

USDA-FOREST SERVICE

FS-2500-8 (6/06)

Initial Request

Date of Report: July 8, 2016

**BURNED-AREA REPORT**

(Reference FSH 2509.13)

**PART I - TYPE OF REQUEST****A. Type of Report**

- ☒ 1. Funding request for estimated emergency stabilization funds  
☐ 2. Accomplishment Report  
☐ 3. No Treatment Recommendation

**B. Type of Action**

- ☒ 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: Reservoir Fire                      B. Fire Number: CA-ANF-002417  
C. State: CA    D. County: Los Angeles  
E. Region: 05    F. Forest: Angeles National Forest  
G. District: 52    H. Fire Incident Job Code: P5KA84  
I. Date Fire Started: June 20, 2016                      J. Date Fire Contained: July 5, 2016  
K. Suppression Cost: \$6.8 million  
L. Fire Suppression Damages Repaired with Suppression Funds  
    1. Fireline waterbarred (miles): 1 mile of hand line, 5 miles of dozer line  
    2. Fireline seeded (miles): None  
    3. Other (identify): None  
M. Watershed Number: 6<sup>th</sup> Field HU 180701060302 – San Gabriel Canyon  
N. Total Acres Burned: 1146  
    NFS Acres (1080)    Private (66)

O. Vegetation Types: Mixed Chaparral, Chamise Chaparral, Canyon/Coast Live Oak Woodland, Coastal Sage Scrub, Riparian Sycamore Woodland, Riparian Willow Scrub.

P. Dominant Soils: The dominant soils include the Caperton, Trigo, and Vista series. The Caperton and Trigo soils are characterized by: shallow depth (not greater than 20 inches), very steep slopes, loam soil texture, rocky surface and hydrologic group D (high runoff potential). The primary difference between Caperton and Trigo is rock composition. The Vista soil series is very similar to the Trigo and Caperton soils except soil depth can be as deep as 60 inches. The Vista soils also tend to be on flatter ridges. There are minor amounts of mixed alluvium in drainages and adjacent to Morris Reservoir.

Q. Geologic Types: The burned area is located in the Transverse Province, on the southern flanks of the San Gabriel mountain range. The San Gabriel Mountains are an east-west range bounded by the San Andreas and San Gabriel faults. Primary rock types are Precambrian and Cretaceous gneisses and granodiorite granitics, which produce toppling rockfall failures.

R. Miles of Stream Channels by Order or Class:

Order 2	1.7 miles (Islip Canyon)
Order 1	3.8 miles (unnamed tributaries)

S. Transportation System

Trails: 0 miles      Roads: 1.5 miles

### **PART III - WATERSHED CONDITION**

A. Burn Severity (acres): 97 (9%) (Unburned), 170 (15%) (low), 794 (69%) (moderate),  
85 (7%) (high)

B. Water-Repellent Soil (acres): 917 (**80%** of fire has water repellency)

C. Soil Erosion Hazard Rating (acres):  
xx (low) xx (moderate) xx (high) xx (very high)

D. Erosion Potential after fire: 12.8 tons/acre Erosion potential before fire: 0.53 tons/acre

E. Sediment Potential: reported as tons per acre in D.

### **PART IV - HYDROLOGIC DESIGN FACTORS**

A. Estimated Vegetative Recovery Period, (years): 10-15

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):	1.26
F. Design Flow, (cubic feet / second/ square mile):	32
G. Estimated Reduction in Infiltration, (percent):	50
H. Adjusted Design Flow, (cfs per square mile):	66

### **PART V - SUMMARY OF ANALYSIS**

#### **Background**

The Reservoir Fire started on June 20, 2016, burning on land administered by the San Gabriel National Monument Ranger District, Angeles National Forest. The fire started at the northwest end of the Morris Reservoir in San Gabriel Canyon, about 5 miles north of the community of Azusa. Initially, steep terrain, rolling debris, and intense fire behavior made fireline construction difficult. Red flag conditions and potential for long range spotting from nearby fires delayed containment. When contained, the fire burned 1,200 acres (1,160 acres of National Forest System [NFS] land and 40 acres of private land). The cause of the fire is still under investigation.

