BURNED-AREA REPORT

(Reference FSH 2509.13, Report FS-2500-8

August 12,1992

PART I - TYPE OF REQUEST

1. Funding Request — A. Funding Request B. Accomplishment Report
2. Initial — A. Initial B. Interim C. Final

PART II - FIRE LOCATION

1. Fire name: Cub Creek
2. Supervisor fire number: P41743
3. State: Idaho
4. County: Valley
5. Region: Intermountain, R-04
6. Forest: Boise, F-02
7. Ranger District: Lowman, D-05
8. Date fire started: 080392
9. Date controlled: 080992
10. Estimated suppression costs: 2,328,832
11. Fire suppression damages repaired with FFF 102 funds:

    a. 9.04 miles of firelines waterbarred
    b. 0 acres of firelines seeded
    c. 3 acres ripped and planted

12. Fire intensity: 20% low 75% medium 5% high

PART III - NATIONAL FOREST SYSTEM PROBLEM INVENTORY

1. Watershed number: 17060205-67

2. NFS acres burned: 2,910

3. Water-repellent soil: 5% of NFS area burned

4. Vegetation types: subalpine fir-pine grass and grouse whortleberry-pine grass, 80%; subalpine fir-elk sedge, 20%.

5. Geologic types: granitic Idaho batholith

6. Soil erosion hazard rating: 1% low 74% medium 25% high

7. Erosion potential: 14 cu. yds./sq.mi/yr. over natural rates.

8. Miles of stream channels by Regional order or classes: 1st order: 5.8
   2nd order: 0.3

9. Miles of Forest Service trails: 0

10. Miles of Forest Service roads by maintenance levels:
    4.1 miles level I roads — 0 miles level II roads
    5.3 miles levels III, IV, V roads — 0 miles trails

PART IV - CALCULATED RISK AND CLIMATIC EVALUATION

1. Estimated vegetative recovery period: 2 years

2. Chance of success desired by management: 80%

3. Equivalent design recurrence period: 20 years

4. Related design storm duration: 1 hours

5. Related design storm magnitude: 1.5 inches

6. Related design flow: 5.0 cfsm (Assume 80% bare ground in 1.2 square mile watershed.)

7. Estimated reduction in infiltration: 5%

8. Adjusted related design flow: 5.3 cfsm

PART V - SUMMARY OF SURVEY AND ANALYSIS

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

2. Describe emergency: There is an immediate need to protect anadromous fisheries habitat from sediment produced from burned-over roads by revegetating road cut and fill slopes, limiting access, and controlling overland flow. Burned-over riparian areas need to be buffered and stabilized. Ungulate access needs to be controlled to reduce sediment production and permit vegetative recovery.

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

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

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

5. Net environmental-quality benefit index: 0.9

6. Net social-well-being benefit: NA

7. Benefit/cost ratio: 1.36

8. Net benefits: $12,806

9. Cost effectiveness index: II

Cub Creek Fire
BAER Report Narrative

August 12, 1992

The Cub Creek fire perimeter encompasses approximately 2910 acres. The fire burned through strongly dissected glacial trough land, and weakly to strongly cryoplanated mountain slopes. The soils tend to 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 Cub Creek and two unnamed first order drainages. The dominate vegetation is characteristic of the subalpine fir/grouse whortleberry, subalpine fir/elk sedge habitat types.

Fire Effects -

- Fire intensity - The fire burned in a mosaic pattern that includes ground fire, stand replacing crown fire and unburned areas. Fire intensity ranges from low to high within the burned areas. The dominant intensity falls between low to medium. The soils characteristically have thin organic horizons which are easily destroyed by fire. Except in isolated areas of high fuel build up, the surface soil horizons have not been intensively heated. Root crowns and surface roots of many of the carex's, 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 were not observed on roadcuts within the fire perimeter. However, the temporally reduced level of evapotranspiration is likely to increase subsurface flow, increasing the risk of interception and sediment production.

