

Date of Report:07/13/2012

BURNED-AREA REPORT  
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

- ☒ 1. Funding request for estimated emergency stabilization funds  
☐ 2. Accomplishment Report  
☐ 3. No Treatment Recommendation

B. Type of Action

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization 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

*\*This 2500-8 addresses two incidents that occurred within a few miles of each other during similar timeframes. Most of the following information is from the Northern Great Plains Interagency Dispatch Center Resource Status Report (July 8, 2012) that was accessed at:  
[http://gacc.nifc.gov/rmcc/dispatch\\_centers/r2gpc/gpcamrpt.htm](http://gacc.nifc.gov/rmcc/dispatch_centers/r2gpc/gpcamrpt.htm)*

A. Fire Names: White Draw Fire  
Parker Peak Fire

B. Fire Numbers: White Draw - SD-SDS-120485  
Parker Peak - SD-BKF-120501

C. State: SD D. County: Fall River (SD)

E. Region: R02 F. Forest: Black Hills

G. District: Hell Canyon

H. Fire Incident Job Codes: White Draw - P2GZ7S Parker Peak - P2G0FV

I. Date Fire Started: White Draw - 6/29/2012; Parker Peak - 7/01/2012

J. Date Fire Contained: White Draw - 7/06/2012; Parker Peak - 7/3/2012

K. Suppression Cost: \*\*\*

L. Fire Suppression Damages Repaired with Suppression Funds \*\*\*

\*\*\* Rehabilitation of fire suppression line is currently ongoing. The fire was still in a "contained" status at the time of this assessment with some active internal burning. In addition, the C-130 MAFFS crash incident within the White Draw fire perimeter is still being investigated and removal of the wreckage by the US Air Force is ongoing.

1. Fireline waterbarred (miles):  
Dozer \*\*\* miles  
Handline \*\*\* miles
2. Fireline seeded (miles): \*\*\* miles
3. Other (identify): Road Damage \*\*\* miles

M. Watershed Number:

#### White Draw Fire

HUC 12	Watershed Name	Watershed Acres	Watershed Acres Burned	Watershed Acres Unburned	Percent Burned (Fire)	Percent Unburned
101201060204	White Draw – Red Canyon Creek	23,258	4,957	18,301	21	79
101201060406	Craven Canyon	16,061	4,000	12,061	25	75
101201060203	Cheyenne River – Driftwood Creek	30,131	35	30,096	0.1	99.9

#### Parker Peak

HUC 12	Watershed Name	Watershed Acres	Watershed Acres Burned	Watershed Acres Unburned	Percent Burned (Fire)	Percent Unburned
101201060206	Chilson Canyon	19,978	589	19,389	3	97
101201060207	Cheyenne River – Little Tepee Creek	35,194	60	35,134	0.2	99.8

N. Total Acres Burned: White Draw: 9,000 acres Parker Peak: 650 acres

White Draw Fire: NFS Acres (6,045) BLM (15) State (0) Private (2,940)

Parker Peak Fire: NFS Acres (50) Other Federal (0) State (0) Private (600)

O. Vegetation Types:

White Draw Fire: Ponderosa pine/Rocky Mountain juniper, Cottonwood/Green ash riparian zone, Little Bluestem/Blue Grama/Buffalo grass community

Parker Peak Fire: Ponderosa pine/Rocky Mountain juniper, Little Bluestem/Blue Grama/Buffalo grass community

P. Dominant Soils:

White Draw Fire: Dominant soil map units within the burned area

Map Unit Symbol	Map Unit Name	Map Unit Acres
MnF	Mathias-Rockoa-Rock outcrop complex, 25 to 60 percent slopes	2657
BvD	Butche-Boneek complex, 3 to 15 percent slopes	2066
MmE	Mathias-Midway-Rock outcrop complex, 15 to 30 percent slopes	1566
RoF	Rock outcrop-Mathias-Butche complex, 30 to 75 percent slopes	693
BoB	Boneek silt loam, 2 to 6 percent slopes	261
MoB	Minnequa silt loam, 2 to 6 percent slopes	206
Ha	Haverson loam	164
BpB	Boneek silt loam, bedrock substratum, 2 to 6 percent slopes	160
RrF	Rockoa-Rock outcrop complex, 25 to 60 percent slopes	143
NoB	Norka silt loam, 2 to 6 percent slopes	142
MpE	Minnequa-Midway silty clay loams, 6 to 25 percent slopes	141
CnD	Colby-Norka silt loams, 6 to 15 percent slopes	129
SmE	Schamber-Eckley complex, 9 to 40 percent slopes	103

