/s/ USDA-FOREST SERVICE FS-2500-8
(6/06)

Date of Report:9-23-2011

BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[x] 1. Funding request for estimated emergency stabilization funds
[ ] 2. Accomplishment Report
[ ] 3. No Treatment Recommendation

B. Type of Action

[x] 1. Initial Request (Best estimate of funds needed to complete eligible stabilization 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:Red Rock Fire

B. Fire Number: WY-BTF-004

C. State:WY

D. County:Teton

E. Region: 4

F. Forest:Bridger-Teton

G. District:Jackson Ranger District

H. Fire Incident Job Code:P4GBT7

I. Date Fire Started:8-20-2011

J. Date Fire Contained: Not contained as of 9-23-2011

K. Suppression Cost: $2,058,319

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 0
2. Fireline seeded (miles): 0
3. Other (identify): hazard tree removal

M. Watershed Number: 170401020204 Gros Ventre River-Lake Creek; 170401020304 Crystal Creek-Gros Ventre

N. Total Acres Burned: 9344
NFS Acres(x) Other Federal (X) State ( ) Private ( )

O. Vegetation Types: mixed conifer, sage and grass

P. Dominant Soils: Argic Cryoborolls, fine, montmorillonitic – Typic Cryoboralfs, fine-loamy, mixed – Typic Cryochrepts, loamy-skeletal, mixed (Teton Soil Survey).

Q. Geologic Types: Landslide deposits, Frontier sandstone and Morrison shale.

R. Miles of Stream Channels by Order or Class: 1st order= 18.5; 2nd order= 3.93; 3rd order= 3.58; 4th order= 0.53 miles

S. Transportation System (within fire perimeter)

Trails: 8.16 miles Roads: 0 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1064 (low) 2807 (moderate) 3186 (high)

B. Water-Repellent Soil (acres): 3186

C. Soil Erosion Hazard Rating (acres):
2000 (low) 3000 (moderate) 4344 (high)

D. Erosion Potential: 3.17 tons/acre

E. Sediment Potential: 1352 cubic yards / square mile (based on an erosion rate of 3.17 tons/acre modeled from ERMIT, clay loam, 20% rock, 0%,50%,30% slope, 300ft, moderate soil burn severity)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 2-5

B. Design Chance of Success, (percent): 80%

C. Equivalent Design Recurrence Interval, (years): 25

D. Design Storm Duration, (hours): 0.5

E. Design Storm Magnitude, (inches): 0.90

F. Design Flow, (cubic feet / second/ square mile): Tepee: 45.8; Alkali: 38.4; Burnt: 44.2; Goosewing: 31.9. All are using Q100 from Miller, 2003. Running Wildcat4 to determine runoff from the design storm (30-minute, 25-year storm = 0.90 inches, with a curve number = 41 up to 55) did not yield any additional runoff from Tepee, Alkali, Burnt, or Goosewing (the main watersheds of concern).

G. Estimated Reduction in Infiltration, (percent): 34 (based on % area with water repellent soil)

H. Adjusted Design Flow, (cfs per square mile): Peak flow **increases** are as follows: Tepee: 45 cfs. Alkali: 48.5 cfs. Burnt: 68 cfs. Goosewing: 23 cfs/16 sq mi = 1.4. **Adjusted design flows are**: Tepee: 37.5 cfs/sq mi; Alkali: 20.3 cfs/sq mi; Burnt: 44 cfs/sq mi; Goosewing: 3.4 cfs/sq mi.

PART V - SUMMARY OF ANALYSIS

The lightning caused Red Rock Fire was discovered in the Gros Ventre Wilderness approximately 20 miles northeast of Jackson, Wyoming on the afternoon of August 20th. The fire is being managed to meet multiple objectives, including firefighter and public safety, protection of private property, as well as allowing the natural ecological process of wildland fire to occur in the Gros Ventre wilderness.

A BAER Team was assembled on 9/19/2011 to conduct an assessment. Members of the BAER team flew the fire in a helicopter to get an overview of the fire from the air and to review the Burned Area Reflectance Class (BARC) map. The BARC map was then used to identify and characterize preliminary soil burn severity classess. The soil burn severity classess were then sampled on the ground to verify and finalize low, medium and high classess. The team found that the BARC map correlated well with the soil burn severity sampled on the ground. Maps and analysis associated with this report can be found on the O drive at: O:\NFS\BridgerTeton\Program\2500WatershedAirMgmt\JRD\2520WatershedProtectionMgmt\D4_projects\RedRockBAER

A. Describe Critical Values/Resources and Threats:

Human Life and Safety:
As a result of the fire, hazard trees along the trail system in the fire area present a threat to human life and safety, however existing hazard trees were identified by fire crews and were dealt with accordingly. Since the fire is still active, additional hazard trees may be identified and removed. Decision point signs warning the public of this threat are in place at the trailhead and area closures associated with the fire have been lifted by the District Ranger due to the popularity of this area for hunting.

