Post Fire Burned Area Summary

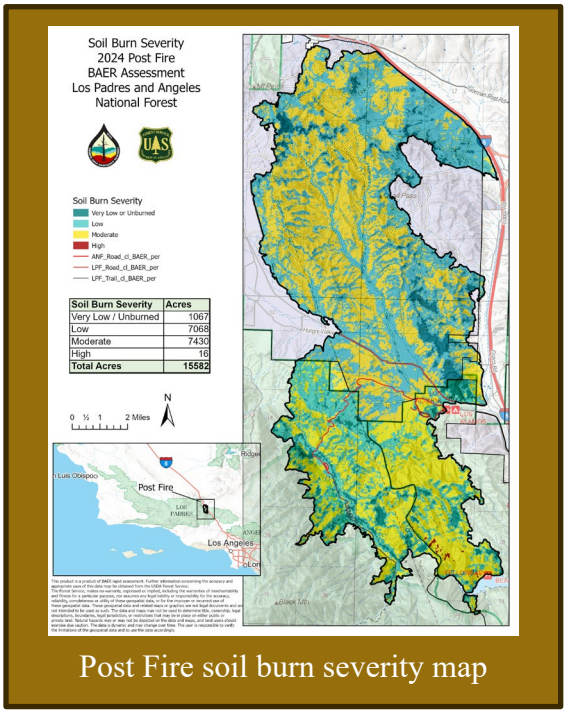
Burned Area Report

Fire Background

The Post Fire is in Los Angeles County and burned across different land ownership including two different National Forests: the Los Padres National Forest, Mount Pinos Ranger District and the Angeles National Forests, Los Angeles Gateway Ranger District, as well as on state and private lands. The fire started on June 15, 2024, (source under investigation) and was wind-driven. This assessment focuses on National Forest System (NFS) lands and Forest Service (FS) critical values as defined in the FS Burned Area Emergency Response (BAER) policy. The fire was reported as 100% contained on June 28, 2024, having burned across 15,582 acres. The fire resulted in the loss of multiple structures (of various sizes) at four locations, all of which are on NFS lands, and a temporary forest closure order.

Photo of burned landscape with Piru Creek in the forefront.

While many wildfires cause minimal damage to the land and pose few threats to the land or people downstream, some fires result in damage that requires special efforts to reduce impacts afterwards. The Burned Area Emergency Response (BAER) program is designed to identify and manage potential risks to resources on National Forest System (NFS) lands and reduce these threats through appropriate emergency measures to protect human life and safety, property, and critical natural or cultural resources. BAER is an emergency program for stabilization work that involves time critical activities to be completed before damaging events to meet program objectives.



Post Fire soil burn severity map

The Forest Service assembled a BAER team on July 1, 2024, for the Post Fire assessment. This team of experts in various resource disciplines began assessing the post-fire effects to critical values on Forest Service lands. Impacts to the soil are the primary indicator of potential post-fire changes in watershed response, as well as watershed recovery. The team developed soil burn severity (SBS) maps to document the degree to which the fires had changed soil properties. Using the SBS map, physical scientists can predict erosion potential, changes to runoff and flood flows, and increased geologic hazards. Field evaluations and modeling results are used to determine relative increases in post-fire risk to different critical values

and inform recommendations to address these increased risks.

Soils

Soil burn severity is not an assessment of vegetation consumption, but rather an integration of vegetation loss, changes in soil structure and infiltration capacity, remaining vegetation, duff, or ash, and soil color, all of which may indicate relative degrees of soil heating.

The final soil burn severity maps were developed with ESRI ArcGIS software using satellite-imagery-derived Burned Area Reflectance Classification (BARC) and field survey data. Field work included assessment of ash characteristics, ground cover, root condition, soil structure, soil water-repellency, and vegetation burn severity as described in the Field Guide for Mapping Post-fire Soil Burn Severity (Parsons et al. 2010). High burn severity is characterized by a complete consumption of organic material with the surface layers of the soil resulting in a change to single-grain structure.

Soil scientist and Hydrologist evaluating soil burn severity.