- 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 temporaly reduced vegative cover, however, this condition is primarily naturally mitigated by the large down woody material and terrain features. Crusting and hydrophobic conditions occur in isolated areas of high fire intensity. The depth of crusting averaged between 1/16 to 1/8 of an inch and is easily disturbed. These conditions will be naturally ameliorated and do not occur frequently enough to significantly increase hazards associated with overland flow.

Sediment analysis results from the Boise National Forest BOISED sediment yield model predicts an increase of sediment of 14 cu.yd./mi.sq./year. This potential sediment increase will most likely be related to the increased overland flow resulting from the loss of vegetation buffers along the existing roads and streams. A fish response model designed for the Forest indicates the potential increase in sediment will reduce the population density of 0+ age chinook salmon by 2.7 per 100 m.sq.

- Runoff Hazards - Soil Conservation Service flow curve analysis and interpretation indicates that there will be a minor increase in related design flows from 5 to 5.3 cu.ft./mi.sq. The increased flow is based on the 20-year storm event with a duration magnitude of 1.5 inches per hour. This increase is not significant and will not affect channel capacity or alter the critical reach.

- Property, Development and Values at Risk - Roads within the perimeter of the fire provided opportunities for dispersed recreation. The fire has increased the likelihood of ORV use by providing access to areas once densely forested. This is likely to increase soil disturbance and sediment production.

- Potential Treatment Alternative - Proposed emergency mitigation activities are necessary to protect spawning and rearing habitat critical to the endangered chinook salmon. Activities include: 1) controlling sedimentation from 5.3 miles of burned over road by installing waterbars; seeding treadway, cut and fill slopes; and close access to burned areas. 2) install .5 miles of temporary protection fence to limit cattle access to burned areas. 3) treat .5 miles of streambank by planting willow cuttings in burned areas along Cub Creek. 4) protect burned Cub Creek streambanks by installing .5 miles of subalpine fir revetments.

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.

			NFS LANDS			Other Lands			ALL Lands
Line Items	Units	Unit Cost	No. of Units	FFF 092 $	Other $ FFF 102 ident.	No. of Units	Federal$ XXX ident.	Non-Federal $ XXX. identify	Total $
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
A. LAND									
a. Seeding	Acres	$17	32	$0.5m					
b. Slope Stabilization									
c. Firelines									
d. Soil Stabilizer									
B. CHANNELS									
a. Sediment Check dams w/in stream									
b. Stabilizing streambanks	Miles	$60.8m	0.5	$30.4m*					
c. Log removal									
C. ROADS AND TRAILS									
a. Culvert replacement									
b. Enlarge/clean catchment basins									
c. Downspout-replace									
d. Trash Racks									
e. Berm removal									
f. Waterbars	Miles	$358	5.3	$1.9m					
D. MAJOR STRUCTURES									
a. Preplanned - from Forest Plans									
b. Fence	Miles	$2m	.5	$1.0m					
* ID team/Admin. costs	Team	$3.5m	1.0	$3.5m					
E. TOTAL				$37.3m			$	$	$

F. Remarks: * Includes subalpine fir revetments and willow planting.

PART VII - APPROVALS

/S/Cathy Barbouletos for _____ 8/11/92

Forest Supervisor (Signature) Date

/S/ _____ _____

Regional Forester (Signature) Date

EXAMINING IMPACTS OF MANAGEMENT ALTERNATIVES FOR AN EMERGENCY PROGRAM

(Reference FSH 2509.13)

Fire Name	**Date of Report**
Cub Creek	* August 12 1992

A. ENVIRONMENTAL QUALITY BENEFIT INDEX

Environmental Factor (a)	Weight Factor (b)	Without Treatment Actual (c)	Without Treatment Weighted (d)	With Treatment Actual (e)	With Treatment Weighted (f)	Difference Actual (g)	Difference Weighted (h)
1. Erosion and sediment *	10	2	20	1	10	1	10
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. Range *	7	2	14	1	7	1	7
8. TOTAL *	42	///////	79	///////	42	///////	37
9. Average weighted index *	//////	///////	1.9	///////	1.0	///////	.9
10. Net environmental quality benefit index*	//////	///////	//////////	///////	///////	///////	.9

