USDA-FOREST SERVICE
FS-2500-8 (6/06)

Date of Report:
August 27, 2013

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

[X] 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

A. Fire Name: Aspen Fire

B. Fire Number: CA-SNF-001732

C. State: CA

D. County: Fresno

E. Region: 05

F. Forest: Sierra NF

G. District: High Sierra RD

H. Fire Incident Job Code: P5HR6W (0515)

I. Date Fire Started: **07/22/2013**

J. Date Fire Contained: not contained as of date of completion of this report.

K. Suppression Cost: $27.8 MILLION

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 57
2. Fireline seeded (miles): 0.0
3. Other (identify):

M. Watershed Number: Three HUC6 watersheds are found within the fire area. These include from north to south: Kaiser Creek (180400060803), Mammoth Pool Reservoir-San Joaquin River (180400060804) and Rock Creek-San Joaquin River (180400061001).

N. Total Acres Burned: 22,800
NFS Acres (22,172) Other Federal (0) State (0) Private (0)

O. Vegetation Types: Sierra Mixed Conifer, Ponderosa pine, Montane Hardwood, Montane Hardwood-Conifer, Mixed Chaparral, and Montane Chaparral.

P. Dominant Soils: Chaix, Tollhouse, Holland, Sirretta, Cagwin, Chawanakee, Cannell, Lithic Xeropsamments, Shaver, Umpa, Auberry, Ultic Haploxeralfs and Ahwahnee.

Q. Geologic Types: The Aspen fire area occurred within the western slopes of the central Sierra Nevada. The geology is classic Sierra Nevadan reflecting its origins as a sedimentary mountain range intruded by granitic batholiths. Subsequent erosion removed most of the metamorphosed sedimentary bedrock except for a few rock masses remaining as roof pendants. This erosion also exposed large areas of granitic bedrock from the numerous batholithic intrusions. Later volcanic and glacial activity has overlain the granitic terrain with isolated flows and deposits of glacial moraines. In summary, the bedrock includes: metasedimentary rock (quartzite, schist and hornfels), granitic bedrock (granodiorite, tonalite, aplitic granite, granite, quartz monzonite and diorite), and trachybasalt. In addition, glacial deposits are underlain on the north facing slopes of the Kaiser Wilderness.

R. Miles of Stream Channels by Order or Class:
Perennial -11 miles; Intermittent - 62 miles; Ephemeral – 300 miles.

S. Transportation System

Trails: 1.7 miles Roads: 75 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): Low – 8,500 (38%); Moderate – 7442 (34%); High - 1,936 (9%); Unburned – 4,294 (19%)

B. Water-Repellent Soil (acres): 2,681 (15%)

C. Soil Erosion Hazard Rating (acres):
0 (low) 7,405 (moderate) 13,705 (high)

D. Erosion Potential: 15.06 tons/acre

E. Sediment Potential: 6333 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 5-15 years

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

C. Equivalent Design Recurrence Interval, (years): 5 yr

D. Design Storm Duration, (hours): 2 hr

E. Design Storm Magnitude, (inches): 2.11 in

F. Design Flow, (cubic feet / second/ square mile): 28.4

G. Estimated Reduction in Infiltration, (percent): 15

H. Adjusted Design Flow, (cfs per square mile): 33.07

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

Several critical values/resources are threatened and are at risk from storm events in the upcoming fall and winter runoff. These values at risk include: Forest System roads, ecological integrity from invasive weeds, cultural resources, public safety on roads and trails, and possible the hydro power facilities along the San Joaquin River.

1. **Roads**- Road damage, runoff, erosion, and public safety – Stump springs road (rock fall, and debris flows)

   The transportation system consists of approximately seventy-eight miles of system roads. Approximately seventy-five miles of system roads are located within the fire perimeter and three miles are located directly adjacent to the fire. Roads range from maintenance level (ML) 1 to ML 5. The field survey was conducted on August 7 – 10, 2013 by truck and foot travel. Most of the roads are constructed on decomposed granite of various grading's, ranging from ¾" to fine sand. This material is very susceptible to erosion degradation. As a result, uncontrolled runoff can result in significant damage and potential loss to the road system.

   a) The roads are at increased risk due to:
      i. Erosion damage as a result of increased storm water runoff velocity and volume on and across the road templates.
      ii. Degradation of road surfaces resulting from fire suppression activity.

   b) The consequences of the fire on the roads will be:
      i. Primarily manifested as increased storm water runoff creates erosion damage, including total loss, to the road surfaces and road templates.
      ii. Secondary consequence of the fire related to the road system is the increase adverse effect of storm water runoff and decreased control of storm water runoff to adjacent watersheds.
      iii. Public Safety is affected due to a significantly increased hazard resulting from destabilized rock slopes, falling trees, and damage to traffic safety structures.

   c. Emergency Determination

Imminent hazards to the roads system vary from minor sloughing and culvert blockage to partial or total loss of road template. A risk assessment was conducted on the assessed roads and the following risk assessment was determined:

Road #	Risk Assessment
6S031A	HIGH
6S31	HIGH
7S03	HIGH
7S05D	HIGH
7S78	HIGH
7S05	HIGH VERY
7S01X	INTERMEDIATE
7S05C	INTERMEDIATE

