United States Department of Agriculture | Forest Service | Salmon NF

Reply To: 2520 Watershed Protection & Mgmt. Date: August 22, 1985

Subject: Burned Area Emergency Rehabilitation - Butte Fire - Long Tom Complex

To: Regional Forester, R-4

Enclosed for your review and action is the Burned Area Emergency Rehabilitation Report for the Butte Fire of the Long Tom Fire Complex. In addition to suppression related damages, we are recommending watereshed treatments which could appropriately be funded with FFF-092 funding. As shown in Part VI of the Rehabilitation Report, we are requesting funding of $81,000 for seeding 1,800 acres of high intensity burn sites. The narrative section of the rehabilitation report describes in detail the watershed protection needs and associated resource values.

R. T. Hauff

RICHARD T. HAUFF
Forest Supervisor

Enclosure

cc:
D-2
TAF
RRWW

United States Department of Agriculture | Forest Service | Salmon NF

Reply To: 2520 Watershed Protection and Mgmt. Date: August 22, 1985

Subject: Burned Area Emergency Rehab. - Long Tom Complex: Butte Fire

To: Forest Supervisor

Enclosed for your review and approval is the Burned Area Report for the Butte Fire of the Long Tom Complex. In addition to suppression related damages, the rehabilitation team is recommending some watershed treatments which could appropriately be funded with FFF-092 funding. Following is a summary of the effects of the Butte Fire as well as the associated fire suppression damages:

The Butte Fire covered approximately 21,200 acres of the Long Tom Complex fires. Major resources affected in the fire area include: watershed values; anadromous fisheries habitat; key big game winter range; commercial timber; National Forest system roads and facilities; and private property.

Watershed Values

Major drainages involved in the Butte Fire are Owl Creek, Dutch Oven Creek and Cove Creek. Soils in the fire area originate from Batholith granitics and are moderately to highly erosive. Approximately 15% of the Butte Fire burned at a high intensity. Preliminary field examination of the high intensity burn areas suggests that infiltration rates have been reduced approximately 60%. Until vegetation has been reestablished on these sites and infiltration rates inprove, the high intensity burn sites will likely be subject to accelerated erosion and noticable overland flow. Only 7% of the Owl Creek watershed burned at high intensity. This may cause up to a 4% increase in peak flows in the main Owl Creek drainage. In the smaller tributaries such as Butte Creek and Swamp Creek, where a concentration of the higher intensity burn is located, localized channel damage and sedimentation is likely, due to the reduction in watershed time of concentration (Tc) resulting from the reduced infiltration rates and likelihood of overland flow.

Fisheries

Approximately 53 miles of stream channel were inside the burned area. This included 33 miles of 1st order, 7 miles of 2nd order, 6 miles of 3rd order, and 7 miles of 4th order streams. The lower reach of Owl Creek, which includes an anadromous fisheries spawning area, was within the fire perimeter. Preliminary sedimentation estimates suggest that fisheries habitat will be severely influenced for several years following the fire. Sedimentation will result from both watershed damage from the burned area, as well as that produced from the fire suppression efforts (primarily tractor fire line). Both of these sources are expected to produce about equal volumes of sediment. Sedimentation is expected to be greater than that which can maintain a minimum viable anadromous population for the

first few years. However, due to expedient watershed protection measures which have already been accomplished or are proposed, a rapid recovery in the Owl Creek stream channel is anticipated. No significant channel clearing needs (related to fire related debris) were identified.

Big Game

Due to the great range in elevation within the burned area (3,000 ft to over 7,500 ft), a wide variety of wildlife habitat was affected. In general, the short term effects of wildfire are universally detrimental. However, within 3 to 5 years, the mosaic created in the upper elevations will result in excellent summer range for mule deer, elk, and bighorn sheep. This is also true in the winter range for elk and bighorns, but mule deer winter range will take longer to regenerate due to the loss of shrubs such as mountain mahogany. Both summer and winter habitats for several small herds of mountain goats were burned. This will displace these animals and may contribute directly to mortality this winter. Long term effects on this species are unknown. In summary, the most significant effect upon wildlife is the nearly total loss of this year's vegetation production on approximately 9,000 acres of key big game winter range along the river breaks. A fire of this magnitude will displace many animals and may cause significant losses, depending on the severity of the upcoming winter.

