USDA-FOREST SERVICE

FS-2500-8 (6/06)

Date of Report:

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: DEVORE

B. Fire Number: CA-BDF-016479

C. State: CA

D. County: SAN BERNARDINO

E. Region: 5

F. Forest: SAN BERNARDINO NATIONAL FOREST

G. District: FRONT COUNTRY

H. Fire Incident Job Code: P5HAF5

I. Date Fire Started: 11/05/2012

J. Date Fire Contained: 11/6/2012

K. Suppression Cost: ~$1,200,000.00

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 22,854.00 feet (handline); 6,903 feet (dozer)
2. Fireline seeded (miles): 0
3. Other (identify):

M. Watershed Number: HUC 6: 180702030305 (Cajon wash – Lytle Creek)

N. Total Acres Burned: 335 acres
NFS Acres(297) Other Federal ( ) State (0) Private (38)

O. Vegetation Types: mixed chaparral; Riversidian alluvial sage scrub; Rudearal; Non-native; riparian

P. Dominant Soils: CmF (Osito-Modesto families association, 30 to 50 percent slopes); AbD (Soboba-Hanford families association, 2 to 15 percent slopes)

Q. Geologic Types: Mc-Miocene nonmarine, Cenozoic sedimentary rocks; QPc-Plio/ pleistocene nonmarine/pliocene marine, Cenozoic sedimentary rocks. These rocks are heavily influenced by major and minor fault zones, often highly fractured, weathered and landslide prone

R. Miles of Stream Channels by Order or Class: 0.96 miles intermittant blue line stream

S. Transportation System

Trails: 0 miles Roads: 2.14 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres total): 5 ac (Low), 330 ac (Moderate), 0 ac (High). The majority of the vegetation, both shrubs and riparian, was burned off or left as blackened skeletons. The fire burned for such a short time and the high rock content of the soil prevented long-term heating. Soil structure and subsurface organics remain, indicating no high soil burn severity.

B. Water-Repellent Soil (acres): 335; the soils are naturally hydrophobic;

C. Soil Erosion Hazard Rating (acres):
0 (low) 8 (moderate) 327 (high)

D. Erosion Potential: 15-25 tons/acre

E. Sediment Potential: 1000 cubic yards / square mile (about 3.6 times normal)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 5-7

B. Design Chance of Success, (percent): 64
There is a 36% chance of having at least one Q5 storm in the first 2 years following the fire that could seriously reduce chance of success,

C. Equivalent Design Recurrence Interval, (years): 5

D. Design Storm Duration, (hours): 6.5

E. Design Storm Magnitude, (inches): 5.5

F. Design Flow, (cubic feet / second/ square mile): 150

G. Estimated Reduction in Infiltration, (percent): 25

H. Adjusted Design Flow, (cfs per square mile): 190

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Summary of fire burned area characteristics and watershed response

The Devore Fire burned approximately 335 acres with 297 acres on the San Bernardino National Forest, and 38 acres on non-Forest Service lands within the San Gabriel Mountains in San Bernardino County. The fire was within the Lower Cajon Wash sixth field watershed.

Firefighters quickly responded to the report of a wildfire in Cajon Pass just before 11:00 am on Monday, November 5, 2012. The Devore Fire started at 10:55 am and burned 335 acres north of the Kenwood Exit on Interstate 15. The rapidly spreading fire burnt in a south southeast direction along the east side of Interstate 15 freeway, pushed by the predicted Santa Ana winds blowing from the north. The winds blew burning embers across the freeway prompting fire and law enforcement officials to close Interstate 15 freeway to all traffic in both directions for several hours. During the course of the firefight, three residences in the Mathews Ranch (located east of Interstate 15) were evacuated, but no damage was reported at the ranch. The Devore fire was declared 100% contained on November 6, 2012 at 6:00pm.

There are several private in-holdings and Caltrans has an easement/right-of-way in association with Interstate-15 within the fire perimeter. A Forest BAER assessment team was mobilized because the District Ranger indicated that values at risk should be assessed, including private residences and access roads into residences, Interstate 15, and threatened, endangered and sensitive species habitat.

The BAER team has been coordinating with Caltrans and the NRCS with regard to the initial BAER assessment, findings, and recommendations.

The BAER Team Leader and Team Hydrologist found the overall soil burn severity to be almost exclusively moderate (98.5%) with a few unburned to low burned hill sides (1.5%). The density of vegetation and fuels accumulation caused most vegetation to be completely consumed, but the fire did not have the residence time on the ground to alter soil structure. In addition, the rock content had an average value of 35 to 40%. Many areas rated as moderate for soil burn severity will have increased coverage due to rock content. Accelerated hill slope erosion and watershed response is expected on slopes with moderate burn severity. 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. Water repellency is present throughout the fire area, including unburned areas, and was only moderately exacerbated by the fire. While a proportion of eroded soil will remain on the hill-slope, delivery of eroded soil, by dry ravel or water erosion, to stream channels is expected to occur. These eroded sediments are a primary source of material for debris flows and sediment laden stream flows.

