



United States
Department of
Agriculture

Forest
Service

Klamath
National
Forest

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File Code: 2520-3/6520

Date: [June 25, 2002]

Route To:

Subject: BAER Report - Forks Fire

To: Regional Forester

USDA-FOREST SERVICE

FS-2500-8 (7/00)

Date of Report: June 25, 2002

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: Forks Fire

B. Fire Number: CA-KNF-1997

C. State: California

D. County: Siskiyou

E. Region: 05

F. Forest: Klamath

G. District: Salmon River Ranger District



H. Date Fire Started: June 9, 2002

I. Date Fire Contained: June 15, 2002

J. Suppression Cost: \$1,500,000

K. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): 3.8

2. Fireline seeded (miles): 0

3. Other (identify):

L. Watershed Numbers (7th fields): 18010210030101: and 18010210020802

M. Total Acres Burned:

NFS Acres (1387) Other Federal () State () Private (<1)

N. Vegetation Types: Live Oak, Pacific Madrone, Douglas Fir, Ponderosa Pine, and Oregon White Oak.

O. Dominant Soils: Kindig, Neuns, Deadwood, Chaix, and Casabonne.

P. Geologic Types: Diorite intruding meta-sedimentary rock.

Q. Miles of Stream Channels by Order or Class: 2nd order – 1.5 miles; 1st order – 3.0 miles.

R. Transportation System

Trails: 0 miles

Roads: 4.0 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 839 (low) 241 (moderate) 307 (high)

B. Water-Repellent Soil (acres): 150

C. Soil Erosion Hazard Rating (acres):

208 (low) 485 (moderate) 694 (high)

D. Erosion Potential: 3 tons/acre

E. Sediment Potential: 208 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

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

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

C. Equivalent Design Recurrence Interval, (years): 2

D. Design Storm Duration, (hours):	<u>6</u>
E. Design Storm Magnitude, (inches):	<u>1.32</u>
F. Design Flow, (cubic feet / second/ square mile):	<u>27</u>
G. Estimated Reduction in Infiltration, (percent):	<u>23</u>
H. Adjusted Design Flow, (cfs per square mile):	<u>33</u>

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

On June 9, 2002, an individual was burning a debris pile on his private property; and it escaped containment onto U.S. Forest Service lands. The Forks Fire affected five small to moderately sized gulches. All are ephemeral/intermittent. There are no perennial streams within the fire perimeter. Two (Logan and Dead Mule) are tributaries to the mainstem of the Salmon River. Two (Swans and an unnamed gulch) are tributaries to the North Fork of the Salmon River. The last remaining gulch (unnamed) is a tributary to Pollocks Gulch. The primary focus of the BAER team was on Logan Gulch. Logan Gulch crosses Forest road 10N14 about one-half mile above the mainstem of the Salmon River. There is a 48-inch culvert at the crossing. Below Forest Road 10N14 there is a domestic water intake located within Logan Gulch on U.S. Forest lands. Burn intensities throughout the fire area were 60% Low, 18% Moderate, and 22% High. This same area burned in 1944, 1977, and now 2002.

Except for the headwaters of Logan and Dead Mule, all five tributaries have mainly low, with some moderate, burn intensities within the gulches themselves. The area is rocky with the exception of a granitic soil strip running diagonally from the end of Forest Road 10N30 through Logan Gulch headwaters and down through a portion of Swans Gulch before intersecting the County Road 2B01. The headwaters of Logan Gulch are south-facing slopes. Approximately 80 percent of the hot burn is located in the Logan Gulch watershed. Logan Gulch has some granitic parent material, but is mostly meta-sedimentary rock. Intense rainfall events are common in this part of the Forest, but with the early timeframe of this fire; it has been observed that re-growth occurs rapidly. This re-growth will reduce the impact of the hydrophobic soils before winter storms occur.

