USDA-FOREST SERVICE FS-2500-8 (7/00)

Date of Report: 12/17/03

**BURNED-AREA REPORT**
(Reference FSH 2509.13)

## PART I - TYPE OF REQUEST

A. Type of Report

[] 1. Funding request for estimated WFSU-SULT funds
[X] 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

[X] 3. Final Report (Following completion of work)

## PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Bear Mountian South

B. Fire Number: WY-MB2F-114

C. State: Wyoming

D. County: Carbon

E. Region: 2

F. Forest: Medicine Bow Routt National Forest

G. District: Brush Creek Hayden Ranger District

H. Date Fire Started: 7/11/02

I. Date Fire Contained: 7/19/02

J. Suppression Cost: 1.35 million

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 4.5
2. Fireline seeded (miles): 4.5
3. Other (identify): Rehabilitate staging areas

L. Watershed Number: 101800020302

M. Total Acres Burned: 507
NFS Acres(**100%**) Other Federal ( ) State ( ) Private ( )

N. Vegetation Types: Lodgepole pine, Spruce, Fir, Aspen

O. Dominant Soils: Taglake Family (70%), Irigul-Supervisor Family (15%), Typic Cryaquolls (10%)Supervisor Family (5%)

P. Geologic Types: Precambrian Crystalline Rock – Metasedimentary and metavolcanic rock.

Q. Miles of Stream Channels by Order or Class: 1.0 mile perennial 1.6 miles intermittent

R. Transportation System

Trails: 0.0 miles Roads: 1.6 miles

## PART III - WATERSHED CONDITION

A. Burn Severity (acres): 280 (low) 123 (moderate) 104 (high)
140(6Mile) (low) 0(6Mile) (moderate) 60(6Mile) (high)

B. Water-Repellent Soil (acres): 70 acres

C. Soil Erosion Hazard Rating (acres):
51 (low) 229 (moderate) 227 (high)

D. Erosion Potential: n/a tons/acre

E. Sediment Potential: n/a cubic yards / square mile

## PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 2-3 years

B. Design Chance of Success, (percent): N/A

C. Equivalent Design Recurrence Interval, (years): N/A

D. Design Storm Duration, (hours): N/A

E. Design Storm Magnitude, (inches): N/A

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

G. Estimated Reduction in Infiltration, (percent): N/A

H. Adjusted Design Flow, (cfs per square mile): N/A

## PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

Fire Effects Summary: The Bear Mountain South fire occurred in an unnamed tributary to North Fork of Big Creek. The 507 acre fire burned in a mosaic pattern. High intensity burn areas comprise less than 25 percent of the burn area; moderate intensity less than 30 percent of the burn area and low intensity or no burn on over 45 percent of the burn area.

In approximately two-thirds of the sample points in high intensity burn areas, strongly hydrophobic soils were found at the soil surface and at a depth of one inch. The hydrophobic layer was moderate to low at depths greater than one inch. Coarse woody material, fine organic

matter, and unburned roots were found in the majority of field sample sites in the high intensity burn areas and conditions are generally conducive to natural revegetation.

Potential Threats to Ecosystem Integrity: Increased erosion, runoff and the potential for noxious weeds spreading in the burn area are all potential threats to ecosystem integrity after fires. Due to the fire consuming vegetative and ground cover, as well as the hydrophobic soil conditions, increased erosion and runoff are expected in the high intensity burn areas. Most soils in the area are on moderate to steep slopes and have a severe post-fire erosion rating for rill and gully formation. Despite these potential effects, the high intensity burn areas are limited, occur in small patches and generally do not occur in or immediately adjacent to streams. Deep swales are common in unburned areas within and adjacent to the fire and may have formed after previous fires in the area. These swales likely produced sediment in the past, but are now stable with large trees growing in them and no evidence of headward migration. Erosion and increased streamflows are likely within the range of natural variability for this landscape and may have some adverse effects on roads in the area, but do not pose a risk to ecosystem integrity.

