

BURNED-AREA REPORT

(Reference FSH 2509.13, Report FS-2500-8)

August 17, 1992

PART I - TYPE OF REQUEST

- |                           |                    |                          |
|---------------------------|--------------------|--------------------------|
| 1. <u>Funding Request</u> | A. Funding Request | B. Accomplishment Report |
| 2. <u>Initial</u>         | A. Initial         | B. Interim      C. Final |

PART II - FIRE LOCATION

1. Fire name: County Line
2. Supervisor fire number: P41739
3. State: Idaho
4. County: Boise  
Custer  
Valley
5. Region: Intermountain, R-04
6. Forest: Boise, F-02  
Challis, F-06
7. Ranger District: Lowman, D-05  
Yankee Fork, D-03
8. Date fire started: 073192
9. Date controlled: 081092
10. Estimated suppression costs: \$4,251,215 (as of 081192)
11. Fire suppression damages repaired with FFF 102 funds:
  - a. 40 miles of firelines waterbarred (approximately)
  - b. 40 miles of firelines seeded (approximately)
  - c. 2 acres ripped and planted; 10 acres disc and planted
12. Fire intensity: 10% low 85% medium 5% high

PART III - NATIONAL FOREST SYSTEM PROBLEM INVENTORY

1. Watershed number: 17060205-67 and 17060205-69
2. NFS acres burned: 8,310
  - Boise National Forest: 7,020 acres
  - Challis National Forest: 1,290 acres
  - Recommended Wilderness: 6,180 acres
  - Non-recommended wilderness: 2,130 acres
  - Anadromous drainage: 4,191 acres
  - Non-anadromous drainage: 4,119 acres
3. Water-repellent soil: 5% of NFS area burned
4. Vegetation types: subalpine fir-pine grass and grouse whortleberry-pine grass, 80%; Douglas fir-elk sedge, 20%
5. Geologic types: granitic Idaho batholith
6. Soil erosion hazard rating:

Within anadromous drainage:	7% low	39% medium	54% high
Outside of anadromous drainage:	4% low	69% medium	27% high
7. Erosion potential: 7.0 cu. yds./sq.mi/yr. over natural rates.
8. Miles of stream channels by Regional order: 

1st order:	15.0
2nd order:	4.9
3rd order:	1.8
9. Miles of Forest Service trails: 11.3
10. Miles of Forest Service roads by maintenance levels:

1.46 miles level IV roads	
0 miles levels I, II, III, V roads	11.3 miles trails

PART IV - CALCULATED RISK AND CLIMATIC EVALUATION

1. Estimated vegetative recovery period: 4 years
2. Chance of success desired by management: 90%
3. Equivalent design recurrence period: 20 years
4. Related design storm duration: 1 hour
5. Related design storm magnitude: 1.5 inches
6. Related design flow: 9.9 cfs (Assume 80% bare ground in 9.4 square mile watershed.)
7. Estimated reduction in infiltration: 20%
8. Adjusted related design flow: 11.9 cfs

PART V - SUMMARY OF SURVEY AND ANALYSIS

1. Skills represented on burned area survey team:  
Range, soils, ecology, hydrology, timber, anadromous fisheries, recreation, and economics.

2. Describe emergency:  
There is an immediate need to protect anadromous fisheries habitat from sediment.

3. Emergency rehabilitation objective:  
Minimize sediment production and associated impacts on anadromous fisheries spawning and rearing habitat.

