Date of Report: 10/11/2007

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: Bridge

B. Fire Number: ID-CWF-000038

C. State: Idaho

D. County: Idaho

E. Region: R1

F. Forest: Clearwater

G. District: Powell

H. Fire Incident Job Code: P1DTU1

I. Date Fire Started: 7/25/07

J. Date Fire Contained: Not yet contained

K. Suppression Cost: $ 398,000

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

M. Watershed Number: (HUC6) total watershed area (area burned):

170603030201 24,816 total acres (15,000 acres burned)
170603030202 17,465 total acres (4117 acres burned)
170603030203 10,578 total acres (10,508 acres burned)
170603030204 24,309 total acres (12,949 acres burned)
170603030205 10,536 total acres (610 acres burned)

170603030206 16,674 total acres (866 acres burned)

N. Total Acres Burned:
[42,100] NFS Acres [ ] Other Federal [ ] State [ ] Private

O. Vegetation Types: Lodgepole pine/beargrass, lodgepole pine/grouse whortleberry, sublpine fire / beargrass, subalpine fire/ grouse whortleberry, Douglas-fir/ninebark, Subalpine fir/ fools huckleberry

P. Dominant Soils: Silt loam Mazama volcanic ash ranging in thickness from absent to 10-12" overlying loamy sands to sandy loams derived from Idaho Batholith granitics. Rock outcrops common as are glacially influenced soils, including outwash plains, glacial troughs, compacted tills, etc.

Q. Geologic Types: Primarily granitics of the Idaho Batholith

R. Miles of Stream Channels by Order or Class: **Order 0:** 0.22 mi, **Order 1:** 52.22 mi, **Order 2:** 16.49 mi, **Order 3**: 19.36 mi, **Order 4:** 10.07 mi, **Order 5:** 5.48 mi
Class 0: 0.22 mi, **Class1:** 34.91 mi, **Class 2:** 68.71 mi

S. Transportation System

Trails: 5.71 **miles** **Roads:** 44.31 **miles**

PART III - WATERSHED CONDITION

A. Burn Severity (acres): **unburned:** 16, 672 (39.6%), **low:** 9178 (21.8%), **moderate:** 14,525 (34.5%) **high:** 1726 (4.1%)

B. Water-Repellent Soil (acres): 2105 (5%)

C. Soil Erosion Hazard Rating (estimated acres): **low:** 16, 840 (40%), **moderate** 10,525 (25%)**, high:** 14, 735 (35%)

D. Erosion Potential: **46.8 tons/acre**[1]

E. Sediment Potential: **14.1 tons/acre**[2]

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 3-5 years

B. Design Chance of Success, (percent): 75%

[1] Results derived from Disturbed WEPP. Modeled high intensity fire in the uplands and riparian, sandy loam soil, 40% slope, 20% ground cover, 30% rock, and Fenn RS modified climate. This is a worse case analysis.
[2] Results derived from ERMiT. Modeled high intensity fire, sandy loam soil, 30% rock, 40% slope, and Fenn RS modified climate. This is a worse case analysis.

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

D. Design Storm Duration, (hours): 0.25 hours

E. Design Storm Magnitude, (inches): 0.53 inches

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

G. Estimated Reduction in Infiltration, (percent): 25 %

H. Adjusted Design Flow, (cfs per square mile): 110 cfsm[3]

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

Based upon the BAER Teams' field survey and analysis, the following emergencies exist on National Forest System lands:

Threat to Federal property and aquatic ecosystem integrity:

Accelerated sheet and rill erosion and runoff will occur due to the lack of canopy, ground cover, and water repellency of soils. Increased sediment delivery to the stream channels will result in degraded water quality and loss of channel capacity. Runoff will increase due to loss of infiltration capacity.

Increased stream flows from moderate to high severity burns in the Bridge Fire poses a threat to Road 360, where one culvert is undersized, several culverts need modification to handle anticipated increased flows, and a stream crossing needs additional work/imporovments to handle expected increases in flow.

Much of the fire burned within the Selway-Bitterroot Wilderness Area. Treatments proposed for wilderness must address imminent threats to downstream or downslope human life and property, or unacceptable degradation of critical natural or cultural resources. Threats to the trail system were created by the burn and treatments are needed to prevent significant soil runoff into wilderness streams as well as wildlife and fisheries habitat. Hazardous tree removal is also proposed along trails for the safety of BAER personnel implementing trail erosion control measures, as well as for the safety of the public utilizing system trails.

