

Fire Safe Planning Canvas

History

California is one of the most ecologically diverse regions in the world. This ecological life cycle has been maintained in large part with 'wildland fires.' As this concept pertains to a forest it must be understood that "a forest is a living biological community that requires disturbances such as fire, for renewal."

California ecology has experienced human manipulation in some capacity since our arrival. Native Americans used fire for several 1000 years, next the introductions of large numbers of livestock eliminated most of the surface fuels which resulted in a wide spread modification of fire patterns. The early 1900's to near present sought to exclude fires from the ecosystem which only maximized fuel loads by allowing for an uninterrupted accumulation of fuel.

The Butte Unit Fire Plan is not being created to eliminate fires but to reduce the devastation and destruction caused by wildland fires to life and property. The Butte Unit Fire Plan is trying to institute measures that are combating events that took centuries to create, so overnight solutions will not be offered nor should they be expected.

Definition

Modifying the National Park Service (2004) definition, The Butte Unit Fire Plan will define *fuel management* as "the planned manipulation of the amount, composition, and structure of the biomass within wildland ecosystems for the purpose of reducing potential for extreme fire behavior and the destructive effects those fires cause." The Butte Unit Fire Plan seeks to set out an outline, as defined in the National Fire Plan, which coordinates fuel management programs with common priorities to better serve the region. Note that with any fuel management program the objectives will only be effective in reducing property losses if they are used in combination with a combustion resistant home construction that is surrounded by a defensible space.

Treatments

Currently there are two types of fuel treatment options utilized within Butte County; fire treatments and mechanical treatments. Fire treatments are coordinated through Butte Unit's Vegetation Management Program Coordinator (VMP). Mechanical treatments involve a 'hands on' approach to achieve effective fuel management. Treatment options include brush thinning using hand tools, masticators, chipping operations, livestock, and herbicides.

A majority of our efforts are in locations where 'human caused fires' normally occur. To reduce this high ignition potential most of our projects center on roadway shaded fuel breaks and home defensive clearance programs. These efforts have already been proven successful in fuel management (www.buttefiresafe.org). These current programs are the restoration phase in a two step process. Once the restoration phase has been achieved the maintenance phase needs to be implemented.

Maintenance

Establishing a maintenance program is not a new dilemma. The Ponderosa Way 650 mile fuel break was completed in the 1930's to prevent a fire from the foothills extending into the forest. This project is now only exemplified by some of the roads still in existence that were used to support the project.

Currently there is a desire to re-establish an ecosystem to its previous existence (pre 1800's). For this to occur we must accept that the western United States has a number of vegetation types that are fire dependent. The VMP's ability to administer prescribed burns is dependent upon, air quality restrictions, wildlife, weather, and fire suppression crew availability. Fear of fire escape and air quality concerns are probably the most influential factors inhibiting large scale VMP burns. These restrictions give our VMP program a severely limited window of burning opportunity. Note that the smoke production of a VMP burn would be minimal when compared to the smoke production of a wildfire in the same area.

There is a lack of research on maintenance methods State wide and future site specific research is warranted. Butte County Fire Safe Council's maintenance Committee has begun to address maintenance in shaded fuel break projects by providing landowners education resources and workshops so that they can proactively maintain vegetation on their property.

Topography

Topography is the lay of the land and includes drainages (canyons, draws, chimneys, etc.) slope, aspect, and fire barriers such as lakes, rock outcroppings and roads. Topography, particularly drainages and steeper slopes add to the difficulty in suppressing fires. Reasons include access problems, adverse working conditions and intense fire behavior as fire reaches preheated fuel beds within the drainages.

Butte County encompasses just over one million acres of land and is divided in half by two topographical features. First are the foothills and mountainous region in the northern Sierra Nevada and southern Cascade Mountains in the northeast. This area is scattered with homes and communities intermixed amongst woodland fuels creating a serious wildland urban interface problem. Second the Sacramento Valley section in the southwest which is predominately farmland.

Butte County's foothills and mountains are carved up by several river drainages, the largest being the Feather River watershed which culminates in Lake Oroville. The Feather River watersheds include the West Branch of the North Fork east of Paradise, the North Fork separating Yankee Hill from Berry Creek, the Middle Fork separating Berry Creek and Feather Falls, and the south fork separating Feather Falls from Forbestown and the La Porte Road communities. The northern part of Butte County is bisected by Butte Creek west of Paradise and Big Chico Creek watersheds which separate the Forest Ranch and Cohasset ridges.

