

Date of Report: 8/8/05

DAMMERON 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 DESCRIPTIONA. Fire Name: DammeronB. Fire Number: PDB0J4C. State: UtahD. County: WashingtonE. Region: IntermountainF. Forest: DixieG. District: Pine ValleyH. Date Fire Started: July 15, 2005I. Date Fire Contained: Estimated Sept. 1, 2005J. Suppression Cost: \$5,500,000

K. Fire Suppression Damages Repaired with Suppression Funds

1. Fireline waterbarred (miles): 1.5
2. Fireline seeded (miles): 0

L. Watershed Numbers: Baker Dam Reservoir-Santa Clara River 150100080704, Cottonwood Creek 150100080905, Headwaters Santa Clara River 150100080702, Sand Cove Wash 150100080801, Snow Canyon 150100080807.

M. Total Acres Burned: 9,982

NFS Acres(6,546) BLM (3,348) State (0) Private (88)

N. Vegetation Types: Pinyon-Juniper, Oakbrush and Mixed Conifer.

O. Dominant Soils: The soils are dominated by moderately deep to very deep soils with 0 to 30 percent slopes on benches and shallow to moderately deep soils intermixed with rock outcrop on 30 to 70 percent sideslopes.

P. Geologic Types: Basalt, Monzonite porphyry and minor amounts of Navajo sandstone and Carmel formation.

Q. Miles of Stream Channels by Order: 23 miles of Order 1, 5 miles of Order 2, 2 miles of Order 3 and 5 miles of Order 5.

R. Transportation System

Trails: 4.29 miles Roads: 9.56 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 5,001 (low and unburned) 3,947 (moderate) 1,034 (high)

B. Water-Repellent Soil (acres): 800

C. Soil Erosion Hazard Rating (acres):
740 (low) 9,112 (moderate) 130 (high)

D. Erosion Potential: 2 tons/acre

E. Sediment Potential: 182 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

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

B. Design Chance of Success, (percent): 2

C. Equivalent Design Recurrence Interval, (years): 2

D. Design Storm Duration, (hours): 30 minutes

E. Design Storm Magnitude, (inches): 0.63

F. Design Flow, (cubic feet / second/ square mile): 24

G. Estimated Reduction in Infiltration, (percent): 30

H. Adjusted Design Flow, (cfs per square mile): 31

PART V - SUMMARY OF ANALYSIS

A. Describe Watershed Emergency:

Threats to Property and Human Life:

The St. George Water Department has 6 spring head box areas at risk, Carter Canyon, Slide Canyon, Quaking Aspen, Reservoir, Lone Pine and Cottonwood Spring. These 6 areas have about 10 to 12 spring head box structures associated with them and supply approximately 4,500 gallons per minute of culinary water to the St. George water system. The Lone Pine and Cottonwood spring structures were burned at a moderate to high severity above the spring head box structures and have a potential of soil movement into and around the

spring sources. An aerial seeding (116 acres) is recommended in this area for additional stabilization of the soil surface and provide for optimum cover in this highly valued spring system and culinary water source.

The Cottonwood Creek and Snow Canyon watersheds (HUC6s) were both analyzed for potential flooding threats to downstream property and human life. Both watersheds are predicted to be able to handle the predicted post fire flows without causing significant damage and no treatments are proposed at this time.

Threats to Road Infrastructure

Road drainage was evaluated on Forest Road 34, 131, 322, 891, 896, 1030, and 33 to determine if they can function with anticipated increased flows. 177 rolling grade dips were determined to be needed to protect the roads from anticipated post fire hydrologic events. Also 3 gates (with an associated administrative closure) are recommended to protect road drainage improvements and eliminate traffic in and around the spring areas that are subject to safety issues such as rockfall and numerous snags in the area.

Threats to Unacceptable Resource Degradation:

ATV encroachment and other off road travel is a concern to resource degradation; it is recommended that 15 signs be placed along critical resource areas along the Cottonwood, Blake-Gubler and Truman Bench Roads to prevent unacceptable degradation to the burned landscape. Also one rock barrier areas in needed to keep ATV traffic from entering a non-motorized trail area. This barrier and signage would help educate and notify forest users of potential excessive degradation to burned watersheds.

Two system trail segments (Blake-Gubler Trail- 1.7 miles and the Goat Springs Trail- 1.65 miles) have been heavily impacted by high and moderate burn severity and are subject to excessive runoff and subsequent complete loss of the trail tread. Treatments are proposed to provide for proper trail drainage to protect this resource.

