BURNED-AREA REPORT
(Reference FSH 2509.13)

PART I - TYPE OF REQUEST

A. Type of Report

[**X**] 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)
[**X**] 2. Interim Report (***Interim report #2 Items are in italicized and Bold Font***)
[**X**] 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: **Carpenter 1**

B. Fire Number: **NV-HTF-500068**

C. State: **Nevada**

D. County: **Clark & Nye**

E. Region: **04 - Intermountain**

F. Forest: **17 – Humboldt-Toiyabe**

G. District: **Spring Mountains NRA**

H. Fire Incident Job Code: **P4HM7D**

I. Date Fire Started: **July 1, 2013**

J. Date Fire Contained: **August 18, 2013**

K. Suppression Cost: **$19,861,000** (estimated from ICS209, July 26, 2013)

L. Fire Suppression Damages Repaired with Suppression Funds (NFS lands only)
1. Fireline waterbarred (miles): TBD
2. Fireline seeded (miles): TBD
3. Other (identify):

M. Watershed Number:

Subwatershed (Hydrologic Unit)		
6th Code Number	**6th Code Name**	**Percent of Watershed Burned**
150100150208	Corkscrew Canyon-Las Vegas Wash*	0.0
150100150301	Kyle Canyon	14.0
150100150302	Harris Springs Canyon	33.6
160600150401	Wild Rose Spring*	0.5
160600150504	Trout Canyon	21.8
160600150507	Carpenter Canyon*	0.6
160600150601	Upper Lovell Canyon	23.1

*Subwatersheds having less than 1% burned area are listed but not analyzed in detail.

N. Total Acres Burned:
NFS (26,939) Other Federal (BLM - 853) State (x,xxx) Private (89)

O. Vegetation Types: Elevations throughout the burn area range from 5,200 to 11,400 ft. Vegetation types include mixed desert scrub in lower elevations, mid-elevation pinyon-juniper woodlands and mixed conifer forests, and high elevation subalpine forests and meadows. Primary conifer species include ponderosa pine, white fir, limber pine, and bristlecone pine. Aspen also occurs throughout avalanche chutes in the mixed conifer zone. Shrub species include blackbrush, sagebrush, point-leaf manzanita, silk tassel, desert ceanothus, and a variety of grasses. Riparian vegetation exists primarily around springs.

P. Dominant Soils: Mountmummy, Buckspring, Seralin, and Ladyofsnow

Q. Geologic Types: limestone, dolostone, sandstone, consolidated and unconsolidated alluvium

R. Miles of Stream Channels by Order or Class:
Perennial: 1.2 Intermittent: 152.5

S. Transportation System (miles)
Roads: 21.0 Trails: 10.9

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

Class	Acres	Percent
Very Low	4,676	17
Low	3,754	13
Moderate	18,235	66
High	1,128	4

B. Water-Repellent Soil (acres): 9,861

C. Soil Erosion Hazard Rating (acres):
800 (low) 3,750 (moderate) 23,243 (high)

D. Erosion Potential: 11 – 21 tons/acre

E. Sediment Potential: 98,980 cubic yards/square mile (range: 22,952 to 184,001)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period (years): 5-7

B. Design Chance of Success (percent): 50

C. Equivalent Design Recurrence Interval (years): 5

D. Design Storm Duration (hours): 1

E. Design Storm Magnitude (inches): 1.24

F. Design Flow (cubic feet / second/ square mile): 43.62

G. Estimated Reduction in Infiltration (percent): 50

H. Adjusted Design Flow (cfs per square mile): 167.95

PART V - SUMMARY OF ANALYSIS

Background: The Carpenter 1 wildland fire was a reported lightning-caused ignition on July 1, 2013 in steep terrain with no direct access. The fire was estimated at 1,800 acres on the afternoon of July 2 and increased to over 10,000 acres between July 4 and July 6. On July 28 the fire was 95% contained and had burned 27,881 acres in the Kyle, Harris Springs, Lovell, and Trout Canyons. The majority of the burned area (26,939 acres) is on the Springs Mountains National Recreation Area of the Humboldt-Toiyabe N.F. (SMNRA), and small amount on the Red Rock Canyon National Conservation Area, Southern Nevada District-BLM (853 acres), and about 89 acres of private land.

A. Describe Critical Values/Resources and Threats (narrative):
(formatted to incorporate "Critical Values" from ID 2520-2013-1, effective June 6, 2013)

A comprehensive list of potential values at risk within or directly downstream of the Carpenter 1 burned area was compiled using the WFDSS (Wildland Fire Decision Support System) and through consultation with local SMNRA management and resource specialists. Following guidance in Interim Directive 2520-2013-1, the BAER assessment team evaluated potential values through field assessment and subsequent analysis to identify the critical values (FSM 2523.1 – Exhibit 01) that may be treated under the BAER program . The critical values were then assigned a level of risk defined by the probability of damage or loss coupled with the magnitude of consequences using the risk assessment matrix (FSM 2523.1 – Exhibit 02). The critical values with unacceptable risks signify a burned-area emergency exists. The characterization of the probability of damage or loss is based on the watershed response analysis completed by the BAER Assessment Team and, in part, using NWS (National Weather Service) data interpreted from a post-fire flood event that occurred during the BAER assessment in Harris Canyon that resulted in impacts on NFS lands and downstream in the city of Las Vegas. Figures 1and 2 show rilling on hillslopes that occurred during a rain event on the burned area that had moderate burn severity. Critical values having a "Very High" or "High" risk rating include a treatment identification number(s) that corresponds to recommended emergency stabilization actions known to mitigate potential threats or minimize expected damage, which are described in Section H. No treatments were identified for values when the analysis resulted in an "Intermediate" or lower risk rating.

Figure 1.


Figure 2.

