

Date of Report: 02/04/2005

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

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

B. Type of Action

☐ 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: Grindstone Complex

B. Fire Number: P53484

C. State: CA

D. County: Colusa, Glenn, Tehama

E. Region: 05

F. Forest: 08 Mendocino

G. District: Grindstone

H. Date Fire Started: 3 Sep 2003

I. Date Fire Contained: 23 Sep 2003

J. Suppression Cost: \$18.2MM

K. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): 34.2 (23.3 dozer; 10.9 hand)

2. Fireline seeded (miles): 0

3. Other (identify): 13 acres dozer line mulching planned; Bowerey Flat spike camp rehabilitated.

L. Watershed Number: 1801010301 (Upper Main Eel), 1802011504 (Grindstone), 1802011503 (Briscoe), 1802011401 (Thomes), 1801010402 (Black Butte)

M. Total Acres Burned: 8004

NFS Acres(7876) Other Federal (0) State (0) Private (128)

N. Vegetation Types: Mixed conifer, chaparral, grassland/type conversion

O. Dominant Soils: Hugo, Sheetiron, Deadwood

P. Geologic Types: Franciscan

Q. Miles of Stream Channels by Order: Order 1: 39.5 Order 2: 8.8 Order 3: 2.1
Order 4: 1.6
Order 5+: 4.2

R. Transportation System

Trails: 0 miles Roads: 42.2 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 4421 (low) 2224 (moderate) 1360 (high)

B. Water-Repellent Soil (acres): 2470

C. Soil Erosion Hazard Rating (acres):
1929 (low) 3936 (moderate) 2140 (high)

D. Erosion Potential: Avg 3, Deafy high int 8 tons/acre

E. Sediment Potential: Avg 270; Deafy high 2600 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): 6

D. Design Storm Duration, (hours): 2

E. Design Storm Magnitude, (inches): 2.4

F. Design Flow, (cubic feet / second/ square mile):	<u>83 to 103</u>
G. Estimated Reduction in Infiltration, (percent):	<u>3 to 12</u>
H. Adjusted Design Flow, (cfs per square mile):	<u>85 to 116</u>

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency: The post-fire emergency conditions occur primarily within the Deafy(ac) and Happy Camp(ac) fires, and to a minor extent on the Estell fire (ac). Other fires of the complex were either small in acreage, had only light and moderate burn intensities, or were otherwise situated so as to pose no significant, mitigatable effect to property or resources. No threats to life or private property exist. The specific emergencies identified by BAER survey are described below.

Threats to roads: The fire has consumed stabilizing large woody debris in some portions of stream channels upstream from road crossings in three of the fires (Deafy, Happy Camp, and Estell). Partial consumption of small diameter woody debris has produced abundant mobilizable debris that is long enough to bridge culvert inlets, some of which show evidence of previous partial plugging. This factor, combined with abundant mobilizable sediment has great potential for culvert plugging and overflow, with resulting facility and resource damage. Resource damage would include gully erosion at locations where overflow exits the road prism, potential channel-scouring debris torrents, and increased stream sedimentation. Such effects would adversely impact achievement of Aquatic Conservation Strategy objectives related to sediment regimes and channel stability. Some road segments (primarily in Deafy) are located below moderate and high intensity burn areas and are predicted to receive abnormal surface flow from these areas. This poses a risk of erosion damage to the road surface and sedimentation impacts on Anderson Creek, Eel River, and Lake Pillsbury. Potential road damage is estimated @ \$243,000; loss of reservoir capacity at Lake Pillsbury is estimated @ \$43,560.

Sedimentation from Intensely Burned Areas: Most of the significant areas of moderate and high intensity burn areas are within Deafy Fire. About 1180 acres of high intensity and 1440 acres of moderate intensity burn occurred, of which 610 and 465 acres respectively were on high EHR soils. The most critical burned areas with respect to sediment production is the portion on high EHR soils in areas of high stream density. Values at risk include reservoir capacity in Lake Pillsbury (a PG&E hydropower dam and water supply for Sonoma County), and resident fisheries in Anderson Creek, Eel River, and the Eel River arm of Lake Pillsbury. Potential damage to the fisheries is estimated @ \$114,000; potential loss of reservoir capacity is \$14,400.

Heritage Resource Site: FS 05-08-53-136 site is situated on a large terrace on the east side of the Eel River within the Deafy Fire. The slope immediately to the east is at least 30° and received some high intensity burning. Several channels cut through the site starting from the base of the steep slope and pose a high risk of adverse effects to the site resulting from erosion caused by predicted increased flows and burned condition of the channels. Potential damage to the site is estimated @ \$52,000.

Noxious Weeds: Dozer lines, handlines, staging areas / drop points, safety zones and helispots all have the potential to become sites of noxious weed infestation. Fire camp and the helibase were located in yellow starthistle areas. Also, equipment was not washed prior to work on the fire.

