BURNED AREA REPORT DATE: 7/28/88

PART I - TYPE OF REQUEST

1. Funding Request
2. Revised

PART II - FIRE LOCATION

1. Fire name: Schiller
2. Supervisors Fire Number: MT-MCD-H188
3. State: Montana
4. County: Powder River
5. Region: 01
6. Forest: Custer
7. Ranger District: Ashland
8. Date Started: 7/12/88
9. Date Controlled: 7/20/88

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

(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 LAND				
	Units	Unit cost	units #	FFF 092 $	other $	units #	federal $	non-fed $	total $	
A. LAND										
Seeding	Acres	34.3	330	11,317						11,281
Log Erosion Barriers	Acres	80	330	26,400						26,400
B. CHANNELS										
opening water courses	Miles									
stabilizing streambanks	Miles									
C. ROADS & TRAILS	Miles									
MAJOR STRUCTURES	Each									
E TOTAL										37,681

MESSAGE SCAN

TO b.putnam:r01a

From: JEAN THOMAS:R01F12A
Postmark: Aug 01,88 8:16 AM

Subject: schiller seed cost revised

Comments:
This is the documentation for the revised seed costs

----------X----------

SCHILLER FIRE

RECOMMENDED SEEDING COSTS - REVISED

JEAN A. THOMAS
JULY 28, 1988

Seed

The seed costs were those listed for the Brewer Fire. The Ashland District Range Con recommended a different seed type mixture and different pounds for application for that area, although the grass types were all considered for rehab on the Brewer Fire.

To further reduce the cost the Ashland District Range Con is agreeable to take out the Stvi grass seed which costs $15.00/lb. The revised recommendation is:

Agsm	3 lbs/ac	X	$4.00/lb	=	$12.00
Agsp	3 lbs/ac	X	4.00/lb	=	12.00
Meof	2 lbs/ac	X	.50/lb	=	1.00
Ann Rye	3 lbs/ac	X	.55/lb	=	1.65
			Total		$26.65/ac

Helicopter

The helicopter cost was an estimate. Today I called Larry Cole at the Interagency Fire Center. He gave me 1987 regional costs for helicopter use. A Jet Ranger costs $420/hr and a Long Ranger costs $600/hr.

According to the final application report on the 1984 North Hills Fire a Jet Ranger can apply 1400 lbs of seed per hour and a Long Ranger can apply 3200 lbs of seed per hour. The seed mixture calls for 11 lbs per acre.

Jet Ranger: 11 lbs/ac X 1400 lbs/hr = .0079 hr/ac X 330 acres = 2.6 hours

2.6 hours X $420/hr = $1092.00

Long Ranger: 11 lbs/ac X 3200 lbs/hr = .0034 hr/ac X 330 acres = 1.1 hours

1.1 hours X $600/hr = $660.00

After further research the helicopter cost can be reduced to $1100.00

$1100.00/330 ac = $3.3/ac

Project Supervision

The original overhead cost was an approximate estimate. This estimate can be revised. It will take a GS-9 approximately two weeks to evaluate and flag the seeding locations since they are assorted acres scattered throughout the burn. There will also be time involved in ordering and processing the seed, and helping with the helicopter application.

GS-9: $100.00/day X 14 days = $1400.00 $1400.00/330ac = $4.2/ac

SCHILLER FIRE

RECOMMENDED SEEDING COSTS

JEAN A. THOMAS
JULY 26, 1988

Seed

The seed costs were those listed for the Brewer Fire. The Ashland District Range Con recommended a different seed type mixture and different pounds for application for that area, although the grass types were all considered for rehab on the Brewer Fire.

Helicopter

The helicopter cost was an estimate. Today I called Larry Cole at the Interagency Fire Center. He gave me 1987 regional costs for helicopter use. A Jet Ranger costs $420/hr and a Long Ranger costs $600/hr.

