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

Date of Report:
6/24/02 (initial request)
1/31/03 (accomplishment)

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)

[X] 2. Interim Report
[ ] Updating the initial funding request based on more accurate site data or design analysis
[X] Status of accomplishments to date

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

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Montoya

B. Fire Number: NM-CAF-223

C. State: NM

D. County: Rio Arriba

E. Region: 03 Southwestern

F. Forest: 02 Carson NF

G. District: 01 Canjilon RD

H. Date Fire Started: 6/11/02

I. Date Fire Contained: 6/16/02

J. Suppression Cost: $1,900,000

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): Approx. 5 miles
2. Fireline seeded (miles): Approx. 5 miles
3. Other (identify): Approx. 1 mile Handline waterbarred and seeded

L. Watershed Number: 1302010206 Canjilon Creek

M. Total Acres Burned: 4,257 acres
NFS Acres (4,257 ac) Other Federal ( ) State ( ) Private ( )

N. Vegetation Types: Pinyon/Juniper/Gambel Oak, Ponderosa Pine/Gambel Oak, Gambel Oak/AZ Fescue

O. Dominant Soils: Typic Eutroboralfs and Udic Ustochrepts

P. Geologic Types: Upper shale member of the Mancos formation

Q. Miles of Stream Channels by Order or Class:

1st Order streams = 5.65 miles, 2nd Order streams = 4.14 miles.

R. Transportation System

Trails: 0 miles Roads: 5 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 1,004 ac (low) 853 ac (moderate) 2,063 ac (high)
337 ac Un-burned

B. Water-Repellent Soil (acres): Approximately 2, 500 ac

C. Soil Erosion Hazard Rating (acres):
1,275 (low) 1,209 (moderate) 1,594 (high)

D. Erosion Potential: 12.4 tons/acre

E. Sediment Potential: 5,462 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

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

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

C. Equivalent Design Recurrence Interval, (years): 5

D. Design Storm Duration, (hours): 24

E. Design Storm Magnitude, (inches): 2.0

F. Design Flow, (cubic feet / second/ square mile): 9.6

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

H. Adjusted Design Flow, (cfs per square mile): 12.3

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

The Montoya fire was a human caused incident that started June 11, 2002 approximately 2 miles east of the Village of Canjilon, NM. This fire initially was contained at approximately 120 acres, but wind and high temperatures on June 12 resulted in escape and a significant increase in size. The June 12 burning period resulted in the highest fire intensity and greatest effect to natural resources. The Montoya fire was contained on June 16. The total area burned is approximately 4,257 acres, all of which occurs on National Forest System lands.

Burn severity is a measure of hydrologic response due to loss of canopy, groundcover and alteration of surface soil/water interactions that are caused by a wildfire. Burn severity is summarized as follows:

2,063 acres of high severity (48%),
853 acres of moderate severity (20%),
1,004 acres of low severity (24%) and
337 acres un-burned (8%).

Three subwatersheds of Canjilon Creek were affected: Blas Canyon, Montoya Canyon, and Lopez Canyon. Of these three subwatersheds, minimal damage occurred to Montoya and Lopez Canyons. Blas Canyon, which encompasses approximately 6,530 acres, was more significantly affected. Of the 2,063 acres of high burn severity, approximately 80 percent occurs in Blas Canyon. This high burn severity affected both the upland and riparian vegetation. Following is a synopsis of threats.

Threats to water quality:
Ash and sediment from upland erosion will contribute to short-term water quality problems and sediment aggradations over the next 2 to 3 years in Blas Canyon, both within and beyond the fire perimeter. Ash and sediment from Blas Canyon will reduce water quality in connecting channels downstream, notably Canjilon Creek, which is currently listed by the State of New Mexico as impaired by turbidity (303d list). The designated use not fully supported is a High Quality Cold Water Fishery. Approximately 25% of the Blas Canyon watershed contains the severely burned areas and will be the major source of sediment and ash contribution during channel flow and flood events.