Threats to Aquatic Resources:

The Forks Fire is located in the northeast corner of the Horn/Boyd and the northwest corner of Big/Pollocks 7th field watersheds. The mainstem of the Salmon River and the North Fork of the Salmon River are located approximately 200 feet away from the burn perimeters at the closest point. On average, the Rivers are approximately 660 feet away from the county roads that acted as the fire line on the southwest and southeast boundaries. The mainstem of the Salmon River and the North Fork of the Salmon River are the main fisheries resources in the vicinity of the Forks Fire. The County Roads, 2B01 and 1C01, are between the fire perimeter and the Rivers and border approximately 3.2 miles of the Fire. The mainstem of the Salmon River has fall and spring-run Chinook salmon, summer and winter-

run steelhead, and Southern Oregon/Northern California Coasts (SONCC) coho salmon, a threatened species. The North Fork of the Salmon River has the same fish species, except the SONCC coho salmon. Although there is no barrier to coho salmon, there are no confirmed sightings of coho salmon in the North Fork of the Salmon River. However, the North Fork of the Salmon is considered critical habitat for the SONCC coho salmon, as is the mainstem of the Salmon River. In addition, Pacific Lamprey, large scale sucker, speckled dace, sculpin, and various other native and non-native fish species are found in the mainstem and the North Fork of the Salmon River.

At the time of the Forks Fire, the Salmon River (near Somes Bar) was running approximately 1100 cubic feet per second (cfs). Over a 77-year record period, the average flow for this time of year is approximately 2000 cfs. By August, the 77-year average flow is approximately 264 cfs. In total flow to the Salmon River, the North Fork of the Salmon River contributes approximately the same amount or slightly more than Wooley Creek, which is approximately 3 miles from the confluence with the Klamath River. The South Fork of the Salmon River contributes slightly more than either the North Fork of the Salmon River or Wooley Creek.

During the winter months, all potential fire-caused impacts are expected to occur from material being brought down the five gulches. Material that may be transported to the mainstem of the Salmon and the North Fork of the Salmon River are ash and fine-grained sediment, particularly from the granitic material located in Logan, Dead Mule, and Swans Gulches. The main impacts are expected to be from Logan Gulch where the majority of the high intensity burn occurred. Based on earth and soil scientist input, the likelihood of a large mass-wasting event being triggered by the impacts of the Forks Fire is low. The effected drainages are relatively small and do not run water on an annual basis. From the investigation of the drainages, the draws are more likely ephemeral, being formed by "gully washers". No annual scour was observed in Logan Gulch, the largest drainage. Ash levels often elevate nitrogen and possibly phosphate levels within streams following wildfire, but levels are seldom a problem for fish especially in a river the size of the mainstem of the Salmon River. On average (over a 77 year period) the flows for November, December, January, February, and March are 1108 cfs, 2188 cfs, 2963 cfs, 3003 cfs, and 2962 cfs respectively. The time period between November and March are generally when the winter storms are intense enough to trigger any transport of material through the channels into the mainstem of the Salmon River and the North Fork of the Salmon Rivers. With the average flows documented, it is assumed that the winter flows will quickly dilute any impacts from the Forks Fire. Adult and juvenile anadromous fish will be in the mainstem of the Salmon River and the North Fork of the Salmon River at this time, however, flow conditions and favorable water temperatures will allow for survival and avoidance of the potential sediment and ash inputs.

During the summer months, it is likely that the greatest impact to the mainstem of the Salmon River and the North Fork of the Salmon River will occur during intense summer thunderstorms. Based on recent history, this area does receive intense summer thunderstorms on a periodic basis. At the low flows that occur during the summer months, there is not enough river flow to flush the sediment and ash input out of the system, thereby affecting summer rearing and holding habitat. Logan and Dead Mule Gulches have low-gradient sections where some sediment and ash can settle out before dropping into the mainstem of the Salmon River. Swans Gulch and the unnamed gulch are steep and drop directly into the North Fork of the Salmon River, after they go under County road 1C01. The west-fork of Pollocks Gulch has a relatively flat gradient for sediment and ash to settle out