4. Probability of completing treatment prior to first major damage producing storm:

Land: 90% Channel: 90% Roads: 90%

5. Net environmental-quality benefit index: 0.7

6. Net social-well-being benefit: NA

7. Benefit/cost ratio: 1.08

8. Net benefits: \$12,669

9. Cost effectiveness index: II

# EMERGENCY BURN REHAB ANALYSIS

ANALYSIS OF DIFFERENCES BETWEEN TREATMENT - NO TREATMENT

TREATMENT, INVENTORY AND ADMINISTRATION COSTS

### A. LAND

## B. CHANNELS

## C. ROADS AND TRAILS

## D. MAJOR STRUCTURES

(a) Preplanned (Forest Plan) \_\_\_\_\_

(b) Fence \_\_\_\_\_ miles

(c) Other \_\_\_\_\_

\$1,300	\$0	\$0	\$0	0	0
\$8,000	\$0	\$0	\$0	0	0
\$1,150	\$0	\$0	\$0	0	0
\$750	\$0	\$0	\$0	0	0
\$0	\$0	\$0	\$0	0	0
\$0	\$0	\$0	\$0	0	0
\$0	\$0	\$0	\$0	0	0
\$0	\$0	\$0	\$0	0	0
\$11,200	\$0	\$0	\$0	0	0

$\frac{0}{2}$	$\frac{0}{2}$	$\frac{0}{2}$	$\frac{0}{2}$	$\frac{0}{2}$
$\frac{0}{2}$	$\frac{0}{2}$	$\frac{0}{2}$	$\frac{0}{2}$	$\frac{0}{2}$
$\frac{0}{2}$	$\frac{0}{2}$	$\frac{0}{2}$	$\frac{0}{2}$	$\frac{0}{2}$
$\frac{0}{2}$	$\frac{0}{2}$	$\frac{0}{2}$	$\frac{0}{2}$	$\frac{0}{2}$

.	Subtotal	\$0	\$0	\$0	\$0	\$0	\$0	\$0
ID Team/Admin.	Costs	\$10,000	\$0	\$0	\$0	\$0	\$0	\$0
17.	Total Investment Costs	\$160,800	\$0	\$0	\$0	\$0	\$0	\$0
18.	Discount Factor Percent	0.08000	0.9259	0.8573	0.7938	0.7350	6.2469	8.
19.	Present Value, Investment Costs	\$160,800	\$0	\$0	\$0	\$0	2.9348	1.
.	Total P.V. Investment Costs							

## YEAR

1                      2                      3                      4                      5                      6 - 10                      11 -

## DAMAGE REDUCTION BENEFITS

## I. WATERSHED IMPACTS SEDIMENTS

(a) Downstream Water Storage	\$0	\$0	\$0	\$0	\$0	\$0
(b) Sediment Removal	\$0	\$0	\$0	\$0	\$0	\$0
(c) Anadromous Fisheries	\$0	\$150,900	\$32,850	\$5,700	\$1,440	\$0
(d) Resident Fisheries	\$0	\$0	\$0	\$0	\$0	\$0
(e) Water Quality	\$0	\$0	\$0	\$0	\$0	\$0
(e) Other	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal	\$0	\$150,900	\$32,850	\$5,700	\$1,440	\$0

## II. FLOOD WATER

(a) Loss of Land, Crops, or Uses	\$0	\$0	\$0	\$0	\$0	\$0
(b) Damage/Loss to Structures and Uses	\$0	\$0	\$0	\$0	\$0	\$0
(c) Flood Fighting and Emergency Actions	\$0					
(d) Other	\$0					
Subtotal	\$0	\$0	\$0	\$0	\$0	\$0

## III. RESOURCE RELATED IMPACTS

(a) Range	AUM's	AUM Value =	\$10.25
(b) Recreation	RVD's	RVD Value =	
(c) Wildlife	Hunter Day	Value =	
(d)	Hunter Day	Value =	
	Hunter Day	Value =	
(f) Timber	MBF	MBF Value =	
(g) Other			
Subtotal			

## IV. OTHER IMPACTS

(a) Recreation Facilities Damaged/Lost	\$0	\$0	\$0	\$0	\$0	\$0
(b) Power Facilities/Revenue Lost	\$0	\$0	\$0	\$0	\$0	\$0
(c) Other	\$0	\$0	\$0	\$0	\$0	\$0
Subtotal	\$0	\$0	\$0	\$0	\$0	\$0

## V. TOTAL DAMAGE REDUCTION BENEFITS

Total Benefits	\$0	\$150,900	\$32,850	\$5,700	\$1,440	\$0
Discount Factor Percent	1.0000	0.9259	0.8573	0.7938	0.7350	6.2469
Present Value, Benefits	\$0	\$139,722	\$28,164	\$4,525	\$1,058	2.9348
Total P.V. Benefits						\$0

8.