*\*\*Dominant soils – did not include individual map units that comprised less than 1% of burned area, were mapped as mines or areas mapped as water.*

Parker Peak Fire: Dominant soil map units within the burned area

Map Unit Symbol	Soil Map Unit Name	Acres
BoB	Boneek silt loam, 2 to 6 percent slopes	9
BvD	Butche-Boneek complex, 3 to 15 percent slopes	76
Lo	Lohmiller silty clay loam	7
MmE	Mathias-Midway-Rock outcrop complex, 15 to 30 percent slopes	250
NoC	Norka silt loam, 6 to 9 percent slopes	142
RoF	Rock outcrop-Mathias-Butche complex, 30 to 75 percent slopes	181
RrF	Rockoa-Rock outcrop complex, 25 to 60 percent slopes	41

*\*\*Dominant soils- Included all individual map units within the burned boundary.*

Q. Geologic Types: (for both fire areas)

The Inyan Kara Group dominates both the White Draw and Parker Peak fire areas. Morrison/Sundace formations, Quaternary and Tertiary gravel deposits, Quaternary alluvium and colluvium deposits, and localized areas of Pierre Shale are also present.

R. Miles of Stream Channels by Order: *within or immediately downstream of contributing burned areas*

**White Draw Fire:**

Perennial: 0.5 miles (Red Canyon) *\*Contributes flow to Cheyenne River/Angostura Reservoir downstream*

Intermittent: 68 miles

Ephemeral: numerous ephemeral channels are found throughout the fire area and only respond to storm events.

**Parker Peak:**

Perennial: none \* *contributes flow to the Cheyenne River and Angostura Reservoir downstream*

Intermittent: 4 miles

Ephemeral: numerous ephemeral channels are found in the fire area and only respond to storm events.

**S. Roads and Trails:**

State Highway: 1.7 miles

Fall River County Roads: 9.4 miles

National Forest System Roads: 13.6 miles      Unauthorized Roads (non-system): 14.0 miles

Trails (motorized): 0 miles

Treatment Map – Due to the sensitive nature of threatment areas associated with archeological sites an electronic treatment map of these areas was not posted pursuant to Archeological Resource Protection Act. A treatment map for other treatments is filed on the O drive at:

O:\NFS\BlackHills\Program\2520EmergencyBurnAreaRehabilitation\BAER\BKFB\BAERFireDocs\WhiteDrawParkerPeak2012

**PART III - WATERSHED CONDITION****A. Burn Severity (acres):**

\* *approximate acreages based on field reconnaissance and mapping; BARC product ordered and awaiting post-fire image capture.*

**White Draw Fire:**

Low/Unburned: 8,185      Moderate: 785      Moderate/High: 30      High: 0

**Parker Peak Fire:**

Low/Unburned: 650      Moderate: 0      Moderate/High: 0      High: 0

**B. Water-Repellent Soil acres: 0 acres (in both fires)**

A thin water repellent layer (2mm or less) was found at the soil-ash interface in moderate burn severity areas. Below this layer, water infiltrated into soils within 10 seconds or less.

**C. Soil Erosion Hazard Rating (acres):**

Soil erosion hazard acreage is based on individual map units that comprised more than 1% (generally more than 90 acres) of the burned area. Erosion Hazard Ratings for this assessment were obtained from accessing <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx> for Hazard of Erosion on Roads and Trails. An erosion hazard rating for burned conditions is not currently available on that web site. In recent past assessments in the southern Hills, the "Hazard of Off-Road or Off Trail Erosion" was used, however, in observing erosion occurring before incidents are controlled or soon thereafter within the first year, (fire removing overstory canopy, shrubs and herbaceous material), seemed to more reflect a higher erosion hazard during precipitation events. Using the information rating provided under "Hazard of Erosion on Roads and Trails" for the first season following fire is likely more realistic on what we expect during that first year "emergency". Then after the area begins to drop conifer needles, snags and has some vegetation regrowth, the landscape systems begin to exhibit more of a similarity to the ratings identified in the "Hazard of Off-Road or Off-Trail Erosion in years 2-4 following the fire.