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Long Ranger: 11 lbs/ac X 3200 lbs/hr = .0034 hr/ac X 330 acres = 1.1 hours

1.1 hours X $600/hr = $660.00

After further research the helicopter cost can be reduced to $1100.00

Overhead

The original overhead cost was an approximate estimate. This estimate can be upgraded. It will take a GS-9 approximately two weeks to evaluate and flag the seeding locations since they are assorted acres scattered throughout the burn. There will also be time involved in ordering and processing the seed, and helping with the helicopter application.

GS-9: $100.00/day X 14 days = $1400.00

COMPUTATIONS TO COMPLETE BURNED AREA REPORT FS-2500-8

Schiller Fire
July 21, 1988

Jean A. Thomas
Hydrologist
Helena National Forest

Part I - Type of Request

1. Funding Request
2. Initial Action

Part II - Fire Location

1. Schiller Fire
2. Fire Number: MT-MCD-H188
3. State of Montana
4. Powder River County
5. Region 01
6. Custer National Forest
7. Ashland Ranger District
8. Date Fire Started: 7/12/88
9. Date Fire Controlled: ?
10. Estimated Suppression Cost: $550,300.
11. Fire Suppression Damages Repaired with FFF 102 Funds
    33.8 miles firelines waterbarred (miles of fireline listed in Fire Report)
    0 acres firelines seeded
    5 acres of campground rehabilitated
12. Fire Intensity
    60% low, 25% medium, 15% high

    The Fire Rehabilitation Team flew over the Schiller Fire on Monday, July 18, 1988. High intensity burn areas were marked on a map. Low and moderate burn intensity percentages were estimated from on-the-ground observations.

Part III - National Forest System Problem Inventory

1. Watershed No: 1009010212
2. NFS Acres Burned: 12000
3. Water Repellant Soil: 0%

    Soil was randomly tested with water from a canteen. The water infiltrated rapidly to moderately rapid. By our judgement none of the soil was water repellant.

4. Vegetation Types (% NFS area burned by vegetation type)

Ponderosa Pine	45%
Hardwood Draw	1%
Grass	25%
Shrub	8%

Jim Hertel came up with these figures, when I get his calculations I will insert them here

5. Geologic Type: Fort Union Formation (From geologic map in SO)
6. Soil Erosion Hazard Rating

13% low, 84% medium, 3% high

Since most of the soils have a high permeability the factor affecting soil erosion the most is slope. The majority of the area has a medium erosion hazard. The areas considered low (flatlands) and high (shear mountain walls) are marked on Map 1.

7. Erosion Potential: 960 cu. yds/sq. mile

Erosion potential was calculated based on the assumption that sediment yields in the Ashland area are the same as those in the Long Pines unit on the Sioux District. These sediment yields were established by the Fire Rehabilitation Team on the Brewer Fire in June, 1988. The sediment yield rates used are: 0.3 T/ac on low soil erosion hazard areas (map 1), 0.6 T/ac on medium soil erosion hazard areas and 1.56 T/ac on high soil erosion hazard areas.

Each of these areas was then divided into high, moderate and low intensity burns. The sediment yield rates were then increased according to the burn intensity. The rates of increase were also based on the values used by the Brewer Fire Rehabilitation Team. Those rate increases are 1.3 for low intensity burns, 4 for moderate and 10 for high intensity burns.

Erosion Hazard	Burn Intensity	Soil Erosion Rate (T/ac)	Burn Intensity Factor	Acres		Tons
Low	High	0.3	10	37	=	111
	Moderate	0.3	4	508	=	609.6
	Low	0.3	1.3	1015	=	395.85
Medium	High	0.6	10	517	=	3102
	Moderate	0.6	4	3188	=	7651.2
	Low	0.6	1.3	6375	=	4972.5
High	High	0	0	0	=	0
	Moderate	1.56	4	120	=	748.8
	Low	1.56	1.3	240	=	486.72
			Totals	12000		18077.67