Musk thistle, a noxious weed, is present within and adjacent to the burn area. Ground disturbance from the fire may have created conditions conducive to the spread of musk thistle and other noxious weeds. Spread of noxious weeds in the burn area could adversely affect the composition and function of vegetation in the area.

Potential Threats to Life: Burned trees (snags) falling can be a significant hazard after fires. With the exception of National Forest System Road (NFSR) 415, the area is difficult to access, receives limited public use, and therefore potential for injury from burned trees falling is very low. Potentially hazardous snags along NFSR 415 were removed as a result of fire suppression activities and remaining burned trees adjacent to the road pose a minimal hazard. Closed gates prevent motorized access to most portions of the fire. Due to the limited access on closed roads and within the burn perimeter, snags in these areas pose a minor safety risk.

Flooding as a result of increased runoff after fires can increase the risk of drowning. There are no known residences in floodprone locations for at least nine miles downstream of the fire. One low water crossing (ford) is located on NFSR 498.2A, approximately 5 miles downstream of the burn area. Any potential increases in streamflow are expected to be small in relation to the natural streamflow at that downstream location.

Potential Threats to Property: Increased runoff and streamflow after fires have the potential to damage downstream infrastructure. NFSR 415 is the road at greatest risk due to its close proximity to the fire. Approximately 0.5 miles of this road travels through the burn area with several high intensity burn areas immediately upslope of the road. Increased runoff and erosion from these locations is likely in the first few years after the fire and may damage this segment of road. There is one stream crossing (culvert) on NFSR 415 within the burn area, which has a high risk of failure due to its close proximity to the burn area. Approximately 2/3 of the watershed area above this culvert is located within the burn area, but less than 20 percent of the watershed received high intensity fire. The 30 inch culvert in this location currently shows signs of over-topping under pre-fire conditions and is at greater risk of over-topping and failing with increased runoff after the fire. NFSR 415 parallels the unnamed tributary below the fire, but is located out of the floodprone area. The next downstream infrastucture is the NFSR 415/North Fork Big Creek stream crossing which contains both a 48 and 72 inch culvert. This crossing is located approximately two miles downstream of the fire area. The capacity of these culverts has withstood streamflows from the much larger (>10 $mi^2$) North Fork Big Creek watershed. Due to the large culvert capacity and small percentage of high intensity burn area in the

watershed above this point, the risk of culvert failure as a result of the fire is minimal. If the culvert capacity in these locations were to be exceeded, there is an overflow location on the road just to the south which would allow additional water to cross the road with minimal damage.

The low water crossing on NFSR 498.2A is the next stream/road crossing downstream. This type of crossing is not at risk to increased streamflows and is located far downstream where increased streamflows as a result of the fire would be minimal compared to natural channel capacity.

An irrigation headgate exists approximately 3.5 miles downstream (North Fork Big Creek – Cunningham Park). This irrigation system is used intermittently as part of a USFS range allotment. Increased ash and sediment could increase the maintenance needs at this facility to a minor degree. There are no other know infrastructure or property at risk downstream of the burn area.

Summary of Emergency Watershed Conditions: Based on our evaluation of the fire effects, we have determined that emergency watershed conditions exist as a result of potential risks to property (damage to NFSR 415) and ecosystem integrity (spread of musk thistle).

B. Emergency Treatment Objectives:

Roads: Improve NFSR 415 road drainage to accommodate expected increases in runoff and minimize damage to road.

Noxious Weeds: Monitor within fire perimeter to determine if existing noxious weed populations are expanding and develop treatment objectives if necessary to control spread into burn area.

