

Date of Report:12-13-02

**SANFORD FIRE
BURNED-AREA REPORT**
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

- ☐ 1. Funding request for estimated WFSU-SULT funds
- ☒ 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
- ☒ 3. Final Report (Following completion of work)

PART II - BURNED-AREA DESCRIPTION

A. Fire Name: Sanford

B. Fire Number: P43547

C. State: Utah

D. County: Garfield

E. Region: R4 (Intermountain)

F. Forest: Dixie

G. District: Powell Ranger District

H. Date Fire Started: Prescribed Fire on April 23, 2002

I. Date Fire Contained: July 1, 2002

J. Suppression Cost: Approximately \$5,500,000

K. Fire Suppression Damages Repaired with Suppression Funds

- 1. Fireline waterbarred (miles): Approximately 3.5 miles
- 2. Fireline seeded (miles):
- 3. Other (identify):

L. Watershed Names and Numbers:

Watershed Name	HUC Number	Total Area (acres)	Area Inside Fire Perimeter (acres)	Area Burned (acres)	Perennial Streams		Intermittent Streams	
					Total Length (mi)	Riparian Burned (mi)	Total Length (mi)	Riparian Burned (mi)
Hunt Creek	160300020305	33,989	25,560.5	11,364.2	43.7	23.4	91.6	40.8
Pacer Lake	160300020412	21,786	2,612.5	1,896.1	0	0	14.4	11.7
Showalter Creek	160300020304	31,106	602.1	87.2	0	0	51.4	0.6
Casto Wash	160300010308	14,169	229.4	11.5	2.1	0.0	42.7	0.0
Limekiln Creek	160300010503	17,034	1,103.5	5.3	0	0	49.8	0.5
Sanford Creek	160300010507	19,150	12,605.7	4,515.7	23.8	17.0	47.6	32.6
Forest Creek	160300020411	10,067	2,022.9	726.9	3.1	0.9	20.9	4.6
Deer Creek	160300020408	18,041	12,735.4	5,059.3	14.5	11.9	35.2	30.4
Deep Creek	160300020410	15,884	10,084.2	6,223.8	0	0	44.6	34.6
Cow Creek	160300020407	11,116	1,733.9	686.3	0	0	7.4	1.0
Cottonwood Creek	160300020406	15,771	9,568.0	4,758.2	14.5	13.0	29.2	19.1
Ranch Creek	160300020405	24,273	449.3	61.6	0	0	25.4	0.2
Prospect Creek	160300020404	18,807	9,127.8	4,232.1	5.3	3.1	74.9	26.0
Smith Canyon	160300010509	21,732	1,964.3	213.9	0	0	28.5	0.4
South Creek	160300020402	21,400	418.0	150.0	0	0	29.2	0.0
TOTALS		294,325	90,817.4	39,992.1	107.0	69.3	592.8	202.5

M. Total Acres Burned: 90,817 acres (based on 6-27-2002 SPOT satellite data)

NFS Acres(89,559) Other Federal- BLM (1,258) State () Private ()

N. Vegetation Types: Aspen, Spruce-fir, grass, mixed conifer, curleaf mountain mahogany, pinyon pine, Utah juniper, sagebrush, ponderosa pine, and cottonwood/riparian (See Vegetation and Burn Severity Map).

Vegetation Type	Unburned Acres	Low Burn Severity Acres	Moderate Burn Severity Acres	High Burn Severity Acres	Total Acres Burned	% of Fire
Aspen	2280	165	1047	387	3879	4.3%
Cottonwood/Riparian	408	54	346	54	863	0.9%
Grass	70	0	5	3	77	0.1%
Mixed Conifer	11478	901	9341	2749	24469	26.9%
Mountain Mahogany	2159	160	1112	291	3722	4.1%
Pinyon Juniper	4467	208	2497	706	7877	8.7%
Ponderosa Pine	216	22	73	1	311	0.3%
Rock	1378	63	350	62	1853	2.0%
Sagebrush	23991	2450	11463	2644	40548	44.6%
Spruce Fir	4377	294	1759	785	7216	7.9%
Total Burned	50825	4317	27994	7682	90817	