Most of the burn area is relatively free of invasive weeds, due to its remote location, as well as wilderness attributes. However, roads and trails provide corridors for weed introduction from other locations, and it is critical that weed monitoring be conducted within the first year after the burn to assess any weed invasion into areas of moderate to high burn severity.

[3] Use 110 cfsm for watershed less than 2 mi^2; Parret et al. 2003. Fire Hydrology. July 2003. For watersheds 5-20 mi^2, the design storm should be approximately 23 cfsm; Arkell Richard E, and Frank Richards, 1986. Short Duration Rainfall Relations for the Western United States. August 1986. Gerhardt, N, 2003. Precipitation – Frequency Values for Lolo Pass, Idaho/Montana. Unpublished Paper. September 2003

B. Emergency Treatment Objectives:

The emergency treatment objectives are to protect life and property, maintain soil productivity and water quality, to protect high value fisheries, and prevent the invasion of noxious weeds. Specifically we are concerned with the potential for:

1. Erosion and sedimentation to streams occurring along moderate and high fire burn severity portions of Trails 1, 4, 9, 10, 22, 28, 43, 50, and 51.
2. Culvert failures on Road 360 from milepost 10.5-10.9 causing detrimental effects to downstream T&E fisheries habitat;
3. Blowout of side channel at the Bridge Creek crossing of Road 360 and potential damage to the road.
4. Weed invasion into previously weed-free areas which have experienced moderate and/or high burn severity adjacent to travel corridors (roads and trails).

Treatments designed to reduce the risk of the potential adverse effects of the fire include:

1. Construction of erosion control measures (water bars, check dams, drainage dips, and minor restoration) and removal of hazard trees along 20.3 miles of Trails 1, 4, 9, 10, 22, 28, 43, 50, and 51.

2. Replacing a culvert at milepost 10.5 on Road 360 with a larger size to accommodate expected increases in stream flow

3. Modify drop inlets in culverts at milepost 10.8 and 10.9 on Road 360 to help debris passage associated with expected increased flows.

4. Stabilize side channel and raise road grade at Bridge Creek crossing (milepost 11.0) on Road 360.

5. Monitor travel ways (roads and trails) in moderate to high burn severity locations for spread of invasives weeds into previously weed free locations that burned.

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

Land ___% Channel ___% Roads/Trails 95**% Protection/Safety ___%**

D. Probability of Treatment Success

	Years after Treatment		
	1	**3**	**5**
Land	XXX	XXX	XXX
Channel	XXX	XXX	XXX
Roads/Trails	95	100	100

Protection/Safety	XXX	XXX	XXX

E. Cost of No-Action (Including Loss): XXX

F. Cost of Selected Alternative (Including Loss): **$85,812**

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Jim Mital

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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: None

Channel Treatments: **None**

Roads and Trail Treatments:

1. **Erosion control measures (and hazard tree removal for safety of BAER implementation team workers) will be implemented on the following trails for the estimated costs:**

TRAIL 1 – BIG SAND CREEK:
Hazard tree removal on 1.5 miles x $1,000/mile = $1,500
Erosion control (drainage dips only) on 1.5 miles x $1,500/mile = $2,250
TOTAL COST = $3,750

TRAIL 4 – BIG SAND LAKE:
Hazard tree removal on 2 miles x $1,000/mile = $2,000
Erosion control (drainage dips only) on 2 miles x $1,500/mile = $3,000
TOTAL COST = $5,000

TRAIL 9 – HIDDEN LAKE:
Hazard tree removal on 1.5 miles x $1,000/mile = $1,500
Erosion control (water bars, check dams, drainage dips, minor restoration) on 1.5 miles x $3,000/mile = $4,500

TOTAL COST = $6,000

TRAIL 10 – HIDDEN PEAK:
Hazard tree removal on 4 miles x $1,000/mile = $4,000
Erosion control (water bars, check dams, drainage dips, minor restoration) on 4 miles x $3,000/mile = $12,000
TOTAL COST = $16,000

TRAIL 22 – SWAMP RIDGE:
Hazard tree removal on 1.5 miles x $1,000/mile = $1,500
Erosion control (water bars, check dams, drainage dips, minor restoration) on 1.5 miles x $3,000/mile = $4,500
TOTAL COST = $6,000