1. Human Life and Safety (HLS)
   a. **Very High** risk to NRA visitors at the Kyle Canyon Picnic Area, Fletcher View Campground, and Cathedral Rock Picnic Area and to Forest Service Employees stationed at the Kyle Canyon Administrative Site due to flooding and debris flows likely to originate from up-canyon source areas that burned at high and moderate severity. (Treatments: T01, T03, T04, T06, T09)
   b. **Very High** risk to travelers along routes (roads and trails) within and downslope from hillslopes burned at a moderate to high severity due to an increased threat of falling trees/snags, rocks, and other debris. (Treatments: T06, T08)
   c. Very low risk to NRA visitors from abandoned telephone line in the Harris Springs Canyon. Exact location and extent has not been quantified. General location is the on the Harris Mountain Road (45104), roughly 1/3 mile beyond the intersection with the Harris Springs Road (45532). No treatments are recommended .

2. Property (P)
   a. **Very High** risk to recreation and administrative infrastructure at the Kyle Canyon Picnic Area, Fletcher View Campground, Cathedral Rock Picnic Area, and the Kyle Canyon Administrative Site from hillslope erosion and sediment, flooding, and debris flows. Damage directly attributed to burned hillslopes immediately upslope of these facilities is likely, as well as indirectly from flooding and debris flows accumulating and diverting from the Kyle wash originating from up-canyon source areas that burned at high and moderate severity. (Treatments: T01, T04, T07)
   b. **Very High** risk to road and bridge infrastructure with substantial damage expected because flooding, debris flows, and erosion is imminent. The highest risk is associated with 16 miles of roads and 2 stream crossings. Travel routes having the greatest concern are: FR094 (Cathedral Rock); FR066 (Rainbow Canyon; FR331 Wash Road; FR532 Harris Springs; FR104 Harris Mountain; FR535 Prospect Springs; FR537 Lovell Canyon, and FR550 Trout Canyon. (Treatments: T01, T03, T04, T08, T09) Figures 3 and 4 show runoff from rain event during the BAER assessment that had mostly moderate burn severity.

Figure 3. High flow mark from storm event

Figure 4. Section of Harris Mtn Road after storm that wiil be adminstratively closed.

c. **Very High** risk to trail infrastructure due to an increased threat of damage expected because flooding, debris flows, and erosion is imminent. The burned area contains about 11 miles of trails. (Treatments: T01, T05, T08, T10)
d. **Very High** risk to the Rainbow Canyon Snotel station with damage expected because flooding, debris flows, erosion, and from hazard trees. No specific treatment was specified for this value. The hillslope treatment proposing aerial application of straw mulch (Treatment T01) will reduce the threat of erosion and flooding impacts. Additional evaluation is needed to determine the extent of potential damage from hazard trees.
e. **High risk** of damage to the wellhead for the SMNRA Visitor Center from flooding and debris flow. (Treatment: T01, T04, T07)
f. Intermediate, low, and very low risks exist for a number of travel routes (roads and trails) where their locations do not increase the susceptibility to erosion or damage from flooding. These routes are either not directly impacted from upslope soil burn severity or are in upland locations not likely threatened from flooding (Attachment 1). These routes will be evaluated using the “Storm Patrol” treatment. (Treatments: T09, T10)

3. Natural Resources (NR)
   a. **Very High** risk to native plant diversity and rare plants due to the threat from the spread of noxious and invasive plant species. Known noxious weed populations (Russian knapweed, salt cedar, and puncturevine) exist within and adjacent to the burned area. Most populations to date occur along existing road systems. There are also 36 invasive weed species documented throughout and adjacent to the burn area. (Treatments: T03)
   b. **High** and **Moderate** risk to soil productivity from increased soil erosion within areas that burned at moderate to high severity. There is a high probability for mass erosion, hillslope sedimentation, and mud flows. The fire is expected to impact soil quality by eroding exposed soil and nutrient-rich ash off-site, as well as by increasing the potential for spread of noxious weeds and invasive plant species. (Treatments: T01, T02, T03, T04, T05, T06)
   c. **High** and **Moderate** risk to hydrologic function from mass erosion, hillslope sedimentation, flooding and debris flows that scour channels below the root structure of the surviving plant communities. About 70% of the fire burned at moderate to high severity, the threat to hydrologic function exists in all four subwatersheds affected by the fire (Trout Canyon, Upper Lovell Canyon, Harris Springs Canyon, and Kyle Canyon). (Treatments: T01, T03, T04, T05, T06)
   d. **Very High** risk to Mount Charleston blue butterfly habitat and populations. The butterfly is proposed for endangered status under the Endangered Species Act of 1973. The final

rule will be published with a decision in September 2013. The fire burned through habitat of two populations. One population is considered the last stronghold and core population of the subspecies. This population's viability is essential to recovery of the subspecies and it would likely be a source population if captive propagation is considered. Areas of habitat with large concentrations of the butterfly remained unburned, however it will be difficult to assess any impacts to the butterfly from the fire without further monitoring of the population and habitat. Habitat may improve in some areas but it will be essential to maintain existing habitat and prevent any impacts from recreational use, trail integrity, and reduce any risks associated with introductions of invasive or noxious weeds in the habitat. (Treatments: T05, T10)

e. **High Risk** to wilderness characteristics in the Trout Canyon and Harris Springs Canyon drainages due to increased threats from the spread of noxious and invasive plant species, erosion, decreased soil productivity and hydrologic function. Proposed Treatments T02, T05, and T08 are expected to moderate the risk.
f. Low risk to wilderness characteristics in the Upper Lovell Canyon and Kyle Canyon drainages. From a wilderness context the relatively natural, undeveloped, and untrammeled conditions in Upper Lovell Canyon have not been impacted. There is only a small amount of wilderness within the burned area portion of Kyle Canyon. Treatments being proposed for other natural resource values will wilderness characteristics.

