Date of Report: 06/25/2012
Minor editing by Bevenger 06/26/2012

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: Box Creek Fire

B. Fire Number: UT-FIF-00083

C. State: Utah

D. County: Sevier / Piute Counties

E. Region: 04

F. Forest: Fishlake National Forest

G. District: Richfield

H. Fire Incident Job Code: P4GWW9 (0408)

I. Date Fire Started: June 5, 2012

J. Date Fire Contained: June 13, 2012

K. Suppression Cost: $3,000,000 (Estimated) as of June 20, 2012; fire is still not controlled.

L. Fire Suppression Damages Repaired with Suppression Funds
1. **Fireline waterbarred (miles)**: Fire lines have not been rehabilitated.
2. **Fireline seeded (miles):** Fire lines have not been rehabilitated.
3. **Other (identify):**

M. Watershed Number: 160300020107 Box Creek (HUC6), 16030020106 Greenwich Creek (HUC6)

N. Total Acres Burned: 2,049:
[2,029**] NFS Acres [** 0 **] Other Federal [** 20 **] Private**

O. Vegetation Types: Mixed Conifer-Aspen, Sagebrush, and Spruce-Fir

P. Dominant Soils: Typic Argricryolls, Typic Haplocryolls, Mollic Haplocryolls, Pachic Agricryolls, Ustic Argricryolls

Q. Geologic Types: Tmv-Miocene Volcanic Rocks, and Qa-alluvium along streams

R. Miles of Stream Channels by Order or Class: 1st order: 3 miles, 2nd order: 4.3 miles, and 3rd order: 1.2 miles

S. Transportation System

Trails: 4.0 **miles** **Roads:** 23 **miles**

PART III - WATERSHED CONDITION

A. Burn Severity (wildfire acres): 699 (**very Low/ unburned**) 324 **(low)** 116 **(moderate)** 133 **(high)**

B. Water-Repellent Soil (wildfire acres): 168

C. Soil Erosion Hazard Rating (wildfire acres): 430 **(low)** 143 **(moderate)** **0 (high)**

D. Erosion Potential: 2.4 **tons/acre**

E. Sediment Potential: 1,525 **cubic yards / square mile**

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years):	5
B. Design Chance of Success, (percent):	90
C. Equivalent Design Recurrence Interval, (years):	10
D. Design Storm Duration, (hours):	2
E. Design Storm Magnitude, (inches):	1.06
F. Design Flow, (cubic feet / second/ square mile):	31
G. Estimated Reduction in Infiltration, (percent):	5
H. Adjusted Design Flow, (cfs per square mile):	32.6

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

BOX CREEK WILDFIRE

BAER / CRITICAL VALUES-AT-RISK SUMMARY TABLE

The values at risk shown below were asssessed based upon the post fire conditions and liklihood of post fire events. The critical values are human safety, road and trail infrastructure, and native / naturalized communities where invasive species and noxious weeds were absent prior to the fire. The magnitude of consequences is high especially to road and trail infrastructure, natural resources, and human safety. Overall, the assessed risk is high for natural resources and human safety.

HUMAN LIFE AND SAFETY

Human Life and Safety.

Users of FS Transportation System (Roads) – There are likely flooding hazards in North Fork Greenwich and North Fork Box Creeks. These roads are heavily used by the public. –likely Probability of Damage or Loss/ Moderate Consequences… **HIGH RISK**

Public trails and use areas- There are several public access areas that have many burned hazard trees. They are located at recreation sites, and trails and roads – Possible Probability of Damage or Loss/ Major Consequences… **HIGH** RISK

PROPERTY

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

Forest Roads and Trails –Likely Probability of Damage or Loss / Moderate Consequences… **HIGH RISK**

There are over 27 miles of transportation surfaces (roads & trails) occurring on NFS Lands located inside and just outside the perimeter of the fire. Some portions of the existing roads and trails that are within or below high severity burn units are considered to be at-risk from flooding hazards. In particular portions of the transportation systems in the South Fork Greenwich and North Fork Box Creek drainages are at risk. These surfaces may 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.

Downstream Diversions and Dams– Likely Probability of Damage or Loss / Minor Consequences … **LOW RISK**

NATURAL RESOURCES

Soil productivity on burned NFS lands.

