

**San Bernardino National Forest**  
**Burned Area Emergency Response (BAER)**  
**Post-Fire BAER Assessment**



BAER Information: (415) 881-1871

**BLUE CUT POST-FIRE BAER ASSESSMENT REPORT SUMMARY**



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

The [Blue Cut Fire](#) began on August 18, 2016, in the Cajon Pass area along Old Cajon Boulevard. The fire quickly spotted across Cajon Creek and grew into a large wildland fire on land administered by the Front Country Ranger District on the [San Bernardino National Forest](#). Driven by years of draught, steep terrain, low relative humidity, and erratic winds, the fire spread quickly. The fire burned 28,980 acres on the San Bernardino National Forest (SBNF) land, 448 acres on [Bureau of Land Management](#) (BLM) land, and 6,811 acres on private lands.

The Blue Cut Fire burned within the watersheds of Lytle Creek, Lone Pine Canyon, Sheep Creek, and Cajon Creek in the San Gabriel Mountain Range near Devore, California. The area is characterized by steep, rocky mountainous canyons and ridges to broad, alluvial valleys of the San Gabriel Range.

The majority of the burned area was chaparral. The vegetation type includes a mix of species such as chamise and mixed chaparral, singleleaf pinyon woodland, Joshua tree woodland, canyon live oak woodland, desert transition scrub oak, alluvial scrub, cottonwood, willow, sycamore riparian scrub, and big cone douglas fir at the highest elevations.

This burned area was surveyed and assessed by an interagency BAER team comprised of Forest Service scientists and specialists. The BAER team evaluated the burned watersheds to determine post-fire conditions, values-at-risk such as human life and safety, property, and critical natural and cultural resources, emergency determination on those values and the potential for increased post-fire flooding, sediment flows, rock slides, and hazard trees. The team also recommended emergency stabilization treatments and actions to reduce the risks to those values.

The BAER assessment team's analysis of the burned area within the Blue Cut Fire and recommended emergency treatments are documented in a separate Forest Service (FS) Burned-Area Report. This report was submitted to the Pacific Southwest Region (Region 5) Regional Forester by the Forest Supervisor for the SBNF. The following is a summary of the BAER team's burned area analysis and report for the Blue Cut Fire:

- 9 sub-watersheds were analyzed and modeled to compare pre-fire conditions to post-fire predicted response: Upper Cajon Wash, Sheep Creek, Oro Grande Wash, North Fork Lytle Creek, Manzanita Wash, Lower Cajon Wash, Horse Canyon-Fremont Wash, Grass Valley Creek-West Fork Mojave River, Cajon Wash-Lytle Creek, and #180902080502.

- There are 63 miles of intermittent streams, 3 miles of perennial streams, and 3 miles of artificial stream channels.
- There are 70 miles of roads, 10 miles of motorized trails, and 19 miles of non-motorized trails.
- There are 19,782 (55%) acres with high and very high hazard ratings for soil erosion, 5,576 (15%) acres with moderate ratings for soil erosion, and 10,882 (30%) acres with low hazard ratings for soil erosion.
- There are about 18,710 (52%) acres of unburned/low soil burn severity, 15,678 (43%) acres of moderate soil burn severity and 1,852 (5%) acres of high soil burn severity.
- There are 9,211 acres of water repellent (hydrophobic) soils. Hydrophobic soil conditions were common within moderate and high burn severity areas and rare in the low burn severity areas.

Increased run-off due to hydrophobic conditions is reflected in the peak flow analysis of the watersheds. Hydrophobic layers usually take 6 months to 2 years to break down. Plant root development, soil microbial activity, and freeze-thaw cycling all contribute to the degradation of hydrophobic conditions.

The different soil burn severity categories reflect changes in soil properties and are a key element BAER specialists use to determine if post-fire threats exist. The identified soil burn severity levels become a baseline for resource specialists to monitor changes in soil hydrologic function and vegetative productivity as the burned watersheds recover.

High and moderate soil burn severity categories have evidence of severe soil heating and the consumption of organic material. Soil seedbank and water infiltration characteristics are also impacted in areas that have burned at high or moderate severity. Natural recovery is slower where little or no vegetative ground cover remains, and increased surface water runoff will result in increased soil erosion at these sites. The low to very low soil burn severity areas still have good surface soil structure, intact fine roots and organic matter, and should recover more quickly once revegetation begins and the soil cover is re-established.

In summary, field observations and modeling of the burned area support a general trend of increased flows, sedimentation, and erosion due to post-fire effects especially in sub-watersheds with the most burned acres, specifically moderate and high soil burn severity, high erosion hazard ratings, and the steepest slopes. Areas most at-risk from post-fire flooding, erosion, and sedimentation are within the burn area or within close proximity to the burn area, although some sites outside of the burn perimeter that are down slope or downstream of the burn area are still at-risk from post-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, debris flow occurrence, rock fall, and incursion of invasive weeds. Emergency post-fire conditions for the Blue Cut Fire were identified by the BAER team for the following on-forest values-at-risk:

- Human Life and Safety: Threats and risk for the general public to be impacted by rolling rocks, flooding, debris flows, landslides, hazard trees, and loss of ingress/egress access.

