MARIPOSA COUNTY REBUILDS

Oak Fire Rebuilding Workshop
October 2, 2022
WELCOME
• Mariposa County Development Services
• Alliance for Community Transformations
• CAL FIRE
• PG&E
• UCCE Fire Advisor
• Sierra Tel
• USDA-Natural Resource Conservation
• Dave Lawson Construction
• Allison Sierra
• Alpine Builders

• Homes Direct of Merced
• MJ Quality Builders
• Living Waters Well and Pump
• Tri County Pump and Well
• William Smith Plumbing
• Sierra Supply
• Hambleton Electric
• Keith Williams Excavation
• Mountain Landscaper
• Mariposa Storage Sheds

WORKSHOP ATTENDEES
INTRODUCTIONS
Residential Building Permit Applications and other Permit Resources are available on our website: 
www.mariposacounty.org/67/Building
Septic Systems Resources:
www.mariposacounty.org/378/Septic-SystemsLiquid-Waste

Water Well Systems Resources:
www.mariposacounty.org/382/Water-Wells
Post-Fire Erosion Control

Alison Deak
Fire Advisor
Mariposa, Madera, and Fresno Counties
Post-fire concerns

- Removal of hazard trees
- Loss of income from timber harvest
- Road damage
- Regeneration (returning property to a forested condition)
- Degradation of wildlife habitat
- Increased fire hazard from post-fire debris buildup and shrub regeneration
- Invasive species management
- Erosion control
Post-fire erosion

- Results from severe loss of vegetation cover and alteration of soil conditions
- Highest erosion rates during first year post-fire.
  - Decreasing with reestablishment of vegetation
- Potential erosion is dependent on burn severity, topography, soil type, soil moisture, and ground cover. The actual erosion response is dependent on rainfall intensity and amount.
- Types of erosion:
  - Hillslope erosion
  - Channel erosion
• **Purpose**: To reduce post-fire flooding and erosion caused by uncontrolled runoff on slopes that have become water repellent and denuded of vegetation.

• Decision on what treatments to implement based on costs, methods, and ecological impacts.

**Types of treatments:**

- **Hillslope treatments**
  - Create cover to absorb runoff
  - Act as a barrier to erosion

- **Channel treatments**
  - Stabilize channels or deflect large channel flows

- **Road treatments**
Survey the damage

• Assess the level of soil burn severity with special attention to hydrophobic (water-repellent) soils.

Assessing soil repellency
Drop one water droplet on soil surface and start timer. Time how long it takes for the droplet to penetrate the soil surface. Repeat across multiple sites and soil depths.

<table>
<thead>
<tr>
<th>Time (seconds)</th>
<th>Repellency Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;5</td>
<td>Wettable or non-water repellent</td>
</tr>
<tr>
<td>5-60</td>
<td>Slightly repellent</td>
</tr>
<tr>
<td>&gt; 1 minute</td>
<td>Strongly to extremely repellent</td>
</tr>
</tbody>
</table>

Adapted from Dekker & Ritsema (1994)
Assessment

Survey the damage

• Assess the level of soil burn severity with special attention to hydrophobic (water-repellent) soils.
Identify areas of concern and values at risk from erosion and/or flooding

Do you have:

- steep and long slopes with a high soil burn severity?
- infrastructure or values at risk from erosion, flooding, or debris flows?
- stream crossing or drainage features on your road that could become clogged?
Fire and erosion are natural processes.
Ash, leaf drop, downed trees, and remnant burned vegetation protect soil and slopes following wildfire.

Closing burned areas and allowing for natural recovery is appropriate in areas with:
- low soil burn severity
- patchy moderate to high burn severity
- on low slopes
- in areas that do not pose risk to values.

