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Comments: In general, I favor the project. The fire return intervals show a challenging situation. I´m glad that the Forest Plan revisions will allow for lower cover than the current Forest Plan. That allows for more flexibility.

The huge challenge is how to open the canopy without a large increase in weeds. Invasive annual grasses are moving to higher elevations with climate change. Removing cover combined with fire can increase the annual grasses, particularly cheatgrass and can change fire spread rates. It can also spread weeds particularly the diversity of seeds that can grow at lower elevations.

A concern in areas with manzanita is that often there is very little growing under it when it is undisturbed because manzanita has ericaceous mycorrhizae or ectomycorhizae and most other plants require vesicular-arbuscular mychorrhizae (VAM). Often grasses only come in where the VAM has been introduced by equipment and vehicles. These grassy areas can spread fire more quickly.

These considerations and weed treatment are important to ensuring the project accomplishes its purpose and need and meets forest plan standards for mitigating weed spread.

More on weeds
The weeds within the Spring-Gap Stanislaus FERC boundary are being treated by PG&E. They may need to be considered in a different way than the rest of the weeds in the project. In addtion, barbed goatgrass and medusahead grass are being hand treated within the Donnells-Curtis FERC boundary.

Burning across volcanic openings has lead to an increased cover of cheatgrass on Strawberry ridge leading to more continuous and flashy fuels. Burning from the edge of the openings can prevent this and protect the sensitive plants as well.

Mastication is of particular concern because of the complete removal of canopy. Currently tocalote is in most or all of the areas that were previously masticated that are at lower elevation (Sampson?). And 92% of the known infestations of tocalote, and over 80% (by area) of the occurrences of Italian thistle, yellow starthistle, medusahead grass, blessed milkthistle, and Spanish broom are within the mapped mastication units in this projects.. This points to a very large risk of spread of weeds as apparently happened in the past. I suggest monitoring post mastication and treatment of any weeds that appear to be establishing and spreading.

Thinning units likewise have nearly 90% of the bull thistle known in the project. The landings and skid trails are also vulnerable to weeds as well as more open units.

Fuelbreaks are also a concern for weeds because they are maintained in a more open canopy over a longer period of time. Broom has spread so densely on a fuelbreak on private land on Yankee Hill Road that no longer functions as a fuelbreak. A large infestation of Spanish broom is in one of the conceptual fuelbreaks can could spread even more rapidly if that is opened up and the broom is not treated. Oblong spurge is in that same fuelbreak.

t is helpful to do pilot testing of specific treatments with specific weeds. Getting the right timing and the right method can make a huge difference in the effectiveness.

In addition, weeds change quickly. Unless surveys have been done in the last three years, the information is not reliable. The use of EDRR is laudable, but meaningless unless those that are working in the area can identify all

the species of weeds including the grasses or some provision is made for weed surveys at least along the roads. (Please see below for more information on weeds.)

Sensitive plants
I am also concerned about the sensitive plants. This project includes the bulk of the occurrences of three-bracted onion, Tuolumne fawnlily,and Tuolumne iris. I appreciate the use of handwork in areas of plant concern. I suggest also specifying that slash not be piled for burning on volcanic openings as has happened sometimes in the past.

In addition, Tuolumne fawnlily is affected by the spread of non-native blackberries. Please consider any effects this project may have on the spread of blackberries. If blackberries spread as much as they have on the other side of Highway 108 (which has had two major fires), many of the occurrences of the Tuolumne fawnlily could be shaded out. This is a viability concern. In addition, both Tuolumne fawnlily and Tuolumne iris have been affected by the spread of perennial sweetpea.

Other issues
It is unclear what is meant by conceptual fuelbreaks. Will they be proposed in this project? Some have been treated as fuelbreaks in the past such as at Cedar Ridge. There are other locations as well. I also do not understand spots of defensible space along streams.

Please also consider what would enable fire refugia to survive where they may be needed to provide for owls and other rare species if there is a fire. I am aware of Predicting late-successional fire refugia pre-dating European settlement in the Wenatchee mountains by Camp et al. 1997. There may be other references that are more recent and more local that have examined fire refugia and how to protect species that are negatively affected by fire..

Finally, in some of the areas with black oak and canyon live oak, I suggest prioritizing black oak over canyon live oak. It acts as a keystone species for many species with its large acorns and deciduous leaves. The canyon live oak could be sold as a fuelwood sale.

Weeds (additional)
It is important to have a priority list for the weed species. The following are my suggestions:

high priority (some may need regular treatment)
spotted knapweed- A listed weed, treat until gone. Hand pulling is effecting for small infestations. (This was not in the provided weed layer. It may have been entered in after the layer was pulled or it has not yet been put into NRIS).

Brooms (Scotch, French, Spanish)- Spanish broom is spreading extensively in one areas along Italian Bar Road. All of these species could spread a lot if areas are opened up without treating them first. The fuelbreak on private land along Yankee Hill is a dramatic example. They have been planted near houses, have been dumped as yard waste in the forest, and have been introduced before equipment cleaning was required. The abundance of these species on the Eldorado and Sierra National Forests shows that the Stanislaus is vulnerable to their spread. It is important to treat them before working in areas where they are growing.

Medusahead grass- this grass can spread in many habitats and can affect sensitive plants. The thatch that builds up can affect many other species. It is often found where cattle first arrive on the National Forest. Treat as much as possible. Much is in mastication areas where it can spread with treatment.

Barbed goatgrass- This is a B listed weed that has been spreading along county-maintained roads. The seeds

are fairly shortlived. Prevent further spread.

Rush skeletonweed, fennel, and bermudagrass are only known in the FERC boundary. They are all very uncommon on the Stanislaus NF.

Oblong spurge can also spread, persist and be difficult to control. There are only two known areas. One was treated at American Camp but not fully eradicated before that project ended. Like the brooms they will continue to spread if not treated.

Perennial sweetpea- priority along roads. People tend to spread it farther in those situations. If it is eliminated there and near subdivisions, the spread is likely to be less. This species can shade out two sensitive plants.

Medium priority
Italian thistle can spread quickly when conditions open up. It would be likely to spread greatly with mastication.

Yellow starthistle is of particular concern for deer. Much has been treated at American Camp.

Tocalote outside of range allotments does not spread rapidly and is treatable.

Blessed milk thistle is primarily at American Camp and FERC.

Perennial sweetpea- that is not along roads

Tree of Heaven- Best to cut and immediately stump treat.

Field Bindweed- another species that may be overlooked.

Armenian and cutleaf blackberries- a threat to Tuolumne fawnlily

Lower priority
Tocalote in range allotments is spread so rapidly that treatment is not effective.

Bull thistle is in many thinning units. With the decreased canopy cover, it may not eventually be shaded out.

Thank you for your care with this.