TRAIL 28 – BRIDGE CREEK:
Hazard tree removal on 2.6 miles x $1,000/mile = $2,600
Erosion control (water bars, check dams, drainage dips, minor restoration) on 2.6 miles x $3,000/mile = $7,800
TOTAL COST = $10,400

TRAIL 43 – GARNET CREEK:
Hazard tree removal on 1 mile x $1,000/mile = $1,000
Erosion control (water bars, check dams, drainage dips, minor restoration) on 1 mile x $3,000/mile = $3,000
TOTAL COST = $4,000

TRAIL 50 – COLT KILLED CREEK:
Hazard tree removal on 4 miles x $1,000/mile = $4,000
Erosion control (water bars, check dams, drainage dips, minor restoration) on 4 miles x $3,000/mile = $12,000
TOTAL COST = $16,000

TRAIL 51 – WHITE SAND LAKE:
Hazard tree removal on 2.2 miles x $1,000/mile = $2,200
Erosion control (water bars, check dams, drainage dips, minor restoration) on 2.2 miles x $3,000/mile = $6,600
TOTAL COST = $8,800

GRAND TOTAL COST = $75,950

2. **Road treatments will be implemented on Road 360 for the following estimated costs:**

Site 1. Road 360 apx MP 10.5 (UTM 11T 0682069E 5137739 N)
Watershed area = 0.16 square miles

Adjusted Design Flow = 110 cfsm[4] = 17.6 cfs (similar to the predicted Q100 event)
Use 36" CMP

Replace 18" x 30' culvert with 36" x 34' culvert. Use existing rates in Bridge Creek Bridge Contract for hourly equipment, aggregate surfacing, and riprap.

Use Cat 320 Excavator for 10 hours @ $95/hour	**$ 950**
36" culvert: 34' @ $33/LF	**$1122**
Riprap: Use 10 CY @ $40/CY	**$ 400**
Aggregate: Use 10 CY @ $28/CY	**$ 280**
Mobilization: 10 hours @ $90/hour *	**$ 900**
* Mobilization may be covered under Bridge Cr Bridge	**$3652**

Site 2. Road 360 apx MP 10.7
Existing 18" x 36' in small perennial stream with < 0.05 Ac watershed
Moderate burn
Do not replace; No work

Site 3. Road 360 apx MP 10.8
Existing 18" x 36' with drop inlet in small seep with < 0.025 Ac watershed
Moderate burn
Remove or cut large holes in drop inlet to help pass debris
Use Cat 320 for 1 hr OR laborer with cutting torch for 2 hrs **$100**

Site 4. Road 360 apx MP 10.9
Existing 18" x 26' with drop inlet in small seep with < 0.025 Ac watershed
Moderate burn
Remove or cut large holes in drop inlet to help pass debris
Use Cat 320 for 1 hr OR laborer with cutting torch for 2 hrs **$100**

Site 5. Road 360, MP 11.0 Bridge Creek
Existing 72" x 32' culvert currently under contract for replacement by bridge Contract for Replacement was issued in early 2007. Construction was scheduled for 2007 and postponed due to the fire.

Watershed area = 2.4 square miles
Adjusted Design Flow = 110 cfsm[1] = 264 cfs

This design flow for a burned watershed is a worst case scenario. The true adjusted design flow for Bridge Creek should be somewhat less as only approximately 25% of the watershed burned with a moderate or high burn severity. The current culvert will handle a flow of 130 cfs or a little less than the Q_{50} event. The designed bridge should

[4] Use 110 cfsm for watershed less than 2 mi^2; Parret et al. 2003. Fire Hydrology. July 2003. For watersheds 5-20 mi^2, the design storm should be approximately 23 cfsm; Arkell Richard E, and Frank Richards, 1986. Short Duration Rainfall Relations for the Western United States. August 1986. Gerhardt, N, 2003. Precipitation – Frequency Values for Lolo Pass, Idaho/Montana. Unpublished Paper. September 2003

accommodate the predicted increase in flow due to the fire. It will also more easily pass logs and other debris that move down the channel.

Replacement of the culvert will not take place this season due to the lateness of the season and project logistics. However, the flows and potential associated debris torrents caused by intense summer thunderstorm may pose the highest risk to the existing culvert. Thus, the bridge construction should occur as early as possible in 2008.

