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

Date of Report: **10/30/02**

BURNED-AREA REPORT
(Reference FSH 2509.13)
Text changes from Interim #2 Report are highlighted

PART I - TYPE OF REQUEST

A. Type of Report

[x] 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
[**x**] 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: East Vivian

B. Fire Number: UT-UIF-18116

C. State: Utah

D. County: Utah

E. Region: Region 4

F. Forest: Uinta

G. District: Pleasant Grove

H. Date Fire Started: 7/26/2000

I. Date Fire Controlled: 8/11/2000

J. Suppression Cost: $5 million (Wasatch Complex)

K. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 9.5
2. Fireline seeded (miles): 0 (to be completed this fall)
3. Other (identify): 0

L. Watershed Number: 160202030304

M. Total Acres Burned: 1753
NFS Acres(1103) Other Federal ( ) State (150) Private (400)

N. Vegetation Types: Gambel Oak-mountain maple; aspen

O. Dominant Soils: Typic Calciustoll, Typic Cryoboroll. Rock loams, very rock loams and rockland, skeletal soils.

P. Geologic Types: Oquirrh Formation, interbedded marine sandstone, limestone, quartzite

Q. Miles of Stream Channels by Order or Class: perennial 3.5; ephemeral 12.5

R. Transportation System

Trails: 5 miles Roads: 9.5 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 703 (low) 800 (moderate) 250 (high)

B. Water-Repellent Soil (acres): 250

C. Soil Erosion Hazard Rating (acres):

1186 (low) 38 (moderate) 498 (high) pre-fire
2 (low) 808 (moderate) 813 (high) post-fire

D. Erosion Potential: 4.4 tons/acre

E. Sediment Potential: 900 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 10

B. Design Chance of Success, (percent): 90

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

D. Design Storm Duration, (hours): 2

E. Design Storm Magnitude, (inches): 2.2

F. Design Flow, (cubic feet / second/ square mile): 25

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

H. Adjusted Design Flow, (cfs per square mile): 30

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency. Intense thunderstorms on the night of August 31, 2000 produced flooding in parts of the burned area. The highest intensity rainfall was focused on a small area in the upper part of the burn in one small watershed. Total precipitation on parts of the burn exceeded 0.83" as measured at a former National Weather Service gage site. From first-hand accounts, the majority of rainfall came in a 20 to 30 minute period. The expected frequency of storms of this magnitude in this area is 25 to 50 years, depending on the actual duration of rainfall. In parts of the burn, intense rill and gully networks have developed and formed source areas of flooding. The rills and gullies effectively reduced the time of concentration of flood flows (and contributed to the flood magnitude).

Rill and gully networks developed on small discrete areas totalling 25 to 30 acres in the upper watershed. There is a high expectancy of continued surface erosion and surface runoff as long as the rill and gully networks remains in place. Surface erosion rates during the flood were locally extreme where rilling and gullying was developed. Rilling and gullying will continue to occur and could provide sufficient sediment for another debris flow. Another debris flow would affect both private property near the mouth of the canyon as well as water quality in the South Fork Provo and Provo Rivers. Source areas for the August 31, 2000 flood cover about 180 acres in two-subwatersheds. **In 2002, the Forest experience flooding and debris flows off of several FY00 and FY01 fires, including one significant flow event off the Oak Hills fire. The Oak Hills fire burned at similar intensity, in similar vegetation types, and at the same time as this East Vivian fire. On-site monitoring indicates that FY2000 fires are recovering, but still contain some hydrophobic soils, and loss of adequate ground cover. Though no flooding or debris flows occurred off the East Vivian fire since August 31, 2000, there is still potential for this given the incomplete recovery.**

B. Emergency treatment objectives: Break up the rill and gully network(s) by breaking up surface flow paths. Decrease surface erosion, reduce near-term flood risk. **Protect downstream property and water quality. Continue to break up flow paths, protect downstream property, and water quality in Provo River.**

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

A damaging storm has already occurred; the goal at this time is to **maintain** treatments before additional damage is done and provide protection against similar storms in spring and summer of FY01, FY02**, and FY2003.**

Land **n/a** % Channel **50** % Roads **n/a** % Other **n/a** %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	80	90	100
Channel	50	80	90
Roads	N/A		
Other	N/A		

E. Cost of No-Action (Including Loss): $300,000 property (estimated); undetermined potential for damage to public water supply and fisheries.