on prior to dropping into the North Fork of the Salmon River. Adult and juvenile anadromous fish will be in the mainstem of the Salmon River and the North Fork of the Salmon River at this time. Summer steelhead (a sensitive species), adult spring Chinook salmon (a sensitive species), juvenile salmonids, and various other aquatic species could be affected if a summer thunderstorm were strong enough to transport sediment and ash to the Rivers. Mortality could occur if enough sediment was transported to the system to irritate their gills. Mortality of holding adult spring Chinook salmon was observed in the mainstem of the Salmon River during 1996, when a summer thunderstorm caused a debris torrent to "blow out" several road crossing in the upper South Fork of the Salmon River. Due to the small amount of high intensity burn, and its location, there is a low expectation that mortality will occur due to the Forks Fire. However, if a "gully washer" were to occur during the summer months of 2002 or 2003, the probability of mortality occurring rises.

The mainstem of the Salmon River receives approximately 13% of the fall Chinook spawning and the lowest reach on the North Fork of the Salmon River (confluence to stream mile 4) receives 19% of the fall Chinook spawning. The North Fork of the Salmon River receives only a small portion of the over-summering population of summer steelhead or Spring Chinook. The mainstem of the Salmon River has a larger percentage of the over-summering spring Chinook and summer steelhead populations.

The added sediment that may enter during summer thunderstorms will not adversely affect the habitat in the short-term. Pools will not fill up with sediment, however they may slightly decrease in volume. This can affect over-summering of adult fish and the rearing of juveniles by reducing the amount of available habitat. Temperature will not be affected negatively as the summer temperatures are currently at risk, particularly during low flow years. The main affects will come during the fall Chinook spawning season, as the flows do not increase significantly until the end of the spawning season. Therefore, the spawning gravels will have a slight increase in fines. This can decrease the survival of egg to emerging fry, and therefore, the number of juvenile fish reaching the ocean, and ultimately the number of returning adults.

The treatment alternative of installing check dams will reduce the amount of sediment reaching the Rivers; therefore, reducing the amount of affected habitat and increasing salmon egg to fry survival after the spawning season. The treatment alternative may slightly increase the number of adult returning salmon and steelhead to fulfill their lifecycle than if no treatment is implemented.

About 75 acres of hydrophobic soils were surveyed in the Logan Gulch headwaters; they are not broadly continuous but appear to be more mosaic in nature. There was evidence of deer travel already throughout the slope and several deer were seen. The crust layer is approximately 1/16" to 1/4" maximum according to the Soil Scientist on this team. Animal traffic throughout the area will breakdown the thin hydrophobic layer to break up or slow down increased runoff where water resistant soils exist. Leaf/needle cast from the burned vegetation will provide ground cover shortly. There are root-sprouting species prevalent throughout the area, Madrone, oaks, and manzanita that will leaf out within the next few weeks according to the Botanist on this team; who observed the 1977 burn in this same area. She has first hand knowledge of the vegetation recovery of that event and years of fire recovery monitoring to support her position that vegetation (root-sprouters) burned by a fire this early in the season will re-sprout within a week or two of being burned. If seeded occurred it would compete and interfere with the natural recovery, this is a consensus of the

botanist, soil scientist, fisheries biologist, and hydrologist on this team. We are not recommending seeding.

Threats to Private Property:

There are no private homes in the flood plain of Logan Gulch. However, as stated above, there is a domestic water intake located between Forest road 10N14 and County Road 2B01. The intake is keyed in beneath the channel substrate to capture the subsurface flow, and this minimizes any potential sediment delivery impact to the water supply. Check dams are still recommended to mitigate potential increased runoff and ash/sediment transport in the short-term to minimize any impact to the mainstem of the Salmon River.

County Road 2B01:

The county road at Logan Gulch has an 18-inch culvert, and may be vulnerable to blockage during winter flow events.

