Six Rivers National Forest

Burned Area Emergency Response (BAER)

Post-Fire BAER Assessment

BAER Information: (415) 881-1871

MAD RIVER COMPLEX POST-FIRE BAER ASSESSMENT REPORT SUMMARY

FS-2500-8 Burned-Area Report: Watershed Analysis, Condition, and Response

A Forest Service Burned-Area Report, which included the BAER assessment team's analysis of the burned areas within Mad River Complex and portions of the Humboldt Complex and recommended emergency treatments, was recently submitted to the Pacific Southwest Region (Region 5) Regional Forester by the Forest Supervisors for the Six Rivers and Shasta-Trinity National Forests:

- ✓ 18 sub-watersheds (HUC 7) were analyzed and modeled to compare pre-fire conditions to post-fire predicted response.
- ✓ There are 73 miles of intermittent streams and 48 miles of perennial streams within the burned areas.
- ✓ There are 112 miles of National Forest System roads and 21 miles of trails within the burned area.
- ✓ There are 1,261 acres of high soil burn severity (3%), 6,441 acres of moderate soil burn severity (17%), and 31,472 acres of low/unburned soil burn severity (90%).
- ✓ There are 12,353 acres of strong water repellent soil, 10,685 acres of medium water repellent soil, and 9,676 acres of weak water repellent soil.
- ✓ There are 14,786 acres of a high hazard rating for soil erosion, 15,588 acres of a moderate rating for soil erosion, and 2,649 acres of a low hazard rating for soil erosion.

Based on historic precipitation patterns, it can be expected that thunderstorms and winter rains have a high probability of occurring within the burned areas of the Six Rivers and Shasta-Trinity National Forests. The risk of flooding and soil erosion events will increase as a result of the fire, creating hazardous conditions within and downstream of the burned areas. These hazardous conditions may be worsened in the case of a rain-on-snow event, where long-duration rainstorms falling on a shallow snowpack can produce very high peak flows.

Erosion response is heavily influenced by soil burn severity and hill slope. Before the fires, most of the forested areas had protective ground cover in the form of litter, duff, or ground vegetation. In high and moderate soil burn severity areas, it is highly likely that increased rates of soil erosion and sediment delivery to stream channels will occur, in the 1st, 2nd, and possible into the 3rd year following the fire, particularly on steep slopes.

Recovery of high burn severity areas is slower because little or no vegetative ground cover remains, the potential for tree needle cast is low and soils may be impacted by fire effects.

Identified Values-at-Risk, Threats, and Emergency Conditions

Threats to the values-at-risk identified below result from the potential for increased water flows, loss of water control, increased sediment delivery, increased debris flows, the establishment of invasive weeds, falling hazard trees, and rock-fall exist. Emergency post-fire conditions for these identified values-at-risk were assessed by the BAER team.

Human Life and Safety - There is an imminent threat to human life and safety within and adjacent to the burned watersheds in the fire areas related to road/stream crossings, recreational cabins, dispersed and developed campgrounds, trailhead parking areas, hiking trails, and burned hazardous materials. Hazard trees pose a threat along road corridors, trails, within campgrounds, and recreation residences, dispersed recreation sites, and recreation facilities, and within the areas where BAER emergency treatments will be implemented.

Property – There is risk to roads and crossings throughout the burn area from increased run-off, associated sediment and debris, and debris flows. There are developed and dispersed recreation sites at the outflow of almost every watershed around the burned area. There is an increased risk of hazard trees in close proximity of dispersed camping areas and picnic sites within and adjacent to the burned area. There is a threat to Forest users from hazard trees, interior hot spots, flooding, and an increased potential of road and trail damage and flooding. There is an intermediate risk to surface water supply systems.

Roads – Roads and bridges throughout the burned watersheds are likely to be impacted by increased run-off, sediment, and debris flows derived from the burned areas. Culverts associated with these roads are at risk of plugging from debris carried down channels from burned watersheds. Culvert failures may increase the magnitude of flood, sediment, and erosion hazards in downstream communities and private lands and increase the potential of scouring of stream channels.