F. Cost of Selected Alternative (Including Loss): Initial Request = $24,900, Interim #2 Request = $105,600 (Total $130,500). **Interim #3 Request = $125,006 (Revised Total for Initial, Interim #2, and Interim #3).**

Note: The initial project request for the East Vivian Fire was $24,900. This was to treat an area at the bottom of the debris flow. A review of the upslope and headwater areas of the fire was conducted after the initial request. From that review, it was determined that additional funding was necessary to treat upland areas of the fire. Work in these upland areas is critical in protecting work done downslope. An additional $105,600 was requested to install contour trenches and straw wattles on 12 failure areas.

These headwater areas total approximately 25-30 acres. The only means necessary to install these wattles is via helicopter, due to the lack of a developed road system to the upland treatment site(s). The helicopter is scheduled for 75 hours while a 12-15 person crew will be necessary to complete work. Salaries for crew members include per diem, base pay, and overtime. Approximately 840 wattles will be necessary to complete the project. Each wattle is 25 feet long and costs about $1.20 per linear foot.

The cost of completing the work approved in the Initial Report and Interim #2 Report (not including the cost of preparing this Interim #3 Report and a report summarizing the results of monitoring to date) is approximately $120,255. This Interim #3 requests approval for removing the silt fences, completing reports summarizing FY02 monitoring, conducting 1 more year of monitoring, completing a final monitoring Report, and a Final BAER Evaluation Report (approximately an estimated additional $4,750 above what has already been spent).

G. Skills Represented on Burned-Area Survey Team:

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

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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: A combination of contour trenching with hand tools and straw wattles **has been completed**. The objective is to reduce the length of surface flow paths, increase infiltration locally and hold soil on hillslopes. Disturbed areas will be seeded with a mixture of native grasses, forbs and shrubs that occur on the site and are adapted to local site conditions. Seed was selected based on local conditions, elevation suitability and to provide community structure as well as ground cover.

Proposed seed mix:

Blue bunch wheat grass	6 lb/ac
Sandberg ble grass	3 lb/ac
Slender wheat grass	2 lb/ac
Louisiana wormwood	0.25 lb/ac
Yarrow	0.25 lb/ac
Showy golden eye	0.5 lb/ac
Mountain big sage	0.3 lb/ac
Total	11.6 lb/ac (pure live seed)

Channel Treatments: Wire reinforced silt fences (approximately 20 total); structures **were** placed along drainages to catch excess sediment loading to the South Fork Provo River. The structures will also reduce flood potential to some extent in this drainage. S**andbags were placed in 2 reaches where channel banks were low and the August 2000 debris flow left the channel. In addition, one of the affected homeowners also placed sandbags on a short reach of the channel located on his property.**

Roads and Trail Treatments: Utah County has **cleaned off and outsloped** 500 feet of road at mouth of drainage to enhance flood conveyance.

Structures: None **on NFS lands. The 2 homeowners most at risk constructed earthen berms along the margin of their property to prevent debris flows from leaving the channel/alluvial fan and further impacting their property. Each berm is an estimated 100 feet in length and about 4-6 feet in heigth**.

H. 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.)

Flow and turbidity data is available from the Central Utah Water Conservancy District (CUWCD) at the public water supply intake 3.5 miles downstream. This data and additional water quality data will be acquired with the cooperation of the CUWCD. A private citizen also operates an abandoned National Weather Service rain gage at the site and the data gathered is available to the Forest Service. **Since the fall of 2000, no substantial debris flow or runoff events from this fire have occurred that could have measurable effects on the CUWCD monitoring data.**

Vegetative recovery **were monitored in FY01 and FY02 through transects and photo points. A monitoring report summarizing the results of the FY01 monitoring has been drafted. This report (Interim #3) proposes to draft a report summarizing the results of FY02 field observations and photo documentation, and to revisit the sites a final time in FY03 and prepare a monitoring report summarizing the results of the monitoring.**

