

BURNED-AREA REPORT

(Reference FSH 2509.13)

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

☒ **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)**

A. Fire Name: Clay Springs

B. Fire Number: UT-SCS-000155

C. State: Utah

D. County: Millard & Juab

E. Region: 4

F. Forest: Fishlake National Forest

G. District: Fillmore Ranger District

H. Fire Incident Job Code: PNGZT8 (1502)

I. Date Fire Started: June 27, 2012

J. Date Fire Contained: 7/20/2012

K. Suppression Cost: \$6,635,000 as of July 19, 2012; fire is still not controlled.

L. Fire Suppression Damages Repaired with Suppression Funds

- 1. Fireline waterbarred (miles):** 69 miles
- 2. Fireline seeded (miles):** 32 miles
- 3. Other (identify):**

M. Watershed Number: 160300051202 Leamington Canyon-Sevier River, 160300050406 Wringer Canyon-Sevier River, 160300051201 Fool Creek Reservoir-Fool Creek, 160300050404 Wide Canyon, 160300050403 Little Valley-Sevier River, 160300051505 Oak Creek Sinks, 160300051504 Lower Oak Creek, 160300050401 Sevier Bridge Reservoir at Sevier River, 160300051503 Upper Oak Creek, 160300051507 Clay Springs Wash, 160300050104 Scipio Valley-Devils Canyon, 160300051502 Whiskey Creek, 160300051409 Upper Eight Mile (all HUC6 watersheds)

N. Total Acres Burned: 108,132

[77,750] NFS Acres [9,778] BLM [0] Other Federal [4,361] State [16,243] Private

O. Vegetation Types: Spruce/Fir (257 Acres), Seral Aspen (2,683 Acres), Mountain Big Sagebrush (12,026 Acres), Mixed Conifer (2,269 Acres), Ponderosa Pine (43 Acres), Gamble Oak/Maple/Pinyon-Juniper (15,245 Acres), Seral Pinyon-Juniper (8,833 Acres), Stable Pinyon-Juniper (25,311 Acres), Black Sagebrush (8,889 Acres), Perennial Grasses (4,549 Acres)

P. Dominant Soils: Lithic Haploxerolls, Calcic Haploxerolls, Torrifluventic Haploxerolls, Petrocalcic Palexerolls, Xerolic Cambrothids, Calcic Argixerolls, Pachic Argixerolls, Typic Argixerolls, Xerollic Calciorthids, Xerolic Paleorthids, Pachic Cryoborolls, Argic Cryoborolls, Typic Argiustalls, Flavaquentic Haplustolls, Ustic Torriorthents, Xeric Torriorthents, Xeric Torriorthents

Q. Geologic Types: C1-Tintic Quatzite, C2-Maxfield Limestone, C3-Ajax Dolomite, D-Devonian Dolomite / Limestone, K2-Indianola Conglomerate, PCs-Precambrian Rocks, Qa-Alluvium and Colluvium, S-Bluebell Dolomite, T1-Flagstaff Limestone, T4-Salt Lake Sediments

R. Miles of Stream Channels by Order or Class: There are 328 miles of intermittent stream channels and 8 miles of perennial stream within the burned area. Approximate miles by stream order are: 1st order-miles= 207; 2nd order- miles= 104; 3rd order- miles= 25

S. Transportation System

Non-Motorized Trails: 17.3 miles **Motorized Trails:** 26.0 miles **Roads:** 73.4 miles

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 7,517 (very low/ unburned) 29,511 (low) 25,831 (moderate) 18,223 (high)

B. Water-Repellent Soil (acres): 22,328 acres

C. Soil Erosion Hazard Rating (acres): 16,220 (low) 9,505 (moderate) 55,358 (high)

D. Erosion Potential: 5-19 tons/acre

E. Sediment Potential: 6,250 cubic yards / square mile

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 2-5

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

C. Equivalent Design Recurrence Interval, (years): 10

D. Design Storm Duration, (hours): 0.5

E. Design Storm Magnitude, (inches): 0.78

F. Design Flow, (cubic feet / second/ square mile): 9.9

G. Estimated Reduction in Infiltration, (percent):	30-50
H. Adjusted Design Flow, (cfs per square mile):	46.1

PART V - SUMMARY OF ANALYSIS**A. Describe Critical Values/Resources and Threats:****CLAY SPRINGS WILDFIRE****BAER / CRITICAL VALUES-AT-RISK SUMMARY TABLE**

The Clay Springs Fire started on state land and spread on to the Fishlake National Forest. Of the 108,132 acres burned 77,750 acres were on National Forest System lands and 3,332 acres on private inholdings within the forest boundary. The remainder of burned lands outside of NF boundary is BLM, state, and other private lands. The Canyon Mountains run from approximately Scipio, Utah on the south to Mills, Utah on the north. This range is divided on a north/south line with long steep canyons mainly oriented from east to west. The headwaters of the main canyons are very steep and typically the drainages have a long reach with multiple contributing side canyons. Fire impacted a significant portion, over 70%, of the Canyon Mountain Range and areas of high severity burn occur up drainage from the towns of Oak City and Fool Creek, Utah. The majority of the values at risk are located on the west side of the range which also coincides with the areas of high and moderate severity burn. However, BAER critical values are located on all sides of the fire. Within the high severity burn areas the risk of loss of hydrologic function, soil productivity, are very likely with moderate to major consequences. The drainages of Oak Creek and Dry Creek flow into Oak City. Fool Creek is down drainage from Wildhorse Canyon. Many of the contributing subwatersheds to Oak Creek, Dry Creek and Wildhorse burned at high severity. The values at risk shown below were assessed based upon the post fire conditions and likelihood of post fire events. The BAER critical values have been identified as; Human life and safety, municipal culinary water supply lines and culinary source water protection zones for Oak City, Fool Creek and Leamington, agricultural water systems for surrounding communities, road and trail infrastructure, soil productivity, hydrologic function, native / naturalized communities where invasive species and noxious weeds are absent (this includes the Partridge Mountain Research Natural Area), and multiple listed cultural and heritage resources. These values are threatened by the post-fire response to short duration, high intensity precipitation events.

