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

Date of Report: 01/30/05

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)

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

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

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Pack Rat Complex

B. Fire Number: AZ-COF-164

C. State: AZ

D. County: Gila and Coconino

E. Region: 3

F. Forest: Tonto and Coconino

G. District: Payson RD-Tonto NF and Mogollon RD Coconino NF

H. Date Fire Started: 8/15/02

I. Date Fire Contained: 9/02/02

J. Suppression Cost: cost to date - $5,975,000

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 20.3
2. Fireline seeded (miles): 18.3
3. Other (identify): Firelines have been slashed, safety zones have been seeded and slashed, fences have been repaired, Roads used for suppression have been graded.

L. Watershed Number: 1506020303, 1506020301

M. Total Acres Burned:
NFS Acres(3,470) Other Federal (-) State (-) Private (-)
Pack Rat – 3,094 acres
5 Mile – 376 acres

N. Vegetation Types: Ponderosa Pine, Mixed Conifer, Chaparral

O. Dominant Soils: Typic Udorthents, Typic Ustorthents, Typic Glosoboralfs, Typic Paleboralfs

P. Geologic Types: Kaibab Formation, Coconino Sandstone, Supai Formation

Q. Miles of Stream Channels by Order or Class:
1st Order = 6.4 miles
2nd Order = .4 miles

R. Transportation System

Trails: 4.8 miles Roads: 5.4 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres):
Pack Rat Fire 2624 (low) 200 (moderate) 209 (high) 61 (mod-hi)
Five Mile Fire 304 (low) 4 (moderate) 0 (high) 68 (mod-hi)

B. Water-Repellent Soil (acres): 383

C. Soil Erosion Hazard Rating (acres):
843 (low) 68 (moderate) 2559 (high)

D. Erosion Potential: 25 tons/acre

E. Sediment Potential: 7,000 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

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

B. Design Chance of Success, (percent): 65

C. Equivalent Design Recurrence Interval, (years): 10

D. Design Storm Duration, (hours): 24 hr SCS Type II

E. Design Storm Magnitude, (inches): 3.6 – 4.0

F. Design Flow, (cubic feet / second/ square mile): 430

G. Estimated Reduction in Infiltration, (percent): 45

H. Adjusted Design Flow, (cfs per square mile): 630

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

This complex consists of two fires, The Pack Rat and Five Mile fires. The Five Mile Fire burned approximately 375 acres 1 mile north of the community of Strawberry on both the Tonto and Coconino National Forests. About 70 acres of this fire burned with moderate to high intensity. Most of the burned area drains to the south towards Strawberry. Highway 87 crosses the drainage burned by this fire on a

large fill with a culvert located 20 – 25 feet above the bottom of the fill. The fill will serve as a detention basin that should minimize an increase in peak flows through Strawberry. The only treatment recommended for this fire is to clean accumulated sediment and debris from the discharge end of the culvert underneath highway 87. No other burned area emergencies were found to exist on this fire.

The Pack Rat Fire burned the steep face and top of the Mogollon Rim in the Tonto and Coconino National Forests. The watersheds draining the burned area drain either to the south into the East Verde River or to the North into Miller Canyon or East Clear Creek above Blue Ridge Reservoir. Several private land subdivisions exist along the East Verde River below the burned area. Homes within these subdivisions are at increased risk of flooding because of the burned area. Incresed flood risks from the 10 year flood are displayed in the table below.

Location	Watershed Area (square miles)	10 year Prefire Flood (cfs)	10 year Postfire Flood (cfs)	Percent Increase
Mail Ck above Washington Park	.53	280	430	54
Chase Creek above Shadow Rim G.S. Camp	2.3	990	1450	46
E. Verde River above Rim Trail Estates	4.3	2430	3000	23
E. Verde River above Whispering Pines	25.1	5430	6375	17

One subdivision, Rim Trail Estates, diverts its domestic water directly from the East Verde River. This development is at risk from water quality degradation and flood damage. A second source of domestic water is diverted from Washington Spring near Mail Creek. The development diverts water from a spring and transports it across Mail Creek to homes in Washington Park. The development is at risk from flooding where it crosses the creek. Other diversions occur on Chase Creek above the Shadow Rim Girl Scout Camp and from Mail Creek at Washington Park. These diversions are used to fill ponds on private lands and are at risk from flooding and water quality degradation. A third diversion from the East Verde River occurs at the Verde Glen subdivision and is used for irrigation. This diversion is also at risk for water quality degradation and flood damage. Structures at risk to flood damage may exist on Chase Creek at the girl scout camp, on Mail Creek at the Washington Park Guest Ranch and in subdivisions along the East Verde River. Roads at risk to flood damage include the 437 Road that provides access to the Shadow Rim Girl Scout Camp, the 1567 Road that parrallels a tributary to Chase Creek, the 32 Road that provides access to Washington Park, Rim Trail Estates and Verde Glen subdivisions, the 141H Road that crosses a number of burned drainages that drain to the North to East Clear Creek, and the 300 Road (the Rim Road) that is a heavily used recreation road along the top of the Mogollon Rim.

Other emergency conditions include hazard trees along the 300 Road (Rim Road).

B. Emergency Treatment Objectives:

- Reduce the risk of flooding at subdivisions along the East Verde River and Mail Creek, and at the Girl Scout camp on Chase Creek. Reduce the risk of flood damage to Forest roads within and below the burned area.
- Reduce impacts to water quality at the domestic water supply intake out of the East Verde River at the Rim Trail Estates subdivision, and at diversions from Chase Creek, Mail Creek and the East Verde River for ponds and irrigation uses.
- Remove hazard trees from roads that can not be administratively closed within the burned area.
- Provide hazard warning signs on roads and trails within and below the burned area.