B. Emergency Treatment Objectives:

Road stream crossing protection: Reduce risk of culvert plugging by improving debris-passing capacity of inlets, by reducing readily mobilized woody debris, and by providing for inter-storm detection and removal of culvert obstructions (storm patrol). Provide for 'least damage' diversion of overflow in the event of culvert failure by constructing dips down-grade from crossings as a back-up treatment. Reduce risk of excessive erosion and road damage from high rates surface runoff affecting road surfaces.

Sedimentation from Intensely Burned Areas: Reduce delivery of sediment from high intensity burn areas of Deafy Fire to downstream fish habitat and Lake Pillsbury reservoir.

Heritage Resource Site: Prevent damage to the FS 05-08-53-136 site from channel erosion caused by high post-fire flows in the channels that cross the site.

Noxious Weeds: Monitor dozer lines, hand lines, spike camp, staging areas / drop points, safety zones, and helispots for noxious weeds. Destroy any infestations found during monitoring activities if possible.

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

Land 80 % Channel 95 % Roads 70 % Other %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land			
Mulch high intensity	85	100	100
Channel			
Arch site armoring	95	100	100

Roads			
Stream xing mitigation	90	95	100
Road drainage impr	95	100	100
Storm patrol	90	NA	NA
Other			

E. Cost of No-Action (Including Loss): \$327,031

F. Cost of Selected Alternative (Including Loss): \$333,763

G. Skills Represented on Burned-Area Survey Team:

☒ Hydrology ☒ Soils ☒ Geology ☐ Range
☐ Forestry ☐ Wildlife ☐ Fire Mgmt. ☒ Engineering
☒ Contracting ☐ Ecology ☒ Botany ☒ Archaeology
☒ Fisheries ☐ Research ☐ Landscape Arch ☒ GIS

Team Leader: Mike Van Dame

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Phone: 530 934 1141

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: Mulch 300 acres of high and moderate burn intensity on high EHR soils that have high stream density or are located above active slides on Deafy Fire.

Channel Treatments: Armor 3 channels within the FS 05-08-53-136 site with geofabric and rock (Deafy Fire).

Roads and Trail Treatments: A) Upgrade 90 minor stream crossings in Deafy, Happy Camp, and Estell fires to enhance passage of post-fire debris. Upgrades vary, and include removal of damaged pipe-ends, addition of inlet sections, channel inlet cleaning, and construction of back-up diversion dips. B) Upgrade cross drainage on road segments subject to high surface flow from moderate and high intensity burn areas by constructing about 170 dips and waterbars. C) Provide for storm patrol to detect and prevent potential failures.

I. Monitoring Narrative:

Conduct search and destroy type noxious weed monitoring in spring and late summer. If weeds are detected in year 1, request authority to extend monitoring one additional year. Target areas for monitoring are firelines, staging areas, drop points and helispots.

Evaluate effectiveness of channel armoring in preventing damage to FS 05-08-53-136 site, and determine if follow-up treatment is necessary.

Monitoring/Assessment Results:

Land Treatments: Of the total acres burned, three hundred were deemed needy of straw mulching. The attached photos 1-4 show a large severely burned chaparral field with a high stream density. Sediment from this area enters trout streams and a reservoir. A helicopter was used to spread the straw. Since a thick layer of rice straw mulch can inhibit seed sprouting, alternate strips of mulch were applied leaving bare areas for native vegetation to sprout.

After the first winter, the area was observed. Erosion occurred on the bare areas as evidenced by soil trapped in straw, soil pedestals and rilling. Even though half of the area was treated, wind and rain moved the straw so only 30% of the area was covered. In viewing the current erosion, hindsight shows the need to mulch all the streambanks and cover 75% of the remaining area.

Channel Treatments: Two channels within an archeological site were stabilized using erosion blankets on the streambanks. Small headcuts in the site were rocked to stop development of a gully. Flat areas in the sensitive portion of the site were covered with erosion blankets.

Photos 5-6 show one streambank that was protected from high water and rain erosion until annual vegetation grew on the site the following spring.

Roads and Trail Treatments: Most of the roads in the various fires had adequate sized culverts to pass anticipated increased storm runoff. To ensure their integrity, end sections were installed on culverts with drainages that had burned material remaining in the channel. Photo 7.

Most road work was on the roadbed re-constructing waterbars/rolling dips and outsloping were extensive burned slopes were above the road. Photo 8.

After the winter, little maintenance work needed to be done. Thus, the work was very effective.

Noxious Weeds: Surveys for noxious weeds were conducted twice during 2004. About 24 miles of dozer and handlines and staging areas were examined. No noxious weeds were found on the five fires that were surveyed.

[illegible]

PART VII - APPROVALS

1. /s/ James Fenwood 2/14/05
Forest Supervisor (signature) Date
2. _____
Regional Forester (signature) Date