

# **Silvicultural Evaluation and Prescription for the Grizzly Flat Fuel Break Project**

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## **Description of Current Stands**

### **Location**

The areas proposed for treatment are within 500 ft of the following roads Capps Crossing Road (09N30), Leoni Road (09N73), Caldor Road (09N45), North South Road (10N83) from Middle Dry Creek to NFS property boundary near Mormon Emigrant Trail.

### **Characteristics**

The project area ranges in elevation from 3800'-5400' contains all aspects, and has slopes that range from flat to 50% plus. This area is dominated by high site quality (2,365 acres of Region 5 site class 1). Approximately 2,400 acres in the project area were left in a deforested condition as a result of the Caldor Fire. This means at least 50% of the standing basal area was killed. Standing dead volume in the deforested areas is estimated to be 25,000 board feet/acre. The other approximate 478 acres in the project boundary burned at low to moderate severity and could be classified as mixed conifer stands with CWHR size class 4 and 5 with canopy closure in the moderate to dense classes.

### **Description of Objectives**

The purpose of the proposed action is to create a defensible fuel break within the Wildland Urban Intermix (WUI) Defense Zone in the vicinity of Grizzly Flat. The proposed action would remove surface and ladder fuels within the project area and maintain fuel level conditions with low fuel levels, reduced canopy closure, and fewer existing or emerging snags in order to create an area where wildfire behavior is significantly modified. The treatments proposed would reduce wildfire spread and intensity, reduce the risk of uncharacteristically severe wildfire on Federal land, and reduce the risk of further catastrophic wildfire for the Grizzly Flat community.

The long-term goal of this project is to establish and maintain a shaded fuel break. Reforestation (planting) will be required in order to provide shade, a critical component of an effective shaded fuel break due to the inhibiting effect shade has on ground level vegetation growth as well as the cooling effect shade has on fuel conditions in the event of a fire.

### **Summary of Scheduled Treatments-Prescription**

Cut and remove snags within 500 ft of roads listed above. Cut and remove hazard trees within 200 ft of roads using USFS, Region 5 Forest Health Protection Hazard Tree Guide. Also use USFS, Region 5 Forest Health Protection Marking Guidelines for Fire Killed Trees in California to cut and remove trees greater than 30" DBH that have a probability of mortality greater than

90% (60% if a tree is within 200 feet of a road). Live trees less than 30 inch DBH may be removed with a probability of mortality greater than 60%.

In areas of low and moderate burn severity (less than 50% basal area loss) remove all vegetation up to 18" DBH in order to remove ladder fuels and add spacing to canopy and overstory. Live Trees greater than 18" DBH and less than 30" DBH may be removed in order to achieve desired canopy cover. Selection should favor retention of the largest and healthiest surviving trees.

In California spotted owl PACs, in areas greater than 200 ft from roads, leave live trees (all sizes) with probability of mortality less than 90%. Leave live trees equal to or greater than 18" DBH. Leave 4-8 snags per acre in clumps. Select snags with higher structural integrity. Snags should be of the tallest/largest available. Wildlife Biologist will assist in selection, location, and distribution of retained snags. Remove all vegetation less than 10" DBH. Trees greater than 10" DBH and less than 18" DBH may be removed in order to achieve Desired Canopy Cover. Selection should favor retention of the largest and healthiest surviving trees.

Methods of tree removal will include mechanized logging: including feller bunchers and rubber-tired or track-mounted log skidders; cut-to-length systems that utilize an in-woods tree processor and log forwarder; conventional logging systems that employ timber fallers with chainsaws and rubber- or track-mounted log skidders.

Operation of equipment will be limited to areas where slopes are less than 35%. There could be isolated instances where slopes greater than 35% may require tree removal. These areas will be limited to tracking equipment no more than 200 feet horizontal distance. No skid trail creation will occur on slopes greater than 35%. Methods of tree removal will be aerial logging with a skyline system. In areas identified as suitable by the soil scientist and/or hydrologist, shovel logging or ground-based logging may be considered. Skyline machinery would operate from roads and lift/suspend logs for removal.

Mechanical mastication may be implemented throughout the project area as needed to remove ground level fuels such as smaller surviving trees, downed trees, stumps, and brush (such as manzanita). Mastication treatment intervals will take into account the rate of growth of new brush as well as reforestation efforts.

Prescribed burns (also known as controlled burns) may be implemented throughout the project area as needed in order to remove light ground level fuels and decrease resistance to control of the fuel break in the event of a fire incident in the future. Prescribed burn treatments that take place in areas that have been planted will maintain adequate stocking and limit tree mortality. See reforestation section for stocking guidelines. Post pre-commercial thinning, mortality from prescribed burning should not exceed 20% of the existing trees per acre.