HUMAN LIFE AND SAFETY**Human Life and Safety.**

Public Users of FS Transportation System (Roads) –There are several main access corridors within the fire perimeter including; Oak Creek, Fool Creek, Dry Creek, Clay Springs, Whiskey Creek, and the Leamington Pass roads. Oak Creek has an existing gate that has been closed since the fire began. An area closure order is in effect for Oak Creek and Dry Creek. Whiskey Creek and Clay Springs remain open on the south. Fool Creek remains open and is an important access point for maintenance of culinary water sources for the communities of Fool Creek and Leamington. The Pass Road is well maintained and is a key transport corridor through the Canyon Mountain Range. There is a risk that persons accessing the non-gated areas could be impacted by debris flows and flooding with the potential to strand or injure individuals – **Possible Probability of Damage or Loss/ Major Consequences...Very High Risk**

Public Users of FS trails (motorized and non-motorized) – ATV use is a common activity that occurs in the area and access to the burned area is possible. Approved ATV routes accessing the closed areas Oak Creek and Dry Creek do not exist. Horse and foot trails can access the closed area and the trails in North Walker Canyon, Buck Hollow, and the drainages in the head of Dry Creek are a concern. From Fool Creek north the potential for flooding and slides is possible to unlikely. It is likely to very likely that floods and debris flows will occur in areas from Fool Creek south to

Clay Springs and Whiskey Creek. Overall the probability of damage or loss is possible but the potential exists that users may incur injury or substantial damage. - **Possible Probability of Damage or Loss / Major Consequences...High Risk**

Public Users of FS facilities - Developed campsites and day use facilities are located in Oak Creek Canyon. The area is currently closed with a locked gate. While it is unlikely that users are in the area when a flood event happens the proximity of the campground and day use facilities to the drainages that burned at high severity would increase the magnitude of consequences to major. Several trees that were burned during the fire are now a hazard in the campground and throughout the canyon near developed rec sites and at trailheads. It would be possible that one of these hazard trees, if left in place, could fall and if people were impacted the magnitude of the consequences could result in the loss of life or severe injury. - **Possible Probability of Damage or Loss / Major Consequences...Intermediate Risk**

Communities Downstream of Burned Areas – The communities of Oak City and Fool Creek are at risk to flooding following precipitation events. The risk of flooding will exist until hillslopes are stabilized. Oak City is at risk for flooding from Oak Creek, Dry Creek, and their contributing drainages and to a slightly lesser extent Rocky Ridge and Basin Canyons to the south. Fool Creek is at risk from flooding that originates in Wildhorse Canyon and associated sub drainages. The National Weather Service hydrologist estimates that a precipitation event of 0.5 inches of rain in 30 minutes in any of these drainages would trigger flooding events and debris movement.

Public Users on or in Private Property – Flooding on private lands may occur following post-fire precipitation events with potential impacts to the public in Oak City.

PROPERTY

Buildings, water systems, utility systems, road and trail prisms, residences, ponds, dams, wells or other significant investments.

Structures on Private Lands near NFS burned lands - The primary residences and outbuildings in Oak City and Fool Creek may be at risk due to flooding that may occur in Oak Creek, Dry Creek, and Wildhorse drainages. Several of these structures in Oak City are built in the drainage bottom at the confluence of Dry Creek and Oak Creek. Additional flows are possible out of Basin Hollow and Rock Ridge Canyon located to the south of Oak City. After the 1981 Clay Springs fire Rocky Ridge and Basin Hollow produced debris flows that reached the town.

Campgrounds and Associated Infrastructure – Oak Creek Campground is a developed site maintained and operated by the Forest Service. The structures for the site include toilets, kiosks, and a bridge across Oak Creek, tables, and fire rings. The bridge was installed, replacing a culvert, following the Devils Den Fire in 2006 when debris flows from Limekiln Canyon plugged the existing culvert and stranded several campers in the campground. It was designed to handle larger flows and the recommendation from forest engineers is to leave it in place but to make improvements to culverts along the Oak Creek Road above the bridge to facilitate material movement in the system. Several trees were burned in the campground which poses a hazard to visitors. Other improvements in Oak Creek include dispersed camping sites, picnic tables, fire rings, barriers, and a toilet near the confluence of Bowens Canyon and Oak Creek. Debris flows from North Walker Canyon, Bowens Canyon, Lyman Canyon, and Radford Canyon increases the likelihood that these improvements will be damaged or lost. **Very Likely Probability of Damage or Loss / Moderate Consequences...Very High Risk**

Private/Municipal Culinary Water Systems on NFS Lands – The fire burned in all the drainages in which culinary water sources originate for the communities of Oak City, Leamington, and Fool Creek. Oak City has spring sources

and water lines from the springs in Oak Creek (Cold Springs) and Dry Creek (Quaking Aspen Hollow has 6 spring sources, Mayparty Spring and First Spring). Leamington and Fool Creek rely on spring sources in the Fool Creek drainage these include springs in Netties Canyon, Black Willow Spring, and Buck Hollow in the Upper Narrows of Fool Creek. The spring sources in Quaking Aspen Hollow and Buck Hollow are at the highest risk for damage from debris flows following rain events. Cold spring is located on a fan with high severity burn area above and is also at risk. Flooding and debris flows could alter water delivery through plugging pipelines and headbox/collection structures. The District Ranger approved a request from the towns of Leamington and Fool Creek to do some earth work (berm reinforcement) above the springs in Fool Creek. They coordinated their efforts with the NRCS and Millard County for equipment and supplies. It is likely that the springs in Dry Creek and Oak Creek on NFS lands will be impacted following a post fire rain event. If the improvements/reinforcements on the springs in Fool Creek remain intact the risk to those springs on NFS land is less.

Agricultural Water Systems – There are multiple structures, pipelines, and tanks scattered across the 77,550 acres of NFS lands within the burn perimeter. The BAER team has identified 7 cement collection structures that either deliver water to a pipe or ditch system to be used for irrigation in Oak City and Fool Creek. These structures are located in Dry Creek, Oak Creek, North Walker Canyon, Little Creek, Fool Creek, and The Narrows of Fool Creek. These collection structures are at risk to plugging with ash and soil or they may be lost entirely to floods and debris flows. Stock watering tanks usually supported with poly pipe that is either buried or above ground occur in Clay Springs, Whiskey Creek, Cow Canyon, John Williams Canyon, Wide Canyon, Pass Canyon, Wildhorse Canyon, Mourning Dove Spring, and Rocky Ridge Canyon. Some pipe has been burned and is no longer functional. Post fire events may further damage these water systems.