Fine roots are commonly charred or consumed 3-5 cm deep. The highest-severity areas often have a loose, dusty appearance, and no longer have any cohesion or soil strength. Generally, there will be less destruction of soil organic matter, roots, and structure in an area mapped as moderate compared to high. In areas mapped as moderate SBS, soil structure, roots, and litter layer may remain intact beneath a thin ash layer. Low soil burn severity results in very little alteration of soil organic matter and little or no change in soil structural stability.

Mapped and validated SBS for the burned area is High (<1%), Moderate (48%), Low (45%), and Very Low/Unburned (7%) see map on page 1. The more severe a fire's effects are on the soil, the more likely those soils will erode in subsequent rainstorms – especially in locations with steep slopes. Erosion after fires can cause tremendous damage to homes and other structures in the years after a fire. The Post Fire had very little high soil burn severity; therefore, there should be minimal long-term damage to soils that would slow vegetative recovery.

Erosion potential was modelled using ERMiT Batch which is a WEPP based erosion emphasizing burned environments and the erosion generated from a single storm model. Erosion rates are low within the Post Fire perimeter due primarily to low annual precipitation and coarse-textured soils. Because this was a wind driven event with limited residence time, the fire burned the chapparal canopy but left the soil structure and roots relatively intact. The structure and roots provide stability to reduce risk of erosion.

Geology

The team identified the geologic conditions and processes that have shaped and altered the watersheds and landscapes and assessed the impacts from the fire on those conditions and processes that could affect downstream critical values. Using the understanding of rock types and characteristics, geomorphic processes, and distribution of geologic hazards helps predict how the watersheds will respond to and be impacted by upcoming storms.

The burn area is in a tectonically complex

region near the juncture of the San Gabriel and San Andreas Faults. During the late Miocene, strata were deposited northeast of the San Gabriel Fault when a transtensional bend created a basin, allowing up to 14,000 meters of nonmarine sediment to accumulate. Most of the fire area is underlain by these clastic nonmarine sedimentary rocks, but minor occurrences of Cretaceous granite and Precambrian gneiss can be found southwest of the San Gabriel Fault.

Within the burned area of the Post Fire, some evidence of pre-fire mass wasting as shallow landslides, debris flows, and rock fall was observed throughout portions of the burn area. Based on our observations, it appears that most of the burn area is underlain by sedimentary rock units that tend to erode to sediments, ranging in size from fines to gravel size, lacking any surface larger rocky materials like boulders. Other geological units, mostly along the San Gabriel Fault (the southwest end of the burn area) present slopes and channels loaded with unsorted, unconsolidated materials comprised of rocks of all sizes, including boulders, cobbles, gravels, and fine sediments ready to be mobilized by flooding and/or debris flows.

In the areas along the San Gabriel Fault, based on the steep slopes, the soil burn severity, and the amounts of stored sediments in some drainages, mostly west and northwest of the Hardluck Campground, a short duration, high intensity storm (>24 mm/hr. has a moderate to high probability of initiating a debris flow. Most other channels in the burn scar have low to moderate probabilities of debris flow initiations under these same rainstorm conditions.

Hydrology

Primary watershed response is expected to include an initial flush of ash and burned materials, erosion in drainages and on steep slopes in the burned area, increased peak flows and sediment transport and deposition. Watershed response is dependent on the occurrence of rainstorms and will likely be greatest with initial storm events. Increased watershed response is most likely in areas with high to moderate soil burn severity, which for the Post Fire is mostly moderate severity. Disturbances will become less evident as vegetation is reestablished, providing ground cover that reduces erosion and increases surface roughness which slows flow accumulation and increases infiltration.

The rapid hydrologic assessment undertaken suggests that there will be increased runoff and sedimentation during post-fire storm events that are likely to be substantial enough to create impacts to NFS roads and drainage infrastructure in the fire area. This will likely lead to increased water quality concerns for municipal and domestic drinking water providers downstream of the fire. Threats to Human Life and Safety from flooding and sedimentation on Forest lands are of less concern because unusually high watershed response is not expected where the people would congregate. Visitors on Forest roads may encounter hazardous conditions if present during large storm events.

Photo of burned landscape upslope of Pyramid Lake.

