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

Date of Report: 06/04/2011

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: Queen

B. Fire Number: NM-LNF-000011

C. State: NM

D. County: Eddy

E. Region: 3

F. Forest: Lincoln

G. District: Guadalupe

H. Fire Incident Job Code: P3F3NQ

I. Date Fire Started: 05/10/2011

J. Date Fire Contained 05/16/2011

K. Suppression Cost: $100,000

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: 130600110802 Middle Last Chance, Upper Last Chance 130600110801

N. Total Acres Burned: 4,176 acres
NFS Acres (3,960) Other Federal (0) State (0) Private (222) Tribal (0)

O. Vegetation Types: Pinyon/Juniper Woodland, Desert Shrubland

P. Dominant Soils: Lithic Argiustolls, Lithic Calciustolls, Rock Outcrop

Q. Geologic Types Limestone, Sandstone and Dolomite

R. Miles of Stream Channels by Order or Class:

Stream Order	Miles
1	196
2	113
3	55
4	19

S. Transportation System

Trails: 0 miles Roads: 13.2 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 3,506 (low/unburned) 670 (moderate)

B. Water-Repellent Soil (acres): 588 acres

C. Soil Erosion Hazard Rating (acres):
0 (low) 532 (moderate) 533 (high)

D. Erosion Potential: 0.4 tons/acre

E. Sediment Potential: 20 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 1-4 years

B. Design Chance of Success, (percent): 85%

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

D. Design Storm Duration, (hours): 1 hour

E. Design Storm Magnitude, (inches): 2.58 inches

F. Design Flow, (cubic feet / second/ square mile): 216

G. Estimated Reduction in Infiltration, (percent): 18

H. Adjusted Design Flow, (cfs per square mile): 253 (ajs)

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

The Queen Fire originated on National Forest Lands, and was started on May 10, 2011, from a suspected human-caused origin. The exact cause of the fire is currently under investigation. The fire was started on the east side of FSR 524, and expanded to the west and north of Queen, NM. The fire was turned over to the Pecos Zone Type 3 IC team by the morning of May 10, 2011, and continued to threaten the community of Queen. The fire also expanded into previous low severity burned areas of the Last Chance fire area and down into the head of Last Chance Canyon. The fire was declared 100% contained on May 16, 2011.

The fuel types were primarily pinon/juniper woodland and desert shrubland. There are no perennial streams, and the area is contained within the Last Chance Canyon watershed. Elevations range from approximately 4,300 to 5,600 feet, and at the head of Last Chance Canyon, the terrain is rugged, very steep canyon country. The remainder of the fire burned on fairly gentle slopes ranging from 5%-15% at the top of the mesa. The area of Last Chance Canyon that experienced moderate burn or reburn possesses a high potential for erosion and a loss of control of water. This will ultimately contribute to an 18% increased water flow into the Last Chance Canyon system downstream of the Queen fire, cumulatively adding to the effects already predicted for the canyon due to the Last Chance Fire.

Little to no vegetative ground cover remains in the moderate severity burn within the Queen fire perimeter. Grass root collars remain intact within the moderate burn severity areas and are expected to green up with the onset of the monsoons. The burned area will experience some higher than normal erosion and overland flows due to hydrophobic soils and a low to moderate slope. It has been determined from the field assessment and subsequent modeling of soils and hydrology that the following are values at risk, with public safety at risk as well.

1. Public Safety

Forest Service Road (FSR) 525 is the main access road into the burned area, and has several additional side roads to access the interior of the burned area. The road itself is not at risk from post fire conditions, but public safety may be at risk if this road into the burned area is not administratively closed, with a physical closure put in (i.e. gate). FSR 524 also poses a risk to public safety if it remains open to public access. The area should be closed to the public, since the Last Chance canyon in pre-fire conditions was already prone to flash flooding, and post fire conditions will only increase the potential for flash flood events.

2. Cultural Resources

There are two cultural heritage sites which are eligible for listing in the National Register of Historic Places. These sites as well as the local uplands are located within moderately burned areas. Due to these being located in moderate burn severity, increased sedimentation and overland flow will threaten the integrity of the cultural heritage sites.