Forest Roads – 73.4 miles of FS roads occur within the burn perimeter. These roads occur on the all aspects of the Canyon Mountain Range. As the majority of the infrastructure is located on the west side of the range this will be the primary focus for consideration but other significant routes exist on the south and east sides of the fire. Oak Creek Canyon Road is surrounded by high severity burn and the cross drainages that feed Oak Creek have long reaches that have been completely affected by fire. Where crossings occur along this road there is potential for washouts and road cutting. The road in Dry Creek is surrounded by high severity burn including the headwaters. The road crosses the channel in several locations and is located adjacent to the channel for most of the reach. Downcutting is evident from past events and some large material has started to fall into the channel post fire. The Fool Creek road is at risk to debris flow and erosion. The road in Wildhorse Canyon is located in the valley bottom with evidence of past flood activity that moved boulder sized material down the canyon following the Mourning Dove fire of 2000. The location of this road puts it at risk. The Pass Road is at a lower risk as most of the vegetation in the area was grasses with some shrub component therefore, it did not burn with high intensities and severity was lower. On the east side of the fire the roads in Wide Canyon, Cow Canyon, and Little Oak Creek are at risk to increased erosion rates. On the south end of the fire the roads to Clay Springs and Whiskey Creek are at risk. Both are down drainage from areas of high severity burn and the Whiskey Creek road is in the drainage bottom. These surfaces will be subject to accelerated rates of soil erosion for the next 2 to 4 years during inclement weather conditions. Most of the roads and drainage structures require normal maintenance, cleaning or repairs to function properly and accommodate anticipated additional runoff. Overall the probability of damage or loss will be very likely with substantial property damage. Local representatives will need to be on site for work along a few roads because of waterline locations. Some tree removal near inlets of crossings will occur as well. – **Very Likely Probability of Damage or Loss / Major Consequences...Very High**

State and County Roads – Millard County has several forest access roads below the fire. Clay Springs, 8 Mile and portions of the Pass Road on private land. Clay Springs/8 Mile roads could experience debris flows and at the least water damage over the roads during rain events. State Highways 128 & 132 will likely be similarly impacted with debris and water. Drainage structures along these roads may be impacted from post fire events.

City Roads and Drainage structures – Dry Creek, Oak Creek, Rocky Ridge, and Basin Canyon all flow into and converge in Oak City. The expected flows from these systems may impact existing drainage structures and associated roads. There is a possibility for drainage structures to clog sending water and debris over road surfaces. The town has

taken precautions of placing sand bags and jersey barriers at known weak spots in the system.

Forest Trails – 26 miles of horse and foot and 17.3 miles of motorized trails are inside the burn perimeter. Trails in Fool Creek, Buck Hollow, North Walker Canyon, Bowens Canyon, Radford Canyon, Little Creek, Little Oak Creek, Upper Rattlesnake and Dry Fork are all at risk to effects from debris flows and erosion associated with hydrophobic soils, steep slopes, and high burn severity. Effects are expected during summer thunderstorm events when more than 0.5 inches of precipitation falls in less than 30 minutes. Effects to trail surfaces from erosion will remain for 2 to 4 years until soils stabilize. - **Very Likely Probability of Damage or Loss / Moderate Consequences...Very High Risk**

NATURAL RESOURCES

Soil productivity on burned NFS lands – Potential loss of soil due to post fire runoff events.

Following the wildfire, erosive conditions exist due to the burning of ground cover, coarse woody debris and soil subsurface organic material. Loss of topsoil negatively affects ecological function for:

- native seed bank and native species recovery
- root growth and soil stability

With BARC imagery mapping, field mapping of approximately 18,000 acres, on the ground assessments and verification the BAER team concluded that 54% of this incident was subject to Moderate and High Severity Burns. Approximately 18,300 acres were mapped as high burn severity and 25,750 acres burned at moderate severity. Much of the Canyon Range burned within the last half-century and in some cases areas have burned 2-3 times over that span of time. However, the areas that previously had not burned over the last half-century or so predominately resulted in the bigger blocks of both high and moderate severity within the burn. For example Upper Oak and Dry Creeks burned at moderate and high severity in large contiguous blocks within the headwaters burning and the soils are hydrophobic. Most of the drainages within these upper drainages specifically, had nearly full combustion of all vegetation. With the exception of a small green strip remaining along the bottom of Oak Creek most vegetation is totally consumed along hillslopes in very large blocks, or still intact in a few blocks based on topography likely shielding a few canyons here and there. North Walker Canyon, the largest tributary drainage, in the Oak Creek drainage has been described by most who have seen it has not having a green tree within it anymore, and many other canyons could also be described in a similar fashion across the burn. The lack of ground cover and hydrophobic soils will likely increase surface runoff, flooding, and erosion following typical summer monsoon and thunderstorm rain events. Flooding and debris flow events occurred in drainages within this current fire perimeter previously and from other fires in the area and are expected again. Increased sedimentation and soil movement is expected. Water quality will be affected following storm events. - **Likely Probability of Damage or Loss/ Moderate Consequences...High Risk**

Hydrologic function on burned NFS lands - An adverse change to hydrologic function is expected due to the large contiguous areas burned at moderate and high severity. Fire severity BARC imagery and on the ground field verifications indicate that watersheds within the burned area now have 25 - 88% of their drainage areas in the high and moderate soil burn severity categories. Watersheds with the greatest percentage of their drainage area burned at high severity include Oak Creek (46%) and Dry Creek (45%). These are also the largest and most critical watersheds within the burned area, with a combined drainage area of almost 30 square miles. Hydrophobic soils are found throughout the headwaters of watersheds that experienced high and moderate soil burn severity. Post fire flooding and debris flow response could be dramatic, with an increased risk of debris flows in the steeper side drainages, as well as increased peak flows throughout the area. Many of the tributary drainages contain accumulated channel sediments that have a high probability of being mobilized in high intensity, short duration rainfall events. Given these conditions, there is a High risk to soil-hydrologic function within the burned area until watershed recovery occurs (2-5 years for hydrologic response). - **Likely Probability of Damage or Loss / Moderate Consequences...High Risk**

Source Water Protection Zone - Ground water recharge may be affected by hydrophobic soils where the ground water recharge zones intersect with high and moderate burn severity portions of the fire. The contributing watershed area above many source water protection zones have been impacted by the fire, and a temporary effect to infiltration and recharge rates are expected, particularly during summer thunderstorm events. These effects should be short-term will decrease as vegetative cover returns to the area. – **Possible Probability of Damage or Loss / Moderate Consequences...Intermediate Risk**

Native or naturalized communities on NFS land where invasive species or noxious weeds are absent or present in only minor amounts. This burned area is more than 98% noxious-weed-free. This portion of the Forest is a great place to use an early detection/rapid response strategy with the noxious weed program. Noxious weeds (existing mapped weed locations), particularly squarrose knapweed (85 acres), musk thistle (52 acres), Russian knapweed (40 acres) and Scotch thistle (39 acres) pose a threat to the burned area. These acreages constitute an early detection and rapid response situation for this 77750 acre burned area on the Forest. These four species are particularly aggressive and need immediate attention. Each one has the potential to adversely affect hundreds to thousands of acres of native or naturalized communities. Several other less serious noxious weeds also occur within the burned area. – **Likely Probability of Damage or Loss / Major Consequences...Very High Risk**