Critical Values

The first critical value BAER teams assess is

always human life and safety on National Forest System (NFS) lands. During and after heavy rainstorms, Forest Service employees and visitors to NFS lands could be threatened by floodwaters and debris flows. In addition, users of roads within and downstream of the burned areas may be affected by road washouts during and after heavy rainstorms. Life and safety for dispersed water recreation users on Pyramid Lake could be affected by increases in floatable debris from the burn area. The National Forest will be working with the managing agency to set up temporary closures and warning signs for these areas. If needed, the National Weather Service can establish an early warning alert plan for areas that are potentially at risk from storm events.

In addition to specific treatments, the BAER team recommends the removal of "hazard trees" (fire-killed trees) in areas where crews will be working to implement identified treatments.

When fires burn structures, there can be risks from exposure to hazardous materials. The Post Fire burned three Forest Service facilities (Yellow Bar Day Use Area; modular building and associated storage sheds at the Los Alamos Fire Station; vault toilet at Hard Luck Campground) and a Special Use Permittee travel trailer/shed at the Los Alamos Fire Station housing area, all of which are located on NFS lands. The destruction and damage caused by the fire that burned buildings at the day use area, fire station and campground created hazardous material contamination that is exposed to the environment. A combination of closure, stabilization, and clean-up were recommended to address each of these sites.

Burned day use area where exposure to burned infrastructure could pose a threat to human life and safety.

Roads and Bridges

Roads in and downstream of burned areas are at risk of damage due to post-fire conditions. The most likely threat due to the fires is clogging of culverts, bridges, and other in-channel infrastructure from the higher levels of floatable debris (especially burned trees) in burned watersheds. Once blocked by debris, road drainage structures no longer function and the stream flows over the road, often causing considerable damage and limiting access. Various measures can reduce this risk, including protecting culvert inlets with debris racks, removing large floatable debris from channels upstream of structures before floods, and making heavy equipment available and readily mobilized during storm events to keep structures clear of debris.

Photo of burned catchment above a road where sediment and runoff from the burn area may overwhelm the culvert if not maintained.

In the Post Fire burn area, segments of NFS roads are below steep burned catchment outlets or

on depositional fans. Due to the soil and geology type and amplified by the fire, sediment from the steep slopes is likely to accumulate in these low-lying areas, plugging culverts.

Debris flows are less likely than debris-laden flood flows, but they pose a greater threat to roads when they do occur and are difficult to mitigate. The team did not identify any NFS roads at risk from debris flows.

Critical values addressed in the BAER report include Forest Service System roads and related drainage features. Treatments for the protection of these roads as well as human life and safety associated with use of these roads include inspection and response to maintain the functionality of drainage control structures and to keep the road clear.

Non-native plants can expand into disturbed areas such as dozerlines, replacing native vegetation.

Recreation

National Forest System recreation infrastructure includes campgrounds, trails, and day use areas, of which are all present within the Post Fire burn area. Like roads, recreation infrastructure can be damaged in post-fire storm events.

The team proposes drainage control treatments for one of the campgrounds, which includes clearing drainage ditches to manage runoff.

Botany

The Post Fire burned through areas with annual grasslands, lower montane mixed chaparral, ceanothus and chamise chaparral, riparian mixed hardwood, alluvial sagescrub/sagebrush, scrub oak chaparral, and low sagescrub (dominated by low shrubs and buckwheat). These vegetation communities support diverse endemic flora and fauna of the Gorman and southwest Tehachapi Mountains area.

Invasive plants adversely affect native plant communities through allelopathy (suppression of growth of a native plant by release of a toxin from a nearby invasive plant) and direct competition for water and resources. Over time, native plant diversity decreases as invasive plants expand, reducing habitat for native plant species and wildlife. Shifts from diverse native plant communities to non-native invasive plant dominance could alter future fire behavior, intensity, extent, and season of burning.

Current infestations are primarily located along roads, old dozer lines, campgrounds, and trails throughout the burned area, with interior areas being largely un-infested. However, the burned area creates conditions for invasive species to outcompete native plants, especially in riparian areas which were seen to harbor isolated populations of invasives.

The team recommends a treatment of Early Detection, Rapid Response (EDRR) to monitor for noxious weed infestation and expansion in areas disturbed due to mechanical suppression activity and burned areas prone to new noxious weed infestations. At-risk areas will be surveyed for weeds and mechanical and chemical treatments will be employed if weeds are present.

