



United States
Department of
Agriculture

Forest
Service

Northern Region

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

File Code: 6520/2520-3

Date: September 15, 2000

Route To:

Subject: Maudlow Fire, Burned Area Emergency Rehabilitation Request

To: Chief

Enclosed is the Initial Burned Area Rehabilitation (BAER) request for the Maudlow Fire on the Helena National Forest. This request is for \$459,173.

This fire burned 81,220 acres of which 10,678 was on National Forest lands. Steep slopes and a high amount of hydrophobic soils combine to form a high potential for erosion and sediment. The Forest has identified the drainages where the values at risk necessitate treatments. In addition, they are proposing spot treatment of noxious weeds and some road drainage work. Contact Bruce Sims (406-329-3447) if you have any questions.

/s/ Kathleen A. McAllister

DALE N. BOSWORTH
Regional Forester

Enclosure

cc:
Max Copenhagen, WO



Date of Report: 9/14/2000**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: Maudlow Fire B. Fire Number: MT-CES-103
C. State: MT D. County: Broadwater, Gallatin, Meagher
E. Region: R1 F. Forest: Helena NF
G. District: Townsend
H. Date Fire Started: 8/15/2000 I. Date Fire Controlled: 9/30/00 (estimated)
Date Fire Contained: 9/15/00 (estimated)
J. Suppression Cost: \$22,500.00 as of 9/12/00
K. Fire Suppression Damages Repaired with Suppression Funds (to date)
 1. Fireline waterbarred (miles): 187 miles pvt., 64 miles F.S.
 2. Fireline seeded (miles): 0.0
 3. Other (identify): 0.0
L. Watershed Number: 1003010107
M. Total Acres Burned: 81,220
 NFS Acres(10,678) Other Federal (1,578) State (2,815) Private (81,220)

N. Vegetation Types: Primary vegetation types on the lower elevations include grassland and shrubland interspersed with Douglas-fir/juniper forests. The higher elevations are dominated by Douglas-fir and lodgepole pine forests with snowberry and ninebark understories. The higher elevation forests are interspersed with productive grasslands and shrublands dominated by timothy, rough fescue, Idaho fescue and mountain big sagebrush.

O. Dominant Soils: Typic Haploborolls, loamy-skeletal, mixed; Typic Cryoboralfs, loamy skeletal, mixed; Typic Eutroboralfs and Mollic Cryoboralfs.

P. Geologic Types: Meta-sedimentary argillites, siltites and quartzites

Q. Miles of Stream Channels by Order or Class: **order 1**—61 mi, **order 2**—17 mi, **order 3**—4 mi.

R. Transportation System

Trails: 3 miles Roads: 99 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 6,580 (low); 3,306 (moderate); 0 (high)

B. Water-Repellent Soil (acres): 4,250

C. Soil Erosion Hazard Rating (acres):
2,847 (low); 2,165 (moderate); 5,757 (high)

D. Erosion Potential: 8.55 tons/acre

E. Sediment Potential: 1,417 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 3

B. Design Chance of Success, (percent): 90

C. Equivalent Design Recurrence Interval, (years): 10

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 2.4

F. Design Flow, (cubic feet / second/ square mile): 19

G. Estimated Reduction in Infiltration, (percent): 20

H. Adjusted Design Flow, (cfs per square mile): 15

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency: The Maudlow fire burned 81,220 acres of which 10,678 are on the Helena National Forest. Of the acres that burned on National Forest, 1/3 were in the moderate burn severity category. The remaining acres were in low or low to moderate rating. Slopes averaged 44% and hydrophobic soils were found on 43% of the acres burned. In the moderate burned areas most of the standing timber, shrubs, grasses and duff layer have been consumed. In several of the drainages over 90% of the watershed burned. This has resulted in reduced soil aggregate stability, reduced permeability, increased runoff and erosion potential, and reduced organic matter/nutrient status. This combination will cause runoff following a rain event to increase significantly, increasing the overland flow available to initiate soil erosion, resulting in sheet or rill erosion. The potential for erosion is highest on the steeper slopes that are burned with a moderate burn severity.

Many of the culverts throughout the area are either undersized for the anticipated flows or are partially plugged with alluvial deposits. Removal of sediment, debris and floatable material as well as proper sizing of culverts or temporary removal will be imperative to prevent road segments from washing away with increased flows. Several road segments have little to no drainage features in them now and will experience significant erosion with sediments entering streams with the increased flows expected. Installing drainage on these roads will be imperative to minimizing sedimentation.

Deep Creek has become a significant recruitment stream for rainbow trout from Canyon Ferry Reservoir. This fishery has become one of Montana's most popular fishery in recent years providing upwards of 100,000 angler days annually. One half million dollars have been invested in private reaches of Deep Creek below the forest to improve stream conditions for trout. Burned tributaries on forest that connect to Deep Creek include Sulphur Bar, Blacktail Creek, and Cedar Bar Creek. There is a high chance for accelerated erosion leading to heavy transport of sediment into Deep Creek from the burned area. The prospect for mudflows, especially from Sulphur Bar Creek, poses the highest risk to this recreational fishery.

