USDA-FOREST SERVICE

FS-2500-8 (6/06)
Date of Report: July 13, 2007

Edited J.Bruggink 07/23/2007

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: Harrison

B. Fire Number: NV-HTF-001103

C. State: NV

D. County: Elko

E. Region: 4

F. Forest: Humboldt-Toiyabe

G. District: Ruby Mountains

H. Fire Incident Job Code (P Code): P4DN1S

I. Date Fire Started: 7/7/2007

J. Date Fire Contained: 7/8/2007 (100%)

K. Suppression Cost: $96,000 (estimated)

L. Fire Suppression Damages Repaired with Suppression Funds: There are 2.2 miles of fireline. At the time of this report, rehabilitation efforts for the fireline were in progress.

M. Watershed Number: 160401030202

N. Total Acres Burned: 564.7
NFS Acres(564.7) Other Federal (0) State (0) Private (0)

O. Vegetation Types:
Mountain Big Sagebrush Plant Community - This plant community makes up the largest community within the burned area. It is located on the benches and moderate slopes.

Mountain big sagebrush (Artemisia tridentata vaseyana) is the dominant plant species. Other species that occur in this plant community are bitterbrush (Purshia tridentata), snowberry (Symphoricarpos oreophilus), currant (Ribes spp.), Basin wildrye (Leymus cinereus), Idaho fescue (Festuca idahoensis), Indian ricegrass (Achnatherum hymenoides), mountain brome (Bromus carinatus), slender wheatgrass (Elymus trachycaulis), and bluebunch wheatgrass (Pseudoroegneria spicata).

These plant communities will be slow to recover from the burn, since mountain big sagebrush does not re-sprout after fire. Some islands and partially/light burned areas of mountain sagebrush were left unburned and will provide a seed source for shrub re-establishment, but it is likely these sites will take about 10 years to recover. Perennial bunch grasses were evident in the burned area and live roots were located within one inch of the surface. Significant amounts of moisture for re-growth or re-sprouting are unlikely until next spring. It will probably be at least two years before the herbaceous vegetation recovers vigor. Cheatgrass (Bromus tectorum) is present in this plant community.

Mountain Big Sagebrush – Antelope Bitterbrush Plant Community - This plant community makes up a small portion of the burn area, and is primarily located in the lower foothills and alluvial fans. The dominant vegetation is antelope bitterbrush (Purshia tridentata) and mountain big sagebrush (Artemisia tridentata ssp. vaseyana). Other common species include yellow rabbitbrush (Chrysothamnus viscidiflorus), serviceberry (Amalanchier alnifolia), basin wildrye (Leymus cinereus), Indian ricegrass (Achnatherum hymenoides), slender wheatgrass (Elymus trachycaulis) and bluebunch wheatgrass (Pseudoroegneria spicata).

These plant communities will be slow to recover from the burn, since mountain big sagebrush does not re-sprout after fire. Some islands and partially/light burned areas of mountain sagebrush were left unburned and will provide a seed source for shrub re-establishment, but it is likely these sites will take about 10 years to recover. Perennial bunch grasses were evident in the burned area and live roots were located within one inch of the surface. Significant amounts of moisture for re-growth or re-sprouting are unlikely until next spring. It will probably be at least two years before the herbaceous vegetation recovers vigor. Cheatgrass (Bromus tectorum) is present in this plant community.

Low Sagebrush Plant Community - This plant community covers a small portion of the burned area. It is located primarily on the ridgelines, higher mountain slopes and some of the high benches within the burned area. The dominant species in this plant community is early, low sagebrush (Artemisia arbuscula longiloba). Other associated species include Idaho fescue (Festuca idahoensis), squirreltail (Elymus elymoides), Sandberg's bluegrass (Poa secunda), milkvetch (Astragalus spp.), biscuitroot (Lomatium spp.) and longleaf phlox (Phlox longiloba).

These plant communities will be slow to recover, since low sagebrush does not re-sprout after fire. It is likely these sites will take approximately 10 to 15 years to recover. It will likely be a minimum of two years before the herbaceous vegetation recovers vigor. Cheatgrass (Bromus tectorum) may be present in this plant community.

Mountain Shrub Plant Community - This plant community resides in the steeper slopes on the north side of fire. The dominant plant species are chokecherry (Prunus virginiana), currant (Ribes spp.), elderberry (Sambucus nigra ssp. cerulea) and wild rose (Rosa woodsii). Understory species include arrowleaf balsamroot (Balsamorhiza sagittata), cinquefoil (Potentilla spp.), lupine (Lupinus spp.), biscuitroot (Lomatium spp.), basin wildrye (Leymus cinereus), Idaho fescue (Festuca idahoensis), bluebunch wheatgrass (Psuedoroegneria spicata), slender wheatgrass (Elymus trachycaulus), and Columbia needlegrass (Achnatherum nelsonii).