B. Emergency Treatment Objectives:

1. Minimize fire-induced risks to public safety when traveling County Road 2B01. Reduce bedload affecting domestic water intake in Logan Gulch.
2. Minimize potential sedimentation effects to spawning and rearing habitat for listed coho salmon and associated aquatic species in the mainstem of the Salmon River. The channel treatments should trap a portion of the eroded soil from the high and moderate severity burned areas.
3. Assess effectiveness of channel treatments.
4. Assess encroachment of noxious weeds into the fire area by monitoring for knapweed species, mustard, and star thistle spread. If results of monitoring identify new infestations, treat by manual pulling.

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

Land ___ % Channel 100 % Roads ___ % Other ___ %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land			
Channel	90	95	100
Roads			
Other			

E. Cost of No-Action (Including Loss): \$15,000.

F. Cost of Selected Alternative (Including Loss): \$10,250.

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 type="checkbox"/> Engineering	<input type="checkbox"/>
<input 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 type="checkbox"/> GIS	

Team Leader: Bill Bemis

Email: wbemis@fs.fed.us Phone: (530) 493-1706 FAX: (530) 493-1796

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: Place 3 small straw check dams and one large check dam (representing the cost of 4 small check dams) in Logan Gulch above Forest Road 10N14.

Roads and Trail Treatments: None

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.)

Channel Treatments will need to be monitored to observe effectiveness, and prevent blockage of the down channel culvert on Forest Road 10N14. Domestic intake structure needs to be monitored in conjunction with special use holder. Monitoring will occur twice monthly starting with the first flow-producing event. It is estimated that 8 trips will occur this fall and 2 trips next spring.

Noxious Weeds

There is a need to monitor the spread of noxious weeds. An assessment of the encroachment of noxious weeds into the fire area by knapweed, mustard, and star thistle is recommended. Monitoring will occur as shown below:

For (2003) the cost of survey and potential treatment of weeds for two people and overseer for the first year is \$4,000. Cost per day per person including vehicle and is \$250.

For (2004) the cost of survey in year two (2004) for two people, once a month for 3 months plus two days for an overseer for plant identification and evaluation report writing is \$4,000.

Cost of survey in year three (2005) for two people and overseer is \$4,000.

It is anticipated that yellow star thistle will return with a vengeance in burned areas that had it previously. The Scotch broom is anticipated to increase in density with germination of the seed bank, stimulated by the fire. It will take about 3 to 4 years for seedlings to produce flowers and hence new seed. Spotted knapweed has hopefully been kept in its current locations. If movement has occurred, it is expected that it will show up on roadsides first, easily visible and treatable.

The overall level of risk of the fire and its associated actions is **HIGH**.

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

A. Land Treatments										
				\$0			\$0		\$0	\$0
				\$0			\$0			
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$0			\$0		\$0	\$0
B. Channel Treatments										
Straw Check Dams	7	350	7	\$2,450			\$0		\$0	\$2,450
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				\$2,450			\$0		\$0	\$2,450
C. Road and Trails										
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
<i>Subtotal Road & Trails</i>				\$0			\$0		\$0	\$0
D. Structures										
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
<i>Subtotal Structures</i>				\$0			\$0		\$0	\$0
E. BAER Evaluation										
Survey	day	1250	5	\$6,250			\$0		\$0	\$6,250
Consultation(NMFS)	project	5000	1	\$5,000			\$0		\$0	\$5,000
F. Monitoring				\$0			\$0		\$0	\$0
Botany	48	250	10	\$12,000		48	\$250			\$12,000
Watershed	10	213	10	\$2,130		10	\$213			\$2,130
G. Totals				\$27,830			\$0		\$0	\$27,830

PART VII - APPROVALS

1. /s/ JAN A. FORD for:
Forest Supervisor (signature)

06 25 02
Date

2. _____
Regional Forester (signature)

Date

/s/ Jan A. Ford for:
MARGARET J. BOLAND
Forest Supervisor

cc: Gary Schmitt, Mailroom R5