Commercial Timber

Three existing timber sale contracts, containing an estimated 18 MMBF of timber scheduled to be cut was burned. Damage from the fire ranged from very slight, where the fire essentially only underburned, to where the loss was 100%. Salvage options are now being evaluated. Further field review and analysis of post fire resource photography of the fire area are now being completed.

Forest System Roads and Trails

Approximately 125 miles of National Forest system roads sustained surface and drainage damage from the fire suppression effort. These include 71 miles of levels 3 and 4; 21 miles of level 2; and 33 miles of level 1. Other damages include guardrails and curbs on the Cove Creek Bridge, and culverts at Dishpan Springs and E. Fork Wallace Creek.

Forest trails were also impacted by the fire and the suppression effort. About 14 miles of trail were within the burned area, and may eventually need clearing. Approximately 5 miles of trail was obliterated by the construction of tractor fire line in the trail's original location.

Following are a list of rehabilitation needs and accomplishments, and anticipated costs:

Firelines

Approximately 37 miles of tractor line and 7 miles of handline were constructed during the suppression of the Butte Fire. During the mop-up

phase of the fire suppression effort, these areas were waterbarred. A team of three special rehabilitation field observers were used to mark appropriate spacings and locations on the firelines. Water bar spacing and other guidance were supplied to the field observers by the rehabilitation team. Along all tractor lines where a slash berm was created, the field observers marked and fire personnel created 16 foot openings every 200 feet, to provide travelways for big game use. Where tractor lines intercepted existing roads, a series of tank trap style water bars were installed to limit access. Seeding will be accomplished this fall. Seed mixtures and costs are listed in the Seeding section.

Road Closures

Approximately 16.5 miles of roads have been identified which were accessed during the suppression effort and now need to be closed. These include:

#135	1.5 miles
#137	2.5 miles
#138	0.75 miles
#284A	1.5 miles
#43C	1.75 miles
#43	3.0 miles
#43	5.5 miles

These roads are targeted for blading before closure, to remove existing drainage problems. Costs for blading are listed in the following section on road maintenance. Seeding costs and mixtures for these road closures will be listed under the Seeding section.

Road Maintenance

The following road segments have been identified as needing maintenance due to the effects of fire traffic during the suppression effort:

Level 3 and 4

No.	Name	Miles	Blading Cost$/Mile	Cost$
30	Salmon R Road gravel	10	NC	NC
30	Salmon R Road native	14	230	3220
123	Colson	11	160	1760
166	Long Tom	3.7	160	592
123	Colson Stateline	15.6	160	2496
38	Spring Creek	16.3	160	2608

Other:	Cove Creek Bridge - repair of curb and guardrail	1200
	Culvert Replacement - Dishpan Springs and E.F. Wallace Cr.	2200
	Resurfacing of Long Tom Road (includes 2 trucks for 3-10 hr days each @$50/hr and 1 loader for 3-10 hr days @ $40/hr)	4200
	Repair Colson-Stateline along cat lines/resurfacing 7 miles (1 D-6 for 8-10 hr days @$85/hr; 1 patrol for 10-10 hr days @$60/hr)	12800
	Subtotal for Level 3-4 Roads:	$31,076

Level 2

No.	Name	Miles	Blading Cost$/Mile	Cost$
137	Upper Swamp	3.4	160	544
135	Swamp Butte	2.7	160	432
43	Owl Creek Section 1	7.5	160	1200
43c	Owl Creek Spur C	2.4	160	384
284	Beartrap LO	4.7	160	752
		Subtotal for Level 2 Roads:		$ 3,312