1.

VI. SUMMARY

Present Value, Benefits  
Present Value, Costs  
Net Present Value  
Benefit Cost Ratio

\$173,469  
\$160,800  
\$12,669  
1.08

PART VI - ELIGIBLE EMERGENCY REHABILITATION MEASURES OR TREATMENTS  
AND SOURCE OF FUNDS

NOTE: Emergency rehabilitation is work done promptly following a wildfire and is not to solve watershed problems that existed prior to the wildfire.

Line Items	Units	Unit Cost	NFS LANDS			Other Lands			ALL LANDS	
			No. of Units	FFF 092 \$	Other FFF 102 ident.	No. of Units	Federal \$	Non-Federal \$	Total \$	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		
A. LAND										
a. Seeding	Acres	\$47	300	\$14.0m						
b. Filter strip	Mi	\$9.1m	2.5	\$22.8m						
Geotextile mat	Acres	\$8.3m	8.5	\$70.6m						
c. Firelines										
d. Soil Stabilizer	Acres	\$0.8m	40	\$32.2m						
B. CHANNELS										
a. Sediment Check dams w/in stream										
b. Stabilizing streambanks										
c. Log removal										
C. ROADS AND TRAILS										
a. Culvert replacement	Cul	\$130	10	\$1.3m						
b. Enlarge/clean catchment basins										
c. Downspout-replace	Mi	\$800	1.5	\$1.2m						
d. Trash Racks	Cul	\$80	10	\$0.8m						
e. Berm removal										
f. Splash pad repair	Yds	\$46	175	\$8.0m						
D. MAJOR STRUCTURES										
a. Preplanned - from Forest Plans										
b. Fence										
* ID team/Admin. costs	Team	\$10.0m	1.0	\$10.0m						
E. TOTAL				\$160.9m			\$	\$	\$	



F. Remarks: \*COR costs are included in each line item.

PART VII - APPROVALS

/s/ \_\_\_\_\_ Date \_\_\_\_\_  
Forest Supervisor (Signature)

/s/ \_\_\_\_\_ Date \_\_\_\_\_  
Regional Forester (Signature)

BAER Team Survey Report

August 17, 1992

The County Line fire perimeter encompasses approximately 8310 acres within the Boise and Challis National Forests. The fire burned through moderate to weakly dissected glacial trough land, and weakly to strongly cryoplanated mountain slopes. The soils range from shallow to moderately deep skeletal, loamy and sandy soils. Overland flow is uncommon in these landtypes. The streams directly affected by the fire include Fir Creek and one unnamed first order drainage that flows into Bear Valley Creek and eventually into the Middle Fork of the Salmon River. These Valley County drainages contain Spring Chinook Salmon a federally listed threatened species. In Boise County, Gates Creek and other small tributaries that flow into the South Fork of the Payette River were affected. These drainages do not contain anadromous fish populations. The dominant vegetation within the perimeter of the County Line Fire is characteristic of the subalpine fir/grouse whortleberry, subalpine fir/elk sedge and Douglas-fir/elk sedge habitat types.