Most of the shrubs that dominate these plants communities are re-sprouters and many are considered fire dependent for seed germination. By next spring the grasses and shrubs should be sending up shoots and these sites should recover vigor within two to five years.

Woody Riparian Plant Community - This plant community occurs throughout the drainage of the burned area. The soils in this drainage tend to be rocky and the slopes moderate and occasionally steep. The dominant woody plant is willow (Salix spp.). Other woody plants and shrubs found in the area adjacent to the fire or within the burn are current (Ribes spp.), chokecherry (Prunus virginia), Oregon grape (Mahonia repens) and wild rose (Rosa woodsii).

The woody species that inhabit these plant communities will readily respond to disturbances such as fire and flooding. In many instances, fire stimulates their re-growth. By next spring, most will be re-sprouting and if adequate moisture is available will facilitate their growth throughout the summer. In two to five years these sites will be mostly recovered. A two year or more period of rest from livestock grazing will provide needed protection for re-establishment.

Riparian Meadow Plant Communities - These plant communities range from moist to wet meadows. These areas do not constitute much of the overall landscape, but do have a high importance for wildlife habitat and the filtering of water run-off. Most of these areas burned lightly around the edges or not at all. However, the drier meadows were usually burned completely. The stream systems, seeps and springs in the burn area dissect and break-up the area providing critical forage for wildlife and livestock. Cheatgrass (Bromus tectorum), Bulbous bluegrass (*Poa bulbosa*), Bull thistle (*Cirsium vulgare*), Canada thistle (*Cirsium arvense*) and Scotch thistle (*Onopordum acanthium*) are present in or around these plant communities.

P. Dominant Soils:

The alluvial foothills in the lower burn area contain fine loamy and fine clayey soils. The fine loamy soils have a moderately to moderately low erodibility, are deep (greater than 6 feet to bedrock), gravelly, well drained , and support sagebrush, forbs, and grass. The fine clayey soils are moderately erodible, deep (greater the 6 feet to bedrock), stony, well drained, and support a sagebrush, forb, and grass vegetation.

The upland area of the burn contains shallow sandy soils with a thin (≤1 inch) gravelly sandy loam surface over a thin (4-5 inch) very gravelly sandy substrata. The underlying bedrock is a soft moderately weathered granite. Soil erodibility is rated at moderately high.

Q. Geologic Types:

Lower burn area is generally composed of gently sloping alluvial fans. Upland area of burn is a "granitic rock land" consisting mostly of outcroppings of spalling granite with little or no soil materials on the surface. The upland area also contains shallow soil areas covered with granitic cobble, and stones.

R. Miles of Stream Channels by Order or Class:

1st order intermittent: 1.2 miles
1st order perennial: 0.5 miles
2nd order perennial: 0.3 miles
3rd order perennial: 0.3 miles

S. Transportation System

Trails: 0 miles Roads: 2.7 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 179.6 (low) 385.1 (moderate) ___ (high)

The burn severity acreages were calcuated from a Burned Area Reflectance Classification Map (BARC) provided by the U.S. Forest Service's Remote Sensing Application Center (RSAC). The map was varifided by the field assessment.

B. Water-Repellent Soil (acres): 0

C. Soil Erosion Hazard Rating (acres): 0 (low) 452 (moderate) 113 (high)

D. Erosion Potential:

Erosion Potential for the Lower Alluvial Slopes (tons/acre)

Treatment	Year following the fire				
	1st year	2nd year	3rd year	4th year	5th year
Untreated	0.75	0.26	0	0	0
Seeded	0.75	0.05	0	0	0
Mulch (0.5 tons/acre)	0.07	0.05	0	0	0
Mulch (1 tons/acre)	0.03	0.05	0	0	0
Mulch (1.5 tons/acre)	0.03	0.04	0	0	0
Mulch (2 tons/acre)	0.03	0.04	0	0	0

Values were calculated by the Erosion Risk Management Tool (ERMiT), with and accuracy of plus or minus 50% (Robichaud and others, 2006).

Erosion Potential for the Steeper Upland Slopes (tons/acre)

Treatment	Year following the fire				
	1st year	2nd year	3rd year	4th year	5th year
Untreated	4.71	1.9	0.49	0.33	0.25
Seeded	4.71	0.63	0.33	0.25	0.25
Mulch (0.5 tons/acre)	0.53	0.52	0.49	0.33	0.25
Mulch (1 tons/acre)	0.43	0.45	0.49	0.33	0.25
Mulch (1.5 tons/acre)	0.42	0.42	0.49	0.33	0.25
Mulch (2 tons/acre)	0.39	0.38	0.49	0.33	0.25

Values were calculated by the Erosion Risk Management Tool (ERMiT), with and accuracy of plus or minus 50% (Robichaud and others, 2006).