Level 1

No.	Name	Miles	Blading Cost$/Mile	Cost$
439	Salmon Copper	4.7	160	752
437	Ebenezer	3.4	160	completed
343	Lower Swamper	2.5	160	400
64	Corn Lake	3.0	160	480
343A	Lower Swamp Spur A	1.0	160	160
243	Ebenezer Swamp	8.4	160	1344
11	Butte Creek	1.4	160	224
138	West Butte	1.1	160	176
43D	Owl Spur D	0.3	160	48
43E	Owl Spur E	0.7	160	112
43F	Owl Spur F	0.5	160	80
284A	Beartrap Spur A	1.9	160	304
43	Owl Creek Section 2	8.1	160	1296
	surface repair			500
		Subtotal for Level 1 Roads:		$ 5,876
		Grand Total for All Roads:		$ 40,264

Seeding Mixtures and Costs

Approximately 285 acres of fireline and closed roads are in need of seeding to establish a vegetative cover and prevent unacceptable on-site watershed damage. Seed is currently being ordered; however, the actual on-site application will be accomplished during this fall (late September or October). Previous seeding experience on the Salmon National Forest has shown that late fall seeding produces the best establishment results. Following are two seed mixtures recommended for this fire area:

1. High elevation tractor line and road closures (80% of seeding needs)

Mountain Brome	3 lbs/ac.
Smooth Brome	4 lbs/ac.
Orchard Grass	4 lbs/ac.
Timothy	2 lbs/ac.
Canada Bluegrass	3 lbs/ac.
Small Burnet	1 lb /ac.
White Clover	2 lbs/ac.
Total	19 lbs/ac.

2. Lower elevation tractor line and road closures(20% of seeding needs)

Smooth Brome	5 lbs/ac.
Orchard Grass	4 lbs/ac.
Timothy	4 lbs/ac.
Intermediate Wheatgrass	4 lb /ac.
Red Clover	4 lbs/ac.
Total	21 lbs/ac.

Fire camps and helispots were evaluated; however, no further treatment is recommended at the present time.

Total estimated costs for suppression related damages are summarized below:

Roads (as described above in Road Maintenance)	$ 40,264
Seed and Seeding (includes seeding 285 acres @ $45/ac)	$ 12,825
Total	$ 53,089

Detailed resource reports will be submitted to the Forest Supervisor from the resource specialists represented on the interdisciplinary rehabilitation team.

Fire Damaged - Recommended Watershed Protection Measures

Approximately 800 acres of high intensity burn sites below the 6,000 foot elevation contour, and 1,000 acres above the 6,000 foot elevation contour are recommended for seeding as a fire damaged watershed protection measure. The seeding mixtures and rates previously recommended for the tractor line seeding are also recommended for the burned area treatment.

Sediment generated from the acres burned will vary according to both fire intensity and burned area positioning within the watershed. It is estimated that 38% of the sediment produced will come from the 17% of the area that burned at a hot fire intensity. An additional 41% will be tied to the 37% of the area that burned at moderate intensities. The remaining sediment contribution can be attributed to the acres that burned at a low intensity.

Seeding of the high intensity burned acres and the more important moderately burned acres will greatly increase the vegetative recovery. Sedimentation and the resultant influence on water quality, resident fish habitats and anadromous fish habitats will be reduced by 25%. Wildlife forage will be enhanced, both on summer and winter ranges. Seeding will also enhance natural stocking control of regenerated lodgepole timber. Reduced visual contrast as a result of the seeding will help in maintaining visual quality objectives of retention and modification.

James E. Hust

ROBERT W. HENNES
for Rehabilitation Unit Leader
Long Tom Fire Complex

USDA—Forest Service

BURNED AREA REPORT

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

Date of Report: 8/15/85

PART I – TYPE OF REQUEST

1. Type of Report

A. [x] Funding (Request for estimated FFF funds) B. [x] Accomplishment Report

2. Type of Action

A. [x] Initial (estimated funding is first requested)

B. [ ] Interim

a. [ ] Updating the initial funding request

b. [ ] Supplying information for accomplishments to date on emergency work underway

