USDA-FOREST SERVICE

FS-2500-8 (6/06)
Initial Request
Date of Report: August 5, 2013

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[X] 1. Funding request for estimated emergency stabilization funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[X] 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)

[ ] 2. Interim Report #____
[ ] Updating the initial funding request based on more accurate site data or design analysis
[ ] Status of accomplishments to date

[ ] 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Mountain Fire

B. Fire Number: CA-BDF-010080

C. State: CA

D. County: Riverside

E. Region: 05

F. Forest: San Bernardino National Forest

G. District: 53

H. Fire Incident Job Code: PNHQ0T

I. Date Fire Started: July 15, 2013

J. Date Fire Contained: July 30, 2013

K. Suppression Cost: $25.5 million

L. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): 51 miles of hand line, 21 miles of dozer line
2. Fireline seeded (miles): None
3. Other (identify): None

M. Watershed Number: HUC 6: 181002010202 (Upper Palm Canyon Wash), 181002010203 (Middle Palm Canyon Wash), 181002010204 (Tahquitz Creek), 181002010205 (Lower Palm Canyon Wash), 180702020101 (Upper South Fork San Jacinto River), 180702020102 (Strawberry Creek-San Jacinto River)

N. Total Acres Burned: 27,533
NFS Acres (15535) BLM (2444) State (893) BIA (5784) Private (2877)

O. Vegetation Types: Lower Montane Mixed Chaparral, Red Shank Chaparral, Mixed Conifer Forest, semi-desert chaparral, desert mixed shrub, Mixed Conifer Pine, Encelia Shrub, Upper montane chaparral, Canyon live oak, black oak, white-fir, riparian mixed hardwood.

P. Dominant Soils: Rock outcrop (**37%**); Lithic Xerorthents-Rock outcrop complex, 50 to 100 percent slopes (**19%**); Rock outcrop, 30 to 100 percent slopes (**13%**); Wapi-Pacifico families, dry-Rock outcrop complex, 15 to 30 percent slopes (**6%**)

Q. Geologic Types: Metasedimentary (Paleozoic) bedrock (including hornfels, schist, phyllites, gneiss, quartzite and marble), intrusive granitic bedrock (mainly granodiorites, tonalite and gabbro), Pleistocene fluvial deposits, and alluvial valley deposits.

R. Miles of Stream Channels by Order or Class: Perennial = 20 miles, Intermittent/Ephemeral = 89 miles, Ephemeral=unknown miles

S. Transportation System

Trails: 30 miles Roads: 5.9 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 3715 (14%) (Unburned), 9872 (36%) (low), 13568 (49%) (moderate), 365 (1%) (high)

B. Water-Repellent Soil (acres): 11,220 (**41%** of fire having moderate water repellency)

C. Soil Erosion Hazard Rating (acres):
2,676 (10%) (low) 6,747 (25%) (moderate) 7,632 (28%) (high) 10,460 (38%) (very high)

D. Erosion Potential after fire: 9 tons/acre Erosion potential before fire: 1.4 tons/acre

E. Sediment Potential: 6 times normal (annual erosion rate cu.yds./sq.mi. : 1,200 – 13,000)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years):	3-10
B. Design Chance of Success, (percent):	75
C. Equivalent Design Recurrence Interval, (years):	10
D. Design Storm Duration, (hours):	1
E. Design Storm Magnitude, (inches):	1.21
F. Design Flow, (cubic feet / second/ square mile):	78
G. Estimated Reduction in Infiltration, (percent):	25
H. Adjusted Design Flow, (cfs per square mile):	164

PART V - SUMMARY OF ANALYSIS

Background

The Mountain Fire began on Monday, July 15, 2013, on private lands, but quickly spread onto land administered by the San Jacinto Ranger District, San Bernardino National Forest. Driven by steep terrain, low relative humidity, and wind, the fire spread quickly, burning into Agua Caliente Indian Reservation, California State Park Wilderness, and Bureau of Land Management jurisdictions. At its height, approximately 3,900 firefighters and support personnel were assigned to the fire, with a very steep ramp up of resources.

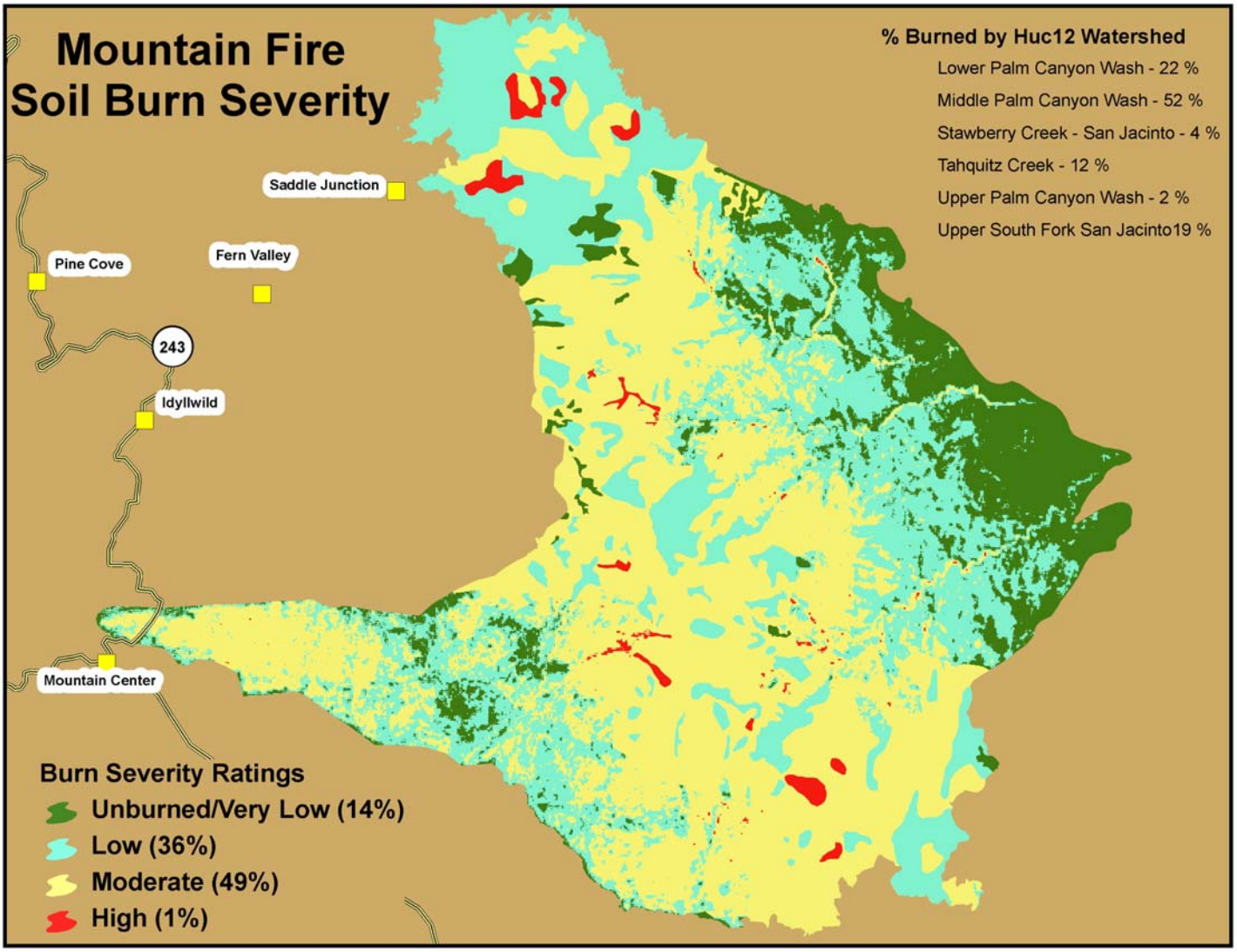
The Mountain Fire burned within watersheds of the South Fork San Jacinto River, Palm Canyon and Tahquitz Creek in the San Jacinto Mountain Range near Idyllwild, CA and Palm Springs, CA. The area is characterized by steep, rocky mountainous canyons and ridges in the higher elevations to broad, alluvial valleys on the southern areas of the burn area to desert alluvial fans along the northern perimeter and escarpment of the San Jacinto Range.

