USDA-FOREST SERVICE FS-2500-8 (7/00)

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 WFSU-SULT funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[x] 1. Initial Request (Best estimate of funds needed to complete eligible rehabilitation 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: Verbenia

B. Fire Number: CARRU 5439

C. State: CA

D. County: Riverside

E. Region: 5

F. Forest: San Bernardino

G. District: Idllywild

H. Date Fire Started: 7/11/04

I. Date Fire Contained: 7/26/04

J. Suppression Cost: 4.44 million

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline (miles): approx 5 mi of tractor line and 1.2 mi of handline
2. Fireline seeded (miles):
3. Other (identify):

L. Watershed Number:

M. Total Acres Burned: 3,828
NFS Acres(2728) Other Federal (420) State (0) Private (680)

N. Vegetation Types: warm woody chaparrals, montane mixed chaparrals, mixed conifer with live oak and manzanita components

O. Dominant Soils: Rock Outcrop with shallow, colluvial, skeletal soils developed from granitic parent materials

P. Geologic Types: granodiorite, tonalite, very old landslide deposits

Q. Miles of Stream Channels by Order or Class:
4.2 perenial, 3.3 intermittent, 8.1 ephemeral

R. Transportation System

Trails: 13.2 miles Roads: 0.5 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 3328 (low) 117 (moderate) 383 (high)

B. Water-Repellent Soil (acres): 340

C. Soil Erosion Hazard Rating (acres):
1596 (low) 1355 (moderate) 877 (high)

D. Erosion Potential: 9 tons/acre

E. Sediment Potential: 4180 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

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

B. Design Chance of Success, (percent): 90

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

D. Design Storm Duration, (hours): 6

E. Design Storm Magnitude, (inches): 2.0

F. Design Flow, (cubic feet / second/ square mile): 68 from RCS,1949peakflood discharge

G. Estimated Reduction in Infiltration, (percent): 14

H. Adjusted Design Flow, (cfs per square mile): 77.6

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:
The Verbenia Fire burned 3,828 acres on the north facing mountain slopes west of San Jacinto Peak above the small community of Snow Creek, located off of Interstate 10. Appendix A gives an aerial overview of the fire. Seventy percent of the burn is in Wilderness. BLM, a botanical reserve administered by UC Davis, and private lands are also present. Special designations such as National Monument, San Jacinto State Game Preserve, and the Santa Rosa Mountains National Scenic Area give this area a complex political status. Burn severity, hydrologic response, and erosion response are as follows:

Burn Severity: Thirteen percent of the burn is mapped as having a moderate and high burn severity (3% moderate, 10 %high). Much of the area within the fire is sparsely vegetated, extremely steep, rock outcrop lands with thin soils of granitic origin, hence low burn severity on 87% of fire area. Areas of higher burn severity are located in the upper one third of the fire at elevations of 4400 feet to 6400 feet. In this upper third, vegetation is Lower Montane Mixed Chaparral, Canyon Live Oak, and a small portion of timber consisting of Mixed Conifer-Fir.

Hydrologic Response: The fire was divided into four assessment watersheds, two of which are relavent to down stream values. Snow Creek and Boundary Creek affect the two values listed below:

1) the small residential community of Snow Creek located at the intersection of two alluvial fans.
2) a water intake owned by the Desert Water Agency (State owned), is located on the West Fork of Snow Creek.

Hydrologic response is quite minimal in both watersheds. Post fire % cfs change for Boundary Creek and Snow Creek is **5.5%** and **1.4%** respectively (1 year return interval). Post fire annual sediment yield for Boundary Creek and Snow Creek is 55% (X1.55 background) and 18% respectively. Rowe, Countryman, and Storey, 1949 was use to model peak flows and sediment yield. This increase in background is not considered significant.

Erosion Response: USLE (the BAER version developed by Jeff TenPas), was used to model hillslope erosion. Post burn erosion is predicted to be 9 tons per acre (average within burn area). Predicted erosion in the upper one third of the burn is predicted to be 15 to 60 tons per acre. Erosion of the Pacific Crest Trail (PCT) is a major concern in this area. Dry ravel is a ubiquis concern on the burned, steep granitic landscape.

The BAER team geologist mapped potential debris slide and rock fall hazard. This product is based on a helicoper flight and interpretation of aerial photos. Geologic hazards of concern are found in the upper one third of the burn. Fifty five percent plus slopes are common in this area. Rolling rock is percieved to be the greatest hazard to the safety of hikers. See geologic storm patrol recommendation.