CULTURAL AND HERITAGE RESOURCES

Cultural resources on NFS lands which are listed on or potentially eligible for the National Register of Historic Places - Prior to the Clay Springs Fire, approximately 14,777 acres (18.22%) had been previously surveyed for historic properties (archeological sites, historic structures, and traditional cultural properties eligible for, or listed on, the National Register of Historic Places) within the area of the fire perimeter (81,082 acres of Fishlake National Forest, U.S.D.A. Forest Service land). These surveys documented and assessed a total of 11 historic properties within the fire perimeter on the Fishlake National Forest. All of these sites actually fall within low (4), moderate (6), and high (1) burn severity areas. These properties include eight prehistoric sites, two historic sites, and one site of unknown antiquity. Of the sites within the moderate and high burn severity areas, two have been identified as having a very high risk of threats. Two additional sites appear to have a high risk of threats, while the remaining sites appear to have a low risk of threat. - **Very Likely Probability of Damage or Loss / Major Consequences...Very High Risk**

Non BAER Values At Risk

Bifid Duct Pyrg - The bifid duct Pyrg (*Pyrgulopsis peculiaris*) is currently under review for listing by the USFWS. Big Spring, located adjacent to Oak, is one of a handful of locations where this species is known to occur. Oak Creek is also one of only two perennial streams on the mountain, and the only one with a productive sport fishery (mostly brown and rainbow trout). Sediment flow and bank/streambed alteration would have significant short and long-term impacts on these and other aquatic species. Limiting erosion and sediment flow through immediate re-vegetation of both uplands and riparian areas will be crucial to maintaining habitat for these species.

Northern Goshawk - The “plantation” area of Oak Creek Canyon is a small, 40 acres patch of ponderosa pine that is unique to the Canyon Mountains. It is also the location of the only active goshawk territory on D1. Over 60% of the ponderosa were impacted by the fire, and many will likely die. Replacement of this stand is important to maintaining habitat values that make it an attractive nest site for this species.

Critical Big Game Winter Range - Roughly 75% of the crucial big game winter and summer ranges have been severely reduced or lost. The value of these ranges could be at further risk due

to the moderate to high potential for soil loss on highly erodible soils that could lead to sterile soils, entrenched streambeds and sediment transport into water bodies. It is therefore important to encourage immediate re-vegetation in areas that have been severely burned and occur on unstable soils through mulching and aerial seeding, using a seed mix that utilizes species with the highest potential for success. If habitat values for big game are to be maintained on lower elevation areas (winter range) browse must be included in re-vegetation efforts. Cliffrose and big sagebrush were present before the fire, and should be included in the species mix. Four-wing saltbush and bitterbrush are also good candidates. Forage kochia has proven to be a valuable browse species for big game that is well adapted to this area as well as fire resistant.

B. Emergency Treatment Objectives:

- Reduce threats to personal injury and/or human life of Forest visitors in and immediately adjacent to the fire by installing a gate, warning signs and performing storm patrols.
- Warn users of Forest roads, trailheads, and trails of hazards present in the burned area.
- Mitigate potential post fire soil losses through increasing post-fire ground cover with mulch and vegetation treatments.
- Reduce the likelihood of invasive and noxious species colonizing the burn area through revegetation, early detection rapid response and chaining treatments.
- Reduce potential for runoff through broadcast seeding. This treatment will be used to stabilize existing ground conditions on severely and adjacent moderately burned terrain. Seeding is to maintain soil productivity, uphold the ecological integrity of our sites, and limit the amount of sediment available for transport into waterbodies.
- Control expected invasion of noxious weeds within the area, especially along Forest roads, drop points, helispots, and spike camps used by fire equipment and in existing populations within the fire boundary (Use of P Code will be used as appropriate).
- Minimize threats from additional post fire runoff to system roads and trails within the fire perimeter by cleaning existing drainage structures, constructing cross drainage in areas that will have excessive increased flow onto travel and trail routes, and upsizing other culverts as necessary to allow for increased peak flows in two watersheds with the most high and moderate severity burn in relationship to critical values and infrastructure.
- Maintain stream gradient near stream crossings to protect Forest infrastructure.
- Minimize threats from post fire runoff to property adjacent and downstream from the fire through storm patrols and cleanouts of drainage structures (culverts) as necessary following rain events.
- Identify appropriate monitoring activities that estimate the effectiveness of emergency stabilization treatments and identify necessary maintenance and continuation of other approved BAER activities.

C. Probability of Completing Emergency Stabilization Treatments Prior to a Storm Damaging Event:

Land	65 %	Channel	70%	Roads / Trails	85 %	Protection / Safety	90 %
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D. Probability of Treatment Success: (on NFS lands)

Treatment Types:	← Years After Treatment →		
	1	3	5
Land Treatments (seeding)	60 %	70 %	75 %
Land Treatments (mulching)	70 %	80 %	80 %
Channel Treatments (Cross Vanes)	70%	80%	90%
Channel Treatments (Debris Basin)	70%	80%	90%
Road / Trail Treatments (drainage and culverts)	85 %	85 %	85 %
Protection / Safety Treatments (signs)	90 %	90 %	90 %

E. The Cost of Taking No - Action See Attached VAR Excel Workbook

The values at risk directly lost through No-Action includes: damage to water quality and availability, loss of soil productivity, damage to structures, campgrounds, picnic areas, roads, trails, utilities, and human life and safety due to change in hydrologic and hillslope conditions. Cost estimates were obtained through consultation with Forest Service engineers, hydrologists, ecologists and botanists and include repair/reconstruction costs and where appropriate replacement costs. City-Data was used to estimate structure values on private land. ClaypringFS.xls is the VAR worksheet used to determine the cost risk assessment of taking no action and for taking action. For Map Areas A and B in the analysis separate worksheets were completed to assess downstream Non-FS values.

F. Cost of Selected Alternative: See Attached VAR Excel Workbook**G. Skills Represented on Burned-Area Survey Team:**

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

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H. Treatment Narratives: 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

AERIAL STRAW MULCH

The mulching treatments were determined to be the minimum necessary to protect critical values, as defined in FSM Interim Directive 2523.03.

Purpose of Treatment: This treatment is to reduce risk to loss of soil productivity and hydrologic function and to protect property including roads, and trails. In addition, this treatment will reduce risks to non NFS values of culinary and agricultural water sources and infrastructure, and private structures. Mulching would also provide protection to public users in the area by reducing the erosional rates and intensities. Apply agricultural straw mulch to the ground surface to achieve a continuous cover of uniform thickness, as specified below, to replace ground cover consumed by the fire. Ground cover is needed to maintain soil moisture, accelerate recovery of native vegetation, to protect any seed remaining onsite, and to improve success of stabilization seeding treatments. In addition, the organic mulch will protect soil from solar heating and drying, thereby improving the ability of seeds to germinate.

