3 has seen numerous significant fires in the past. Fire history demonstrates moderate to rapid rates of spread, sometimes reaching 1 to 3 mph especially within fuel model 1 and in fuel model 10 and 11 during foehn wind events. These fast moving fires can occur during north wind weather patterns as well as during a strong onshore flows pushing up the Sacramento Valley causing south to southwest winds of 12-18 mph. The humidities with these onshore/south winds tend to only increase a few percent due to the distance from the ocean. Example: 1965 Highway 44 Fire -13,708 acres. In fuel model 4 flame lengths in the chaparral can range from 12 to 20 feet once the live fuel moisture reaches critical at 80%. Example: 1958 Blue Mountain Fire – 7,731 acres. Fire history demonstrates the greatest risk for large damaging fires occurs mostly in the hard/conifer fuel belt running through the battalion. This is especially true once the 1000 hour dead fuel moisture reaches critical level of less that 12%. Examples: 1978 Whitmore Fire – 7,285 acres, 1988 Fern Fire – 7,558 acres, 2003 Whitmore Fire – 1,004 acres.

Fuels Reduction / Battalion Projects and Priorities:

Battalion 3 has one of the oldest Fire Safe Councils in California within the community of Shingletown. Over the years this Fire Safe Council has developed, completed and maintained approximately 5 miles of shaded fuel break around the community of Shingletown. They have also worked on numerous fuels reduction projects and continue to develop and look for new ways at reducing the fuel loading in and around

the community of Shingletown. A comprehensive plan has been developed with the assistance of the Shasta County Fire Safe Council and the Western Shasta County Regional Conservation District. Currently additional shaded fuel breaks/escape routes are currently being constructed in two more locations along Shingletown Ridge.
There is one other Fire Safe Council in the community of Manton. This council is also very active but most of their work has been completed within Tehama County. Currently the two Fire Safe Councils are working together and are developing future projects in Shasta County along the Tehama County line. Both councils are also working hard to ensure their communities are designated “Fire Wise” in hopes of securing additional grants in the future.
With the continued threat of catastrophic wildland fires and the increasing population growth within the wildland urban interface (WUI), the battalion aggressively provides Defensible Space Inspections and Information/Education presentations on an ongoing basis.

SHU Battalion 4

Battalion Overview:

The Shasta-Trinity Unit's Battalion 4 (Redding Battalion) is comprised of an integrated, multi agency workforce of State, Local and Federal firefighting resources which provide wildland fire protection to the heart of Shasta County under cooperative agreements. Battalion 4 is located on the valley floor of Shasta County along the Interstate 5 and Sacramento River corridor running from Siskiyou County to the north and Tehama County to the south. Battalion 4 is interspersed with three incorporated cities, the City of Redding, the City of Anderson, and the City of Shasta Lake. There are also three unincorporated communities within the Battalion which are served by independent Fire Districts which include (from north to south) Mountain Gate, Happy Valley, and the community of Cottonwood. The northern portion of Battalion 4, north of the community of Mountain Gate, is Federal direct protection area (DPA) and is administered by the Shasta-Trinity National Forest and the Shasta Lake National Recreation Area. While the statutory responsibility for all wildland fires is federal responsibility, the protection responsibility for medical aids, traffic collisions, boat fires on Lake Shasta, and other improvement fires is served by the Shasta County Fire Department (SCFD), administered by CAL FIRE under contract. Lake Shasta is located within this federal DPA/Battalion and is the largest reservoir in California. At full pool, the lake has an elevation of 1,067 feet, a surface area of 30,000 acres, and a storage capacity of more than 4 million acre feet of water.

Battalion Resources:

Fire Protection within the Battalion is largely made up of career paid staffing, specifically within the incorporated cities, while CAL FIRE/SCFD career and volunteer firefighters make up a large majority of the firefighting work force in the unincorporated areas.

- CAL FIRE

Battalion 4 houses two career fire stations and three volunteer fire companies. Redding Fire Station 43 is served by 2 Type III Schedule B engines and one Type II Schedule A engine during the peak fire season months, while in the winter months the staffing is reduced to two engines under Amador and Schedule A contracts. The Palo Cedro Fire Station 32 is a combination career and volunteer staffed Schedule A fire station which houses one Type II fire engine. Battalion 4 is also home to the Shasta Bear Lookout which is staffed by career or retired firefighters during times of severe fire danger (red flag conditions).

- Shasta County Fire Department:
Volunteer fire companies within the Battalion include (from north to south) the Lakehead Volunteer Fire Company Station 54, the Palo Cedro Volunteer Fire Company Station 32, and the West Valley Volunteer Fire Company Station 55.

- Districts and Municipality
District and municipal fire departments within the Battalion (from north to south) include the Dunsmuir/Castella Fire Protection District located at the Siskiyou, Shasta County line on Interstate 5 near the City of Dunsmuir. The Dunsmuir/Castella Fire Protection District is comprised of three fire stations, a number of ICS Type 1, 2, and 3 engines, two water tenders, and rescue units. Staffing includes one career paid Fire Chief and a workforce of volunteer firefighters. The Mountain Gate Fire Protection District (MGFPD) is located on Interstate 5 directly south of Lake Shasta and is comprised of one station with two ICS Type 2 and one ICS Type 3 fire engines, a rescue, and one water tender. Staffing is made up of one career paid chief and a volunteer firefighting workforce. The Shasta Lake Fire Protection District (SLFPD) is located in the City of Shasta Lake and is comprised of two fire stations with two ICS Type 1, one ICS Type 2, two ICS Type 3 engines, one rescue, and one water tender. The SLFPD has one career paid Chief, two career Battalion Chiefs, six career firefighters working in three alternating shifts 24 hours per day. The City of Redding Fire Department (ISO rating of 3) is comprised of seven career staffed fire stations with 63 uniformed firefighting personnel assigned to three alternating shifts (A/B/C). The Anderson Fire Protection District (AFPD) is located within the City of Anderson (ISO rating of 5) and is comprised of one career staffed fire station with one career paid Chief, one Battalion Chief, and 6 firefighting personnel assigned to three alternating shifts 24 hours per day. Directly west of the AFPD is the Happy Valley Fire Protection District (HVFPD). The HVFPD currently has two fire stations with plans for a third and is located entirely within State DPA. The HVFPD has one career paid Chief and a workforce of volunteer firefighters. HVFPD has two paid firefighters staffing one station during normal weekday business hours. Lastly is the Cottonwood Fire Protection District (CFPD) located near Interstate 5 at the Shasta/Tehama County line. The CFPD is comprised of one paid Chief and three firefighting personnel working alternating shifts staffed at 1-0.

Wildland and Urban Interface:

Battalion 4 is largely comprised of commercial, residential, agricultural, and highway uses, including Interstate 5 and State Highways 44, 273 and 299 east. Commercial properties include three active lumber mills, three large bulk propane facilities, and the Knighton Road Truck Stop to name a few. There are numerous public schools, and plans for a new retail center located on 92 acres on the northeast corner of Knighton Road and the Interstate 5 interchange. When completed, the Knighton and Churn Creek Commons Retail Center would include 740,000 square feet of mixed commercial development, which may include retails shops, restaurants, lodging, food supplies, recreation activities and equipment, traveler services including gasoline fueling facilities, and entertainment related facilities. While most of these occupancies exist within the large portion of LRA in Battalion 4, other mixed retail and commercial occupancies exist throughout the Battalion's SRA areas.

Fuels-Weather-Topography:

Fuels within Battalion 4 transition from grass/oak woodland to brush to conifer stands, fuel models 1, 4, and 10. At lower elevations, open areas of annual grasses are interspersed with 15 to 50 year old stands of decadent brush (chaparral). These fuel's dead to live ratio average approximately 20%. Annual chaparral live fuel moistures vary from 120% to less than 75%. Fuels transition from chaparral to conifer stands above 3000 feet. Current mixed conifer stands have occasional pockets of dead trees due to bug and snow kill.

Weather is generally warm and dry during the day with moderate humidity recovery at night. Peak summer temperatures average 85 to 95 degrees with temperatures reaching in excess of 110 degrees for 2 to 5 day periods. The average relative humidity is 15 to 35%. Gradient winds are generally out of the west, southwest 5 to 12 mph. Occasional light east winds occur in the morning then shifting to more W/SW flow in the afternoon and can reach speeds of 15 to 20 mph, generally up slope and up canyon. North wind events occur periodically throughout the fire season and can reach in the 10 to 30 mph range with associated higher gusts. These winds frequently switch to the Northeast and strengthen after dark, maintaining low relative humidities, often in the single digits throughout a 24 hour period.

Battalion Fire History:

Fire history suggests moderate to rapid rates of spread, sometimes reaching 1 to 3 mph specifically within fuel model 1. Spotting can be expected to have a major impact on firefighting resources, especially within the wildland urban interface (WUI) which is a large make-up of Battalion 4's geography (43 homes per square mile according to the 2000 U.S. Census Data). Flame lengths in the chaparral can range from 12 to 20 feet. Normal Burning Indexes (BI's) from July to October average over 40. The 1999 Canyon Fire and Jones Fire, both driven by powerful north wind events, burned 2,580 and 26,200 acres respectively, and consumed more than 1,184 homes throughout a large portion of Battalion 4 within a single burning period. Lightning fires are also common place in Shasta County. In 2008, the valley floor was hit with hundreds of lightning caused fires that were quickly contained due to the lighter fuel models. Battalion 4's Lightning control plan was initiated and was instrumental in the rapid and efficient deployment of initial attack resources to extinguish these fires quickly, thereby making resources more readily available to assist with larger fires at higher elevations and in heavier fuel models.

Fuels Reduction / Battalion Projects and Priorities:

There are no large scale fuel breaks located within Battalion 4. Many subdivisions have completed defensible space projects including small scale or isolated fuel breaks. There are many natural and man made features that may serve as fire breaks including roads, highways, railroads, and the Sacramento River. Local, state, and federal budgetary constraints have led small local community fire safe councils within the Battalion to merge their efforts for project work under the umbrella of the Shasta County Fire Safe Council, administered under the direction of the Western Shasta Resource Conservation District (WSRCD). The WSRCD has established fire plans for areas within Battalion 4 that include the Cottonwood Creek Watershed to the south, the Cow Creek Watershed to the east, the Community of Lakehead to the north, the lower Clear Creek Watershed to the west, and the Stillwater/Churn Creek Watershed plan in the heart of the Battalion which includes the communities of the City of Shasta Lake, Buckeye, the City of Redding, and the City of Anderson. The goal of these plans is to reduce the destruction and associated costs from wildfire by creating shaded fuel breaks, increase homeowner and fire department access and egress, watershed restoration, and public information and education on developing fire wise communities.

SHU Battalion 5

Battalion Overview:

The battalion is located at the northern end of the Sacramento Valley with the City of Redding forming the eastern boundary and Trinity County forming the western border. The battalion includes portions of the Coast Range with elevations ranging from 500 to 6919 feet. The unincorporated communities of Centerville, Igo, Ono, Platina, French Gulch, Keswick, and Shasta all lie within the battalion. The Whiskeytown National Recreation Area is a popular local destination for area residents that enjoy water sports, camping, and hiking. The battalion is comprised of a multi-agency workforce of State, Local, and Federal firefighting resources which provide wildland fire protection to the western portions of Shasta County under cooperative agreement.

Battalion Resources:

Fire Protection within the battalion is made up of CAL FIRE, Shasta County Fire Department, Shasta Fire Department, and National Park Service career and volunteer firefighters.

- CAL FIRE

Cal Fire maintains two career fire stations located in the communities of Shasta and Ono. Station 58 in Shasta houses two Type III Cal Fire engines and one Type II bulldozer during peak fire season. In the winter months the staffing at station 58 is reduced to one engine under Amador contract agreement with Shasta County Fire. Station 57 in Ono houses one Type III Cal Fire engine during the fire season.

- Shasta County Fire Department

The Shasta County Fire Department (SCFD) is administered by Cal Fire. SCFD has volunteer fire companies located in Centerville, Igo/Ono, French Gulch, Keswick, and at station 58 in Shasta.

- Shasta Fire Department

Shasta Fire Department station 56 is located in the community of Shasta.

- Whiskeytown National Recreation Area

The National Park Service staffs one Type III engine during the fire season at their facility in the Whiskeytown NRA.

Wildland and Urban Interface:

Battalion 5 is largely comprised of brush and timberland with residential subdivisions located within the wildland. The subdivisions contain mainly single family residences

with a few public schools and commercial businesses located within the communities. All of the communities within the battalion have the potential for a catastrophic Wildland Urban Interface (WUI) fire due to population density and fuel loading.

Fuels-Weather-Topography:

The Coast Range is the dominate topographic feature within the battalion. Bully Choop Peak sits on the western boundary of the battalion at 6919 feet. Fuels transition from oak woodland to chaparral to conifer stands at the higher elevations. The climate is characterized by hot, dry summers and cool, wet winters. The summer high temperatures average from 90°F to 95°F with average relative humidity ranging between 15% - 35%. The majority of the precipitation occurs during the winter with an average of 30 – 40 inches falling per year. Gradient winds are generally out of the West to Southwest with wind speeds of 15-20 mph in the late afternoon during the summer. Foehn wind events occur periodically throughout the summer and fall with wind speeds for these events ranging from 10-30 mph.

Battalion Fire History:

The battalion has a rich fire history ranging back into the 1940's. Below is a sampling of some of the large fires that have occurred in the communities within the battalion.

- Centerville 1946 – Muletown Fire 25,993 acres
- Centerville 1950 – Kanaka Creek Fire 4,828 acres
- French Gulch 1962 – East Fork Fire 5,162 acres
- Shasta 1972 – Swasey Fire 3,215 acres
- Centerville 1990 – Kanaka Fire 2,901 acres
- French Gulch 2004 – French Fire 12,675 acres
- Keswick 2008 – Motion Fire 28,330 acres
- Igo/Ono 2008 – Moon Fire 35,312 acres

Lightning fires are common in Shasta County during the summer months. In June of 2008, the battalion was hit with numerous lightning strikes that caused scores of fires that eventually burned together into the Motion and Moon fires.

Fuels Reduction / Battalion Projects and Priorities:

The battalion aggressively pursues defensible space inspections as well as fire safety presentations within the community. Information and education presentations are made

at the local schools, the area churches, and at the two CAL FIRE stations within the battalion.

The battalion has many natural and man made features that may serve as fire breaks including roads, highways, and waterways. State Highway 299 bisects the battalion from Trinity County to the Redding City limits. Highway 299 is a major thoroughfare to the Northern California Coast.

Local, state, and federal budgetary constraints have led small local community fire safe councils within the battalion to merge their efforts for project work under the umbrella of the Shasta County Fire Safe Council, administered under the direction of the Western Shasta Resource Conservation District (WSRCD). The WSRCD has established fire plans for areas within the battalion that include the communities of Keswick, Shasta, Igo, and French Gulch. The goal of the plans are to reduce the destruction and associated costs from wildfire by creating shaded fuel breaks, increase homeowner and fire department access and education on developing fire wise communities.

SHU Battalion 6

Battalion Overview:

The administrative boundaries for Shasta Trinity Battalion VI encompass most of Trinity County. General boundaries are east of South Fork Mountain and Devils Backbone to Shasta County. The North boundary is the Siskiyou/Trinity County Line and the Southern boundary is the Yolla Bolla Wilderness Area. The county is dissected by three state highways. State Route 299 and State Route 36 run East/West and State Route 3 runs North/South. The County is situated in mountainous heavily forested land between the Sacramento Valley and the Coastal Mountain Range. A large portion of the land in Trinity County is federally owned. Trinity County population is just under 14,000 with an overall population density of 4 persons per square mile. The largest community is Weaverville, the County seat, with an estimated population of 3500 people1. The direct protection area (DPA) for the battalion includes the communities of Douglas City, Lewiston, Hayfork Weaverville and most of Junction City. Federal DPA is to the North, West, and South of the state DPA which includes Lewiston Lake, Trinity Lake and the Trinity Alps. There are no areas in Trinity County that currently meet Local Protection Area criteria.

Battalion Resources:

It is not uncommon for resources from a high dispatch to respond for 1.5 hour before arriving at an incident in the battalion. Incidents within the battalion require a multi agency response that relies on the United State Forest Service to commit 3 to 4 engines during initial attack. Local Fire entities usually supply one engine and water tender.

CAL FIRE has three Schedule B stations, one Lookout and one Conservation Camp within the battalion. Trinity River Conservation Camp is a 6 crew camp and located north of Lewiston. All stations are staffed seasonally. Weaverville, Station 60 is the Battalion VI Headquarters and has one type III four-wheel drive engine. Hayfork, Station 62 has one Type III four- wheel drive engine. Fawnlodge Station 61 has two type III engine one conventional and one four-wheel drive. Bully Choop lookout is near the Shasta Trinity County Line in the southern portion of Trinity County at just under 7,000 feet elevation. The lookout is staffed during periods of elevated fire danger by seasonal firefighters.

There are areas in the battalion DPA that are not covered by local Departments and Districts (unprotected for improvement fires). All local fire entities are staffed by volunteers, with only a couple of paid members in the larger communities. Being volunteer based, response from departments varies between departments, time of day, time of year etc…
The following are the Districts and Department with in the Battalion DPA:

[1] 2010 census

Douglas City Community Services District: one type I engine, two type IV engines, one type I water tender
Hayfork Fire Protection District; one type I engine, one type II engine, and one water tender
Junction City Fire Protection District one type I engine, one type II engine, two type III engines, and one type I water tender
Lewiston Fire Protection District: one type II engine, two type III engines, one type I water tender
Weaverville Fire Department: one type I engine, one type II engine, one type III engine, and one water tender

Wildland and Urban Interface:

Developments within Trinity County tend to be guided by the terrain. Structures comprise of one working lumber mill, multiple schools, light commercial and residential housing. Population density is generally greater in the flatter areas of the County. Because of the terrain there are multiple areas in the county that do not have a secondary ingress/egress. Multiple roads outside of the communities are either unnamed or unmarked. Large fire apparatus have limited mobility outside of the communities. The county is presently implementing a standardized addressing system. Water systems for fire suppression are limited to the larger communities and most do not have generator back-up to support the system during power failures. Fire suppression resources rely on water tenders using the Trinity River and numerous creeks for water supply.

Fuels-Weather-Topography:

Fuels within the battalion are primarily timber and oak woodland with pockets of brush and grass. Timber fuel loading is increasing due to changing logging practices, fire occurrences, and natural effects (bug, snow, and wind). Fuel models[2] best representing most of trinity County timber would be: Fuel Model 10, TL3 (moderate load conifer) and TL 6 (heavy load conifer). Ground fires are easily transitioning to crown fires. Canopy cover density is allowing for longer sustained crown fire runs. There are numerous brush pockets in the battalion that are to dense to walk through. The dead component in these brush pockets can exceed 50%. Fuel Model 4 best represent these pocket during peak season. Unit fire occurrence and history maps show that there are areas in the battalion that have not burned in over a 100 years. Fires during peak season in these areas will most likely cause significant damage to the water shed and natural resources. Annual grasses are limited to the Hayfork Valley, old fire areas with large tree and brush kills, and areas of the county where the tree density still allows for grass growth. Fuel Model 1 and 2 best represent the grass during the peak season.
Due to fires in the last 15 years another fuel loading category is increasing across the county. Large pockets of dead and down material that was not consumed during the

[2] Hal E. Anderson / Joe H. Scott/Robert E. Burgan

fire with little or no post fire clean-up. These fuel beds are estimated to have greater than 75 tons of large fuel (above 3" in diameter) accumulations. Fires in these fuels are time consuming to extinguish and pose significant control problems during peak season. Fire modeling is difficult because the models do not account for the large diameter fuel loading.

Weather is generally warm and dry with occasional thunderstorm throughout the summer. Average daily high temperatures during the summer range between 85°-93° with peaks above 100°. Average Relatively Humidity daily minimums 19% to 12% with single digit humidity's occurring a couple of days most summers. Gradient winds are West to East. Diurnal winds upslope and up canyon occur during the afternoon hours with down slope winds occurring during the night. Both upslope and down slope winds can be influenced by the Sacramento Valley and the coast causing higher than normal wind speeds. Precipitation during the summer averages less than 2" for the months of June, July, and August[3].

Trinity County topography is dominated by the Trinity Alps reaching above 7000' in elevation. The Trinity River dissects the battalion with multiple tributaries. Slopes of 100% are common with few areas of the county considered flat.