3. Watersheds

During the Queen fire the Last Chance watershed experienced low to moderate severity burns. There will be some loss of soil productivity and hydrologic function due to little or no vegetative ground cover remaining in the moderate severity burn areas within the fire. These areas of moderate burn severity in the pinyon/juniper vegetation type will experience increased erosion and overland flow. In the low and unburned pinyon/juniper vegetation type there is an existing grass component and herbaceous cover that will green up with the onset of the monsoons, providing vegetative ground cover. During the assessment, it was found that root collars and surface roots were intact, providing a basis for natural recovery. There will be short-term increase in erosion and peak flows until natural recovery of the low/unburned burn severity areas found within the burned area

occurs. The subsequent increase in flow potential at the head of the Last Chance Canyon will add to the already high flows and erosions predicted for the outflows at the bottom of Last Chance Canyon.

Critical Values Identified

Critical Values were identified (FSM 2523.1 Exhibit 01) during the BAER assesment are: human life and safety, property, natural resources and cultural/heritage resources. The BAER team evaluated the risk to those critical values using the BAER Risk Assessment (FSM 23235.1 Exhibit 02)

The risk matrix below, Exhibit 2 of Interim Directive No.: **2520-2010-1**, was used to evaluate the Risk Level for each value at risk identified during Assessment:

Probability of Damage or Loss	**Magnitude of Consequences**		
	Major	Moderate	Minor
	Loss of life or injury to humans; substantial property damage; irreversible damage to critical natural or cultural resources.	– Injury or illness to humans; moderate property damage; damage to critical natural or cultural resources resulting in considerable or long term effects	Property damage is limited in economic value and/or to few investments; damage to natural or cultural resources resulting in minimal, recoverable or localized effects
	RISK		
Very Likely (>90%)	**Very High**	**Very High**	**Low**
Likely (>50% to <90%)	**Very High**	**High**	**Low**
Possible (>10% to <50%)	**High**	**Intermediate**	**Low**
Unlikely (<10%)	**Intermediate**	**Low**	**Very Low**

The Very High and High Risk are unacceptable risk levels due to threats to human life, property, infrastructure and resources, therefore treatments should be applied. For an Intermediate Risk, this could be unacceptable if human life or safety is the critical value and treatments may be needed.

Little to no vegetative ground cover remains in the moderate burn severity areas in the pinon/juniper sites in the burned area.

Values were identified at risk from post fire conditions due to increased peak flows, debris torrents and sedimentation. Peak flows are predicted to increase over several areas of the burned area. Soil erosion rates were modeled to increase in the moderate burned areas of the fire. The area inside the Queen fire perimeter is of concern with risks to public safety, cultural and natural resources associated with potential post fire conditions. Forest Service Road (FSR) 525 is a single access road, with only one way in and out, posing a threat of entrapment. Two cultural resource sites are at a high risk of damage and potential vandalism, due to loss of vegetative ground cover and associated overland flow and erosion resulting from the fire. All of the burned area

drains into the Last Chance Canyon, which has already been addressed in the Last Chance BAER Assessment. The canyon will see increased sedimentation and ash flow resulting from the fire.

Values at risk were determined from field surveys, observations, input from district personnel and specialists, and further evaluated through the risk matrix. The values below rated at a high to a very high risk to human health or safety, risk to infrastructure or to natural or cultural resources. These are itemized with a description and followed in the next section with the recommended BAER treatment.

Summary of Threats and Risk Matrix Values
(Risk Matrix Rating is the Likelihood of Occurrence/Magnitude = Risk Value)

Human life or Public Safety on or in close proximity to burned NFS lands.

- FSR 525 & 524 have a probability that damage to natural resources or entrapment will occur (>90%), and the magnitude of the consequences is moderate. Thus the risk associated with this is Very High due to the potential of threats of entrapment, and cultural and natural resources.

Property on or in close proximity to the burned NFS lands

- No areas were ranked as High or Very High on the risk matrix.

Cultural and Heritage Resources

- Cultural Heritage Sites have a risk to site integrity. The probability of a damaging post fire event is very likely (>90%) and the magnitude of the consequences is moderate. Therefore the risk associated with this is Very High due to the potential of loss of cultural resources.

Natural Resources

- Loss of soil productivity and hydrologic function due to little or no vegetative ground cover remaining in the high and moderate severity burn areas within the fire. The probability of a damaging post fire event is likely (>50 to <90%) and magnitude of the consequences is moderate, resulting in a High risk.
- Watersheds: The probability of a damaging post fire event is very likely (>90%) and the magnitude of the consequences is major with the risk associated with this being very high due to the potential risks to life, property and infrastructure.