4. Cultural and Heritage Resources (CHR)
   a. **Very High** risk to eligible cultural and historic sites from looting, due to the burned area exposing previously obscured features and artifacts. There are 42 previously recorded eligible or unevaluated cultural sites within the burned area and an unknown number of undocumented sites. Site densities are high in previously surveyed areas near springs and several similar but unsurveyed areas exist with the burn. Subsequent to recent wildland fires, FS archeologists observed and photographed looters on cultural resources sites during BAER assessments. Unauthorized artifact collection (i.e. looting) is a pervasive, persistent, and well-documented activity, especially in the SMNRA and adjacent areas. Vandalism and off-road vehicle traffic are associated risks. Treatments proposed for administrative closures (T08) or that minimize erosion (T01, T03, T05) will benefit the cultural and heritage resources.
   b. **Very High** risk to eligible cultural and historic sites due to an increased threat from erosion, falling trees, or falling debris causing irreversible damage. There are 42 eligible historic/cultural sites within the burned area, of which, only 23 have been visited as part of the BAER assessment to date. (Treatments: None are currently proposed on NFS lands. However, further assessment may identify subsequent treatments. Point protection is not recommended for any of the previously identified sites.)
   c. **Very High** risk to the Kyle Canyon Ranger Station due to increased threat from flooding and erosion associated with potential debris flows in Kyle Canyon. The threat is exacerbated by the presence of a CC-era culvert in the Kyle drainage at the entrance to this administrative site. Removal of the historic culvert would mitigate the threat. Figure 5 is a picture of an undersized historic culvert that is recommended for removal.

Figure 5.

d. Very Low risk to Keyhole (Slot) Canyon. No treatments are recommended.

B. Emergency Treatment Objectives:

- Mitigate, to the extent possible, threats to personal injury or human life of forest visitors and Forest Service employees at administrative and recreation facilities or while traveling select roads and trails on NFS lands within or downstream of the burned area.
- Protect or minimize damage to high-value NFS investments within the burned area. Minimize damage to key NFS travel routes within and downstream the fire boundary.
- Treat invasive plants that are a threat to naturalized ecosystems by minimizing the expansion of existing populations in the burned area and control of expected invasion of noxious weeds within and adjacent to the area where soils/vegetation was disturbed as a result of fire suppression activities.
- Assist cooperators with the interpretation of the assessment findings to identify potential post-fire impacts to communities and residences, domestic water supplies, public utilities (including power transmission facilities, cellular towers, roads, and other infrastructure).

C. Probability of Completing Treatment Prior to Damaging Storm or Event:
Land - 75% Channel - na Roads/Trails - 60% Protection/Safety - 80%

D. Probability of Treatment Success

Treatment	Years after Treatment		
	1	3	5
Land	90	70	--
Channel	--	--	--
Roads/Trails	70	75	80
Dependent on Regional approval for treatments less than $500,000.			
Protection/Safety	80	70	60
Initially, visitors will heed the warning signs. Complacency is expected after the initial year unless there is a damaging event.			

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

Refer Values at Risk Analysis for the Cost of No-Action and Cost of Selected Alternative (Including Loss).

While the benefit:cost is 2.5 there are several other factors to consider. The VAR analysis focuses on the very high and high risks to NFS values within the Kyle Canyon watershed (See Attachment VAR). There are 4 NFS facilities potentially impacted within the Kyle Canyon map unit having extremely high monetary investment and cultural/historic value. Some of the treatment costs will be distributed across the entire burned area – the estimated cost of treatments within Kyle Canyon is roughly 94% of the overall cost for recommended treatments. Conversely, total loss of any or all of the facilities would only occur with an epic climatic event that no treatment would effectively mitigate. The assumption is localized storm events would result in some level of damage to the high value properties but not a total loss. With respect to implementability and effectiveness, treatments T01 and T04 have the greatest probability for reducing risk.

The accumulated benefits are not considered in the cost analysis. First, the hillslope treatments (T01) is estimated to decrease runoff and reduce sediment by roughly 75%. This will increase the chance of success for the culvert/bridge treatment (T04) at 2, 5, and 10 year (and possibly higher) design storm return intervals. The hillslope treatment will also increase the likelihood of success for the road treatments recommended in Rainbow Canyon; which will ultimately benefit downstream values on and off NFS lands.

F. Cost of Selected Alternative (Including Loss): See above and Attached VAR analysis.

G. Skills Represented on Burned-Area Survey Team:

[**X**] Hydrology	[**X**] Soils	[ ] Geology	[ ] Range	[**X**] Recreation
[ ] Forestry	[**X**] Wildlife	[ ] Fire Mgmt.	[**X**] Engineering	[**X**] Wilderness
[ ] Contracting	[**X**] Ecology	[ ] Botany	[**X**] Archaeology	[ ]
[ ] Fisheries	[ ] Research	[**X**] GIS	[**X**] Public Information Officer	

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Team Members:

Brad Rust – Soils	Tim Tolley – Hydrology	Suzanne Shelp – Recreation
Will Reed – Archeology	Brian Anderson – Hydrology	Mike Rowan – Wilderness
Jim Schmidt – GIS	Rich Jaros – Soils	Jay Nichols – Public Information
Kevin Duchow – Engineering	Marisa Anderson – Ecology	Demetrius Purdie-Williams – GIS
Mary Moore – Hydrology	Corey Kallstrom – Terrestrial Biology (USFWS)	

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:

T01 - Aerial Mulch

General Description: Aerially apply agricultural straw mulch to the ground surface to achieve a continuous cover of uniform thickness in order to replace ground cover consumed by the fire.

Location (Suitable Sites)**:** The proposed treatment units are within the Kyle Canyon watershed (see BAER Treatment Map). Treatment units were identified using the following criteria:

1. Within areas burned at moderate and/or high severity.
2. On slopes up to 55 percent.
3. In areas that do not receive excessively high winds.

Although only a small amount (13%) of the entire Kyle Canyon subwatershed is within the fire perimeter, each of the smaller catchments proposed for aerial mulch was entirely burned at varying severity. The acres proposed for treatment within each catchment ranges from 22 to 46 percent. The expected reduction in post-fire runoff (cfs) for these catchments is 75% using a 5-year, 1-hour design storm.