There are potential impacts to life and safety of Forest visitors and employees entering the burned area. Generally, increased risk occurs within or directly down-slope from high and moderate soil burn severity areas.

- **Property**: Threats to Forest Service system roads and trails, trailheads, developed campgrounds, picnic areas, dam, fire station, abandoned mines, developed springs/guzzlers, railroad tracks and infrastructure, utility pipelines, recreation residences, private recreation vehicle resort, and private land from the risk of increased water, sediment and debris flows, erosion, rock fall, hazard trees, tread destabilization, and hazardous waste.
- **Natural Resources**: Threats to water quality for domestic and agriculture uses, soil productivity, ecosystem stability and vegetation recovery from invasion of noxious weeds, and soil productivity from accelerated erosion, and critical or suitable occupied habitat for five federally listed endangered wildlife species: southwestern willow flycatcher, least Bell's vireo, arroyo toad, San Bernardino kangaroo rat, and desert tortoise.
- **Cultural/Heritage Resources**: Threats to sites susceptible to flooding, debris flows, increased erosion, and from increased access to the sites as a result of a denuded landscape that leads to a greater risk of looting, vandalism, and unauthorized off-highway vehicle (OHV) use.

## **Emergency Stabilization Treatments**

### **Treatment Objectives**

The BAER assessment team's emergency stabilization objectives for the burned areas are to protect, mitigate and reduce the potential for identified post-fire threats, including increased soil erosion/sediment yield and water run-off on steep slopes, for:

1. Human life, safety, and property within and downstream of the burned area;
2. Forest Service infrastructure and investments such as roads and trails;
3. Critical natural and cultural resources; and
4. Native and naturalized plant communities from new noxious weed infestations.

In addition to on-Forest efforts to reduce the threats to National Forest values and resources, the BAER team and the Forest will warn users of Forest Service roads and trails of hazards present in the burned area, and communicate and coordinate with other agencies such as the Bureau of Land Management, National Resource Conservation Service (NRCS), National Weather Service, State of California, and local counties to assist private entities and communities including private residents, railroad companies, and public utilities to achieve post-fire recovery objectives.

**The following post-fire emergency stabilizations measures and treatments have been approved:**

- Install barriers, such as rocks, gates, fencing, and vegetation to limit OHV damage to vulnerable and endangered wildlife species habitat, cultural resource sites, riparian areas, and native vegetation to assist in the enforcement of closure areas.

- Enhance a berm to protect the Mormon Rocks Fire Station building from expected minor flooding and sediment.
- Reduce the potential for impaired vegetative recovery, and the introduction and spread of invasive weeds by conducting early detection surveys and rapid response eradication of noxious weeds along areas disturbed by fire suppression activities, equipment concentration points, high and moderate soil burn severity areas near these fire suppression disturbed areas, and other high priority areas.
- Install sediment deflector to protect identified wildlife water structures from potential increased sediment flow and to protect the infrastructures from increased erosion and flooding.
- Remove a burned fiberglass guzzler.
- Fix and replace burned fencing around vertical ventilation abandoned mining shafts and replace burned signage.
- Storm-proof and stabilize approximately 11 miles of Forest Service System transportation roads with improved water drainage structures and features to prevent damage resulting from post-fire watershed conditions such as soil erosion and storm water run-off, public safety hazards to improve the safety of forest visitors and employees. Conduct storm patrols to monitor roads and drainage structures within the burned areas. Implement temporary road closures by means of gates and signage.
- Storm-proof and stabilize approximately 14 miles of burned area hiking trails with improved water drainage structures and features to prevent damage resulting from post-fire watershed conditions. Close trails, and/or install hazard warning signage along trails affected by the fire as part of an area closure. Conduct post-storm inspection of problem areas with emergency repairs if needed.
- Removal of up-channel loose woody debris and earthwork clearing to re-direct side and main channel away from the Keenbrook Dam earthen embankment.
- Install burned area warning signs to caution forest visitors recreating within the burned areas.
- Implement continuing temporary forest, road and trail closures with signage to protect public users of Forest Service System lands and recreation sites such as Baldy Mesa Staging Area, Lost Lake Day Use Area, Lytle Creek Picnic Area, and Lytle Creek Campground.
- Continue to communicate risks to the public, community groups, and cooperating agencies.
- Continue to work and coordinate with interagency cooperators, partners, and affected parties and stakeholders.
- Assist cooperators, including local, state, and federal agencies with the interpretation of BAER assessment findings to identify potential post-fire impacts to communities and residences, domestic water supplies, and public utilities (including hydropower facilities, power lines, county roads, and other infrastructure).

- Implement treatment effectiveness monitoring of closures, road and trail storm proofing treatments, mine closure treatment, and spring/guzzler deflection treatment to determine if these treatments are working and if/when maintenance or repairs are required.

**SPECIAL NOTE:** *Everyone near and downstream from the **Blue Cut Fire** burned area 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, San Diego (SW California)** (<http://www.wrh.noaa.gov/sqx/>) website.*

*Blue Cut Post-Fire BAER Assessment information is available at <http://inciweb.nwcg.gov/incident/4988/>.*