O. Dominant Soils: Soil map unit data is from the Panguitch Area Soil Survey.

Soil Type	Soil Name	Acres Burned
9	Badland-Rock Outcrop-Paunsaugant Complex, 2-20% slopes	1581
15	Behanin Loam, 30-70% slopes	18812
25	Brycan very fine sandy loam, 1-6% slopes	7
28	Callings-Winnemucca Assoc. 5-15% slopes	281
31	Castino-Behanin Assoc. 20-70% slopes	1433
32	Castino-Tica Family Complex, 20-70% slopes	28693
34	Circleville-Rock Outcrop Complex, 25-60% slopes	2731
45	Echard Loam, 5-39% slopes	1308
46	Ess-Callings Assoc. 15-45% slopes	17106
58	Guben-Showalter Complex, 20-30% slopes	1726
59	Harol Very Cobbly Loam, 2-15% slopes	180
60	Harol Very Cobbly Loam, 15-40% slopes	264
61	Harol Very Cobbly Loam, moist, 25-50% slopes	4
74	Kade Silt Loam, 0-2% slopes	15
93	Mitch Silt Loam, 0-3% slopes	12
94	Mitch-River Wash Assoc. 0-3% slopes	510
96	Neto fine sandy loam, 1-5% slopes	6
110	Paunsaugant gravelly loam, 2-15% slopes	2
113	Plite sandy loam, 2-8% slopes	7
120	Redcreek Cobbly Loam, 15-50% slopes	172
122	Rock Outcrop	4704
124	Rubble Land	358
128	Schauson Loam, 4-15% slopes	338
131	Showalter-Guben Complex Dry, 0-8% slopes	27
145	Tolman-Rock Outcrop Complex, 25-40% slopes	152
149	Tridell cobbly loam 4-25% slopes	64
160	Widtsoe Gravelly Sandy Loam, 8-40% slopes	4393
165	Wimmemucca-Hoodle Assoc., 5-30% slopes	5930
Total		90817

P. Geologic Types: Tertiary Volcanics (Mt. Dutton Volcanics) and Quaternary deposits and surfaces

Q. Miles of Stream Channels by Class:

69.3 miles of perennial streams

202.5 miles of intermittent streams

R. Transportation System

Trails: 72.8 miles Roads: 51.7 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 55,142 (61%) (unburned and low) 27,993 (31%) (moderate) 7,682 (8%) (high)

B. Water-Repellent Soil (acres): 768 acres

- C. Soil Erosion Hazard Rating (acres):
14,349 (low) 37,598 (moderate) 38,870 (high)
- D. Erosion Potential: 0.02 to 1.36 tons/acre (Disturbed WEPP Model)
- E. Sediment Potential: 769 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

- A. Estimated Vegetative Recovery Period, (years): 10
- B. Design Chance of Success, (percent): 80
- C. Equivalent Design Recurrence Interval, (years): 25
- D. Design Storm Duration, (hours): *

* - The 25-year event flood flows were calculated using a regional equation that had been developed for South Central Utah based on area stream gage data (Thomas et al 1994). The increase in flows resulting from the fire were calculated based upon a study on the effect of wildfire on peak flows in Ponderosa Pine ecosystems in Central Arizona, which showed a 500% to 1500% increase in peak flows (Rich 1962, *in* DeBano et al 1998). The flows calculated using the regional equation were multiplied by 5 and 15 for the estimated 25-year flood flow in the first year after the burn, and are shown as a possible range. This method was chosen because it is based upon regional curve data, which better takes into account the short-duration, high-intensity thunderstorms that occur in the area, and upon the results of a study in an ecosystem type and climate similar to that of the Sanford Fire location. Therefore, the six-hour design storm duration was not used in the calculations.

- E. Design Storm Magnitude, (inches): 0.22
- F. Design Flow, (cubic feet / second/ square mile):

Pre-fire predicted 25-year event flood flows for 6th Field drainages within the Sanford Fire.