Watershed and Geology and Soils

The Devore Fire occurred in the Cajon Pass area which bridges the Southern California basin to the south and the high desert environment to the north. The area is dominated by older slides, a broad alluvial wash, and numerous springs. A majority of the drainages only flow when rainfall is present, typically in the winter months.

The San Bernardino Mountains are some of the most tectonically active and rapidly uplifting mountains in the United States. The forces lifting the mountains to great heights are being counteracted by erosive forces tearing them down, such as gravity, moving water, wind, earthquakes and human activities. When the Devore Fire removed vegetative cover and burned surface soil structure, slopes and channels became even more unstable than normal. Groundwater which previously fed vegetation may now surface as seeps and springs on some slopes and in canyon bottoms, and may initiate slope movements in some areas, even before the arrival of winter rains.

Deep seated rotational landslides and earth flows are relatively few in these mountains, but could occur in deep saturated slopes, especially if shaken by an earthquake. Many earthquake faults crisscross and border these mountains, and quakes could significantly increase all types of slope movements when slopes are

saturated. Thin surficial slides and deeper translational debris slides will increase due to the destruction of soil structure and loss of root support.

Potentially, the most dramatic geologic hazard response to the fire could be the increase in destructive debris flows. Debris flows tend to bring side slope and channel deposits racing down channel bottoms in a slurry similar to the consistency of concrete, in masses from a few hundred cubic yards to hundreds of thousands of cubic yards of saturated material, destroying everything in their path until they finally lose their momentum or are caught in a debris catchment basin.

Soils are dominantly coarse textured, rocky, and occur on steep to very steep slopes, rendering them naturally erodible. Relatively recent tectonic uplifting and high geomorphic erosion rates are responsible for relatively low amounts of soil development. Pulse erosion following fire is a natural, long-term process in this region. Cover is critical for soil stabilization, and is lacking throughout most of the fire area.

Threats to Life, and Property

Threats to life, safety, and property exist from the increased potential for flooding that could affect the Caltrans culvert along Interstate 15. These increased flows have the potential to cause damage to Interstate 15 and associated infrastructure. Interstate 15 is one of the busiest freeways in southern California and serve thousands of commuters daily. A loss or shut down of this freeway could result in large economic impacts.

The culvert was already under repair at the time of the fire. As a result of the fire, the repairs were delayed, so an assessment was made of the risk that a damaging storm would prevent completion of the repairs. Failure to complete the required repairs puts the Interstate at risk that would justify a high value treatment, such as aerial hydromulching.

During the course of the BAER assessment, Caltrans completed the first step of the repair, grouting around the area of the culvert that had experienced "piping" and filling all the holes in the culvert. This repair returned the culvert to near its 1200 cfs capacity, the modeled 100-year return interval storm.

The residences within the Gem Ranch communities have some potential to be affected by increased flows as a result of the Devore Fire. Gem Ranch is directly below the outlet of the I-15 Caltrans culvert. Although the ranch was not affected by the fire itself, the potential increased flows does pose a threat to physical structures and residences that live in this area, especially if the Caltrans infrastructure fail. The Matthews Ranch community does not appear to be affected by the Devore Fire. The community was previously affected by the Ken Fire of 2011.

With a possible sediment yield of over 3.5 times the average natural condition, it is important to make those responsible for road and residential protection aware of potential issues.

Threats to water quality and quantity

Given that the Devore Fire only burned in an area of intermittent streams, the increase in sediment and ash from the burned area should not noticeably affect water quality.

Threats to Soil Productivity

The greatest threat to long-term soil productivity comes from the threat of increased potential for establishment of noxious weeds. Despite high rates of post-fire soil erosion (dry ravel, increased overland flow, and wind), burned area soils will support recovery of fire adapted vegetation in the burned area. Slope stability is likely to recover to pre-fire conditions within 3-5 years.

Threats to wildlife and botanical resources

An emergency exists with respect to the recovery and ecological sustainability of the native vegetation within the entire burned area as a result of invasive weed introduction and expansion and unauthorized off-road vehicle (OHV) use. While the burned area did not have a history of unauthorized OHV use, there is now potential for increased use to occur as a result of the loss of vegetative barriers. Additionally, areas of ground disturbance (i.e. dozer lines) and regular equipment or crew presence (i.e. staging areas, safety zones, drop points) during suppression operations created a risk of invasive weed introduction, establishment and proliferation. Loss of vegetative cover which has acted as a natural barrier substantially increases this threat. Invasive weed populations known prior to the Devore Fire event will increase in the burn area due to naturally accelerated growth rates, high reproduction capabilities, and release from competition with native species. These weed populations could affect the structure and function of native plant communities within the burn area, weaken watershed integrity and soil stability threaten native wildlife habitat. The open vegetation structure of the post-fire landscape is extremely vulnerable to unauthorized OHV use. Impacts associated with this activity, including soil disturbance, compaction, and weed introduction/spread further exacerbate the recovery of multiple resources already at risk post-fire. These resources at risk include general vegetation, rare plants, wildlife, and watershed values. It is expected that most native vegetation would recover over time if noxious weed competition and OHV use are minimized.