Battalion Fire History:

Most communities in Trinity County have been under evacuation orders do to wildland fires with the last 15 years. Most fires requiring the evacuation orders were over 1000 acres in size. Examples are the Oregon Fire 1695 acres in 2001 and the Junction Fire 3150 acres in 2006. These larger fires are characterized as total stand replacement fires creating significant environmental concerns. Fires starting at the bottom of a slope will typically reach the top of that slope. Winds aloft will transport embers into the next drainage creating spot fires in receptive fuel beds. Rates of spread can reach 1-3 miles per hour as the fire spreads uphill. Damage to structures caused by wildland fire is occurring more frequently as structure are built in the interface and fuel loading increases.

Fuels Reduction/Battalion Projects and Priorities:

The Battalion is responsible for implementing the Public Resource Code 4290 in Trinity County. Working in conjunction with the County Building Department, Planning Commission, General Plan Committee, and Subdivision Committee, Battalion personnel provide guidance to prepare and interpret ordinances as subject matter experts. In addition personnel assist developers in applying Fire Safe ordinances to their projects. The Trinity County Resource Conservation District (TRCD) and Hayfork Water Shed Center in conjunction with the Trinity County Fire Safe Council have taken lead roles in

[3] NOAA and RAWS data

implementing fuels reduction projection and pre fire activities within the battalion. All communities have been identified as a community at risk and are registered “Fire Wise Communities”. TRCD assisted in up dating a map book of the county, created pre fire attack maps with water sources, structures locations, roads, staging areas, and gates. The Community Wildfire Protection Plan has identified and prioritized areas within the county that fuel treatments are needed to limit the negative impacts of wildland fires. Prioritization was of areas was based on population, fuel loading, fuel type, terrain, completed fuel treatments and weather patterns. In addition ingress/egress routes were evaluated for fuel treatment projects to enhance safer travel for residents and response personnel. Prioritization was on a regional scale tying ridge top fuel breaks into community defensible zones.

TRCD in partnership with Bureau of Land Management created the Weaverville Community Forest, a stewardship to reduce the fuel loading on the west side of Weaverville. The plan is to expand the Community Forest to include addition areas to the west and north of Weaverville and include Forest Service lands. The local Volunteer department has received grant funding to assist land owners in Defensible Space clearances. Defensible Space inspections are coordinated with the local projects to enhance the overall project success. This approach has produced a positive impact in the community by providing residents that other wise could not complete the clearances, a means to comply with the law with little to no out of pocket cost. This multiple project approach is being implemented throughout the County with cooperation between Federal, State, and Local resources to reduce fuels in and around communities.

The Hayfork Water Shed Center is implementing projects that started with fuel breaks and defensible space clearances. The second phase of the projects will include combination of hand/mechanical and prescribe fire to treat large blocks (over 1000 acres) of Bureau of Land Management and private lands.

Battalion station personnel work with school officials to provide education to grade school children. Coordination of resources between Federal, State, and local resources occur when the school is within a multi jurisdictional area.

SHU Battalion 7 Training

The Shasta – Trinity Unit Training Bureau statement of goals:

The Shasta Trinity Unit is dedicated to providing our employees with the highest degree of training, incorporating industry recognized standards and certifications, focusing on cost efficiency and fiscal responsibility while assuring operational needs are met. The Shasta Trinity Unit training goals are based on defined, measurable training objectives, provided in a safe and harassment free environment, meeting Department policy and State statues. It is expected that each employee dedicate 15% of their shift to training, whether it's informal at the fire station, or formal multi-agency training. By maintaining this commitment, we can perform at the highest level of service in; mitigating all types of emergency incidents, public education, law enforcement and administration for our customers, the people of California and its valuable resources.

APPENDIX A: PRE- FIRE PROJECTS

Shasta County

Batt	Project Number (Fuel Mgmt Plan)	Project Name	Status/ Priority	Estimated Completion Year	Project Type	Net Acres
	Hat Creek Fuel Mgmt Plan	Cassel (private lands)	C	2011	Fuel Break	14
	Lower Clear Creek FMP	Archer Road	C	2011	Fuel Break	10
	Shingletown FMP	Shingletown Ridge Road	A	2012	Fuel Break	152
	Shingletown FMP	Site/Plateau Pines Road	A	2012	Fuel Break	12
	Stillwater-Churn Creek CWPP	Northeast Shasta Lake City, Section A	A	2013	Fuel Break	32
5	Shasta West FMP	Iron Mountain Road	P/1*	2014**	Fuel Break	61
5	Keswick CWPP	Iron Mountain Road	P/2*	2014**	Fuel Break	32
5	Keswick CWPP	Centimudi: Lake Boulevard	P/3*	2014**	Fuel Break	19
	Stillwater-Churn Creek CWPP	North Shasta Lake City, Section B	P/4*	2014**	Fuel Break	24
	Lakehead FMP	Gregory Creek: Herman/Zola	P/5*	2014**	Fuel Break	39
	Shingletown FMP	Chipper Program	P/6*	2014**	Defensible Space	Unknown ***
5	Shasta West FMP	Riverside Trail	P/7*	2014**	Fuel Break	45
	Cow Creek FMP	Buzzards Roost Section	P/8*	2014**	Fuel Break	49
	Stillwater-Churn Creek CWPP	North Shasta Lake City, Section A	P/9	Unknown	Fuel Break	37
5	Shasta West FMP	Buenaventura Boulevard	P/10	Unknown	Fuel Break	54
	Lower Clear Creek FMP	Clear Creek South	P/11	Unknown	Fuel Break	102
	Cow Creek FMP	Buzzards Roost Section	P/12	Unknown	Fuel Break	49
	Shingletown/Manton FMP	Black Butte Road	P/13	Unknown	Fuel Break	85
	Shingletown/Manton FMP	Ponderosa Way #1	P/14	Unknown	Fuel Break	116
5	French Gulch FMP	Niagara Street	P/15	Unknown	Fuel Break	18
5	French Gulch FMP	Lower Trinity Road	P/16	Unknown	Fuel Break	33
	Cottonwood Creek FMP	Lower Gas Point Rd. (Shasta County)	P/17	Unknown	Fuel Break	Unknown ****
	Cottonwood Creek FMP	Gas Point Rd. (Shasta County)	P/18	Unknown	Fuel Break	Unknown ****
	Lakehead FMP	Gregory Creek: Clause, Cordes, Branch Lanes	P/19	Unknown	Fuel Break	24
	Hat Creek FMP	Red Rock Hill	P/20	Unknown	Fuel Break	48
	Hat Creek FMP	Cassel (BLM)	P/21	Unknown	Fuel Break	4
	Shingletown/Manton FMP	Emigrant Trail #1	P/22	Unknown	Fuel Break	83

*Ca FSC Grant Applications in 2012 providing funds are available
** If funded
*** Unknown, limited by amount of money received through grant
****Cottonwood Watershed Management Group opted not to determine estimated lengths, acres, and costs for fuel reduction projects when plan was updated.

Status Guide: A = Active, P = Planning, C = Completed, O = Ongoing, M = Maintenance.

Trinity County

Batt	Project Number	Project Name	Status	Estimated Completion Year	Project Type	Net Acres
6	02	Hayfork South (USFS – Shasta-Trinity NF)	C	2011	Fuel Break	200
6	31	Hayfork Community Protection 2011(Private lands in the Hayfork Valley)	A	2012	Fuel Reduction around homes	196
6	71	Hayfork WUI (Private lands in Hayfork Valley)	A	2012	Fuel Reduction around homes and Fuel Break	135
6	45	Hayfork Forest Health (USFS – Shasta-Trinity NF)	O	2011	Fuel Break	30
6	-	Kellogg Forest Health (USFS – Shasta-Trinity NF) - actually in Hayfork adjacent to 2001 Hyampom Fire	P	2012	Fuel Break	?
6	66	Ewing Reservoir FMZ (BLM)	C	2011	Fuel Break	25.2
6	50-4	ARRA - 2008 Lyme and Telephone Fire Roadside Hazard Trees (USFS – Shasta-Trinity NF)	A	2012	Hazardous Tree Falling	540
6	50-6	ARRA - Forest Glen Roadside Brushing (USFS – Shasta-Trinity NF)	C	2011	Fuel Break	54.5
6	-	Lower Hayfork Timber Sale – Fuels and Slash Abatement (USFS – Shasta-Trinity NF)	P	2012	Brush Piling	100
6	50-2	Bear Wallow and Corral Bottom Progeny Site Thinning (USFS – Shasta-Trinity NF)	P	2012	Plantation Thinning	18
6	88	Mad Ridge and South Fork Mastication (USFS – Six Rivers NF)	A	2012	Fuel Break mastication	14
6	284	East Branch Fuels Reduction Phase I (USFS-Shasta-Trinity NF)	C	2012	Brush Piling	92
6	286	East Branch Fuels Reduction Phase II (USFS-Shasta-Trinity NF)	O	2012	Brush Piling	94
6	283	Garden Gulch Fuels Reduction (USFS-Shasta-Trinity NF)	O	2012	Brush Piling	30
6	282	Mining District Forest Health (BLM)	)	2012	Landscape Fuels Reduction	230
6	280	Trinity County Title III Fuels Reduction	C	2011	Fuel Reduction around homes	80
6	260	Trinity County Seniors Fuels Reduction	C	2011	Fuel Reduction around homes	80
6	256	North Lake Communities Fuels Reduction	C	2011	Fuel Reduction around homes	80
6	257	Southern Trinity Fuels Reduction	C	2011	Fuel Reduction around homes and Fuel Break	180
6	255	Mid Trinity Fuels Reduction	C	2011	Fuel Reduction around homes	150
6	248	China Gulch Fuels Reduction	C	2011	Fuel Reduction around homes	261
6	296	Oregon Mtn. Community Forest Restoration	O	2012	Landscape Fuels Reduction	700
6	258	ARRA-Hazardous Fuels Reduction	O	2012	Plantation Thinning	348
6	292	Westside Fire Area Broom Removal	O	2012	Scotch Broom Removal	
6	294	China Gulch Phase II	O	2012	Fuels Reduction	126
6	307	TCFSC Outreach & Implementation	A	2013	Fuels Reduction	15
6		Weaverville Community Forest-Musser Hill Phase I	approved	2013	Fuels Reduction	15
6		Weaverville Community Forest-Musser Hill Phase II	approved	2013	Fuels Reduction	75

Status Guide: A = Active, P = Planning, C = Completed, O = Ongoing, M = Maintenance.

APPENDIX B: UNIT GOALS AND OBJECTIVES

Goals and Objectives of the Shasta-Trinity Unit

The overall goal of the Shasta Trinity Unit is to reduce the costs and losses associated with wildfire thought continuing collaborative efforts from the unit, stakeholders and cooperators with shared objectives to be implemented in this plan, including;

- Collection, analysis and sharing Geographic Information Systems (GIS) with stakeholders and cooperators.

- Continue to support resource conservation districts, fire safe councils and fire safe communities in the efforts in implementation in the communities CWPP'S.

- Recognize and identify assets at risk and establish protection plans for those assets.

- Increase the number and effectiveness of the defensible space (*PRC § 4291*) inspections and promote an increase level of compliance with defendable space laws and regulations.

- Increased inspections on railway and power line clearances and equipment.

Appendices C

Shasta County Fire Safe Standards

CHAPTER 6

FIRE SAFETY STANDARDS

Adopted: September 22, 1981

Revised: August 7, 1986

September 29, 1988

April 1, 1992

September 4, 1992

May 15, 2001

June 1, 2003

6.0 GENERAL POLICIES

6.01 AUTHORITY

These standards shall be administered and implemented by the County Fire Warden, his or her designees, and as otherwise authorized by the Board of Supervisors by adoption of these standards.

6.02 SCOPE

These standards shall apply to subdivisions, parcel maps, use permits, administrative permits, building permits, mobile home installation permits, and other developments which require the issuance of a permit by the County of Shasta.

6.03 CONSISTENCY WITH OTHER STANDARDS AND REGULATIONS

a. Portions of these standards are required by the California Code of Regulations (CCR) Title 14, Division 1.5, Chapter 7, Subchapter 2, Articles 1-5. Such sections are noted with the CCR section in parenthesis after the section. As minimum State of California Regulations, these sections would supersede other Shasta County regulations and standards.

b. Sections not noted with the CCR in parenthesis are locally adopted standards which exceed or differ from the requirements of the regulations of the State of California. These standards are adopted by resolution and may be superseded by other Shasta County Ordinances.

c. These standards are intended to be minimum standards. If other County Standards require a higher standard of development, then the other standard prevails. Where these standards require a higher standard of development, these standards prevail.

6.1 ACCESS

a. The following standards shall establish minimum access requirements for public safety. The road and driveway networks shall provide safe access for emergency wildland fire equipment and civilian evacuation concurrently and shall provide unobstructed traffic circulation during a wildfire emergency. The road and driveway network shall also provide all-weather, safe access for emergency personnel responding to medical aids, traffic accidents, and structure fires. The standards shall apply to subdivisions, parcel maps, use permits, administrative permits, building permits, mobile home installation permits, and any other developments which require the issuance of a permit by the County of Shasta.

b. In accordance with Sections 6.91 thru 6.94 of these standards, the County Fire Warden or the approving authority may approve or recommend the approval of exceptions to the access standards where the same practical effect can be achieved and where reasonable access can be provided to assure adequate evacuation routes for the public and adequate access routes for emergency personnel and equipment. In determining whether the same practical effect can be achieved, the approving authority shall apply and make findings concerning the performance criteria set forth in Section 6.92.

c. For single family residential building permits and residential mobile home installation permits, off-site improvements will not be required if adequate physical access is existing as determined by the County Fire Warden. Private bridges on access roads must be certified by a licensed engineer when required by the County Fire Warden. If modifications are necessary in order to provide adequate physical access for fire apparatus, then a building or grading permit shall be obtained and the necessary modifications shall be made.

d. For administrative and use permits, off-site improvements will not be required on public roads and streets constructed prior to January 1, 1992, if adequate physical access exists and the County Fire Warden finds that any increase in personal density created by the project will not adversely affect public safety.

6.11 GENERAL ROAD DESIGN REQUIREMENTS

Scope:

It shall be the intent of the Fire Safety Standards to provide for safe access for emergency fire equipment, civilian evacuation, and unobstructed traffic circulation by requiring the construction of continuous or through roadways and limiting the length and use of dead-end roads.

6.11.1 Dead-end Road Length:

The maximum length of a dead-end roads shall not exceed the following cumulative lengths, regardless of the number of parcels served. Cumulative lengths refer to the combined lengths of dead-end roads accessed from the particular dead-end road in question.

Parcels less than one acre in size - 800 feet
Parcels one acre or larger in size - 1000 feet

6.11.1.1 Exception:

The County Fire Warden or approving authority may grant an exception to the maximum length dead-end road standards for parcels 40 acres or larger in size providing the cumulative dead-end road(s) servicing such a parcel are not over 5280 feet in length. In considering such an exception, the County Fire Warden or approving authority shall make findings that the exception does not adversely affect public safety in the area.

6.11.2 Construction Standard:

Continuous or through roads constructed in areas designated by the General Plan as Urban (UR), Suburban (SR), Commercial (C) and Industrial (I) shall be constructed in accordance with Chapter 2 of the Development Standards. Continuous or through roads constructed in all other areas, may be constructed as emergency fire escape roads as determined by the County Fire Warden and the Director of the Department of Public Works. Emergency fire escape roads shall be constructed in accordance with the minimum road standards as specified in Section 6.14 of the Fire Safety Standards.

6.11.3 Density:

When an area or project is accessed by a single paved road and the area or project contains more than 50 parcels or is intended to be occupied by more than 150 persons, then the area or project shall be required to construct a continuous road system that provides a minimum of two (2) paved access roads designed in accordance with Chapter 2 of the Development Standards

6.11.4 Open Space and Greenbelts:

Projects creating open space and greenbelt areas shall provide adequate fire department access to such areas as determined by the County Fire Warden or approving authority.

6.12 PRIVATE ROAD, PUBLIC ROAD, AND NON- RESIDENTIAL DRIVEWAY STANDARDS

a. The following standards are minimum standards and may be superseded by the requirements of Chapter 2 of the Development Standards when said requirements are more stringent then these minimum standards.

b. Non-residential driveways shall provide fire department access from nearest Shasta County recognized private or public roadway to within 150 feet of any portion of the exterior wall of each building on the premises. An exception to subsection (b) may be approved by the County Fire Warden when buildings (s) are completely protected with an approved automatic fire sprinkler system.

c. Following are minimum road and non-residential driveway construction standards:

1. Width – Eighteen (18) feet, unobstructed. (CCR T. 14, Section 1273.01)

2. Shoulders - one (1) foot wide on each side of driving surface.

3. Vertical Clearance - Fifteen (15) feet, unobstructed. (CCR T. 14, Section 1273.07)

4. Surface

   a. All-weather, capable of supporting 40,000 pound load. (CCR T.14, Section 1273.02)

   b. Those portions of roadways and driveways with grades greater than 12% shall be paved in accordance with Chapter two of the Development Standards.

5. Horizontal Curvature (CCR T.14, Section 1273.04)

   a. Not less than 50 feet inside radius

   b. Curves having an inside radius of 50-100 feet shall have a minimum surfacing width of 22 feet.

   c. Curves having an inside radius of 100-200 feet shall have a minimum surfacing width of 20 feet.

6. Vertical Curvature – Vertical curves shall be designed by a licensed engineer to accommodate fire apparatus.

7. Turnarounds

   a. Dead-end roads shall be provided with a turnaround.

   b. Dead-end non-residential driveways over 150 feet in length shall be provided with a turnaround within 50 feet of the building.

   c. Turnarounds shall be constructed in accordance with Figure 2-40. Turnarounds shall have all-weather surfaced radius of not less than 40 feet on roads. On roads, the right-of-way shall have a radius of not less than 50 feet.

   d. Hammerhead or "T" turnarounds may be approved for parcel maps by the approving authority upon considering recommendations by the Department of Public Works and the County Fire Warden. Alternative turnarounds shall be constructed in accordance with Figure 2-40.

   e. Hammerhead or "T" turnarounds may be approved on non-residential driveways by the County Fire Warden. Alternative turnarounds shall be constructed in accordance with Figure 2-40.

8. Hydrant Turnouts

   a. Roads and commercial driveways less than 28 feet in width shall be provided with turnouts at each fire hydrant.

   b. Turnouts shall be a minimum of 10 feet wide and 30 feet long with a minimum 25 foot taper at each end as per attachment FS-4. (CCR T. 14, Sections 1273.06 and 1275.15)

   c. An exception to the turnout requirement may be granted by the County Fire Warden when fire hydrants are required at intersections.

9. Structures (Bridges, Culverts, etc.)

   a. Structures shall be designed and constructed to AASHTO HS20-44 loading or to carry the maximum legal load specified in the California Vehicle Code (CCR T.14, Section 1273.07)

   b. Bridges having limitations shall be provided with signing that designates the limitations including vertical clearance

limitations, weight limitations, and single lane conditions. (CCR T.14, Section 1273.07)

c. One-lane bridges shall provide unobstructed visibility from one end to the other and shall be provided with turnouts at both ends as per attachment FS-4. (CCR T.14, Section 1273.07)

10. Grades – shall not exceed 16%. (CCR T.14, Section 1273.03)

11. One-way roads may be allowed by the approving authority upon considering recommendations from the County Fire Warden that such roads will provide safe emergency access for fire equipment, civilian evacuation, and unobstructed traffic circulation during emergencies. One-way roads shall provide a minimum twelve (12) feet wide traffic lane. One-way roads shall not exceed 2,640 feet in length. One-way roads over 1320 feet in length shall provide a turnout at approximately the midpoint. One-way roads may not provide direct access to more than 10 dwelling units. One-way roads shall connect to a two-lane roadway at both ends. (CCR T.14, Section 1273.08)

12. Obstructions – minimum widths and vertical clearance shall be maintained.

13. Gates

a. Gates on private roads and commercial driveways shall be a minimum of 20 feet in width. (CCR T.14, Section 1273.11)

b. Gates shall be set back a minimum of 30 feet from the edge of pavement of adjacent roadways. (CCR T.14, Section 1273.11)

c. Electronic security gates shall provide for fire department access. Plans shall be submitted to the County Fire Warden or his / her designee for review and approval prior to any construction.

14. Speed Control Bumps on private roads and driveways shall not exceed four (4) inches in height.

6.13 RESIDENTIAL DRIVEWAY STANDARDS

a. The following standards are minimum driveway standards to be applied to residential driveways serving no more than three (3) residences located on a single parcel. Residential driveways servicing four (4) or more residences shall meet the requirements of Section 6.12. (CCR T.14, Section 1271.00)

b. Residential driveways shall provide fire department access from the nearest Shasta County recognized private or public roadway to within 50 feet of each residence on the parcel. (CCR T.14, Section 1273.10)

c. Following are minimum residential driveway standards:

1. Width

   a. Sixteen (16) feet, unobstructed.

   b. The County Fire Warden may approve widths of twelve (12) feet for short distances. The lesser widths may be utilized at bridges, culverts, gates, and cattle guards, and in areas where unique topographic conditions exist.