Drainage	Area (mi²)	Discharge (cfs)	cfs/mi²	Remarks
Hunt Creek	53.1	700.4891615	13.19188628	entire drainage
Showalter Creek	48.6	673.7205417	13.86256259	entire drainage
Casto Wash	22.1	476.3129959	21.55262425	entire drainage
Limekiln Creek	15.7	409.784642	26.10093261	entire drainage
Right Fork Sanford Creek	12.6	371.9828098	29.52244522	For drainage above diversion
Left Fork Sanford Creek	7.1	289.010422	40.70569324	For drainage above diversion
Sanford Creek	29.9	544.0704685	18.19633674	entire drainage
Forest Creek	15.7	409.784642	26.10093261	entire drainage
Deep Creek	15	401.6427987	26.77618658	For drainage abv Forest boundary
Deep Creek	24.8	501.0932704	20.2053738	entire drainage
Pacer Lake	34	575.7189891	16.93291145	entire drainage
Deer Creek	24	493.9156384	20.57981827	For drainage above diversion
Deer Creek	28.2	530.2362781	18.8027049	entire drainage
Cow Creek	17.4	428.7474005	24.6406552	entire drainage
Cottonwood Creek	11.5	357.3278616	31.07198797	For drainage above culvert
Cottonwood Creek	24.6	499.3111655	20.29720185	entire drainage
Ranch Creek	37.9	603.8945122	15.93389214	entire drainage
Prospect Creek	29.4	540.0483656	18.36899203	entire drainage
Smith Canyon	34	575.7189891	16.93291145	entire drainage
South Creek	33.4	571.226407	17.10258704	entire drainage

G. Estimated Reduction in Infiltration, (percent):

Estimated Reduction in Infiltration in watersheds within the Sanford Fire.

	Watershed	High Burn	Hydrophobic	Reduced	Reduced
Drainage	Area (acres)	Severity (acres)	Soils (acres)	Infiltration	Infiltration (%)
Hunt Creek	33,989	1808.8259	180.88259	0.005321798	0.532179793
Showalter Creek	31,106	11.0703	1.10703	3.5589E-05	0.003558895
Casto Wash	14,169	0.8896	0.08896	6.2785E-06	0.00062785
Limekiln Creek	10,067	0	0	0	0
Right Fork Sanford Ck (abv structure)	8,057	292.1185	29.21185	0.003625649	0.36256485
Left Fork Sanford Ck (abv structure)	4,549	101.2133	10.12133	0.002224957	0.222495713
Sanford Creek	19,150	393.3318	39.33318	0.002053952	0.205395196
Forest Creek	10,067	179.8924	17.98924	0.001786951	0.178695143
Deep Creek (abv FSBoudary)	9,592	2340.1181	234.01181	0.024396561	2.439656068
Deep Creek	15,884	2366.7548	236.67548	0.014900244	1.490024427
Pacer Lake	21,786	684.6259	68.46259	0.003142504	0.31425039
Deer Creek (abv structure)	15,343	1230.2772	123.02772	0.008018492	0.801849182
Deer Creek	18,041	1230.2772	123.02772	0.00681934	0.681934039
Cow Creek	11,116	135.4135	13.54135	0.001218185	0.12181855
Cottonwood Creek (abv structure)	7,366	545.8577	54.58577	0.007410504	0.741050367
Cottonwood Creek	15,771	574.3497	57.43497	0.003641809	0.364180902
Ranch Creek	24,273	17.8655	1.78655	7.36024E-05	0.007360236
Prospect Creek	18,807	223.0821	22.30821	0.001186165	0.118616526
Smith Canyon	21,732	18.9774	1.89774	8.73247E-05	0.008732468
South Creek	21400	36.4539	3.64539	0.000170345	0.017034533

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

Adjusted Design Flows (ft³/sec/mi²) for watersheds within the Sanford Fire.