Values at Risk: Values at risk were determined by the Verbenia BAER Team. The BAER Team members were drawn from two agencies, the FS and BLM. There are values at risk relative to the Pacific Crest Trail, Wilderness, and Habitat/Ecosystem Integrity

Pacific Crest Trail

- 13.2 miles of PCT trail are found within the fire boundary
- As a direct consequence of the fire, the greatest risk at this time for user safety is from hazard trees. The fire has left numerous hazard trees, or potential hazard trees adjacent to the trail.
- There is a risk for user safety from rock fall and dry ravel.
- As a direct consequence of the fire there is a large risk of damage to property (the trail facility) caused by the loss of water control. Increased flow rates can be expected following the loss of vegetation. A total of 35 wood water bars need to be replaced as a result of the fire, and 25 water bars need immediate maintenance.

During the reconnaissance of the trail 15 hazard trees of immediate concern were recorded, along with 15 trees that may cause future problems. All water bars were noted with only 4 that were found existing and functional, 25 existing functional with maintenance, and 35 existing that require replacement (primarily because they were wooden water bars that burned). An additional 36 swales will need to be installed. There is roughly 3000+ feet of upslope dry ravel narrowing the tread, and roughly 2700+ feet of down slope dry ravel undermining of the tread. Some large rocks have rolled onto the trail. The majority of the damaged trail is on the southern half of the PCT (upper elevations). The trail is now temporarily closed to the public due to the tree and rock hazards

San Jacinto Wilderness

- The fire has increased the potential for invasive plant species to become established in the Wilderness. This would lead to an '*unnatural loss*' of the Wilderness resource. Cheat grass is the primary invasive plant of concern. The desert flats and foothills are full of cheat grass. It appears that cheat grass could move easily upslope across a two mile long Wilderness boundary. The botanist suspects that it may be in the lowest elevations of the Wilderness area (not know for certain).
- The absence of vegetation in the area that burned will likely lead to the establishment of user created trails

Habitat/Ecosystem Function

Habitat, occupied and modeled, is present for 6 federally listed species within the fire area. The BAER Team biologist believes that there is a credible emergency related to the spread of noxious weeds. The primary weeds of concern are salt cedar and cheat grass. Salt cedar is a very aggressive species in riparian areas. The cheat grass concern is both a Wilderness issue and a concern related to critical habitat degradation.

Values Not At Risk

There is no emergency related to the following:

- Soil productivity
- Sediment delivery and flooding,
- Roads
- Heritage resources.
- Sensitive plants

The burn severity, the modeled erosion response, and the modeled hydrologic response described above do not warrant a high level of concern relative to Snow Creek Community and the Snow Creek Intake.

Snow Creek Community

Field surveys of the Snow Creek community revealed low risk of flooding as a result of the fire. Stream channels in the community show evidence of infrequent flow due to the desert climate where runoff occurs during intense summer thunderstorms, less intense winter storms and snowmelt. Rain-on-snow events are uncommon. While some structures appear to be located in or near stream channels, they also appear to either be somewhat elevated or in a remnant alluvial fan channel that's disconnected from the upstream watershed. Interviews with local longtime residents and Homeowners Association members also revealed little history of flood damage to structures or roads in the past 32 years (Truett and Anderson, pers comm.).

Snow Creek Water Intake

Interviews with Desert Water Agency personnel revealed little concern of impacts of the fire to water quality or flood damage to the water intake structure. Past fires in the area have resulted in few problems at the intake. Regarding impacts to water quality, the Agency stated that the water intake can be shut off when an increase in turbidity is detected. The intake can then remain closed for three weeks or more. If this period is surpassed the Agency would need to truck in water for the Snow Creek community. Past fires have increased turbidity on the order of 4 days due to an influx of ash. Regarding flood damage at the intake, the Agency stated that with the exception of an extreme summer thunderstorm flood in the late 1980's, no major flood damage has occurred at the intake in the past 30 years. Sedimentation in the intake reservoir can be removed on an as-needed basis by opening a drain valve in the diversion dam and flushing out sand and fine gravel-size material. Material not flushed is removed by hand and larger material is removed with a clamshell bucket. Removal of fine material is needed at least every year, while large material removal is needed every few years (Alexander, pers comm.).

