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Agriculture and Natural Resources



Briefing Paper
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Background for Steep Terrain Hazardous Fuels Demonstration – June 8-9, 2018

Subject: 2018 Steep Terrain Hazardous Fuels Demonstration as part of the Statewide Wood Energy Team Cooperative Agreement with Watershed Research and Training Center.

Key Issue: Mechanical fuels treatment with heavy equipment is often the most cost effective means of fuels management on steep terrain, but has been underutilized for a variety of reasons.

The Problem: Historically, fuels treatment activities in California have focused on four techniques: 1) Prescribed fire; 2) Livestock grazing; 3) Treatment with hand crews; and 4) Mechanical treatment with heavy equipment. Prescribed fire (PF) is typically the preferred and most cost effective technique to treat excessive fuels. However, in many cases, the existing fuel load has accumulated too much to safely treat with PF. Often, a pre-treatment step is needed to reduce standing and down fuels to acceptable levels before PF can be deployed. The use of PF is also constrained by the number of burn days approved by air quality management districts and the number of burn projects competing for approval in the airshed. While livestock grazing and hand crew deployment is relatively light on the land, the cost per acre is significant. In many cases, mechanical treatment with ground-based equipment is the next most cost effective technique. The costs of mechanical fuel treatment on steep terrain usually cannot be offset by utilization of the vegetation removed because it typically consists of small diameter trees and other non-commercial biomass that is very costly to collect and remove.

Much of the mechanical fuels treatment conducted in the California has only been focused on relatively accessible topography (typically under 35% slope) due to equipment limitations and concerns regarding potential soil impacts, equipment effectiveness and operator safety. As wildfires have become larger and more frequent, fire agencies and land managers have been seeking alternative fuels treatment methods on steep terrain in order to more effectively protect communities, watersheds and key infrastructure such as powerlines and communication facilities.

Solutions: In response to the growing need for fuel treatment on steep terrain, equipment manufacturers have improved mechanical vegetation treatment systems used to manipulate biomass onsite (mastication) in order to lessen the intensity of wildfire behavior. Improvements include development of equipment carriages and self-leveling cabs that facilitate safe operation on steep slopes (35% plus topography). To assist with increasing mechanical fuel treatment and biomass utilization, the USFS Pacific Southwest Region established a cooperative agreement in 2013 with the Watershed Research Training Center (WRTC) as part of the State and Private Forestry Program. Under this agreement, the WRTC facilitates monthly meetings for the CA Forest Biomass Working Group, the Statewide Wood Energy Team and the Tree Mortality Task Force Bioenergy Subgroup. All groups work to expand the use of wood as fuel for thermal and power energy systems throughout California through education, policy analysis, and technical assistance.

Past Studies: Mechanized Fuels treatment demonstrations were conducted in 2002 and 2015 at seven locations in Idaho, Washington, Oregon and California. Findings from these demos include cost of



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operating the equipment, soil impacts and fuels treatment effectiveness. TSS Consultants was the project manager for these studies. The results can be found at: <http://tssconsultants.com/reports-papers/>

Current Study: The USDA Forest Service and CAL FIRE, in cooperation with other partners, are sponsoring a steep terrain hazardous fuels treatment demonstration (demo) near Ice House Resort in Northern California. The demo will provide interested parties the opportunity to view conventional and innovative techniques and equipment that are capable of operating on steep terrain (>30% slope gradient). Equipment and techniques used for the demo will utilize mastication as the primary fuels treatment methodology. Mastication treatment is designed to manipulate and rearrange excess fuel onsite to mitigate wildfire behavior. Equipment will be monitored for effectiveness, efficiency, cost, and soil impacts. Once completed, results of the demo will be synthesized and disseminated. TSS Consultants, a contractor for WRTC, is the project manager for the 2018 demo.

2018 Demo - Dates and Location: The Steep Terrain demo will be conducted on Sierra Pacific Industries land near Ice House Resort in El Dorado County on June 8 (9am-5pm) and on June 9 (9am - 12pm).

Why Conduct the Demo: Wildfire mitigation is critical in California. Over the past five years (2013 – 2017), California has averaged approximately 4,800 fires with 202,786 acres impacted. 2017 was an exceptionally challenging year with 9,133 fires across 1,248,606 acres, almost 10,000 structures destroyed and 46 fatalities. The most destructive fire in California recorded history was the 2017 Tubbs Fire with 5,643 homes destroyed and 22 lives lost.

Objective: The primary objective of the steep terrain demo is to raise awareness about different hazardous fuel treatment alternatives for steep terrain, including conventional and innovative techniques and equipment. Expected outcomes include:

- Increase knowledge and ability of natural resource managers, governmental agencies and partners to assess, plan and budget for future fuels treatment projects.
- Provide opportunity for students to view fuels treatment operations firsthand.
- Existing and potential forest fuels treatment contractors can view equipment and techniques firsthand.

Online Registration: Link for more information and to register for the demo:
<http://ucanr.edu/steepdemo>

Project Partners: The 2018 Steep Terrain Hazardous Fuels Treatment Demo involves collaboration between many organizations including USDA Forest Service; CAL FIRE; Sierra Pacific Industries; The Nature Conservancy; The Watershed Research and Training Center; California Forestry Association; University of California Cooperative Extension; and Natural Resources Conservation Service.

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