## Reforestation

### Site Preparation

Areas will be cleared of existing surface fuels and or resprouting vegetation maximizing the amount of mineral soil accessible for planting of seedlings. Site preparation may be conducted using mechanical or prescribed fire methods.

### Planting

Seedlings will be planted at 12 foot spacing in order to achieve approximately 300 trees per acre (TPA). Interplanting would occur where stocking falls below 150 TPA.

Seedlings will include a mixture of conifer species including Ponderosa Pine, Sugar Pine, Douglas Fir, Incense Cedar, and White Fir.

### Post Planting Activities

One or more release treatments for survival of planted conifers using mechanical and or manual methods will occur. Initial live ground cover would be reduced below 20% for 2-3 years after initial planting. At 12 ft planting spacing radial grubbing would need to be done in at least a 6 ft radius.

Pre-commercial thinning will take place in 5-7 years after initial planting in order to achieve approximately 100-120 TPA.

Additional thinning and release treatments will take place in 10-12 years after initial planting in order to maintain tree stocking and live fuel levels at desired levels. Live fuel cover (shrubs) will be maintained below 50%.

Ongoing thinning and release treatments will take place in 20-25 years after initial planting in order to maintain canopy separation and canopy cover at 40%.

Thinning and release treatments may include manual (such as hand thinning/pruning) as well as mechanical methods (such as mastication).

## **Survival and Stocking**

The Pacific Southwest Region (R-5) of the Forest Service has developed specific stocking standards for successful reforestation (USDA, FS, R-5 FSH. 2409.26b, 1991). These standards describe the specified minimum and recommended numbers of trees per acre needed to establish a growing forest. For the mixed conifer forest type, the minimum stocking is 50% of a given area having at least 150 trees per acre. The recommended stocking is 50% of a given area having at least 200 trees per acre. These standards reflect the knowledge that not every seedling has the genetic potential to thrive on the micro-site they were planted in. It also requires that the seedlings be well-distributed and growing under conditions that will allow them to “persist into the future”.

It is anticipated that approximately 70% of the planted trees will survive. By planting 300 trees per acre it is anticipated that minimum stocking will be met. In addition, it is anticipated that by controlling competing vegetation through release treatments and stocking through pre-commercial thinning, trees will have adequate growth rates into the future. With the specified target stocking, trees will not be at risk for completion induced mortality until they are of approximately 18" DBH which is estimated to be at least 30 years.

## **Release**

The FEIS for Vegetation Management for Reforestation (USDA, 1989), pages 1-4 to 1-5 states:

*Within the forest environment, plants compete with each other for sunlight, soil moisture and nutrients, and space. In California forests, because of the long dry season during late spring, summer, and early fall, the competition is primarily for soil moisture. Root and shoot growth generally is limited by moisture availability within plant tissues, temperature, nutrients, and energy (gained through photosynthesis). The major growth period for roots and shoots usually occurs in the spring because all conditions for growth are met. Growth ceases during the dry season when levels of soil moisture are so low that the plant cannot take up enough moisture to continue growth. Excessive moisture stress in conifers, caused by the long dry period and reductions in available soil moisture by competing plants, is the most frequent cause of insufficient growth and mortality in small conifers. Thus control of competing vegetation is needed in the commercial timber lands of the Region [including the Eldorado National Forest].*

As a practical measure, a short-term silvicultural goal is to keep competing vegetation levels below twenty percent (total live ground cover) for a period of two to three years after planting. This objective is based on plantation studies in California which have shown that levels below 20-30 percent crown cover are necessary to maintain seedling survival and growth (McDonald and Fiddler, 1989).

By conducting release treatments in at least a 6 ft. radius around trees that are planted at 12 ft. spacing, enough area will be treated to keep competing vegetation levels below 20% crown cover. Due to fact that many shrub species in the area have the ability to re-sprout, it will be critical to completely dig up the root system during grubbing. Currently there is not an established shrub component in the stand, so this should be possible if done in a timely manner.

## **Summary of Environmental Variables (light, water, soil, insects etc.), other resource concerns, administrative constraints**

The primary factor that will limit success on achieving the objectives on this project is the timing of salvage logging and successful planting of conifers. Within one to three years the dead trees will still be of sound nature that will facilitate removal. After that time period trees will be deteriorated to the point where they may not hold together when felled and or skidded. In addition the economic viability of the wood products will be compromised. As each year passes since the fire, competing vegetation will become more established and be more difficult to control for reforestation and fuels management objectives.

## References

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