Sensitive Plants

There are no known locations of threatened or endangered plants within the fire boundary. Coachella Valley milk-vetch (*Astragalus lentiginosus* var. *coachellae*, an endangered species, is known to occur in the sand areas on the desert floor (T3S, R3E, Sections 15, 16, 21 and 22) but was not affected by the fire or suppression activities. There is no critical habitat or modeled habitat for threatened or endangered plants in the vicinity of the fire.

Heritage resources

Many recorded and unrecorded heritage resource sites are located within, and in the vicinity of the Verbenia Fire. No NRHP-eligible heritage resource sites located on BLM or National Forest system lands appear to be threatened by major flood or natural earth-moving events. As a result, there is no emergency on Federal lands and rehabilitation or stabilization of heritage resource values is not needed. However, possible rehabilitation of the Van Pelt homestead, which is located on the Oasis de los Osos Reserve is still unresolved pending consultation with University of California. It is also recommended that sites like the Van Pelt Homestead and the pictograph site, CA-RIV-210/FS-05-12-55-269 be monitored by local Site Stewards, members of a volunteer organization that monitor heritage resource sites located on Federal lands for damages from vandalism or natural disasters. No BAER funding would be required for monitoring by Site Stewards.

It is also recommended that any ground-disturbing BAER activities be inventoried to satisfy the requirements of Section 106 of the NHPA. Inventory includes on the ground survey for heritae resource sites in the areas of proposed ground disturbance, report writing, and follow-up with Tribal Consultation and site monitoring resource. Any heritage resources located would be avoided during rehabilitation activities. Estimated cost for inventory is approximately **$1,300.00**. This is included in the BAER survey costs.

Soil productivity

Post fire soil erosion is expected to be within the range of natural variation given the sparse native ground cover and the very steep slopes prone to both surface erosion and mass movement processes. However, fires appear to occur in this landscape every decade, which is probably outside the natural range and may possibly alter natural erosion rates (beyond the scope of BAER).

B. Emergency Treatment Objectives:

1) Prevent loss of life and risk to human safety on the PCT
2) Reduce threat to property on the PCT
3) Reduce risk of noxious weed invasion into Wilderness lands and riparian areas occupied by federally listed species.

C. Probability of Completing Treatment Prior to First Major Damage-Producing Storm:

Land **na** % Channel **na** % Trails **80** % Other **na** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	na		
Channel	na		
Trails	80	90	90
Other			

E. Cost of No-Action (Including Loss): **$**300,000

F. Cost of Selected Alternative (Including Loss): **$**420,000

G. Skills Represented on Burned-Area Survey Team:

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

Land Treatments:
None

Channel Treatments:
None

Trail Treatments:

The policy for emergency rehabilitation in wilderness areas is contained in FSM 2323.43b and FSH 2309.19, chapter 70. Treatment is recommended on approximately 13 miles of trail within the burn. Trail treatments are designed to meet the following objectives:

1) To keep people out of burned area until risks subside and trail is repaired, and to reduce liability to the government.

2) To allow people back in ASAP

- Close trail to remove hazard trees, scale loose rocks, remove dry ravel, rehabilitate drainage system.
- Geologist will survey trail to evaluate geologic hazard and safety concerns. Geologist will report to District Ranger. Open trail ASAP, based on geologic hazard evaluation and other criteria.
- Provide appropriate warnings for trail users
- Complete heavy repair work, i.e. rock 'junk' walls to protect trail from downslope dry ravel
- After significant storms, have the geologist re-evaluate the trail for safety concerns. Status of trail (open/closed) should be based on geologic hazard and other criteria
- Local trail crew will do storm patrol and do necessary light repair.
- Keep saddle stock off the trail for 1 year, then re-evaluate

A. Treatment Costs

1. <u>Storm proofing</u>: storm proofing is only the minimum necessary trail work activity which will protect the trail investment in its current state and protect it from the expected seasonal weather. This is not an attempt to perform deferred maintenance objectives or improve the trail in any way.

