



United States  
Department of  
Agriculture

Forest  
Service

Northern Region

200 E. Broadway  
P.O. Box 7669  
Missoula, MT 59807

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**File Code:** 6520/2520-3

**Date:** August 10, 2000

**Route To:**

**Subject:** Little Blue Fire, Burned Area Emergency Rehabilitation (BAER)

**To:** Forest Supervisor, Bitterroot National Forest

Enclosed is the approved initial Burned Area Emergency Rehabilitation (BAER) for the Little Blue Fire. You are authorized to spend up to \$66,000 for the assessment, land and road treatment, and monitoring activities shown in Part VI of the report. For out-year monitoring needs, you must submit an annual interim request that describes monitoring needs based on previous year's results.

Use the assigned P-code for the approved suppression land treatments. Please provide me with your Final Accomplishment Report (FS 2500-8), describing actual costs and accomplishments, within 60 days of project completion. Based on your monitoring schedule, a monitoring report is due by September 30, 2001. Contact Bruce Sims (406-329-3447) if you have any questions.

*/s/ Kathleen A. McAllister for*

DALE N. BOSWORTH  
Regional Forester

Enclosure



Date of Report: 8/1/2000

**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: Little Blue FireB. Fire Number: MT-BRF-11420C. State: MTD. County: RavalliE. Region: 01F. Forest: Bitterroot NFG. District: West Fork (04)H. Date Fire Started: July 13, 2000I. Date Fire Controlled: Sept, 2000  
Date Fire Contained: 7/26/2000J. Suppression Cost: \$3,852,570 as of 7/30/2000

## K. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): 28.1  
2. Fireline seeded (miles): 1.1  
3. Other (identify): approximately 1.1 miles dozer line recontoured

L. Watershed Number: 170102052401M. Total Acres Burned: **5800**NFS Acres(**5700**) Other Federal ( ) State ( ) Private (**100** )

N. Vegetation Types: Ponderosa pine, Douglas-fir with pinegrass, snowberry, elk sedge, twinflower, kinnikinnik; lodgepole pine, subalpine fir with beargrass, grouse whortleberry, blue huckleberry; Riparian areas: Engelmann spruce, aspen, willows, sedges.

O. Dominant Soils: lower 2/3 elevations: Vitrandic and Ustic Dystricrypts, LSK, moderately deep to deep on northerly aspects; On southerly aspects, Typic and Lithic Dystricrypts, LSK and Typic and Lithic Argicrypts. Upper 1/3 elevations: Andic and Typic Dystricrypts, LSK

P. Geologic Types: Lower 2/3: mixed quartzite and rhyolite colluvium  
Upper 1/3 elevations: granitic glacial till and colluvium

Q. Miles of Stream Channels by Order or Class: First Order A4 type: 6.88 miles  
Second Order B4 type: 4.12 miles  
Fourth Order C4 type: 3.08 miles

R. Transportation System

Trails: 0.4 miles      Roads: 21.3 miles

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

A. Burn Severity (acres): 1800 (low) 1100 (moderate) 2900 (high)

B. Water-Repellent Soil (acres): 3500

C. Soil Erosion Hazard Rating (acres):  
760 (low) 2351 (moderate) 2689 (high)

D. Erosion Potential: 5.0 tons/acre

E. Sediment Potential: 380 cubic yards / square mile

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

A. Estimated Vegetative Recovery Period, (years):	<u>4</u>
B. Design Chance of Success, (percent):	<u>80</u>
C. Equivalent Design Recurrence Interval, (years):	<u>10</u>
D. Design Storm Duration, (hours):	<u>6</u>
E. Design Storm Magnitude, (inches):	<u>1.5 inches</u>
F. Design Flow, (cubic feet / second/ square mile):	<u>4.0</u>
G. Estimated Reduction in Infiltration, (percent):	<u>70</u>
H. Adjusted Design Flow, (cfs per square mile):	<u>65</u>

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

- A. Describe Watershed Emergency: The fire burned at moderate to high intensity over much of the Little Blue Joint drainage. Most of the standing timber, shrubs and duff layer has been consumed in the high intensity burn areas. Soils in these areas are highly hydrophobic and slopes average 50 to 60 percent. Some riparian areas were burned at high intensity also, particularly near the main culvert crossing of Little Blue Joint Creek. There is little or no potential for slumping or landslides, but an intense rainstorm will produce significant streamflows and heavy debris loading. Soils are relatively coarse, however, an intense rainstorm will cause some erosion and sediment loading. In the riparian areas that burned intensively, there was a serious fish kill due to overheating of the water during the fire.

There is a high potential for flooding in the main drainage and four tributaries that enter just downstream from the main crossing as indicated on the map. The existing culverts at all of these crossings appear to be undersized in the event of a 10 year, 6 hour rainstorm. With the added volume of expected sediment and woody debris, these culverts will almost certainly plug and fail. Little Blue Joint Creek supports bull trout as well as westslope cutthroat trout. The consequences of five road crossing failures in close proximity to the main stream (or on the mainstream) would have serious negative consequences to the fish populations as well as damaging the road systems. This road system is a major transportation route between two Forest Highway System roads. If the culverts were to wash out, it would seriously disrupt traffic in the area.