2. Shoulders – One (1) foot wide on each side of driveway.

3. Vertical clearance, fifteen (15) feet, unobstructed. (CCR T.14, Section 1273.10)

4. Surface

   a. Capable of supporting 40,000 pound load. (CCR T.14, Section 1273.02)

   b. All-weather surface width of not less than twelve (12) feet of the driveway. Minimum surface thickness of 4” of compacted class 3 aggregate base rock.

   c. Driveways with a grade of over 12% slope shall be paved in accordance with the flaglot driveway standard in Figure 2-16 of the Development Standards.

5. Horizontal curves shall have an inside radius of <u>not</u> less than 50 feet.

6. Vertical curves shall have a minimum length of not less than 100 feet or be designed to accommodate fire equipment as approved by the County Fire Warden or approving authority. See illustration FS-5.

7. Turnarounds

    a. Driveways exceeding 200 feet in length shall be provided with a turnaround within 50 feet of the residences. (CCR T.14, Section 1273.10)

    b. Turnarounds shall be constructed in accordance with Figure 2-42 of the Development Standards.

8. Hydrant Turnouts – If a fire hydrant is located along a residential driveway, then a turnout shall be provided as per Attachment FS-4. (CCR T.14, Sections 1273.06 and 1275.15)

9. Bridges and Culverts

    a. Bridges and culverts shall be designed and constructed to AASHTO HS20-44 loading or to carry the maximum legal load specified by the California Vehicle Code. (CCR T.14, Section 1273.07).

    b. Bridges having limitations shall be posted with signs designating the limitations including vertical clearance and weight limitations. (CCR T.14, Section 1273.07)

10. Grades shall not exceed 16%. (CCR T.14, Section 1273.03)

11. Gates

    a. Gates shall be a minimum of twelve (12) feet wide. (CCR T.14, Section 1273.11)

    b. Gates shall be set back a minimum of 30 feet from the edge of pavement of the adjacent roadway. (CCR T.14, Section 1273.11)

    c. Electronic security gates shall provide for fire department access. Plans shall be submitted to the County Fire Warden or his/her designee for review and approval prior to any construction.

6.14 EMERGENCY FIRE ESCAPE ROAD STANDARDS

Scope:

The following construction standards shall apply to the creation of an emergency fire escape road. The construction standards shall apply only to the emergency fire escape road and not an existing road unless a portion of an existing road becomes part of an emergency fire escape road.

The following standards are minimum standards and may be superseded by the requirements of Chapter 2 of the Development Standards.

6.14.1 Definition:

Emergency Fire Escape Road: A road designed and constructed primarily to provide an alternate route of civilian vehicular egress, in the event of a wildfire, from an area accessed by only one ingress/egress road, and that the area served by the one ingress/egress road exceeds the minimum dead-end road length as indicated in Section 6.11.

6.14.2 Delineation:

Applicant shall submit improvement plans indicating the proposed location and placement of the emergency fire escape road to the Shasta County Fire Department and the Department of Public Works.

6.14.3 Location and Placement:

The County Fire Warden and the Director of the Department of Public Works shall determine the final location and placement of emergency fire escape roads. Emergency fire escape roads shall be located in relationship to topography, fuel types and fuel density in the project area, and serviceability of existing ingress road.

Emergency fire escape roads shall provide a second means of vehicular egress and shall be sufficiently separated from the primary vehicular ingress road to prevent both roadways from being simultaneously obstructed during a wildland fire.

6.14.4 Right of Ways:

Right-of-ways or easements shall be a minimum of 30-feet in width and shall be sufficient to permit construction and maintenance of the required road improvements. Applicant shall acquire and offer rights-of-ways or easements for dedication to the County of Shasta.

6.14.5 Construction Standards:

Emergency fire escape roads shall be either:

A) Constructed to the standards of a permanent road division emergency fire escape road pursuant to Section 6.14.6 and be maintained by the permanent road division or,

B) Constructed to the standards of a paved emergency fire escape road pursuant to Section 6.14.7.

6.14.6 Permanent Road Division Emergency Fire Escape Road Construction Standards:

Emergency fire escape roads constructed as a permanent road division emergency fire escape road shall be constructed to the following standards and as shown in Figure

FS-8:

6.14.6.1 Width:

A) Shall be a minimum of 18 feet in width, unobstructed; and

B) Shall provide 1-foot shoulders on each side of road.

6.14.6.2 Surface:

Shall be an 18-foot wide all-weather surface with a minimum thickness of 4 inches of compacted class-3 aggregate base rock (excluding shoulders).

6.14.6.3 Vertical Clearance:

Vertical clearance shall not be less than 15 feet unobstructed.

6.14.6.4 Grades:

Grades shall not exceed 16%.

6.14.6.5 Horizontal Curves:

A) Horizontal curves shall have an inside radius of not less than 50 feet.

B) Curves having an inside radius of 50-100 feet shall have a minimum surfacing width of 22 feet.

C) Curves having an inside radius of 100-200 feet shall have a minimum surfacing width of 20 feet.

6.14.6.6 Vertical Curvature:

Vertical curves shall have a minimum length of not less than 100 feet.

6.14.6.7 Bridges and Culverts:

Bridges and culverts shall be designed by a licensed engineer, and be constructed to AASHTO HS20-44 loading (40,000 pound vehicle load) or to carry the maximum legal load specified in the California Vehicle Code.

6.14.6.8 Gates:

Gates may be installed in areas so that an emergency fire escape road not provide through access on a continual basis.

A) The gate opening shall be minimum of 20 feet in width.

B) Gates shall be designed to open without the use of a key, tools, or any special knowledge or effort. Gates shall not be locked.

C) Gates shall not be rendered unusable by using chains, bolts, and latches or barricaded.

6.14.6.9 Signs:

Signs shall be constructed and installed adjacent to the beginning of the emergency fire escape road as shown in Figure FS-9.

6.14.7 Paved Emergency Fire Escape Road Construction Standards:

Emergency fire escape roads constructed as paved emergency fire escape roads shall be constructed to the same standards in accordance with Section 6.14.6 as a permanent road division emergency fire escape road, except that the aggregate base shall be surfaced with 0.17’ X 18’ of asphalt concrete as shown in Figure FS-8.

6.2 STREET SIGNS AND BUILDING NUMBERING

6.21 ADDRESS FOR BUILDINGS

a. Every building or structure, except accessory buildings shall be provided with a street address marker located with respect to the nearest public highway, street or road servicing such building or structure so as to be clearly visible and legible at all times from the roadway. Each dwelling unit shall be separately identified. (CCR T.14, Section 1274.08)

b. Numbers and/or letters shall be a minimum of 4 inches in height, 3/8 inch stroke, reflectorized, and contrasting with the background color. (CCR T.14, Section 1274.09)

c. Each building, except accessory buildings, shall have a permanently posted address which shall be posted at the intersection of the driveway and the road. Addresses shall be visible from both directions of travel. Where multiple addresses are required at a single driveway, they shall be mounted on single post. (CCR T.14, Section 1274.10)

   Exception: Buildings located within 100 feet of the road may post the address on the surface of the wall facing the road providing that the address is clearly visible from the road.

d. The address shall be posted prior to the final building inspection by the Shasta County Building Division.

e. Address posting shall be maintained. (CCR T.14, Section 1274.10)

6.22 STREET IDENTIFICATION SIGNING

a. Newly constructed or approved public and private roads shall be identified by a name or number that is non-duplicating and consistent with the Shasta County road naming system. (CCR T.14, Section 1274.04)

b. Signs identifying roads, streets, and private lanes shall be placed at the intersection of those roads, streets and/or private lanes and shall be clearly visible from both directions of travel for a distance of at least 100 feet. (CCR T.14, Sections 1274.02 and 1274.05)

c. Letters and numbers for street and road signs shall be a minimum of 3 inches in height, 3/8 inch stroke, reflectorized, and contrasting with the background color. (CCR T.14, Section 1274.01)

6.23 STREET LIMITATION SIGNING

a. Newly constructed and approved public and private roads shall be provided with signs identifying any access limitations such as weight limitation, vertical clearance, dead-end road, one-way road, single-lane condition, and other similar limitations. (CCR T.14, Section 1274.06)

b. Limitations shall be clearly posted at two locations:

- the intersection proceeding the traffic limitation

- at a location not more than 100 feet before the actual area of traffic limitation (CCR T.14, Section 1274.06)

c. Letters and numbers for limitation signs shall be a minimum of 3 inches in height, 3/8 inch stroke reflectorized, and contrasting with the background color. (CCR T.14, Section 1274.01)

6.3 FIRE PROTECTION WATER STANDARDS

With A Central Water System

a. The standards in this section apply to new developments within the boundaries of a public or private water service jurisdiction having a pressurized water system that contains water mains that are six inches in diameter or larger in size. The standards in Section 6.31 (c) will not be applied by Shasta County to permit applications for single-family residences on parcels that were created prior to January 1, 1989.

b. For land divisions, the required water system, including hydrants, must be installed and in service or bonded for prior to recording the map.

c. For use permits, building permits and other developments, the required water system must be installed and in service prior to the foundation inspection by the Shasta County Building Division.

d. For single family residential construction, mobile home installation permit or for a building permit for substantial improvements to any such structures as defined by Section 5.01.080 of the Shasta County Ordinance Code, an approved fire hydrant shall be installed at an approved location on water mains four inches or larger in size within 750 feet of the parcel or, the applicant shall contribute to the fire hydrant fund.

6.31 FIRE FLOW AND HYDRANT SPACING

a. New water facilities shall provide the following flow requirements in addition to the average daily demand.

b. Proof of the ability to comply with the fire flow requirements shall be submitted with the application for development. Proof may consist of a letter of certification from the responsible water supply entity.

c. See below:

	Land Use	Min. Flow	Min. Flow w/Sprinklers	Maximum Hydrant Spacing	Maximum Driving Distance *
1.	Single-family residential lots larger than one acre in size***	500 gpm	N/A	750’	750’
2.	Single-family residential lots, one-half to one acre in size.	750 gpm****	N/A	500’	300’
3.	Single-family residential lots, less than one-half acre in size and mobile home parks	1000 gpm****	N/A	500’	300’
4.	Multiple residential, 3-8 units per acre, one story, neighborhood business (C-1 Zone District)	1500 gpm	1000 gpm	500’	300’
5.	Multiple residential, 9 or more units per acre; one and two stories; commercial or industrial buildings not to exceed 10,000 square feet **	2000 gpm	1250 gpm	300’	200’
6.	Multiple residential, 3 stories or higher; commercial or industrial buildings over 10,000 square feet**	2500 gpm	1500 gpm	300’	200’

See next page for asterisked items.

* Maximum Driving Distance from Hydrant to Building

** For specific projects or occupancies, greater fire flows may be required.

*** For land divisions creating large lots, a maximum of one hydrant per proposed building site shall be required.

**** Fire flows of not less than 500 gpm will be acceptable if the responsible water supply entity is implementing an adopted capitol improvement plan to upgrade the water system to provide the needed fire flows. Plans shall be approved by the County Fire Warden.

d. Fire flows and hydrant spacing for new developments utilizing the planned development zone district, density averaging or clustering will be based upon the actual density created by the clustering.

e. In order to qualify for the sprinkler fire flow reduction, a building must be completely protected by an automatic sprinkler system installed in accordance with NFPA 13 and the latest edition of the Uniform Building Code Standards. Approved backflow prevention device(s) may be required by the responsible water supply entity.

f. If the fire flows listed above are greater than those required by the Insurance Services Office Guide for Determination of Needed Fire Flow, the lesser fire flow shall be allowed for the development. However, system design may be required to meet higher fire flow requirements for future development or expansion.

g. On residential and commercial projects where minimum fire flow or hydrant size or spacing cannot be achieved, the Fire Warden may, where reasonable fire protection can otherwise be supplied, approve reduced fire flows, hydrant size or increase spacing if alternate facilities or construction methods can be provided to assure reasonable fire protection.

6.32 DURATION

The minimum fire flow requirements detailed in Section 6.31 above shall be sustained for a period of at least two hours.

6.33 PRESSURE

The water supply system shall be designed to maintain normal operating pressures of not less than 20 psig at the required fire flow. Static pressure at the hydrant should not exceed 150 psig.

6.34 WATER LINE SIZE AND DESIGN

The distribution system shall be of adequate size and so designed, in conjunction with related facilities, to maintain the minimum fire flow and pressure required. Minimum pipe size for new water lines that supply or may be anticipated to supply fire hydrants shall be not less than six inches in diameter. Water line materials shall be approved by the responsible water supply entity.

6.35 LOCATION

a. Fire hydrants shall be attached to the distribution system at locations approved by the responsible fire protection agency and water supply entity providing service.

b. Fire hydrants should be located not closer than 50' to the building being protected unless a second hydrant is available as approved by the responsible fire department.

c. Fire hydrants installed after January 1, 1992, shall be located at a turnout or turnaround along the road or driveway so that fire apparatus using the hydrant will not block the roadway. (CCR T.14, Section 1275.15) Turnouts shall be constructed in accordance with illustration FS-4. An exception to the turnout may be granted by the County Fire Warden when fire hydrants are located at intersections.

6.36 MATERIALS AND HYDRANTS

a. Six inch fire hydrants shall conform to A.W.W.A. standards with one 4 ½" and two 2 ½" NST connections. All fire hydrants shall be a dry barrel type. Each hydrant shall be fitted with a 5 ¼" main valve opening and installed as per illustration FS-2.

b. Fire hydrants shall be:

1. Mueller Centurion A-423
2. Kennedy Guardian K-81A
3. Waterous Pacer WB-67
   with oil reservoir

   bronze seat ring

   weather shield and one piece bronze nut

4. or equivalent, as approved by the respective water service and fire protection agency.

c. Each hydrant gate valve shall be supplied with an 8” valve box with metal cover, set to finish grade and installed to allow operation of gate valve as per FS-2 illustration.

d. All hydrants, valves, fittings, pipe, and installation shall be approved by the responsible fire protection agency and water supply entity providing service.

e. Protective barriers shall be provided when required by the respective fire department or water supply entity and shall be installed as per illustration FS-3.

6.37 HYDRANT INSTALLATION

a. Fire hydrants shall be installed in accordance with FS-2 illustrations and items 1 through 6 of illustration FS-1.

b. Hydrant installations are to be inspected in a timely manner by the responsible water supply entity or fire agency prior to burial.

6.38 HYDRANT MAINTENANCE AND MARKING

a. It is essential that hydrants be in operable condition when they are needed; therefore, hydrant maintenance is an important part of these standards.

It is recommended that water and fire districts enter into an agreement to specify which maintenance tasks will be the responsibility of each respective district.

b. A written record of hydrant inspections and maintenance should be maintained.

c. The following hydrant maintenance schedule is recommended:

2 year intervals

- paint hydrant - taking care that paint does not interfere with valve stem operation or cap removal

1 year interval

- flush and flow-test hydrant

6 month interval

- check for leaks in valves and repair
- operate and check street valve
- lubricate valve stem
- lubricate threads on outlets and caps

d. Marking – public hydrant barrels should be painted chrome yellow in color; private hydrant barrels should be painted red in color.

e. Hydrants installed after January 1, 1992, shall be identified by reflectorized blue markers.

1) On paved roadways located below 2,000 foot elevation, reflectorized blue markers shall be installed in accordance with the State Fire Marshall's Guidelines for Fire Hydrant Markings Along State Highways and Freeways, May 1988. See illustration FS-7;

or

Hydrants shall be identified by a reflectorized blue dot (minimum three inch diameter) mounted on a metal post located within three (3) feet of the hydrant. The blue dot shall be three (3) feet to five (5) feet above ground level and clearly visible from the road/driveway. (CCR T.14, Section 1275.20)

2) Along paved roads located at or above the 2,000 foot elevation, and along unpaved roads or driveways, hydrants shall be identified by a reflectorized blue marker on a metal post as specified above. (CCR T.14, Section 1275.20)

f. Flammable vegetation shall be cleared within eight (8) feet of fire hydrants (CCR T.14, Section 1275.15).

g. Landscaping over four (4) inches in height shall not be permitted within eight (8) feet of fire hydrants.

h. Fences, structures, obstructions, and hydrant protection posts shall not be permitted within three (3) feet of fire hydrants.

6.4 FIRE PROTECTION WATER STANDARDS No Central Water System

The following standards shall apply for new developments within areas without a central water distribution facility (either public or private) as described in Section 6.3a.

6.41 DEVELOPMENT WITHIN WATER AGENCY SPHERE OF INFLUENCE

Developments within the sphere of influence of a public water agency or adjacent to a private water system (as described in Section 6.3) may be required to connect to the water system and to meet the requirements of Section 6.3. The respective Fire District and water supply entity shall make recommendations to the Planning Commission or other appropriate board as to whether or not connection to the water system should be required.

6.42 RESIDENTIAL REQUIREMENTS

a. Each project shall be analyzed for individual requirements by the responsible fire department. Single-family residences outside the boundaries of a public or private water system will normally have water supplied by a fire department water tender.

b. Land divisions that create parcels less than two acres in size shall construct a central water system meeting the requirements listed in Section 6.3.

c. Land divisions that create parcels less than five acres in size shall be located within five road miles of a fire station. Said fire station shall be recognized by the County Fire Warden as being capable of providing fire protection services to the lots being created.

d. If usable and reliable water supplies exist on site, the responsible fire department may require access to such supplies. Access may be either

an all-weather road for direct drafting or a gravity flow minimum 3" feeder line with 2 ½" NST gated valve outlet. Examples of water supplies are swimming pools, ponds, lakes, creeks, streams, irrigation ditches, etc.

6.43 FIRE FLOW – Commercial

a. Commercial, industrial, multiple residential (4 units or more) and public assemblies shall develop a private water system that meets the Insurance Services Office Schedule for Needed Fire Flow, June 1980 Edition;

or

Shall participate in a public entity that has plans for developing a water system to provide the needed fire flows. Said plans shall be approved by the County Fire Warden or his representative.

b. On projects where minimum fire flow, hydrant size or spacing cannot be achieved, the Fire Warden may, where reasonable fire protection can otherwise be supplied, approve reduced fire flows, hydrant size or increase spacing if alternate facilities or construction methods can be provided to assure reasonable fire protection.

6.5 BUILDING CONSTRUCTION STANDARDS

6.51 BUILDING SETBACKS

All buildings and accessory buildings constructed on parcels one acre or larger in size shall be setback a minimum of thirty (30) feet from all property lines and road easements. (CCR T.14, Section 1276.01)

6.52 ROOFING

Roofing materials on buildings and accessory buildings constructed within Shasta County shall have a Class "A" or Class "B" fire retardancy rating as specified by Uniform Building Code Standard No. 32-7.

6.53 CHIMNEY

Each structure equipped with a fireplace, stove, or other device that burns any solid or liquid fuel shall provide and maintain a spark arrester over the outlet of the chimney, stovepipe or duct as specified in this section (Public Resources Code 4291 (f)).

A spark arrester is defined as a device constructed of nonflammable material, 12 gauge minimum welded or woven wire mesh, with ½ inch openings or cast iron plate, 3/16 inch minimum thickness or other material found satisfactory by the enforcement agency and having ½ inch perforations for arresting burning carbon or sparks installed in such a manner as to be visible for the purposes of inspection and maintenance as required by Title 24, California Administrative Code, Section 2-1217.

6.54 RAFTERS

The spaces between rafters, the wall plate line and the underside of the roof sheathing shall be filled with solid blocking. No more ventilation than the minimum required by UBC shall be allowed. All vent spacings required by UBC shall be screened.

6.6 FUEL MODIFICATION

6.61 DISPOSAL OF VEGETATION

Disposal, including chipping, burning or removal to a landfill site approved by the local jurisdiction, of flammable vegetation and fuels removed during or caused by site development and/or construction, road and driveway construction, or fuel modification, shall be completed prior to recording the map for land divisions or final inspection for building permits. Disposal of vegetation by onsite burial is not permitted. (CCR T.14, Section 1276.02)

6.62 GREENBELTS

Subdivisions and other developments, which propose greenbelts such as parks, golf courses, irrigated landscaped areas, playgrounds, parking lots, orchards, etc. as a part of the development plan, shall locate said greenbelts strategically to provide a separation between wildland fuels and structures (CCR T.14, Section 1276.03). The location of greenbelts shall be approved by the County Fire Warden.