The rapid spread of noxious weeds as a result of the fire has caused concern for federal, state and private landowners in the burned area. The expected spread of noxious weeds will result in loss of vegetation which will have impacts to wildlife habitat, livestock grazing, archaeological resources, watershed stability, peak storm flow runoff, site productivity, aesthetics, public safety, and impacts to threatened, endangered or sensitive plant and animal species. Unless treated the potential long-term effects to the forest and riparian ecosystems will be significant.

The forest lands affected by the fire are unique in that they are extensively bordered by private land on the west and south sides. Because this area is extensively bordered by private land, boundary fences were constructed on the property lines to avoid trespass cattle on either National Forest or the private lands. Private landowners suffered a tremendous loss due to the Maudlow-Toston fire, both vegetative and structurally. The fire was so intense and moved so quickly, natural and structural barriers that deterred livestock were lost. Soil erosion and compaction is imminent, without these barriers to prevent entry of livestock into the burned areas. According to Vallentine, treading of the soil by livestock has the potential to be deleterious to soil by soil compaction, penetrating and disrupting the topsoil, reducing infiltration, displacing soil on steep slopes and increasing soil erosion. As a result, the streams contained within the watersheds have a greater potential to become contaminated with increased sediment loads. Because livestock have a tendency to settle in the stream bottoms, soil compaction will be increased. Vegetative recovery will be greatly slowed down by trespass cattle from adjacent private lands. Without boundary fences significant loss of soil productivity, ecosystem function and stability and overall vegetative recovery will be severely affected.

Other values at risk include the Broadwater Ditch which services many of the farms around Townsend. Of particular concern is the potential for fine sediments reaching sprinkler irrigation systems that rely on this ditch. Without proper erosion control measures being taken, significant damage to sprinkler irrigation

systems will occur along with damage to the ditch itself. In addition there are two cultural resource sites identified by our archaeologist that are threatened by watershed destabilization due to the fire. Additional sites may be identified as the area is more thoroughly inventoried.

B. Emergency Treatment Objectives: The objectives for the proposed treatments include minimizing loss of fisheries resource in Deep Creek, maintain long-term soil productivity by minimizing the potential for erosion and subsequent sediment delivery to streams, minimizing damage to the existing road system, protection of the Broadwater Ditch from excessive sedimentation, and maintaining site productivity and enhancing recovery on range and forest lands within the Forest boundary.

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

Land 80 % Channel NA Roads 90 % Other 90%

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	80	100	100
Other	95	100	100
Roads	90	100	100

E. Cost of No-Action (Including Loss): \$ 962,400

F. Cost of Selected Alternative (Including Loss): \$ 916,700

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input type="checkbox"/> Geology	<input checked="" type="checkbox"/> Range
<input type="checkbox"/> Forestry	<input type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input type="checkbox"/> Engineering
<input type="checkbox"/> Contracting	<input checked="" type="checkbox"/> Ecology	<input type="checkbox"/> Botany	<input checked="" type="checkbox"/> Archaeology
<input checked="" type="checkbox"/> Fisheries	<input type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch	<input checked="" type="checkbox"/> GIS

Team Leader: Bo Stuart, Hydrologist Helena N.F.

Email: BAER contact: bstuart@fs.fed.us

Phone: 406-449-5201 (ex. 245)

FAX: 406-449-5436

H. Treatment Narrative:

Land Treatments: A total of 1,922 acres are planned for aerial seeding this fall with Triticale (*Triticum aestivum* X *Secale cereale*). The seeding treatment will be focused on the moderately burned areas in Sulphur Bar Creek. This will function as a temporary cover to minimize loss of site productivity through accelerated erosion/sedimentation, and loss of native seed through erosion, while allowing native species to more rapidly recover due to less competition from weeds and persistent exotic species. Natural revegetation on the moderate severity burn areas will be too slow to prevent accelerated runoff and soil erosion. The intent of seeding this species is to provide a quick ground cover, and biomass early in the spring of 2001 and for the species to be gone from the ecosystem by 2004. The application rate proposed (30lbs. per acre) provides 9 seeds per square foot.

Noxious weeds will be aggressively monitored over the next two growing seasons and infestations spot treated to control their spread. It is estimated that small localized areas totaling up to 360 acres will need this treatment the 1st year with equal amounts during years 2 and 3 due to the aggressive nature of weed spread following a fire. Weed treatment will be as follows: Apply Tordon 22k at 1 pint per acre (1/4 lb. Active ingredient per acre) on thistles and knapweed away from riparian zones and in accordance with all label instructions. Apply 2,4-D amine 4 at the recommended rate of 2 quarts per acre in accordance with label instructions. Begin weed treatments in September of 2000 if at least ½ inch of rain falls. (Plants have entered dormancy due to the drought and will need some moisture in order to uptake the herbicides. Treat weeds again in the spring of 2001 as soon as conditions and plant growth allow. Replace lost bio-control agents and add new insectary sites with appropriate insect agents. Forest NEPA documents covering these treatments are in place.