	Adjusted Design	Adjusted Design		Adjusted	Adjusted	
	Flow (cfs/mi2)	Flow (cfs/mi2)	Design Flow	Discharge (cfs)	Discharge (cfs)	
Drainage	5 times Design Flow	15 times Design Flow	(cfs/mi2)	5 times Discharge	15 times Discharge	Discharge (cfs)
Hunt Creek	65.9594314	197.8782942	13.19188628	3502.445808	10507.33742	700.4891615
Showalter Creek	69.31281293	207.9384388	13.86256259	3368.602708	10105.80813	673.7205417
Casto Wash	107.7631212	323.2893637	21.55262425	2381.564979	7144.694938	476.3129959
Limekiln Creek	130.504663	391.5139891	26.10093261	2048.92321	6146.769629	409.784642
Right Fork Sanford Ck (abv structure)	147.6122261	442.8366783	29.52244522	1859.914049	5579.742146	371.9828098
Left Fork Sanford Ck (abv structure)	203.5284662	610.5853986	40.70569324	1445.05211	4335.15633	289.010422
Sanford Creek	90.98168369	272.9450511	18.19633674	2720.352342	8161.057027	544.0704685
Forest Creek	130.504663	391.5139891	26.10093261	2048.92321	6146.769629	409.784642
Deep Creek (abv FSBoudary)	133.8809329	401.6427987	26.77618658	2008.213994	6024.641981	401.6427987
Deep Creek	101.026869	303.0806071	20.2053738	2505.466352	7516.399055	501.0932704
Pacer Lake	84.66455723	253.9936717	16.93291145	2878.594946	8635.784837	575.7189891
Deer Creek (abv structure)	102.8990913	308.697274	20.57981827	2469.578192	7408.734576	493.9156384
Deer Creek	94.01352449	282.0405735	18.8027049	2651.181391	7953.544172	530.2362781

Cow Creek	123.203276	369.609828	24.6406552	2143.737002	6431.211007	428.7474005
Cottonwood Creek (abv structure)	155.3599398	466.0798195	31.07198797	1786.639308	5359.917925	357.3278616
Cottonwood Creek	101.4860093	304.4580278	20.29720185	2496.555828	7489.667483	499.3111655
Ranch Creek	79.66946072	239.0083821	15.93389214	3019.472561	9058.417683	603.8945122
Prospect Creek	91.84496013	275.5348804	18.36899203	2700.241828	8100.725484	540.0483656
Smith Canyon	84.66455723	253.9936717	16.93291145	2878.594946	8635.784837	575.7189891
South Creek	85.51293518	256.5388055	17.10258704	2856.132035	8568.396105	571.226407

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

Threats to Property and Human Life: The following values were identified “at risk” during the initial phase of the Sanford BAER evaluation process: Property owners adjacent or downstream from USFS lands (Sanford Ranch, Deer Creek Ranch and Cottonwood Creek landowners) are “at risk” from debris flow that may encroach upon private land. Monitoring of hydrologic conditions and vegetative recovery will determine the need for future treatments. Hazard tree and flood /debris flows may cause risk to users of the Cottonwood Road (FS Road 30125) and Sanford Loop Road (FS Road 30121); and also to users of USFS trails within the fire perimeter. To inform the public about risks to human life and property, hazard-warning signs will be necessary. Culverts will be analyzed and/or redesigned for anticipated post fire hydrologic events.

Threats to Unacceptable Resource Degradation: The Bonneville Cutthroat Trout habitat is “at risk” in Deep Creek drainage because of increased water temperatures, sedimentation and lack riparian vegetation. To reduce expected sedimentation into Deep Creek, log erosion barriers and emergency erosion control seeding will be necessary to help protect the fisheries habitat. Monitoring of hydrologic cross sections and riparian vegetation will determine if additional treatments are necessary. The mixed conifer and pinyon-juniper vegetation recovery will be monitored to assess the risk of long-term impairment to ecosystem structure and function.

Threats to Long Term Soil Productivity: The Tica soil that has been severely burned (Panguitch Area Soil Survey, Map Unit 32) has been identified as a soil at risk because soil loss is expected to exceed soil loss tolerance. The Tica soil has a very low production potential, and because of marginal soil productivity, treatments to these soils would not be cost effective. The extent (890 acres of Tica soils that have been severely burned) of soil map unit 32 will need to be monitored to make sure long-term soil productivity is at risk. Pinyon-Juniper ecotypes that have been moderately to severely burned and lack the under story to provide an adequate seed source will cause a future risk to long term soil productivity because of expected accelerated erosion rates. Severely burned areas in the mixed conifer and spruce/fir ecotypes are expected to recover, however monitoring in these sites will determine if future treatments are necessary.