18077.67 Tons/12000 acres = 1.5 T/ac

Earth; common loam, perfectly dry, loose = 72-80 lbs/cu ft
(Reference: Trautwine, 1937, "Civil Engineer's Reference Book", 21st Edition)

72-80 lbs/cu ft X 27 cu ft/cu yd = 1944 - 2160 lbs/cu yd

1944-2160 lbs/cu yd X 1 ton/2000 lbs = .972 - 1.08 T/cu yd = 1 T/cu yd

1 T/cu yd X 1.5 T/ac(calculated above) X 640 ac/sq mi= 960 cu yd/sq mi

8. Miles of Stream Channels by Order
First Order 30.5 mi, Second Order 11.7 mi, Third Order 0.4 mi.

Measured from Map 2

9. Miles of Forest Service Trails: 0

10. Miles of Forest Service Roads by Maintenance Levels:
0 mi Level I, 0 mi Level II, 15.9 mi Levels III, IV, V

Measured from a map. If a road was on the burn boundary and was affected by fireline, it was included.

Part IV - Calculated Risk and Climatic Evaluation

1. Estimated Vegetative Recovery Period: 2 years

Based on observations on the ground in a 1985 burn area.

2. Chance of Success Desired by Management: 80%

Decision by District Forester

3. Equivalent Design Recurrence Period: 10 years

Taken from Calculated Risk Diagram, Exhibit 1 in FSH 2509.13, Burned-Area Emergency Rehabilitation Handbook, page 25.6--3 and based on vegetative recovery period and chance of success desired by management.

4. Related Design Storm Duration: 0.5 hours

The storms in this area of Montana that cause the most damage are short duration (30 minutes) convective storms. This is common local knowledge.

5. Related Design Storm Magnitude: 1.0 inch

This value is from a Precipitation Atlas that the Soil Scientist has in the Custer N.F. Supervisor's Office. One inch is the magnitude of a 10 year recurring 30 minute storm.

6. Related Design Flow: 63.3 cfsm

Calculated with an equation from USGS Water-Resources Investigations Report 86-4027, Southeast Plains Region, 10 year frequency flood.

$$10 \text{ yr flood (cfs)} = 1370 \times A^{0.53} \times (E/1000)^{-2.18} \times Gf$$

A = drainage area in sq mi = 1.0 (to get cfs/mile [cfsm])
E = elevation in ft = 3700
Gf = geographical factor from Figure 6 in publication = 0.8

$$63.3 \text{ cfsm} = 1370 \times 1^{0.53} \times (3700/1000)^{-2.18} \times 0.8$$

7. Estimated Reduction in Infiltration: 15%

Based on the percent of the area under a high intensity burn

8. Adjusted Related Design Flow = 72.8 cfsm

The previous two multiplied together (63.3 X .15)

Part V - Summary of Survey and Analysis

1. Skills Represented on Burned Area Survey Team
   Hydrology - Jean Thomas, Helena N.F.
   Timber - Jim Hertel, Lewis & Clark N.F.
   Archaeology - Cynthia Hamlett, Lewis & Clark N.F.

2. Describe Emergency: Lightening-caused fire burned 12000 acres of FS land. High intensity burn areas have a severe probability of soil loss and productivity loss due to short duration, high intensity rain storms, and steep slopes.

3. Emergency Rehabilitation Objective: Stabilize the watershed to prevent loss of soil and onsite productivity through accelerated soil erosion.

4. Probability of Completing Treatment Prior to First Major Damage Producing Storm: 80%

Besides the fact that we based in on what was reported for the Brewer Fire, the rehabilitation recommended can be done now before fall rain storms, and winter snowpack.