Since the fire started several rain events have occurred. The first rain event dropped 0.02 inches and occurred on July 20. The second rain event was measured at the Mt. San Jacinto RAWS station near the north end of the fire. This rain event occurred on July 21 and dropped approximately 2.36 inches, of which over 1.5 inches fell between 3 and 4 am. The same rain event dropped 1.03 inches near the southeastern edge of the fire as was measured at the Keenwild RAWS station. Most of the 1.03 inches fell between 12pm and 2 pm. This seems to indicate that the northern portion of the fire may have seen more rainfall and of higher intensity. These rain events led to debris flows, hyperconcentrated flows, and flooding in multiple watersheds of the burn area. These watershed responses are discussed in greater detail in the geology, hydrology, and soils reports.

Approximately 50% of the burn area burned at a high and moderate soil burn severity (see soil burn severity map below). The rest of the fire was either low or very low soil burn severity. It is very important to understand the difference between *fire intensity* and *burn severity* as discussed by fire behavior, fuels, or vegetation specialists, and *soil burn severity* as defined for watershed condition evaluation in BAER analyses. Fire intensity or burn severity as defined by fire, fuels, or vegetation specialists may consider such parameters as flame height, rate of spread, fuel loading, thermal potential, canopy consumption, tree mortality, etc. For BAER analysis, we are not mapping simply vegetation mortality or above-ground effects of the fire, but soil burn severity. Soil burn severity considers additional surface and below-ground factors that relate to soil hydrologic function, runoff and erosion potential, and vegetative recovery.

General trends: Oak/brush areas were moderate to high soil burn severity especially on east and north-facing slopes; South and west-facing buckbrush and manzanita areas had moderate soil burn severities; Areas in low lands and meadows where grass and small bushes were prevalent mostly experienced a low soil burn severity.

Mountain Fire Soil Burn Severity Map:



A. Describe Critical Values/Resources and Threats:

The risk matrix below, Exhibit 2 of Interim Directive No.: **2520-2010-1**, was used to evaluate the Risk Level for each value identified during the Assessment:

Probability of Damage or Loss	**Magnitude of Consequences**		
	Major	Moderate	Minor
	RISK		
Very Likely	**Very High**	**Very High**	**Low**
Likely	**Very High**	**High**	**Low**
Possible	**High**	**Intermediate**	**Low**
Unlikely	**Intermediate**	**Low**	**Very Low**

Values at Risk and Risk Matrix Table[1]

Risk Type	Value at Risk	Potential Threats	Ownership	Probability of Damage	Magnitude of Conseq	Risk	Forest Service Treatment Method
Life/ Property	Keenwild Fire Station/ Helibase	hazard trees	sbnf	Possible	moderate	intermediate	coordination with fire
Life	Keenwild Boneyard	hazmat (lead, tires, chemical tubs)	sbnf	Likely	moderate	high	silt fencing, cleanup
Life/ Property	Reservoir N. of K Flat	flooding	sbnf	unlikely	minor	very low	none
Life/ Property	Bonita Vista Community	plugged road culvert: flooding	private	Likely	minor	low	coordination with land owners/NRCS
Life/ Property	Pine Springs Ranch	rilling, hazmat	private	unlikely	minor	very low	coordination with land owner, hazmat cleanup
Life/ Property	Bonita Vista Ranch	debris flows, flooding, dam failure	private	very likely	major	very high	coordination with NRCS/OES
Life/ Property	Zen Center	debris flows, flooding	private	very likely	major	very high	coordination with NRCS/OES
Life/ Property	Zen Center	rock fall	private	unlikely	major	intermediate	coordination with land owner
Life/ Property	Apple Canyon Ranch Dam	debris flows, flooding, dam failure	private	Likely	moderate	high	coordination with NRCS/OES
Life/ Property	Apple Canyon Road	debris flows, flooding	private	Very likely	major	Very high	coordination with NRCS/OES
Life/ Property	Camp Ronald McDonald	flooding	private	unlikely	major	intermediate	coordination with camp
Life/ Property	Hurkey Creek County Park	flooding	private	unlikely	major	intermediate	coordination w/park
Life/ Property	Fobes Ranch	rock fall	private	unlikely	major	intermediate	coordination w/ NRCS

Life/ Property	Fobes Ranch	debris flows, flooding, hazard trees, hazmat	private	very likely	major	very high	coordination with NRCS/OES
Life/ Property	Pacific Crest Trail (PCT)	rilling, sedimentation, rock fall, debris flows, hazard trees	sbnf	very likely	major	very high	closure, signage, storm proofing, coordination with PCTA
Natural Resources	Vegetation Recovery	Invasive plants, biking, post fire grazing	sbnf	Likely	moderate	high	weed detection/rapid response, allotment closure, seeding
Natural Resources	Quino Checkerspot Habitat (endangered species)	Invasive plants, post fire grazing	sbnf	very likely	moderate	very high	allotment closure, weed treatments
Natural Resources	Mtn. Yellow-legged frog (endangered species)	debris flows, flooding, invasives	sbnf	very likely	moderate	very high	Salvage and captive holding
Natural Resources	SW willow flycatcher (endangered species)	debris flows, invasives	sbnf	unlikely	moderate	low	none
Natural Resources	Bald eagle	sedimentation	cdfw	unlikely	minor	very low	none
Natural Resources	Cartridge Spring (drinker)	hazmat, flooding, debris flows	sbnf	likely	moderate	high	wattles, hazmat
Life/water quality	Lake Hemet	sediment deposition	water district	unlikely	minor	very low	coordination with water district
Natural Resources	Soil productivity/ecosyst em recovery	unauthorized bike trails, invasives	sbnf	Possible	moderate	intermediate	area closure, signage
Life/ Property	Spitler Peak Trail (3E22)	rilling, sedimentation, rock fall, debris flows, hazard trees	sbnf	very likely	major	very high	closure, signage
Life/ Property	Caramba Trail (3E04)	rilling, sedimentation, rock fall, debris flows, hazard trees	sbnf	very likely	major	very high	closure, signage
Life/ Property	Willow Creek Trail (3E02)	rilling, sedimentation, rock fall, debris flows, hazard trees	sbnf	very likely	major	very high	closure, signage

Life/ Property	Fobes Trail (4E04)	rilling, sedimentation, rock fall, debris flows, hazard trees	sbnf	very likely	major	very high	closure, signage
Life/ Property	Cedar Trail (3E16)	rilling, sedimentation, rock fall, debris flows, hazard trees	sbnf	very likely	major	very high	closure, signage
Life/ Property	Skunk Cabbage (3E42)	hazard trees	sbnf	Possible	moderate	intermediate	closure, signage
Life/ Property	South Ridge Trail (3E08)	sedimentation, flooding	sbnf	Likely	moderate	high	closure, signage
Life/ Property	Cedar Springs Trail (4E17)	Rilling, rock fall, hazard trees, sedimentation	sbnf	Likely	moderate	high	closure, signage
Property/ Natural Resources	Garner Range Allotment	invasives	sbnf	very Likely	major	very high	Closure of subunits
Property/ Natural Resources	Wellman Range Allotment	invasives, debris flows	sbnf	very Likely	major	very high	Closure of subunits
Natural Resources	5S05 spur(unauthorized) to Johnson meadow	invasives, flooding, headcutting	sbnf	very likely	moderate	very high	barriers
Life/ Property	5S01	flooding, sedimentation	sbnf	very likely	moderate	very high	spillways
Life/ Property	5S05	flooding, sedimentation	sbnf/private	very likely	moderate	very high	culvert cleanout, overside drain, dips, 2 gates, closure signs
Life/ Property	5S02	flooding, sedimentation	sbnf	very likely	moderate	very high	gate at helibase end, storm proofing
Life/ Property	5S21	flooding, sedimentation	sbnf	very likely	moderate	very high	rolling dips, overside drains
Life/ Property	6S05 (Fobes)	debris flows, flooding	sbnf	very likely	moderate	very high	culverts, storm response, riser pipes, inlet on culvert, gate, signage
Life/ Property	Highway 243	rock fall	state	unlikely	major	intermediate	coordinate with Caltrans

Note: Only values at risk greater than intermediate will be addressed below. County and private property requires interagency coordination.

Threats to Life and Property

The combined factors of severely burned watersheds directly above private property, large volumes of loose, stored sediment in channels and on the steep slopes, moderate and high soil burn severity with water repellency, and the location of property in the floodplain directly below those watersheds indicate a high risk to life and property creating an emergency situation. Hikers, mountain bikers, and equestrians are also at risk from rock fall, hazard trees, debris flows and washouts while traveling along the Pacific Crest Trail and other forest trails in the burn area. Similarly, motor vehiclists and other travelers are also at a high risk from debris flows, rock fall, and flooding along Forest Service, Caltrans and County roads.