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

Land **60** % Channel **75** % Roads **75** % Other ___ %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	60	75	90
Channel	75	85	95
Roads	80	90	90
Other			

E. Cost of No-Action (Including Loss): **$4,337,500**

F. Cost of Selected Alternative (Including Loss): **$4,168,370**

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Grant Loomis

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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:

- Construct log erosion barriers on approximately 65 acres of severely burned areas along the top of the Mogollon Rim and along toe slopes of the Rim adjacent to the East Verde River. Priority of treatment would be:
    - Severely and moderately burned areas in the watershed of the East Verde River above the Rim Trail Estates subdivision to reduce the quantity of sediment entering the E. Verde River above the domestic water supply intake for the subdivision.
    - Severely burned areas in the Chase Creek watershed above the Shadow Rim Girl Scout Camp to reduce sediment bulking of peak flows that would contribute to the flood hazard through the camp.

- Hand seed severely burned areas (65 acres) along the top of the Mogollon Rim that drain to the East Verde River. This treatment would accelerate recovery of severely burned areas. Accelerated recovery would reduce sediment impacts to the East Verde and reduce peak flows through subdivisions along the East Verde and Mail Creek, and through the Girl Scout Camp on Chase Creek. Hand seeding is recommended to ensure seed is consistently delivered at appropriate application rates across the severely burned area. The mix would consist of annual rye, western wheat and bottlebrush squirreltail and would be applied at a rate of 5 pounds per acre.
- Aerial seed moderately and severely burned areas (299 acres) along the face of the Mogollon Rim. A seed mix consisting of annual rye would be applied at a rate of 10 pounds per acre immediately to provide a quick ground cover. A second seed mixture consisting of perennial species would be applied in the fall. The second mix would be seeded before the winter snows to provide the best opportunity for germination and establishment of ground cover in the spring. These treatments would accelerate recovery of burned areas. Accelerated recovery would reduce sediment impacts to the East Verde and reduce peak flows through subdivisions along the East Verde and Mail Creek, and through the Girl Scout Camp on Chase Creek. The perennial mix would consist of western wheat, little bluestem, mountain brome, sideoats grama, and sand dropseed and would be applied at a rate of 10 pounds per acre.

Channel Treatments:

- Construct 10 strawbale checkdams in a severely burned drainage above the Mogollon Rim that drains to Chase Creek. This small watershed stores the greatest sediment volume of any of the severely burned areas in the fire. Strawbale checkdams would reduce the sediment discharge that contributes to bulking of peak flows through the girl scout camp. They would also provide some moderation of peak flows from this small drainage.

Roads and Trail Treatments:

- Remove hazard trees along the 300 Road (Rim Road). This road is a heavily used recreation route that can not be administratively closed. Removal of trees that pose a hazard to users over the next 2-6 months would improve user safety on this road.
- Install hazard signs on roads and trails that enter or cross below the burned area. These signs would warn road and trail users of fire created hazards such as flash floods, rolling rocks, and falling limbs and trees. They would be placed on roads and trails that enter the burned area or cross below it.

Structures:

Treatment Accomplishments

- 365 acres were seeded with annual rye grass in September 2002
- Two seed mixes containing perennial species were used to treat approximately 365 acres in November 2002. 85 acres above the rim were treated with a mix specified by the Coconino NF.
- Approximately 40 acres above the rim were treated with log erosion barriers (LEB's)
- Ten excelsior sediment dams were used to treat small drainages in one area above the rim.
- Caution signs were installed in September 2002. 2 road signs and 6 trail signs were installed on the Payson District and 8 signs were installed on roads and trails in the Mogollon District.
- Hazard trees were removed along 3.3 miles of road

Treatment implementation costs were less than planned due to some personnel and helicopter costs being charged to the P-code instead of the H-code.

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.)

Part VI – Emergency Rehabilitation Treatments and Source of Funds by Land Ownership

			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										
log erosion barriers	acres	220	40	$8,800			$0		$0	$8,800
seeding (annual mix)	acres	10	365	$3,650			$0		$0	$3,650
seeding (perennial mix	acres	47	365	$17,155			$0		$0	$17,155
							$0		$0	$0
				$0			$0		$0	$0
Subtotal Land Treatments				$29,605			$0		$0	$29,605
B. Channel Treatments										
strawbale checkdams	miles	4,000	0.5	$2,000			$0		$0	$2,000
				$0			$0		$0	$0
				$0			$0		$0	$0
				$0			$0		$0	$0
Subtotal Channel Treat.				$2,000			$0		$0	$2,000
C. Road and Trails										
Hazard tree removal	miles	908	3.3	$2,996			$0		$0	$2,996
Hazard signs	each	167	16	$2,672			$0		$0	$2,672
				$0			$0		$0	$0
				$0			$0		$0	$0
Subtotal Road & Trails				$5,668			$0		$0	$5,668
D. Structures										
				$0			$0		$0	$0
				$0			$0		$0	$0
				$0			$0		$0	$0
				$0			$0		$0	$0
Subtotal Structures				$0			$0		$0	$0
E. BAER Evaluation										
	ea	10940	1	$10,940			$0		$0	$10,940
				$0			$0		$0	$0
F. Monitoring				$0			$0		$0	$0
G. Totals				**$48,213**			**$0**		**$0**	**$48,213**

PART VII - APPROVALS

1. /s/ Thomas J Klabunde — 2/7/05
   Forest Supervisor (signature) — Date

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