Cultural Resources

The most typical post-fire threats to cultural

sites are physical threats such as erosion or damage from (now dead) falling trees. In some cases, newly exposed artifacts are threatened by human damaging activities such as looting or vandalism. Cultural resources were evaluated by the team and treatments proposed as necessary to protect these values from post-fire threats.

Federally Listed Species - Wildlife and Fisheries

The Post Fire is within the current range of Arroyo toad and California condor. Threats include additional loss of habitat in the fire area due to blowdown, micro trash exposure, flooding, and insects and disease.

Critical habitat for Federally listed Arroyo toad occurs in select river drainages. Impacts to aquatic systems are directly related to the anticipated increases to runoff, erosion, and sedimentation in streams as well as indirectly related to expansion of invasive weeds replacing native habitat.

Post Fire burned through critical occupied habitat for Endangered Arroyo Toad.

Anticipated Vegetation Recovery

Post-fire recovery varies greatly based on climate, vegetation types and burn severity. Native vegetation recovery time may be between 3-8 years since most of the fire burned at moderate to low intensity with little damage to the native seedbank and underground resprouting bodies.

In areas threatened by invasive weed expansion, the Post Fire could take 10-20 years, or longer, depending on efficacy of invasive weed detection surveys and immediate eradication. The persistence of drought in the years following wildfires also delays the recovery time frame. Even with only a short period of time since fire containment, resprouting of trees and shrubs as well as emergence of forbs have been noted within the burned area.

Non-Forest Service Values

Since fire effects know no administrative boundaries, additional threats exist for assets not owned or managed by the Forest Service. Post-fire emergency response is a shared responsibility. There are several federal, state, and local agencies that have emergency response responsibilities or authorities in the post-fire environment. The BAER team and local unit BAER Coordinators have engaged with interagency partners to facilitate consideration of off-Forest values covered through other programs with the relevant responsible entities.

Conclusion

There are multiple phases of post-fire actions after a wildfire covering suppression repair through long-term recovery. BAER is the rapid assessment of burned watersheds by a BAER team to identify imminent post-wildfire threats to human life and safety, property, and critical natural or cultural resources on National Forest System lands and take immediate actions to implement emergency stabilization measures before the first major storms. The BAER team has identified imminent threats to critical values based on a rapid assessment of the area burned by the Post Fire. The assessment was conducted using the best available methods to analyze the potential for damage from post-fire threats, including flooding and debris flows. The findings provide the information needed to prepare and protect National Forest System critical values

against post-fire threats. As of July 12, the recommended BAER treatments in this report are not yet approved or funded. Because of the emergency nature of BAER, initial requests for funding of proposed BAER treatments are supposed to be submitted by the Forest Supervisor to the Regional Office within 7 days of total containment of the fire. The Regional Forester's approval authority for individual BAER projects is limited. Approval for BAER projects exceeding this limit is forwarded onto the Washington Office.

BAER treatments cannot prevent all the potential flooding or soil erosion impacts, especially after a wildfire-changed landscape. It is important for the public to stay informed and prepared for potentially dramatic increased run-off events. Many burned-area watersheds were already hydrologically responsive to rainfall and prone to erosion and sediment transport prior to the fire and will likely be even more responsive due to post-fire conditions. However, vegetation recovery is anticipated to be rapid with ground cover approaching pre-fire conditions within 3-8 years, which will attenuate any post-fire effects on watershed processes. The Forest Service will continue to provide information and participate in interagency efforts to address threats to public and private values resulting from the Post Fire. Information can be found on-line at https://inciweb.wildfire.gov/incident-information/caanf-post-burned-area-emergency-responsebaer.

The Forest Service will continue to work towards long-term recovery and restoration of the burned area in coordination with efforts to rebuild and restore the communities affected. A vegetation burn severity map, or mortality map, may be produced as a part of the recovery efforts to help other scientists, such as wildlife biologists, botanists, and silviculturists understand what to expect from this changed landscape for wildlife habitat, invasive weeds, timber salvage, and reforestation needs.