Design/Construction Specifications:

1. Straw application rate: achieve a continuous, uniform cover of straw mulch over 85% of treatment area at a depth of less than 2.0 inches (1- 2 tons per acre). This is about 0.25 inches or 3 straw shafts deep. The ground cover rate for the treatment is to be 70-80% of treatable areas. Higher rates will be required on the high burn severity areas and steeper slopes. Application must emphasize proper dispersal of straw throughout the identified polygon to minimize clumping and achieve treatment purpose.
2. Straw must conform to Nevada State Department of Agriculture (NSDA), Certified Noxious Weed Free Standards. The H-T National Forest will allow forage certified by any state as long as it meets the Regional Forage Certification Standards followed in Idaho, Colorado, Montana, Utah, Wyoming, Nevada, or California. Straw from local Nevada farms is preferred. All straw provided must have been planted and harvested during the 2013 growing season. Straw should be processed to an average of 4” to approximately 12” stubble length and shall not be double-baled. Suitable straw includes barley, rice, and wheat grasses. Other options may be recommended, but would require FS approval before purchase and application. Contractors must provide a certificate of inspection (i.e. certification form, tags, colored twine, etc.).

Purpose of Treatment: Straw mulch provides immediate ground cover and protects the soil from erosion and loss of nutrients. Mulch can reduce downstream peak flows by absorbing rainfall and allows pre-wetting of water repellent soil. Straw helps to secure seeds that are stored in the soil, or applied as an emergency treatment. Straw mulch on burned areas helps maintain a favorable moisture and temperature regime for seed germination and growth. The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the accumulated critical values of:

1. Human life and safety at 3 recreation facilities and the Kyle Canyon R.S.
2. Human life and safety to forest visitors and employees along travel routes,
3. NFS facilities (historic properties) and recreation infrastructure within Kyle Canyon,
4. NFS roads, trails, and bridges,
5. Soil productivity,
6. Hydrologic function,
7. Native plant diversity and rare plants,
8. Cultural and heritage assets, and
9. Wilderness characteristics.

Treatment Effectiveness Monitoring: Visually inspect randomly selected mulch treatment units for proper application rate and uniform thickness during/immediately after treatment. In

each unit, measure percent ground cover using a 100ft-transect or the random 10 point method once after treatment.

T02 – EDRR (Early Detection Rapid Response)
General Description: Monitor known weed populations and all known disturbed areas from suppression efforts. If weed spread occurs, treat as necessary. Treat and monitor noxious weed infestations on NFS lands associated with suppression activities and BAER treatments. Monitoring will take place where suppression activities were implemented and at BAER treatment sites (i.e., aerial mulch sites).
Location (Suitable Sites)**:** Roads and trails within and immediately adjacent leading into the Carpenter 1 Fire used for travel having existing weed populations. Some trails are open for ATVs, mountain bikes, and/or pedestrian/equestrian. All handline and dozerline within Carpenter 1 Fire, and also helibases, helispots, drop points, heliwater spots, spike camps, dip sites, medevac sites, camps, staging areas, and ICPs. These areas are not contiguous; they are disjunct and isolated. The wildfire covered the east and west sides of the mountain range, which will require long drives and separate logistics to conduct the weed control activities. Monitoring of the BAER treatment areas (aerial mulching) will be completed by using stratified sampling and initial efforts will focus on staging areas and sampling within treatment areas. Mulching sites near existing weed infestation sites will receive priority for monitoring. See weed treatment table below for location and acre breakdown.
Design/Construction Specifications:

1. Monitor disturbed areas during growing seasons for spread. Conduct two surveys of the area within the first year following the fire by small ground crews, driving and hiking. Two separate surveys, late spring and early to mid-summer to detect the variety of weed species that may emerge in this ecosystem based on weed biology.
2. If spread of noxious and invasive weeds is identified, then plan and design treatment.
3. Select mechanical or chemical treatment dependent upon weed species and location. With chemical treatments, determine appropriate herbicide, application rate, and application timing based on specific weed being treated and access to the location of the infestation.
4. Consideration for sensitive habitat when selecting appropriate herbicide.

Purpose of Treatment: Reduce the potential for establishment of new noxious weed infestations in highly susceptible burned areas, prevent spread of existing infestations, and prevent increase in weed density in existing infestations. Reduce the potential for establishment of new noxious weed infestations in native or naturalized communities
Treatment Effectiveness Monitoring: Follow-up monitoring in subsequent years if new or expanded weed populations are discovered during the 1st year BAER treatments.

<u>Channel Treatments</u>: None recommended.

<u>Road and Trail Treatments</u>:

T03a – Road Drainage Treatments
General Description: The road drainage treatment should not be limited to only those segments crossing through high burn severity areas. These roads are located downslope of mostly moderate burn severity (and some high). The July 12 rain event showed moderate burn severity areas can cause significant loss of roads without proper drainage features to accommodate the additional runoff. The minimal treatments required to remedy issues are as follows:

1. Construct Rolling Drain Dip – Roadway dips modify the road drainage by altering the template by allowing surface flows to run off the road to prevent any excessive erosion of the surface. Work includes placing rip-rap armoring required where runoff could possibly cause erosion to the road surface and fill slope.
2. Construct Leadoff Ditch – Roadway runoff ditches convey stormwater runoff away from the road, helping to reduce excessive erosion of the surface.
3. Construct Roadside Ditch – Roadside ditches collect and convey stormwater runoff to a point down-gradient to an existing or newly constructed drain dip or runoff ditch to prevent excessive erosion of the surface.
4. Remove/Replace Culvert – Remove existing culvert and replace with new to better convey expected increased flows or remedy deficient culverts that are too damaged to repair. Work includes placing new surfacing necessary to provide proper cover over the pipe.
5. Recondition Existing Drainage Feature – Clean existing drainage dip, runoff ditch, roadside ditch, or channel at culvert inlet/outlet to better convey stormwater runoff off the road or around road to prevent excessive erosion of the surface. Work includes removing silt and debris that impede the flow or deflect it out of the drainage feature onto the road. Work also includes armoring of culvert inlet/outlet required where runoff could possibly cause erosion to the road surface and fill slope.
6. Over-side Drains – Where steep fill slopes exist, over side drains help in preventing erosion of the fill slope by directing the flow toward a flatter grade or over surfaces with low erosion potential.