Road #	Risk Assessment
7S05F	INTERMEDIATE
7S05G	INTERMEDIATE
7S05H	INTERMEDIATE
7S05K	INTERMEDIATE
7S13YD	INTERMEDIATE
7S25	INTERMEDIATE
7S26A	INTERMEDIATE
7S303	INTERMEDIATE

Road #	Risk Assessment
7S30A	INTERMEDIATE
7S33A	INTERMEDIATE
7S72Y	INTERMEDIATE
7S77	INTERMEDIATE
7S77A	INTERMEDIATE
7S81A	INTERMEDIATE
8S71	INTERMEDIATE
8S71A	INTERMEDIATE

All of the other roads in the fire area were determined to be a low risk. The base upon which the roads are built varies from bed rock to decomposed granite (DG) and alluvial deposits. The DG, which composes the majority of the road system foundation in the area, is highly susceptible to water erosion. Lack of maintenance of most of the roads has resulted in significant surface and template degradation in many locations. Although it is recognized that BAER is not intended to correct past maintenance deficiencies, the drastically changed conditions resulting from wildfire impose an urgency for correction on some of those situations. The work proposed herein is intended to stabilize the identified roads and structures in preparation for the anticipated increase in erosion from storm water runoff. In addition, several work elements involve public safety hazards.

An emergency exists for both debris flow and rock fall hazard due to the Aspen fire on the Forest Road system. The likelihood of debris flows from Westfall, Daulton, Camp, Saddle, Horsethief, and Aspen creeks reaching Stump Springs Road (5S05) is likely and the magnitude of their impact would be moderate. This would be a BAER risk level of high. It is worth noting that collector roads upslope and downslope from Stump Springs Road may also be impacted.

2. **Ecological Integrity**- Invasive weeds

The botanical values at risk in the Aspen Fire are related to the ecological integrity of the vegetation communities in and around the Aspen Fire area. Known populations of Spanish broom (*Spartium junceum*), Medusahead (*Elymus caput-medusae*), cheatgrass (*Bromus tectorum*), bull thistle (*Cirsium vulgare*), perennial pea (*Lathyrus latifolius*) and non-native grasses (*Avena fatua*, wild oat; *Bromus diandrus*, rip gut brome) were adjacent to and within the burned area prior to the fire. Field surveys were completed within the burned area, along contingency lines, at fire suppression point locations (e.g., drop points, safety zones) and along major travel routes utilized by suppression activities to gain access to the fire area. The Aspen Fire burnt through scattered cheatgrass and non-native grass populations within the fire and large population of Spanish broom along the Stump Springs Road (7S05). Stump Springs Road was heavily used to access the burned area during suppression operations and the BAER assessment, several hundred vehicles

traveled through the Spanish broom population along this route during the course of the fire. Vehicle travel through the town of Big Creek passes through Spanish broom and perennial pea populations prior to entering the fire. Hand and dozer line were cut through medusa head and non-native grass populations on the North Contingency. Hand and dozer line were also cut through Spanish broom and non-native grasses within the burned area and contingency lines east of the San Joaquin River. Mono Hot Springs evening primrose (*Camissonia sierrae ssp. alticola*) populations and their habitat areas were not harmed by the Aspen Fire and were not affected by any aspect of fire suppression.

Both perennial pea and Spanish broom were in a stage of seed dispersal at the time of the incident. Vehicle travel and fire line construction through these populations at this time have a high likelihood of enhancing seed dispersal along travel routes, fire line and within the burned area. Seed bank of yellow star thistle (*Centaurea solstitialis*), cheatgrass and other non-native grass scattered populations were likely spread by soil movement along hand and dozer lines and where safety zones and medivac locations were constructed within and adjacent to these populations. Dozer line and safety zone construction in the vicinity of 6S81Z in the North Contingency intersected several small, isolated medusa head populations and likely spread seed of this species in this area.

Probability of damage to landscape ecological structure and function is *very likely* (> 90%), as existing populations of invasive species within and in close proximity to the fire are anticipated to expand in the post-fire environment. New populations will *likely* colonize areas of ground disturbance and burned areas where reduced canopy cover and open ground will facilitate invasive species establishment and proliferation within the next year. With the exception of the Stump Springs Road corridor, most of the Aspen Fire is either clean of invasive plants or only has minor occurrences of low threat non-native plant species. This potential for weed spread will have significant impacts on that critical value. Existing populations that experienced low to moderate burn severity will expand due to seed bank release and enhanced post-fire resource availability (e.g., light, nutrients). The magnitude of invasive plant species expansion and isolated population establishment will be *moderate*. Long-term negative effects to wildlife habitat quality, plant community heterogeneity, fire frequency, landscape ecological integrity and watershed health are anticipated to increase within the post-fire environment. The magnitude of invasive species effects will increase with each growing season, escalating from *moderate to major* over time. In the Aspen Fire burned area, areas impacted by fire suppression tactics and locations used to support fire suppression efforts, invasive plant species pose a *very high risk* to landscape ecosystem integrity.

The Aspen Fire environment is at ***very high risk*** of compromised landscape ecological integrity from invasive non-native plant population expansion and new population establishment. This BAER emergency can be mitigated by evaluating and treating known populations to limit fire-induced population growth, as well as monitoring and treating specific locations for new invasive non-native plant populations. The probability of damage is ***very likely*** **with** ***moderate*** **consequences** to the landscape in the first year after fire.