The vegetative recovery of the Dammeron fire is currently at risk along 2.5 miles of boundary between NFS and BLM. The NFS lands adjacent to BLM property have had their allotments retired but the BLM allotments are active. The threat of slow vegetative recovery on NFS lands with no barriers to prevent grazing on NFS land will restrict recovery on these burned watershed. It is recommended that 2.5 miles of temporary fence be built on the boundary to prevent the over utilization of the initial vegetative recovery of the proposed seeding. Currently this treatment is being addressed with the BLM to determine if they can cost share this treatment with USFS with their emergency stabilization program.

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 invasion is occurring within the wildfire perimeter. During the fire suppression activities, fire transportation equipment and engines utilized areas near Diamond Valley where noxious weeds are present. Also, known sites of noxious weeds are currently found within the fire perimeter. Monitoring will begin in fiscal year 2006.

To prevent invasive plant encroachment from cheatgrass; 2,672 acres have been identified for seeding associated with the BAER effort. This treatment would also provide soil stabilization and additional cover to seasonal occupation cultural resource sites on Truman Bench and the Blake-Gubler area. See attached Hawkins Fire BAER aerial seeding report for reference that documents success on the Dixie NF in slowing cheatgrass expansion.

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 and noxious weeds and invasive plants. The emergency treatments being recommended by the Dammeron 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) Protect St. George City culinary water supply from degradation.
- 3) Limit colonization and/or expansion of noxious weeds and invasive plants species onto National Forest System lands.
- 4) Reduce the impacts to cultural resources and soils to prevent significant resource damage from ATV and off road travel.
- 5) Protect roads and trails in the area from post fire runoff.
- 6) To assist in the natural vegetative recovery of burned watersheds.

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

Land **65-70** % Channel % Roads **85** % Other %

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Land	70%	75%	75%
Roads	90%	95%	95%

E. Cost of No-Action (Including Loss):

Value at Risk	Estimated Cost
Damage to Roads	\$300,000
ATV damage to Watershed (rutting, vegetative trampling)	\$250,000
Noxious Weed Encroachment	\$754,800
Invasive Plant Encroachment and Cultural Resource Damage	\$700,000
St. George City Water Department Spring Sources	\$3,000,000
USFS Trail System Damage	\$75,000
Total	\$5,079,800

F. Cost of Selected Alternative: (Including Loss)

- The treatment of the rolling dips improvements has a 25% chance of failure from slow implementation or exceedingly high precipitation; The estimated possible loss would be \$50,000 for supplemental road repair plus the treatment cost of \$41,390.
- The signage to prevent potential ATV damage is estimated at 90% effective in deterring use on burned landscape. This would possibly expose 500 accessible acres of to rutting, compaction and vegetative trampling with a cost of \$500/acre to repair the damage. The potential total cost of ATV damage would be \$250,000 from damages plus \$1,500 for signage and \$1,000 for a ATV barrier.
- The noxious weed monitoring detects typically 70% of the initial weed locations; 30% of the burned areas has a potential of weed expansion. Typically it cost \$100 an acre to treat noxious weeds and for the 2,994 acres at risk (9,982 acres with 30% potential of noxious weed expansion) would potentially cost \$299,400 plus \$3,100 for monitoring.
- Invasive cheatgrass prevention seeding is estimated to be 65% effective, \$175,000 (35% of \$500,000) is added as included loss for seeding failure potential and a 25% loss to cultural resources sites (50,000 value; 25% of \$200,00 for total loss) plus \$267,200 costs associated within this seeding treatment. This treatment would provide for both protection of invasive plant encroachment and cultural resource protection.

- The culinary water/spring protection treatment has a 70% chance of success due to favorable elevation and precipitation in and around the spring areas. A 30% loss of \$3,000,000 (\$900,000) of culinary water value and the treatment of \$29,000 are included in the cost of the selected treatment.
- The trail drainage improvement treatment has a 85% chance of success. A 15% loss of \$75,000 (\$11,250) of trail tread along with a treatment cost of \$35,000 in hand trail work is included in the cost of the selected treatment.