Suitable habitat existed within the Devore Fire area for numerous plant and wildlife species, including Management Indicator Species and several Forest Service Sensitive plant and wildlife species. Any treatments taken to minimize the spread and establishment of invasive plants within the Devore Fire area will also reduce long-term adverse modification of plant and wildlife species habitat within the fire area. Treatments intended to preclude unauthorized OHV use will also be beneficial for the recovery of habitats.

It is likely that suitable habitat existed within the Devore Fire area for California Gnatcatcher (Federally Threatened). It is not known if any occupied habitat was adversely affected by the fire. Threats to California Gnatcatcher habitat quality after a fire include spread and establishment of invasive plants. Any treatments taken to minimize the spread and establishment of invasive plants within the Devore Fire area will also reduce long-term adverse modification of California Gnatcatcher habitat. In addition, treatments intended to preclude unauthorized OHV use will be beneficial for the recovery of California Gnatcatcher habitats within the fire area.

Speckled dace (Forest Service Sensitive), Arroyo Toad (Federally Endangered), Southwestern Willow Flycatcher (Federally Endangered), and San Bernardino Kangaroo Rat (Federally Endangered) are all known to occur downstream of the burn area in Cajon Wash. In addition, Cajon Wash contains designated Critical Habitat for both Arroyo Toad and San Bernardino Kangaroo Rat. Cajon Wash is also known to support a number of other Forest Service Sensitive plants and wildlife.

Based on ground assessments conducted by the BAER wildlife biologist and BAER Team Leader, adverse impacts to these species are not expected as a result of increased watershed response. This is due to the small size of the fire, lack of high soil burn severity, buffer capabilities of unburned vegetation between the Devore Fire and the Cajon Wash, dilution of sediment and ash as a result of the size of Cajon Wash, and because both Arroyo Toad and San Bernardino Kangaroo Rat are adapted to fluctuations in watershed response.

Threats to Heritage Sites

No known concerns per Archaeologist, Hila Nelson.

Summary of Values at Risk and Emergency Determination

BAER Risk 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

Probability of Damage or Loss: The following descriptions provide a framework to estimate the relative probability that damage or loss would occur within one to three years (depending on the resource):

Very likely- nearly certain occurrence (>90%)
Likely- likely occurrence (>50% to < 90%)
Possible- possible occurrence (>10% to <50%)
Unlikely- unlikely occurrence (<10%)

Magnitude of Consequences:

Major- Loss of life or injury to humans; substantial property damage; irreversible damage to critical natural or cultural resources.

Moderate- Injury or illness to humans; moderate property damage; damage to critical natural or cultural resources resulting in considerable or long term effects.

Minor- Property damage is limited in economic value and/or to few investments; damage to natural or cultural resources resulting in minimal, recoverable or localized effects.

Value Category	Hazard	Value At Risk	Emergency Risk Rating
Life/Health/Safety	Debris Flows, flooding, rockfall, sediment deposition	Private Residence Roads and Gem and Matthews Ranch properties	Low
Property/Infrastructure	Debris flows, flooding, rockfall, sediment deposition	Interstate 15	Intermediate
Water Quality	Increased sedimentation and turbidity	Water quality	Low
	Hazardous material runoff from burned vehicles, structures	Water quality; public health	Low
Wildlife and rare plant habitat	Noxious Weed Invasion, Increased unauthorized OHV use	Vegetative recovery	High
Soil Productivity	Increased runoff and debris flows, rock and debris fall, erosion and sedimentation, and landslides.	There is no emergency to soil productivity due to fire-adapted ecosystems.	Very Low

B. Emergency Treatment Objectives:

The primary treatment objectives are to reduce threats to life, safety, and natural resources.

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

Land **90** % Channel **N/A** % Roads/Trails **90** % Protection/Safety **90** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	80	90	100
Channel	n/a	n/a	n/a
Roads/Trails	80	80	80
Protection/Safety	80	90	90

E. Cost of No-Action (Including Loss): **$2,964,000**

F. Cost of Selected Alternative (Including Loss): **$10,572**

G. Skills Represented on Burned-Area Survey Team:

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

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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.)

The proposed treatments on National Forest System lands can help to reduce the impacts of the fire from storm events, but treatments cannot fully mitigate the effects of the fire on the watershed. The treatments listed below are those that are considered to be the most effective on National Forest System lands for the identified threats.