Zen Center

The Zen Center is located in the upper reach of Apple Canyon where 87 percent of the upper watershed burned. The July monsoon storm event clearly showed that the structures close to the drainage are subject to flooding and deposition of sediment. See geology report for debris flow hazard (O:\NFS\SanBernardino\Program\2500Watershed\2520WatershedProtectionMgmt\2500-BAER\sj\2013_Mountain\Mountain\SpecialistReports\GeologyReport).

Probability of Damage or Loss: Very Likely. The hydrologic post fire response is expected to be quite significant at the Zen Center. Table 1 shows that 86 percent of the upper Apple Canyon watershed burned and sediment yield may be 21Xs greater than background through the first winter. Models predict 7.5 ac-ft of sediment moving through (or depositing), along the channel the first winter. One acre-foot is equivalent to a football field with one foot depth of sediment. Post fire runoff for a 10 year storm event is expected to 1.8 Xs normal. See hydrology report for an estimate of peak flow increase (O:\NFS\SanBernardino\Program\2500Watershed\2520WatershedProtectionMgmt\2500-BAER\sj\2013_Mountain\Mountain\SpecialistReports\HydroReport).

Magnitude of Consequence: Major. The hydrologic post fire response is expected to be quite significant and there could be substantial damage to property and loss of life or injury.

Risk Level: Very High. The BAER team recommends the Zen Center land owners work directly with the NRCS and Riverside OES to develop evacuation plans, localized storm warnings, and potential point treatment to directly protect life and property at the Zen Center.

Bonita Vista Ranch & Apple Canyon Ranch

Two critical values in Apple Canyon below the Zen Center were assessed for risk of flooding, increased sedimentation, and property damage to houses and constructed dams. Constructed earthen dams at both the Apple Canyon Ranch (one dam) and at Bonita Vista Ranch (two dams) received significant sediment inputs from hyperconcentrated mudflows occurring in late July, 2013. The dam at Apple Canyon Ranch, which is upstream from Bonita Vista Ranch, was completely filled in with sediment and was overtopped by a mudflow. Additionally, water seepage was noted coming from the bottom of the dam. The existing condition of these dams, and the risk of future storms producing additional sediment delivery and high flows justifies an emergency determination at both locations.

Apple Canyon Ranch

Probability of Damage or Loss: Likely. Damage or loss of the dam at Apple Canyon Ranch is likely due to the modeling data indicating a high probability of additional flood events with high peak flows.

Magnitude of Consequences: Moderate. Property damage would include potential dam failure, and resulting impacts to structures that are approximately .5 miles downstream from this dam (at Bonita Vista Ranch).

Risk Level: High. The BAER team recommends that the land owner or NRCS has a geotechnical or other appropriate engineer familiar with earthen dams, assess the structural stability of the dam at Apple Canyon Ranch. The risk of dam failure is closely tied to the risk level the team assigned to Bonita Vista Ranch.

Bonita Vista Ranch

Probability of Damage or Loss: Very Likely. Flooding and hyperconcentrated flows (mudflows) resulting from increased erosion are very likely to damage private structures at Bonita Vista Ranch. Possible dam failure upstream at Apple Canyon Ranch would significantly increase the probability of property damage, and was considered in our rating of very likely.

Magnitude of Consequences: Major. The predicted size of runoff events and the amount of material that could be deposited at Bonita Vista Ranch could cause substantial property damage, and may threaten life or injury to humans.

Risk Level: Very High. The BAER team recommends private land owners work directly with the NRCS and Riverside OES to develop evacuation plans, localized storm warnings and potential point treatment to directly protect life and property at Bonita Vista Ranch.

Apple Canyon Road above Bonita Vista Ranch (pvt)

The Apple Canyon Road between Bonita Ranch and the Zen Center is a native surface road subject to flooding and loss of hydrologic function if the 2 culverts culverts and inside ditch plugged.

Probability of Damage or Loss: Very Likely. The hydrologic post fire response is expected to be quite significant above the Bonita Ranch and the Zen Center. Table 1 shows that 86 percent of the upper Apple Canyon watershed burned and sediment yield may be 21Xs background through the first winter. Post fire runoff for a 10 year storm event is expected to 1.8 Xs normal. See hydrology report for an estimate of peak flow increase.

Magnitude of Consequence: Major. Storm damage to the road may deny emergency access in or out of the private land area.

Risk Level: Very High. The BAER team recommends private land owners work directly with the NRCS and Riverside OES to develop evacuation plans and potential point treatment to protect access on Apple Canyon Road.

Fobes Ranch

The Fobes Ranch property sits at the base of the steep upper slopes of Fobes canyon on an alluvial fan, and receives runoff in a nearby stream channel from a ~430 acre moderately burned watershed. Approximately 90% of the steep hillslopes above Fobes Ranch were mapped with moderate soil burn severity, removing a significant portion of protective ground cover and increasing erosion potential. Moderately hydrophobic soils were noted during field surveys; in intense rain events the hydrophobicity is strong enough in Fobes Canyon to cause rill initiation, but not strong enough to completely prevent water infiltration. Thus, intense rain events that exceed the infiltration capacity of the soil are the most likely to cause excessive rill erosion, which could contribute to a damaging mudflow. Modeling predicts that erosion levels will remain elevated and will have the potential to contribute to damaging mudflows for at least 3 years. This predicted increase in runoff and sediment loading in Fobes Canyon, combined with the close proximity of buildings to the Fobes channel justifies and an emergency determination.

Probability of damage or loss: Very Likely. Flooding and hyperconcentrated flows (mudflows) resulting from increased erosion are very likely to damage private structures at Fobes Ranch.

Magnitude of consequences: Major. The predicted size of runoff events and the amount of material that could be deposited at Fobes ranch could cause substantial property damage, and may threaten life and safety of humans.

Risk Level: Very High. The BAER team recommends the landowner work with NRCS and/or Riverside OES to develop a point treatment on private land to directly protect life, safety, and property at Fobes Ranch. We believe treatments on private land in close proximity to structures at risk of flooding and sediment deposition would be more effective than a land treatment on Forest Service land. A discussion of why land treatments are not recommended in Fobes Canyon is given in the Soils Report. The BAER team also recommends the land owner works directly with the NRCS and OES to develop evacuation plans and localized storm warnings.

Highway 243

Probability of damage or loss: Unlikely. Usually, rock movement and dry ravel occur as the fire passes over the area and shortly afterwards. The absence of this evidence of movement adjacent to Highway 243 suggests little rockfall has occurred. This may change during future storm events. The movement of individual rocks into the road bed is the most likely rockfall event in the future. See Geology Report for further discussion.

Magnitude of consequences: Major. Rocks falling into the roadbed can easily cause human injury or mortality if unavoidable or unrecognized.

Risk Level: Intermediate. The BAER team recommends coordination with Caltrans to discuss potential rock fall hazards in the burn.

Pacific Crest, Willow, Spitler, Cedar Springs, Fobes, South Ridge, Caramba, Skunk Cabbage, Cedar Trails

Six trails in the San Jacinto Wilderness and three outside were affected by the fire. The Pacific Crest National Scenic Trail (PCT) stretches through the entire length of the burn for approximately 15 miles and is within the Santa Rosa and San Jacinto Mountains National Monument. The Forest Service system trails within the burn area are classified as Class 3, the designed use is for equestrian and managed use is for equestrian and hikers. The single rain event on July 20th showed damage and washouts along many miles of trails and inevitable weather events will further degrade tread surfaces. Standing dead trees and rock fall also pose a serious threat to people on the affected trails.

PCT, Willow, Spitler, Cedar, Fobes, Caramba Trails
Risk Assessment –Life and Trail

Probability of Damage or Loss: Very Likely. This determination is due to increased rock fall, sedimentation, hazard trees, erosion rates and debris flow potential already occurring post fire on the very steep slopes above the trail.

Magnitude of Consequence: Major. Though it is very unlikely hikers will be out along the trails during rain events and the closure of the area and trail re-route will be implemented, if someone is on any of the above trails there is a chance they could experience significant harm or mortality.

Risk Level: Very High. See treatment described below under Section H.

South Ridge, Cedar Springs Trails

Risk Assessment –Life and Trail

Probability of Damage or Loss: Likely. The areas surrounding these trails burned at a low to moderate soil severity, leaving some vegetation intact and the probability of damage from increased rock fall, sedimentation, hazard trees and erosion rates slightly less than the trails above.