B. Emergency Treatment Objectives:

1. Stabilize soils and reduce the risk of erosion and loss of integrity to the Cultural Heritage Sites. Hand seed with a non persistent annual grass with a small portion of native grasses mix, seeded across the cultural resources sites eligible for National Register of Historic Places listing. Mulch, using certified weed-free straw, 1 acre of headcutting that will worsen due to post fire conditions, threatening not only the integrity of the cultural resource site, but also FSR 525.

2. Due to threats to public safety and natural resources, the two roads will be closed. Specifically, close, gate and sign FSR 525, and close and sign FSR 524.

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

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

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	95	95	95
Channel	--	--	--
Roads/Trails	--	--	--
Protection/Safety	95	95	95

E. Cost of No-Action (Including Loss): **$427,000.00**

F. Cost of Selected Alternative (Including Loss): **$4,515.00**

G. Skills Represented on Burned-Area Survey Team:

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

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H. **Treatment Narrative:**

Land Treatments:

1. Seed with a non persistent annual cereal grass and a small percent of native grasses mix to give the burned area a jumpstart in native vegetative recovery. The seed mix has a high percentage of annual barley in it, which is a quick growing non-persistent annual intended to provide protective ground cover in a short period of time. The area to be treated is approximately 6 acres. The seed mix is comprised of:

Little Bluestem	(*Schizachyrium scoparium*)	5 seeds/square foot
Green Sprangletop	(*Leptochloa dubia*)	5 seeds/square foot
Plains Lovegrass	(*Eragrostis intermedia*)	5 seeds/square foot
Sand Dropseed	(*Sporobolus cryptandrus*)	5 seeds/square foot
Annual Barley	(*Hordeum vulgare*)	20 seeds/square foot
	Total:	40 seeds/square foot

2. Straw Mulch (small bales of wheat) of the one of the cultural sites eligible for listing in the National Register of Historic Places. The area to be treated covers approximately 1 acres. There is no needle cast or

potential for needle cast to act as protective ground cover. This treatment is intended to stabilize and maintain the integrity of cultural heritage sites.

Channel Treatments:

No treatments recommended

Roads and Trail Treatments:

No treatments recommended

Protection/Safety Treatments:

1. Implementation of a burned area closure order, to remain in effect until after the monsoon season.

2. Installation of closure gate on FSR 525 at the Forest Service boundary. This is necessary to keep visitors from entering the area, putting at risk human health and safety, as well as to preserve the integrity of the newly exposed cultural resource areas inside the burn.

3. Installation of 2 closure/warning signs at access points into the burned area.

I. **Monitoring Narrative:**

Mayhill Fire BAER treatments will be monitored to determine 1) if treatments were effective for effective ground cover and cultural resources protection. Final summaries will be provided annually.

1) Treatment effectiveness

Monitoring treatment effectiveness will consist of monitoring the seeding and mulching of the cultural resource sites to ensure effectiveness. Initial plots for repeatable photo points will be established just before treatments are applied to provide baseline data. Objectives for the monitoring are to determine the effectiveness of the post-fire application of seeding and mulch on the areas at risk and establishment of vegetative recovery and establishment. The monitoring will be conducted to document effectiveness of protection measures for significant cultural heritage sites. The monitoring revisit will be completed in September of each year.

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										
Hand Seeding	acres	170	6	$1,020	$0		$0		$0	$1,020
Hand Mulch	acres	580	1	$580	$0		$0		$0	$580
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$1,600	$0		$0		$0	$1,600
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										
				$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										
Warning Signs	ea	100	2	$200	$0		$0		$0	$200
Road Closure Gate	ea	2500	1	$2,500	$0		$0		$0	$2,500
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Structures				$2,700	$0		$0		$0	$2,700
E. BAER Evaluation										
	ea	10,660	1	$0.000	$10,660.000		$0		$0	$10,660
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				---	$10,660		$0		$0	$10,660
F. Monitoring										
Treatment Effectivenes				$700	$0					
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$700	$0		$0		$0	$700
G. Totals				$5,000	$10,660				**$0**	**$15,660**
Previously approved										
Total for this request				**$5,000**						

PART VII - APPROVALS

1. */s/ Robert G. Trujillo* 6/8/2011
   Forest Supervisor (signature) Date

2. */s/* Corbin L Newman, Jr. 6/14/2011
   Regional Forester (signature) Date