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

Land **n/a** % Channel **n/a** % Roads **50** % Other **n/a** %

D. Probability of Treatment Success

| | Years after Treatment | | |
|---|---|---|---|
| | | | |
| Land | | | |
| | | | |
| | | | |
| Channel | | | |
| | | | |
| | | | |
| Roads | | | |
| | | | |
| Other | | | |
| | | | |

E. Cost of No-Action (Including Loss): **$25,000**

F. Cost of Selected Alternative (Including Loss): **$7,500**

G. Skills Represented on Burned-Area Survey Team:

[X] Hydrology [**X**] Soils [ ] Geology [ ] Range [ ]
[X] Forestry [ ] Wildlife [ ] Fire Mgmt. [ ] Engineering [ ]
[ ] Contracting [ ] Ecology [ ] Botany [ ] Archaeology [ ]
[ ] Fisheries [ ] Research [ ] Landscape Arch [ ] GIS

Team Leader: Dave Gloss

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H. **Treatment Narrative:**

The following treatments have been proposed to mitigate the threat to life, property, and loss of site productivity:

Roads and Trail Treatments: NFSR 415 – a) install up to five new driveable dips; clean existing dips and improve road template and ditch drainage (applies to approximately 0.5 miles of road through the fire perimeter (T13N, R82W, Sec 33), b) armor inlet and outlet of culvert; add 6-12 inches of fill on top of culvert (T13N, R82W, Sec 33 NE ¼).

Noxious Weed Treatments: Monitor within fire perimeter to determine if existing noxious weed populations are expanding and develop treatment objectives if necessary to control spread into burn area.

I. **Monitoring Narrative:**

Monitoring will focus on implementation and effectiveness of BAER treatments. Implementation monitoring will be provided by on-site work supervisors and include documentation of the number, type, location and that road and trail treatments are implemented. Effectiveness monitoring will determine if road drainage is adequate to accommodate expected flows and determine if abandoned railroad grade culverts remain open and able to accommodate expected streamflows. Effectiveness monitoring is planned for three periods: late summer 2002; early summer 2003 and late summer 2003. Annual BAER monitoring and accomplishment reports will be sent to the Regional Office in 2002 and 2003.

**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** | | | | | | | | | | |
| Monitor Weeds | days | 250 | 8 | $2,000 | $0 | | #REF! | | #REF! | #REF! |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Subtotal Land Treatments* | | | | $2,000 | $0 | | #REF! | | #REF! | #REF! |
| **B. Channel Treatments** | | | | | | | | | | |
| N/A | | | | $0 | $0 | | $0 | | $0 | $0 |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Subtotal Channel Treat.* | | | | $0 | $0 | | $0 | | $0 | $0 |
| **C. Road and Trails** | | | | | | | | | | |
| 415 culvert | hrs | 100 | 12 | $1,200 | $0 | | $0 | | $0 | $1,200 |
| 415 cul. mobilization | ea | 1000 | 1 | $1,000 | $0 | | $0 | | $0 | $1,000 |
| 415 Drainage | hrs | 100 | 20 | $2,000 | $0 | | $0 | | $0 | $2,000 |
| 415 Dr. mobilization | ea | 1000 | 1 | $1,000 | $0 | | $0 | | $0 | $1,000 |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Subtotal Road & Trails* | | | | $5,200 | $0 | | $0 | | $0 | $5,200 |
| **D. Structures** | | | | | | | | | | |
| N/A | | | | $0 | $0 | | $0 | | $0 | $0 |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Subtotal Structures* | | | | $0 | $0 | | $0 | | $0 | $0 |
| **E. BAER Evaluation** | | | | | | | | | | |
| **Survey Team** | days | 250 | 8 | $2,000 | $0 | | $0 | | $0 | $2,000 |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| | | | | $0 | $0 | | $0 | | $0 | $0 |
| *Subtotal Evaluation* | | | | $2,000 | $0 | | $0 | | $0 | $2,000 |
| **F. Monitoring** | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| *Subtotal Monitoring* | | | | $0 | $0 | | $0 | | $0 | $0 |
| | | | | | | | | | | |
| **G. Totals** | | | | **$9,200** | **$0** | | **#REF!** | | **#REF!** | **#REF!** |
| | | | | | | | | | | |

## PART VII - APPROVALS

1. _/s/ Jane D. Darnell_____ 12/23/03
   Deputy Forest Supervisor (signature) Date

2. _____ _____
   Regional Forester (signature) Date