Threats of Noxious Weeds and Invasive Plant Invasion: To determine the need for future treatments, monitoring will be conducted to document if increased noxious weed and invasive plants invasion is occurring within the wildfire perimeter.

B. Emergency Treatment Objectives:

The primary purpose of the proposed emergency rehabilitation is to take prompt actions deemed reasonable and necessary to effectively protect, reduce or minimize significant threats to unacceptable resource degradation, property and human life, long-term soil productivity and noxious weeds and invasive plants. The emergency treatments being recommended by the Sanford BAER Team are specifically designed to achieve the following results.

- 1) Provide for public safety (road and flood hazard identification) and promote fire recovery by communicating the post fire hazards to the public.
- 2) Expedite recovery of habitat for Bonneville Cutthroat Trout.
- 3) Limit colonization and/or expansion of noxious weeds and invasive plants species onto National Forest System lands.
- 4) Reduce the potential for significant resource damage to and from roads as a result of increased fire related runoff.
- 5) Provide monitoring of hydrologic, vegetative and soil productivity conditions to consider potential emergency treatments that may be required in the near future.

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

Land 80 % Channel N/A % Roads 95 % Other N/A %

D. Probability of Treatment Success

Years After Treatment

	1	3	5
Land	75%	80%	90%
Channel	N/A	N/A	N/A
Roads	95%	100%	100%
Other	N/A	N/A	N/A

E. Cost of No-Action (Including Loss): Five parameters were used to determine the cost of the loss of resources if no treatments were applied.

Value at Risk	Estimated Cost
Loss of Bonneville Cutthroat Habitat (10 miles estimated)	\$1,000,000
Damage to Property (Irrigation Diversions, Roads and Debris Flows on Private Lands)	\$142,500
Loss of Long Term Soil Productivity	\$100,000
Noxious Weed and Invasive Plant Encroachment	\$350,000
Recreation Values	\$50,000
Total	\$1,642,500

F. Cost of Selected Alternative:

Treatments Selected	Estimated Cost
Installation of log erosion barriers (LEBs) in 7 to 9 miles of the Deep Creek Riparian Corridor (Work began on June 28 with the Powell Ranger District Fire/Fuels Crew installing LEBs, average cost is \$5,400 per day with 9 days of work expected. Other costs for transportation and implementation supervision has also been added on.)	\$65,000
Seeding of Deep Creek Riparian Corridor (Fixed wing seeding of 150 acres of riparian corridor)	\$17,500
Seeding 450 acres of moderate to high severity burned Pinyon-Juniper areas.	\$61,500
Culvert Cleaning on Cottonwood Road (8 culverts)	\$1,000
Installation of 12 hazard warning signs	\$7,500
Total	\$152,500

Adjusted Cost Estimates are found in Part VI of this document.

Monitoring Selected	Estimated Cost –FY02	Estimated Cost – FY03	Estimated Cost – FY04
Noxious Weed and Invasive Plant Monitoring	\$1,500	\$1,500	\$1,500
Vegetation Recovery Monitoring	\$2,000	\$1,500	\$1,500
Deep Creek Channel Stabilization Monitoring	\$2,000	\$2,000	\$2,000
Long Term Soil Productivity Monitoring	\$2,000	\$1,000	\$1,000
Implementation Monitoring of BAER Treatments	\$1,000	NA	NA
Effectiveness Monitoring of BAER Treatments	NA	\$1,000	\$1,000
Total	\$8,500	\$7,000	\$7,000