Fire Effects -

- Fire Intensity - Eighty percent of the burned area consisted of a stand replacing crown fire. Twenty percent of the area resulted in a mosaic pattern that includes ground fire and unburned areas. Fire intensity ranges from low to high within the burned area. The dominant intensity category, as described in the Burned Area Emergency Rehabilitation Handbook, was medium fire intensity. Areas of both low and high fire intensity occurred in isolated spots. The soils characteristically have thin organic horizons which are easily destroyed by fire. However, the surface soil horizons have not been intensively heated, except in isolated areas of high fuel build up. This was due to rate of spread and relatively high antecedent soil moisture conditions. Root crowns and surface roots of many of the sedges, bunch grasses, and shrubs are still viable and will resprout.

- Geologic Hazards - Geologic hazards associated with these landforms are primarily related to activities associated with intercepting subsurface flow. Such conditions do exist on roadcuts within the fire perimeter. The reduced level of evapotranspiration is likely to increase subsurface flow, increasing the risk of sediment production from burned cut and fill slopes.

- Soil Hazards - These landforms tend to have a moderate to high erosion hazard naturally. Sediment transport is controlled by vegetation, down woody material and natural barriers associated with the benchy terrain and high percentage of surface rocks and boulders. Fire has temporarily reduced vegetative cover, this condition is partially mitigated by the large down woody material that remained unburned. Crusting and hydrophobic conditions occur in isolated areas within areas of moderate and high fire intensity. The depth of crusting averaged 1/4 of an inch. Timing of natural revegetation and amelioration of the crusting and hydrophobic conditions within the anadromous drainage makes the risk of sediment

delivery to Fir Creek significant enough to require immediate mitigation measures. Potential sediment yield will be highest the first year after the fire and decrease rapidly thereafter. The BOISED sediment yield model predicts the fire will add an additional seven tons of sediment per square mile in the 1993 spring runoff period. Within this nine square mile drainage, the additional sediment is expected to result in high impacts to rearing habitat in Fir Creek and could contribute sediment to spawning habitat located downstream in Bear Valley Creek. A fish response model designed for the Forest predicts the additional sediment will result in the loss of 2.5 age 0 chinook per 100/m<sup>2</sup> the first year after the fire. Any perceived loss of chinook salmon identifies this as an emergency condition warranting mitigation due to its listing as an endangered species. The degree of impact as a result of increased sediment will depend largely on the snowmelt and runoff conditions in the spring of 1993. Although the sediment yield increase is expected to be short-lived, it will continue to result in mortality to chinook fry, at a declining rate, until 1996, when hydrologic function is expected to return to pre-fire conditions.

- Runoff Hazards - The area of greatest concern from a watershed perspective is the extent of contiguous areas burned at moderate and high intensities. Eighty-five percent of the fire area burned at moderate intensities, the potential increase in overland flow due to the reduction of infiltration by crusting or hydrophobic conditions could be significant. Overland flow and peakflow increases were analyzed using the Soil Conservation Service flow curves. Interpretations indicate a two ft<sup>3</sup>/mi<sup>2</sup> increase in related design flows based on a reduction in infiltration of 20 percent and a 20-year storm event with a duration magnitude of 1.5 inches/hour (an actual storm event of this magnitude occurred in the Lowman burn area in 1990). A storm of this magnitude will have detrimental effects. The potential runoff impacts of next spring's runoff are of greatest concern. The potential for significant altering of channel capacity is minimal because any increase in water yield and peak flows should be dissipated by the natural hydrological mechanics that exist in the headwater streams, or by natural meanders when potential increased flows reach downstream meadow areas.

- Property, Development and Values at Risk - Roads and trails within the perimeter of the fire provide opportunities for dispersed recreation within the Red Mountain Roadless Area. A significant portion of the Red Mountain Roadless Area is proposed wilderness. In fact, approximately 75% of the burn area is recommended wilderness. Maintaining the integrity of wilderness characteristics was considered in the development of watershed protection measures.