Location of Suitable Sites for Treatment: The locations are areas that burned at high severity. Treatments are placed in headwaters, along perennial streams and on slopes of 20 to 70% where greatest probability of erosion is expected and where the team has determined it will be most effective to reduce flows and soil loss. (Refer to BAER Treatment Map for the exact locations).

Design Specifications:

- Treat areas in designated units with “High” soil burn severity. Do not treat areas that have needles in trees, exposed rock outcrops, or slopes greater than ~70%.
- Straw application rate: Apply mulch to achieve a continuous cover of uniform thickness on areas of 20-70% slope within the mulch polygons of treatment area at a depth of less than 2.0 inches. Application rate will be approximately 1 ton / acre (2,000 pounds). This is about 0.25 inches or 3 straw shafts deep. Aerial application may not achieve desired ground cover, therefore ground crews will likely be needed to spread straw clumps by hand in select locations in each treatment unit. Discussion with Pete Robichaud on October 14, 2010 regarding a rate of 0.5 tons/acre identified that patching or stripping has not proved to be successful in the past. It was determined that the energy created between patches or strips of treated area overwhelms the next treated area and/or undercuts with rilling.
- Straw must conform to State Department of Agriculture (SDA), Certified Noxious Weed Free Standards for Noxious Weed Free Forage and Straw (NWFFS). All straw provided must have been planted and harvested during the 2011(2012 maybe preferred) growing season. Straw shaft length will not exceed 12 inches. Suitable straw includes barley, rice, and wheat grasses.
- The straw must be applied dry (less than 12 percent internal moisture content) to ensure proper dispersal during aerial applications. The Forest Service may randomly test bales using a moisture probe.

This treatment is intended to achieve three sequential objectives:

1. Improve conditions to protect soil productivity by replacing ground cover burned in the fire. Replacing ground cover will: a) decrease erosion by interrupting raindrop impact and surface soil detachment; and b) increase hillslope obstructions to decrease slope lengths which mitigate accelerated overland flow, thereby decreasing sediment delivery. Mulching also helps to protect the native seedbed and retain moisture on the burned slopes to facilitate vegetative recovery of the treatment areas.

2. Decrease overland flow and erosion from high soil burn severity areas upslope of trails or roads, which can intercept surface runoff and result in damage and/or loss of infrastructure.
3. Decrease sedimentation from burned areas and trails upslope of streams to protect water quality. In addition it will help reduce risk to agricultural irrigation water supplies.

The mulching treatments are predicted to lower the estimated soil erosion and subsequent sediment delivery to the streams by up to about 1/2. Mulching will also reduce downstream peak flows by absorbing and slowly releasing overland runoff which is likely to be increased due to reduced soil cover and hydrophobic soil conditions. Mulching treatments in the headwaters of the streams can protect a much larger downstream area from cumulative runoff and sedimentation.

Implementation Monitoring

Visually inspect randomly selected mulch treatment units for proper application rate and uniform thickness during / immediately after treatment to ensure treatment/contract specifications are met prior to completing treatment. In each unit, measure percent ground cover using a 100 feet pace transects.

BROADCAST SEEDING

The purposes of the aerial broadcast seedings are to protect the soil productivity, hydrologic function. In addition seeding areas where the pinyon, juniper and mountain brush cover type burned and resulted in moderate and high burn severity will minimize impacts to Native or Naturalized communities from an invasion of invasive species (cheatgrass and 7 noxious weeds present in the area). These later treatments are intended to prevent an alteration of the fire regime.

The different values at risk and the level of risk guided our recommendations to apply seed to reduce unacceptable risks on only portions of the forest-administered lands. These recommendations include the following for reducing risks to soil productivity, water quality and other downstream values

- 1) Seed many of the contiguous high and moderate burn severity areas in the major drainages of the burned area. These areas may have the greatest potential in the burned area to produce flood events.

- 2) Seed under any areas that are proposed for mulch.

- 3) Where mulch is not feasible, or possible because of steep slopes, seed with a cereal grain to grow mulch on site and protect long-term soil productivity.

In addition the following recommendation is to reduce the risk to BAER value of native or naturalized plant communities.

- 4) Be proactive and aggressive with a seed mix, and mulch or cereal grain, designed to prevent an infestation of cheatgrass and other undesirable invasive species as well as to protect soil productivity.

Treatments Proposed

The following treatments are proposed (see Treatment map):

- 1) Use high elevation seed mix in conjunction with aerial mulch – 2,905 acres
- 2) Use high elevation seed mix (after the earlier application of wheat) – 6,653 acres
- 3) Use high elevation seed mix – 2,140 acres
- 4) Use low elevation seed mix in conjunction with chaining -- 2,378 acres
- 5) Use low elevation seed mix in conjunction with aerial mulch – 404 acres
- 6) Use low elevation seed mix (after the earlier application of wheat) – 261 acres
- 7) Use low elevation seed mix – 2,692 acres
- 8) Early application of wheat – 6,914 acres (high elevation mix is greater than 20 inches annual precipitation (6,653 ac); low is less than 20 in annual precipitation (261 ac))

All 8 of these treatments are designed to improve soil productivity and hydrologic function for the respective locations and below. Treatments 1 thru 7 will help sustain naturalized ecosystems. The early wheat seedings (Treatment 8), designed for immediate implementation, is proposed to provide some

cover on these specific damaged soils and watersheds as soon as possible. This is not an expensive treatment, and has less chance of being successful, but at least 6 people consulted feel there is value. The wheat will compete some with the native and naturalized species on site and in seed Treatments 2 and 6. However, our combined opinion is that the competition from the wheat at the rate seeded (25 lb/ac) will not be excessively competitive or persistent over the long run, and this is a worthy treatment. We justify Treatment 8 on the chance that it may provide the most immediate protection to soil productivity and hydrologic function.

These seed mixtures and treatments will help to keep the soil on the mountain slope and promote hydrologic and ecosystem function. These mixes contain a strong component of native species as well as some less aggressive and well-reasoned introduced species. In light of Executive Order 13112 (2/3/1999) on invasive species, we considered and determined that the introduced species in this mix will not be “likely to cause economic or environmental harm or harm to human health.”

Native or Introduced	Species to be Seeded	Seed Mix #1	Seed Mix #2	Cereal Grain
		12 to 20 in. ppt.	20+ in. ppt.	