6.63 VEGETATION CLEARANCES AROUND STRUCTURES

Combustible vegetation shall be cleared around all structures for a distance of not less than 30 feet on each side; or to the property line. This does not apply to specimen trees or irrigated landscaping that will not transmit fire from the native vegetation to the structure. (Public Resources Code Section 4291)

6.7 FLAMMABLE AND COMBUSTIBLE LIQUIDS

6.71 ABOVEGROUND STORAGE TANKS FOR MOTOR VEHICLE FUEL – DISPENSING STATIONS

a. Except as provided in Sections 6.72 and 6.73, flammable and combustible liquid storage tanks at motor vehicle fuel-dispensing stations shall be located in accordance with divisions VI and IX of Article 79 of the Uniform Fire Code as adopted by the County of Shasta.

b. The County Fire Warden and his/her designees may grant approval in writing for the installation of aboveground storage tanks for flammable and/or combustible fuels for motor vehicle fuel-dispensing stations as set forth in Sections 6.72 and 6.73.

c. Fuel-dispensing stations shall obtain any required permits or clearances from the Shasta County Planning Division.

d. Prior to operation of a fuel-dispensing station, an approved Hazardous Material Business Plan shall be filed with the Shasta County Division of Environmental Health.

e. Storage of over 600 gallons requires notification to State Water Resource Control Board.

6.72 VAULTED TANKS OF CONCRETE OR EQUIVALENT

a. Vaulted tanks may be located at commercial, industrial, governmental, or manufacturing establishments and are only intended for fueling vehicles used in connection with the business.

b. Class I and Class II liquids (such as diesel and gasoline) may be dispensed into motor vehicles from listed and approved concrete-vaulted tanks or tanks providing equivalent fire protection of not less than two hours on all tank surfaces. Tanks shall have UL Listing Label attached.

c. Tanks shall not exceed 2,000 gallons individual or aggregate capacity, except for Class II liquids installed in accordance with Section 6.73 and/or exceptions processed in accordance with Section 6.91 through 6.94.

d. Tanks shall be located a minimum of fifteen (15) feet from all property lines and fifteen (15) feet from any buildings on the same property.

e. Vaulted Tanks shall be provided with automatic fuel shut-off devices capable of stopping the delivery of fuel when the level in the tank reaches 90 percent of tank capacity.

f. Warning and identification signs shall be clearly posted on the tank in accordance with the current edition of the Uniform Fire Code. Signs shall identify tank contents and flammability; prohibit smoking and open flames within 25 feet; and require vehicle motors to be stopped when fueling.

g. Protection posts shall be installed in accordance with Figure FS-3 to safeguard the tank against damage from vehicles.

h. Dispensing systems shall be in accordance with the current edition of the Uniform Fire Code. Dispensing devices are allowed to be installed on top of vaulted tanks. Antisiphon devices shall be installed at each pipe connection when such piping extends below the top of the tank.

i. Venting and electrical controls, including emergency pump shut-off switch, shall be in accordance with the current edition of the Uniform Fire Code. A permit shall be obtained from the Building Division for all electrical work.

j. A fire extinguisher with a minimum 2-A, 20B:C rating shall be provided within 75 feet walking distance of the vaulted tank and dispensing area at a location approved by the fire agency having jurisdiction.

k. Simultaneous tank filling and fuel dispensing into motor vehicles is prohibited and signs shall be posted to this effect.

l. The vaulted-tank area and dispensing area shall be graded in such a manner that any fuel spilled will not drain towards buildings or other exposures.

6.73 ABOVEGROUND STORAGE TANKS WITHOUT VAULTS

a. Aboveground tanks may be located at commercial, industrial, governmental, or manufacturing establishments and are only intended for fueling vehicles used in connection with the business and/or as otherwise permitted by Article 79 of the current edition of the Uniform Fire Code.

b. Aboveground tanks without vaults may only be located in the following zone districts and/or as otherwise permitted by Article 79 of the current edition of the Uniform Fire Code:

1) Exclusive Agriculture (EA) District

2) Timber Production (TP) District

3) Timberland (TL) District

4) Mineral Resource (MR) District

5) Light Industrial (M-L) District

6) General Industrial (M) District

7) Public Facilities (PF) District

c. Only Class II fuels (such as diesel) may be dispensed into motor vehicles from approved or listed aboveground tanks without vaults. Class I fuels (such as gasoline) shall be dispensed from underground tanks special enclosures, or vaulted tanks as specified in Section 6.72 and the current edition of the Uniform Fire Code.

d. Aboveground tanks shall have a maximum individual capacity of 12,000 gallons and a maximum aggregate capacity of 24,000 gallons.

e. Tanks shall be located a minimum of:

1) 100 feet from any property line.

2) 50 feet from the nearest side of the edge of a road, not including internal driveways on the parcel.

3) 50 feet from any building on the same property.

4) 50 feet from any fuel dispenser.

f. Only tanks that are designed, and approved or listed for aboveground storage of Class II combustible liquids shall be used. Underground tanks shall not be installed for aboveground use.

g. The area surrounding the tank(s) shall be provided with a concrete and/or solid masonry-diked area with a concrete floor. The volumetric capacity of the diked area shall not be less than 115 percent of the amount of Class II fuel stored within the diked area. Walls of diked areas shall not exceed six (6) feet above the interior grade. Walls shall be designed and certified by a licensed engineer to be liquid-tight and to withstand a full hydrostatic head. The concrete floor of the diked area shall slope away from the

tanks towards the walls of the dike. Diked areas containing two or more tanks shall be subdivided by channels or intermediate dikes. Provisions shall be made for draining or removing water from diked areas in a manner that will protect the environment and not constitute a hazard. Water removal by a sump and pump is preferred; however, drainage by a valve which is operable from outside the dike is acceptable. Such a valve shall be kept locked in the closed position except when water is being drained from the diked area.

h. A means shall be provided for determining the liquid level in each tank and this means shall be accessible to the delivery operator. Provisions shall be made either to automatically stop delivery of liquid to the tank when the liquid level in the tank reaches 98 percent of capacity or to sound an audible alarm when the liquid level in the tank reaches 95 percent of capacity.

i. Class II liquids shall not be dispensed from the tank by gravity flow or by pressurization of the tank. An antisiphon device shall be installed to prevent the release of fuel by siphon flow. A solenoid valve may be required at the tank outlet when the tank elevation produces a gravity head.

j. If a submersible pump system is used, a listed emergency shut-off valve shall be installed at each dispensing device. If a suction pump-type dispensing device is used, a listed vacuum-activated shut-off valve with a shear section or equivalent-type valve shall be installed directly under each dispensing device.

k. Piping shall be protected from physical damage. Piping subject to external corrosion shall be protected by approved or listed corrosion-resistant materials such as fiberglass reinforced plastic.

l. Tanks shall be protected from unauthorized entry either by chain-link fence at least six (6) feet high around the tank or around the perimeter of the yard area.

m. Diked areas shall be kept free of vegetation and combustible materials.

n. The delivery connection shall be located within the diked area. A check valve and shut-off valve with a quick-connect coupling or a dry-break valve shall be installed at the connection and disconnection location for tank filling.

o. Tanks and dispensing areas shall be clearly posted with warning and identification signs in accordance with the current edition of the Uniform Fire Code.

p. The remote fuel dispensing system shall be protected against physical damage by a six (6) inch high concrete curb or protection posts installed in accordance with Figure FS-3.

q. Venting and electrical controls including the emergency pump shut-off switch shall be in accordance with the current edition of the Uniform Fire Code.

r. A permit shall be obtained from the Building Division for the tank foundations and all electrical work.

s. A fire extinguisher with a minimum 2-A, 20B:C rating shall be provided within 75 feet walking distance of the diked-tank area and the dispensing area at a location approved by the fire agency having jurisdiction.

t. Plans for the motor vehicle fuel dispensing facility and the aboveground tank installation shall be submitted to the County Fire Warden or fire agency having jurisdiction for review and approval prior to any construction.

6.8 (Reserved for future additions to Standards.)

6.9 POLICIES AND STANDARDS; EXCEPTIONS; APPEALS

6.91 POLICIES AND STANDARDS NOT A LIMITATION

The policies and standards established by this chapter are not a limitation upon the powers of an approving authority to protect public health and safety and to ensure consistency between the projects and all elements of the General Plan, all other applicable laws, policies and standards of Shasta County, and all applicable state and federal laws and standards. The approving authority by 4/5 vote or greater may, with appropriate findings, grant an exception to the design and construction standards for an individual project in order to avoid physical obstructions which are extremely difficult or impossible to remove; to avoid irreparable damage to natural features; and to handle similar situations which are unforeseen by these standards. Exceptions from the generally applicable Standards shall result in the same practical effect of the general standards by meeting the performance criteria listed in Section 6.92.

6.92 CRITERIA FOR EXCEPTIONS AND APPEALS

a. The approving authority shall apply the following criteria when granting exceptions or appeals:

1. Exceptions shall provide defensible space consistent with the "SRA Fire Safe Regulations." (CCR T.14, Section 1270.09)

2. Exceptions shall provide safe emergency access for fire equipment.

3. Exceptions shall provide for unobstructed traffic circulation during an emergency.

4. Exceptions shall provide for safe civilian evacuation during an emergency.

5. Exceptions shall not cause delays in emergency response or interfere with the ability of emergency personnel to locate an incident.

6. Exceptions shall provide a sufficient quantity of water for both wildfire and structural fire fighting at a location where it is immediately available to emergency personnel.

7. Exceptions shall not result in fuel modification that would adversely effect access or defensible space thereby jeopardizing civilian and firefighter safety.

b. The approving authority shall consider recommendations from the County Fire Warden and/or the fire agency having jurisdiction in the exception or appeals process. The County Fire Warden and/or fire agency having jurisdiction shall provide documentation outlining the effects of the requested exception on fire protection services.

c. The approving authority shall make a written statement of findings as to the reason for the decision. A copy shall be provided to the applicant and the County Fire Warden.

6.93 EXCEPTIONS

a. Requests for exceptions shall be made in writing to the County Fire Warden by the applicant or the applicant's authorized representative. Requests shall state the specific section(s) for which an exception is requested, material facts supporting or justifying the exception, and proposed alternative mitigation measures.

b. For projects or permits under the jurisdiction of the Planning Division, the County Fire Warden will forward requests for exceptions to the Planning Commission or Board of Administrative Review along with his or her recommendations. The Planning Commission or Board of Administrative Review may grant or deny an exception in accordance with Section 6.92. A request for exception on a project subject to an administrative permit may, at the discretion of the Director of Resource Management, be referred to the County Fire Warden for approval or denial of the exception in accordance with Section 6.92.

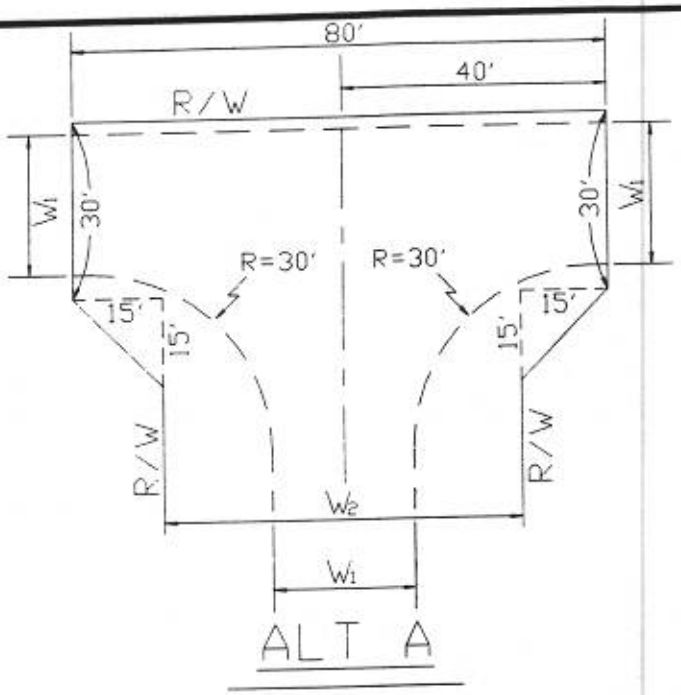
c. For permits under the jurisdiction of the Building Division, the County Fire Warden may grant or deny the exception in accordance with Section 6.92.

6.94 APPEALS

a. Where an exception is not granted by the approving authority, appeals shall be processed in the manner provided for in the Shasta County Code. Planning Commission or Board of Administrative Review appeals shall be processed in accordance with Section 15.08.140. Building permit appeals shall be processed in accordance with Section 16.04.080.

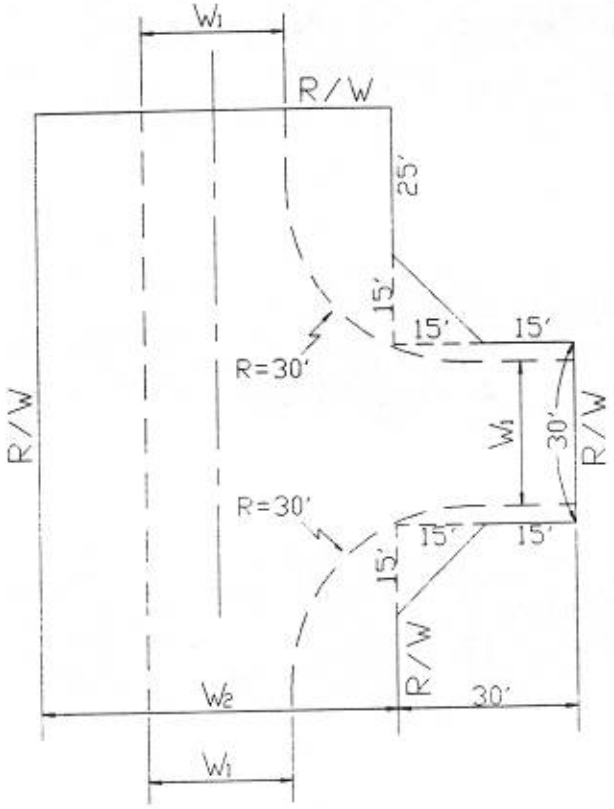
b. Upon appeal, the Board of Building Appeals may grant or deny an exception in accordance with Section 6.92.

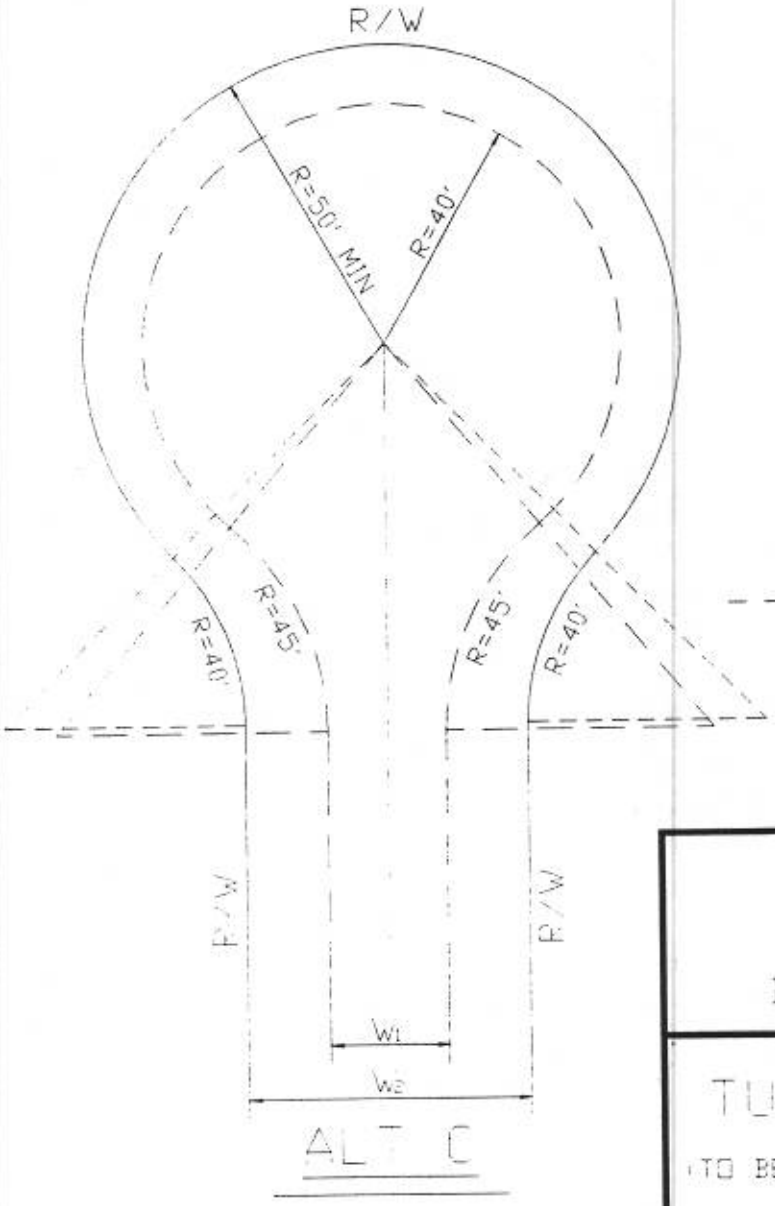
c. Upon appeal, the Board of Supervisors may grant or deny an exception in accordance with Section 6.92.



NOTE

ALT. 'C' IS PREFERRED
ALT. 'A' AND 'B' MAY BE ALLOWED UPON APPROVAL BY THE DIRECTOR OF PUBLIC WORKS





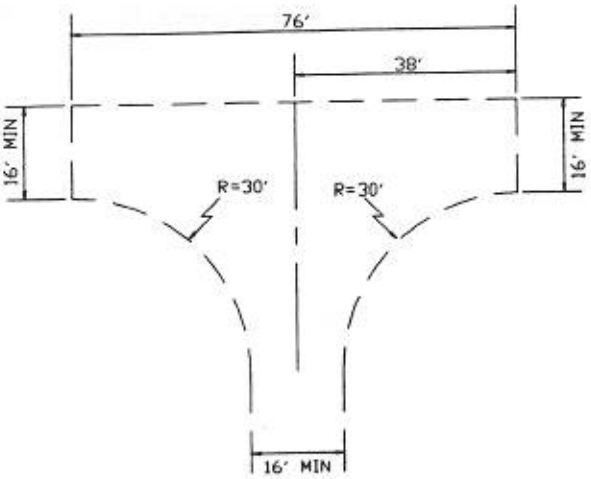
- - - - = EDGE OF PAVEMENT
W_1 = WIDTH OF REQUIRED ROAD
W_2 = WIDTH OF REQUIRED R/W

STATE OF CALIFORNIA
COUNTY OF SHASTA
DEPARTMENT OF PUBLIC WORKS

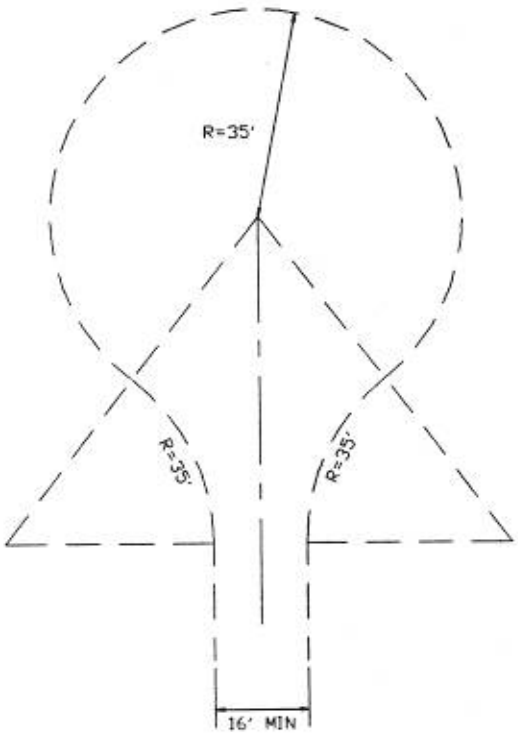
TURNAROUND ALTERNATES

(TO BE USED IN RURAL GENERAL PLAN DESIGNATION)

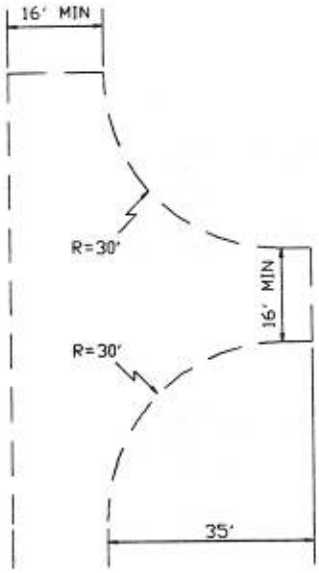
FIG 2-40



ALT A



ALT C



ALT B

– – – – Boundary of cleared and leveled area.