It is the Forest's expectation there is an "Unlikely" (<10 percent) chance for hazard trees to fall in the vicinity of a trail or road; and "Intermediate" consequences to human life if a tree were to fall on someone. This would equate to an "Intermediate" level risk based on the interim BAER direction.

Property:
Roads
Existing culverts and bridges were already undersized before the fire where streams crossed the Gros Ventre road. An attached spreadsheet shows calculated 100-year flows (Q100) and 50-year flows (Q50) at the crossing sites, as well as bankfull channel widths upstream from the crossings. Well-designed crossings should be able to accommodate at least Q50 on mainstem streams, and should also accommodate bankfull channel widths: these two parameters allow for flow capacity and for channel function, as well as aquatic organism passage. Culverts showed signs that they are already unable to convey peak flows. The Burnt Creek pipe has a drop at the inlet and deposition upstream from the structure. The Tepee Creek culvert is blocked by what appears to be old straw bales and has an extensive sediment deposit upstream from the inlet. Flow is bypassing the culvert and flowing around it, through the fill. At Alkali Creek wingwalls were added to the undersized pipe to compensate for the lack of width, and there are fresh overbank deposits downstream from the crossing. At many of these structures willow is obscuring inlets and outlets, making it even more likely that debris will be be caught upstream from the pipes or inside them. It is evident that these structures have not been maintained. Sediment inputs from road ditches and exposed slopes adjacent to roads add to potential sediment that may be delivered from the fire, too (e.g., Devil's Dip, Burnt Creek). Potential increased peak flow runoff due to the Red Rock fire could exacerbate existing conditions, making structures that are already unable to carry flow even less able to do so. The bridge at Goosewing Creek has structural problems and does not meet bankfull channel width, but doesn't show any major signs of being undersized at this time.

It is the Forest's expectation there is a "Possible" (10-50 percent) chance for the bridge capacity at Goosewing Creek to be exceeded and a "Likely" (50-90%) chance for the Tepee, Alkali, and Burnt Creek culverts to have their capacities exceeded. It is anticipated that there would be "Moderate" consequences to the existing

culverts and roadway if restoration efforts are not pursued, although cumulatively the consequences could add up to be a “Major” consequence. This would equate to a “High” level risk based on the interim BAER direction.

Trails

There are a total of 8.16 miles of system trails through the burned area that are at risk of washing out as a result of the fire. Waterbars within the high burned severity areas were consumed by the fire and need to be replaced. Additional waterbars and drainage structures need to be installed throughout the trail system in order to maintain the trails to prefire conditions.

It is the Forest’s expectation there is a “Likely” (50-90%) chance for the trail system to be washed out as a result of the fire. It is anticipated that there would be “Moderate” consequences to the existing trail system if efforts are not pursued. This would equate to a “High” level risk based on the interim BAER direction.

Natural Resources:

Within the fire perimeter, short-term increases in erosion and sedimentation are expected to be within the natural range of disturbance for this landscape, and no threats outside of this natural range were identified for soil productivity/hydrologic function, water supply/water use, or federally listed TES species. There are potential threats to native plant communities on NFS lands where invasive species or noxious weeds are absent or present in only minor amounts. Musk Thistle occurs at several locations in and around the burned area and it is expected that these infestations may increase to adjacent burned areas.

There is a high probability that noxious weed seeds – either from the immediate vicinity, or from some other location - were transported into the area via firefighters, equipment, and support vehicles that were used for fire monitoring/suppression operations. In addition to areas with moderate or high soil burn severity that are now lacking vegetation, roads and trails used to for access were heavily impacted and are now ideal staging points for noxious weeds. The level of undesirable disturbance makes these locations more susceptible for invasion of noxious weeds. It is the Forest’s expectation there is a “Likely” (50-90 percent) chance for noxious weeds to invade areas where they did not previously exist; and “Moderate” consequences to the existing native vegetation if early detection and rapid response (EDRR) efforts are not pursued. This would equate to a “High” level risk based on the interim BAER direction.

Cultural and Heritage Resources: Several existing sites were reviewed and no protection treatments are recommended.

B. Emergency Treatment Objectives:

Human Life and Safety:

- Protect the public from the threat of hazard trees caused by the fire along trails and roads (to be achieved though supression activities).