### White Draw Fire:

Map Unit Symbol	Map Unit Acres	Erosion Hazard
MnF	2657	Severe
BvD	2066	Moderate
MmE	1566	Severe
RoF	693	Severe
BoB	261	Moderate
MoB	206	Moderate
Ha	164	Slight
BpB	160	Moderate
RrF	143	Severe
NoB	142	Moderate
MpE	141	Severe
CnD	129	Severe
SmE	103	Severe

Slight = Approximately 164 acres

Moderate = Approximately 2,835 acres

Severe to Very Severe = Approximately, 2,939 acres.

### Parker Peak Fire

Map Unit Symbol	Map Unit Acres	Erosion Hazard
BoB	9	Moderate
BvD	76	Moderate
Lo	7	Slight
MmE	250	Severe
NoC	142	Moderate
RoF	181	Severe
RrF	41	Severe

Slight = Approximately 7 acres

Moderate = Approximately 227 acres

Severe to Very Severe = Approximately 472 acres.

### D. Erosion Potential:

Erosion potential for areas mapped as low/unburned within both fire areas is not expected to be much higher than the inherent erosion rate prior to the fire. However, areas mapped within the White Draw fire as having moderate to high soil burn severity occurred on the extremely steep slopes of Craven Canyon. These soils are inherently very susceptible to erosion and downslope movement. What little stabilization that was provided by vegetation, litter, and duff layers prior to the fire has now been removed. Significant runoff and erosion has already been observed on these hillslopes in response to a 1.1 inch thunderstorm event that lasted approximately 30 minutes. Thus a relatively small change in the hydrologic characteristics of these hillslopes has resulted in a large change in watershed response. This will continue until ground cover can be

established – either naturally and/or through approved BAER treatments (5 years or more depending upon weather conditions and erosion producing storm events).

Initially the Black Hills and Region 2 BAER coordinators conferred regarding the needs for erosion modeling for these two fires. Both agreed at the time, that there was no reason to model erosion potential because of recent ERMiT modeling completed for the 2011 Whoopup/Barrel and the 2007 Alabaugh BAER assessment. Both occurred within the same MLRA, similar elevation, precipitation, and site conditions. However, following field reconnaissance, conditions and hillslope characteristics were found to be different enough to warrant separate hillslope erosion modeling for the White Draw Fire – specifically hillslopes within Craven Canyon that were mapped as moderate to high soil burn severity. This modeling is ongoing at the time of this initial request.

E. Sediment Potential: N/A cubic yards / square mile

#### PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 1-3 years for the grassland areas longer for the Ponderosa pine/Rocky Mountain juniper sites and the Cottonwood/Green Ash Riparian Zones, and areas mapped as moderate to high soil burn severity.

B. Design Chance of Success, (percent): 60-70%

C. Equivalent Design Recurrence Interval, (years): 2-5 year\*

*\* high intensity, short duration thunderstorms*

D. Design Storm Duration, (hours): 30 – 60 minutes

E. Design Storm Magnitude, (inches): 1 inch or greater\*

*\* 1.1 inches fell on 7/5/11 causing flash flooding in response to this “typical” storm*

F. Design Flow, (cubic feet / second/ square mile): 300 – 1200 cfs\*

*\*estimated flood flows from 7/5/11 event range between 300-500 cfs based on experience with post-fire research/modeling in the 2000 Jasper Fire area (Gould 2003).*

G. Estimated Reduction in Infiltration, (percent): < 10% \*

*\*due to the absence of soil water repellency; however due to the high amount of bedrock outcropping, cap rock, and colluvial deposits, and the nature of the short duration, high- intensity thunderstorms typical in the burned area, infiltration of rainfall will be very limited in moderate to high soil burn severity areas.*