- Potential Treatment Alternative - The following proposed emergency rehabilitation activities have been identified as necessary to protect anadromous fish rearing and spawning habitat from sedimentation. 1) Seed approximately 300 acres on slopes lacking sufficient amounts of down woody debris to impede overland flow. A native seed mix of 12 lbs. of mountain brome and 8 lbs. of slender wheatgrass (PLS) will be used. 2) Place cut straw bales (2.5 miles) between the toe of slopes and stream channel as a

temporary measure to filter overland flow. 3) Install geotextile mat (8.5 acres) along burned slopes with no natural buffer directly above the stream channel. 4) Hydromulch 40 acres of cut and fill slopes along burned road corridor to reduce ravelling and filter runoff by replacing vegetation which had stabilized these slopes. 5) Rehabilitate road FS 579 drainage system directly affected by fire, including catch basin-splash pad repair, culvert extension, downspouts, and trash racks. These treatments are necessary to carry anticipated increases in runoff generated from subsurface and overland flow intercepted by the road and discharged on unprotected slopes adjacent to the stream.

EXAMINING IMPACTS OF MANAGEMENT ALTERNATIVES FOR AN  
EMERGENCY PROGRAM  
(Reference FSH 2509.13)

Fire Name		Date of Report									
County Line		* August 17 1992									
A. ENVIRONMENTAL QUALITY BENEFIT INDEX											
Environmental Factor (a)	Weight Factor (b)	Without Treatment		With Treatment		Difference		Actual (g)	Weighted (h)	Actual (g)	Weighted (h)
		Actual (c)	Weighted (d)	Actual (e)	Weighted (f)	Actual (g)	Weighted (h)				
1. Erosion and sediment *	10	2	20	0	0	0	20				
2. Aesthetic land quality *											
3. Water quality *	10	2	20	1	10	1	10				
4. Site productivity *	5	1	5	1	5	0	0				
5. Wildlife habitat *											
6. Anadromous fish habitat *	10	2	20	1	10	1	10				
7. Wilderness Characteristics *	8	0	0	1	8	-1	-8				
8. TOTAL *	43	65	33								
9. Average weighted index *			1.5		.8		.7				
10. Net environmental quality benefit index*											
B. SOCIAL WELL-BEING BENEFIT INDEX											
Social Criteria (a)	Weight Factor (b)	Without Treatment		With Treatment		Difference		Actual (g)	Weighted (h)	Actual (g)	Weighted (h)
		Actual (c)	Weighted (d)	Actual (e)	Weighted (f)	Actual (g)	Weighted (h)				
1. Life, health, safety *	0										
2. Employment *	0										
3. Recreational opportunity *	0										
4. Economic stability *	0										



Note: At current Water Resources Council interest rate \* 8.0 percent

Economic Benefit Indices	Units of Measure	Damage Expected				Expected \$ Damage Reduction
		Without Treatment	Present Value (\$)	No. of Units	With Treatment	
(a)	(b)	(c)	(d)	(e)	(f)	(g)
I. Watershed Impacts Sediments						
1. Downstream water storage *		NA				
2. Sediment removal *		NA				
3. Anadromous fish habitat *	No. of returning adults.		See notes for calculation process.			\$173,469
4. Water quality *		NA				
II. Flood Water						
1. Land *		NA				
2. Water Improvements *		NA				
3. Subtotal, Watershed *						
III. Resource Related Impacts						
1. Range *		NA				
2. Wildlife and recreation *		NA				
3. Timber *		NA				
4. Subtotal, Resource Related *						
IV. Other Impacts						
*Recreation Facilities						
1. *Power, Habitat		NA				
2. Subtotal, Other *						
V. TOTAL DOLLARS *			3333333333333			\$ 173,469

NMFS published "Net Economic Values for Salmon and Steelhead" in 1982. At that time, chinook were valued at \$550 per escaping spawner, and steelhead at \$359 per escaping spawner. Since the listing of chinook as "threatened", the agencies, power developers, water users, etc. are spending a tremendous amount of money to recover chinook salmon. Ed Murrel of NMFS suggested that we estimate the current value as follows: there are now about 3,000 escaping spawners in the Snake River Basin. Costs for recovery are running in the hundreds of millions of dollars. Therefore, chinook values are extremely high. If one hundred million dollars are spent over the next ten years, each spawner in that period of time is worth about \$3,000. Therefore, assume this value as the current baseline. Multiply smolt escapement numbers by .05 to convert to escaping spawners (based on most recent data in Bear Valley).