Property:

- Reduce the threat of the Gros Ventre road by constructing hardened crossings.
- Protect trail infrastructure on 8.16 miles of trail by placing waterbars and other drainage structures.

Land

- Prevent the spread of noxious plant species into previously unoccupied locations.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:

Land **90** % Channel **na** % Roads/Trails **90*** % Protection/Safety **na** %

*Road and channel treatments are weather dependent and could reduce the chances of completing the work either from too much snow, frozen ground or too much moisture.

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	50	75	75
Channel	100	90	90
Roads/Trails	100	90	90
Protection/Safety			

E. Cost of No-Action (Including Loss): **$200,000**

The cost of the no-action alternative could be significant for a variety of reasons. The Gros Ventre road could wash out at one, or several, locations, making it more expensive to repair than if the structures were replaced initially. If left unchecked, noxious weeds could invade areas previously not occupied by weeds and erradication costs could be significant.

F. Cost of Selected Alternative (Including Loss):$35,452 plus loss estimated at less than ½ of cost of no action.

Completing the reccommended treatments within the first year would result in a much reduced cost.

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Eric Winthers

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H. **Treatment Narrative:**

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Land Treatments:

Early detection and rapid response techniques for noxiuos weeds will be implemented during greenup next spring and throughout the growing season. Trailheads and roadways will be monitored and weeds

will be sprayed as necessary using standard truck mounted equipment. Weed treatments along trails will require a horse pack sprayer.

Channel Treatments: none

RoadsTreatments:
Install armored dips above or on either side of the three culverts at greatest risk of having their capacities exceeded (Tepee, Alkali, Burnt). This would allow flows to overtop the pipes with reduced road damage and would intercept some of the flow coming down the road ditches to the crossings. There is also a need to maintain the pipes: clean out inlets and outlets, and make sure there are relief culverts up-ditch from the pipes. The less additional flow these pipes experience from the road, the better. The Alkali pipe is set too steeply (from appearances): the outlet needs to be armored, as do, probably, the outlets of the other pipes: vegetation at the outlets was too thick to see their conditions clearly.

Trail Treatments: Total of 8.16 miles on Tepee Creek, West Goosewing, East fork of West Goosewing, Goosewing Creek and Alkali Ridge trails. Replace burned out waterbars and place new waterbars in between, doubling the frequency. Clean out existing drainage stuctures and construct new ones as necessary.

Protection/Safety Treatments:
Hazard trees will be removed from areas along the trail network. Portions of the trails are within wilderness and require minumum tool techniques. **To be completed by suppression crews**.

I. **Monitoring Narrative:**
(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

Weed treatments will be monitored using spray records and maps completed by weed crew.

The culvert and road treatments will be monitored by Forest Hydrologist with photo points, both pre and post treatment and after spring runoff.

Trail treatments will be monitored by Jackson District Trail Crew.

Part VI – Emergency Stabilization Treatments and Source of Funds **Interim #**

			NFS Lands				Other Lands			All
		Unit	# of		Other	# of	Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	BAER $	$	units	$	Units	$	$
A. Land Treatments										
weed treatment	acres	500	17	$8,500	$0		$0		$0	$8,500
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$8,500	$0		$0		$0	$8,500
B. Channel Treatments										
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treat.				$0	$0		$0		$0	$0
C. Road and Trails										
trail protection	miles	1700	8.16	$13,872	$0		$0		$0	$13,872
road drainage	miles	2000	0.25	$500	$0		$0		$0	$500
hardened crossings	each	1000	6	$6,000	$0		$0		$0	$6,000
armoring culverts	each	600	1	$600						$600
maintain culverts	each	50	16	$800						$800
install relief culverts	each	876	5	$4,380						$4,380
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$26,152	$0		$0		$0	$26,152
D. Protection/Safety										
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Structures				$0	$0		$0		$0	$0
E. BAER Evaluation										
salary	actual			$8,769			$8,769		$0	$8,769
travel	actual			$201			$201			
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				$8,970	$0		$8,970		$0	$8,769
F. Monitoring										
road and trails	each	4	100	$400	$0		$0		$0	$400
weed treatment	each	4	100	$400						$400
				$0						$0
Insert new items above this line!					$0		$0		$0	
Subtotal Monitoring				$800	$0		$0		$0	$800
G. Totals				$35,452	$0		**$8,970**		**$0**	**$44,221**
Previously approved										
Total for this request				**$35,452**						

PART VII - APPROVALS

1. Jacqueline A. Buchanan — 9-23-2011
   Forest Supervisor (signature) — Date

2. /s/Harv Forsgren — 9/27/2011
   Regional Forester (signature) — Date