Magnitude of Consequence: Moderate. Though it is very unlikely hikers will be out along the trails during rain events and the closure of the area and trail re-route will be implemented, if someone is on either of the trails there is a chance they could experience significant harm.

Risk Level: High. See treatment described below under Section H.

Skunk Cabbage Trail

Risk Assessment –Life and Trail

Probability of Damage or Loss: Possible. This trail predominately runs through flat terrain, making the probability of loss to the trail itself from sedimentation possible in few places.

Magnitude of Consequence: Moderate. Though it is very unlikely hikers will be out along the trails during rain events and the closure of the area and trail re-route will be implemented, if someone is on either of the trails there is a chance they could experience significant harm from hazard trees.

Risk Level: Intermediate. See treatment described below under Section H.

Forest Service Roads 5S01, 5S02, 5S05, 5S21, 6S05

It has been determined through the BAER Risk Assessment process that it is very likely that post burn conditions will increase runoff and movement of sediment into road drainage features, such as culvert inlets, overside drains, roadway dips and runouts along some road segments. The magnitude of this occurrence is considered Moderate and puts road drainage features at high risk for blockage and uncontrolled water to divert, resulting in the likelihood of damage to the invested road improvements, loss of road function and the denial of access.

Risk Assessment –Road and Infrastructure

Probability of Damage or Loss: Very Likely. As a result of the burned watersheds it was determined through the BAER Risk Assessment process that it's very likely that some drainage features at road crossing will be inadequate to handle post burn increased water flows and additional movement of sediment down slope and into these drainage features, causing water to divert over and down the roadways.

Magnitude of Consequence: Moderate. This occurrence has Moderate Consequences and is considered a high risk to life and safety of Forest visitors, permittes and personnel accessing some areas of the burn by the roads. There is a risk of flash flooding, movement of sediment down slope, rock and tree fall, and road prism wash outs.

Risk Level: High. See treatment described below under Section H.

Threats to Water Quality
One hazmat site, the Keenwild Station Boneyard, was found in the burn perimeter. The California Integrated Waste Management Board (CIWMB) has stated that ash and debris from residential structures consumed by wildfires may contain concentrated amounts of heavy metals, such as arsenic, barium, beryllium, copper, chromium, cadmium, lead and zinc. Further, according to the CIWMB, the occurrence of these metals in burned residential debris has been demonstrated in the "Assessment of Burned Debris Report for the Cedar and Paradise Fires, San Diego County, CA" dated December 2003. It is also known that asbestos remains are found in burned debris and poses a threat when disturbed and airborne. Common household products found in burned structures are usually present such as pesticides, fertilizers, paints and thinner, automobile products and other petroleum based products. There are no nearby surface water bodies that could be affected by hazmat release at the Keenwild Boneyard, however there is a moderate chance that soluble hazmat from burned refuse could release into the soil and to nearby areas by overland flow or through ephemeral stream channels nearby.

Keenwild Station Hazmat: This site is used for storage of infrequently used items and equipment and building materials. A large mobile home (abandoned, not used for living space) was burned and destroyed by the fire. Older equipment such as a trailers, tanks, and assorted building materials also exist. The fire burned much of the materials at the site and a threat of off-site soil contamination exists. A water tank trailer sustained burning that scorched a large amount of exterior paint (most likely lead) that has blistered and fallen to the soil around the trailer. A fifty-five gallon tank that was partially burned was found that contains an unknown liquid that may be hazmat. Three 5 gallon containers that are partially burned are at the site that have unknown contents, possibly waste oil. Finally, an unprotected stockpile of creosote treated 6x6 "railroad ties" exist at the site that could release toxic creosote resin, a known carcinogen, into the soil at the site, although the materials were unburned.

Keenwild Station Boneyard:
Risk Assessment – Life and Water Quality

> Probability of Damage or Loss: Likely. If the debris are not contained or removed from the site, contamination of soils could occur as a result of the first major storm events in the fire area.
>
> Magnitude of Consequence: Moderate. The regional boards and the water quality objectives established to protect state waters from pollutants or waste disposal must be followed. The Forest water quality plan includes recreational uses to protect water from pollutants.
>
> Risk Level: High. See treatment described below under Section H.

Threats to Threatened, Endangered and Sensitive Wildlife Species
MYLF Risk Assessment: Increased erosion and sedimentation to streams in the Tahquitz watershed pose a potential risk to Mountain Yellow-Legged Frog occupied habitat. ERMiT and AGWA modeling of two subwatersheds that flow to occupied MYLF habitat show significant increases in erosion ranging from 19 to 26x times background levels in the first year post-fire, and remain elevated above background for at least 3 years. Additionally, ERMiT modeling on two site-specific high burn severity slopes above known occupied locations of MYLF showed there is a 50% probability that >1150 tons of sediment would be delivered just above occupied sites. High burn severity areas in the Tahquitz watershed were mapped in continuous patches, likely in dense stands of trees, and had complete canopy removal. These areas are expected to contribute excess sediment for several years, and all high burn patches in this area flow directly or indirectly into MYLF habitat. Lastly, when the initial BARC map was acquired, the upper portion of Tahquitz watershed was obscured by clouds, so soil burn severity in the MYLF habitat was mapped by hand from a helicopter. It is likely that moderate burn is underrepresented in the final soil burn severity map because the dense overstory was still intact during the helicopter flight. Thus, total sedimentation to occupied MYLF habitat may be higher in year one (before complete needle cast occurs) than erosion models are predicting. Because of these factors, an emergency condition exists for the Mountain Yellow-Legged Frog.

Probability of Damage or Loss: Very Likely. This determination is due to the likelihood that the stream habitat will be filled with sediment and there will be no remaining suitable habitat for several years. In addition, the high likelihood that the post storm peak flows and sedimentation modeled will result in extirpation.

Magnitude of Consequence: Moderate. Sediment inputs to stream channels are not likely to cause irreversible damage to the habitat for MYLF because after revegetation occurs, sedimentation will return to natural levels. However the soil scientists, hydrologist, and aquatic biologist on the team agree that there will be significant impacts to individual endangered frogs from excess sedimentation, that most suitable pool habitat will fill with sediment, significantly negatively impacting the MYLF population in the Tahquitz watershed

Risk Level: Very High

SWWF Risk Assessment: It is our determination that an emergency does ***not*** exist for the southwestern willow flycatcher as a result of post-fire effects of the Mountain Fire. This is based on the low likelihood that debris flows at these habitats would result in long-term damage to critical nesting habitat.

Probability of Damage or Loss: Unlikely. This determination is due to low likelihood of significant debris flows at the historic habitat that would result in a loss or alteration of habitat for this species.

Magnitude of Consequence: Moderate. This determination is due to the fact that if debris flows did occur and this resulted in the removal of suitable nesting habitat this would result in damage to critical nesting resources for this species.

Risk Level: Low

QCB Risk Assessment: It is our determination that an emergency ***does*** exist for quino checkerspot butterfly as a result post-fire effects of the Mountain Fire. This determination is based on the likelihood that invasive plants will displace host and food plants and this would be further exacerbated by cattle grazing. These effects would be considered a long-term reduction in available suitable habitat.

Probability of Damage or Loss: Very Likely. This determination is based on the expectation that without treatment, non-native invasive plants will out-compete native QCB host and food plants. In addition, cattle grazing following a wildfire will further retard the regrowth of host and food plants.

Magnitude of Consequence: Moderate. This determination is a result of expected damage to QCB habitat resulting in considerable and long-term effects.

Risk Level: Very High

Threats to Ecosystem Stability/Soil Productivity

During field surveys, soil conditions were described, post-fire resource damage conditions were noted, and threats to soil productivity were determined. The magnitude and longevity of fire-related soil effects may be generally inferred from the soil burn severity rating. A low rating indicates short-term soil effects; these areas are generally not considered significant sediment source areas, and do not constitute a potential fire-caused emergency. A high rating indicates rather severe and long-term effects, both moderate and intermediate.

The overall soil burn severity in the Mountain Fire is 14% unburned/very low, 36% low, 49% moderate, and 1% high. Soils with low burn severity still have good surface structure, contain intact fine roots and organic matter, and should recover in the short-term once revegetation begins and the soil surface regains cover. The moderate to high classes have evidence of severe soil heating in isolated patches; these areas have a

significant loss of organic soil cover, and surficial char with partial destruction of structure, porosity, and roots. The most severely burned areas occurred on steep slopes at higher elevations and mostly under conifer forests or dense oak & riparian vegetation where pre-fire vegetation density and fuels accumulations were higher. In addition, if left uncontrolled grazing pressures in the Garner and Wellman allotments may delay the natural recovery of soil and vegetation conditions by increasing soil disturbance, and keeping ground cover at low levels.