Treatments/Monitoring Selected	Estimated Cost
Rolling Dip Road Drainage Improvements	\$91,390
ATV signage/barriers for prevention of resource damage	\$252,500
Noxious Weed Monitoring	\$232,500
Prevention of cheatgrass/watershed cover enhancement in Pinyon/Juniper areas and protection of Cultural Resource sites (Aerial Broadcast Seeding)	\$492,200
St George City Culinary Water Protection (Aerial Broadcast Seeding)	\$929,000
USFS Trail System Drainage Improvement	\$46,250
Total	\$2,043,840

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

Team Leader: Richard Jaros

Email: sjaros@fs.fed.us

Phone: (435) 865-3722

FAX: (435) 865-3791

H. Treatment Narrative:

Emergency Seeding of Burned Pinyon-Juniper and Cultural Resource sites

Burned pinyon-juniper areas and protection of scattered seasonal occupation cultural resources sites on Truman Bench and in the Blake-Gubler area necessitate treatment as watershed emergencies; the sparse under-story before the fire, combined with past evidence of cheatgrass in the area makes these areas susceptible to unacceptable resource degradation. 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.

Our analysis shows that sites that are the most favorable for invasive cheatgrass growth are on south slopes up to 30 percent, and all other aspects up to 20 percent. We have focused our 2,672-acre seeding site on these parameters. After the Magotsu Fire in 1996, seeding of similar grasses as proposed was successful; cheatgrass was also impeded in the reseeded areas. Following the Hawkins fire in 2004, seeding of similar species shows success in providing grass species diversity and resistance to a complete cheatgrass under story. See attached Hawkins Fire BAER aerial seeding report for reference that documents success on the Dixie NF in slowing cheatgrass expansion.

This seeding is proposed for immediate application. (Late summer/early fall 2005)

Proposed Seed Mix (Target Rate 15 lbs/acre – 97 seeds per square foot)

Species	% of mix	Estimated Seed per Pound	Estimated Cost per pound	Acres	Estimated Cost per Acres for Seed	Estimated Cost per species for 2,672 acres
Western Wheatgrass (VNS cultivar)	53% (8 lbs)	110,000	\$5.50	2,672	\$44.00	\$117,568
Sandburg bluegrass (VNS cultivar)	20% (3 lbs)	925,000	\$4.00	2,672	\$12.00	\$32,064

Indian Ricegrass (rimrock cultivar)	14% (2 lbs)	150,000	\$2.50	2,672	\$5.00	\$13,360
Bluebunch Wheatgrass (anatonne cultivar)	13% (2 lbs)	150,000	\$10.00	2,672	\$20.00	\$53,440
Total	100% (15 lbs)			2,672	\$81.00	\$216,432

(Aerial Application Rate (SEAT Plane) Estimated at \$19 an acre) Sandburg bluegrass has 925,000 seeds per pound and causes a high rate (97 seeds per square foot) of seeds per square feet.

Emergency Seeding of St. George City Culinary Water Springs

The objective of this seeding is to provide quick vegetative cover for the reduction of sediment sources near the Cottonwood Spring and and Lone Pine Spring culinary water sources. This seeding is proposed for immediate application. (Late summer/early fall 2005)

Proposed Seed Mix (Target Rate 88 lbs/acre- 52 seeds per square foot)

Species	% of mix	Estimated Seeds per Pound	Estimated Cost per pound	Acres	Estimated Cost per Acres for Seed	Estimated Cost per species for 50 acres
Sterile Triticale (QuickGuard)	91% (80 lbs/acre)	13,000	\$1.50	116	\$120.00	\$13,920
Thickspike Wheatgrass (critana cultivar)	9% (8 lbs/acre)	154,000	\$3.50	116	\$28.00	\$3,248
Total	100% (88 lbs/acre)			116		\$17,168

(Aerial Application Rate (Helicopter) Estimated at \$102 an acre)

Emergency Road and Trail Treatments

Off-Road (ATV) encroachment and other off road travel is a concern in this area. Signage will be placed at critical resource areas to prevent unacceptable degradation to the watershed. The signage proposed would help educate and notify forest users of potential excessive degradation to burned watersheds. 15 signs and 1 ATV barrier is currently proposed for this treatment.

Example of ATV (Off-Road) signs:

<p>ATTENTION: OHV RIDERS</p> <p>This OHV trail is open for your recreation pleasure. Please stay on the designated trail.</p> <p><i>The immediate area off the trail is closed for burned area recovery.</i></p> <p>Riding off the trail is a violation of Federal regulations and punishable by fine and/or imprisonment.</p>

Road Drainage Treatments

Road dips will be needed to prevent projected road damage from post fire runoff. The USFS Guide "Water/Road Interaction: Introduction to Surface Cross Drains" was utilized to propose placing 177 road dips on Forest Roads 30,31, 896 and 34 for the emergency protection of the road. 3 road closure gates are also recommended to ensure the road work will be protected from traffic and to ensure that the public is not permitted into the burned springs area where rockfall and snag hazards are present. The costs for this treatment are as follows:

- 177 Rolling Grade Dips - \$36,816 (\$208 each)

- 3 Road Gates - \$4,500 (\$1,500 each for heavy duty Powder River 16 Foot Gates and install)

Trail Drainage Treatments

- 1.7 miles of the Blake-Gubler Trail (within the Pine Valley Wilderness) has been affected by high and moderate burn severity. This trail is located in a canyon that was vegetated by mixed conifer. This trail is highly susceptible trail damage due to its location and will need numerous waterbars to protect this wilderness resource. This trail is the only southern entry point into the Pine Valley Wilderness.
- 1.65 miles of the Goat Springs Trail has been affected by moderate burn severity. This trail is susceptible trail damage due to its sideslop bench location and will need numerous waterbars.
- Estimated costs to protect these two trails is \$36,000 are 4 days for a twenty person handcrew and 2 days for mobilization/demobilization of the resource in this remote wilderness area.

I. Monitoring Narrative:

Monitoring will begin in fiscal year 2006.

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 sites and likely sites for new infestations and implement control actions as specified in the Noxious Weed Amendment to the Dixie Forest Plan (2000). Randy Russell (Pine Valley Range Conservationist) will be responsible for this monitoring effort.

Effectiveness Monitoring of BAER Treatments

Monitor the aerial broadcast seeding and the amount of invasive cheatgrass returning to the seeding sites. Mark Madsen (Forest Botanist) will be responsible for this monitoring effort.

Dammeron BAER

Noxious Weed Monitoring

OBJECTIVE: Monitor noxious weeds the Dammeron fire perimeter to prevent an outbreak.

ITEM TO MONITOR: Presence and noxious weed within the burn perimeter.

TYPE OF MONITORING: Site visit/ocular

METHODS/PARAMETERS: Visit known location of noxious weeds. Grid exam in burned areas and along road corridors.

FREQUENCY/DURATION: FY06.

PROJECTED COSTS: \$3,100.00

REPORTING PROCEDURES: Annual Dammeron BAER Monitoring Report

RESPONSIBILITY: Randy Russell, Range Conservationist

Monitoring of BAER Treatments

OBJECTIVE: Monitor the aerial broadcast seeding and the amount of invasive cheatgrass returning to the seeding sites.

ITEM TO MONITOR: Seeding site evaluation.

TYPE OF MONITORING: Site visit/ocular.

METHODS/PARAMETERS: Visit seeding sites in May 2006.

FREQUENCY/DURATION: FY06.

PROJECTED COSTS: \$2,000.00

REPORTING PROCEDURES: Annual Dammeron BAER Monitoring Report

RESPONSIBILITY: Mark Madsen, Forest Botanist

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

Line Items	Units	Unit Cost	# of Units	WFSU SULT \$	Other \$	# of units	Fed \$	# of Units	Non Fed \$	Total \$
A. Land Treatments										
Invasive and Cultural Resource Seeding	acre	100	2672	\$267,200	\$0		\$0		\$0	\$267,200
Culinary Water Area Seeding	acre	250	116	\$29,000	\$0		\$0		\$0	\$29,000
ATV Barriers	sites	1000	1	\$1,000	\$0		\$0		\$0	\$1,000
Road Closure Gates	each	1500	3	\$4,500	\$0		\$0		\$0	\$4,500
<i>Subtotal Land Treatments</i>				\$301,700	\$0		\$0		\$0	\$301,700
B. Channel Treatments										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treat.</i>				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
Signage	signs	100	15	\$1,500	\$0		\$0		\$0	\$1,500
Rolling Dips	each	208	177	\$36,816	\$0		\$0		\$0	\$36,816
Trail Water Bars	mile	10746	3.35	\$36,000	\$0		\$0		\$0	\$36,000
<i>Subtotal Road & Trails</i>				\$74,316	\$0		\$0		\$0	\$74,316
D. Structures										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0					
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Structures</i>				\$0	\$0		\$0		\$0	\$0
E. BAER Evaluation										
BAER Assessment	days	300	60	\$18,000	\$0		\$0		\$0	\$18,000
<i>Subtotal Evaluation</i>				\$18,000	\$0		\$0		\$0	\$18,000
F. Monitoring										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Monitoring</i>				\$0	\$0		\$0		\$0	\$0
G. Totals				\$394,016	\$0		\$0		\$0	\$394,016

PART VII - APPROVALS

1. /s/ Robert Russell
Forest Supervisor (signature)

August 8, 2005
Date

2. Mary Wagner for Catherine Beaty
Acting Regional Forester (signature)

8/9/2005
Date