

## **SECTION V: PRE- FIRE MANAGEMENT TACTICS**

### **DIVISION / BATTALION / PROGRAM PLANS**

# **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 Cascade 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 retail 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 people<sup>1</sup>. 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:

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<sup>1</sup> 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<sup>2</sup> 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 too 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

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<sup>2</sup> 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<sup>3</sup>.

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 due 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 structures 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

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<sup>3</sup> 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.