C. [ ] Final

a. [ ] Best estimate for funds needed to complete eligible rehabilitation measure

b. [ ] Following completion of funded work

PART II – FIRE LOCATION

1. Fire Name (From Form FS-5100-29)	2. Forest Supervisor's Fire No. (From FS-5100-29)	3. State	4. County
Long Tom Complex (Butte Fire)	04-13-050	Idaho	Lemhi

5. Region	6. Forest	7. Ranger District	8. Date Fire Started	9. Date Fire Controlled	10. Estimated Suppression
4	Salmon	North Fork	7/20/85	8/13/85	$ 5,337,140

11. Fire Suppression Damages Repaired with FFF 102 Funds

a. 37.4 miles (firelines waterbarred) + 6 mile handline b. 225 acres (firelines seeded) c. Other (identify) closed roads: 16.5 miles

12. Fire Intensity

a. 50 % (low) b. 35 % (medium) c. 15 % (high)

PART III – NATIONAL FOREST SYSTEM PROBLEM INVENTORY

1. Watershed No.	2. NFS Acres Burned	3. Water Repellant Soil
0034/0035/0046	28469 (Butte 21200)	15 % of NFS acres burned

4. Vegetation Types

Douglas Fir; Lodgepole Pine; Pinyon Pine Ponderosa Pine; Annual Grasses; Mt. Mahogany

5. Geologic Types

Granitic: Border Zone of the Idaho Batholith

6. Soil Erosion Hazard Rating

a. 0 % (low) b. 59 % (medium) c. 41 % (high)

7. Erosion Potential

427 cu. yds/sq. miles

8. Miles of Stream Channels By Regional Order or Classes

1st order: 32.6 miles 3rd order: 5.7 miles
2nd order: 6.8 miles 4th order: 7.1 miles

9. Miles of Forest Service Trails

14.1 miles within burn area
5.0 miles are now tractor line along ridges

10. Miles of Forest Service Roads By Maintenance Levels

a. 32.6 miles (Level I) b. 20.7 miles (Level II) c. 70.6 miles (Levels III, IV, V)

PART IV – CALCULATED RISK AND CLIMATIC EVALUATION

1. Estimated Vegetative Recovery Period (Years)

Burn Intensity: low-1 yr high-6 yr
med-3 yr (mean: 2.45 yr)

2. Chance of Success Desired By Management (Percent)

90

3. Equivalent Design Recurrence Period (Years)

25 year event

4. Related Design Storm Duration (Hours)

6

5. Related Design Storm Magnitude (Inches)

1.6 inches/ 6 hour

6. Related Design Flow (cfsm)

Owl Creek: 25.6 cfsm

7. Estimated Reduction In Infiltration (Percent)

60 % in High Intensity Burn Area

8. Adjusted Related Design Flow (cfsm)

26.7 cfsm (a 4 % increase in Owl Creek)

Previous edition of this form is obsolete.

FS-2500-8 (11/82)

PART V – SUMMARY OF SURVEY AND ANALYSIS

1. Skills Represented on Burned Area Survey Team (x appropriate boxes)

a. [X] Hydrology b. [X] Soils c. [ ] Geology d. [X] Range e. [X] Timber f. [X] Wildlife
g. [X] Fire Mgmt. h. [X] Engineering i. [ ] Contracting j. [X] Local Mgmt. k. [ ] Research l. [ ] Other _____ (Identify)

2. Describe Emergency

Potential loss of soil and long term productivity on 225 acres of fireline. Damage to anadromous fishery habitat from increased sedimentation resulting from erosion of fire area and tract lines. Potential erosion from damage of 125 miles of system roads.

3. Emergency Rehabilitation Objective

Stabilize firelines and other disturbed areas with seeding and water control measures to prever unacceptable watershed damage and effects on anadromous fisheries. Repair damage to system roads and trails and forest facilities.