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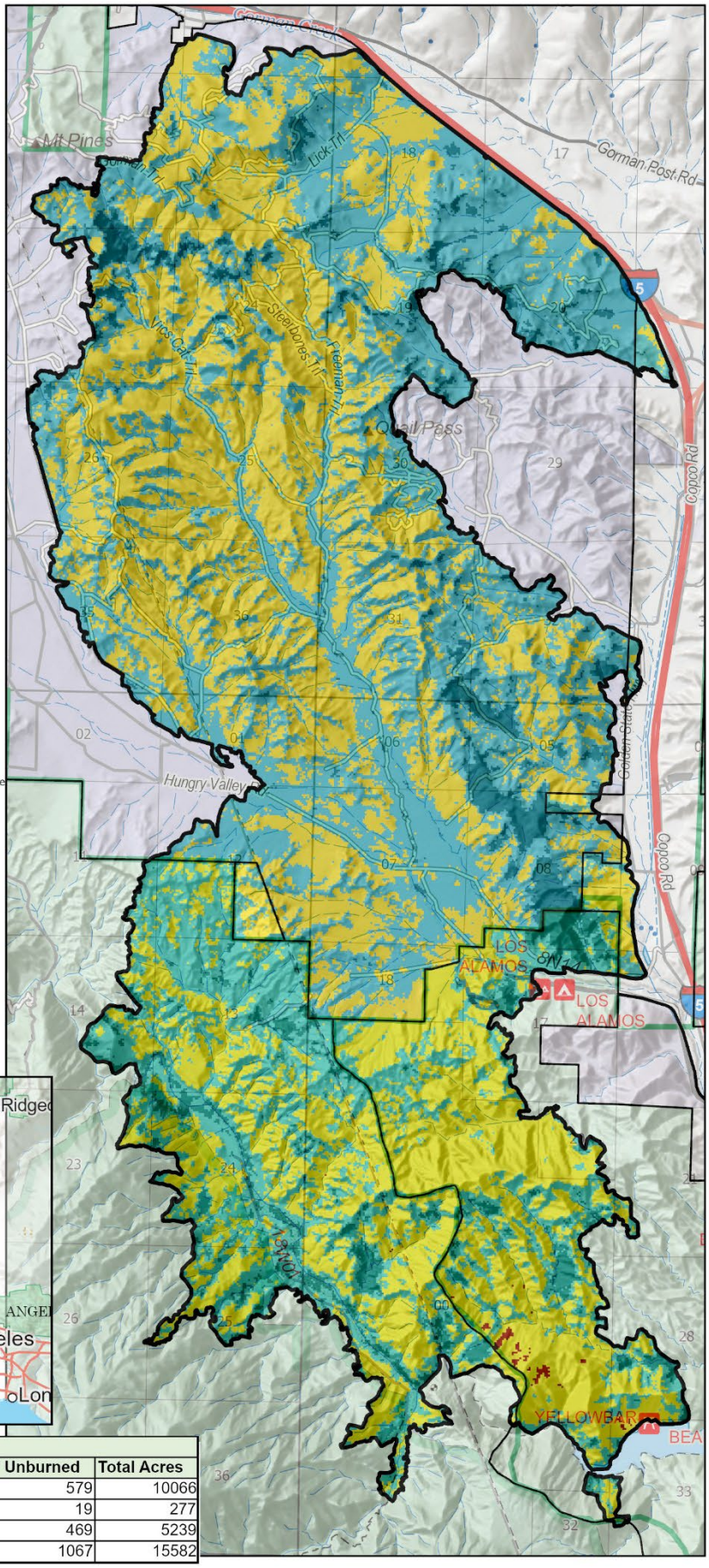
References:

Parson, Annette; Robichaud, Peter R.; Lewis, Sarah A.; Napper, Carolyn; Clark, Jess T. 2010. Field guide for mapping post-fire soil burn severity. Gen. Tech. Rep. RMRS-GTR-243. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 49 p. (https://www.fs.usda.gov/rm/pubs/rmrs_gtr243.pdf)

Soil Burn Severity
2024 Post Fire
BAER Assessment
Los Padres and Angeles
National Forest

Soil Burn Severity

- Very Low or Unburned
- Low
- Moderate
- High



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Soil Burn Severity					
Owner/Administrator	High	Low	Moderate	Very Low / Unburned	Total Acres
State		4859	4628	579	10066
Private		123	134	19	277
USFS	16	2087	2668	469	5239
Total Acres	16	7068	7430	1067	15582