The topography in these drainages differs significantly from the deep and very steep, heavily timbered drainages of the Feather River Watershed to the moderately steep wide and generally brush filled Butte Creek and Chico Creek drainages. The drainages are generally oriented toward south and west aspects which lead to prolonged sun exposure and diminished fuel moisture in the wildland fuels.

Fuel Types

Butte County is comprised of three general fuel types; grass, brush and timber. There are a number of factors such as fuel type and size, loading (tons/acre), arrangement (vertical & horizontal), chemical composition, and dead and live fuel moisture that contribute to the flammability characteristics of vegetation. The CAL FIRE Resource Assessment Program has developed a hazard ranking for wildland fuels as part of the California Fire Plan that utilizes the fuel characteristics listed above coupled with slope conditions to determine a fuel hazard rank.

The valley and lower foothills up to roughly 1000' elevation comprise the grass fuel type. This fuel type is comprised of fine dead grasses and leaf litter which is the main carrier of fire. Fires in this fuel type react dramatically to changes in weather; particularly low relative humidity and high wind. Grassland fires can be very difficult to control when under strong wind conditions, and often spread over a large area quickly threatening life and property.

The mid foothill and lower mountain areas generally between 1000' and 2500' elevation are dominated by brush. Fire in this fuel type can burn readily especially later in the summer as live fuel moistures drop to critical levels. Brush fuel unlike grass fuel does not react readily to changes in relative humidity. Brush fires can be difficult to control under normal summer burning conditions when their fuel moistures reach critical levels, and become very difficult to control on steep topography and/or when subject to strong winds.

The mountainous areas above the 2000' to 2500' elevation make up the timber fuel type. Timber fires burn readily especially if they occur in overstocked stands, stands with a lot of down dead material, and/or later in the summer as live fuel moistures drop. Timber fires can be difficult to control under normal summer burning conditions, but become very difficult to control on steep topography and or when subject to strong winds.

Weather

Butte County has a Mediterranean climate with cool, wet winters and hot dry summers. Precipitation is normally in the form of rain, ranging from approximately 20 to 80 inches per year. With snow in the higher elevations, the average annual high temperature for January is 55 degrees and for July is 96 degrees.

The predominate summer weather pattern includes high to very high temperatures, low humidity and light to moderate south winds associated with a high pressure weather gradients. Occasionally during the summer, dry weather fronts will approach northern California bringing increased wind speeds from the south on approach, then changing direction to north winds after passing the area.

Each year, especially in the Autumn months, north wind events bring high temperatures, very low humidity and strong winds. These north wind events usually produce *red flag warning* conditions and provide the highest potential for extreme fire behavior. With the fuels already at their driest moisture content, north winds can create a severe fire weather situation.

Wildland Urban Interface

The Wildland Urban Interface (WUI) defines the community development into the foothills and mountainous areas of California. The WUI describes those communities that are mixed in with grass, brush and timbered covered lands (wildland). These are areas where wildland fire once burned only vegetation but now burns homes as well. The WUI for Butte County consists of communities at risk as well as the area around the communities that pose a fire threat.

There are two types of WUI environments. The first is the true urban interface where development abruptly meets wildland. For Butte County the town of Paradise and the community of Paradise Pines are examples of high density housing meeting wildland.

The second WUI environment is referred to as the wildland urban intermix. Wildland urban intermix communities are rural, low density communities where homes are intermixed in wildland areas. For Butte County the communities of; Cohasset, Forest Ranch, Concow, Yankee Hill, Berry Creek and Forbestown are some of these examples. Wildland urban intermix communities are difficult to defend because they are sprawling communities over a large geographical area with wild fuels throughout. This profile makes access, structure protection, and fire control difficult as fire can freely run through the community.

Human impact on wildland areas has made it much more difficult to protect life and property during a wildland fire. This home construction has created a new fuel load within the wildland and shifted fire fighting tactics to life safety and structure protection.

Building Code

In January of 2008, new building codes were instituted for State Responsibility Area the reflected the technologies, new terms and new direction for construction. These codes are being instituted to maintain high levels of fire and life safety.

The California Building Commission has adopted these codes that included provisions for ignition resistant construction standards in the WUI. Updated 2008 fire hazard severity zones that will be used by building officials to determine appropriate construction material for new or remodeled buildings in the WUI. The California Building Code that references the building standards can be found in section 703A.1 to 705A.