4. Probability of Completing Treatment Prior to First Major Damage Producing Storm

a. _____% (land) b. _____% (channel) c. 95 % (roads) d. _____% (other) _____ (identify)

5. Net Environmental Quality Benefit Index

a. [ ] Significant b. [ ] Not Significant

6. Net Social Well Being Benefit Index

a. [ ] Significant b. [ ] Not Significant

7. Benefit/Cost Ratio

8. Net Benefits

9. Cost Effectiveness Index

a. [ ] I b. [ ] II c. [ ] III d. [ ] IV

PART VI – ELIGIBLE EMERGENCY REHABILITATION MEASURES OR TREATMENTS & 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 (1)	Units (2)	Unit Cost (3)	NFS Lands No. of Units (4)	NFS Lands FFF 092 $ (5)	NFS Lands Other $ FFF 102 (identify) (6)	Other Lands No. of Units (7)	Other Lands Federal $ (identify) (8)	Other Lands Non-Federal $ (identify) (9)	All Lands Total $ (10)
A. LAND	a. Seeding	Acres	45	1800	81,000					81,000
	b. Tractor lines		45	220		9900				9900
	c. Handlines		45	5		225				225
	d. Roadclosure		45	60		2700				2700
	e.									
B. CHANNELS	a. Opening water courses	Miles								
	b. Stabilizing Streambanks	Miles								
	c.									
	d.									
	e.									
C. ROADS & TRAILS	a. Road surface repair	(see attached report for description)								
	b. and facilities work					40264				40264
	c.									
	d.									
	e.									
D. MAJOR STRUCTURES										
	a. Preplanned – from Forest Plans									
E. TOTAL					81,000	53089				134,089

PART VII – APPROVALS

1. Forest Supervisor (Signature) R. G. Hamell

2. Date 8/22/85

3. Regional Forester (Signature)

2. Date

USDA–Forest Service

EXAMINING IMPACTS OF MANAGEMENT ALTERNATIVES FOR AN EMERGENCY PROGRAM

(Reference FSH 2509.13)

Fire Name: Butte – Long Tom Complex

Date of Report: 8/19/85

A. ENVIRONMENTAL QUALITY BENEFIT INDEX

Environmental Factor (a)	Weight Factor (b)	Without Treatment		With Treatment		Difference	
		Actual (c)	Weighted (d)	Actual (e)	Weighted (f)	Actual (g)	Weighted (h)
1. Erosion and sediment	10	2	20	1	10	1	10
2. Aesthetic land quality	4	1	4	0	0	1	4
3. Water quality	6	1	6	1	6	0	0
4. Site productivity	6	1	6	0	0	1	6
5. Wildlife habitat	8	2	16	1	8	1	8
6. Fish habitat	9	2	18	2	18	0	0
7. Other	NA	NA	NA	NA	NA	NA	NA
8. TOTAL	43		70		42		28
9. Average weighted index			1.63		.67		.96
10. Net environmental quality benefit index							.96

B. SOCIAL WELL-BEING BENEFIT INDEX

Social Criteria (a)	Weight Factor (b)	Without Treatment		With Treatment		Difference	
		Actual (c)	Weighted (d)	Actual (e)	Weighted (f)	Actual (g)	Weighted (h)
1. Life, health, safety	10	0	0	0	0	0	0
2. Employment	2	0	0	0	0	0	0
3. Recreational opportunity	1	0	0	0	0	0	0
4. Economic stability	1	0	0	0	0	0	0
5. Income distribution	1	0	0	0	0	0	0
6. Preserve special sites	1	0	0	0	0	0	0
7. Other							
8. TOTAL	16		0		0		0
9. Average weighted index			0		0		0
10. Net social well-being benefit index							0

C. REMARKS

(OVER)

FS-2500-8a (11/82)