STATE OF CALIFORNIA

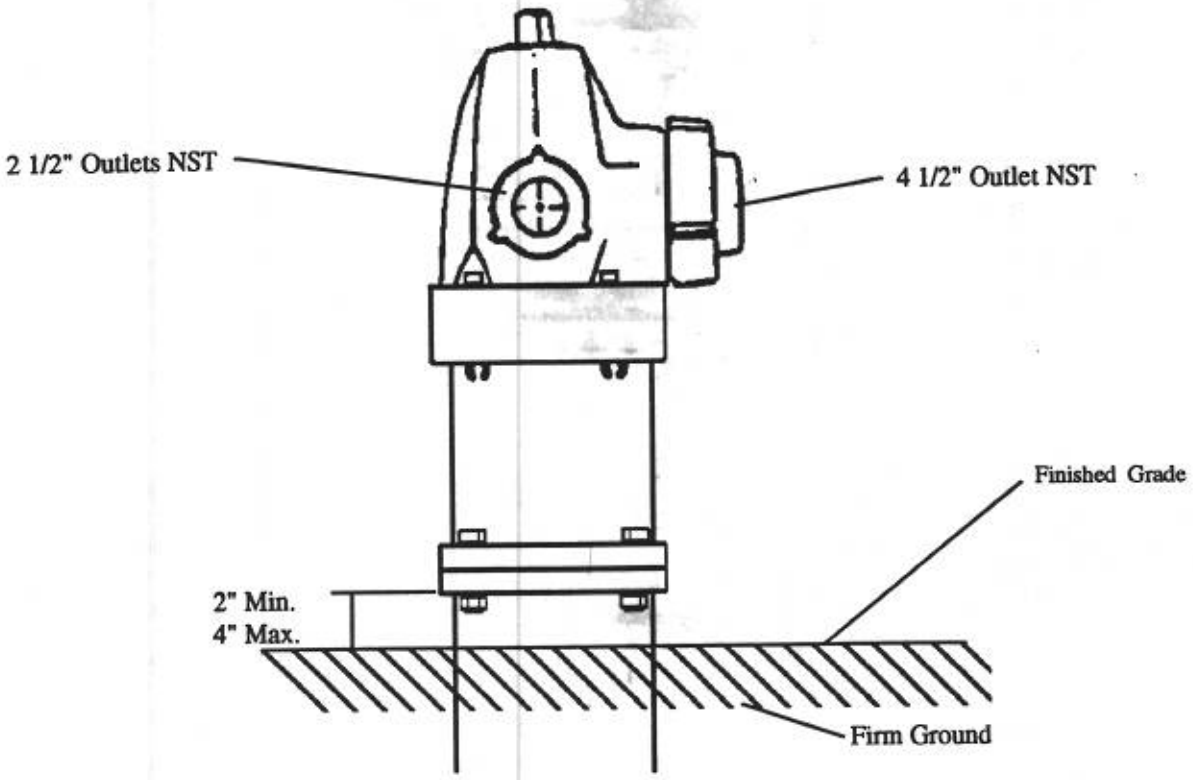
COUNTY OF SHASTA

DEPARTMENT OF PUBLIC WORKS

MINIMUM FIRE STANDARD TURNAROUND ALTERNATES

(FOR PRIVATE DRIVEWAYS OVER 200 FEET IN LENGTH)

Fig. 2-42



NOTES:

(1) Each hydrant must be gated between the hydrant and street main.

(2) Each hydrant shall be placed in such a manner that the 4 1/2 inch outlet faces the street.

(3) Fire hydrants shall be placed a minimum of 4 feet and maximum of 10 feet from the edge of the road surface or turnout, or as otherwise approved by the respective fire district and water service entity.

(4) Barrel must be of dry type.

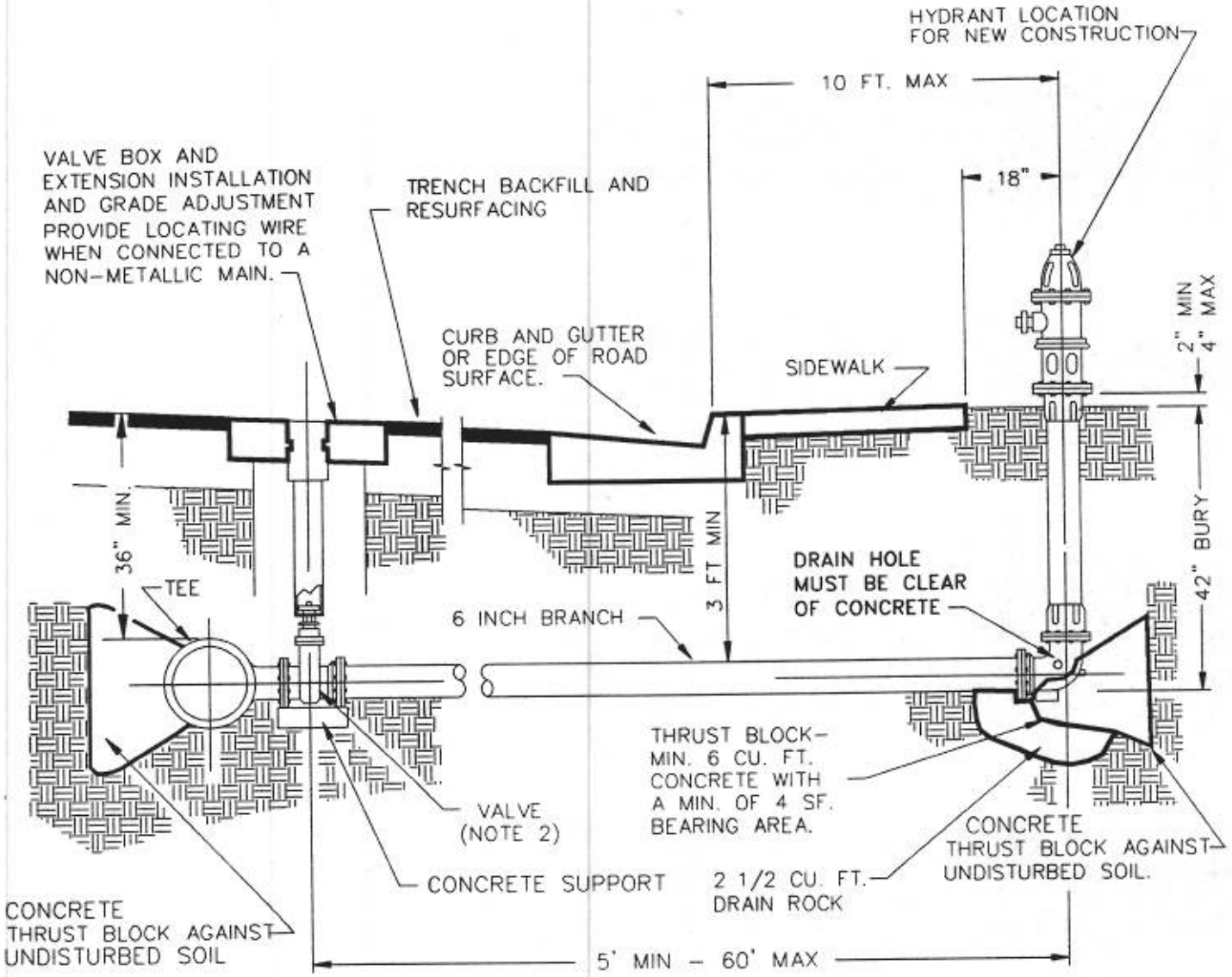
(5) Hose threads on outlets shall be National Standard dimensions.

(6) Hydrants shall NOT be less than 18 inches or more than 25 inches above the grade of the roadway or driveway.

STATE OF CALIFORNIA
COUNTY OF SHASTA
FIRE DEPARTMENT

MINIMUM FIRE STANDARD
FIRE HYDRANT
DRY BARREL TYPE

Fig. FS-1



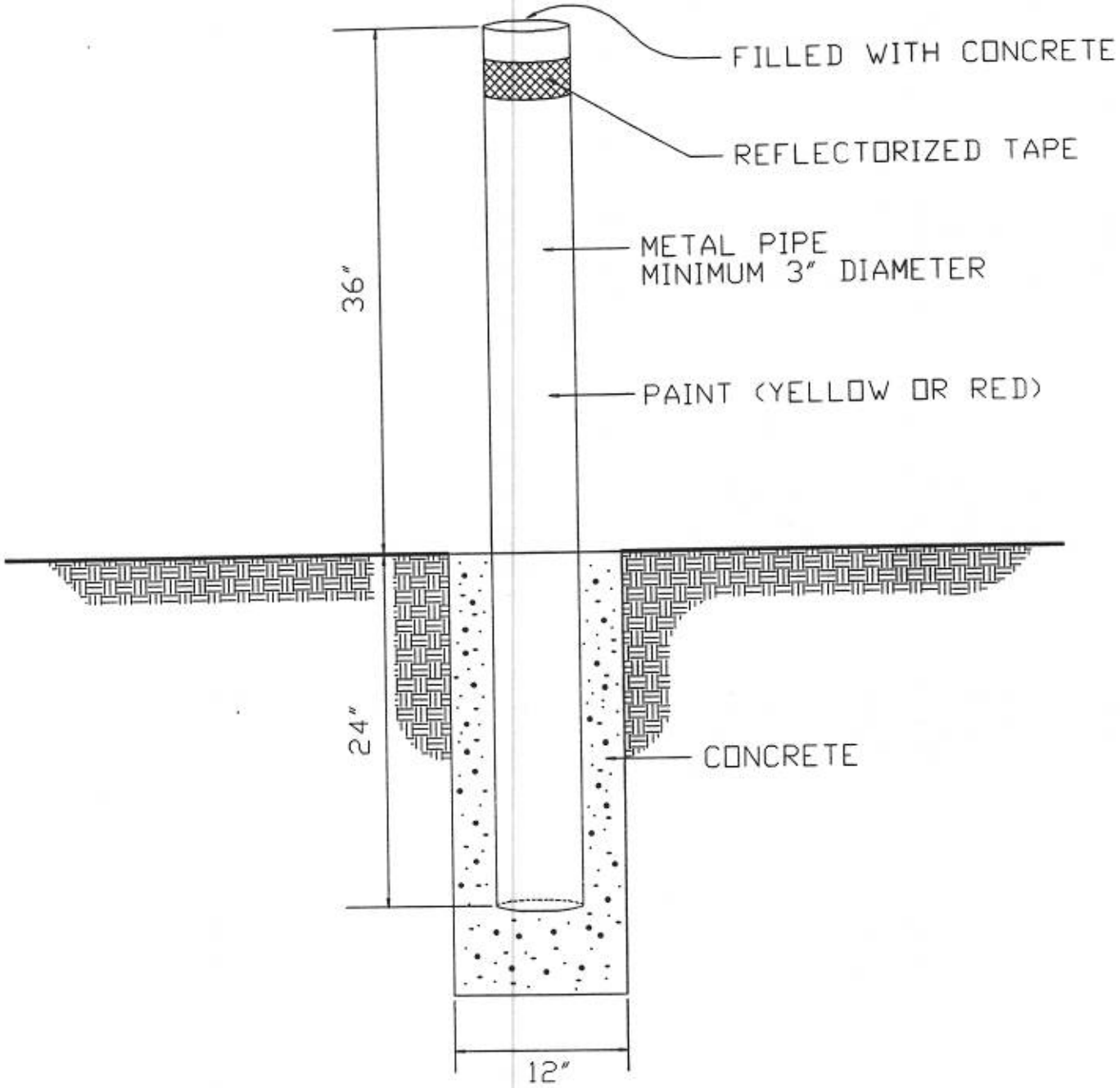
NOTES:

1. ALL CONSTRUCTION SHALL BE INSPECTED BY THE RESPONSIBLE AGENCY PRIOR TO BURIAL.
2. FOR ALLOWABLE FIRE HYDRANTS, VALVES, PIPE AND FITTINGS SEE SECTION 5.36. (GATE VALVE ACCORDING TO A.W.W.A. STANDARDS)
3. HYDRANT BURY DEPTH MAY VARY WITH PRIOR APPROVAL OF THE WATER SERVICE ENTITY.
4. PRIVATE ON-SITE HYDRANT LOCATIONS TO BE APPROVED BY THE FIRE AGENCY HAVING JURISDICTION.

STATE OF CALIFORNIA
COUNTY OF SHASTA
FIRE DEPARTMENT

FIRE HYDRANT INSTALLATION

Fig. FS-2



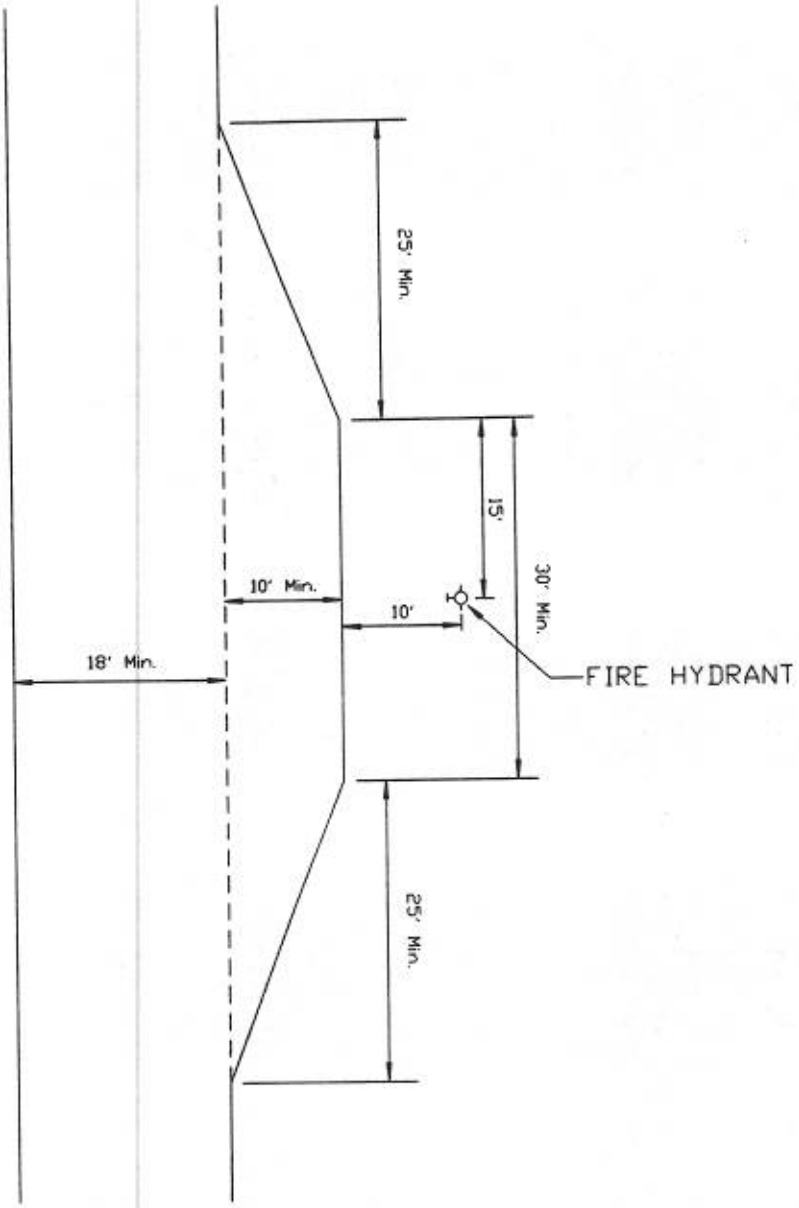
*** NOT FOR USE ON PUBLIC OR PRIVATE ROADWAYS

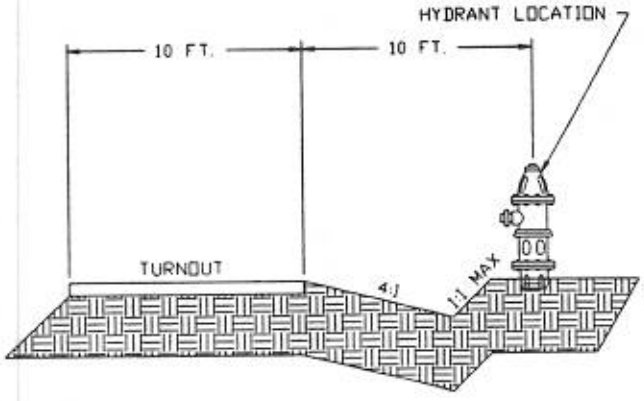
FOR USE ON PRIVATE PROPERTY ONLY

STATE OF CALIFORNIA
COUNTY OF SHASTA
FIRE DEPARTMENT

MINIMUM FIRE STANDARD
HYDRANT
PROTECTION POST

Fig. FS-3





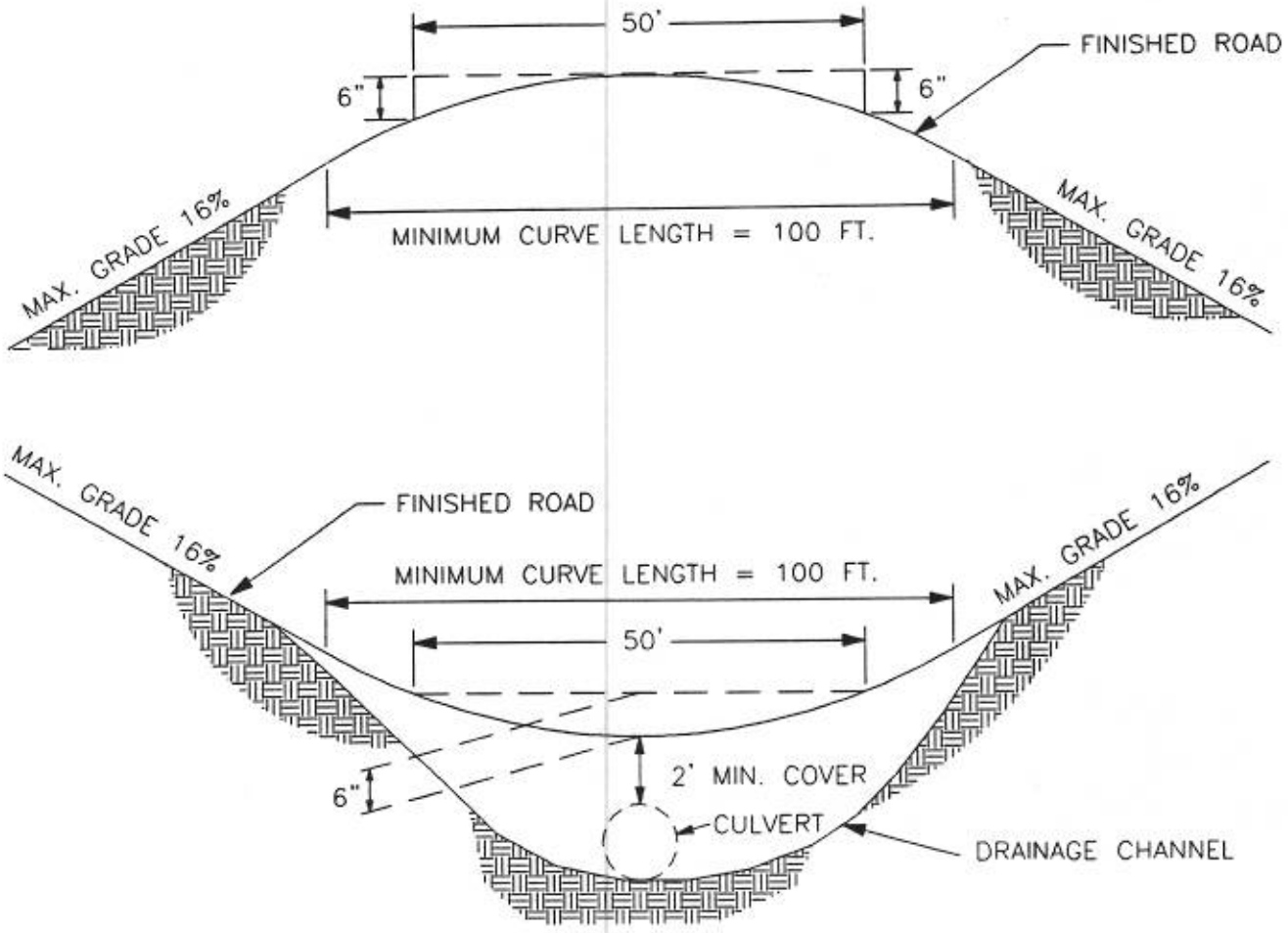
STATE OF CALIFORNIA

COUNTY OF SHASTA
FIRE DEPARTMENT

TURNOUT
FOR FIRE HYDRANTS

Fig. FS-4

*** NOT DRAWN TO SCALE



NOTES:

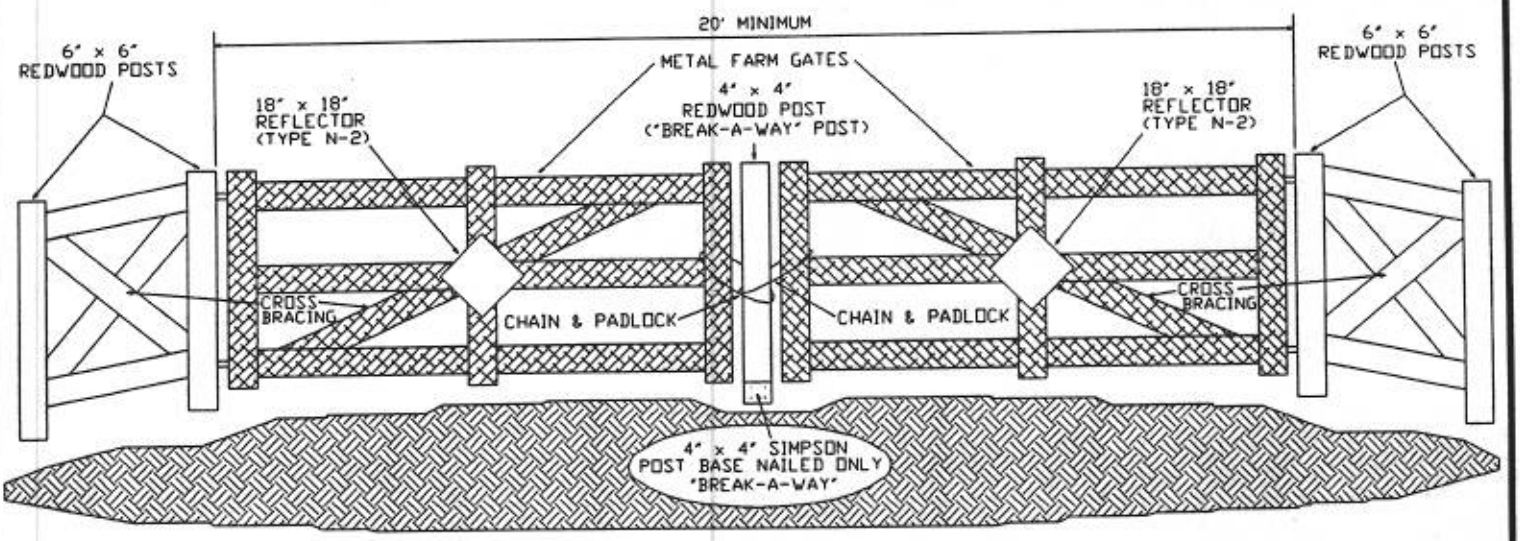
1. Culvert size to be established by a licensed Engineer.
2. Culverts should have a minimum depth of 24" of cover or an amount equal to 1/2 of the diameter of the culvert, whichever is greater.
3. Contact the Shasta County Building Division to determine whether a grading permit is required.
4. Contact the California Department of Fish and Game prior to grading within creeks and drainages.