Location (Suitable Sites)**:**

Harris Mountain Road (Forest Road 45104)

Construct Rolling Drain Dip:	15 each
Construct Leadoff Ditch:	15 each
Recondition Roadside Ditch:	5.5 linear miles
Remove/Replace Culvert:	600 linear feet
Recondition Existing Drainage Feature:	15 each
Remove roadside Berm:	5 linear miles

Harris Spring Road (Forest Road 45532)

Recondition Existing Drainage Feature:	12 each
Recondition (low water crossing):	4 each

Prospector Springs Road (Forest Road 45535)

Recondition Existing Drainage Feature:	2 each

Lovell Road (Forest Road 45537)

Construct Over side Drain (near bridge):	1 each

Other Roads in the Harris Drainage

Recondition Existing Drainage Feature:	5 each
Construct Leadoff Ditch:	15 each
Construct Waterbars:	29 each

Design/Construction Specifications: FHWA Standard Specifications for Roads and Bridges on Federal Highway Projects (FP-03) with Forest Service supplemental specifications.

Purpose of Treatment: Protect road infrastructure by minimizing erosion of the road surface and reducing excessive sediment delivery into the watersheds. The probability of damage or loss to the road system if no treatments are done is estimated to be 80%, which results in a very probable, likely determination with a high risk. The cost of the loss to the road system is estimated at $50,000, assuming roughly five sections of the road system would need each about $10,000 worth of repairs if no work was done to improve the drainage system. If treatments are done the probability of success of not losing major sections of road is estimated to be 80% which results in a very probable, likely.

Treatment Effectiveness Monitoring: Monitor roads and culverts after storm events for possible obstructions and damage and initiate maintenance.

Interim # 2
The Griffith Peak Road (GPR) was constructed in the 1930's by CCC crews. During construction, crews partially hardened major drainage crossings and installed small culverts. Prior to the Carpenter 1 Fire, all culverts had plugged or eroded out of the road template. Small run-off events overtopped the road in every case.
The Spring Mountains NRA road management plan requires continued use of the Griffith Peak Road for administrative and recreational uses. The road is currently closed by closure order until 2018, or until fire-related risks attenuate to acceptable levels.
Following the Carpenter 1 Fire, the magnitude of runoff events increased dramatically due to runoff from burned slopes above the road. The resulting flows significantly damaged the road and severely gullied several crossings. (See picture below) The expected post-fire runoff events for the next 5 years are a significant threat to the historic road and the target crossings.

Because of the amount of debris expected during future runoff events, replacing old culverts at major crossings is not feasible since any subsurface water conveyance device there will not survive flash-flood events. Doing nothing will place the road itself at significant risk of loss since flood events can easily divert and channel down the bench-cut road template for long distances. Preservation of the road infrastructure itself is best served by constructing armored crossings at each of 5 major drainages.
Construction costs will be minimized by developing required riprap resources on-site. Work will require about 6 weeks of construction for a total cost estimated at $167,000. Additional funding in the amount of $107,300 is required to complete the proposed work described herein. There is approximately $60,000 remaining from the original BAER allocation. The required additional funding is based on calculations as per below:

PROJECT COST DISTRIBUTION	
Cost Center	Lump Sum Costs

Wage Costs	$	93,059
Travel & Per Diem Costs	$	3,125
Other Wage Costs	$	-
Other Travel Per Diem Costs	$	-
FS Owned Vehicles	$	3,750
Non-FS Owned Vehicles	$	-
Other Resources	$	54,300
Contingencies	$	12,853
Total costs	**$**	**167,087**

Funds remaining: $59,849
Funding deficit: $107,238

Under the currently-funded plan of action, the road will require significant effort to reopen after the current closure order is lifted. Completion of the proposed project work described herein would allow the NRA to reopen the road as early as June 2014 during periods of low risk from potential runoff-producing weather events. Restoring access to the road for administrative and recreation purposes will insure frequent monitoring of road conditions as well as facilitate maintenance of the road during the period of time between now and full stabilization of up-slope areas.

SOW

A crew of four force-account equipment operators will deploy an excavator, dozer, and loader to the project site. Drilling and blasting will occur to create the necessary riprap for stabilization of the road at each stream crossing. Blasting sites are located at existing rock exposures created by construction of the original road alignment.
Ford construction will involve use of heavy equipment to excavate excess sediment from each crossing site that was recently deposited from post-fire runoff-events. Riprap will be placed in the excavation, founded on bedrock where possible, to form a stable structure upon which the road template can be reconstructed. Construction techniques will create road profiles and flow-line conditions at each ford that will prevent diversion of runoff flows to the adjacent road alignments as well as protect road base material placed on top of the riprap structure from loss due to erosion.
Future work on the road could involve maintenance after runoff events. Additionally, installation of culverts at each site once the slopes above the road naturally stabilize in 5-10 years may be the final best-practice disposition for management of the road at each crossing.

T03b – Road Drainage Treatments: Rainbow Canyon FR 45066
General Description: The minimal treatments required to remedy issues are as follows:

1. Construct Rolling Drain Dip – Roadway dips modify the road drainage by altering the template by allowing surface flows to run off the road to prevent any excessive erosion of the surface. Work includes placing rip-rap armoring required where runoff could possibly cause erosion to the road surface and fill slope.
2. Recondition Existing Drainage Feature – Clean existing drainage dip, runoff ditch, roadside ditch, or channel at culvert inlet/outlet to better convey stormwater runoff off the road or around road to prevent excessive erosion of the surface. Work includes removing silt and debris that impede the flow or deflect it out of the drainage feature onto the road. Work also includes armoring of culvert inlet/outlet required where runoff could possibly cause erosion to the road surface and fill slope.

3. Road Template Reshaping – Road surfaces that channel water down the roadway need to be reshaped to shed the increased flows quickly before additional road surface erosion occurs. This will be accomplished by a combination of insloping and removal of berm where water will drain off the road surface.

Location (Suitable Sites)**:** Rainbow Canyon Recreation Tract (Forest Road 45066).