Installed channel structures and upland slope stability will be monitored for effectiveness and function (thunderstorms and spring runoff in 2001, 2002). **This report (Interim #3) proposes to continue this through the 2003 season, and then summarize the results in a final report.**

PART VI – EMERGENCY REHABILITATION TREATMENTS AND SOURCE OF FUNDS BY LAND OWNERSHIP

INITIAL (Approved 9-15-00) Plus INTERIM #2 (Approved 11-9-00) COMBINED REQUEST

NFS Lands							Other Lands			
	Units	Unit Cost	# of Units	WFSU SULT$	Other $		# of Units	Fed $	Non-Fed $	All Total
A.Land Treatments • Straw Wattles	Job		1	$96,600						$96,600
Subtotal Land Treatments				$96,600						$96,600
B.Channel Treatments • Silt Fences	Job		1	$14,000						$14,000
• Emergency Sand Bagging	Job		1	$1,900						$1,900
Subtotal Channel Treatments				$15,900						$15,900
C. Road and Trails *Subtotal Road/Trail*				$0						$0
D. Structures *Subtotal Channel Treatments*				$0						$0
E.BAER Evaluation • Initial				$2,500						$2,500
• Interim #2				$2,500						$2,500
Subtotal Evaluation				$5,000						$5,000
G. Monitoring • Initial	Job		1	$6,500						$6,500
• Interim #2	Job		1	$6,500						$6,500
Subtotal Monitoring				$13,000						$13,000
H. TOTALS				$130,500						$130,500

INTERIM REPORT (Prepared 10-30-2002, Reflects Actual Expenditures)

NFS Lands							Other Lands			
	Units	Unit Cost	# of Units	WFSU SULT$	Other $		# of Units	Fed $	Non-Fed $	All Total
A.Land Treatments • Straw Wattles	Job		1	~~$96,600~~ **$96,366**						~~$96,600~~ **$96,366**
Subtotal Land Treatments				~~$96,600~~ **$96,366**						~~$96,600~~ **$96,366**
B.Channel Treatments • Silt Fences	Job		1	~~$14,000~~ **$10,795**						~~$14,000~~ **$10,795**
• Emergency Sand Bagging	Job		1	~~$1,900~~ **$893**			**1**		**$0** [1/]	~~$1,900~~ **$893**
• **Remove Silt Fence (8-9/03)**	**Job**		**1**	**$1000**						**$1000**
Subtotal Channel Treatments				~~$15,900~~ **$12,688**						~~$15,900~~ **$12,688**
C. Road and Trails *Subtotal Road/Trail*				$0						$0
D. Structures • **Protective Berm**				$0			~~0~~ **2**		~~$0~~ **$2,500** [2/]	~~$0~~ **$2,500**
Subtotal Structures				$0						~~$0~~ **$2,500**
E.BAER Evaluation • Initial				~~$2,500~~ **$2,201**						~~$2,500~~ **$2,201**
• Interim #2				~~$2,500~~ **$2,467**						~~$2,500~~ **$2,467**
• **Interim #3 (10/02)**				**$750**						**$750**
• **Final (9-10/03)**				**$1,000**						**$1,000**
Subtotal Evaluation				~~$5,000~~ **$6,418**						~~$5,000~~ **$6,418**
G. Monitoring • Initial	**Field w Report**		1	~~$6,500~~ **$4,541**						~~$6,500~~ **$4,541**
• Interim #2	**Field**		1	~~$6,500~~ **$2,993**						~~$6,500~~ **$2,993**
• **Final (10//02 Report and FY03 final field work and report)**	**Reports**		**2**	**$2,000**						**$2,000**
Subtotal Monitoring				~~$13,000~~ **$9,534**						~~$13,000~~ **$9,534**
H. TOTALS				~~$130,500~~ **$125,006**	$0			$0	~~$0~~ **$2,500**	~~$130,500~~ **$127,506**

1/ One homeowner at risk did additional sandbagging on his property; we understand this was done using his labor and materials donated by others.

2/ Two homeowners at risk built earthen dike (protective walls) at their own expense. The cost figures shown are rough estimates.

PART VII - APPROVALS

1. *__/s/ John Logan__* *10/31/02*
Forest Supervisor (signature) Date

2. _____ _____
Regional Forester (signature) Date