Clean existing, replace damaged, and add water bars	$10750
Swales (trail equivalent of a road rolling dip)	$7,200
Reconstruct/armor crossings	$2,800
Remove upslope dry ravel (Due to severe side slopes along the trail corridor (55 to 60+%) and constant movement of the denuded decomposed granitic soils the dry ravel situation is severe. Removal of the dry ravel which is clogging and obliterating the trail tread will be very labor intensive and ongoing until stabilized)	$27,000
Rock work to stabilize tread (Significant amounts of single tier wall will need to be installed to protect the outer edge of the trail tread. Due to loss of vegetation that was binding the soil, which supported the trail tread, dry raveling is undermining the trail. This minimal wall technique will arrest the situation)	$37,800
Trail signs and installation	$1,500
Minor scaling	$1,600
Rock outcrop blasting and contingency blasting for expected rock fall	$3,100
Hazard tree removal	$3,750
Packer support (Packer support is the use of pack and saddle stock to support crew activities in this remote area. Pack animals will be used to ferry tools, supplies, water, and groceries)	$11,426
	$106,926

2. <u>Storm/safety patrol:</u> Due to intense dry raveling and immediate concern of rock fall damaging or closing the trail, working patrols will be needed to do periodic assessments on the trail condition. These working patrols will correct minor expected problems and report significant events.

Minor repairs, (2 person, local, FS) following each storm	
(2 x 15 times per season @2 day ea x 200/day	$12,000
Vehicle mileage 110 x 15 x .37/mile	$610
Total	$12,610

Estimate for Storm Proofing + Storm Patrol for one season: $119,536

Note: Above figures reflect the use of force account labor as planned. If contracted an additional 30% of the above total will be needed for survey and design at 15% and COR contract administration at 15% costs.

Please feel free to contact us if more information or clarification is needed.

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<u>Geologic Hazard Assessment:</u> Geologic Hazard survey to document, and report after each significant storm (contractor or FS geologist)

Salary and travel @ $400 day, 3days per storm, x 5 storms = **$6000**

<u>Noxious Weed Survey :</u> In spring of 2005, conduct a field visit to burned riparian areas at risk of aggressive invasion by salt cedar. Seedlings that are found will be pulled as the survey is conducted.
Costs: 40 acres x $200 per acre = **$8,000**

In spring of 2005, conduct a field survey to determine the spread of cheat grass from the lower portion of the fire towards the Wilderness boundary. The objective of the survey is to survey and GPS the geography of expansion from present locations along a two mile front (where slopes are feasible to survey). It is unknown just how far up the foothill slopes cheat grass has colonized. **The District is interested in doing NEPA** to control weeds from moving upslope too far into the Wilderness. Survey along the 13 miles of PCT trail and manually or thermally eradicate cheat grass as it is found. A GPS map of cheat grass expansion into the burn and a written report is required.
Costs: $200/day x 2 people x 25days = **$10,000**

Structures:
None

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.)

No actuall monitoring is recommended at this time.

Part VI – Emergency Rehabilitation Treatments and Source of Funds by Land Ownership

			NFS Lands				Other Lands			All
		Unit	# of	WFSU	Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	SULT $	$	units	$	Units	$	$
A. Land 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 Land Treatments				$0	$0		$0		$0	$0
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										
constr rock waterbars	ea	200	45	$9,000	$0		$0		$0	$9,000
swales	ea	200	36	$7,200	$0		$0		$0	$7,200
clean/rebuild waterbar	ea	70	25	$1,750			$0		$0	$1,750
remove dry ravel	ft	9	3000	$27,000			$0		$0	$27,000
rock wall	ft	14	2700	$37,800			$0		$0	$37,800
warning signs	ea	300	5	$1,500			$0		$0	$1,500
blast larger rock	job	3100	1	$3,100			$0		$0	$3,100
minor scaling	job	1,600	1	$1,600			$0		$0	$1,600
remove hazard trees	ea	250	15	$3,750			$0		$0	$3,750
packer support	job	11,426	1	$11,426			$0		$0	$11,426
storm/safety patrol	job	12,610	1	$12,610			$0		$0	$12,610
armour crossings	ea	400	7	$2,800	$0		$0		$0	$2,800
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$119,536	$0		$0		$0	$119,536
D. Structures										
				$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 Structures				$0	$0		$0		$0	$0
E. BAER Evaluation										
BAER survey				$48,700	$0		$0		$0	$48,700
Nox weed survey				$18,000						$18,000
Geo Haz assess				$6,000	$0		$0		$0	$6,000
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Evaluation				$72,700	$0		$0		$0	$72,700
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				**$192,236**	**$0**		**$0**		**$0**	**$192,236**

PART VII - APPROVALS

1. /s/ Max Copenhagen — July 30, 2004
   Deputy Forest Supervisor — Date

2. _____ _____
   Regional Forester (signature) — Date