G. Skills Represented on Burned-Area Survey Team:

<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Soils	<input type="checkbox"/> Geology	<input checked="" type="checkbox"/> Range
<input checked="" type="checkbox"/> Forestry	<input checked="" type="checkbox"/> Wildlife	<input type="checkbox"/> Fire Mgmt.	<input checked="" type="checkbox"/> Engineering
<input type="checkbox"/> Contracting	<input type="checkbox"/> Ecology	<input type="checkbox"/> Botany	<input checked="" type="checkbox"/> Archaeology
<input checked="" type="checkbox"/> Fisheries	<input checked="" type="checkbox"/> Research	<input type="checkbox"/> Landscape Arch.	<input checked="" type="checkbox"/> GIS
<input checked="" type="checkbox"/> Recreation			

Team Leaders:

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H. Treatment Narrative:

Land Treatments:

Log Erosion Barriers on the Deep Creek Drainage

Felling of trees linearly adjacent to the channel are recommended for the Deep Creek drainage from the Forest boundary to about 2 miles above the North and South forks of Deep Creek. The purpose is to reduce the amount of sediment that may enter the stream from the reduction in ground cover. Deep Creek is an important Bonneville trout fishery and these efforts should help to reduce sediment that is likely to enter the stream. This land treatment is intended to provide immediate sediment reduction in 7 to 9 miles of the Deep Creek channel. Initial installation began on June 28, 2002.



Photo 1 - Log Erosion Barriers Installed in Deep Creek

The log erosion barriers were installed from June 28 to July 10, 2002. It has been noted in the fall of 2002 that some of the logs have been displaced from high surface flows. Effectiveness monitoring of this treatment in FY2003 will assist in determining how effective this treatment has been.

Emergency Soil Stabilization Seeding on the Deep Creek Riparian corridor

Seeding the flat terrace area adjacent to the channel is recommended for the Deep Creek drainage from the Forest boundary to about 2 miles above the North and South forks of Deep Creek. The purpose is to reduce the amount of sediment that may enter the stream from the reduction in ground cover. Deep Creek is an important Bonneville trout fishery and these efforts should help to reduce sediment that is likely to enter the stream.

This seeding is proposed for immediate treatment.

Proposed Seed Mix (Target Rate 15 lbs/acre)

Species	% of mix	Acres
Sterile triticale	83.3	150
Slender Wheatgrass	16.7	150

This seeding was completed on July 9th, 2002 by Spanish Fork Flying Service. Joni Brazier overseen the seeding implementation and documented that the target rate objective of 15 lbs/acre (14 to 20 seeds per square foot) was met. Effectiveness monitoring of this treatment in FY2003 will assist in determining how effective this treatment has been.

Emergency seeding of moderately and to severely burned Pinyon-Juniper sites in the Deer and Deep Creek areas

Some of the burned pinyon-juniper areas do warrant treatment as watershed emergencies. The sparse understory before the fire combined with past evidence of sheet erosion and a likelihood of increased erosion in the future make these areas susceptible to loss of long-term soil productivity. The lack of a viable seed bank also makes these zones more vulnerable to invasive plants, such as cheatgrass, which threatens ecosystem structure and function.

This seeding is proposed for summer or fall application. (July/October 2002)

Proposed Seed Mix (Target Rate 15 lbs/acre)

Species	% of mix	Acres
Bluebunch wheatgrass	20	450
Beardless Bluebunch wheatgrass	15	450
Barley	50	450
Blue flax	2	450
Nezpar ricegrass	13	450

This seeding was completed from October 29 to the 31th, 2002 by Airmotive Flying Service. Dixie NF personnel overseen the seeding implementation at seven sites and documented that the target rate objective of 15 lbs/acre (30 to 35 seeds per square foot) was met. Effectiveness monitoring of this treatment in FY2003 will assist in determining how effective this has been.

Roads and Trail Treatments:

Culvert Cleaning on Cottonwood Road

On November 6, 2002; Cindy Taylor Trucking (backhoe service) was hired to clean 8 culverts affected by late summer and fall thunderstorm events. The culverts on the Cottonwood Road typically had less than 25 percent capacity remaining and further road damage would occur during the next major storm resulting in the loss the the road in areas.

Hazard Warning Signs

Signs stating that there is a risk of flooding and mud flows should be placed at the lower and upper ends of Sanford Creek and the Cottonwood Loop roads to let the public know that there is a risk of flash flooding in the next two years until adequate vegetation establishes itself in the watersheds. A hazard tree warning will also be included on the signs.