STATE OF CALIFORNIA
COUNTY OF SHASTA
FIRE DEPARTMENT

TYPICAL VERTICAL CURVES

FOR PRIVATE RESIDENTIAL DRIVEWAYS

Fig. FS-5



*** NOTES: 1) All exposed surfaces to be painted with 2 coats of white exterior grade paint.

2) Set all posts in 3' of concrete.

3) 2 SEPARATE CHAINS AND PADLOCKS, ONE SET FOR EACH GATE

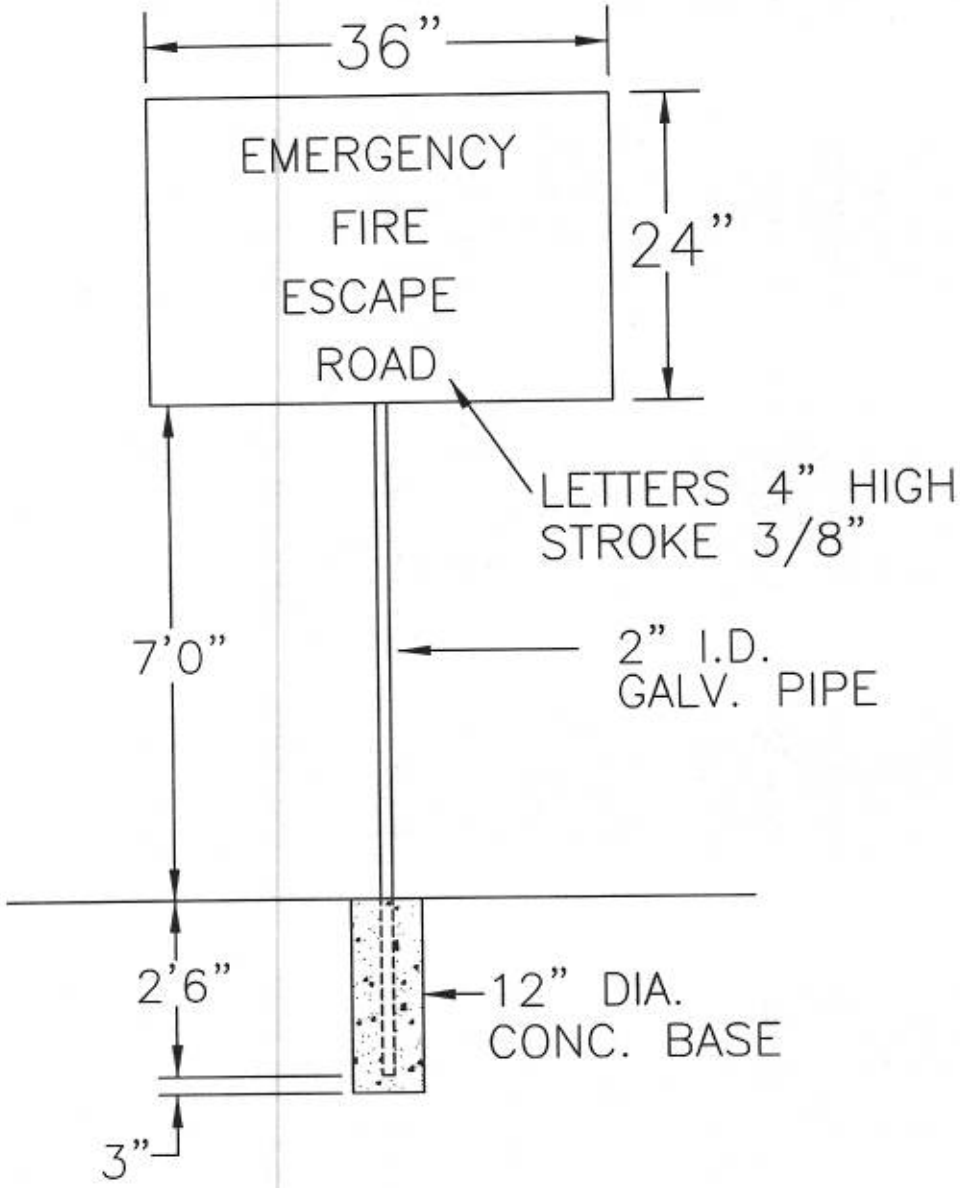
STATE OF CALIFORNIA

COUNTY OF SHASTA

FIRE DEPARTMENT

BREAK-A-WAY GATE ASSEMBLY

Fig. FS-6



REFLECTIVE WHITE LETTERS ON
REFLECTIVE GREEN BACKGROUND

SCALE: NTS	DATE: 01-2003	SHASTA COUNTY DEPARTMENT OF PUBLIC WORKS

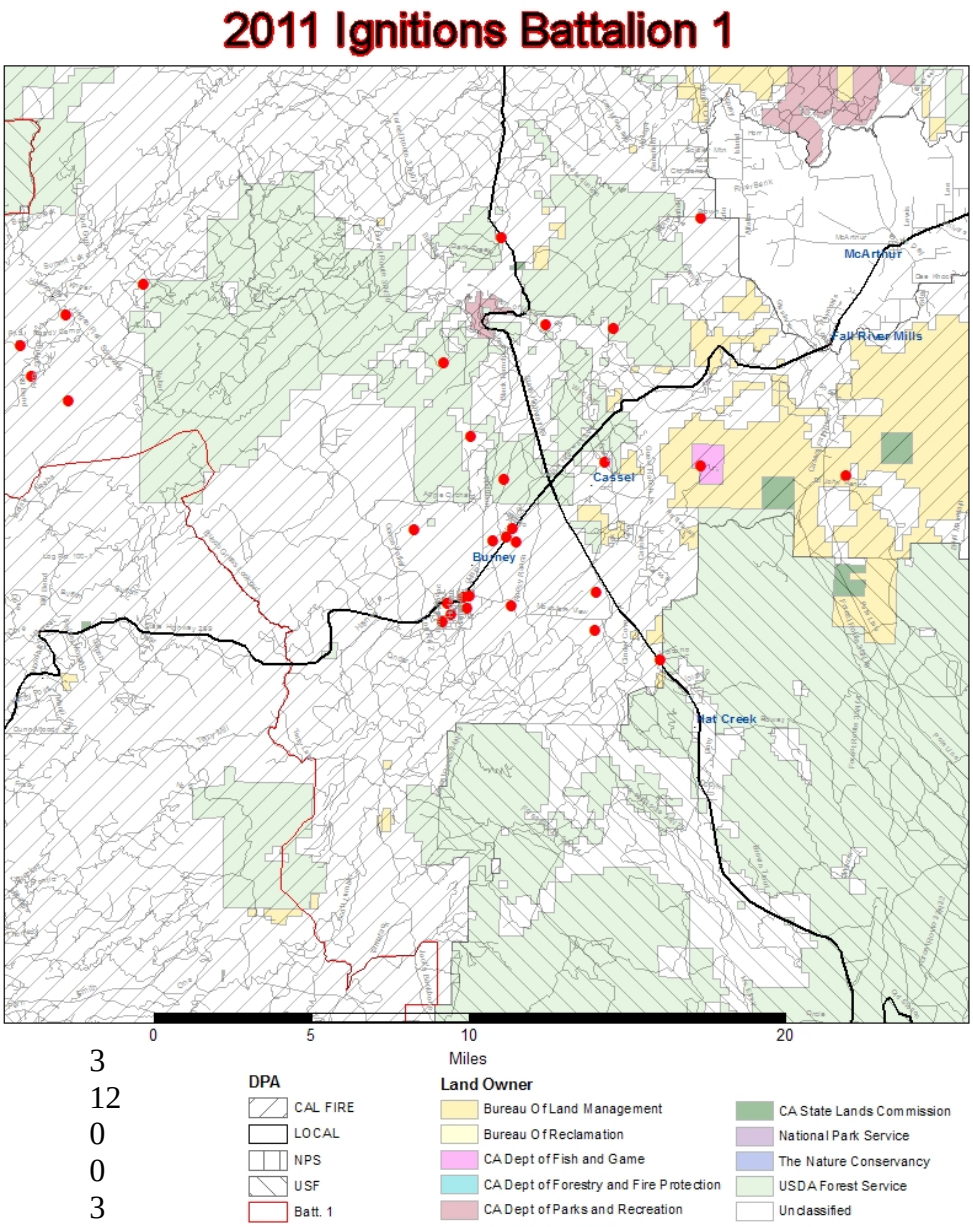
SIGN

FOR EMERGENCY FIRE ESCAPE ROAD

FS-9

Appendices D

The Shasta – Trinity Unit Vegetation Ignition Analysis was determined by using the ignition history Geodatabase, vegetation fire feature class provided by the Fire and Resource Assessment Program (FRAP) and was analyzed for each battalion:

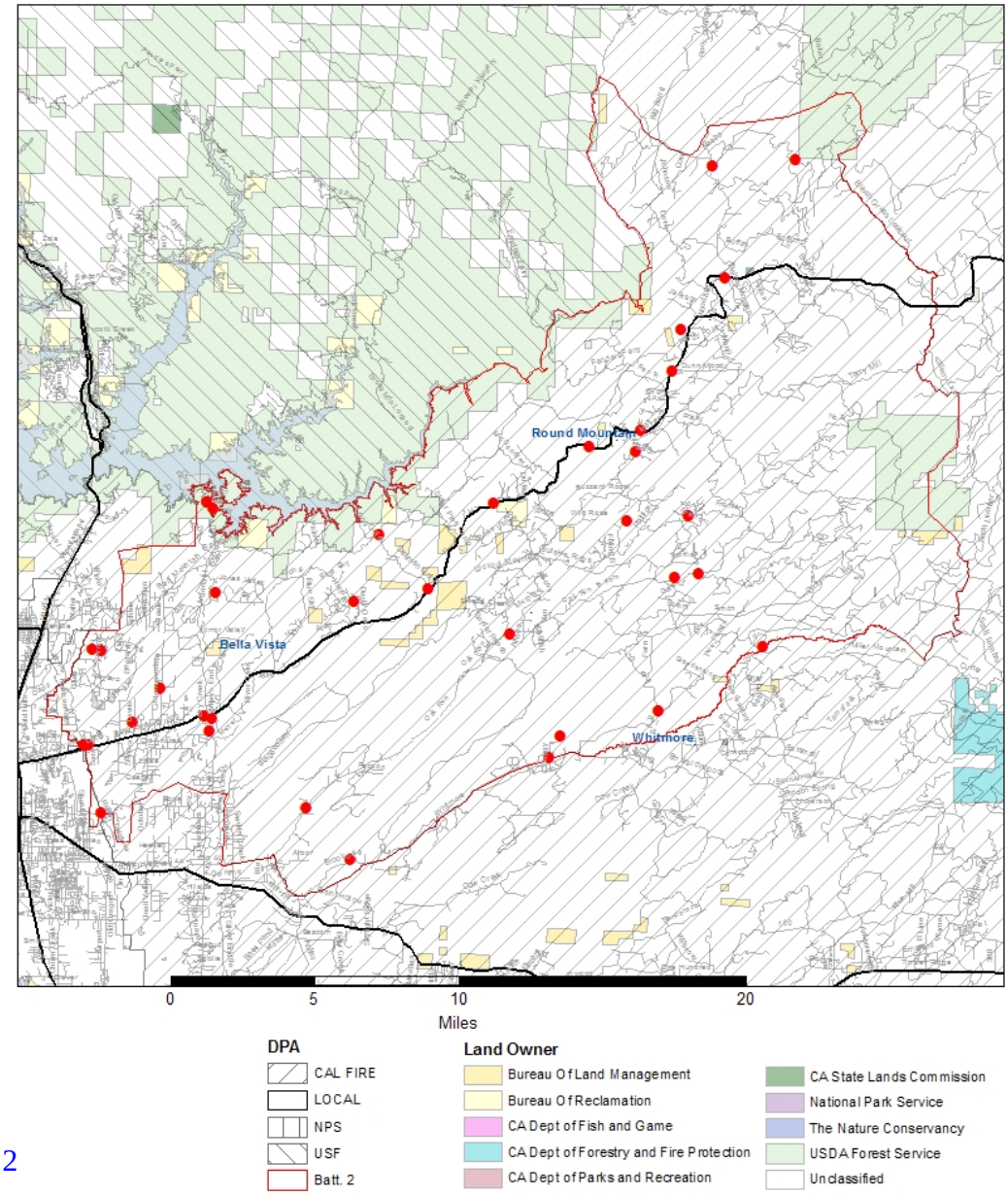


Battalion 1

Undetermined	3
Lightning	12
Campfire	0
Smoking	0
Debris Burning	3
Arson	1
Equipment	0
Playing with Fire	4
Miscellaneous	6
Vehicle	0
Railroad	0
Powerline	0

Total Vegetation Fires 29

2011 Ignitions Battalion 2



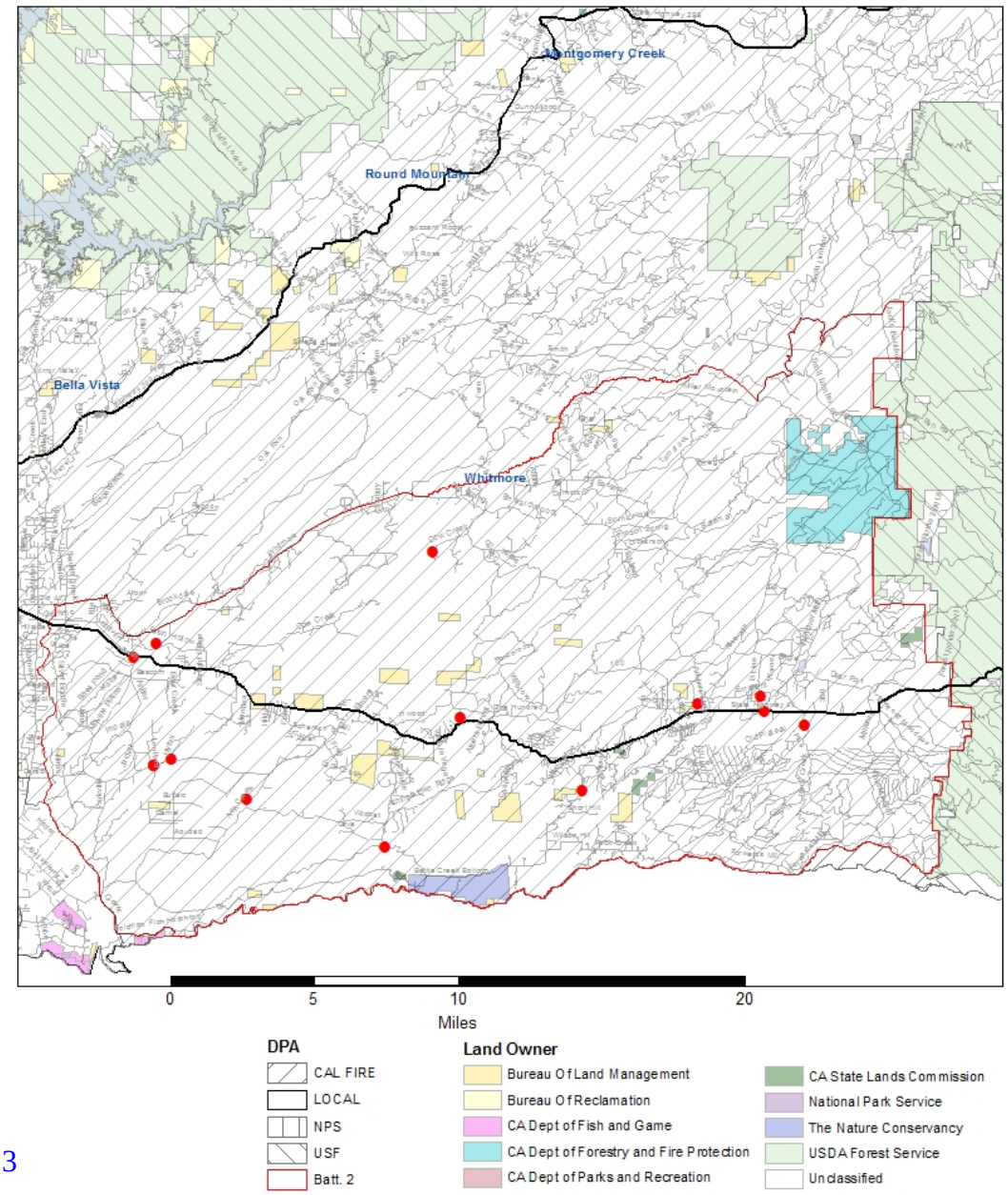
Battalion 2

Undetermined	7
Lightning	4
Campfire	0
Smoking	1
Debris Burning	6
Arson	4
Equipment	6
Playing with Fire	1
Miscellaneous	7
Vehicle	0
Railroad	0
Powerline	0