Doing nothing may be best.
NOT RECOMMENDED

• Largely ineffective
• Limits native species recovery and conifer regeneration
• May introduce invasive species
Hillslope treatments: Mulching

- Reduces erosion by
  - providing ground cover
  - increasing infiltration and soil moisture retention
  - shortening flow paths
  - trapping sediment
  - slowing development of concentrated flow
- Suitable for areas burned in moderate and high burn severity
## Comparison of hillslope treatments

<table>
<thead>
<tr>
<th></th>
<th>Wood shred mulch</th>
<th>Straw mulch</th>
<th>Seeding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effectiveness high intensity rainfall</td>
<td>High</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Effectiveness low intensity rainfall</td>
<td>High</td>
<td>High</td>
<td>Moderate-Low</td>
</tr>
<tr>
<td>Effectiveness on slopes (40-65%)</td>
<td>High</td>
<td>Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>Function 0-1 year</td>
<td>High</td>
<td>High-Moderate</td>
<td>Low-Very Low</td>
</tr>
<tr>
<td>Function 1-3 years</td>
<td>High</td>
<td>Moderate</td>
<td>Depends on establishment</td>
</tr>
<tr>
<td>Function 3+ years</td>
<td>High</td>
<td>Low</td>
<td>Depends on establishment</td>
</tr>
<tr>
<td>Resistance to wind displacement</td>
<td>High</td>
<td>Low</td>
<td>Moderate</td>
</tr>
<tr>
<td>Resistance to water displacement</td>
<td>High</td>
<td>Moderate</td>
<td>Very low pre-germination</td>
</tr>
<tr>
<td>Implementation speed</td>
<td>Slow</td>
<td>Fast-Moderate</td>
<td>Fast</td>
</tr>
<tr>
<td>Risk of invasive species</td>
<td>Very low</td>
<td>High-Moderate</td>
<td>Moderate</td>
</tr>
<tr>
<td>Impact on native species</td>
<td>Positive-Neutral</td>
<td>Positive-Neutral</td>
<td>Negative/Unknown</td>
</tr>
</tbody>
</table>

Robichaud, Ashmun & Sims (2010)
Erosion barriers

Contour log felling
• Reduces erosion by
  • shortening slope length
  • trapping sediment
• Suitable for sites with slopes between 25 and 60%
• Considerations:
  • Less effective during high-intensity and large amounts of rainfall
  • Success is based on how well the logs are installed

Fiber rolls/wattles
• Reduces erosion by
  • shortening slope length
  • trapping sediment
  • providing a seedbed for vegetative recovery
• Suitable for slopes < 40%
• Considerations
  • May contain noxious weeds
  • Less effective during high-intensity and large amounts of rainfall

Robichaud, Ashmun & Sims (2010)
Road treatments

• Inspect roads frequently
• Drainage features may need to be replaced, relocated, or resized
• Patrol roads during significant rain events to clean out clogged ditches and culverts.
• Common treatments include:
  • Installing rolling dips or water bars
  • Upgrading to larger culverts
  • Ditch clearing and armoring

NPS.gov
1. Pull in berms on sides of dozer line
2. Lop, fell, and scatter brush and trees on dozer line to increase ground cover.
3. If on a steep slope, construct water bars to divert water flow.
4. Monitor for invasives
Seek professionals that are certified, registered, and/or licensed before selecting and installing treatment measures.

Contact NRCS to get on a waiting list for an engineer to come out to assess your property and provide technical advice

(209) 966-3431
Thank you!

Please reach out if you have questions:
aldeak@ucanr.edu
(209) 966-2417
Oak Fire Rebuilding Workshop

Direct Point of Contact:
• Michael Gaffney
• Mobile 209-300-4501
• Michael.Gaffney@pge.com

For more information:
• Call us at 1-800-743-5000
• Email us at rebuild@pge.com
• Visit www.pge.com/wildfirerecovery
SIERRA TEL

- Telecommunications Information (Phone & Internet)
- Michael Montgomery
- Operations Manager
John Grimes
Natural Resources Specialist
Topic Title: Post-Fire Recovery and Conservation
Public Resources Code 4290

- Darrin McCully
- Fire Captain Specialist
- CAL FIRE Madera-Mariposa-Merced Unit
REBUILDING YOUR PROPERTY

1. Complete Debris Removal
2. Apply for a Residential Building Permit
3. Receive Permit and/or Instructions for Other Specific Requirements
4. Connect with a Contractor, PG&E and Other Utility Services
5. Begin Construction and Inspections
County Personnel, Contractors and Utility Companies will be available for individual and property-specific questions during the open workshop immediately following this presentation.

THANK YOU!