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

## PART V - SUMMARY OF ANALYSIS\*

### A. Describe Critical Values/Resources and Threats:

*\*All assessment information will be shared with local cooperators, including the Fall River County NRCS, Emergency Management System, and County Roads Department.*

#### **Human Life and Safety:**

Emergency watershed conditions were identified within and downstream of the White Draw Fire. Increased runoff (total volume and peak flows), decreased times of concentration, and entrainment of ash, sediment, rock, and other debris within floodwaters poses a threat to human life and safety to residents, forest users, USFS employees, and permittees using the Craven Canyon and Red Canyon Road. Because of this, there is a **VERY HIGH RISK** or threat to human life and safety where roads on Forest and private land cross stream channels that now have a substantially greater potential for flash floods during short duration/high intensity precipitation events. These two main roads in the fire area, Red Canyon Road (Fall River County) and Craven Canyon Road (USFS), both have numerous crossings of their respective stream channels. All residential structures in both canyons are located outside and/or above stream channels and floodplain areas and no structures are situated directly at the outlet of hill slope drainages.

No emergency watershed conditions were found within the Parker Peak Fire during field reconnaissance and no threats to human life or safety were identified. All residential structures, outbuildings, and roads are located outside and/or above valley bottoms, stream channels, and floodplain areas. Therefore threats to human life and safety associated with runoff and flooding events in the Parker Peak Fire are unlikely and **LOW RISK** to houses located downstream.

#### **Property:**

The loss of stabilizing roadway vegetation will increase the likelihood of severe soil erosion and sedimentation at stream crossings resulting from heavy rain associated with "typical" thunderstorm events that occur during late spring and summer. Damage to both Forest System roads and non-system roads caused by previous storms in burned areas on the Black Hills includes the loss of roadway soils, causing road material to move into drainages and the downslope movement of road fills. Deep rutting, rilling, and partial to full washout of fill material on and around existing culverts also occurs. Once fill material on and around culverts is lost, there is an increased potential for the culvert to become part of debris flow following heavy rain events, thus increasing the risk to human life and property downstream.

Red Canyon road is within the fire perimeter and runs through Red Canyon with numerous concrete-enveloped vented fords present. Residents in Red Canyon use this to access their property as well as local area residents that use the road to gain access to USFS lands. Based on the location of the houses in proximity to stream channels, and the types of crossings present on the Red Canyon Road, there was an **INTERMEDIATE RISK** assigned.

Craven Canyon Road is open to public non-motorized use including foot and horse traffic. Motorized administrative use includes USFS employees, permittee access to range improvements and wells, utility access to power poles, tribal use, and guided tours. There are over 30 crossings present within the canyon associated with this road, ranging from low water crossings to culverts. Nearly all culverts are non-functional (plugged, buried under flood deposits, crushed, or washed out). These identified crossings pose a **VERY HIGH RISK** of failure due to post fire flash flooding. To date there has been a flash flood event that occurred within Craven Canyon in response to a thunderstorm on July 5, 2012 where flood debris blocked numerous crossings and has made several sections of the road impassable for administrative use.

There is a private resident located in Red Canyon near the outlet of Craven Canyon. The residential structures are located away from potential flooding areas, but horse corrals and associated livestock structures are situated

immediately next to the bottom of Craven Canyon creek where it joins Red Canyon Creek. Due to the emergency watershed conditions present in Craven Canyon, the distinctly identifiable flood source areas, the multiple road conditions and their poor condition these horse-related structures are at **HIGH RISK** for flood damage.

## **Natural Resources:**

### *Water Quality:*

The BAER Team did not identify emergency conditions for drinking water quality within the burned areas. No watersheds are known to be sources of surface drinking water in this area. There are a couple of springs that are not expected to be permanently impacted other than filling and scouring as part of flood pulses through the stream system.