I. 1 and 2. Downstream water storage and sediment removal costs were not evaluated economically. These were evaluated in the environmental quality index.

3 and 4. Anadromous fish values were developed based on output from the BOISED sediment prediction model and the Boise Fish Response Model. BOISED results indicate that rehabilitation treatment activities will minimize mortality. The capability of the stream to support parr production will return to pre-fire levels by 1996.

II. No flood water economic impacts were evaluated. There are no private holdings downstream which would be impacted.

III. This treatment will not result in changing wildlife or recreation use, timber harvest levels, etc.

IV. There are no potential effects on recreation or power facilities.

Note: Water Resource Council discount rate of 8% was used per telephone conversation with Jack McDonald, P & B, Regional Office, on 8/12/92.



USDA-FOREST SERVICE		FS-2500-8b (11/82)	
ON-SITE and OFF-SITE DEVELOPMENTS SUBJECT TO HAZARDS (Reference FSH 2509.13)		Fire Name	
		*County Line	
		Date of Report	
		*August 17, 1992	
	Type of Units	Number of Units	Estimated Value (\$)
1. Community and urban development	People	0	
2. Municipal and domestic water supply	People served	0	
3. Transportation systems	Miles	0	
4. Water distribution systems (irrigation)	Miles	0	
5. Agricultural development (crops, facilities)	Acres	0	
6. Industrial development	Number	0	
7. Power and communication lines	Miles	0	
8. Recreation development	PAOT	0	
9. Anadromous fish habitat	Miles	16	\$2.1mm
10. Other (specify)			
11. Total Hazard Potential			
12. Narrative (Optional-if additional space is needed attach another sheet)			
16 miles of stream exist from Fir Creek to the mouth of Bear Valley Creek.			

**SUMMARY OF EMERGENCY REHABILITATION NEEDS BY LANDOWNERSHIP**  
(Reference FSH 2509.13)

		Fire Name	
		* County Line	
		Date of Report	
		* August 17, 1992	
		<b>B. Emergency Rehabilitation Needs</b>	
<b>Landownerships</b>	<b>A. Acres Burned</b>	<b>(1) Land (acres)</b>	<b>(2) Channel (miles)</b>
			<b>(3) Road &amp; Trail (miles)</b>
			<b>(4) Other (Fence construction)</b>
<b>Federal (NFS) *</b>	8,310	350	1.5
<b>Other (specify) *</b>			
<b>Subtotal (NFS) *</b>	8,310	350	1.5
<b>Non-Federal (State &amp; County) *</b>			
<b>Indian reservation *</b>			
<b>Private *</b>			
<b>Subtotal (Non-Federal) *</b>			
<b>TOTAL *</b>	8,310	300	1.5
<b>C. Source of Emergency Rehabilitation Funds for Needed Work (\$)</b>			
	<b>1. FFF</b>	<b>2. Emergency Flood Prevention</b>	<b>3. FR &amp; T</b>
	<b>(a) 092</b>	<b>(b) 102</b>	<b>4. Other Federal (Enter fund)</b>
<b>Landownerships</b>			<b>5. Non-Federal (Enter fund)</b>
			<b>6. Total</b>
<b>Federal (NFS) *</b>	\$160.9m		\$160.9m
<b>Other (specify) *</b>			
<b>Subtotal (NFS) *</b>			
<b>Non-Federal (State &amp; County) *</b>			
<b>Indian reservation *</b>			
<b>Private *</b>			