< -- Pounds / Acre (PLS) -- >

N	Big bluegrass “Sherman”	0.5	0.5	
N	Bluebunch wheatgrass “P-7”	2.0	2.0	
N	Snake River wheatgrass “Secar”	1.0		
N	Sandberg bluegrass “UP Colorado”	1.5	1.5	
N	Slender wheatgrass “Pryor”		0.5	
N	Mountain brome “Bromar” or “Garnet”		3.0	
N	Thickspike wheatgrass “Bannock”	2.5	2.0	
I	Crested wheatgrass “Hycrest”	2		
I	Orchardgrass “Paiute”	1	1	
I	Winter Wheat			25

Total Pounds / Acre

Total Seeds / ft² ^{1/}

Estimated Seed Cost / Acre

Estimated Cost Seed Mix/Pound

10.5	10.5	25
70	66	8.5
\$42.25	\$41.00	\$5.00
\$4.02	\$3.90	\$0.20

^{1/} Recommended rates for broadcast seeding mixes are about 50 – 100 seeds per square foot.

Price estimates were obtained from Utah Division of Wildlife Resources seed warehouse in Ephraim, UT. Actual costs may vary depending on availability at time of purchase from the successful bidder. The following table shows the pounds per acre of seed (PLS) that is used in each mix. Cost for aerial application is estimated at \$45 per acre.

The seed purchased will be certified to the variety claimed. Also, the mix will be certified that NO noxious weed seeds are present. Pure live seed (PLS) equals the percent of purity times the percent total germination ($PLS = \% P \times \% TG$).

These seed mixes include the recommendations of District and Forest specialists. We referred to seed mixes previously used with success on the Forest and the Intermountain Planting Guide, from Utah State University Cooperative Extension Service, while designing these seed mixes to achieve the FSM objectives listed above. Dr. Stanley Kitchen from the Rocky Mountain Research Station's Shrub Sciences Lab in Provo also provided input on the seed mixtures.

The value of multiple species in the seed mix provides the flexibility for different species in the seed mix to thrive in a micro-site that is best suited for that certain species.

The Planting Guide for Utah gives the following information in the "Wildfire Seedings" section. "Steep slopes and rough areas that are not accessible to conventional ground equipment can be aerial seeded ... if it is not possible to cover seed, plant late in the fall and increase the seeding rate ... burned sites, including forest and desert ranges are often seeded within a few days or weeks following the fire, in the mistaken belief that the ash will cover the seed ... even if an ash residue or a loose seedbed is present, seed only during the appropriate seasons. Do not plant on a loose dry seedbed ... plant in the late fall when seedbeds are firm."

Rest the seeded area, and entire burned area, from livestock grazing for two full growing seasons. This will give the seeded species and residual plants two seasons to grow, set seed and begin to re-establish. When livestock are allowed to return, the treated areas could be grazed late season after seed set. The livestock hoof action would help to work some of the shattered ripe seed into the soil which will continue to extend the value of the treatment.

CHAINING

Purpose of Treatment: The purpose of the double chaining is to cover the seed and maximize the potential benefit of seeding near the fire perimeter or along the Forest boundary to reduce the high potential for cheatgrass and noxious weeds to increase, or move into, these portions of the Forest. The total acres recommended for treatment is 2378. Treatment will only be applied to suitable areas that have slopes less than 25%. All of the chaining will occur on Forest Service administered lands. The Forest documented success from chaining 1,100 acres in similar ecosystems setting about 15 miles to the south from a emergency response post fire treatment of the 2009 Sawmill Canyon Fire. Monitoring showed the 2009 treatment met treatment objectives identified in the BAER project similar to the proposed treatment objectives of this fire.

General Description: The double chaining entails making a single pass with an Ely chain pulled by two dozers (most likely D8 or D9) to prepare the seed bed. The seed mix is then flown on (most likely by fixed wing aircraft). Finally, a second pass of the entire area is made with the Ely chain to cover the seed.

Location (Suitable) Sites: West of Lower Clay Springs at the fire perimeter and Southeast edge of the burned area from John Williams Canyon north to Cow Canyon. (See Treatments Map)

NOXIOUS WEED EXPANSION MONITORING and SPOT TREATMENT

Purpose: To detect and treat emerging noxious weeds within the burn perimeter along known locations and travel routes used during suppression operations. An early detection and rapid response strategy is to be employed. Three aggressive noxious weeds need immediate attention; Scotch thistle, squarrose knapweed, and musk thistle threaten the area. Also, houndstongue might increase in the area, and whitetop may spread in the reaches of Fool Creek, Clay Springs, Whiskey Creek, and John Williams Canyon. Several other species on the State of Utah noxious weed list are present along travel corridors and adjacent to the burned area (see Existing Noxious Weed Locations map).

General Description: The Fillmore Ranger District weed crew will implement this strategy during the growing seasons of 2012 and up to the fire containment date of 2013 to detect and treat any new infestations of noxious weeds in the burned area. Individuals of noxious weeds generally will be sprayed with herbicide at the same time they are discovered. New weed locations will be documented with GPS positions and photographed when possible. The search of all locations will occur three times during the growing season, preferably in May, late-June and up to the containment date of the fire. This frequency should allow individual young weeds to be detected and treated before they reach full maturity and set seed. Monitoring levels may be increased if substantial amounts of young noxious weeds are detected.

Location (Suitable) Sites: This treatment includes a search for any new individuals of noxious weeds on forest-administered lands for 300 feet inside the fire perimeter along four specific stretches (see Noxious Weed Monitoring and Spot Treatment map). Most of the forest routes in the burned area will be monitored for 150 feet on each side of the route. Dozer lines that occur inside the Forest boundary will be monitored for 300 feet on each side of the route or line. Also, spike camps, drop points, helispots, and dipsite locations will be monitored.

ROAD AND TRAIL TREATMENTS

ROAD STABILIZATION CULVERTS/DRAINS

Purpose of Treatment: To upsize existing culverts to handle increased flows, clean plugged culverts, and replace damaged culverts that are no longer functioning.

General Description: Cleaning includes the cleanout of catch basin culvert inlets, outlets, and the drop inlets. Replacement of existing culverts with larger culverts is the best solution in cases where existing culverts are too small.

Location (Suitable) Sites: Oak Creek crosses the Oak Creek Road in several locations. Replacement of the existing culverts with larger culverts are necessary to be able to accomdate higher flood flows. These improvements will ensure that the existing road is not washed out and preserve this infrastructure, which has been very well maintained up to this point. Many improvements have been made to the road recently and need to be protected. If this step is not taken, the probability of failure is high and magnitude of loses would be large as has been seen in the past on this road. Proposal is for 12 culverts.

HARDENED LOW WATER CROSSINGS

Purpose of Treatment: These crossings are a cost effective way to direct the drainage flows across the road in a single area and prevent the water from running parallel to the road, which would increase the chances of road washing out for a futher distance.