The post-fire erosion risk was assessed using Rowe, Countryman and Storey (1949). Rowe, Countryman and Storey produced a classic study based on real data collected from many burned and unburned watersheds in Southern California. The Forest Service uses this model to estimate probable erosion rates from southern California watersheds as influenced by fire. Table 2below summarizes burned acres and erosion rates for "pourpoint" watersheds within the fire perimeter. The table also gives both post-fire erosion rates times normal or background(pre-fire). See hydrology report for a more detailed analysis of runoff discharge.

The model essentially erodes soil off the hillslopes into drainage ways, mobilizes sediment stored in the channels, and delivers the sediment to a point of interest or value. For example in Fobes Canyon at the Fire boundary, the model indicates that approximately 29 ac-ft of sediment may be delivered the first winter, over the course of one or more storms. At Fobes Ranch 5.6ac-ft of sediment may be delivered to a point immediately above the Ranch structures. The model does not specify the size of storm. It is a probable output based on expected rates over a long period of time.

Table 2: Hydrologic Response by watershed within the Mountain Fire (1st year)

Watershed	Low + unburned (ac)	Moderate + high (ac)	Fraction of watershed burned mod&high	Erosion x backgrd	Sediment Delivery to "pourpoint" (ac-ft)
FOBES at RANCH HOUSE	52	364	0.87	21.8	5.6
APPLE CYN at ZEN CENTER	74.8	463	0.86	21.5	7.1
APPLE CYN above BONITA VISTA	163.5	797	0.83	20.7	12.3
ANDREAS CYN at Forest Bdy	573.9	883	0.61	8.2	1.6
COLDWATER CREEK	1,647.60	501	0.23	6.5	8.7
FOBES CANYON	716	1,874	0.72	18.2	29
HERKEYCREEK above PARK	6,254.00	690	0.1	3.4	14.4
K FLAT above CAMP	689.1	206	0.23	6.5	3.6
MURRAY CYN	2,658.80	2,588	0.49	6.9	4.9
TARQUITZ CREEK	3,262.00	785	0.19	2.3	7
WILLOW CREEK	1,231.60	143	0.1	1.7	1.7
WEST PALM CYN	2,881.30	3,091	0.52	5.4	5.4
Total acres	20,205	12,385			
Percent of area	62%	38%			

Risk Assessment – Soil Productivity

Probability of Damage or Loss: Possible. This determination is due to the change in watershed response causing sheet and rill erosion of topsoil. ERMiT modeling shows that large, intense rain events in the first year after the fire could cause significant loss of soil from excessive erosion, but the team determined the likelihood of occurrence is <50%.
Magnitude of Consequence: Moderate. This determination is due to the expected change in watershed response causing erosion of topsoil in a fire-adapted ecosystem. Any reduction in soil productivity is not expected to be irreversible in this fire-adapted landscape.

Risk Level: Intermediate.

Threats to Vegetation Recovery

Increase in Noxious Weed Populations: An emergency exists with respect to vegetative recovery as a result of the threat of post-fire weed introduction and spread. The unknowing introduction and dispersal of invasive weeds into areas disturbed by fire suppression and rehabilitation has the potential to establish large and persistent weed populations. In addition, it is highly likely that existent weed infestations along roadsides will increase in the burn area due to their accelerated growth and reproduction and a release from competition with natives. These weed populations could affect the structure and habitat function of native plant communities within the burn area. It is expected that most native vegetation would recover if weed invasions are minimized. Approximately 21 miles of dozer line and 51 miles of handline were also constructed outside and within the burn perimeter. In addition to causing an increase in weed invasion, the disturbances caused by dozer/hand lines are expected to create accelerated erosion and soil compaction that may also inhibit the recovery of native plant populations. Approximately 18,397 acres of the Mountain Fire have burned previously within the past 32 years; 1,444 acres of which have been burned by multiple fires since 1994. If weed infestations are not controlled there is potential for these short fire return intervals to lead to vegetation type conversion over time.

Grazing: Portions of two grazing allotments (Garner and Wellman) were burned in the Mountain fire. The only portion of the Garner allotment that has recently (past 10 years) been utilized is the western end of the Johnson Meadow subunit. This portion is unburned and fenced. The rest of Johnson Meadow and May Valley did burn at a low to moderate soil burn severity and will recover if livestock continue to be excluded and weed eradication is completed. In the Wellman allotment a significant portion of the Summer Fobes TC subunit burned, eliminating pasture fencing that was in the form of dense vegetation. This Fobes subunit is also expected to recover if grazing is excluded for three years post fire and weed treatments are implemented. Grazing is known to increase invasive plant cover and dispersal, possibly to the point of native vegetation type conversion to predominantly non-native cover. This conversion is especially exacerbated post-fire when canopies are opened and invasives thrive in increased sunlight, nutrient and water availability. Grazing often not only threatens vegetation recovery post-fire by increasing weed spread and physical consumption of resprouting or germinating seedlings, but also by soil disturbance which leads to increased erosion rates and altered hydrologic functions.

Risk Assessment – Vegetation Recovery

Probability of Damage or Loss: Very Likely. This determination is due to the change in watershed response causing sheet and rill erosion of topsoil. There is also a significant amount of unauthorized mountain biking within the burn area and dozer lines that will be highly detrimental to vegetation recovery and encourage noxious weed invasion. In addition,

Magnitude of Consequence: Major. This determination is due to the high potential for vegetation type conversion to non-native annual grasslands over one third of the burn area, most especially dozer lines, roadsides, grazing allotments, and areas that have experienced frequent fire intervals.

Risk Level: Very High.

Threats to Cultural Resources
None

B. Emergency Treatment Objectives:

• Provide for Public Safety– Ensure communication of potential post fire values at risk has occurred. Reduce threat to life and safety by closing hazardous areas and roads until watershed stabilization has occurred and/or the threats/hazards have been removed. Re-evaluate the burned area before lifting the closures. Further reduce threat to life and safety by installing and maintaining educational/safety signing in hazardous areas and roads until watershed stabilization has occurred and/or the threats/hazards have been removed. Cleanup or stabilize hazardous material sites to prevent water and soil contamination.

• Limit Damage to Property- Private residences/businesses and roads within and downstream of the burn area are at greater risk from flash flooding and sedimentation after the fire. Clearing channel obstructions and increasing the road cross-drainage capacity will help mitigate the effects of accelerated storm flows and sedimentation to property. The treatment objective is to increase the awareness of the private property owners, Natural Resource Conservation Service (NRCS), Riverside OES, and other agencies of the potentially hazardous conditions resulting from the fire.

• Noxious Weeds - Reduce the potential for impaired vegetative recovery and introduction/spread of noxious weeds by conducting detection surveys/rapid response and preventing unauthorized OHV and mountain biking activity.

• Quino Checkerspot and Mtn. Yellow-legged frog- Reduce potential for habitat degradation and extirpation by conducting detection surveys/rapid response, preventing unauthorized OHV and mountain biking activity through closure, and salvage for the yellow-legged frog.

• Road and Trail Treatments – Objective is to improve road drainage to protect the road system. Reduce erosion from the road surface and sediment delivery to stream channels. Reduce the threat to life and safety for road users.