However, impaired water quality in the Cheyenne River and Angostura Reservoir downstream may occur in response to future storm events. After the 2000 Jasper Fire and the 2001 Elk Mountain II/Rogers Shack Fire (combined acreage of approximately 100,000 acres), post-fire flooding material was observed to have accessed the Cheyenne River and Angostura Reservoir during at least two separate high intensity precipitation events. These past fire areas were over 110 stream miles upstream of the reservoir. The White Draw Fire is only five stream miles upstream of the Cheyenne River. Previous flood events caused increased turbidity in both water bodies. The Cheyenne River is listed as a South Dakota impaired water body, in part due to excess suspended solids and dissolved solids carried by entrained sediment and colloidal particles. The likelihood of ash and debris accessing the river and reservoir happening is dampened by the large amount of low soil burn severity acreage mapped in the White Draw Fire. Thus the probability of occurrence was rated as possible with moderate consequences, resulting in an overall **INTERMEDIATE RISK**.

### *Soil Productivity and Hydrologic Function:*

Numerous areas within the White Draw fire have been identified as having moderate/high soil burn severity. Although these areas are small in comparison to the overall area burned, the areas identified within Craven Canyon have a **VERY HIGH RISK** of producing increased post-fire runoff, gully erosion, and slope failures. These flood/debris source areas threaten downslope and downstream critical archeological sites as well as the Craven Canyon road, Red Canyon road, and their respective users. In fact increased runoff and gully erosion and flooding has already been observed in response to a thunderstorm that produced approximately 1.0 inch of precipitation over the burned area (a relatively small amount for "typical" thunderstorms in this area).

No soil productivity or hydrologic function decrease were identified within the Parker Peak fire.

### *Threatened/Endangered Species –*

No Threatened or Endangered wildlife or botanical species are known to occur within the burned area. Bighorn sheep and prairie dogs (both USFS Region 2 Sensitive Species) are documented to occur within the White Draw Fire. There are no Region 2 Sensitive or Forest Species of Local Concern plant species currently known to occur within the burned area. There is **NO RISK** associated with T&E status species for these fire areas.

### *Plant Communities - Noxious Weeds*

The BAER Team identified the post-wildfire threat of increased risk for spread and/or establishment of noxious weeds. The current noxious weed populations within the proximity of the two fire areas is very minimal. Approximately 35 acres of bindweed and canada thistle exist within and immediately adjacent to the burned areas on USFS lands. Little to no noxious weed control has been necessary in recent years prior to the fires. However, based on monitoring of adjacent and nearby fire areas, a 30% increase in noxious weed spread can be expected each year following the fire if not treated. Private lands within and adjacent to the burned area may also contain established populations of noxious weeds.



There is also a potential risk for introduced noxious weed species from other regions (MT, CA, NV) due to fire suppression equipment from these areas and the absence of a weed wash station at the incident. There is now some unknown level of potential for spotted knapweed and star thistle establishment. The potential noxious weed increase on Forest administered lands were rated as **HIGH RISK**. Documented investigations of safety zones and fire suppression lines in the adjacent 2011 Coal Canyon Fire and the nearby 2011 WhoopUp Fire areas have revealed that cheatgrass has dominated those sites and may significantly increase within the White Draw Fire area.

### Cultural and Heritage:

The White Draw Fire area has 144 known cultural sites, many of which are eligible or already listed on the Historic Register. Four of these listed sites were identified as threatened by post-fire hillslope runoff, erosion, and/or flooding damage. These archeological resources are extremely rare examples of their respective cultures and uses, and are irreplaceable resources. Therefore all four sites have a **VERY HIGH RISK** of major damage or loss. No concerns were identified for archeological resources within the Parker Peak Fire area.

### B. Emergency Treatment Objectives:

- To reduce runoff, erosion, and downstream sedimentation from moderate to high severity burned areas in Craven Canyon.
- To warn the public of impending flood.
- To protect USFS employees, Forest users, and the public working and traveling along Craven Canyon and Red Canyon roads.
- To reduce runoff and erosion damages to rare and irreplaceable cultural resources.
- To prevent expansion of noxious weeds in the burned area.