Recommendations:
Develop two sediment retention basins in Blas Canyon above FDR 137. These basins would be located in low gradient reaches of the stream channel, and are intended to slow and hold the initial flushes of ash and sediment that will be delivered to Blas Canyon. They would be no more than 6 feet in height, and would be temporary structures that will require prompt maintenance excavation when filled with sediment. They will be excavated when and as needed in both the first 2 to 3 summer storm seasons and spring snowmelts. The sediment retention structures will be removed when watershed conditions in Blas Canyon have stabilized.

Threats to long term soil productivity:
Increased levels of surface soil erosion and sediment delivery are predicted as an effect of the high and moderate burn severity areas within the Montoya fire area. This increased rate of erosion poses a threat to long-term soil productivity, and increases the risk of water quality impacts and threats to downstream resources.

Threats to cultural resources:
Increased levels of surface soil erosion are predicted as an effect of the high and moderate burn severity areas. This increased rate of erosion poses a threat to cultural resource site stability in the northwest corner of the fire. Cultural resources sites affected include approximately 25 prehistoric archeological sites previously recorded and an additional 2 previously un-recorded sites. All sites are lithic scatters associated with the

Archaic Period (6000 to 1000 years before present) or possibly the Pueblo Period (1600 to 500 years before present).

Recommendations:
Aerial seed the moderate and high burn severity areas to restore vegetative ground cover to these sites as quickly as possible, in order to minimize surface soil erosion and provide surface stability to the affected sites.

Threats to property:
The potential threat to property mainly involves three (3) downstream road crossings. These three crossings have the potential for damage from both storm flows during summer monsoon seasons, and from spring snowmelt peak flows. One road crossing on FDR 337B (towards the town of Placitas) is made up of one 4 ft. and one 5 ft. diameter corrugated metal pipe. This road crossing is located on Blas Canyon, upstream from its confluence with Canjilon Creek. The double culvert pipes on FDR 337B have a capacity to handle approximately 250 cfs only, which is close to the estimated 10-year post-fire storm flow magnitude. This double pipe crossing is more likely to plug or dam up at high flow, resulting in overtopping of the road surface by flood flows and erosion of road fill materials surrounding the pipes. This could lead to washing out the road crossing, with significant effects to water quality, property, and perhaps even human life downstream in the small village of Placitas.

A larger arch pipe culvert is located on FDR 137 approximately 1.5 mile upstream from the Placitas road crossing on FDR 337B. This pipe has a dimension of approximately 10 feet wide (almost encompassing the channel's width) and 8 feet high. This larger arch pipe culvert has a capacity to handle approximately 600 cfs. This is close to the 780 cfs flow predicted at the 50-year return interval post-fire flood flow. This larger culvert has a greater chance of surviving a 50-year flood than do the double culverts in only a 10-year flood flow.

The third road crossing at risk is FDR 724 where it crosses a small headwater channel of Montoya Canyon, just inside the fire perimeter. There is approximately 1 square mile of high burn severity above this road crossing. The 16-inch culvert currently in place will likely become plugged with ash, sediment, and small woody debris during the first storm event.

Another threat to property in Blas Canyon is the potential for sedimentation to the acequia that originates approximately 1 mile upstream of FDR 137. This small earthen acequia is located at the base of a steep scarp slope which has been severely burned. The acequia diverts and transports water from Blas Canyon to the private land downstream in the small Village of Placitas. In addition to the value of this feature as a functional conveyance of irrigation water it is also a feature of cultural and social significance to the local community.

Recommendations:
Develop an overflow swale on FDR 337B (near Placitas) by over excavating the road surface and replacing the excavated zone with large (12 inch minus) riprap rock, which will protect the downstream face of the road crossing from erosion. Further protection will be provided by under laying the riprap material with an erosion cloth to prevent piping. Construct a splash pad of concrete at the outlets of the 4 foot and 5 foot culvert pipes, to prevent creation of a scour pool and undermining of the roadway.