• Limit loss of soil productivity –Objective is to decrease rates of runoff water and erosion by conducting trail stormproofing, invasive species removal, area closure, and closure enforcement.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land **90** % Channel **0**% Roads/Trails **90** % Protection/Safety **90** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	90%	80%	N/A
Channel	N/A	N/A	N/A
Roads/Trails	90%	75%	70%
Protection/Safety	90%	80%	75%

E. Cost of No-Action (Including Loss): See attached Economic Analysis in Attachment A

F. Cost of Selected Alternative (Including Loss): See attached Economic Analysis in Attachment A

G. Skills Represented on Burned-Area Survey Team:

[X] Hydrology	[X] Soils	[x] Geology	[x] Range	[X] Recreation
[ ] Forestry	[X] Wildlife	[ ] Fire Mgmt.	[X] Engineering	[ ] Lands
[ ] Contracting	[ ] Ecology	[X] Botany	[X] Archaeology	[X] Hazmat
[x] Fisheries	[ ] Research	[ ] Landscape Arch	[X] GIS	

Team Leader: Katie VinZant: Angeles National Forest

Email: kvinzant@fs.fed.us Phone: (626) 383-1626 FAX: (626) 574-5207

Core Team

Eric Nicita (GIS)
Casey Shannon (Hazmat, Hydrologist)
Todd Ellsworth (Liason)
Nathan Sill (Wildlife trainee)
Rusty LeBlanc (Engineering)
Curtis Kvamme (Soils)
Alex Janicki (Soils)
Rob Taylor (BAER Coordinator/Hydrologist)
Glenn Sundstrom (Archaeologist)
Kim Boss (Wildlife Biologist)
Kerry Johnston (Botany)
Bill Wells (Hydrologist)
Andy Smith (Recreation)
Jerry DeGraff (Geologist)

H. **Treatment Narrative:**

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments:

Noxious Weed Detection and Rapid Response

Weed detection surveys and rapid response eradication treatments are to determine whether ground disturbing activities related to the Mountain Incident and the fire itself have resulted in new or the expansion of existing noxious weed infestations. With 21 miles of dozerline, 51 miles of handline, 109 miles of riparian corridors, 6 miles of road and 30 miles of trail in the Mountain fire it is expected that new and expanding weed infestations will proliferate in and along these vectors if left unchecked, eventually leading to vegetation type conversion. As stated under the vegetation recovery threat section above, it is also expected that the 1,444 acre area that has burned since 1994 will also face type conversion impacts given the rapid fire return interval that is much more frequent than historic fire events. In addition, given that more than half of the Mountain Fire is in the wilderness it is imperative to keep new infestations from establishing in the backcountry and to keep infestations on the road perimeters from expanding into dozerlines, riparian areas, and trails. Surveys and rapid response eradication treatments will begin in 2014 during the flowering periods of weed species. Because of differences in flowering times for all potential species, two visits may be required during the growing season. If timing is such that all the target species are detectable/treatable in one visit, the actual costs would be lower than displayed below. Completion of surveys in riparian areas, dozer lines, roads, staging areas, safety zones, Quino checkerspot butterfly habitat and known invasive and sensitive plant populations would be the first priority. The second survey priorities would be along handlines and drop points. Surveys of the general habitats in the burned area would be the lowest priority. Detailed weed detection survey guidelines

are attached in Appendix A. In addition to weed detection and rapid response treatments, native seeding is proposed for 10 acres in the burned portion of Johnson Meadow. This portion of the meadow is adjacent to known noxious weed infestations of bull thistle and other non-natives that threaten to type convert the burned meadow area. Rapid response weed treatment methods alone were determined to be ineffective for this area, as in addition to burning, the area also received suppression activity disturbance from vehicles driving off-road across the meadow, leading to accelerated weed dispersal and soil disturbance. In addition, the adjacent weed populations are known to be aggressive and rapid colonizers and are usually not controllable by hand removal methods (and herbicide use is not approved for the area). Seed will be collected locally within the adjacent unburned meadow habitat in order to maintain and preserve the genetic integrity of the burned area. Seed collecting guidelines and species list are attached in Appendix C and D of the Botany Report (O:\NFS\SanBernardino\Program\2500Watershed\2520WatershedProtectionMgmt\2500-BAER\sj\2013_Mountain\Mountain\SpecialistReports\BotanyReport) .

Allotment Closure and Drinker Hazmat Cleanup

The recommended treatment for vegetation recovery and soil productivity in the Garner and Wellman livestock allotments is temporary closure of the burned subunits for up to three years post-fire. In the Garner allotment this would mean closure of the Johnson Meadow and May Valley subunits and in Wellman closure of the Summer Fobes TC subunit, north of the Fobes Ranch Road and Wagonwheel Road junction. Treatment costs reflect time for a rangeland specialist and wildlife biologist to co-manage and enforce the closure of the allotments. In addition to the allotment closure treatment, hazmat in the form of burned spring development piping requires cleanup in the Summer Fobes TC subunit at the Fobes TC Trough. The treatment cost reflects removing approximately 400 feet of piping and approved disposal.

Mtn. Yellow-legged Frog Salvage

The recommended emergency action to benefit MYLF is a salvage effort in which individuals may be captured and removed from the wild and placed into captivity, or if habitat conditions outside the burn area within Tahquitz Creek are suitable for MYLF they could be translocated into those suitable habitats. On August 2, Jesse Bennett with the USFWS suggested that it might be preferable to move any frogs that are found into suitable habitats upstream of the burn area in Tahquitz Creek rather than put the frogs into captivity (J. Bennett, personal communication). The district office staff should coordinate with the regulatory agencies and USGS to determine whether it is preferable to move frogs into captivity or move them upstream of the burn area.

The Tahquitz Creek population is thought to be genetically similar to the populations located in Dark Canyon and Fuller Mill Creek (Backlin, personal communication) although this is based on only a few genetic samples and is not statistically significant. There is a captive population representative of the Fuller Mill Creek and Dark canyon populations that is currently being used to produce individuals for release into the wild. Since it is likely that the habitat will be unsuitable for at least a couple of years and there were only 6 known individuals in the population and the peak flow potential indicates that there is a real possibility of washing any individuals that survived the recent storm events downstream and they would not likely survive. Frogs would be held until such time that they can be re-released into the Tahquitz watershed from where they were captured. Biologists that have all the necessary permits from the CA Fish and Wildlife and the U.S. FWS will visit the known locations where frogs have been found. They will be collected and transported to a facility that is equipped to care for them. The agreements for this kind of work are already in place and would not require any new agreements to be established. We are recommending that District staff coordinate with the CA Fish and Wildlife, USGS and USFWS to determine how many visits will need to be made to collect individuals of any life stage for captive husbandry and breeding. These individuals will be held until the habitat is suitable for re-introduction. We anticipate that this will take 2-4 years but will depend on precipitation and will vary by site. Each year biologists from the Forest Service in coordination with the USFWS, USGS, CDFW will coordinate on whether there is consensus on whether the habitat is suitable for release.

Cartridge Springs Drinker Stabilization and Hazmat Cleanup

The loss of vegetation above the Cartridge Spring springbox and wildlife drinker has left these structures vulnerable to destruction by debris flow. This treatment will reduce erosion from reaching these structures. In addition, burnt plastic piping persists at the wildlife drinker. This treatment will also remove the hazardous materials.

Road and Trail Treatments:

Pacific Crest, Spitler, Willow, Fobes, Caramba, Laws, Skunk Cabbage, Cedar, South Ridge Trails Closure, PCT Reroute, Stormproofing and Closure Enforcement

For the purposes of public safety, these nine trails in the burn area should be closed and an appropriate reroute established for the PCT, ensuring the safety of hikers. Because of the high incidence of dry ravel coming onto the trail, actual repair and reopening is probably impractical for 2 to 3 years. Enforcement patrol should be conducted to ensure the public is not utilizing these trails and causing impacts to vegetation recovery, water quality and soil productivity. In addition, the PCT is in need of erosion stabilization efforts over approximately 1.5 miles of the total 15 miles burned. These stabilization and storm proofing treatments for retention (walls and switchbacks) and repaired drainage features (rolling dips, drains, etc.) will allow for facilitated water flow off of the trail and prevent the trail from becoming a negative erosion impact to surrounding vegetation recovery and overall soil productivity.

Road Treatments

Accepted and economical BAER road treatments to mitigate the risks to life and safety and facilitate the administrative closure on road segments of 5S02, 5S05, 5S21, and 6S05 include replacing existing and installing new standard traffic control gates at the beginning of main road entry points of the burn area, installation of vertical riser pipes, metal end sections, metal overside drains, rolling dips, drainage armor, storm proofing and storm inspection and response.

Protection/Safety Treatments:

Interagency Coordination
Interagency coordination started during the fire and continued throughout the BAER Assessment and is a critical component to the BAER process. Continuing this coordination by providing the BAER Assessment Report, specialist reports and attending meetings is anticipated. Public meetings are scheduled for the near future. Continued coordination is needed for the following values at risk:

- Zen Center – Apple Canyon
- Bonita Vista Ranch – Apple Canyon
- Fobes Ranch – Fobes Canyon.
- Riverside County OES/ NOAA- reverse 911 calls for significant precipitation events for private property owners listed above.
- We also anticipate the interagency coordinator will respond to media inquiries regarding the BAER report.

