

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 (#3)

☐ Updating the initial funding request based on more accurate site data or design analysis

This report focuses on additional road work for erosion protection on formerly private lands that are now USFS lands.

☐ Status of accomplishments to date

☒ 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Spanish

B. Fire Number: MNF-1106 ; H53500

C. State: CA

D. County: Glenn

E. Region: R5

F. Forest: 08 Mendocino

G. District: Grindstone RD

H. Date Fire Started: 9/28/03

I. Date Fire Contained: 10/5/03

J. Suppression Cost: \$6.1MM

K. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): 12 miles (10.8 dozer; 1.2 handline)

2. Fireline seeded (miles): 0

3. Other (identify): Fireline and other areas (safety and drop points) mulched - approximately 10 acres

4. Fireline with slash pulled back across it- approximately 8 miles

L. Watershed Number: 1801010402 (Black Butte)

M. Total Acres Burned: 6,058

NFS Acres(3,385) Other Federal (0) State (0) **(Formerly)** Private (2,673)

Note: All of the Private acres listed within the fire in the figures above were recently acquired by USFS. This roughly 23,000 acre acquisition is the largest in the history of R5. The acquisition has brought additional responsibilities to the Forest. Forty-Four percent of the fire occurred on these formerly private lands and these lands have the highest density of roads and most intensive land management of the land burned by the Spanish Fire.

N. Vegetation Types: Mixed Conifer, Chapparal, Conifer/Hardwood, and Red Fir (minor)

O. Dominant Soils: Sheetiron, Deadwood, Henneke/Dubake, Masterson

P. Geologic Types: South Fork Mountain Schist

Q. Miles of Stream Channels by Order or Class: Order 1: 26.3 miles; Order 2: 7.2 miles; Order 3: 5.5 miles; Order 4: 3.6; Order 5: 1.8.

R. Transportation System

Trails: 1.1 miles Roads: 39.9 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1,304 (low) 3,324 (moderate) 1,430 (high)

B. Water-Repellent Soil (acres): none

C. Soil Erosion Hazard Rating (acres):
65 (low) 4,110 (moderate) 1,883 (high)

D. Erosion Potential: 7 tons/acre average (Highest is 11 on Markham Ridge)

E. Sediment Potential: 750 cubic yards / square mile average (Highest is 1400 on Markham Ridge)

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): 2 years

D. Design Storm Duration, (hours):	<u>6 hr</u>
E. Design Storm Magnitude, (inches):	<u>2.5</u> <u>Average</u> <u>Markham Creek</u> <u>(highest)</u>
F. Design Flow, (cubic feet / second/ square mile):	<u>54</u> <u>62</u>
G. Estimated Reduction in Infiltration, (percent):	<u>26%</u> <u>66%</u>
H. Adjusted Design Flow, (cfs per square mile):	<u>73</u> <u>181</u>

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency: Spanish Creek is an important tributary to the Black Butte River as it supplies about half of the water flow in the River at their confluence. Spanish Creek and the Black Butte River both contain steelhead and Chinook salmon listed under the Endangered Species Act (ESA). The Black Butte Watershed is a Tier 1 key watershed but has been identified as sediment impaired by the EPA. The formerly private land, especially on Bear Wallow Ridge has a high density of roads (the average is greater than 6 miles of roads per square mile). The roads experienced elevated postfire erosion in the winter of 2003 to 2004 and are risk of failing and impacting listed fish and water quality. The effects of the fire will be greatest in Spanish Creek and the upper end of the Black Butte drainage until a large amount of diluting water is added by Cold Creek about 8 miles down river from the fire. Effects will be from landsliding and sediment.

Surface Erosion Threats: Landforms in this watershed are about half colluvial hillslopes and half landslide terrain. Along the main channel of Spanish Creek there are landslide and slump toe zones. These areas are very steep (60-70% slope) and rocky. The stream bottom is bedrock constrained and landsliding causes lateral scouring of the toes of slopes, which results in further landsliding. The Bear Wallow Ridge on the south side of the watershed has some colluvial hillslopes, which are very steep (65-75%) and landslide terrain. The formerly private land was extensively roaded and skid roaded and exceeded cumulative watershed effect thresholds before the Spanish Fire. The winter of 2003 to 2004 saw elevated erosion on these former private lands and this erosion is likely to stay elevated for at least through the end of this decade. The road system not treated in the first round of BAER is at a continuing risk of failure, with resultant effects to fish and water quality.