The fire burned on steep slopes that have inherently high soil erosion hazards. The fire effects are expected to increase the high erosion hazard due to loss of vegetation canopy, effective ground cover, and formation of water repellent soil layers at varying depths. The burned, steep drainages have the ability to generate sudden releases of storm runoff at high velocities. The ensuing runoff from storm events can also erode and mobilize sediments stored at the base of the slopes and in channel bottoms, leading to major deposition of sediment along the lower reaches and possibly into Morris Reservoir.

#### **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<sup>1</sup>**

<b>Risk Type</b>	<b>Value at Risk</b>	<b>Potential Threats</b>	<b>Owner ship</b>	<b>Probability of Damage</b>	<b>Magnitude of Conseq</b>	<b>Risk</b>	<b>Forest Service Treatment Method</b>
Life/ Property	Highway 39	Rock fall, debris flow, flooding, plugged culverts	Caltrans	likely	major	very high	coordination with Caltrans
Life/ Property	Morris Reservoir	Sediment, water quality	LA County	possible	major	high	coordination with County
Natural Resources	Vegetation Recovery	Invasive plants	USFS	very likely	major	very high	weed detection/rapid response
Natural Resources	Soil productivity/ ecosystem recovery	Erosion, unauthorized OHV	USFS	likely	moderate	high	OHV barriers & weed detection

**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 burned watersheds directly above Morris Reservoir and Highway 39, large volumes of loose, stored sediment in channels and on the steep slopes, moderate and high soil burn severity with water repellency indicate a high risk to life and property creating an emergency situation.

#### *Highway 39*

Probability of damage or loss: Likely. This determination is due to increased rock fall and erosion rates already occurring post fire on the very steep slopes above the road and the change in watershed response causing a potential for greatly enhanced sediment and water flows down and onto the road.

Magnitude of consequences: Major. This determination is due to the high usage of this road by vehicles and the potential for rocks/sediment on the road to cause a vehicle accident.

Risk Level: Very high. The BAER team recommends coordination with Caltrans to discuss potential rock fall hazards in the burn and the review of drainage features across the roadbed.

#### *Morris Reservoir*

Probability of damage or loss: Possible. This determination is due to the potential for increased sedimentation and potential reduction in the reservoir storage capacity. The potential increase accounts for the sediment originating from burned hillslopes and does not include mobilizing stored sediments that have naturally accumulated in the drainage bottoms.

Magnitude of consequences: Major. This determination is due to the potential consequences of reduced reservoir storage capacity or filtration processes.

Risk Level: High. The BAER team recommends coordination with LA County Public Works. No hillslope or land treatments are recommended for mitigating this potential threat. The analysis revealed most of the burned area is on land with slope gradients that are 50 percent or greater. Research monitoring has concluded

**Magnitude of Consequence:** Major. This determination is due to the high potential for vegetation type conversion to non-native annual grasslands across the burn area, most especially dozer lines, since it burned only 7 years prior.

**Risk Level:** Very High. The BAER team recommends early detection and rapid response weed surveys to locate and treat high priority infestations.

### Threats to Cultural Resources

None

### B. Emergency Treatment Objectives:

- **Provide for Public Safety**– Ensure communication of potential post fire values at risk has occurred.
- **Limit Damage to Property**- The treatment objective is to communicate with Caltrans and LA County on 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.
- **Limit loss of soil productivity** –Objective is to decrease rates of runoff water and erosion by conducting invasive species removal and installing OHV barriers.

### 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):

### F. Cost of Selected Alternative (Including Loss):

### G. Skills Represented on Burned-Area Survey Team:

☒ Hydrology    ☒ Soils    ☐ Geology    ☐ Range    ☐ Recreation  
☐ Forestry    ☒ Wildlife    ☐ Fire Mgmt.    ☒ Engineering    ☐ Lands

effectiveness of hillslope treatments is reduced by as much as 50 percent on 40 to 60 percent slopes, and generally not effective on slopes greater than 60 percent.

### **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 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 Reservoir Fire is 9% unburned/very low, 15% low, 69% moderate, and 7% 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 surficial char with partial destruction of structure, porosity, and roots. The most severely burned slopes occur on steep slopes at higher elevations and mostly on north aspects where pre-fire vegetation density and fuels accumulations were higher.

#### **Risk Assessment – Soil Productivity**

**Probability of Damage or Loss:** Likely. This determination is due to the change in watershed response causing sheet and rill erosion of topsoil. There is also a potential for unauthorized off-highway vehicle use within the dozer lines leading to the burn that could be highly detrimental to vegetation recovery, encouraging noxious weed invasion.