In addition, 20 acres of contour slope treatment on intense burn slopes close to streams with bull trout habitat will help to reduce potential runoff and sediment. The material used will be straw wattling (a tube of mulch netting of straw placed on slopes and secured with wooden stakes).

- B. Emergency Treatment Objectives: The objectives of the proposed treatments are to prevent damages to facilities and resources due to undersized culverts and prevent debris and sediment from entering bull trout habitat. The culverts would be replaced with larger sized pipes designed to accommodate the 10 year, 6 hour storm with adequate freeboard to pass debris.

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

Land 80 % Channel \_ % Roads 80 % Other \_\_\_ %

- D. Probability of Treatment Success

Years after Treatment			
	1	3	5

Land	90	90	100
Channel	90	90	100
Roads	90	90	100
Other			

E. Cost of No-Action (Including Loss): **\$323,000**

F. Cost of Selected Alternative (Including Loss): **\$130,000**

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 checked="" 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: Bob Hammer

Email: bhammer@fs.fed.us

Phone: (406)777-5461

FAX:

#### H. Treatment Narrative:

Land Treatments: The team evaluated land treatments and decided not to pursue seeding because of the high cost and low chance of success based on previous work and monitoring in similar sites. Seeding has been largely ineffective because of the low germination success and the time of year. Because it is the middle of summer with hot, dry conditions, and the thunderstorm season has not yet begun, it is highly unlikely that the grass could provide protection before a major thunderstorm occurred. Most of the area has abundant native vegetative roots (beargrass and shrubs) and it is thought that the natives will grow as soon as any non-native temporary grasses. Contour felling of trees on the slope has had similar low success without keying in the logs to the soil. The team concluded that the low likelihood of success did not justify the high cost of pursuing these treatments. However, we will use straw wattling placed on certain slopes to reduce the amount of erosion and sediment that could reach bull trout habitat.

Channel Treatments: None, except to replace the undersized culverts for the same reasons as described for land treatments.

Roads and Trail Treatments: A total of 5 culverts are proposed for replacement as indicated on the attached map. Four of these culverts are on intermittent or very small tributaries to Little Blue Joint Creek. The existing culverts are 18 inch CMP pipes and the proposed replacement culverts would be 36 inch CMP pipes. The main crossing of the stream is currently a 60 inch CMP round pipe. Based on the hydraulic and flood analysis, the existing culvert has a capacity of 110 cfs with a HW/D ratio of 1.0 and predicted rainstorm flood flows are predicted to be about 300 cfs without debris. The existing culvert

should be replaced with a 142" by 91" CMP squash pipe buried one foot into the streambed and backfilled with stream run cobble. This installation will provide adequate passage of debris and sediment and also provide adequate fish passage. All of these replacement culverts should prevent a road crossing failure directly into Little Blue Joint Creek.

Structures:

None except as discussed in the previous section.

Monitoring:

The Boise Research Station may select this fire area to do research on erosion and sediment yields from wildfire areas. If selected a rainfall simulator will be used at various locations within the burned area to measure runoff and erosion rates. This possible research will be done outside the BAER framework.

Streamflow and precipitation will be recorded for two years to validate the flow prediction model used to determine culvert sizes required downstream of the fire.

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

Line Items	Units	Unit Cost	NFS Lands		Other \$	Other Lands				All Total \$
			# of Units	WFSU SULT \$		# of units	Fed \$	# of Units	Non Fed \$	
<b>A. Land Treatments</b>										
STRAW Wattling	Acres	1000	20	\$20,000			\$0		\$0	\$20,000
				\$0			\$0			
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				<i>\$20,000</i>			<i>\$0</i>		<i>\$0</i>	<i>\$20,000</i>
<b>B. Channel Treatments</b>										
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				<i>\$0</i>			<i>\$0</i>		<i>\$0</i>	<i>\$0</i>
<b>C. Road and Trails</b>										
tributary culverts	4	2800	4	\$11,200			\$0		\$0	\$11,200
Main culvert	1	21800	1	\$21,800			\$0		\$0	\$21,800
replacement				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
<i>Subtotal Road &amp; Trails</i>				<i>\$33,000</i>			<i>\$0</i>		<i>\$0</i>	<i>\$33,000</i>
<b>D. Structures</b>										
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
<i>Subtotal Structures</i>				<i>\$0</i>			<i>\$0</i>		<i>\$0</i>	<i>\$0</i>
<b>E. BAER Evaluation</b>										
IDT days	12	250	12	\$3,000			\$0		\$0	\$3,000
				\$0			\$0		\$0	\$0
<b>G. Monitoring Cost</b>				\$10,000						\$10,000
<b>H. Totals</b>				<b>\$66,000</b>			<b>\$0</b>		<b>\$0</b>	<b>\$66,000</b>

**PART VII - APPROVALS**

- /s/ Jeffrey S. Amoss  
Forest Supervisor (signature)

8/2/00  
Date
- /s/ Kathleen A. McAllister  
Regional Forester (signature)

8/11/00  
Date