3. **Archeology** – Cultural Resources
Archaeological records within the Aspen Fire area identified 67 archaeological sites. According to Steve Marsh, High Sierra District Archaeologist, none of the sites within the burn area has been evaluated for the National Register of Historic Places (NRHP), therefore all of the sites can be considered potentially eligible for the Register. Five cultural resource sites within the burned area were determined to be potentially at risk from the Aspen Fire and subsequent watershed events involving erosion and increased water movement. An emergency determination was

determined based on the susceptibility to damage site components, topographic location, and surrounding burn severity and predicted watershed events. Bare ground conditions that could increase the risk of affecting the cultural resource sites principally involve rill and gully erosion and burned out roots resulting in holes that vary in size from 30 centimeters to 1.5 meters in diameter with similar depths.

One of the five cultural resource sites was determined to be an emergency. This site has been impacted by late 1980s and earlier logging and subsequent plantation preparation and implementation. These activities have resulted in a skid trail intercepting flow from a channel and directing the flow of water onto the cultural resource site. The flow of water onto the site has resulted in rill and gully erosion of the site and is damaging the cultural resources. In addition, past logging and silvicultural activities has caused compaction and damage to the site and have created a condition for accelerated erosion (see Soil/Archaeology Treatment Report, 2013). Fire induced hydrophobic conditions along with the soil compaction noted have altered natural infiltration rates. The soil was strongly hydrophobic in the top 0.25 inches and localized testing suggested as much as 80 percent of the soil surface below the ash layer may be hydrophobic. A number of burned out stump holes pose a potential concern that cultural material might slough to the bottom of the hole. There is a likely Probability of Damage or Loss to the cultural site. The small watershed and site itself is in a high burn severity area. The hydrologic post-fire response is expected to increase discharge flows from 2cfs to 5cfs. This increased discharge is likely to increase erosion through the middle of the site. The site itself is likely to contribute increased runoff, because of the compaction and hydrophobic soil conditions. The small head cut is likely to erode further into the cultural resource site.

The stump holes associated with the five at-risk sites are the result of natural phenomena that have occurred over thousands of years and are considered to be within tolerable limits for site integrity degradation.

No emergencies have been identified from the implementation of the proposed road and invasive weed BAER treatments, which will be conducted in compliance with the provisions of the 2013 PA with State Historical Preservation Office (SHPO).

4. **Hydro Power**- The Southern California Edison (SCE) hydropower facilities in the San Joaquin River were identified as a value at risk from the Aspen Fire. The facilities includes Mammoth Pool Dam, the Intake at Mammoth Pool Dam, Mammoth Pool Power House, Dam 6 Lake, Intake to Powerhouse 3, Powerhouse 3 and two power line towers.

   SCE hydroelectric power facilities were evaluated through direct communication with SCE staff and field surveys. SCE staff expressed concern for post-fire impacts due to floatable debris, turbid water and landslides/debris flows (Don Dukleth, Tim Frazer, and Cy Lamarsny, pers comm.). Floatable debris can impact Powerhouse 3 by clogging the vertical grates at the intake at Dam 6 Lake. The intake grates run vertically from the full pool elevation to the bottom of the reservoir. If the intake gets clogged, the intake grids can collapse. This occurred in 1996, following the 1994 Big Creek Fire (T Frazer, pers comm). However, if this collapse occurred during the 1997 flood, that was a major flood, which is beyond the scope of any potential mitigations that would be implemented under BAER. Further discussion with SCE is needed to

determine if that flood was related to the grate collapse. Floatable debris is not a concern for the Mammoth Pool powerhouse, because the intake is below the water surface, near the bottom of the reservoir. Floatable debris will increase due to the amount of burned forest vegetation adjacent to stream channels. Using the burn severity map, it was found that 10.2 miles, or 37 percent of the intermittent and perennial stream channels in the burned area below Mammoth Pool dam are in moderate to high burn severity. Most of the debris of concern will come from forested ground, while a small component will come from shrub-type cover. A review of vegetation cover types in the burned area showed that 9.7 miles are in forest cover and 0.5 miles are in shrub-type. A 5 year storm event, one that has a 20 percent chance of occurring each year, will deliver this debris to the reservoirs. SCE will need to monitor the weather and be ready to adjust their operations to respond to an influx in debris. They could also install additional booms to manage this debris. There is no emergency regarding the threat of floatable debris to the Number 3 Powerhouse. The probability of damage or loss is possible, and the consequences of this damage are considered to be moderate, resulting in an intermediate risk.

Sediment and turbid water is a threat to the SCE hydropower facilities. Turbid water can impact and clog the cooling system, which can cause overheating of the turbines. When this occurs, SCE shuts down the turbines and waits for the turbidity to drop to an acceptable level. Potential impacts to SCE facilities from a landslide/debris flow include a loss of reservoir capacity and damage to the Mammoth Pool Dam. Debris flows could also result in turbidity at levels high enough to cause the powerhouses to shut down temporarily (see the Geology report for more detail on landslide/debris flow risk).