### C. Probability of Completing Treatment Prior to Damaging Storm or Event: \*

*\* A damaging storm event occurred while fire suppression activities were ongoing in the "un-contained" fire status. The event probabilities displayed below reflects that an event has already occurred (i.e. road/trail damage has already occurred from flooding thus it has a low probability of being completed prior to a damaging event). The probability of implementing treatments prior to the next damaging storm for all treatments is approximately 30% due to the natural variability associated with the Black Hills convective thunderstorm processes. A damaging storm event does not apply to noxious weeds as it does to other treatments designed to minimize erosion and runoff from burned areas.*

Land (weeds) N/A\* Land (hill slopes) 33 % Channel N/A Roads/Trails 0 - 5 %  
Protection/Safety 90 % Archeology 60 %

### D. Probability of Treatment Success

Treatment Type	Years after Treatment		
	1	3	5
Land/hill slope	50%	70%	85%
Weed Treatment	60 - 70%	-	-
Channel	N/A	N/A	N/A
Roads/Trails	90%	95%	95%
Protection/Safety/signs	100%	-	-
Archeology	75 - 90%		

E. Cost of No-Action (Including Loss): the cost of the No-Action alternative ranges from \$100,000 to an immeasurable amount associated with the loss of human life or the rare and irreplaceable critical archeological resources.

F. Cost of Selected Alternative (Including Loss): the proposed treatments have been designed to have the best possible chances of success to protect human life, property, and critical natural and cultural resources. Complete loss, despite implementation of proposed treatments, is not expected to occur. Refer to the cost summary table for the cost of the proposed treatments associated with the selected alternative.

### BAER Risk Assessment (based on probability and magnitude of consequences)

The BAER Team considered many potential values at risk (VAR). These are documented in a separate table filed on the O drive at:

O:\NFS\BlackHills\Program\2520EmergencyBurnAreaRehabilitation\BAER\BKFB\BAERFireDocs\WhiteDrawParkerPeak2012

The table below lists only those critical values identified as warranting BAER stabilization:

Value At Risk	Probability of Damage/Loss	Magnitude of Consequences	Risk
<b>Human Life and Safety:</b>			
Red Canyon Road users/residents	Likely	Major	Very High
Craven Canyon users	Very Likely	Major	Very High
<b>Property:</b>			
Red Canyon Road/crossings	Possible	Moderate	Intermediate
Craven Canyon Road/crossings	Very Likely	Major	Very High
Randy Stevens property, corrals, etc. (Red Canyon)	Likely	Moderate	High
<b>Natural Resources:</b>			
<i>Water Quality</i>			
Cheyenne River and Angostura Reservoir	Possible	Moderate	Intermediate
<b>Natural Resources:</b>			
<i>Soil Productivity and Hydrologic Function</i>			
Bowl/slope west of "S curve", Craven Canyon	Likely	Major	Very High
Bowl/slope west of Ghost Dance Site, Craven Canyon	Likely	Major	Very High
Craven Canyon wall along Robinson Flats	Likely	Major	Very High
Numerous areas west side of Craven Canyon	Likely	Major	Very High
<b>Natural Resources:</b>			
<i>Plant Communities</i>			
Noxious Weeds	Likely	Moderate	High
<b>Cultural and Heritage Resources:</b>			
4 critical sites within Craven and Red Canyon	Very Likely	Major	Very High

G. Skills Represented on Burned-Area Survey Team:

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

On 07/06/2012, the Hell Canyon District Ranger determined there was a need for a BAER Assessment. The BAER Team Leader was appointed on 7/6/12 and a Formal BAER Team was assembled on 7/7/12. 100% containment was announced that same day.

Team Leader: Jessica Gould, Hydrologist

Email: jigould@fs.fed.us Phone: 605-716-2039

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:**

*Soils/Hill Slope Treatments*

- Identified moderate/high soil burn severity areas on the west slopes of Craven Canyon will be treated with aerially-applied agricultural straw (noxious weed free), with the exception of certain areas located within close proximity of archeological areas. These areas will be treated by hand to protect petroglyph panels from damage. Aerial application is recommended for these slopes because slope steepness, instability caused by loose, rocky soils; and snag hazards pose risk of injury or death to implementation team members. This treatment is aimed at establishing immediate effective ground cover to slow and disperse hill slope runoff; prevent rill and gully erosion; prevent downslope transport of water, ash, sediment, and debris; reduce flood peaks and damage to downstream values; and to reduce the risk of human injuries or death associated with flash flooding.