Improve the existing splash pad/concrete runout on the outlet of the large FDR 337 arch pipe to prevent scour and backcutting into the road crossing.

Remove the 16-inch pipe on FDR 724 and establish a low water crossing until the watershed stabilizes in a few years. When stabilization has taken place the 16-inch pipe can be returned in place when feasible.

Consult with NRCS engineers and conservationists and the State Engineers Office to determine what, if any, assistance may be available to restore the acequia should extensive damage occur.

B. Emergency Treatment Objectives:

Control sediment delivery and transport in Blas Canyon to mitigate effects to water quality downstream of the fire perimeter, specifically Canjilon Creek.

Re-establish surface vegetative ground cover on moderate and high burn severity areas to prevent unacceptable soil loss, cultural resource site degradation and unacceptable losses of long term productivity.

Protect Forest Roads 337, 337B and 724 from loss and damage due to increased flood flows.

Protect acequia in Blas Canyon from sedimentation.

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

Land **70** % Channel __ % Roads **70** % Other (structures) **60** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	60	70	80
Channel			
Roads	75	80	80
Other	60	70	80

E. Cost of No-Action (Including Loss): $3,537,000

F. Cost of Selected Alternative (Including Loss): $1,713,000

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Greg Miller, Carson NF

Email: gmiller@fs.fed.us Phone: 505.758.6251 FAX: 505.758.6213

Montoya BAER team members:

Hydrology – Mike McConnell, Lincoln NF, Deb Kanter (trainee), Carson NF
Soils – Mike Natharius, Gila NF
Archaeology/GIS – Skip Miller, Carson NF
Wildlife – Joseph Lujan, Santa Fe NF
Timber – Danny Gomez, Carson NF

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:

Aerial seed with fixed wing aircraft approximately 3,000 acres of moderate and high burn severity areas at a target rate of 50 PLS per square foot. Proposed seed mix is slender wheat grass (30%), mountain brome (10%), annual ryegrass (30%), cereal barley (10%) and western wheatgrass (20%). This treatment is intended to restore vegetative ground cover to these sites as quickly as possible, minimize surface soil erosion and provide surface stability to the affected cultural resource sites.

Accomplishment as of report date:

Approximately 2,600 acres seeded at 50 seeds per square foot.

The accomplishments and costs associated with the improvements described above are reported in Part VI of this report under Line Item A – Land Treatments as "aerial seeding". Costs reported include seed and application services.

Channel Treatments:

Develop two sediment retention structures in Blas Canyon above FDR 337. These basins would be located in low gradient reaches of the stream channel, be no more than 6 feet in height and would be temporary in nature. They are intended to retain sediment generated by surface soil erosion from upland watershed areas and protect water quality and downstream road crossings. These structures will require maintenance excavation when filled with sediment during their life expectancy. They are intended to slow and hold the initial flushes of ash and sediment that will be delivered to Blas Canyon, excavated when and as needed in the first 2 to 3 summer storm seasons, and removed when watershed condition in Blas Canyon has stabilized.

Accomplishment as of report date:

Two (2) sediment basins constructed.

The accomplishments and costs associated with the improvements described above are reported in Part VI of this report under Line Item B – Channel Treatments as "stream channel protected". Costs reported include material and supplies, contract costs and contract oversight.

Roads and Trail Treatments:

Remove the 16-inch pipe on FDR 724 and establish a low ford crossing until the watershed stabilizes in a few years. When stabilization has taken place the 16-inch pipe can be returned in place when feasible.

Develop an overflow swale on FDR 337B by excavating the overburden of the road surface and replacing the excavated zone with large (12 inch minus) riprap rock. Protect the downstream face of the road crossing from erosion by lining with riprap as specified above and under laying this material with an erosion cloth to prevent piping. Construct a splash pad of concrete at the outlets of the 4 foot and 5 foot culvert pipes to prevent creation of a scour pool and undermining of the roadway.