E. Sediment Potential:

Sediment Potential for the Lower Alluvial Slopes (cubic yards/square mile)

Treatment	Year following the fire				
	1st year	2nd year	3rd year	4th year	5th year
Untreated	480	166	0	0	0
Seeded	480	32	0	0	0
Mulch (0.5 tons/acre)	44.8	32	0	0	0
Mulch (1 tons/acre)	19.2	32	0	0	0
Mulch (1.5 tons/acre)	19.2	26	0	0	0
Mulch (2 tons/acre)	19.2	26	0	0	0

Values were calculated by the Erosion Risk Management Tool (ERMiT), with and accuracy of plus or minus 50% (Robichaud and others, 2006).

Sediment Potential for a Typical Slope on the Steeper Upland Areas (cubic yards/square mile)

Treatment	Year following the fire				
	1st year	2nd year	3rd year	4th year	5th year
Untreated	3,014	1,2169	314	211	160
Seeded	3,014	403	211	160	160
Mulch (0.5 tons/acre)	339	333	314	211	160
Mulch (1 tons/acre)	275	288	314	211	160
Mulch (1.5 tons/acre)	269	269	314	211	160
Mulch (2 tons/acre)	250	243	314	211	160

Values were calculated by the Erosion Risk Management Tool (ERMiT), with and accuracy of plus or minus 50% (Robichaud and others, 2006).

PART IV - HYDROLOGIC DESIGN FACTORS

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

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

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

D. Design Storm Duration, (hours): 6

E. Design Storm Magnitude, (inches): 1.6

F. Design Flow, (cubic feet / second/ square mile): 32.4

G. Estimated Reduction in Infiltration, (percent): 1.8

H. Adjusted Design Flow, (cfs per square mile): 33.0

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Threats to Human Life: Field reviews within and downstream of the burn confirmed that there are no significant threats to human life.

Threats to Property: Field reviews within and downstream of the burn confirmed that there are no situations where private property is within flood prone areas. Therefore, the effects of the fire do not appear to have created any significant threats to private property.

Threats to Drainages: The field assessment within and downstream of the burn confirmed that there are no significant threats to water quality in the drainages. There will be sediment and ash output and minor, inconsequential changes to chemical quality, but the effects to on-site and downstream water quality are expected to be minor.

Threats to Long-term Soil Productivity and Ecosystem Integrity: The following Invasive and noxious weed species have been identified as a threat to long-term soil productivity and ecosystem integrity within the burned area:

Thistles: Bull thistle (*Cirsium vulgare*), Scotch thistle (*Onopordum acanthium*), and Canada thistle (*Cirsium arvense*)
These thistles are native to Europe and Asia and are on the Federal and Western States noxious weed lists. They grow in both riparian and dry sagebrush habitat.

These thistles occur along the roads, streams, and springs in the burned area. The weed inventory map shows known populations. During the field examination of the burn, all three species were located in or very near the burn.

Fire creates conditions that are favorable to the spread of thistles and may result in large stands or monocultures of these species. Colonies of thistle do not adequately protect soil from erosion by water. An increase in thistle will probably result in a loss of native vegetation. The native vegetation, which has finer roots and produces more ground litter, is much better adapted to hold soil in place during water and wind erosion events than the tap-rooted thistles.

Cheatgrass (*Bromus tectorum*)
Cheatgrass is a non-native (European) invasive annual species that can obtain a competitive advantage over native species after fire. This competitive advantage is created by loss of shade and litter cover on the soil surface and loss of water retention and infiltration with burned soils.

The southern border of this fire is adjacent to established cheat grass stands that run along the Harrison Pass road. Also the burn area has a scattered population of cheat grass with some southern slopes having a larger infestation. Since cheatgrass expands so quickly after a fire, much of this area is susceptible to cheatgrass conversion. Cheatgrass conversion could limit the watershed function to the top few inches of soil, increase the future fire frequency, create a pocket population that could invade adjacent areas and limit the site capability of the area to produce forage and shelter for wildlife. A field inspection showed a slight burn layer on the surface of the soil in most areas, as well as evidence of perennial bunchgrasses with live roots just below the burned soil surface. Treating the cheatgrass with an herbicide would likely assist the native perennials in competition with this invasive weed.

Bulbous bluegrass (*Poa bulbosa*)
On the lower benches, Bulbous bluegrass a non-native (Mediterranean region) invasive annual species is abundant in drier meadows and sagebrush systems, most likely due to heavy past use. These sites are often located adjacent to wet and moist sites. The areas with bulbous bluegrass will likely not expand as the burn recovers if given a couple of years rest from livestock grazing. A rest from grazing may assist the native perennials in competition with this annual grass.