**Magnitude of Consequence:** Moderate. This determination is due to the change in watershed response causing erosion of topsoil in a fire-adapted ecosystem.

**Risk Level:** High. The BAER team recommends installation of OHV barriers to encourage vegetation recovery, limit weed invasion and protect soil structure.

### **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 fuelbreaks 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, although the entire fire area burned 7 years ago, which well exceeds the historic fire interval of 30-50 years. Approximately 5 miles of dozer line were also constructed outside and within the burn perimeter. In addition to causing an increase in weed invasion, the disturbances caused by dozer lines are expected to create accelerated erosion and soil compaction that may also inhibit the recovery of native plant populations.

#### **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 potential for unauthorized off-highway vehicle use within the burn area and dozer lines that will be highly detrimental to vegetation recovery and encourage noxious weed invasion.



**Protection/Safety Treatments:*****Barriers for Unauthorized Off Road Vehicle Use***

Unauthorized access is a threat to the burned watershed due to the dozerlines created for the fire. The ANF is the most urban Forest in the nation with one of the highest use levels. The challenge for the ANF is managing the high number of users who gain unauthorized access to the Forest by driving/riding/entering through or around a locked gate or closure sign. This type of unmanaged use can cause damage to natural resources. In order to manage OHV potential access onto dozerlines and the burned area, the BAER team requests funding to purchase and install no-dig barriers, which have been proven to be effective and cost efficient barriers on the ANF in past fires.

**OHV Barrier Installation Cost**

Item	Unit	Unit Cost	# of Units	Cost
No-digs barrier materials	Each	\$36.25	80	\$2,900
Installation Supplies	Each	\$200	1	\$200
Labor (4 GS 5 Techs)	Days	\$800	6	\$4,800
Mileage	Miles	\$0.55	300	\$165
<b>Total Cost</b>				<b>\$8,065</b>

**Part VI – Emergency Stabilization Treatments and Source of Funds****Initial**

Click red icons for notes.	NFS Lands					Other Lands				Money Left Total \$
Line Items	Units	Unit Cost	# of Units	BAER \$	Spent \$	# of Units	Fed \$	# of Units	Non Fed \$	
A. Land Treatments										
NX Weed Det. Surv.	Ea	\$9385	1.0	\$9385	\$0		\$0		\$0	\$0
Subtotal Land Treatments				\$9,385	\$0		\$0		\$0	\$0
B. Channel Treatments – none										
				\$0	\$0		\$0		\$0	\$0
Subtotal Channel Treatments				\$0	\$0		\$0		\$0	\$0
C. Road and Trails– none										
Subtotal Road & Trails				\$0	\$0		\$0		\$0	\$0
D. Protection/Safety										
OHV Barrier Installation	ea	\$8065	1	\$8065						
Subtotal Protection				\$8065	\$0		\$0		\$0	\$0
E. BAER Evaluation										
Assessment Team	0520	H5BAER	---	---	\$4,000	---	\$0	---	\$0	\$0
	---	---	---	---	\$0	---	\$0	---	\$0	\$0
Subtotal Evaluation				---	\$4,000	---	\$0	---	\$0	\$0
F. Monitoring										
Subtotal Monitoring				0	\$0		\$0		\$0	\$0
G. Totals				\$17,450	\$0		\$0		\$0	\$0

☐ Contracting    ☐ Ecology    ☒ Botany    ☒ Archaeology    ☐ Hazmat  
☒ Fisheries    ☐ Research    ☐ Landscape Arch    ☒ GIS

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**Core Team**

Eric Nicita (Soils/GIS)

Kelsha Anderson (Hydrologist)

Nathan Sill (Wildlife)

Thalia Ryder (Archaeologist)

Katie VinZant (Botany)

Cliff Johnson (Engineering)

**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 Reservoir Incident and the fire itself have resulted in new or the expansion of existing noxious weed infestations. With 5 miles of dozerline, 1 mile of handline, 5.5 miles of riparian corridors in the 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 since the entire fire footprint burned in 2009 it is highly likely that the area will also face type conversion impacts given the rapid fire return interval that is much more frequent than historic fire events. Surveys and rapid response eradication treatments will begin in 2017 during the flowering periods of weed species. Because of differences in flowering times for all potential species, two visits will 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, and known invasive 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.