Construct Rolling Drain Dip:	18 Each
Road Template Reshaping:	0.25 miles

Design/Construction Specifications: FHWA *Standard Specifications for Roads and Bridges on Federal Highway Projects* (FP-03) with Forest Service supplemental specifications.
Purpose of Treatment: The probability of damage or loss to the road system if no treatments are done is estimated to be 80%, which results in a very probable, likely. The cost of the loss to the road system is estimated at $50,000, assuming roughly five sections of the road system would need each about $10,000 worth of repairs if no work was done to improve the drainage system. If treatments are done the probability of success of not losing major sections of road is estimated to be 80% which results in a very probable, likely.
Treatment Effectiveness Monitoring: Monitor roads and culverts after storm events for possible obstructions and damage and initiate maintenance.

T04 – Culvert / Bridge Replacement
General Description: Several pipe crossings were identified as being undersized due to the expected increase in flows from the burned watersheds above the crossings. These culverts will be removed and replaced with larger structures in order to pass the increased flows that are anticipated from future storm events. The minimal structures to decrease the likelihood of damage are timbered abutments with wood-lam decking and guard rails – estimated cost somewhere between $130,000 - $150,000 each. Consultation with State SHPO on NHPA and tribes is included in the estimate.
Location (Suitable Sites)**:** FR 45065 - entrance to Fletcher View Campground and primary access to Kyle Canyon Ranger Station.
Design/Construction Specifications: Removal of culverts shall include setting up traffic control, excavating and removing the existing culvert off of Forest Service lands, hauling away excavated material to an approved waste site, and where indicated, laying the road prism back so that it matches the slopes of the stream banks. Replacement of culverts shall be per the design and specifications written for each site. Contract specifications shall conform to Forest Service Supplements and the designated sections in the *FP03-Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects*.
Purpose of Treatment: Reduce the risk of pipe failure and subsequent delivery of the associated sediment and debris to Forest Service infrastructure downstream. Treatment will also decrease the potential flooding of the historic Kyle Canyon Ranger Station and Fletcher View Campground by removing the culvert and fill from the channel, thereby increasing the flow capacity of the channel.
Treatment Effectiveness Monitoring: Replacement of the structures will be designed to accommodate the increase in flow. Check on the structures after a precipitation event and see if there is debris deposited around the structure.

T05 – Trail Drainage Treatments
General Description: Many of the trails in the burned area are at high risk due to the burning of stabilizing brush, roots and logs. Treatments include installing rolling dips, waterbars, and rock waterbars. Treatments are needed to provide sustainability of the trail and to prevent off-site impacts should the trails erode or fail.

Location (Suitable Sites)**:** The trails are located primarily though areas mapped as moderate soil burn severity. With the expected watershed response these routes will have varying levels of damage depending on the localized precipitation. The trail drainage treatment and storm patrols are designed to work in concert to maintain the sustainability of the routes. While not all 11 miles will actually be treated, at some point the entire length of the trails will be traveled to reach the segments needing drainage work. A rapid assessment was completed during the assessment that did not provide a full evaluation of trail conditions. However, this treatment used the following criteria to determine suitable sites. Each trail segment listed for treatment would be:

1. Within or below moderate and high-burn severity areas,
2. Have a sustained grade through burned areas that lacks adequate drainage,
3. Has the potential to deliver sediment to streams,
4. Consists of previous drainage structures that were damaged by the fire, or
5. Has a stream crossing with diversion potential.

The following trails have been affected: South Loop, Griffith Peak, and Griffith Shadow.
Design/Construction Specifications: According to USFS Trails Handbook 2309.18. Installation should be designed to last no more than 3 years. Permanent structures are not part of this treatment. If safety risks (e.g. hazard trees) cannot be mitigated for work crews, work will be delayed until threat is reduced or stabilized.

1. Install drainage feature depending on steepness of trail (18 per mile) in areas of moderate or high severity. Focus on sections of trail that have continuous gradient for a length of greater than 50 feet and are either insloped (cupped) or show evidence of routing water (rills, gullies).
2. Hazards within or along the trail route that restrict efficient and safe access to work sites will be mitigated (rocks, trees).
3. Clean existing water bars.

Purpose of Treatment: This treatment is designed to stabilize trails lacking adequate drainage features for anticipated increases in runoff. The stabilization methods may vary by site but are designed to reduce trail erosion or damage. The BAER Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the accumulated critical values:

1. Trail infrastructure,
2. Mt. Charleston blue butterfly habitat,
3. Soil productivity,
4. Hydrologic function,
5. Wilderness characteristics
6. Travelers.

Treatment Effectiveness Monitoring: The sections of trail improved during this treatment will be inspected after implementation and in 2014 to ensure that drainage features are functioning.

Protection/Safety Treatments:

T06 - Road and Trail Warning Signs
General Description: This treatment will design and install burned area warning signs to caution forest visitors recreating within the burned area. It is consistent with the language provided in the BAER Treatments Catalog. The treatment is a component of the overall travel control devices for the burned area (USDA Forest Service-EM7100-15, 2005). The warning signs will identify the types of hazards to watch for at the recreation site. This treatment will place hazard warning signs and information signs at 3 developed recreation trailheads.
Locations (Suitable Sites)**:**

1. Trail signs will be installed at the following locations: Griffith Peak Trailhead, Griffith Shadow Trailhead, and Cathedral Rock Trailheads providing access into the burn area.

2. Installation of the ”BURNED AREA” warning road signs:
    a. Junction of State Highway 157 and FS Road #45532 (Harris Springs Road)
3. At access points leading into the fire area
    a. Installation of the Object Marker Signs (White) and Closure Marker Signs (Brown):

The location of these signs will be mainly on the roads and trails within the Kyle Canyon and Harris Canyon drainages. Some signs will be installed along other routes when identified while conducting enforcement.