There is a historic channel approximately 100' down the road from the existing channel. There is an old deposit 300' up the channel from the road that blocked the channel and diverted it approximately 100' it to the other side of the valley (see photos). There is a risk of the channel abandoning the current channel and rewatering the historic channel. A root wad with tree attached currently blocks access to most of this old channel.

Additional work to be done at site 5:
Hand work should be completed fall of 2007 if possible.
Equipment work will be completed as early as possible in 2008 under the existing bridge contract with Independence Construction.

Fall hazard trees from construction site. Use two sawyers for 4 hours **$ 250**

In order to keep the flow in the current channel and avoid diversion into the old channel, construct a 15' long x 3' high wingwall structure using wood posts and local logs, tieing root wad to valley bank on south side of Creek. Embed wingwall in ground. Do not disturb streambanks. Revegetate by transplanting unburned shrubs from riparian area/ alluvial fan downstream of road crossing. Remove logs / log jam from creek just below bend in creek.

Use 3 laborers (at least one sawyer) for 3 10 hour days	**$ 750**
6 wood posts – (2" x 2" x 6') @ $2.50 EA	**$ 15**

If the flow does revert back to the old channel, the current configuration of the road could divert the flow down the road causing much erosion and subsequent sedimentation. To minimize the risk of the flow diverting down the road, raise grade of road down grade from the 18" culvert at the old dry channel, creating a low spot over the 18" culvert. In addition, armor the fill slope around the culvert outlet to reduce the chance of road failure and headcutting in the channel.

Raise grade 1' high for 100' (including 25' of taper on either side).
Use existing rates in Bridge Creek Bridge Contract for hourly equipment, aggregate surfacing, and riprap. Armor fill slope on outlet side of 18" culvert with riprap for 60'.

Use 3 truckloads of borrow from Savage Pass Pit – 1 hour round trip	
3 loads @ 1 hour/load @ $65/hour	**$ 195**
8 hours excavator @ $95/ hour	**$ 760**

Add 20 CY of aggregate surfacing and 20CY riprap	
20 CY @ $28/CY	**$ 560**
12 CY @ $40/CY	**$ 480**
Resurvey and stake bridge for construction. (This was previously complete but the stakes burned.)	**$1000**
Total cost to at site 5	**$4010**
Total cost along road 360	**$7862**

Protection/Safety Treatments: **None**

I. Monitoring Narrative:

1 **Trail monitoring-**Monitoring will be accomplished throughout the recreation season by trail crews, wilderness rangers, and other recreation personnel. If any of the implemented erosion control treatments are determined to be inadequate, an interim 2500-8 report will be submitted for additional treatment funding to correct the situation.

2. **Invasive weed monitoring ($2000)**-Previous weed locations along roads and trails while be monitored in spring/summer 2008 where they intersect with the burn perimeter. Roads and trails will be monitored for encroachment of knapweed (and other weeds) into areas of moderate to high burn severity. If such monitoring identifies the invasion of knapweed (or other weeds) into previously weed-free areas, appropriate treatment measures will be identified and an interim 2500-8 report will be submitted for weed treatment funding.

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											
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Land Treatments				$0	$0			$0		$0	$0
B. Channel Treatments											
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
				$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 erosion control	miles	$3,741	20.3	$75,950	$0			$0		$0	$75,950
Rd 360 culvert replace	Each	$3,652	1	$3,652	$0			$0		$0	$3,652
Rd 360 culvert repair	Each	$100	2	$200							
Misc bridge epairs	Each	$4,010	1	$4,010	$0			$0		$0	$4,010
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Road & Trails				$83,812	$0			$0		$0	$83,612
D. Protection/Safety											
				$0	$0			$0		$0	$0
				$0	$0			$0		$0	$0
				$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											
Team Costs				$12,285				$0		$0	$0
Insert new items above this line!				---	$0			$0		$0	$0
Subtotal Evaluation				$12,285	$0			$0		$0	$0
F. Monitoring											
Weed Monitoring	Ea	$2,000	1	$2,000	$0			$0		$0	$2,000
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Monitoring				$2,000	$0			$0		$0	$2,000
G. Totals				$85,812	$0			**$0**		**$0**	**$85,612**
Previously approved											

PART VII - APPROVALS

1. /s/ Kimberly D. Nelson (for) Thomas K. Reilly 10/11/2007
   Forest Supervisor (signature) Date

2. _____ _____
   Regional Forester (signature) Date