Debris flows are also capable of inflicting significant damage to hydroelectric facilities. Sediment from surface erosion within the fire area and debris flows could introduce significant amounts of sediment into the San Joaquin River. This could have a detrimental effect to hydroelectric facilities using this water for power generation. There is a threat that sediment could fill in the reservoirs at the Mammoth Pool Dam and the Dam 6 Lake. Soil erosion modeling show 108 acre feet of sediment will be delivered to stream channels from the burned area. However, based on dominate soil types, approximately one third of this material will be silt and clay sized material, which will be held in suspension and flushed through the system, leaving two thirds of the volume deposited in the reservoirs. Also, some small percentage of this volume may get stored in the channels upstream of the reservoirs. Mammoth Pool reservoir has a capacity of 123000 acre feet. The capacity of Dam 6 Lake is 992 acre feet (T. Frazer, personal communication). According to the values of the soil erosion modeling; if two thirds of the material is deposited in the reservoirs, Mammoth Pool would receive 38 acre feet and Dam 6 Lake would get 33 acre feet. This would reduce their capacity by 0.03% and 3% respectively. There is no emergency regarding reservoir capacity at Mammoth Pool and Dam 6 Lake. The probability of increased sediment input to the reservoirs from soil erosion and debris flows is likely, but the consequence of the loss of reservoir capacity is minor, resulting in a low risk.

There is potential risk that a debris flow at Camp Creek could reach the Camp Creek diversion structure near Mammoth Pool Reservoir. This poses a threat to the function of this hydroelectric system structure. Predicting the volume of debris flow material and its impact is difficult. The

volume of the Camp Creek debris flow was about 405 cubic yards. However, this was an infiltration-triggered debris flow, i.e., a debris flow caused by a storm event initially triggering a small debris slide. Post-fire debris flows are almost always caused by runoff-generation, i.e., storm runoff eroding sediment from slopes and stored sediment in channels. Post-fire runoff-generated debris flows tend to involve larger volumes of material than infiltration-triggered debris flows. **An emergency exists for Mammoth Pool Dam, because the likelihood of debris flows from Camp Creek reaching the Camp Creek Diversion structure and the dam is considered possible.** The impacts would be moderate to major depending on the volume of the debris flow. Consequently, the BAER risk level ranges between intermediate to high.

A final concern raised by SCE personnel was the stability of the large power line towers, near the Mammoth Pool powerhouse on the southern end of the fire. The concern was that the footings on the towers could be undermined due to excessive erosion on the hillside. A field visit found that two towers are located within the burned area. One tower is within 200 feet of a ridge top. The other is on the lower third of a planar slope, within 600 feet of the ridge top. The towers are in an area of moderate burn severity. Some erosion on this slope is likely, but not enough to undermine a tower footing. Also, it is likely these footings are excavated down to and into bedrock, which is within a few feet of the surface on this slope. This was confirmed during a conversation with SCE personnel (T. Frazer, pers comm).

5. **Public Safety** – Public safety is at risk on the Stump Springs Road from debris flows and rock falls. In addition, public safety is at risk on the Gloria Meadow Trail from tree hazards.

   a. Stump Springs Road – The Stump Springs Road (Forest Road 5S05) is a major National Forest Primary Route that accesses the east side of the San Joaquin River and the north side of the Kaiser Wilderness. Stump Springs Road is a very popular road by the public and Forest Administrators. The coincidence of moderate and high burn severity with high landslide hazards on the slopes above the Stump Springs Road indicates debris flows may be generated in Aspen, Horsethief, Saddle, and Camp, Daulton, and Westfall creeks. This is based on the assumption that runoff-generated debris flows, which typically occur after wildfires, in part due to the effects of moderate to high soil burn severity, will more readily occur where debris flows have occurred in the past. It also reflects the expectation, based on past debris flow experience, that post fire debris flows would be capable of reaching and passing over Stump Springs Road. Debris flows are fast moving (10 - 17 miles per hour) and pose a threat to anyone driving on the road. There are no visual indicators that would provide forewarning of their occurrence or their reaching a crossing.

      Several rock fall hazards are located along the Stump Springs Road where rocky slopes exist with high burn severity areas. This likelihood exists between Aspen Creek and Daulton Creek. A high likelihood for rock fall exists for the existing rockslide, located south of Saddle Falls Creek. This is a combination of the level of existing rock fall hazard and the degree of soil burn severity. Two other rock fall hazard areas are shown in between the crossings of Horsethief and Saddle creeks. The rock fall in this area will pose a hazard to

driving safely as opposed to the large, dangerous rocks possible from the existing rock fall area.

b. Trails – Four trails are located within the Aspen Fire area; including Kaiser Creek Trail and Mammoth Pool Dam Trail, which are non-system trails, and Pryor Lake Trail and Gloria Meadow Trail, which are system trails. Trail segments in the fire area experienced mostly low to moderate burn severity as a result of the Aspen Fire with smaller areas of unburned vegetation found. In the trail assessment areas, it is estimated that up to 70% of the forest canopy is intact and a smaller percentage of groundcover remains in the form of pine needle duff and other organic matter as the fire burned in a mosaic pattern where a mix of moderate and low/unburned occurred.