**Weed Detection and Rapid Response Cost**

Item	Unit	Unit Cost	# of Units	Cost
1 GS-11 botanist	Days	\$400	1	\$400
4 GS-7 weed technicians	Days	\$225	8	\$7,200
Supplies	Each	\$1,000	1	\$1,000
Vehicle gas mileage	Miles	\$0.55	800	\$440
Vehicle Lease	Month	\$600	0.5	\$300
<b>Total Cost</b>				<b>\$9,385</b>

**Road and Trail Treatments:**

None



Previously approved		Comments:
Total for this request	\$17,450	

**PART VII - APPROVALS**

1. for [Signature]  
Forest Supervisor (signature)

7/14/16  
Date

2. [Signature]  
Regional Forester (signature)

8/4/2016  
Date

## Appendix A

### NOXIOUS WEED DETECTION SURVEY PLAN

Fire Name: Reservoir Fire Month/Year: July 2016

Author: Katie VinZant

Author Duty Station: Angeles National Forest

#### A. 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. Wild oats (*Avena* spp.), ripgut brome (*Bromus diandrus*), red brome (*Bromus madritensis*), cheatgrass (*Bromus tectorum*), tocalote (*Centaurea melitensis*), shortpod mustard (*Hirschfeldia incana*), tree tobacco (*Nicotiana glauca*), castor bean (*Ricinus communis*) and Spanish broom (*Spartium junceum*) are known to occur within the burn area and along access routes adjacent to the burn. Many plant dispersal vectors such as Forest roads, high winds, and waterways occur within the fire area. Even though a weed washing station was utilized after five days of suppression activities, seed could have been transported into the burn on suppression vehicles and equipment that arrived on the fire before the washing station was established. Fire is known to enhance the establishment of all weed species present.

#### B. Management Concerns

Noxious weed invasions interfere with habitat recovery and ecosystem health within burned areas and fire suppression sites. In particular, noxious weeds hinder the recovery of habitat, especially in arid and riparian ecosystems, by aggressive colonization and reduction of water quality and quantity.

#### C. 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.

#### D. Parameters

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

#### E. Locations

In and along roads, dozerlines, handlines, drop points, safety zones, riparian areas, and adjacent to known invasive plant populations.

#### F. Weed Detection Survey Design and Methodology

Surveys will begin in 2017 during the flowering periods of weed species. Because of differences in flowering times for all potential species, two visits will be required during the growing season. Completion of surveys in roads, dozerlines, riparian areas, staging areas, safety zones, and known invasive plant populations will be the first priority. The second survey priorities will be along hand lines, and drop points. Surveys of the general habitats in the burned area will be the lowest priority. All locations of weed species will be mapped, using the Angeles NF, "Invasive Weeds" list.

Surveying will include documentation and hand pulling/herbiciding new weed occurrences at the time of inspection. New weed occurrences will be pulled to root depth, placed in sealed plastic bags, and properly disposed or sprayed with the appropriate and approved herbicide.

Documentation of new infestations will include:

- Mapping perimeter of new infestations
- Filling out Weed Element Occurrence Form (Appendix A)
- Treatment method required

- 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

### G. Reporting

If weed introduction and spread has occurred to the point that funding provided in the detection cost is not sufficient, an interim BAER report will be completed to request eradication funding. Reporting costs are included in figures below.

### H. Costs: Weed Detection Surveys for One Year =\$9,385.00

Weed detection surveys to determine whether ground disturbing activities related to the Reservoir Fire have resulted in the expansion of noxious weeds is requested for the first year. Estimated costs are based on the assumption that two visits would be necessary because of the differences in flowering times. If timing is such that all the target species are detectable in one visit, the actual costs would be lower than displayed below.

#### Estimated Cost:

1 GS-11 botanist (\$400/day x 1 day)	\$ 400
4 GS-7 weed technicians (\$225/day x 8 days)	\$ 7,200
Supplies	\$ 1,000
Vehicle Lease (\$600/month)	\$ 300
Vehicle mileage (800 miles @0.55/mile)	\$ 440
<b>TOTAL</b>	<b>\$ 9,385</b>

### I. Follow-up Actions

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