5. Net Environmental Quality Benefit Index: Significant Benefit
6. Net Social Well Being Benefit Index: Significant Benefit

See the attached form "Examining Impacts of Management Alternatives for an Emergency Program" Form FS-2500-8a.
Where 0 = No or little expected damage
1 = Moderate potential damage
2 = High potential damage
and
0.7 or higher = Significant Benefit
less than 0.7 = No Significant Benefit

7. Benefit/Cost Ratio: 10.7:1

Recommended Rehabilitation: Seed and waterbar 330 acres

Cost

Seeding
(seed prices based on those listed in Brewer Fire Report, seed types and weights recommended by Ashland District Range Con)

Seed	Agsm	1 lb/ac	X	$4.00/lb	=	$4.00
	Agsp	3 lbs/ac	X	4.00/lb	=	12.00
	Stvi	2 lbs/ac	X	15.00/lb	=	30.00
	Meof	2 lbs/ac	X	.50/lb	=	1.00
	Ann Rye	3 lbs/ac	X	.55/lb	=	1.65
				Subtotal		$48.65 / ac
Helicopter				$10.00/ac		10.00 / ac
Overhead				10.00/ac		10.00 / ac
				Total		$68.65 / ac

3.30

Log Erosion Barriers
~~Waterbars~~

Labor $80.00/ac $80.00 / ac
($50.00/day - 1 and 3/5 day per acre)

Benefits

Seeding
Grazing $7.85/AUM : 100 AUM/330 acres = $785.00

Topsoil $2186/ac = 721600.00
(Topsoil price from landscape contractor in Billings: $8.00/yd, 820 yds/ac 6" deep, but assuming soil loss will only be 2")

Costs and Benefits by Years

Costs

Treatments	Year 1	Year 2	Year 3	Total	Present Value
Seeding	22654.5	0.0	0.0		
Waterbars	26400.0	0.0	0.0		
				49,054.5	49,054.5

Benefits

Grazing					
w/o *	588.75	196.25	0.0		
w/	392.5	0.0	0.0		
Benefit	196.25	196.25		392.5	376.8
Topsoil					
w/o	541200.0	180400.0	0.0		
w/	180400.0	0.0	0.0		
Benefit	360800.0	180400.0		541200.0	526768.0
		Total			527144.8

* w/o = value lost without treatment
w/ = value lost with treatment

Present Value is based on Table 1 in FSH 2509.13, page 34--2, one year hence [Year 2] present value of 1 = .92

Assumptions: 1) Without treatment 75% of the value is lost in Year 1 and 25% is lost in Year 2. 2) With treatment 50% of the grazing value will be lost in Year 1 and 25% of the topsoil value will be lost in Year 1.

Benefit/Cost Ratio = $\frac{\text{Present value of economic benefits}}{\text{Present value of costs}} = \frac{527144.8}{49054.5} = 10.7$

8. Net Benefits: $478,090.0

Benefit ($527,144.8) - Cost ($49,054.5) = $478,090.0

9. Cost Effectiveness Index: I

Based on Table 1, FSH 2509.13, pg 37 and on Nos. 5, 6, & 7 above:
Benefit/Cost Ratio of 10.7:1 = Favorable
Environmental Benefit Index = Significant
Social Benefit Index = Significant

Part VI - Treatments and Source of Funds

Based on values calculated in Costs above.

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

Fire Name
Schiller Fire, Custer NF, Ashland District

A. ENVIRONMENTAL QUALITY BENEFIT INDE

Environmental Factor (a)	Weight Factor (b)	Without Treatment Actual (c)	Without Treatment Weighted (d)	Wi Act (
1. Erosion and sediment *	8	2	16	
2. Aesthetic land quality *	3	1	3	
3. Water quality *	4	1	4	
4. Site productivity *	7	2	14	
5. Wildlife habitat *	3	1	3	
6. Fish habitat *	0	0	0	
7. Other *				
8. TOTAL *	25	///////	40	///
9. Average weighted index *	//////	///////	1.6	///
10. Net environmental quality benefit index*	//////	///////	//////////	///

B. SOCIAL WELL-BEING BENEFIT INDEX

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

C. REMARKS

It is assumed local people will be hired to do the rehabilitation work,