Total Vegetation Fires 36

Last update: 1 Feb 2012

2011 Ignitions Battalion 3



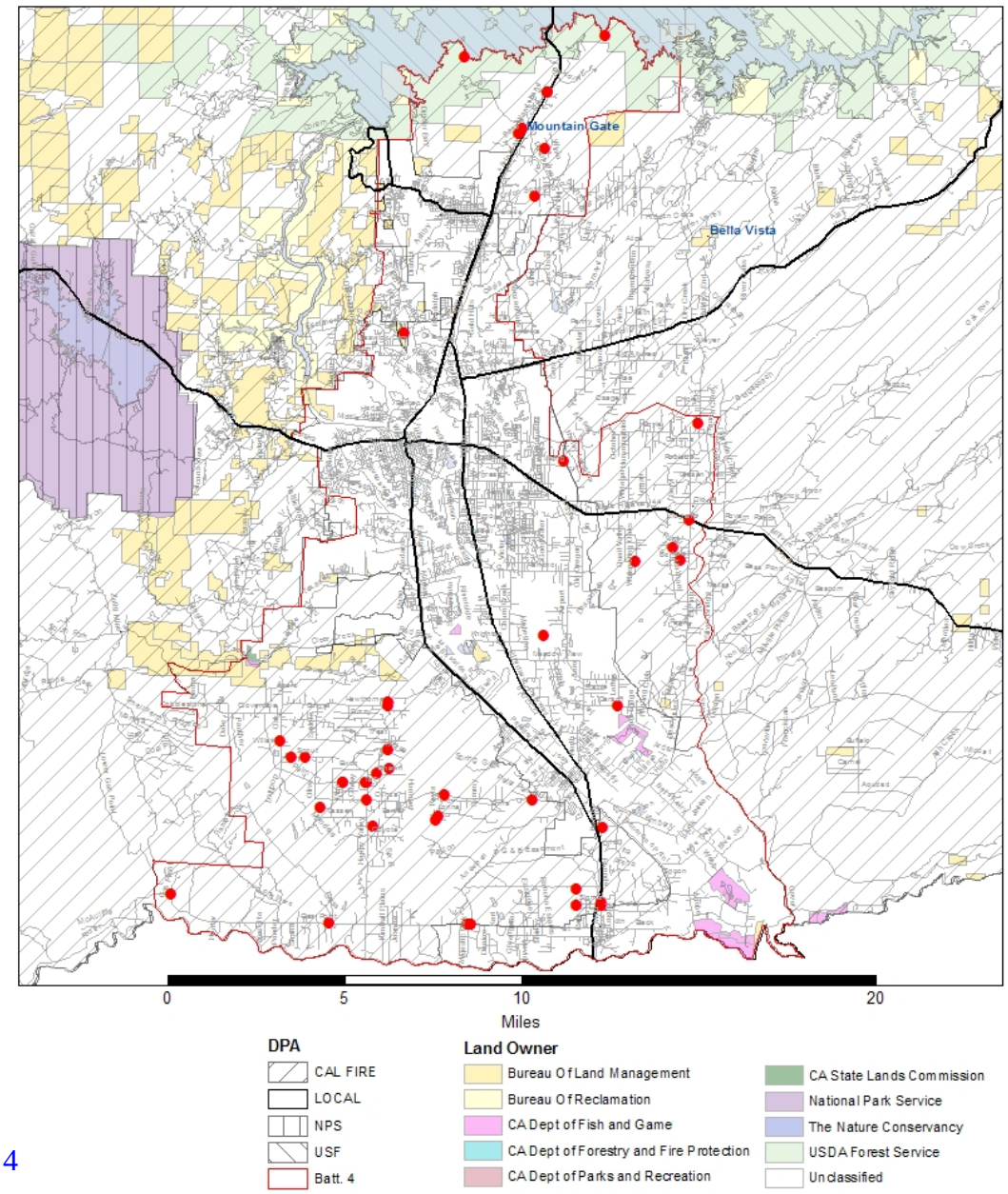
Battalion 3

Undetermined	4
Lightning	0
Campfire	0
Smoking	0
Debris Burning	6
Arson	0
Equipment	0
Playing with Fire	2
Miscellaneous	2
Vehicle	0
Railroad	0
Powerline	1

Total Vegetation Fires 15

Last update: 1 Feb 2012

2011 Ignitions Battalion 4



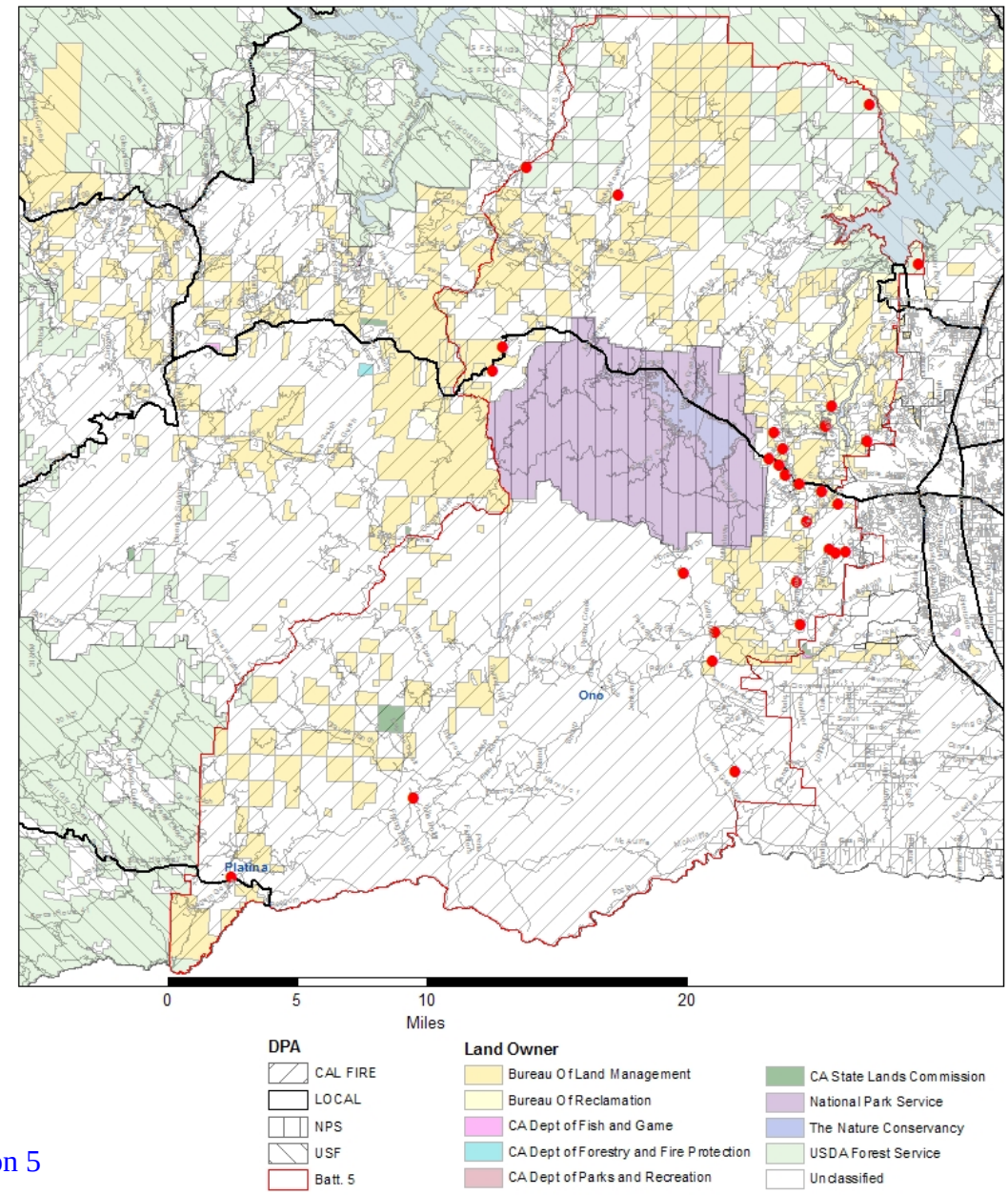
Battalion 4

Undetermined	17
Lightning	1
Campfire	1
Smoking	2
Debris Burning	4
Arson	6
Equipment	8
Playing with Fire	3
Miscellaneous	4
Vehicle	0
Railroad	0
Powerline	0

Total Vegetation Fires	46

Last update: 1 Feb 2012

2011 Ignitions Battalion 5



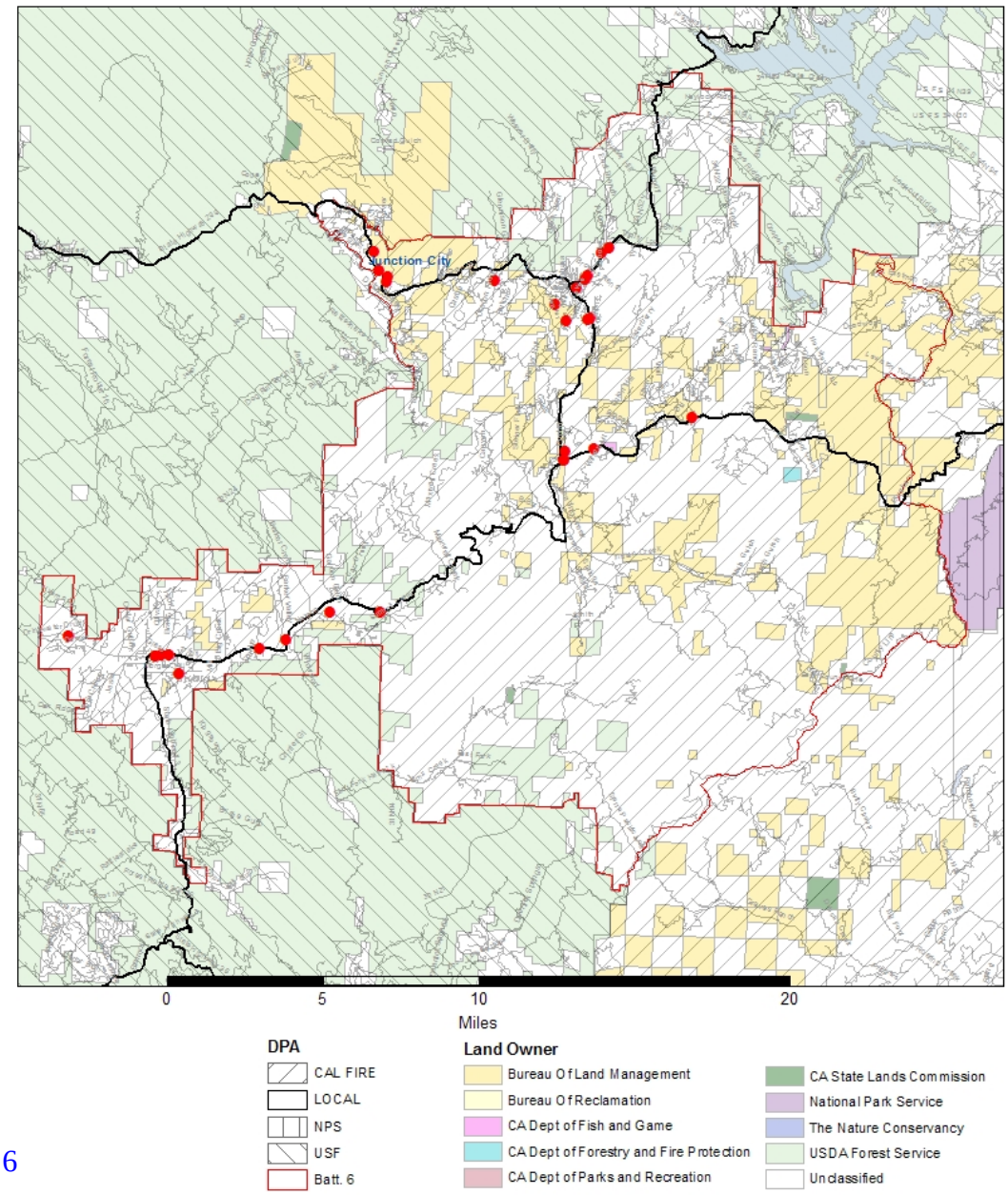
Battalion 5

Undetermined	8
Lightning	1
Campfire	0
Smoking	0
Debris Burning	7
Arson	0
Equipment	1
Playing with Fire	2
Miscellaneous	9
Vehicle	0
Railroad	0
Powerline	1

Total Vegetation Fires 29

Last update: 1 Feb 2012

2011 Ignitions Battalion 6



Battalion 6

Undetermined	6
Lightning	0
Campfire	3
Smoking	1
Debris Burning	1
Arson	3
Equipment	7
Playing with Fire	1
Miscellaneous	7
Vehicle	0
Railroad	0
Powerline	1
Total Vegetation Fires	28

EXHIBITS: MAPS

Figure A: Unit Map

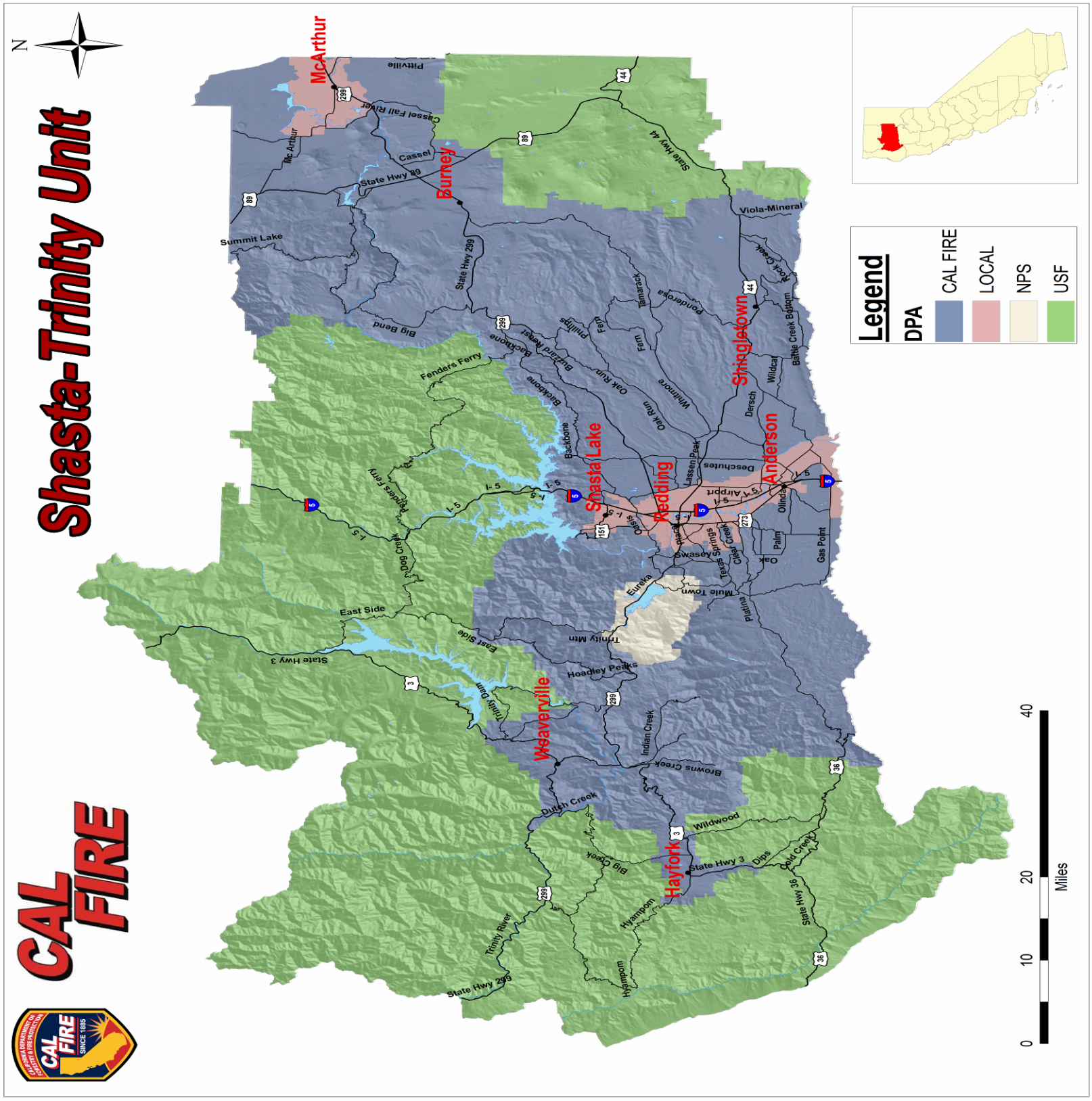
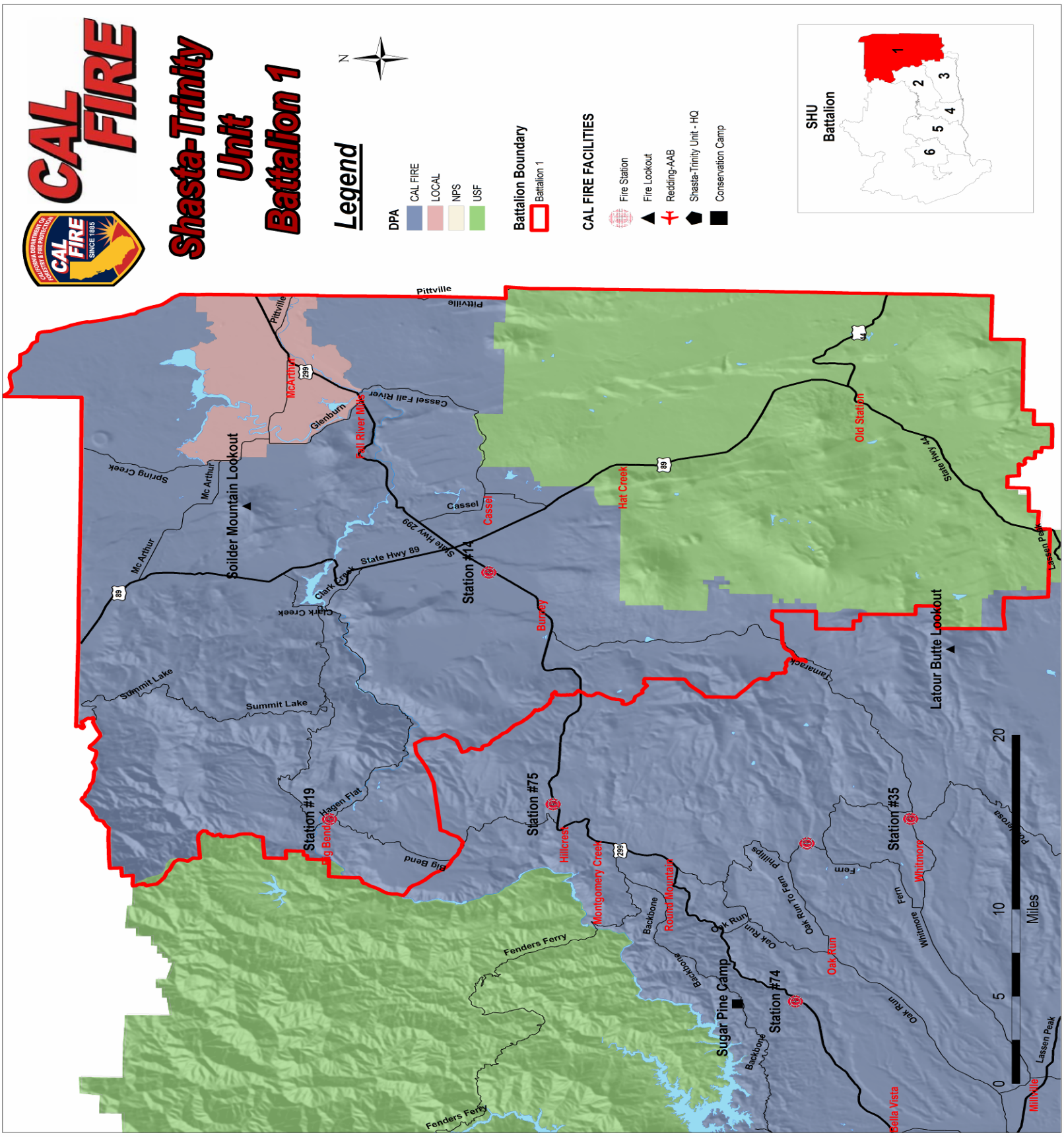
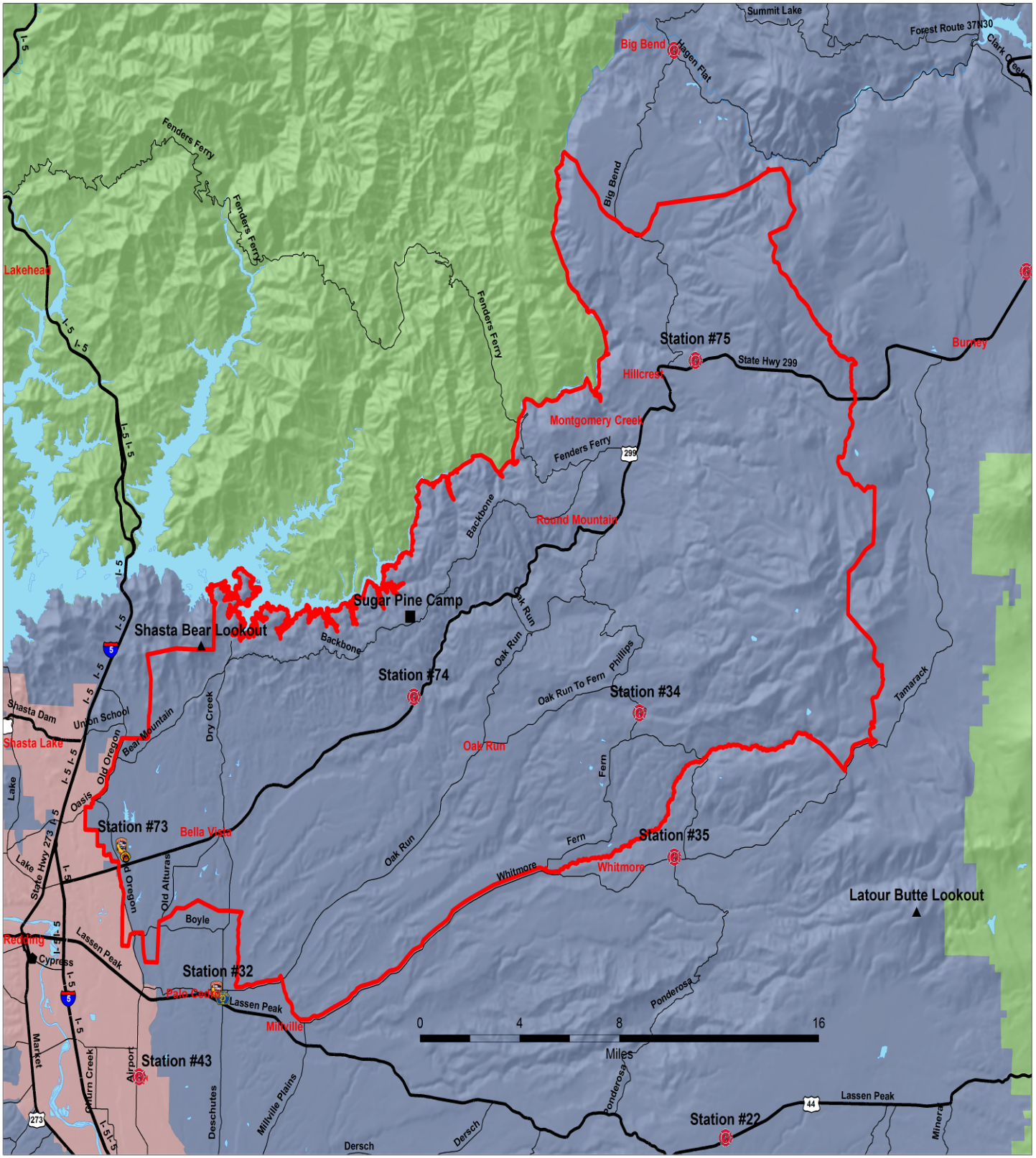