Gloria Meadow Trail is the only trail that was found to be a concern for public safety. Several large, burned trees have fallen over the trail since the fire and are blocking access in many locations. This scenario creates an increase in user trails, as trail users tend to navigate around the obstacles down and up slopes to gain access to the main trail tread. The use of this trail increases the potential for additional soil erosion and vegetation impacts. Navigating around tree obstacles usually require traversing unstable slopes, more so when burn conditions exist and may be a safety concern for trail users. Many burned or partially burning trees exist along this trail section are standing are likely to fall randomly and present a serious threat to trail user safety over the next month following the fire, and most likely this condition of burned trees that are likely to fall will continue over the next year after the fire, particularly during storms when windy weather can occur. A threat to human safety exists on the section of Gloria Meadow Trail, within the burn area from the trail start at FS road 7S78 for two miles south, where the southern perimeter of the Aspen Fire boundary is located due to a high hazard of large, burned trees that will be falling over the next year. Unstable trail tread exists along this section due to the fire impacts and intermittent trail sections are not discernible due to the burned conditions that have created safety hazards for trail users.

B. Emergency Treatment Objectives:

1. **Roads** - To stabilize the transportation roads system and prevent further damage resulting from:
   a. Erosion and other effects of storm water runoff as a result of fire damage on adjacent lands.
   b. Direct traffic on the roads.
   c. Public Safety Hazards as a result of facilities or structures damaged or destroyed.

2. **Ecological integrity (Invasive weeds)** - The objective of invasive non-native plant early detection surveys and rapid response treatment in the Aspen Fire environment is to reduce the potential for existing population expansion and new population establishment of invasive weeds.

3. **Archeology** – Cultural Resources - Treatment objective is to restore drainage function to the road crossing, restore the channel flow back into the natural drainage, and increase post burn cover on the cultural site to mitigate overland flow.

4. **Hydro Power** –Protect property at Mammoth Pool Dam.

Issue an official notification to the Southern California Edison Company responsible for Mammoth Pool Reservoir that a debris flow threat to the dam exists.

5. **Public Safety** –Protect life and property on Stump Springs Road and Gloria Meadow Trail.
   a. Stump Springs Road - Close the road to traffic from the Big Creek terminus to the vicinity of Cow Camp through spring 2014. Post signs of debris flow danger during storms at six major channel crossings (2 signs each). These would be at each channel crossing and in addition to those signs noted under "rockfall hazard'. Evaluate the level of rock fall activity to determine if seasonal closure or day/night closure might be equally protective. General warning signs needed if road is re-opened in spring 2014. These signs should be placed at each end of the road and explain the general danger posed by rock fall and debris flow to those entering the fire area.
   b. Gloria Meadow Trail - Close the Gloria Meadow Trail from FS road 7S78 trail head to the fire boundary, or to the most logical administrative location. Trail closure should be implemented through the fall and the 2013/2014 winter season (Spring 2014). Trail closure signage and notice of falling tree hazards at the trail start at 7S78 and at the southern burn area boundary (or wherever else appropriate) should be placed. This info should be posted in the Forest website and at visitor centers. After the first winter season the Forest should re-evaluate the trail to determine if conditions are safe to open the trail and conduct downed tree removal off the trail and conduct trail repairs if necessary to return the trail to a safe standard appropriate for this trail.

C. Probability of Completing Treatment Prior to Damaging Storm or Event: The first damaging storms has been determined to be November 1.

Land (slope) **100%** Channel __ % Roads **90%** Trails **100%**

D. Probability of Treatment Success

	Years after Treatment		
	1	3	5
Roads/Trails	85%	70%	70%
Protection/Safety	100%	90%	80%
Invasive Weeds	85-95%	50%	<20%

Note: The quick drop-off in probability of success for invasive weed treatment was determined by the observation that treatment funding only will be for one year with subsequent years being dependent on Forest and Regional funding. Given the inconsistent levels of funding for weed work over recent years, it cannot be assumed that other funding sources will be available to complete the treatment in an effective way.

E. Cost of No-Action (Including Loss): The proposed road treatments, invasive weed treatments and archaeological site protection have been evaluated for no action. The public safety and hydro power facility proposed emergency work are in the form of letters of warning, warning signs along the roads and road closures. These proposed emergency actions could save lives and will not be quantified. These

emergency action items are very low cost and the likelihood of these treatments not being implemented is very low.

Cost of No Action for Proposed Road Emergency Work:

Estimated Cost of No Action, High Risk Roads at 1 year. Includes estimated loss of resource value and increased maintenance cost. Factor 28%	$117,400.00	$150,272.00
Estimated Cost of No Action, High Risk Roads at 5 year. Includes estimated loss of resource value and increased maintenance cost. Factor 23%	$327,900.00	$403,317.00
Estimated Cost of No Action, Intermediate Risk Roads at 1 year. Includes estimated loss of resource value and increased maintenance cost. Factor 28%	$225,300.00	$288,384.00
Estimated Cost of No Action, Intermediate Risk Roads at 5 year. Includes estimated loss of resource value and increased maintenance cost. Factor 23%	$619,600.00	$762,108.00

Archaeology Site Protection: The context of archaeological remains is vital to any scientific analysis or interpretation of historic or prehistoric sites. Dollar values are not usually placed by the professional community on archaeological sites or materials, because they are non-renewable and not replaceable. Ecological integrity (Invasive weeds) Treatment:

Ecological integrity (Invasive weeds): The price for doing no treatment of Spanish broom (and other potential weeds) in the Aspen Fire area is hard to estimate in monetary terms but will be rather significant in terms of ecological integrity of the forest vegetation that is remaining. Fire is an event that will enhance weed germination and viability above and beyond its normal capability to invade; cleared areas with no canopy and no immediate competition will be ripe for seed rain and germination in the following years. Once established, these plants will mature and become co-dominant with other shrubs, forming their own monotypic community at the expense of native vegetation in the area. This potential area for spread cover several thousand acres and could alter ecosystem processes such as fire interval and increases the flammability of areas due to the large amount of dead material a plant can hold. Other weeds can have similar negative impacts and more, depending on what species one is contemplating. The other impact is in terms of silviculture and reforestation efforts following the fire. A rapid and large invasion of Spanish broom has already been shown to have both monetary and work force impacts here on the Sierra NF (Big Creek Fire, 1994). Within the Big Creek Fire area were some remaining Spanish broom plants that took off exponentially immediately after the Big Creek Fire. Several years and tens of thousands of dollars were spent controlling broom as it was having impacts on tree planting and other reforestation efforts. The Aspen Fire is adjacent to this historic burn, has similar vegetation and is even larger than the Big Creek fire. These elements combine to show the high risk and potential for big impacts on budgets and work force time in treating entrenched infestations.

F. Cost of Selected Alternative (Including Loss): **$489,830**

G. Skills Represented on Burned-Area Survey Team:

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

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H. **Treatment Narrative:**

(Describe the emergency treatments, where and how they will be applied, and what they are intended to do. This information helps to determine qualifying treatments for the appropriate funding authorities. For seeding treatments, include species, application rates and species selection rationale.)

Channel Treatments: N/A

Roads and Trail Treatments: Road Treatment(s) will vary from culvert removal to culvert inlet and outlet cleaning, installation of drop inlets at culvert inlets, culvert up-sizing and road reconstruction. There is no anticipated need for relocation of roads. Specific treatment details for each road are noted in Appendix 1.

Ecological Integrity – Invasive Weeds: Invasive species early detection and rapid response will be initiated with a crew pulling weeds as they are detected in the field. For populations along Stump Springs Road, above the San Joaquin River Canyon, a contract crew will survey and eradicate invasive non-native plants, during 3 visits in the 2014 growing season on 7567 acres along dozer firelines and other fire lines. Surveying and treatment will be occuring at the same time. The first visit will coincide with the height of growing season for Spanish broom on the Sierra NF, sometime in mid to late May. Subsequent visits for treatment should be done five to seven days apart to fully eradicate or control Spanish broom seedlings as they grow into mid-June. Oversight and guidance could be provided for the Sierra NF botany staff. A separate botany crew will survey suppression lines and point locations for new invasive non-native plant populations and treat these locations where detected immediately as these plants are detected. This crew will also visit small populations of invasive non-native plants and treat these locations to reduce for population expansion.

Archaeology: Land Treatments for protection of archaeology site:

a. Road Treatment: The BAER engineer recommended a low water crossing to replace the two poorly functioning culverts. See engineering report for details.

b. Restore Flow to Natural Drainage: Re-establish the natural swale from the constructed low water crossing to the defined natural drainage, maintaining an even grade. This will involve backhoe work to shape the swale; to construct a "berm or rolling dip" by first filling the below grade skid trail with wasted material from constructing the low water crossing. Material will need to be placed in layers and compacted. The constructed swale must also be compacted by wheel rolling. Rip rap the constructed swale with rock to create an energy dissipating apron or hardened channel bottom.

c. Increase Post Burn Ground Cover at Cultural Site: The site is approximately 2 acres. Mulch site with erosion control cover (minimum 70 percent cover). Mulch may be wood chips or manufactured wood straw. Wood straw application rate of one ton per acre is adequate. Straw mulch is not applicable at this site because the site is exposed to high winds. Mulch will be carried and applied by hand.

Hydropower: Make an official notification to the Southern California Edison Company responsible for Mammoth Pool Reservoir that a debris flow threat to the dam exists at Camp Creek.

Public Safety Treatments:

a. Gloria Meadow Trail - Propose to close the Gloria Meadow Trail from FS road 7S78 trail head, 2 miles south till the trail leaves the fire boundary, or what else is sensible for the Forest to implement until after the first following winter season after the fire (Spring 2014). Trail closure signage and notice of falling tree hazards at the trail head at 7S78 and at the southern burn area boundary (or wherever else appropriate) should be placed. This info should be posted in the Forest website and at visitor centers. After the first winter season the Forest could re-evaluate the trail to determine if conditions are safe to open the trail and conduct downed tree removal off the trail and conduct trail repairs, if necessary to return the trail to a safe standard appropriate for this trail for use.

b. Stump Springs Road – Close Stump Springs Road from the Big Creek terminus to the vicinity of Daulton Creek in anticipation and prior to the first fall/winter storms. Post signs of debris flow danger during storms at six major channel crossings (2 signs each). These would be at each channel crossing and in addition to those signs noted under "rockfall hazard'. Monitor the level of rockfall activity to determine if seasonal closure or day/night closure might be equally protective. Install general warning signs if road is re-opened in spring 2014. These signs should be placed at each end of the road and explain the general danger posed by rockfall and debris flow to those entering.