Potential loss of soil due to post fire runoff events on nearly all high and some moderately severe soils. However, these conditions are limited in extent within the burn perimeter and within drainages. Likely Probability of Damage or Loss/ Moderate Consequences… **HIGH RISK**

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 such as aspen
- root growth and soil stability

Our most recent Fire Severity Image indicates only about 20% of this incident outside the prescribed burn was subjected to Moderate and High Severity Burns. Approximately 133 acres were mapped as high burn severity. The steep mountainsides and ridge tops areas located within this burn where high and moderate severities will be prone to localized flooding hazards during spring / summer / fall thunderstorm events. Much of this fire-damaged terrain is located above North Fork Box Creek and South Fork Greenwich Creek. However, the fire is spread-out along multiple tributary and mainstem drainages in both Box and Greenwich Creeks. These locations will be subject to localized flooding hazards. The loamy (75%) and fine soils (25%) located on the fire have a low and moderate potential for loss of soil resources.

Hydrologic function on burned NFS lands Likely Probability of Damage or Loss to Localized Reaches / Moderate Consequences … **HIGH RISK**

A moderate change to hydrologic function is expected to localized reaches below severly burned slopes. These areas are generally steep and contain large percentages of hydrophobic soils. Many of the hillslopes contain accumulated sediments that have a high probability of being mobilized in high intensity, short duration rainfall events. This will result in the following changes:

- Increased flow and sedimentation
- Loss of riparian areas and access to floodplains,
- Degradation of aquatic and terrestrial wildlife habitat (i.e. may damage beaver dams with larger flood events)

Channel down-cutting and lateral migration may result in a loss of riparian areas and access to floodplains.

Native or naturalized communities on NFS land where invasive species or noxious weeds are absent or present in only minor amounts. Possible Probability of Damage or Loss / Moderate Consequences … **Intermediate Risk**

This center part of Monroe Mountain is generally a noxious weed free area. It was reported to the BAER Team that there was one known population of musk thisle within the Oldryod Fire that was likely introduced by equipment used in suppression activities. It is possible that equipment used for suppression transported noxious and/or invasive weed species into the area again. Roads, parking areas, drop points and spike camps are areas of primary concern for introduction on this burn. There were over 10 hand-crews with vehicles and numerous other pieces of equipment used in suppression of the Box Creek Burn.

CULTURAL AND HERITAGE RESOURCES
Cultural resources on NFS lands which are listed on or potentially eligible for the National Register of Historic Places. Possible Probability of Damage or Loss / Minor Consequences… **Low Risk** A historic cabin was burned within the wildfire portion of the Box Creek Fire. The historic site surrounding the cabin most likely would not be subject to flooding damage.

Non-BAER Values At Risk

1. Aspen Regeneration- It is basically necessary for the Forest to fence any disturbed aspen in the center portion of Monroe Mountain in order to maintain any aspen clones surving due to ungulate (elk and cattle) use of sprouts as food. The fencing must be completed on fuel projects, wildfires, and other stand disturbances such as harvesting of aspen trees. The Oldryod Fire, that this fire reburned a portion, had very high ungulate use on sprouts within the burn. Portions of the burn lost aspen stands. The Forest will be fencing the portion of the burn within the prescribed burn portion of the Box Creek Fire to regenerate and protect aspen sprouting and growth.

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 warning signs and performing storm patrols.
- Warn users of Forest roads, trailheads, and trails of hazards present in the burned area.
- Reduce the likelihood of invasive and noxious species colonizing the burn area through early detection rapid response treatments.
- Control expected invasion of noxious weeds within the area, especially along and adjacent to Forest roads, dozer lines, helispots, and private land boundaries used by fire equipment and in existing populations within the fire boundary (Use of P Code will be used as appropriate).
- Minimize threats from additonal post fire runoff to system roads and trails within the fire boundary by cleaning existing drainage structures.
- 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	**NA**	**Channel Treatments**	**NA**	**Roads / Trails**	**85 %**	**Protection / Safety**	**90 %**

D. Probability of Treatment Success: (on NFS lands)

Treatment Types:	← Years After Treatment →		
	1	3	5
Land Treatments	**NA**	**NA**	**NA**
Channel Treatments	**NA**	**NA**	**NA**
Road / Trail Treatments (drainage and culverts)	**85 %**	**85 %**	**85 %**
Protection / Safety Treatments (signs)	**90 %**	**90 %**	**90 %**
Weeds	**90 %**	**90 %**	**90%**

E. The Cost of Taking No - Action: $1,300.000

The values at risk directly lost through No-Action includes: damage to water quality, loss of soil productivity, structures, roads, trails, utilities, and human life due to change in hydrologic and hillslope conditions.