D. EXPECTED DAMAGE REDUCTION BENEFIT SUMMARY

Note: At current Water Resources Council interest rate 8-3/8 percent

Economic Benefit Indices (a)	Units of Measure (b)	Damage Expected				Expected $ Damage Reduction (g)
		Without Treatment		With Treatment		
		No. of Units (c)	Present Value ($) (d)	No. of Units (e)	Present Value ($) (f)	
I. Watershed Impacts Sediments						
1. Downstream water storage	--					--
2. Sediment removal	--					--
3. Fish habitat	FUDs COM. I35	1376 1686	40,219	1884 1752	42,937	2,718
4. Water quality						
II. Flood Water						
1. Land						
2. Water Improvements						
3. Subtotal, Watershed						
III. Resource Related Impacts						
1. Range						
2. Wildlife and recreation	WFUDs	6900	76,186	13,800	152,372	76,186
3. Timber	ACRES	1000	-20,000	1,000	0	20,000
4. Subtotal, Resource Related						
IV. Other Impacts						
1.						
2. Subtotal, Other						
V. TOTAL DOLLARS			96,405		195,309	98,904

E. REMARKS

1. See attached calculations.
2. Interest Rate: 8-3/8% (based on Water REsources Council - Fiscal Year 1984).
3. Amenity values, such as visual quality, were not included in damage reduction summaries.
4. Benefit - Cost Ratio: $\frac{98,904}{81,000} = 1.22$

GPO 893-637

Wildlife Benefits:

We expect treatment to double wildlife outputs on a yearly basis over the next 20 years, i.e., 345 WFUD's/yr (without treatment 690 WFUD's/yr (with treatment).

345 WFUD's/year x $23.10/WFUD = $7,969.50/yr (undiscounted $)

Present Net Value:

Year	Without Treatment Discounted Dollars	With Treatment Discounted Dollars	Difference Discounted Dollars
1	7,332	14,664	7,332
2	6,774	13,548	6,774
3	6,296	12,592	6,296
4	5,818	11,636	5,818
5	5,339	10,678	5,339
6	4,941	9,882	4,941
7	4,543	9,086	4,543
8	4,224	8,448	4,224
9	3,905	7,810	3,905
10	3,586	7,172	3,586
11	3,267	6,534	3,267
12	3,028	6,056	3,028
13	2,789	5,578	2,789
14	2,550	5,100	2,550
15	2,391	4,782	2,391
16	2,231	4,462	2,231
17	1,992	3,984	1,992
18	1,833	3,666	1,833
19	1,753	3,506	1,753
20	1,594	3,188	1,594
Total	76,186	152,372	76,186

Timber Benefits:

Without treatment, high serotony in much of the area will necessitate thinning in order to establish natural stocking levels. With treatment, we expect a 50% reduction in thinning costs. We estimate our thinning costs to be $200/acre. Treatment now would, therefore, result in a net benefit of $100/acre. These cost savings would be realized on the 1,000 acres receiving treatment and would occur in year 20. They are represented as negative benefits (costs) in the "without treatment" column.

-$100/acre x 1,000 acres = $100,000 (undiscounted)

Present Net Value:

	Without Treatment	With Treatment	Difference
Year	Discounted Dollars	Discounted Dollars	Discounted Dollars
20	-20,000	0	20,000
Total	-20,000	0	20,000

Fish:

Calculations include values for commercial pounds of fish and fish user days (FUSD's).

Present Net Value:

Year	Without Treatment Discounted Dollars	With Treatment Discounted Dollars	Difference Discounted Dollars
1	13.432	13,432	0
2	3,836	4,862	1,026
3	3,565	4,518	953
4	9,604	10,343	739
5	9,782	9,782	0
Total	40,219	42,937	2,718

USDA - Forest Service

SUMMARY OF EMERGENCY REHABILITATION NEEDS BY LANDOWNERSHIP

(Reference FSH 2509.13)

Fire Name: Butte - Long Tom Complex

Date of Report: 8/19/85

Landownership	A. Acres Burned	B. Emergency Rehabilitation Needs				C. Source of Emergency Rehabilitation Funds for Needed Work ($)						
		(1) Land (acres)	(2) Channel (miles)	(3) Road & Trail (miles)	(4) Other	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)	21,200	2,085		125		81,000	53,089					134,089
Other (specify												
Subtotal (NFS)												
Non-Federal (State & County)												
Indian reservation												
Private												
Subtotal (Non-Federal)												
TOTAL	21,200	2,085		125		81,000	53,089					134,089

D. Remarks

FS-2500-8 (11/83)