General Description: All of these crossings would be installed on Oak Crek Road (one just adjacent to it). Several have already been installed along Oak Creek Road in the lower portion of the canyon and

function well. The armor consisting of 6" minus riprap is placed where runoff could possibly cause erosion to the road surface and fillslope. A one foot thick gabion blanket is employed downstream and adjacent to the road to avoid headcutting. This is necessary due to the high flows expected following this fire. Previous fires in the area had post fire flash floods in this canyon.

Location (Suitable) Sites: Larger Hardened Low Water Crossings will be employed at major culvert crossings along the Oak Creek Road to help in accomodating potential flooding at higher flows to prevent culverts from failing if plugged with debris or cannot accomadate the flash flood flows. Smaller Hardened Low Water Crossings will be installed on the road to Little Creek Campground, which takes off of the Oak Creek Road to protect the road prism.

CLEANOUT ROADSIDE DITCHES

Purpose of Treatment: Improve existing ditch to handle increased flows expected with the post fire precipitation events.

General Description: Clean ditches in Oak Creek along the main road of dirt, sediment, and debris. Material pulled from the ditch will be deposited down canyon off site where it will not pose a hazard or plug other drainage structures.

Location (Suitable) Sites: Along 5.2 miles of the Oak Creek Canyon Road from the Forest Service boundary to the trailhead to Little Oak Creek. (See BAER Road Treatments Map)

ROAD RECONDITIONING

Purpose of Treatment: Grader/Dozer reconditioning will enhance rolling drainage dips where necessary. It will also ensure drainage flow is directed to the nearest drainage structure as necessary or that the increased flow from burned areas will sheet off of the road effeciently. This will prevent the predictable higher flows off of burned areas from washing out large areas of roads which will be much more costly to repair in the future if that happens. Cleaning of existing structures, ditches, minimal cross drain construction in areas where unacceptable risk to losing the road prism is neccessary.

General Description: The grader will work with a dozer on these roads. The dozer will mainly be responsible for installing water bars, applying correct cross slopes and drainage ditches. The grader will enhance these improvements and also provide a smoother driving surface then the dozer can obtain. For steeper sections of road the dozer will be used exclusively (this constitutes 1.2 miles, otherwise the grader and dozer will work together). Where waterlines are buried in the road an excavator will be used to create waterbars for drainage purposes. Many times stock water water lines are "ripped" directly into the road bed and over time become exposed. To further minimize damage to these lines the excavator will be employed to drag material from the shoulder of the road bed to build up the water drainage structure.

Location (Suitable) Sites: Along 17.7 miles of roads in Dry Fork of Fool Creek, Fool Creek, Pole Canyon, Cascade Creek, North Walker Canyon, Dry Creek, and Rocky Ridge Canyon. (See BAER Road Treatments Map)

TRAIL STABILIZATION

Purpose of Treatment: Grade dips, and waterbars will divert water off of the trail preventing erosion and debris flows from degrading the trail. This method will keep the trail from becoming a stream channel and prevent the loss of the trail.

General Description: Install drainage structures, contour trenches, and debris to prevent erosion, mass wasting and mud flows that are predicted to occur following the burn. These measures would reduce the risk to trail infrastructure.

Location (Suitable) Sites: Locate drainage structures along 34 miles trails within the fire perimeter. See Trail Stabilization Map)

STORM PATROLS

Following large storm events or as reports are received about debris flows on roads and trails Forest staff will patrol the area and address the problem. This may involve equipment use to clean plugged culverts for example. Additionally, staff will make recommendations for interim BAER funding requests that may be needed.

CULTURAL RESOURCES PROTECTION

Purpose of Treatments: Provide protection to cultural resources at risk from debris flows and flooding within the burn perimeter. These sites are listed on the National Register of Historic Places. They include lithic and ceramic scatters, a rock art site with associated lithic scatter, and potentially a historic site (field visit to confirm damage to historic site still needed).

General Description: Hand seed and mulch sites FL-1019 and FL-1026 (lithic and ceramic scatters). Also, mulch and seed slopes above site FL-1026 to prevent/reduce hillslope erosion impacts. A rock art site with an associated lithic scatter (FL-879) along Fool Creek will suffer loss of integrity and cultural values, as well as research values, if this site is not protected from flooding and rock damage. It is recommended that 2" wire mesh fence with silt fence fabric and T-bar posts are placed around the rock outcrop for protection.

Location (Suitable) Sites: Archeologist will assist BAER team with treatment placement. Due to sensitive nature of the sites maps will not be provided.

CHANNEL TREATMENTS

CROSS AND HALF VANES

Purpose of Treatment: Cross and half vanes are designed to direct and keep stream flow directed at the most appropriate angle for each road/stream crossing. The purpose of installing vanes is to provide grade control to keep the flowline where it would be most beneficial for the crossing. They will also be employed in locations where the stream is threatening the road due to erosion. Half vanes are recommended where the channel makes a bend and is threatening the road. Half vanes are installed on only the side of the channel closest to the road. These also direct erosive energies away from the road and will protect it.

General Description: A cross vane is a semi-circular arch constructed out of large, approximately three foot in diameter boulders that points upstream. These will be installed above and below the culverts that will be installed at the Oak Creek/Oak Creek Road crossings. Half vanes are basically half of cross vane that jetty out about half way into the stream to function on bends to protect the outside banks and in this projects cases roads.

Location (Suitable) Sites: Oak Creek Canyon along 6.4 miles of the road at low water crossings and culverts that are at highest risk to road damage from increased flows due to the fire. (See BAER Road Treatment Map)

SEDIMENT BASIN

Purpose of Treatment: To catch increased sediment where flatter topography allows them to be effective. Prior to the runoff flow reaching the inlet of a culvert or other drainage structure the sediment basin will allow the velocity of the water to slow enough to deposit sediment load into the basin.

General Description: One proposed site has been identified to install a sediment basin to meet the purposes described above.

Location (Suitable) Sites: At the Forest boundary in Rocky Ridge Drainage.

PROTECTION AND SAFETY MEASURES

WEATHER STATIONS

Purpose of Treatment: Deploy weather station to measure precipitation events that would initiate floods and or debris flows.

General Description: Coordinate weather station locations with the National Weather Service (NWS) to set up weather stations that will provide information to the Millard County Sheriff's Office. The NWS will issue any alerts and ownership of the stations will be transferred to Millard County. This treatment/service has been requested by the Sheriff of Millard Co. and the Mayor of Oak City. Forest Service will provide appropriate permits and access for installation of weather stations on NFS lands. Other agencies will install, manage, and maintain the weather stations.

Location (Suitable) Sites: To be determined by the NWS.