Design/Construction Specifications: The travel management strategy identifies the type of signing necessary. Use may be discouraged at certain times of the year when the risk is higher. This treatment must be combined with the closure order to ensure that it is posted consistent with both the identified hazards as well as the language of the order. The sign will be integral to the enforcement of a legal order identified in the Temporary Trail Closure Treatment and citing the appropriate CFR. Purchase and install signs at each of the identified locations consistent with Forest Recreation Standards at these locations.

Purpose of Treatment: Inform users of the dangers associated with entering/recreating within a burned area as well as inform them of objects and closures to help ensure that users are able to access the correct routes in a safe manner. The probability of motorist accessing routes or hitting objects not marked within the roadway is about 95% or nearly certain will occur. The loss is difficult to estimate since this a safety issue. One could conclude damages to a vehicle would occur but the risk of someone getting injured if their vehicle strikes something or gets stranded on a route unknown to them is increased when involved in a vehicle accident or when loss in this particular environment. If the treatments are implemented the probability of someone damaging their vehicle is greatly reduced if they are able to see the obstacles within the roadway and know what roads they are operating on. This would give an estimated success rate of around 90% since the treatments are highly understood by all common drivers. The BAER Assessment Team considered this treatment to be the minimum necessary to achieve a reduction in risk to the human lives and safety of Forest visitors and Forest Service employees.

Treatment Effectiveness Monitoring: A Forest Service employee will inspect the signs for visibility, damage, or loss and replace as needed.

T07 – Administrative Site Protection

General Description: Install jersey barriers, sandbags, and backfill around structures to minimize risk of damage from flood and debris flows. Barriers are keyed into existing slopes or placed so flows cannot travel around the established barriers. All barriers shall be connected to at least one other barrier and interlocked to prevent movement of barrier. Sand bags are to be placed between the jersey barriers and protected structure to provide for barrier reinforcement and stabilization. Additional sandbags can be used to assist with structure protection.

Locations (Suitable Sites)**:** Areas for treatment as determined by the BAER Team: Fletcher View Campground, Kyle Canyon Ranger Station, Cathedral Rock Picnic Area, Kyle Canyon Picnic Area, Rainbow Canyon Snotel Station, and Visitors Center wellhead.

Design/Construction Specifications: Ensure that all structures installed to protect government property don’t put unprotected structures or private residences at an increased risk. Install all structures according to manufactures specifications. Review the Burned Area Emergency Response Treatments Catalog December 2006 for additional information regarding barriers.

Purpose of Treatment: The purpose of the treatment is for the protection of government property, that would be damaged by floods and debris flows if no action was taken. The Kyle Canyon Administrative Site is historic and requires protection to ensure that potential damage is minimized as much as possible.

Treatment Effectiveness Monitoring: Treatment effectiveness should be monitored after all major storm events and adjustments should be made to structure protection devices as need to maintain the structure protection.

T08 – Administrative Site Protection
General Description: The treatment is to install administrative closure devices, gates and signs, to keep the public out of areas or concern for safety and resource protection.
Locations (Suitable Sites)**:** Install gates to close off access to the lower Harris Canyon area and the Harris Mountain Road. Install "ROAD CLOSED" signs as well as information explaining the reason for the closure.
Design/Construction Specifications: Follow Forest policy for preparing and posting closure orders, installing barricades or gates, and enforcement. Consult with law enforcement and other agencies as necessary to ensure effectiveness of treatment.
Purpose of Treatment: Minimize risks to human life and safety from post-fire hazards by restricting access to area. Treatment will prevent unauthorized travel on the damaged Harris Mountain Road, provide protection to vulnerable cultural and heritage resources, and minimize further impacts to soil productivity from illegal motorized vehicle travel off of designated routes.
Treatment Effectiveness Monitoring: Consult with law enforcement on a surveillance plan to ensure an acceptable level of effectiveness.

T09 – Road Storm Patrol
General Description: The patrols are used to identify road problems such as plugged culverts and washed out roads, and to clear, clean, and/or close roads that are or have received damage. Those conducting storm patrols shall have rapid access to a backhoe and dump truck that can be used when a drainage culvert is plugged or soon to be plugged, to repair any road having severe surface erosion, or to clean debris from roadside drainage ditches. Due to the multiple crossing structures in the Kyle Canyon drainage and the potential for debris to cause damage to those structures, the patrols will also monitor the movement of large woody debris and make a determination of whether or not the material should be removed before it contacts the structures.
Locations (Suitable Sites)**:** Patrols are based on the areas expected to have or that did have localized precipitation events. Secondly, patrols should then focus on those roads that receive the most traffic and are of more value to the transportation system.
Design/Construction Specifications:

1. FS personnel will direct the work.
2. Immediately upon receiving heavy rain and spring snowmelt the FS will send out patrols to identify road hazard conditions. Observations of rocks and sediment causing washouts and plugged culverts are identified and corrected before they worsen or jeopardize motor vehicle users.
3. The road patrol personnel bring heavy equipment necessary to mechanically remove any obstructions from the roads and culvert inlets and catch basins where necessary.
4. All excess material and debris removed from the drainage system shall be placed outside of bank-full channel where it cannot re-enter stream channels.

Purpose of Treatment: Roads within the Carpenter 1 Fire contain drainage structures that cross streams located in watersheds having areas of high to moderate soil burn severity. These flood source areas have a greater potential for increased runoff and debris flows. These increases in flows pose a threat to the existing crossings which may result in plugging culverts or exceeding their maximum flow capacity. If these flows plug drainage structures the result could be unacceptable erosion and debris torrents further down the drainage from the failure of the fill slope of the road. There is an immediate and future threat to travelers along these roads within the burned area due to the increased potential for rolling and falling rock from burned slopes and increased potential for falling trees, flash floods and mudflows. With the loss of stabilizing vegetation, normal storm frequencies and magnitudes can more easily initiate rill and

gully erosion on the slopes and it is likely this runoff will cover the roads or cause washouts. These events make for hazardous access along steep slopes and put the safety of users at risk.
Treatment Effectiveness Monitoring: Engineering and District personnel will survey the roads within the fire perimeter after high-intensity summer monsoons in 2013 and spring 2014 runoff. Survey will inspect road surface condition, ditch erosion, and culverts/inlet basins for capacity to accommodate runoff flows. The purpose of the monitoring is to evaluate the condition of roads and bridges for motorized access and to identify and implement additional work needed to maintain and/or repair damage to road surfaces and flow conveyance structures (culverts, bridges) across roads in order to provide safe access across FS lands.