B. SOCIAL WELL-BEING BENEFIT INDEX

Social Criteria (a)	Weight Factor (b)	Without Treatment Actual (c)	Without Treatment Weighted (d)	With Treatment Actual (e)	With Treatment Weighted (f)	Difference Actual (g)	Difference Weighted (h)
1. Life, health, safety *	0						
2. Employment *	0						
3. Recreational opportunity *	0						
4. Economic stability *	0						
5. Income distribution *	0						

6. **Preserve special sites** *	0						
7. **Other** *	0						
8. **TOTAL** *	0	////////	0	////////	0	////////	0
9. **Average weighted index** *	////////	////////	0	////////	0	////////	0
10. **Net social well-being benefit index** *	////////	////////	////////	////////	////////	////////	0

C. REMARKS

*Life, health, and safety: This item is not affected by the fire or treatment. The potential modeled increases in water yield from a twenty year storm are minimal (5 cfsm).

Employment: Outside of suppression and rehabilitation activites, there are no effects on employment.

Recreational opportunity: No change.

Economic stability: The only effect would be impacts on grazing use on the Bear Valley Allotment. Grazing allocations are not expected to change as a result of the fire.

Income Distribution: No changes.

Preservation of special sites: None impacted.

D. EXPECTED DAMAGE REDUCTION BENEFIT SUMMARY

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

Economic Benefit Indices (a)	Units of Measure (b)	Damage Expected Without Treatment: No. of Units (c)	Without Treatment: Present Value($) (d)	With Treatment: No. of Units (e)	With Treatment: Present Value($) (f)	Expected $ Damage Reduction (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.			$48,250
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 *		33333333333333				$48,250

E. REMARKS

* 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 extrememly 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. Treatment activities show modeled increase of 13.75 returning salmon the first year after treatment, and 2.55 the second year. Returning adults would return to pre-fire levels by year 3. NMFS representatives contacted evaluated the value of returning adults at $ 3,000 per fish.

Modeled values show increases of 275 smolt and 50 smolt respectively on years 1 and 2 after treatment. 5% of these smolt were evaluated as returning adults. Present value of anadromous fish benefits are $48,250. This relates to benefits of treatment from both habitat and water quality effects.

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

III. This fire will not result in changing range allocations, willife, or recration 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 McDonalsd, 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
*Cub Creek
Date of Report
*August 12, 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	25	
10. Other (specify)			
11. Total Hazard Potential			

12. Narrative (Optional-if additional space is needed attach another sheet)

25 miles of stream exists from Cub Creek to the mouth of Bear Valley.

USDA-FOREST SERVICE

FS-2500-8c (11/82)

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

Fire Name
* Cub Creek

Date of Report
* August 12, 1992

Landownership	A. Acres Burned	B. Emergency Rehabilitation Needs (1) Land (acres)	(2) Channel (miles)	(3) Road & Trail (miles)	(4) Other (Fence construction)
Federal (NFS) *	2,910		0.5	5.3	0.5
Other (specify)*					
Subtotal (NFS) *	2,910		0.5	5.3	0.5
Non-Federal (State & County) *					
Indian reservation *					
Private *					
Subtotal (Non-Federal) *					
TOTAL *	2,910		0.5	5.3	0.5

C. Source of Emergency Rehabilitation Funds for Needed Work ($)

Landownership	1. FFF (a) 092	1. FFF (b) 102	2. Emergency Flood Prevention	3. FR & T	4. Other Federal (Enter fund)	5. Non-Federal (Enter fund)	6. Total
Federal (NFS) *	$37.3m						$37.3m
Other (specify) *							
Subtotal (NFS) *							
Non-Federal (State & County) *							
Indian reservation *							
Private *							

Subtotal (Non-Federal) *							
TOTAL *	$37.3m						$37.3m