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.)

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

			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											
Arch site (2 acres)											
Wood Straw	Bales	$10.92	80	$874	$0			$0		$0	$874
Transportation		$4,000	1	$4,000	$0			$0		$0	$4,000
10 person Hand Crew	Each	$4,000	1	$4,000	$0			$0		$0	$4,000
Supervision & Prep	Day	$250	3	$750	$0			$0		$0	$750
Subtotal Arch Treatments				$9,624	$0			$0		$0	$9,624
Invasive Species Early Detection and Rapid Response(7566 acs)											
GS-9Detailer Salary/PD	PayPeriod	$3,263	12	$39,159	$0			$0		$0	$39,159
GS-11	Day	$357	10	$3,570	$0			$0		$0	$3,570
GS-5	Day	$176	60	$10,560	$0			$0		$0	$10,560
GS-4	Day	$125	60	$7,500	$0			$0		$0	$7,500
Americorp Crew 10 person	Day	$880	15	$13,200	$0			$0		$0	$13,200
MATERIALS AND MILEAGE COST				$8,103							$8,103
Contract Admin (10%)				$7,398	$0			$0		$0	$7,398
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal NoxWds Treatments				$89,490	$0			$0		$0	$89,490
Subtotal Land Treatments				$99,114	$0			$0		$0	$99,114
C. Road and Trails											
See Appendix 1				$0	$0			$0		$0	$0
High Risk (Contract)				$33,190	$0			$0		$0	$33,190
High/Intermediate Risk (Force Acct)				$241,375	$0			$0		$0	$241,375
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Road & Trails				$274,565	$0			$0		$0	$274,565
D. Protection/Safety											
Debris Flow/Rock Fall Hazal	Each	$333	12	$3,996	$0			$0		$0	$3,996
Rock Fall Evaluation	Day	$385	3	$1,155	$0			$0		$0	$1,155
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Structures				$5,151	$0			$0		$0	$5,151
E. BAER Evaluation				$86,000	$0			$0		$0	$86,000
BAER Implementation Admin				$25,000				$0		$0	$25,000
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Evaluation				$111,000	$0			$0		$0	$111,000
F. Monitoring											
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Monitoring				$0	$0			$0		$0	$0
G. Totals				**$489,830**	$0			**$0**		**$0**	**$489,830**

PART VII - APPROVALS

1. Forest Supervisor (signature) — Date 9/24/13

2. for Regional Forester (signature) — Date 9/5/13

per letter dated 9/5/13 for $289,340.

Appendix 1. Proposed Road Treatments - Cost Estimate for High and Intermediate Risk Roads

Aspen BAER Sierra National Forest

Road #	Risk Assessment	Treatment	Qnty	Item cost	Total cost
6S31	HIGH Adjacent archilogical concerns	RP 23: Remove 2 culverts and construct low-water crossing. Riprap Apron. Outslope road and construct dips (10) if not repaired in rehailitation.	1	$3,950.00	$3,950.00
6S031A	HIGH	MP0.85 Replace CMP with Low-Water Crossing(LWX)	1	$3,250.00	$3,250.00
7S01X	INTERMEDIATE	Out-slope Road (Mile)	1.6	$3,675.00	$5,880.00
		Reconstruct Dips.	20	$1,950.00	$39,000.00
		Road Total			$44,880.00
7S03	HIGH	MP 0.15: Replace culvert with 36" CMP	1	$4,810.00	$4,810.00
		MP 0.2 - 1.1: Clean culvert inlets.	9	$320.00	$2,880.00
		Road Total			$7,690.00
7S05	VERY HIGH	Install Drop-Inlets to culverts.	10	$390.00	$3,900.00
		Replace Guard-rail & 3 posta at RP 40A	1	$1,825.00	$1,825.00
		Replace 2 guard-ral posts at RP 40B	2	$400.00	$800.00
		Replace 7 guard-ral posts at RP 41	7	$400.00	$2,800.00
		Place "FALLING ROCK" signs. (2)	2	$345.00	$690.00
		Monitoring, Days	5	$440.00	$2,200.00
		Road Total			$12,215.00
7S05C	INTERMEDIATE	Reconstruct Water Bars	8	$280.00	$2,240.00
7S05D	HIGH	MP 0.0 - 1.6, Clean culvert inlets.	7	$320.00	$2,240.00
		Replace culvert at Saddle Creek with 36" Culvert.	1	$4,810.00	$4,810.00