Example of sign design:

WARNING

Due to the 2002 fires, All areas behind this sign are subject to the following hazards:

- **EXTREME FLOODING**
- **FALLING ROCKS**
- **DEBRIS FLOWS and EROSION HAZARDS**
- **FALLING TREES**

BE RESPONSIBLE

Signs will have an orange background with black lettering.



Shown above is a sign installed on the Sanford Fire. All signs were installed by July 31st, 2002.

I. Monitoring Narrative:

A detailed monitoring plan will be submitted as a separate document to the Regional BAER coordinator.

Noxious Weed and Invasive Plant Monitoring

Monitor the location of the known musk thistle location and implement control actions as specified in the Noxious Weed Amendment to the Dixie Forest Plan (2000) and also monitor for cheatgrass invasion in the Deer and Deep Creek watersheds.

Vegetation Recovery Monitoring

Monitor the moderate to high severity burn areas within the mixed conifer to determine the amount of aspen.

Deep Creek Channel Stabilization Monitoring

Due to the fisheries value at risk in the Deep Creek drainage, the installation of stream cross-sections is recommended to track changes in channel morphology over the next three years from possible changes in sediment input and increases in peak flows, and to assist in determining if log erosion barriers were effective in reducing sediment inputs.

Long Term Soil Productivity Monitoring

Establish silt fence erosion monitoring plots that are located in high burn severity areas of mixed conifer or spruce-fir. Create plots to (after Robichaud, et.al., 2000) measure erosion after the next two major storm events ($\geq 1/2$ inch of precipitation) to determine soil loss and the need for rehabilitation treatments. Also measure erosion during the spring of 2003 to determine if soil loss is exceeding soil loss tolerance (T) factors. Provide monitoring reports for BAER for the next two years or until erosion is reduced to within tolerance levels and provide recommendations for treatments.

Implementation Monitoring of BAER Treatments

Implementation monitoring for the LEBs installed in Deep Creek and seeding implementation for the Deep Creek drainage and the pinyon-juniper areas.

Effectiveness Monitoring of BAER Treatments

Effectiveness monitoring for the LEBs installed in Deep Creek and seeding effectiveness for the Deep Creek drainage and the pinyon-juniper areas.

			NFS Lands				Other Lands			All
		Unit	# of	WFSU	Other		Fed	# of	Non Fed	Total
Line Items	Units	Cost	Units	SULT \$	\$	# of units	\$	Units	\$	\$
A. Land Treatments										
Deep Creek LEBs	acre	433.33	150	\$65,000			\$0		\$0	\$65,000
Deep Creek Seeding	acre	56.58	150	\$8,487			\$0		\$0	\$8,487
P-J Seeding	acre	86.14	450	\$38,763			\$0		\$0	\$38,763
				\$0			\$0		\$0	\$0
Subtotal Land Treatments				\$112,250			\$0		\$0	\$112,250
B. Channel Treatments										
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
Subtotal Channel Treat.				\$0			\$0		\$0	\$0
C. Road and Trails										
Hazard Signs & Install	signs	625	12	\$7,500			\$0		\$0	\$7,500
Culvert Cleaning	culverts	125	8	\$1,000			\$0		\$0	\$1,000
				\$0			\$0		\$0	\$0
				\$0			\$0		\$0	\$0
Subtotal Road & Trails				\$8,500			\$0		\$0	\$8,500
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										
BAER Team	days	300	83.33	\$25,000			\$0		\$0	\$25,000
Salary O/T and Travel				\$0			\$0		\$0	\$0
Spot and Landsat Data	data	6,000	1	\$6,000						\$6,000
F. Monitoring				\$8,500			\$0		\$0	\$8,500
G. Totals				\$160,250			\$0		\$0	\$160,250

PART VII - APPROVALS

1. /s/Gretchen Merrill (for Mary Wagner) 12/13/02
Forest Supervisor (signature) Date
2. _____
Regional Forester (signature) Date

Sanford BAER Team