GATE

Purpose of Treatment: Provide public protection by installing a locking gate restricting access to burned areas susceptible to flooding and debris flows.

General Description: Metal gate which can be locked will be fabricated and installed to prevent access and unnecessary exposure to hazards associated with the burned area and post fire effects expected in the headwaters of Dry Creek.

Location (Suitable) Sites: Dry Creek

HAZARD TREE REMOVAL

Purpose of Treatment: To remove trees in areas where people congregate. Only treat areas where the hazard trees are a high risk to life and property.

General Description: Identify and mark all hazard trees at trail heads, in campgrounds, in parking areas, or other spots where people congregate.

Location (Suitable) Sites: Oak Creek Campground, trail heads in Oak Creek Canyon, and around other improvements in Oak City Canyon including day use areas and the toilet in the Ponderosa Plantation. Other sites include; Dry Creek Canyon trail heads and Whiskey Creek parking areas.

ROAD AND TRAIL / BURNED-AREA WARNING SIGNS

Purpose of Treatment: The purpose of the BURNED-AREA signs is to warn the public of potential hazards resulting from the effects of the fire, such as rolling rocks, falling trees, road washouts, and flash floods.

General Description: This treatment is for the installation of burned-area warning signs. Burned-area signs consist of a warning to the public identifying of the possible dangers associated with a burned-area. It shall contain language listing items to be aware of when entering a burn area such as falling trees and limbs, rolling rocks, and flash floods.

Location (Suitable) Sites: These signs shall be installed at road intersections below the fire along the eastern perimeter (3 signs in total). All signs will be placed facing the direction of travel entering the burn area.

Design/Construction Specifications:

- Burned Area warning signs along the roads shall measure, at a minimum, 4 feet by 4 feet and consist of 0.08" aluminum, sheeted in high intensity orange with black letters. The BURNED AREA lettering shall be a minimum of 5 inches in height and all remaining lettering, indicating the hazards, shall be a minimum of 3.5 inches in height.
- Ensure maximum visibility and readability of signs warning visitors of the hazards to human life and safety that exist in burned areas.

Implementation Monitoring

Determine if the following proposed treatments were implemented as outlined in the BAER report:

- **Aerial straw application:** Was work performed safely and without injury? Did ground cover meet location and extent? Was application timely? Did the estimated costs approximate budgeted allocations?
- **Broadcast Seeding:** Are the seed mixtures applied to the intended sites with the proper rates of application?
- **Chaining:** Were appropriate areas selected for treatment? Were the areas double chained?
- **Spring Box Protections:** Did the berm and ditch structures work as planned? Were there unintended consequences with the treatment?
- **Debris Basins** – Were materials used adequate? Did the site function as planned?
- **Explanatory Signs:** Are the signs installed at the designated locations with the intended messages? Are the signs clear and legible? Was the installation timely? Did costs approximate budgeted allocations?
- **Channel Treatments:** Were structures installed correctly? Did structures maintain grade and protect road infrastructure?
- **Road and Trail:** Are drainage structures installed correctly? Were culverts cleaned and replaced as planned?

Interim Evaluations

The Implementation Team Leader will conduct periodic evaluations with the District and Forest / Implementation Team to assess implementation progress, effectiveness monitoring and to determine if parameters measured and sampling frequency meet the planned objectives. The BAER team understands that monitoring funds could be available for effectiveness monitoring in years 2 and 3 provided that the Fishlake National Forest submits interim reports to request addition funding and provided that the Forest documents and shares their findings.

Monitoring Reports

The overall results will be presented in a detailed summary report during 2013. This report will be submitted to the Forest Supervisor, District Ranger, the Regional Office and all cooperating agencies and other interested parties.

Annual Financial Requirements

Report cost of monitoring by year.

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

Line Items	Units	Unit Cost	NFS Lands		Other \$	Other Lands			All Total \$
			# of Units	BAER \$		# of units	Fed \$	# of Units Non Fed \$	
A. Land Treatments									
Aerial Mulch-acre	acres	900	3,309	\$0	\$0		\$0	\$0	\$0
Broadcast Seeding Pe	acres	72	19,515	\$0	\$0		\$0	\$0	\$0
Weed Treatment-ac in	acres	9	5,898	\$0	\$0		\$0	\$0	\$0
Chaining - Ely chain d	acres	75	2,378	\$0					\$0
Cultural Resource Prot	sites	4,832	4	\$19,328					\$19,328
Broadcast Seeding Ce	acres	22.0	6,914	\$152,108					\$152,108
Insert new items above this line!				\$0	\$0		\$0	\$0	\$0
Subtotal Land Treatments				\$171,436	\$0		\$0	\$0	\$171,436
B. Channel Treatments									
Cross and Half Vanes	each	3,445	12	\$41,340					
Sediment / Debris Bas	each	36,000	1	\$36,000					
Cross and Half Vanes	each	3,445	21	\$0					
Insert new items above this line!				\$0	\$0		\$0	\$0	\$0
Subtotal Channel Treat.				\$77,340	\$0		\$0	\$0	\$77,340
C. Road and Trails									
Trail Drainage-mile \ H	mile	1000	35	\$0	\$0		\$0	\$0	\$0
Road Culverts and Cro	each	36,800	6	\$220,800	\$0		\$0	\$0	\$220,800
Road Drainage	mile	1,515	42	\$0			\$0	\$0	\$0
Road Culverts and Cro	each	36,800	3	\$0					
Insert new items above this line!				\$0	\$0		\$0	\$0	\$0
Subtotal Road & Trails				\$220,800	\$0		\$0	\$0	\$220,800
D. Protection/Safety									
Warning Signs	each	325	22	\$7,150	\$0		\$0	\$0	\$7,150
Metal Gate	each	9,200	1	\$9,200			\$0	\$0	\$9,200
Storm Patrol	Job	12,000	1	\$12,000					
Insert new items above this line!				\$0	\$0		\$0	\$0	\$0
Subtotal Structures				\$28,350	\$0		\$0	\$0	\$16,350
E. BAER Evaluation									
Assess. & Report	1	68,000	1	\$68,000			\$0	\$0	\$68,000
Insert new items above this line!				---	\$0		\$0	\$0	\$0
Subtotal Evaluation				\$68,000	\$0		\$0	\$0	\$68,000
F. Monitoring									
monitoring plan				\$0	\$0		\$0	\$0	\$0
Insert new items above this line!				\$0	\$0		\$0	\$0	\$0
Subtotal Monitoring				\$0	\$0		\$0	\$0	\$0

/s/ Allen Rowley
ALLEN ROWLEY
Forest Supervisor

____July 24, 2012____
Date

July 30, 2012

Date