Figure B: Battalion Maps

Battalion 1





CAL FIRE

Shasta-Trinity Unit Battalion 2

Legend

DPA
- CAL FIRE
- LOCAL
- NPS
- USF

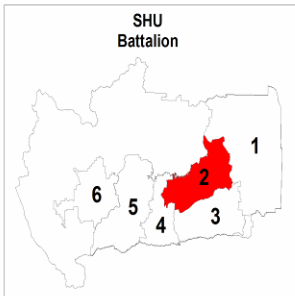
Battalion Boundary
- Battalion 2

CAL FIRE FACILITIES
- Fire Station
- Fire Lookout
- Redding-AAB
- Shasta-Trinity Unit - HQ
- Conservation Camp

CAL FIRE Contract Stations
- Station #32 (A)
- Station #73 (Amador)

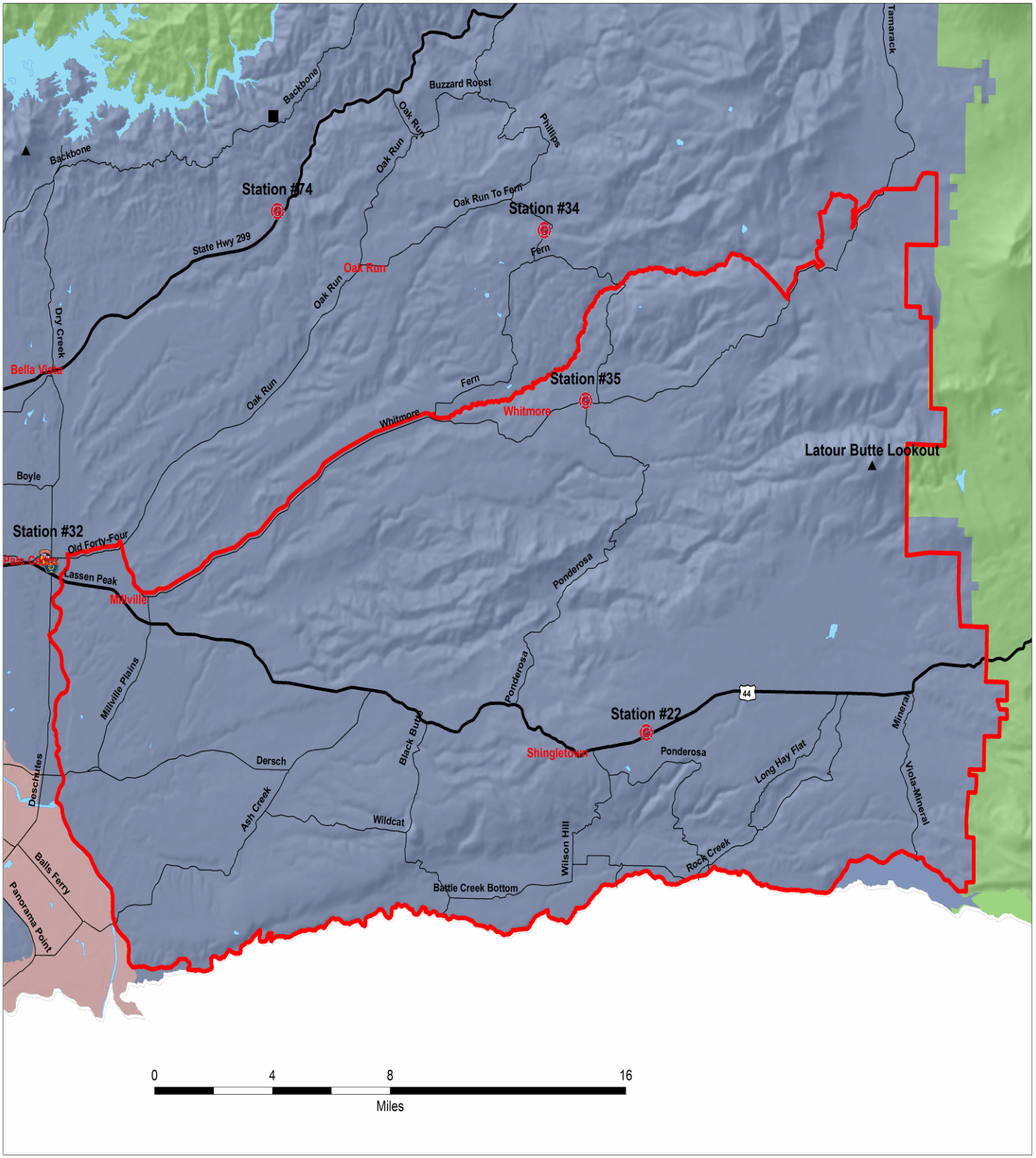
N

SHU Battalion



Battalion 2

Last update: 1 Feb 2012



CAL FIRE

Shasta-Trinity Unit Battalion 3

Legend

N

DPA
- CAL FIRE
- LOCAL
- NPS
- USF

Battalion Boundary
- Battalion 3

CAL FIRE FACILITIES
- Fire Station
- Fire Lookout
- Redding-AAB
- Shasta-Trinity Unit - HQ
- Conservation Camp

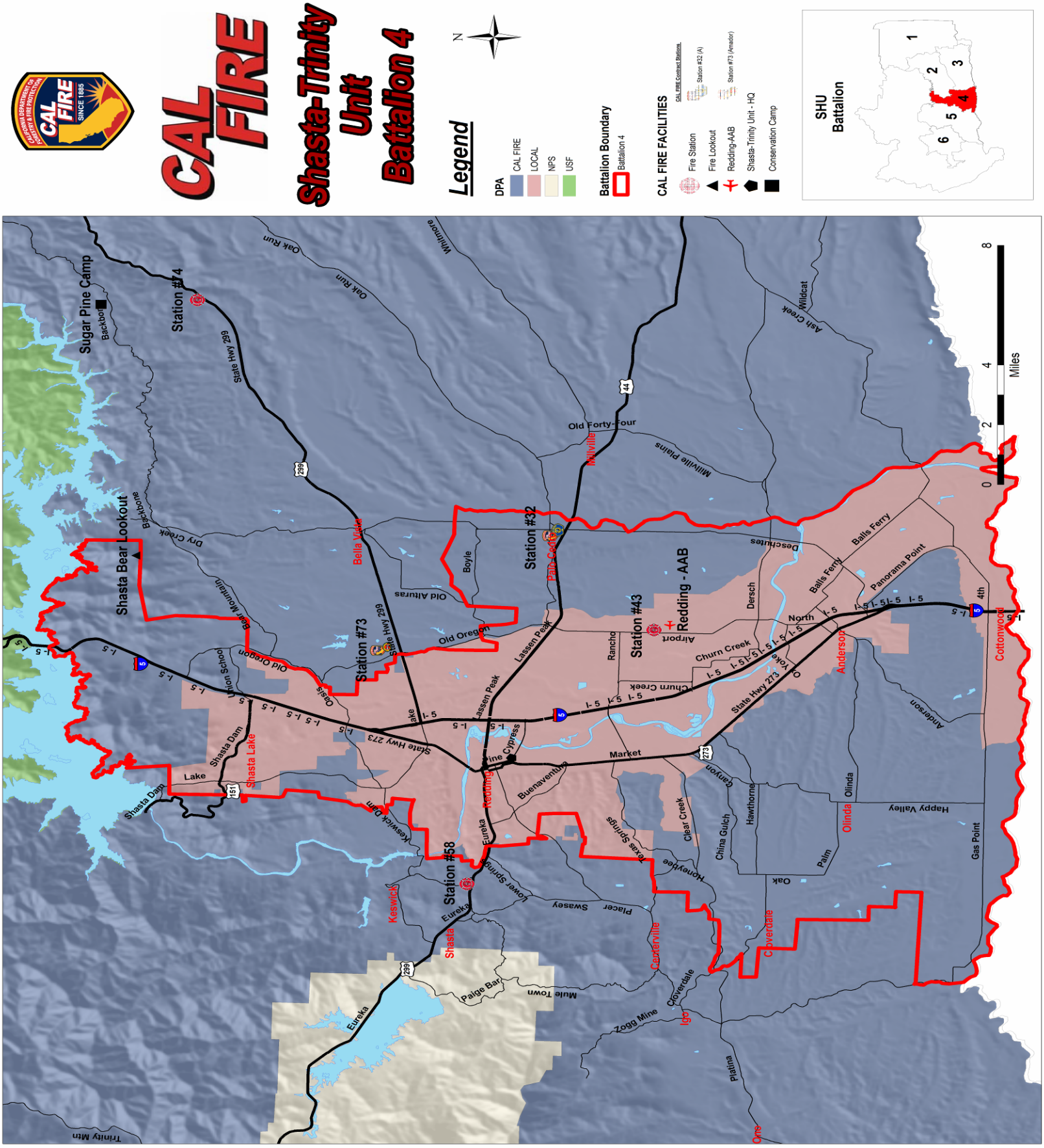
CAL FIRE Contract Station
- Station #32 (A)

SHU Battalion

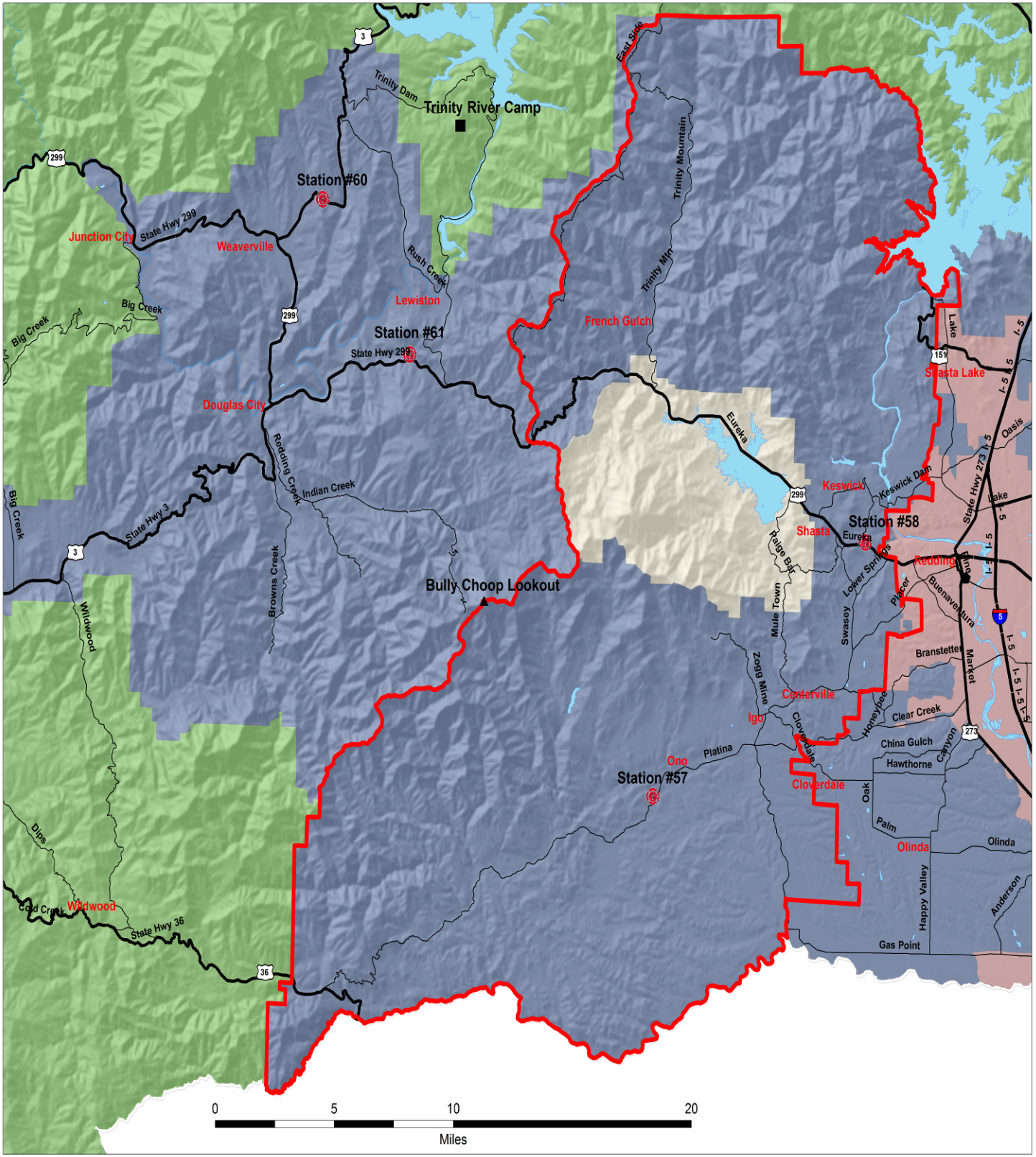
Battalion 3

Last update: 1 Feb 2012

Battalion 4



Last update: 1 Feb 2012



CAL FIRE

Shasta-Trinity Unit Battalion 5

Legend

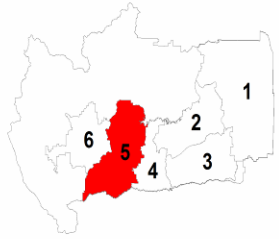
N

DPA
- CAL FIRE
- LOCAL
- NPS
- USF

Battalion Boundary
- Battalion 5

CAL FIRE FACILITIES
- Fire Station
- Fire Lookout
- Redding-AAB
- Shasta-Trinity Unit - HQ
- Conservation Camp

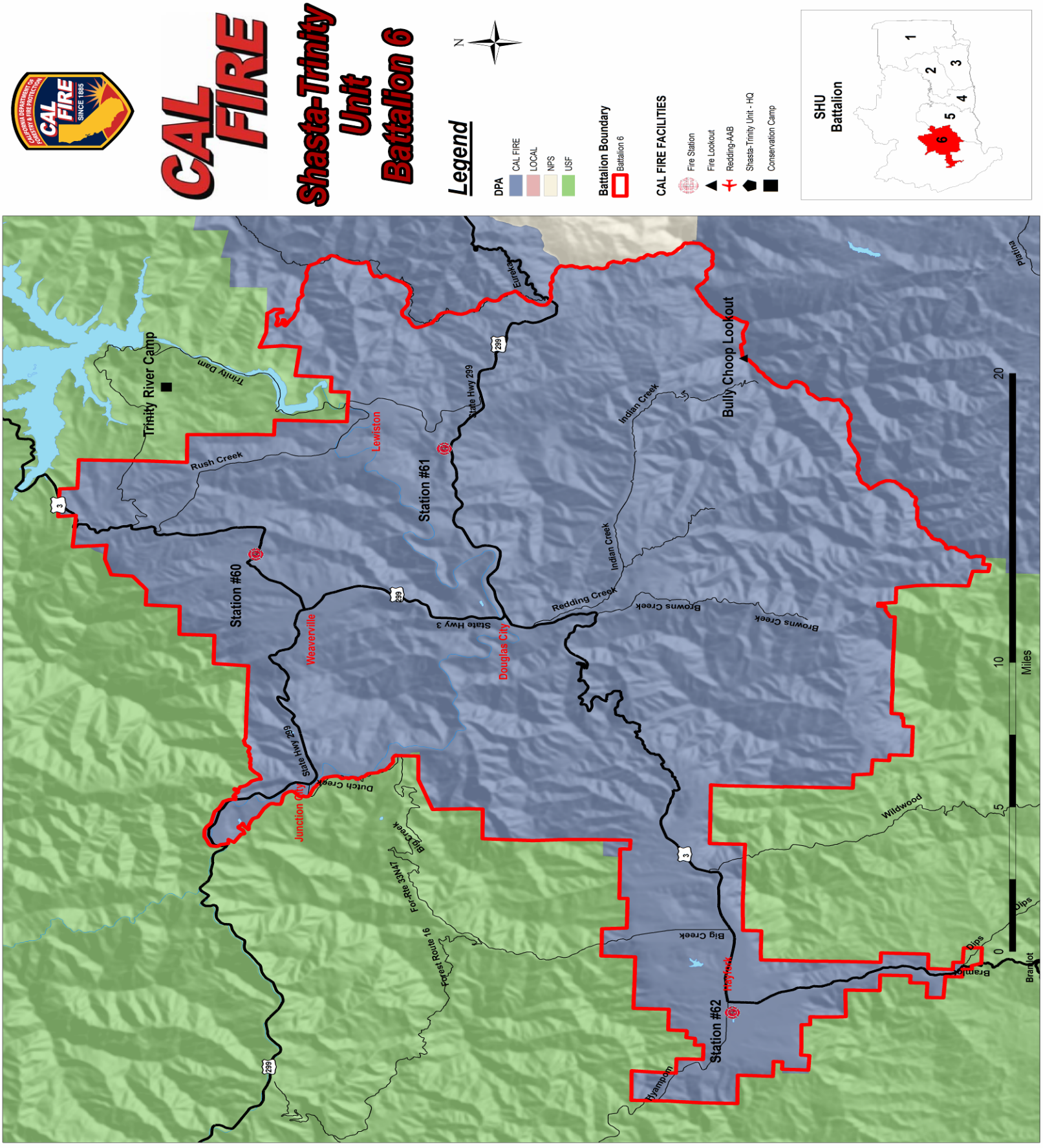
SHU Battalion



Battalion 5

Last update: 1 Feb 2012

Battalion 6


CAL FIRE
Shasta-Trinity Unit
Battalion 6
Legend
DPA
CAL FIRE
LOCAL
NPS
USF
Battalion Boundary
Battalion 6
CAL FIRE FACILITIES
Fire Station
Fire Lookout
Redding-AAB
Shasta-Trinity Unit - HQ
Conservation Camp
SHU Battalion
1
2
3
4
5
6
Trinity River Camp
Trinity Dam
Rush Creek
Lewiston
Station #61
Station #60
Weaverville
Junction City
Dutch Creek
State Hwy 299
State Hwy 3
Douglas City
Redding Creek
Indian Creek
Browns Creek
Bully Choop Lookout
Eureka
Big Creek
Forest Route 31N17
Forest Route 16
Hayfork
Station #62
Wildwood
Dips
Miles
0
5
10
20

SUPPLEMENT: 2012

Annual Report of Unit Accomplishments

- Working with our cooperator fire agencies to provide education and enforcement to reduce two increased fire ignitions in the unit, debris burn escape and children playing with fire.

- Working with our cooperator fire agencies, trough the use of GIS, to improve response times and to meet the needs of each emergency incident within the unit before the incident occurs.

- Continued education to the employees of the unit to better serve the citizens of the State of California.

- Information sharing with resource conservation districts and fire safe councils on reporting fuels modifications into the CalMAPPER program.