Improve the existing splash pad/concrete runout on the outlet of FDR 337 to prevent scour and backcutting into the road crossing.

Accomplishment as of report date:

Removed culvert on FDR 724 and developed rock armored low water crossing.
Constructed an extension to the splash pad /concrete runout at the outlet of the arch pipe culvert under FDR 337. (NOTE: the overflow swale and rip rap protection proposed for FDR 337B was not constructed.)

The accomplishments and costs associated with the improvements described above are reported in Part VI of this report under Line Item C – Roads and Trails as "road miles protected". Costs reported include materials and supplies, crew costs, crew supervision, contract costs and contract oversight.

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.)

Monitor the seeding treatment success in providing vegetative ground cover protection to the numerous cultural resource sites in the northwest corner of the fire. This will be accomplished by repeat visits by Forest archelogical staff to determine the amount and degree of surface erosion and subsequent effect to cultural resources. It is proposed that 4 seasonal visits be made each year for 3 years. Monitoring methods will include photo points (repeat photography), comparisons of current site conditions to earlier written descriptions of the affected sites, and evaluation of seeding success with respect to protection of cultural resources. First year monitoring costs are included in this request.

Monitor the effectiveness of aerial seeding. Seasonal visits are proposed by Forest watershed staff and Ranger District personnel for 3 years after application to determine the germination and survival success of seeded grasses, their effectiveness in providing surface ground cover and site stability and recovery of watershed condition. First year monitoring costs are included in this request.

Monitor the condition and status of the sediment retention basins during the summer storm season. This will be accomplished by recurrent visits by District staff, as needed during the summer monsoon season, to determine the need to excavate captured sediment in order to re-establish basin storage capacity. These visits will also monitor the need to make any needed repairs to the structures themselves to ensure functionality as designed.

A monitoring plan for the Montoya burned area is being developed. A copy of that plan and a revised 2500-8 requesting the FY 2003 monitoring funds will be forthcoming soon.

VI – Emergency Rehabilitation Treatments and Source of Funds by Land Ownership (01/31/03)

			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											
aerial seeding	acres	21.14	2,600	$54,964							$54,964
											$0
											$0
											$0
Subtotal Land Treatments				$54,964							$54,964
B. Channel Treatments											
stream channel protec	miles	15,325	2	$30,650							$30,650
											$0
											$0
											$0
Subtotal Channel Treat.				$30,650				$0		$0	$30,650
C. Road and Trails											
road miles protected	miles	5828	2	$11,656				$0		$0	$11,656
											$0
											$0
											$0
Subtotal Road & Trails				$11,656				$0		$0	$11,656
D. Structures											
											$0
											$0
											$0
											$0
Subtotal Structures											$0
E. BAER Evaluation	plan	18780	1	$18,780							$18,780
F. Monitoring	plan	7000	0	$0				$0		$0	$0
G. Totals				**$116,050**				**$0**		**$0**	**$116,050**

NOTE: Total dollar expenditures outlined in the table above correspond to costs detailed in "USDA Forest Service, Fire Costs for Carson NF, Comprehensive Transaction Fire Register, Year to Date Through FM 2003 – 03 (closed)."

Total costs for BAER evaluation correspond to costs detailed in "Forest Service Transaction Register, Obligations, Period Ending 09 2002—June, 2002 (closed) for Job Code H39999. Reports for the Carson, Santa Fe, Gila, Lincoln and Regional Office were reviewed to capture costs incurred but not necessarily billed to the affected unit by the personnel who contributed to this task.

PART VII - APPROVALS

1. /s/ Martin D. Chavez — 01/31/03
Forest Supervisor (signature) — Date

2. _____ — _____
Regional Forester (signature) — Date