B. Emergency Treatment Objectives:

The goals of the burned area emergency rehabilitation are to:

- Allow for the natural recovery of native plant communities in a timely fashion in order to reduce or eliminate a threat to long-term soil productivity and protect the ecological integrity of the ecosystem.

Treatment objectives to achieve the goals are:

- Control expected invasion by Bull thistle (*Cirsium vulgare*), Scotch thistle (*Onopordum acanthium*) and Canada thistle (*Cirsium arvense*), and cheatgrass (*Bromus tectorum*) through herbicide application.
- Rest areas of the burn from grazing within the guidelines provided by the Forest Plan.

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

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

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	75	85	90
Channel	NA		
Roads/Trails	NA		
Protection/Safety	NA		

E. Cost of No-Action (Including Loss): $57,884

The no-action cost was calculated using the BAER cost/risk analysis worksheet (USDA Forest Service, 2007). Costs associated with noxious weed treatment and potential loss of grazing fees were evaluated in the analysis.

F. Cost of Selected Alternative (Including Loss): $29,111

The cost of the selected alternative was calculated using the BAER cost/risk analysis worksheet (USDA Forest Service, 2007). Direct costs associated with weed monitoring were evaluated as well as the cost associated with the risk of failure in the first year following treatment.

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Ron Hudson

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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: Areas of the burn will be rested from grazing within the guidelines provided by the Forest Plan. Areas to be rested will be specified in annual operating plans for each allotment. If monitoring indicates that invasive plants, lack of recovery, or unauthorized livestock use are concerns, the timeline to reintroduce livestock grazing may be extended.

Noxious Weeds: As described in the monitoring narrative below, monitoring for noxious weeds will be conducted by the district weed treatment crew in the 2008 field season. As noxious weeds are documented, they will also be treated with herbicide by the crew.

Invasive Weeds (Cheatgrass): Treatment for cheatgrass control would require a two prong approach. First the district, using program funding, would commit to treating cheatgrass along the Harrison Pass Road. This would control the main seed source. The second objective, using BAER funding, would be to treat areas within the burn that had a larger cheatgrass infestation or are adjacent to a cheatgrass infestations. We would not attempt to treat the entire burn area, but just the areas that we know are more prone to invasion. The treatment area is estimated to be 100-150 acres. The herbicide Plateau™ would be applied in fall 2007.

Vegetation Recovery and Soil Stabilization: The soils in this area are very high in rocks, cobbles and gravels, which tend to provide soil stability, and the pre-fire vegetation appears to have been primarily native and in good health. Given rest from human-caused disturbances, the burn area should become resilient within two years and recover completely within five to ten years. Other than a rest from grazing in areas determined by the team, no treatment is recommended.

Channel Treatments: Not necessary.

Roads and Trail Treatments: Not necessary.

Protection/Safety Treatments: Not necessary.

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.)

The burned area will be monitored for the presence of noxious and invasive weeds by a district weed treatment crew. New weed locations will be documented with GPS positions and photographs.

Noxious weed monitoring will occur at once early in the 2008 field to prevent weeds from maturing in the burned area. Monitoring levels may be increased if weeds are detected in the area. If additional monitoring of treatments is necessary beyond 1 year, an interim 2500-8 request will be submitted. A monitoring report following the first year monitoring results will be submitted before any interim requests are made.

Monitoring for invasive weeds will be conducted in the fall of 2007 to assess the potential for cheatgrass invasion and dominance in the burn area. If initial assessments indicate that further surveys are needed to assess the effectiveness of treatment and need for re-treatment, the Forest will request additional funds at that time.

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										
Invasive Weeds	acres	120	100	$12,000	$0		$0		$0	$12,000
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$12,000	$0		$0		$0	$12,000
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										
				$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 Road & Trails				$0	$0		$0		$0	$0
D. Protection/Safety										
				$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										
4 person Team	total	2700	1	---	$2,700		$0		$0	$2,700
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				---	$2,700		$0		$0	$2,700
F. Monitoring										
					$0		$0		$0	$0
Noxious Weeds	total	5,040	1	$5,040	$0		$0		$0	$5,040
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$5,040	$0		$0		$0	$5,040
G. Totals				$17,040	$2,700		**$0**		**$0**	**$19,740**
Previously approved										
Total for this request				**$17,040**	**$2,700**		**$0**		**$0**	**$19,740**

PART VII - APPROVALS

1. /s/ *Jeremiah C. Ingersoll* 7/13/2007
for Forest Supervisor (signature) Date

2. /s/ Mary Wagner for 7/30/2007
Regional Forester (signature) Date

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