Road #	Risk Assessment	Treatment	Qnty	Item cost	Total cost
		Monitoring, Days	3	$440.00	$1,320.00
		Road Total			$8,370.00
7S05F	INTERMEDIATE	Cleaning culvert inlets.	3	$320.00	$960.00
7S05G	INTERMEDIATE	Clean culvert inlets (5)	5	$320.00	$1,600.00
7S05H	INTERMEDIATE	Reconstruct dips. (4)	4	$1,950.00	$7,800.00
7S05K	INTERMEDIATE	If open, reconstruct dips (4).	4	$1,950.00	$7,800.00
7S13YD	INTERMEDIATE	Reconstruct Water-bars. (14)	14	$280.00	$3,920.00
7S25	INTERMEDIATE	MP 0.6 - 1.1: Construct dips (6)	6	$1,950.00	$11,700.00
		Replace with 36" culvert at Westfall Creek.	1	$4,810.00	$4,810.00
		Road Total			$16,510.00
7S26A	INTERMEDIATE	RP 31: Riprap at culvert inlet, rock road.	1	$760.00	$760.00
		RP 34: Remove culvert, construct LWX.	1	$3,050.00	$3,050.00
		Road Total			$3,810.00
7S30A	INTERMEDIATE	If open, clean culvert inlets. (4)	4	$320.00	$1,280.00
7S33A	INTERMEDIATE	Clean culvert inlet at Kaiser Creek.	1	$420.00	$420.00
7S72Y	INTERMEDIATE	RP 19 and RP 21: Install riprap at culvert inlet.	2	$760.00	$1,520.00
		MP 3 and 3.25: Remove culvert and construct LWX with riprap outlet dissipater.	2	$3,550.00	$7,100.00
		Road Total			$8,620.00
7S77	INTERMEDIATE	MP 0.2: Install 36" culvert, Rirrap at inlet.	1	$4,810.00	$4,810.00
		Out-slope road. 1,8Mile	1.8	$3,675.00	$6,615.00
		Reconstruct dips	17	$1,950.00	$33,150.00
		Road Total			$44,575.00

Road #	Risk Assessment	Treatment	Qnty	Item cost	Total cost
7S77A	INTERMEDIATE	Out-slope road. 0.4 Mile	0.4	$3,675.00	$1,470.00
		Reconstruct dips.	5	$1,950.00	$9,750.00
		MP 0.25: Remove culvert and construct LWX	1	$3,050.00	$3,050.00
		Road Total			$14,270.00
7S78	HIGH	MP 1.2 - MP 2.75: Remove culverts. (12)	12	$2,900.00	$34,800.00
7S81A	INTERMEDIATE	MP 2.0 - 2.6: Remove side berms.	0.6	$1,200.00	$720.00
		Out-slope road. 0.6 Mile	0.6	$3,675.00	$2,205.00
7S81A	INTERMEDIATE	Reconstruct dips. 4	4	$1,950.00	$7,800.00
		Road Total			$10,725.00
7S303	INTERMEDIATE	MP 0.75 and 0.90: remove culvert and construct LWX	2	$3,050.00	$6,100.00
8S71	INTERMEDIATE	Clean culvert inlets. (8)	8	$320.00	$2,560.00
8S71A	INTERMEDIATE	Clean culvert inlets. (8)	8	$320.00	$2,560.00
Road Closure Gates			4	$3,550.00	$14,200.00
Additional Monitoring			5	$440.00	$2,200.00
		Total High Risk (includes all monitoring & gates)			$86,675.00
		Total Intermediate Risk			$180,630.00
		Total All			$267,305.00

Although the above estimates include burdened labor and equipment costs, it is difficult to include aggregated costs, such as mobilization and P&O to individule items. Funding for public works contract work should be increased by an avarage of 28% for emergency (first year work) and 23% for out-year maintence and reconstruction work. Costs with Contract Factor are noted below.

				Base Cost	Contract Factor 28%
		High Risk		**$86,675.00**	**$110,944.00**

Road #	Risk Assessment	Treatment	Qnty	Item cost	Total cost
		Intermediate Risk		$180,630.00	$231,206.40
		Totals		$267,305.00	$342,150.40
		Total (Force Acct + Contractor)		$274,565.00	

Aspen Fire
Sierra National Forest
2500-8 BAER Assessment Report
August 28, 2013

Executive Summary

On July 22, 2013, a wild fire occurred on the High Sierra Ranger District on the east side of the San Joaquin River, along Mammoth Pool Reservoir. The fire burnt, approximately 22,800 acres of mixed vegetation types including Sierra Mixed Conifer, Ponderosa pine, Montane Hardwood, Montane Hardwood-Conifer, Mixed Chaparral, and Montane Chaparral. The fire resulted in 8,500 (38%) acres of low burn severity, 7442 (34%) acres of moderate burn severity, 1,936 (9%) acres of high burn severity, and 4,294 (19%) acres of unburned.

A Burn Area Emergency Response (BAER) Assessement was conducted in the fire area to: determine values at risk; make an emergency determination on those values at risk and; make recommendations on reducing the risk to those values.

All values at risk were evaluated and assessed in the fire area. The values at risk that were determinined to be an emergency include the Forest Road (FR) System, ecological integrity from noxoius weed invasion, one cultural resource site, public safety on Stump Springs Road (FR 5S05) and Gloria Meadow Trail, and a Southern California Edison (SCE) diversion structure from Camp Creek into Mammoth Pool Dam.

The BAER assessment recommends **$489,830** in treatments costs that includes: work on the Forest Road system to control water; early detection and radication of noxious weeds on 7567 acres along dozer fire lines and other fire lines; reduce channel erosion and provide ground cover to a 2 acre cultural resource site, close Stump Springs Road (FR 5S05) prior to and in anticipation of fall/winter storms, and close Gloria Meadow Trail for one fall and winter season, and issue a notification to SCE that the Camp Creek Debris Flow is a potential hazard to their Camp Creek Diversion structure and the Mammoth Pool Dam.