Land Treatments:

Noxious Weed Detection Surveys

Surveys will begin in 2013 during the re-sprouting and flowering periods of weed species. Completion of surveys in roads, dozer lines, staging areas, safety zones, downstream from the weed washing station, known invasive and sensitive plant populations, and habitat for the southwestern willow flycatcher will be the first priority. The second survey priorities would be along riparian areas, hand lines, drop points, and prohibited plant plantations.

Item	Unit	Unit Cost	# of Units	Cost
GS-11 Botanist	Days	$400	3	$1200
Supplies	Each	$100	1	$100
Vehicle Mileage	Miles	$0.37	200	$74
			Total Cost	**$1374**

Hill slope treatments above the Interstate 15 culvert

Hill slope treatments above the Interstate 15 culvert (such as hydromulching and woodstraw application) were investigated and costs and timeline were estimated during the BAER assessment. The increased flow and debris that could scour and "pipe" around an un-repaired culvert would put the Interstate at risk. During the course of the BAER assessment, Caltrans has implemented the beginning of the fix to prevent this scouring from occurring. Therefore, these hillslope treatments are not proposed.

The 11-foot diameter culvert is designed to pass a flow of 1200 cfs, the modeled 100-year return interval storm. The Devore fire burned less than 10% of the contributing watershed (albeit the acres directly above the culvert), and the flow increase of the 5-year design storm was modeled as 25-200% greater from that portion of the watershed, depending on the effects of hydrophobicity and increased overland flow (with an increase of sediment of 3.5 times). The ongoing fixes to the culvert has lowered the magnitude of consequences, which in turn reduces the risk as a result of the fire.

Channel Treatments: N/A

Roads and Trail Treatments:

Unauthorized OHV Management:

Unauthorized access is a threat to the burned watersheds. Erosion, spread of invasive species destruction of rare plant and native plant communities, disturbance to wildlife, destruction of wildlife habitat, and risks to public safety can result from unauthorized access. Funding for materials to construct the barriers is requested. Funding is also requested for District FPOs to patrol within and adjacent to the burned area to enforce the physical barriers and deter unauthorized access on National Forest System lands.

Item	Unit	Unit Cost	# of Units	Cost
Boulder Procurement and Delivery	Ton	$40	70	$2,800
Equipment Rental and Delivery	Day	$2,000	1	$2,000
1-GS-9 Project Lead	Days	$300	4	$1,200
Mileage for Project Lead	Miles	$0.37	150	$155
1-GS-7 Patrol (Level 2 FPO)	Days	$220	10	$2,200
Mileage for Patrol	Miles	$0.37	300	$111
Total Cost				**$8,466.00**

Protection/Safety Treatments:

BAER Implementation and Interagency Coordination:
This treatment ensures continued communication and coordination with NRCS and California Depratment of Transportation both of which have jurisdiction over adjacent lands and in holdings where life and property are at risk from post-fire conditions. Actions include working and coordinating with other agencies on the post-fire effects within and downstream of the fire such as potential road closures, operation and maintenance plan with regard to the fire, the County of San Bernardino regarding road closures, and the NRCS regarding private property in holdings.

Item	Unit	Unit Cost	# of Units	Cost
GS-11 Lands specialist	Days	$366	2	$732
Total Cost				**$732**

I. **Monitoring Narrative:**
(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

Part VI – Emergency Stabilization Treatments and Source of Funds

Interim #

			NFS Lands				Other Lands			All
		Unit	# of		Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER $	$	units	$	Units	$	$
A. Land Treatments										
Noxious Weed Detect	1	1374	1	$1,374	$0		$0		$0	$1,374
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$1,374	$0		$0		$0	$1,374
B. Channel Treatments										
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treat.				$0	$0		$0		$0	$0
C. Road and Trails										
Unauthorized OHV ma	1	8466	1	$8,466	$0		$0		$0	$8,466
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$8,466	$0		$0		$0	$8,466
D. Protection/Safety										
Interagency Coordiant	1	732	1	$732	$0		$0		$0	$732
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Structures				$732	$0		$0		$0	$732
E. BAER Evaluation										
Evaluation Team	1	5250	1	$5,250	$0		$0		$0	$0
Insert new items above this line!				—	$0		$0		$0	$0
Subtotal Evaluation				—	$0		$0		$0	$0
F. Monitoring										
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$0	$0		$0		$0	$0
G. Totals				$15,822	$0		**$0**		**$0**	**$10,572**
Previously approved										
Total for this request				**$15,822**						

PART VII - APPROVALS

1. Jody Noiam — Forest Supervisor (signature) — 11/14/12 — Date

2. Barnie J. Grant — Regional Forester (signature) — 12/13/2012 — Date