*Archeological*

- Identified archeological sites will be treated with hand application of agricultural straw mulch, erosion fiber rolls and/or mats to slow and disperse runoff and prevent rill and gully erosion of sensitive cultural sites.
- Native sandstone rock will be used to stabilize a tribal access trail to a large petroglyph panel that crosses the associated base slope/apron containing important associated artifacts. Grade checks will prevent gully erosion and loss of site artifacts.
- Native sandstone rock and erosion fiber rolls will also be used to create a permanent deflector to direct hill slope runoff away from rock shelter aprons and artifacts contained within.
- A 1970's era impoundment dam will be removed using a backhoe or excavator. Fill will be placed back into the excavated depression that has already filled to approximately 90% of its storage capacity following the 7/5/12 rain event. This caused backwater up to the petroglyph panel at the site. Due to archeological constraints and site accessibility the pond cannot be cleaned out following storm events to maintain its storage capacity. The dam/pond features cannot stay in place because they would continue to contribute to ongoing damage to the archeological resources at the site.

*Roads*

- Flash flood warning signs: Small warning sign identifying flood potential and potential impassable conditions are currently located at the north and south entrance points of Red Canyon Road.

However, based on the post-fire flooding that has already occurred and the change in flood characteristics compared to un-burned conditions, the BAER team recommends additional post-fire flash flood warnings signs be placed along the Red Canyon Road. These warning signs would warn road users and residents of the specific hazard related to post-fire flooding and would be placed at the north and south access points to the Red Canyon road, as well as at the entrance points with secondary access roads.

- Culvert removal, cleaning, drainage dip construction, riprap placement, wattle placement and road reconditioning in Craven Canyon is proposed to remove existing flood deposits; lessen the potential for adding culverts to debris flows; add and control road drainage; armor and protect remaining culverts; stabilize soils to reduce sediment transport during flood events; and ultimately leading to a reduced threat to human life, safety, and property loss.
- Installation of a closure gate on a non-system road above Craven Canyon is recommended to keep un-authorized public traffic out of moderate to high soil burn severity areas on steep slopes that contribute runoff to sensitive archeological sites. This road accesses the west side of Craven Canyon and has had heavy un-authorized ATV traffic and use.

#### *Noxious Weeds Detection and Treatment*

Detection surveys and treatment of new infestations that are accessible within the fire boundary is recommended. Detection and treatment of weeds in the burned area may occur multiple times within the next year. Treatment will be accomplished using ground application by spraying and may be completed by Forest employees or through another option such as through contracting.

#### **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.

Monitoring for treatment effectiveness will be performed after major storm events for the next three years. A major storm event is considered 1 inch of rain or greater. Depending on annual variability of weather patterns, it is estimate that 5-7 visits per year following storms will be necessary to monitor treatments.

#### *Roads and Flood Warning Signs*

Monitoring is needed to check condition of warning signs and replace as necessary. Monitoring is needed after each rain event to ensure stability of soil, road drainage crossings and effectiveness of treatments applied to remaining culverts in Craven Canyon. Monitoring on nonsystem road west of Craven canyon will determine closure effectiveness, soil stability and vegetation return. At a minimum monitoring will be necessary after each rain/storm event from May through the end of August. Five monitoring site visits per year for three years minimum.

#### *Soil Stabilization*

Effective ground cover created by aerial and hand application of agricultural straw mulch will take place to ensure desired cover levels were achieved to prevent overland flow and rill/gully erosion. Slope stability will be assessed. Treatments for archeological resource protection will be jointly monitored with cultural resource specialists to ensure that runoff and erosion are not impacting the four sites. Adjustments or additions to runoff and erosion control measures will be done as necessary.

#### *Archeology Resources*

Monitoring will be performed to determine the effectiveness of treatments (jointly with watershed specialists) and to determine if other measures are needed to ensure protection of the sites. Damage assessments to sites will be performed if necessary.

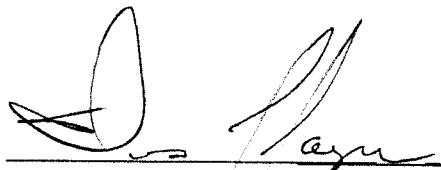
## Noxious Weeds

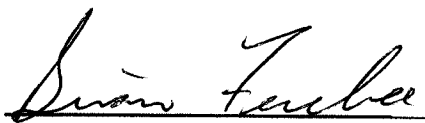
Monitoring of known population will be performed in addition to the detection surveys for additional noxious weed species or areas. Treatment effectiveness monitoring will also be done to determine any retreatment needs to occur within the twelve month period.