T10 – Trail Storm Patrol
General Description: The patrols are used to identify hillslope erosion that may be causing damage to the trail and to monitor the effectiveness of the trail drainage and stabilization treatment (T05) to ensure sustainability of trail facility. The objective is to determine if excessive erosion events are occurring from concentrated trail runoff. Areas of concern will be prioritized where accumulated values increase the magnitude of consequences of loss from damage.
Suitable Sites: This treatment is intended for the Griffith Peak and South Loop Trails within critical T&E habitat areas. Focus areas are segments of these trails in the vicinity of habitat identified for the Mount Charleston blue butterfly.
Purpose of Treatment: Conduct monthly monitoring with a recreation specialist and wildlife biologist from August to October 2013 and May to July of 2014 to ensure that trail erosion of critical habitat is prevented in the burned area.
Treatment Effectiveness Monitoring: A Forest Service employee will monitor the critical T&E Habitat.

T11 – Extended Emergency Coordination
General Description: This involves communication and coordination with other federal, state, and local agencies with jurisdiction over lands where life and property are at risk from post-fire conditions. There was a very high level of public involvement and interagency coordination initiated during Carpenter 1 Fire suppression efforts. This interest has continued into the BAER assessment and there will be a need for maintaining a high level of coordination during implementation of emergency stabilization treatment recommendations that are approved for NFS lands. Actions include but are not limited to cooperating with other agencies on hazard notification systems, permitting the siting of rain gages and soil moisture instruments to monitor conditions within the burn in support of National Weather Service forecasts, and exchanging information and coordinating the BAER implementation plan as needed when subsequent recovery plans are developed by other agencies. This initial request is to fund a primary coordinator assigned to the SMNRA to facilitate coordination of the Forest Service BAER activities with the cooperating partners implement EMS (Emergency Management Services) for other jurisdictions. Additional coordination needs may ensue costs which will be requested on an interim 2500-8. During the next 3-5 years it is critical that appropriate agencies maintain due diligence and continue to inform the public of the potential hazards resulting from post-fire watershed response. There is a high likelihood that access for emergency traffic along routes that provide for ingress and egress throughout and downstream of the burn area may become compromised.

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.)

Beyond the implementation monitoring for each treatment, the extent of proposed effectiveness monitoring is incorporated into the storm patrol and administrative closure treatments.

Interim #2

Requested funding for this interim for items (see narrative above):

T01 = $42,500
T03 = $107,238

Total = $149,738

$79,701 still remains available for this BAER. This request is requesting an additional $70,037.

The Aerial mulching contract was awarded for $297,500 a savings of $202,500 that was originally approved in the 2500-8. The Transaction registers appear to show an overage in T-01 on wages and supplies, (exceeding the $100,000 assessment estimate). There are numerous charges on the TR that have no names associated with it that are being charged to T01, travel, purchases, and fleet at this time. Until the inconsistencies can be reconciled, I request $42,000 be transferred back into that T code. Note: I miss quoted the helimulching contract by $500 in Interim #1 so an additional $500 also needs to be transferred back for a total of $42,500.

Part VI – Emergency Stabilization Treatments and Source of Funds

Interim #_2_

			NFS Lands				Other Lands			All
		Unit	# of		Other	# of	Fed	# of	Non Fed	Total
Line Items	**Units**	**Cost**	**Units**	**BAER $**	**$**	**units**	**$**	**Units**	**$**	**$**
A. Land Treatments										
T01 - Aerial Mulch	acres	$1,064	413	$439,500	$0		$0		$0	$439,500
T02 - EDRR	acres	$31	2,150	$67,207	$0		$0		$0	$67,207
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$506,707	$0		$0		$0	$506,707
B. Channel Treatments										
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treatments				$0	$0		$0		$0	$0
C. Road and Trails										
T03 - Road Drainage	miles	$11,828	16	$189,254	$0		$0		$0	$189,254
T04 - Culvert/Bridge Replac	each	$210,880	2	$421,760	$0		$0		$0	$421,760
T05 - Trail Drainage	miles	$6,015	10.9	$65,564	$0		$0		$0	$65,564
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road and Trails				$676,578	$0		$0		$0	$676,578
D. Protection/Safety										
T06 - Road/Trail Hazard Sig	lump sum	$18,500	1	$18,500	$0		$0		$0	$18,500
T07 - Kyle R.S. Site Protecti	each	$65,900	1	$65,900	$0		$0		$0	$65,900
T08 - Admin Closure	each	$20,900	1	$20,900	$0		$0		$0	$20,900
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Protection/Safety				$105,300	$0		$0		$0	$105,300
E. BAER Evaluation										
Initial Assessment	report	$122,000	1	$122,000	$0		$0		$0	$122,000
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				---	$0		$0		$0	$122,000
F. Monitoring										
T09 - Road Storm Patrol	events	$6,000	12	$72,000	$0		$0		$0	$72,000
T10 - Trail Storm Patrol	site visit	$833	6	$5,000	$0		$0		$0	$5,000
T11 - Interagency Coordinat	days	$470	30	$14,100			$0		$0	$14,100
T08 - Admin Closure Monito	days	$250	15	$3,750						
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$94,850	$0		$0		$0	$91,100
G. Totals				$1,383,435	$0		**$0**		**$0**	**$1,501,685**
Previously approved				$1,313,398						
Total for this request				**$70,037**						

Interim #_2_

Original Request $ 1,313,398

Interim #2 Request $70,037

PART VII - APPROVALS

1. /s/Kevin Wilmont for WILLIAM A. DUNKELBERGER — February 03, 2014
   Forest Supervisor (signature) — Date

/s/ Chris Iverson (for)

2. Nora Rasure — 2/11/14
   Regional Forester (signature) — Date