Threats to streams, which would impact fish and water quality:

Prefire surveys in Spanish Creek rated the stream in fair stability. However, the lower end Spanish Creek is exhibiting some degradation. The lower end in a 1976 survey rated the stream in medium fair, whereas as 1995 survey rated the stream as low fair with more stream bank landslides appearing. A cumulative watershed effects analysis showed the watershed being at or slightly above threshold due to timber harvesting on private lands in the upper end of the watershed. The effects of the fire will be to add to the cumulative effects, increase land sliding, and bank cutting can be expected in the lower end of Spanish Creek. This will decrease the quality of fish habitat in the near-term. Spring 2004 Fisheries surveys failed to locate any Chinook salmon juveniles and most of the anadromous habitat is being significantly impaired by landsliding. Fresh landsliding is greatest below the recently acquired lands and road system on Bear Wallow Ridge.

Threats to roads, which would impact fish and water quality: The land acquisition brought about 25 miles of road into the Forest System, and of that mileage, about 17 miles of road need immediate attention to protect this infrastructure, as well as fish and water quality. The road work completed in the first phase of BAER last fall was successful in protecting the roads, water quality and fish.

Roads located in the high to moderate intensity burn areas can expect continued elevated surface runoff. Past private logging practices and an often-high density of

roads worsen the situation. Formerly private roads on Bear Wallow Ridge especially pose a threat of cascading effects due to the number of roads and their being stacked above each other. Road drainage needs to be improved to reduce road erosion, crossing failure and sediment to streams.

This poses a risk of erosion damage to the road surface and sedimentation impacts on Spanish Creek and the Black Butte River, both of which contain steelhead and Chinook salmon listed under the Endangered Species Act (ESA). Potential road damage is estimated @ \$126,900.

The dollar value of the threat to the steelhead and salmon cannot be readily quantified, as typical costing methods don't apply. USFS is tasked with making reasonable management decisions to protect these species and help provide for their future delisting under ESA in the long-term. For the purpose of having a cost calculation, we valued the cost of sediment production @ 5 times the cost of lost reservoir storage on other MNF fires (as for the initial 2500-8), which equates to \$264,000.

Sedimentation from Intensely Burned Areas: This was discussed in the initial report, but is not pertinent to this request.

Heritage Resource Sites: This was discussed in the initial report, but is not pertinent to this request.

Noxious Weeds: This was discussed in the initial report, but is not pertinent to this request.

B. Emergency Treatment Objectives:

Road protection: Reduce risk of excessive erosion and road damage from high rates surface runoff affecting road surfaces. Reduce risk of culvert plugging by cleaning inlets and improving debris-passing capacity of inlets; reducing readily mobilized woody debris immediately upstream of culverts; and pulling fills at partially failed stream crossings. Increase outsloping where needed and construct rolling dips with rocked outlets to ensure appropriate road drainage. Rock existing low water crossings to protect the road prism, the slope, and water quality. Storm patrol for the 2004-2005 winter to assure structures are passing storm water flows.

Sedimentation from Intensely Burned Areas: Dealt with in the initial BAER implementation.

Heritage Resource Site: Dealt with in the initial BAER implementation.

Noxious Weeds: The initial BAER survey for noxious weed monitoring was \$3,080. Interim report #2 was intended to request an additional \$3,799 to cover monitoring needs on the acquired lands, which would have increased the total to \$6,879. However, due to confusion, the 3/31/2004 regional office approval increased the *total* survey amount to \$3,799, which was an incremental increase of only \$719. In interim report #3 we are requesting the missing \$3,080 needed to bring the approved total up to \$6,879. The work proposed in interim report #2 remains unchanged.

C. Probability of Completing Treatment Prior to First Major Damage-Producing Storm of 2004:

Land NA % Channel NA % Roads 90 % Other NA %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Roads			
Road drainage impr	95	100	100
Other	NA	NA	NA

E. Cost of No-Action (Including Loss):_ **\$734,667 (Change for Interim 3 = +\$327,341)**

F. Cost of Selected Alternative (Including Loss):_ **\$705,968 (Change for Interim 3 = +\$291,410)**

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input checked="" type="checkbox"/> Geology	<input type="checkbox"/> Range	<input type="checkbox"/>
<input type="checkbox"/> Forestry	<input type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input checked="" type="checkbox"/> Engineering	<input type="checkbox"/>
<input checked="" type="checkbox"/> Contracting	<input type="checkbox"/> Ecology	<input checked="" type="checkbox"/> Botany	<input checked="" type="checkbox"/> Archaeology	<input type="checkbox"/>
<input checked="" type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input checked="" type="checkbox"/> GIS	

Team Leader: Mike Van Dame

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H. Treatment Narrative:

Land Treatments: See monitoring results.