### Part VI – Emergency Stabilization Treatments and Source of Funds

Line Items	NFS Lands					Other Lands				All
	Units	Unit Cost	# of units	BAER \$	Other \$	# of units	Fed \$	# of units	Non-Fed \$	Total \$
A. Land Treatments										
Noxious Weed Treatment	Acres	\$ 202	35	\$7,070	\$0		\$0		\$0	\$7,070
Agric. Straw Mulch (Aerial)	Acres	\$ 1,000	250	\$250,000			\$0		\$0	\$250,000
Agric. Straw Mulch (Hand)	Acres	\$ 1,000	1	\$1,000			\$0		\$0	\$1,000
Erosion fiber rolls/mat install	Linear Ft	\$ 4	120	\$480			\$0		\$0	\$480
Rock deflectors/grade control install	Lump	\$ 1,000	1	\$1,000			\$0		\$0	\$1,000
Dam removal	Lump	\$ 5,000	1	\$5,000			\$0		\$0	\$5,000
Subtotal Land Treatments				\$264,550	\$0		\$0		\$0	\$264,550
B. Channel Treatments				\$0	\$0		\$0		\$0	\$0
** NONE **				\$0	\$0		\$0		\$0	\$0
Subtotal Channel Treat.				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
Flood Warning Signs	Each	\$ 210	8	\$1,680	\$0		\$0		\$0	\$1,680
Mobilization	Lump Sum	\$ 3,400	1	\$3,400	\$0		\$0		\$0	\$3,400
Culvert Removal/disposal	Each	\$ 290	10	\$2,900	\$0		\$0		\$0	\$2,900
Culvert Cleaning	Each	\$ 290	2	\$580	0		0		0	580
Drainage Dip Construction	Each	\$ 207	30	\$6,210	\$0		\$0		\$0	\$6,210
Straw wattles	Linear Ft	\$ 3.5	400	\$1,400	\$0		\$0		\$0	\$1,400
Road Reconditioning	Mile	\$ 1,600	3	\$4,800	0		\$0		\$0	\$4,800
Class/II RipRap/Rock	CY	\$ 80	25	\$2,000	\$0		\$0		\$0	\$2,000
Road Closure Device	Each	\$ 1,470	1	\$1,470	\$0		\$0		\$0	\$1,470
Seed	Acre	\$ 633	3	\$1,899	\$0		\$0		\$0	\$1,899
Contract Administration	days	\$ 400	5	\$2,000			\$0		\$0	\$2,000
Subtotal Road & Trails				\$28,339	\$0		\$0		\$0	\$28,339
D. Structures										
** NONE **				\$0	\$0		\$0		\$0	\$0
Subtotal Structures				\$0	\$0		\$0		\$0	\$0
E. BAER Evaluation										
BAER Team Asses.	each	\$ 27,000	1	\$27,000	\$0		\$0		\$0	\$27,000
Subtotal Evaluation				\$27,000	\$0		\$0		\$0	\$27,000
F. Monitoring										
Noxious Weed Detection Surveys	Acres	\$ 10	200	\$2,000	\$0		\$0		\$0	\$2,000
Roads/Signs	day	\$ 400	21	\$8,400	\$0		\$0		\$0	\$8,400
Soil/Hillslope Treatments	day	\$ 400	21	\$8,400	\$0		\$0		\$0	\$8,400
Archeology Site/Treatments	day	\$ 515	21	\$10,815	\$0		\$0		\$0	\$10,815
Subtotal Monitoring				\$29,615	\$0		\$0		\$0	\$29,615
G. Totals				\$349,504	\$0		\$0		\$0	\$347,504
Previously approved										
Total for this request				\$349,504						

PART VII - APPROVALS

1.  7/13/12  
Deputy Forest Supervisor (signature) Date

2.  7/16/12  
Regional Forester (signature) Date