Human Life and Resource Protection (Fire Area and Trails Closure)
To support the Forest closure order and ensure safety for Forest visitors and protection to Forest resources during the recovery period, gates and closure/warning signs will be placed at trailheads, campgrounds, picnic areas, trails, and road locations adjacent and within the fire perimeter. Site specific location such as Forest roads need to be evaluated annually, to prioritize areas identified as possibly requiring extended closure to protect Federally listed species and associated habitats.

Forest Infrastructure: To protect life and property associated with the public use of the non-motorized hiking trails, picnic areas, and trailheads within and downslope/downstream of the Mountain Fire, the BAER Assessment Team recommends the temporary closure of the burn area to all recreational users. The closures will be accomplished by various means such as placement of signs, gate closures and informing the public at strategic locations of access points outside and within the fire perimeter which will effectively close off the burn area.

Keenwild Boneyard Hazmat Stabilization and Cleanup
Treatment includes installation of silt fencing around downslope perimeter of the burned mobile home until cleanup and disposal action can be conducted. Monitoring and maintenance of this fencing should be also conducted after large storm events and corrective measures taken. In addition, the hazmat containers should be removed and properly disposed of off-site.

Hazard Tree Removal for Treatment Implementation (Fire Area and Trails Closure/Stabilization)
This treatment will ensure threats to the life and safety of Forest Service personnel from hazard trees in the direct vicinity of BAER treatment sites have been properly mitigated. The objective of this treatment is to fell hazardous trees from areas along the PCT where trail stabilization treatments are to be implemented and near trailheads where people are likely to congregate. This treatment is also necessary to remove hazard tree threats having a high probability of damaging property or life in the Keenwild Station area.

PART VII - APPROVALS

1. _____ _____
Forest Supervisor (signature) Date

2. _____ _____
Regional Forester (signature) Date

Appendix A

NOXIOUS WEED DETECTION SURVEY PLAN

Fire Name: Mountain Fire Month/Year: August 2013
Author: Kerry Johnston
San Bernardino National Forest

A. Introduction

There were 21 miles of dozerline, 51 miles of handline and 5.9 miles of roads within the Mountain Fire burn area. Treatments proposed for these areas and riparian corridors within sensitive resource areas include weed detection surveys and noxious weed removal within year one. There will be no effects of BAER treatments on special status plant species, habitats, and no associated risk of noxious weed introduction or spread during these treatments. This report focuses on identifying botanical concerns associated with the fire itself, and presenting an assessment of whether there are any botanical or vegetation values at risk on NFS land that may require treatment. Noxious weeds are evaluated in the SBNF Land Management Plan Revision Environmental Impact Statement of 2006 (EIS). All species addressed in the EIS were considered in this analysis, and the list is incorporated herein by reference.

B. Background

Forest Service policy mandates the Forest to minimize the establishment of non-native invasive species to prevent unacceptable degradation of the burned area. It is necessary to conduct noxious weed detection surveys to evaluate the potential for spread from both existing populations and from the activities associated with fire suppression. Therefore, noxious and invasive weed detection surveys are proposed for the first year following the fires to verify the suspected infestations and determine the fires' potential impact on weed populations within the burned area. Invasive weed species wild oats (*Avena* sp.), ripgut brome (*Bromus diandrus*), cheatgrass (*Bromus tectorum*), redstem filaree (*Erodium cicutarium*), shortpod mustard (*Hirschfeldia incana*), tumble mustard (*Sisymbrium altissimum*), bull thistle (*Cirsium culgare*), blessed thistle (*Cnicus benedictus),* teasel (*Dipsacus fullonum*) tree of heaven (*Ailanthus altissimum*) salt cedar (*Tamarix ramosissima*) and teasel (*Dipsacus fullonum*), are known to occur within the vicinity of the burn area.

Several plant vectors such as Forest roads, recreational trails, high winds, and waterways occur within the fire area. A weed washing station was utilized during fire suppression activities; however this was not set up until several days into the incident. Therefore, initial attack equipment may have transported weed seeds into the fire vicinity. Roadsides, dozer lines, and hand lines will be most impacted by this threat.

C. Management Concerns

Noxious weed invasions may interfere with habitat recovery and ecosystem health within burned areas. In particular, noxious weeds may hinder the recovery of habitat due to aggressive colonization and reduction of water availability, quality and quantity for competing native vegetation. For instance, cheatgrass is most widespread in xeric sagebrush communities (FEIS, 2013). These communities are more likely to be converted to annual grasslands with increased fire frequency. Outside and adjacent to the burn area cheatgrass was observed along Bonita Vista, Apple Canyon Road and Fobes Canyon Rd., within the southern portion of the burn area including the access road to Johnson Meadow. Many of the ecosystems that cheatgrass has invaded are altered, and may not support the diversity of vegetation within the natural community. Cheatgrass may persist for many years on sites where native vegetation has been eliminated or severely reduced by grazing, cultivation, or fire (FEIS, 2013).

Areas of concern for invasive weed introduction within the fire area include both quino checker spot butterfly occupied habitat areas in Fobes Canyon and May Valley (refer to BAER Wildlife Technical Specialist Report for locations and details) since the primary host plants for this Federally threatened species are annual species (foothill plantain (*Plantago erecta),* woolly plantain *(Plantago patagonica),* white snapdragon (*Antirrhinum coulterianum*), bird's beak (*Cordylanthus rigidus*)) which are most likely to be impacted and potentially outcompeted by weeds for water and soil nutrients. Weed detection surveys and treatments will help improve habitat for the host plants of this species and is expected to be a viable treatment for this species in addition to proposed temporary grazing allotment closures to allow for vegetation recovery post-fire.

The May Valley/Bonita Vista area experiences heavy recreation and trail use. Adjacent and within the burn area are existing mapped populations of invasive species including poison hemlock (*Conium maculatum),* common teasel, salt cedar (Tamarix ramosissima), tree of heaven (*Ailanthus altissimum*) and cheat grass. Multiple Forest service sensitive species are also known to occur in this area including (*Allium marvinii*), Mojave tarweed (*Hemizonia mohavensis*) meadow foam (*Limnanthes alba* ssp. *parishii*), Munz's Mariposa lily (*Calochortus munzii*) skullcap (*Scutellaria bolanderi ssp. austromonatum*), pumice alpinegold (*Hulsea vestita* ssp. *Callicarpha*) and (California bedstraw (*Gallium californicum*) and would benefit from invasive weed inventory and treatments within year one post-fire.

Johnson Meadow is an area of concern for invasive weed introduction and spread. The east end of the meadow burned while the west end remained unburned (refer to attached map). There is an unclassified road that connects to a level 2 road to the west that was used during fire suppression. This road provides direct access to the east end of Johnson Meadow and may be an avenue for invasive weed introduction and illegal OHV use. This area is also suitable quino checkerspot butterfly habitat and numerous FSS plant populations (refer to attached map).

D. Objectives
To determine if the fire and associated ground disturbing activities have promoted the establishment and spread of noxious weeds to the extent that eradication efforts are necessary. Early detection dramatically increases the likelihood of successful treatment. If weeds are detected, a supplemental request for BAER funds will be made for eradication.

E. Parameters
Noxious weed presence, location, density, population size, and persistence.

F. Locations
In and along roads, dozerlines, handlines, helispots, drop points, incident camp, riparian areas, meadows and adjacent to known sensitive and invasive plant populations, Quino Checkerspot Butterfly (QCB) occupied habitat and Mountain Yellow-legged Frog (MYLF) critical habitat. Refer to the Weed Detection Survey map, Appendix C.

G. Weed Detection Survey Design and Methodology
Surveys will begin in 2014 during the flowering periods of weed species. Because of differences in flowering times for all potential species, two visits may be required during the growing season. Completion of inventory and treatments along roads, dozer lines, known sensitive and invasive plant populations will be the primary focus. The secondary survey priorities will be along meadows, riparian areas, handlines, drop points and helispots. Surveys of the general habitats in the burned area will be the lowest priority. All locations of weed species will be mapped, using the San Bernardino NF, "Invasive Weeds" lists (Appendix B). Surveys would be completed using the NRIS protocol available at the national website: http://fsweb.nris.fs.fed.us/products/TESP_Invasive_Species/documentation.shtml. Results would be entered into the NRIS database. Weed species listed in the San Bernardino NF "weed species to note" list (Appendix B) that are discovered in the burn area would be recorded in the plant species list for the entire burn, or mapped and recorded in NRIS if the population is restricted in size and distribution.

Surveying will include documentation and hand pulling new weed occurrences at the time of inspection, if practical. New weed occurrences will be pulled to root depth, placed in sealed plastic bags, and properly disposed.