7 miles of temporary exclusion fencing and 14 miles of boundary fencing is proposed to prevent cattle on adjacent private lands from coming on to burned areas on National Forest lands. This treatment is essential to speeding recovery and maintaining site productivity. Without fencing, recovery is expected to be significantly prolonged. Vegetative recovery will be greatly slowed down by trespass cattle from adjacent private lands.

Contour felling will be done on 468 acres with 13 trees per acre being specified. This will aid in trapping sediment and increasing infiltration in a small tributary to Sulphur Bar Creek which has steep (50%) slopes and was burned over 90%. This drainage also has a high percentage of hydrophobic soils. In addition, a sediment basin is planned for the mouth of this drainage to trap any additional sediment before it enters Sulphur Bar and Deep Creek. These treatments are necessary to prevent accelerated erosion leading to heavy transport of sediment into Deep Creek from the burned area. The prospect for mudflows, especially from Sulphur Bar Creek, pose the highest risk to the recreational fishery in Deep Creek.

Roads and Trail Treatments: Road drainage improvement consists of rolling dips, waterbars, cleaning or removal and upsizing of culverts, and ditching with cross drains. This work will occur on about 15 miles of roads. Removal of sediment, debris and floatable material as well as proper sizing of culverts or temporary removal will be imperative to prevent road segments from washing away with increased flows. Several road segments have little to no drainage features in them now and will experience significant erosion with sediments entering streams with the increased flows expected. Installment of erosion control features on these roads will greatly reduce the amount of accelerated erosion and subsequent sedimentation.

Cultural Site Protection: There are two cultural sites that will need to be protected with straw bales and mulch to divert runoff and prevent erosion of these sites.

H. Monitoring Narrative:

Monitor Aerial Seeding Effectiveness:

Establish monitoring plots in each of the following habitat types :Douglas-fir/snowberry, Douglas-fir/ninebark, Douglas-fir/pinegrass, Douglas-fir/twinflower, Douglas-fir/juniper or bearberry Douglas-fir/bunchgrass.

Replicated plots will be established by agency representatives to measure canopy cover, frequency, and density. Plots will be measured in 2001 and 2002. The purpose of the monitoring is to measure the vegetative response both to the fire and to the seeding. A final report shall be published that documents sampling techniques, areas sampled, and summary of preliminary findings after the year 2002 sampling.

Weeds Monitoring:

Check known weed infestations early spring 2001 to assess the effect of the September/October 2000 weed treatments.

Check and map weeds in early spring of the years 2002 and spray any new infestations. If the weeds are sprayed with picloram the treatment only needs to be done once in a year, if all the rosettes were killed. If the weeds are treated with 2,4-D, the treatment may need to be repeated several times during the summer to insure no seeds are produced.

Soils and Water:

Soil erosion transects will be installed in areas where countour felling and seeding are poposed and compared to transects where only seeding and no treatment are proposed. In addition a stream stage monitor will be installed to assess the effectiveness of increasing infiltration from log erosion barriers and seeding.

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

			NFS Lands				Other Lands			All	
		Unit	# of	WFSU	Other		# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	SULT \$	\$		units	\$	Units	\$	\$
A. Land Treatments											
seeding	acres	18.65	1922	\$35,845				\$0		\$0	\$35,845
noxious weed control	acres	120	360	\$43,200				\$0		\$0	\$43,200
exclusion fencing	miles	5000	21	\$105,000				\$0		\$0	\$105,000
contour felling	acres	427.2	468	\$199,930				\$0		\$0	\$199,930
sediment basin	ea.	2400	1	\$2,400				\$0		\$0	\$2,400
Subtotal Land Treatments				\$386,375				\$0		\$0	\$386,375
B. Road Drainage											
road dainage	miles	1927.2	15	\$28,908				\$0		\$0	\$28,908
harden drain	ea.	2400	1	\$2,400				\$0		\$0	\$2,400
				\$0				\$0		\$0	\$0
				\$0				\$0		\$0	\$0
Subtotal Road & Trails				\$31,308				\$0		\$0	\$31,308
C. Cultural Site Protection											\$0
erosion control	ea.	420	2	\$840				\$0		\$0	\$840
				\$0				\$0		\$0	\$0
Subtotal Structures				\$840				\$0		\$0	\$840
E. BAER Evaluation											
IDT days	days	250	120	\$30,000				\$0		\$0	\$30,000
aerial photo flight	flights	4400	1	\$4,400				\$0		\$0	\$4,400
Subtotal BAER Eval.				\$34,400				\$0		\$0	\$34,400
G. Monitoring Cost	days	250	25	\$6,250				\$0		\$0	\$6,250
Subtotal Monitoring				\$6,250				\$0		\$0	\$6,250
H. Totals				\$459,173						\$0	\$459,173

PART VII - APPROVALS

- /s/ THOMAS J. CLIFFORD
Forest Supervisor

9/14/2000
Date
- /s/ Kathleen A. McAllister (for)
Regional Forester (signature)

09/15/00
Date