Roads and Trail Treatments: A) Upgrade stream crossings 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. Work includes repairing/enhancing existing ditch relief culvert inlets, dips, and water bars, and constructing additional dips. Total number of existing and added cross drains is 226. C) Add 3 new 18 -inch culverts to provide proper road drainage.

I. Monitoring Narrative:

Monitoring/Assessment Results:

Land Treatments: About 140 acres of the total fire area that was severely burned contained areas with high stream density and steep streambanks. These areas were straw mulched by helicopter. Field observations showed that the straw trapped soil eroding from the slopes. This was important as downstream there is anadromous (steelhead) spawning and rearing stream reaches. Plus, seed in the soil was held in place allowing for seed to germinate and create more ground cover. See photos 1-8 in Spanish fire BAER treatments, part 1.

Channel Treatments: In the same land area as mentioned above, the high intensity burn incenerated woody material in the channels that were holding sediment. This loose soil is easily mobilized by water to create debris flows. To prevent channel scour and sediment reaching larger streams, large woody debris was added to the channel. Work crews cut dead trees on the streambanks and bucked them into pieces to create "V" weirs to slow runoff and trap sediment. Success of these structures is seen in photos 9-11.

Road Treatments: Road drainage improvement occurred on numerous miles of road. The goal of the improvements were to assure culverts would pass water and debris without plugging, outslope roads and rolling dips to reduce concentrations of

water in the road bed. Two large streams had an extreme amount of burned trees on steep streambanks. Culvert risers and inlet sections were installed on these culverts in case tree pieces would float downstream. See photos 12 and 13. After the first winter, most of the trees were still standing and culverts past pieces that were in the channel.

Noxious Weeds: Surveys for noxious weeds were conducted twice during 2004. About 35 miles of dozer and handlines and staging areas were examined. No noxious weeds were found.

			NFS Lands				Other Lands				All
		Unit	# of	Requested	Final		# of	Fed	# of	Requeste	Final
Line Items	Units	Cost	Units	Funds	Costs		units	\$	Units	Funds	Costs
A. Land Treatments											
Mulch high risk areas	acres	760	143	\$108,680	\$64,064			\$0		\$0	\$64,064
Mulch arch sites	acres	1000	1	\$1,000	\$520			\$0		\$0	\$520
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Land Treatments				\$109,680	\$64,584			\$0		\$0	\$64,584
B. Channel Treatments											
Grade control	mile	10,000	0.8	\$8,000	\$5,531			\$0		\$0	\$5,531
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Channel Treat.				\$8,000	\$5,531			\$0		\$0	\$5,531
C. Road and Trails											
Improve stream Xings	job	99,980	1	\$99,980	\$92,577			\$0		\$0	\$92,577
Improve rd drainage	job	58410	1	\$58,410	\$14,400			\$0		\$0	\$14,400
Impr rd drain (Int 3)	job	254,367	1	\$254,367	\$254,367			\$0		\$0	\$254,367
Storm patrol (Initial)	job	2100	1	\$2,100	\$1,800			\$0		\$0	\$1,800
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Road & Trails				\$414,857	\$363,144			\$0		\$0	\$363,144
D. Structures											
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Structures				\$0	\$0			\$0		\$0	\$0
E. BAER Evaluation											
Initial Survey	job	16,000	1	\$16,000	\$15,489			\$0		\$0	\$15,489
Interim Survey	job	14,500	1	\$14,500	\$7,246			\$0		\$0	\$7,246
Admin Reporting	job	4,900	1	\$4,900	\$2,438			\$0		\$0	\$2,438
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Evaluation				\$35,400	\$25,173			\$0		\$0	\$25,173
F. Monitoring											
Nox weeds (Initial)	job	3080	1	\$3,080	\$4,145			\$0		\$0	\$4,145
Nox weeds (Int 2)	job	719	1	\$719	\$2,930			\$0		\$0	\$2,930
Nox weeds (Int 3)	job	3080	1	\$3,080	\$4,405			\$0		\$0	\$4,405
Heritage treatments	job	300	1	\$300	\$210			\$0		\$0	\$210
Land / Channel Eff	job	2000	1	\$2,000	\$240			\$0		\$0	\$240
Insert new items above this line!				\$0	\$0			\$0		\$0	\$0
Subtotal Monitoring				\$9,179	\$11,930			\$0		\$0	\$11,930
G. Totals				\$577,116	\$470,362			\$0		\$0	\$470,362

1. /s/ James Fenwood
Forest Supervisor (signature)

2. _____
Regional Forester (signature)

Date _____