Documentation of new infestations will include:
- Mapping perimeter of new infestations
- Filling out Weed Element Occurrence Form
- Treatment method
- Dates of treatment
- Incorporating data into local GIS spatial database
- Entering data into National Resource Information System (NRIS) database
- Entering data into FACTS database
- Evaluating success of treatment in subsequent inspections

H. Reporting
A Weed Detection Survey Report will be submitted to the regional and Forest BAER coordinators and San Jacinto District Ranger. If weed introduction and spread has occurred, an interim BAER report will be completed to request eradication funding. Reporting costs are included in figures below.

J. Follow-up Actions
Design and implement follow-up treatments as needed. Plan for integrated weed management and NEPA analysis using non-BAER funding.

Appendix B

BAER ROADS REPORT
Fire Name: Mountain Fire Month/Year: August 2013
Author: Russ LeBlanc
Stanislaus National Forest

I. Resource Condition Assessment

A. Resource Setting -Figure A-1 shows an overview and the burn severity For the Mountain Fire.

1. National Forest Service System Roads (NFSR) with in the burn perimeter are listed in INFRA as maintenance level – 2, 3, and 4. 5S01 to Keenwild Heliport is listed as ML-4. ML- 2 and 3 roads are single lane native surface some suitable for passenger car others high clearance vehicles with some roads closed. Road designs vary the majority of the road segments surveyed were designed and constructed both insloped and outsloped with outside berms rolling dips and associated lead offs and metal overside drains smaller diameter culverts are present with the largest being 48 inches in diameter.

2. There are approximately 6.0 miles of National Forest system roads and one unclassified within the burn perimeter. All of the NFSR are located on the San Bernardino National Forest and are under the jurisdiction of the Forest Service. This 6.0 miles of road was accessible and surveyed for purposes of this report. Apple Canyon Road is under the jurisdictions of Riverside County and Highways 74 and 243 are State Highways.

B. <u>Findings of the On-The-Ground Survey</u>

1. The Mountain Fire burned approximately 27,500 acres.
of this acreage, burn severity was determined to be 385 acres high, 13,568 acres moderate, 9,872 acres low and 3,715 acres unburned.

2. On the ground reconnaissance of roads within and adjacent too the fire perimeter were assessed by BAER team road engineers to determine potential risks to life and safety, property, natural and cultural resources and which roads held the highest potential for water diversion, and fire related flood damage.

3. The Mountain Fire Suppression Rehab and Repair have repaired road damage and restored drainage function to most roads impacted by the fire both in and outside the burn. These roads include 5S05, 5S21, and segments of 6S05.

4. Values at Risk: Life and Safety: As a result of the burned watersheds it was determined through the BAER Risk Assessment process that it's very likely that some drainage feature at road crossing will be inadequate to handle post burn increased water flows and additional movement of sediment down slope and into these drainage features, causing water to divert over and down the roadways. This occurrence has Moderate Consequences and is considered a high risk to life and safety of Forest visitors, permmittes and personnel accessing some areas of the burn by the roads. There is a risk of flash flooding, movement of sediment down slope, rock and tree fall, and road prism wash outs.

Property: It has been determined through the BAER Risk Assessment process that it is very likely that post burn conditions will increase runoff and movement
of sediment into road drainage features, such as culvert inlets, overside drains, roadway dips and runouts along some road segments. The magnitude of this occurrence is considered Moderate and puts road drainage features at high risk for blockage and uncontrolled water to divert, resulting in the likelihood of damage to the invested road improvements , loss of road function and the denial of access.

Resource Values / Water Quality: Herkey Creek and Fobes Canyon are two large drainages (watersheds) coming through and out of the burn area some road segments cross tributaries drainages up slope of these drainages. Through the BAER Risk Assessment process these tributary drainage crossing are very likely to blockage resulting in Moderate Consequences to water quality and soil productive values of these watersheds. There is a high likely hood of increased water flow and movement of sediment from the burned slopes above, when road drainage feature become blocked water and sediment backs up and diverts resulting in a increased risk of uncontrolled water sedimentation deliveries, effecting down stream resource values.

Condition of Values at Risk: On roads 5S02, 5S05, 5S21 and 6S05 , Moderate burned watersheds have created a risk to life and safety, road infrastructure and down stream resource values. because of the likelihood of increased run off over whelming roadway drainage features causing water to divert resulting in property damage, increasing sediment loads from roadway fill slope failures and loss of function of the road for emergency and administrative access.

II. Emergency Determination

A. Life and Safety— Function loss of drainage features loss of road function denial of access.
B. Water Quality and Soil Productivity— both on and off site from roads up slope of main drainages.
C. Loss of Control of Water— blocked or plugged drainage features causing water to divert and over top road crossing and erode fill slopes.

1. NFSR **5S01 Keenwild Heliport:** Infra listing for this road segment is ML-4 single lane BST (asphalt) the road is designed on a steep grade and is drained by rolling dips and metal overside drains, this road is not at risk of flooding or surface damage.

2. NFSR **5S02 Bonita Ridge TH., 5S05 Bonita Vista, and 5S21 May Valley:** Infra listing for these road segments is ML-2 High Clearance Vehicles. The roads are closed to public access year around. The drainage features on these road segments are very likely to be at risk of the failing due to increase water flow and the movement of sediment into culvert inlets, overside drains, rolling dips and runouts. There is a threat to the infrastructure of the road (property) when drainage feature fail and water diverts, road fills are likely to wash out, as a result there is a loss of function of the road and denial of access.

3. NFSR **6S05 Fobes Ranch:** Infra list this road as ML-3 suitable for passenger car, This road segment enters the burn area 2.6 miles in from Highway 74 and is the main access to the Fobes Canyon and the Fobes property. Drainage features on the road are very likely become blocked due to increased run off with water having the potential to divert resulting in damage to the road loss of function and denial of access.

D. Treatment to Mitigation the Risks

Life and Safety : Accepted and economical BAER road treatments to mitigate the risks to life and safety and facilitate the administrative closure on road segments of 5S02, 5S05, 5S21, and 6S05, replace existing and install new standard traffic control gates and BAER Information signs at the beginning of main road entry points of the burn area. Proposed BAER road treatments at drainage crossing that have the high likely hood blockage and water diverion will reduce the risk of loss of function of the road and assure emergency increase and ecrease.

Property: roads 5S01, 5S02, 5S05, 5S21, and 6S05, are very likely to be at risk from flooding and increased deliveries of sediment due to the anticipated post burn run off. This can result in roads drainage feature blockage, resulting in Moderate Consequences when culvert inlets, overside drains, roadway dips and runouts become blocked water can divert onto the road causing wash outs loss of function and denial of access. To mitigate the risk to invested road improvements and access, accepted and economical BAER road treatments include the installation vertical riser pipes, metal end sections, metal overside drains, rolling dips, drainage armor, storm proofing and storm inspection and response.

Resource Values / Water Quality: roads 5S05, 5S21, and 6S05 are located on and upslope of the Herkey Creek and Fobes Canyon drainages in the light to moderate burned watersheds. Road crossing on tributaries upslope of these larger drainages are very likely to receive increased water flow and sediment deliveries. If road drainage feature at these crossing become blocked and water is diverted onto the road there could be an unacceptable risk to down stream resource values. To mitigate this risk accepted and economical BAER road treatments include the Installation of vertical riser pipes, and metal end section at culvert inlets, metal overside drains, rolling dips, drainage armor, and storm proofing.

III. Discussion/Summary/Recommendations

A. Implement accepted BAER road treatments as described for roads 5S01, 5S02, 5S05, 5S21, and 6S05

B. Install gates and BAER Information Signs at main road intersections and entry points accessing the fire area.

C. Road 6S05 Fobes Ranch, inspect and monitor conditions of BAER treatments on this road between major storm events respond as needed to assure the function of these treatments and emergency road access.

D. Trails on National Forest lands within the burn permeter are not Included in this report, see Trails Specialist Report.

E. Discussions with Riverside County Transportation regarding the Apple Canyon road. County will storm proof the paved road segment before winter, and will develop a storm inspection and response plan to keep the road open and accessible before, during and after significant storms.

IV. Contacts and References

A. INFRA Travel Routes Inventory, quad maps.
B. BAER Team meetings and discussions.
C. Arturo Delgado District Ranger San Jacinto Ranger District
D. Mary Debelina Forest Engineer
E. Josh Direen Assistant Forest Engineer
F. Travis Mason Engineering / OHV
G. Ryan Righetti Riverside County Dept. of Transportation