Trails - Emergency conditions exist to impact specific trails and sections of trail within the burned area. Life and safety of trail users is also at risk in some areas within the burn. Dispersed recreation areas along these trails are also at an increased safety risk.

Developed Recreation - The Mad River Complex area and areas downslope of the fire support a number of developed recreation sites and were assessed by the BAER team. Threats may include threat to human life and safety of the people using the Forest Service campgrounds, dispersed recreation sites, day use areas – including picnic areas, threats to Forest Service infrastructure, loss of access roads/driveways, loss of water quality due to the potential for increased storm water run-off velocity and volume, increased debris flows, and hazard trees.

Natural Resources: Ecosystem Stability and Vegetation Recovery – An emergency threat exists with post-fire invasive weed introduction and spread. There are many existing weed areas within the fire perimeter. There is the potential for the establishment of new and persistent weed populations due to the introduction and dispersal of invasive weeds into soils disturbed by fire suppression activities. It is highly likely that existing weed infestations along roadsides and fire suppression equipment staging areas will spread and expand into vulnerable burned areas. The ecological integrity of native plant communities in the burned area is at risk from these introduced invasive weeds and expanding invasive weed populations.

Natural Resources: Water Quality – An emergency threat exists to the water quality of streams due to increased sediment and soil erosion.

Natural Resources: Wildlife - An emergency condition exists for the Fairy shrimp's unique habitat due to increased sediment and ash flows into Vernal Pools located within the burned areas.

Cultural Resources - Emergency conditions exist for 2 historic properties with damage likely from flooding and impacts from increased overland flows and hillslope erosion.

Emergency Stabilization Treatments

Treatment Objectives

The BAER assessment team's emergency stabilization objectives for the burned areas are to mitigate and reduce the potential for increased soil erosion/sediment yield and water runoff over steep slopes to lessen the overall threats to 1) protect downstream life and property; 2) protect or minimize damage to Forest Service infrastructure and investments such as roads and trails; 3) protect or mitigate post-fire impacts to critical natural and cultural resources; 4) reduce the increased potential for the establishment of new noxious weed infestations; and 5) coordinate with interagency cooperators who assist communities, residences, domestic water suppliers and public utilities by implementing these treatments:

- Stabilize the transportation roads system and water drainage structures to prevent damage resulting from soil erosion and storm water run-off, public safety hazards, and improve the safety of forest visitors and employees.
- Storm-proof roads and trails and close portions of trails to the public as warranted until properly stabilized.
- Reduce the potential for impaired vegetative recovery and the introduction and spread of invasive weds by conducting detection surveys and rapid response eradication efforts where feasible.
- Stabilize hillslopes to minimize sediment and ash flow into vernal pools.
- Stabilize hillslopes and hazardous materials by redirecting and slowing water flows away from the areas of concern.
- Conduct storm patrols to monitor roads and drainage structures at risk, maintain and/or repairs any damage to road surfaces, remove sediment and debris from drainage and treatment structures within the burned areas.
- Mitigate hazard trees at BAER treatment locations to provide for worker safety,
- Install burned area warning signs to caution forest visitors recreating within the burned areas.
- Mitigate potential loss of heritage/cultural resources.
- Continue to work and coordinate with interagency cooperators, partners, and affected parties and stakeholders.
- Re-evaluate the need for temporary closures of camping areas, developed campgrounds and other recreational sites within and downstream of the burned area.

SPECIAL NOTE: *Everyone near and downstream from the **Mad River Complex** fire areas should remain alert and stay updated on weather conditions that may result in heavy rains over the burn scar. Flash flooding may occur quickly during heavy rain events. Current weather and emergency notifications can be found at the **National Weather Service, Eureka Office** (http://www.wrh.noaa.gov/eka/) website.*