Values-At-Risk	Estimated Costs
Potential impairment to water quality	$200,000
Potential Damage or Loss of Soil Productivity and Ecosystem Integrity (native or naturalized communities) from an increase in invasive and noxious species and erosion.	$750,000
Potential Damange or Loss of Forest Roads	$225,000
Potential Damage or Loss of Trail System	$125,000
Total	$1,300,000

F. The Cost of the Selected Alternative: $798,000 (including loss)

Values-At-Risk	Estimated Costs
Potential Impairment to Water Quality Prevention of damage to drainages, travel routes and road crossings . Preventions of erosion and sedimentation within the watersheds and reservoirs.	$190,000
Potential Damage or Loss of Soil Productivity and Ecosystem Integrity (native or naturalized communities) from an increase in invasive and noxious species and erosion. The weed treatment is estimated to be 90% effective in reducing weed populations. 10% failure rate of $250,000 plus $3,000 of the cost of the first year of weed treatments, plus the $500,000 from soil loses without any treatment.	$528,000

Potential Damage or Loss of Forest Roads • The road treatments are estimated to be 80% effective in protecting the forest roads. • 20% failure rate of $225,000 plus $7,000 of the cost of the road and sign treatments.	$52,000
Potential Damage or Loss of Trail System • The drianage treatments are estimated to be 80% effective in protecting the forest trails. • 20% failure rate of $125,000 plus $3,000 of the cost of the trail treatments.	$28,000
Total	**$798,000**

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Adam Solt

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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

NOXIOUS WEED EXPANSION MONITORING and SPOT TREATMENT

The Richfield RD weed crew will implement this strategy in 2012 / 2013 to detect and treat any new infestations of noxious weeds in the burned area. Aggressive noxious weeds need immediate attention; Musk thistle has been being treated in one area of the Oldroyd Fire according to District Biologist, Kreig Rasmussen. This treatment includes a search for any new individuals of noxious weeds on forest-administered lands along specific stretches of the fire perimeter where vehicles were used for suppression activities, along most of the forest routes in the burned area. The fire suppression lines, drop points, and helispots, etc. will be monitored. Individual noxious weed plants generally will be sprayed with herbicide at the same time they are discovered. The search will occur during the growing season preferably in May, late-June and early August; estimated coverage of EDRR of $3,000 to cover for 20 GS-5 days, vehicle use, and purchase of chemicals. There are 27 miles of well-traveled routes (horse, foot, ATV, and roads) in the close vicinity of the Box Creek Fire that will need treatment because they were heavily used in suppression activities. This fire is not large in acreage but was a wind driven event with a lengthy distance covered by fire over numerous tributary channels. The top of

Monroe Mountain is flatter on top than sides and because of terrain numerous travel routes exist. The fire is located near tracks of private land that have necessitated addition travel routes in the area. Two of the main access points from the east and west sides of Monroe Mountain meet just west of the burn and one of them runs through the burn perimeter. The major north-south travel corridors are located in the fire perimeter and vicinity as well.

STORM PATROLS

Following large storm events or as reports are received about concerns within the burn area. Forest staff will monitor the storm effects on roads and report any damages, and base any future actions based on public safety and natural resource issues. Coordination will occur between SO and District staff regarding any future actions and needs relating to BAER funding and interim requests that may be required within one year following fire containment.

ROAD AND TRAIL TREATMENTS

(ROAD STABILIZATION)

CULVERTS

Purpose of Treatment: Cleaning culvert pipes will enable the drainage system to convey design flows and will reduce the chance of plugging. This will avoid the expensive possibility of long lengths of road washouts and keep the roads safe to drive by keeping water off the road. No culverts are recommended for replacment or upsizing. Cleaning and repair of existing inlets and outlets are recommended.

General Description: Cleaning includes the cleanout of catch basin culvert inlets, outlets, and the drop inlets.

Location (Suitable) Sites: Culvert cleaning will occur within all drainages of the fire along associated portions of roads with high risk.

TRAIL STABILIZATION

Purpose of Treatment: Grade dips and waterbars will divert water off of the trail preventing erosion and flows from degrading the trail. These methods will keep trails from becoming a stream channel and prevent the loss of the trail.

General Description: Install drainage structures to prevent erosion, mass wasting and mud flows that are predicted to occur following the burn. These measures would also address the risk to human safety, risk of loss of trail infrastructure.

Location (Suitable) Sites: Locate drainage structures along portions of 4 miles of trails within the fire perimeter where there is high risk.

PROTECTION AND SAFETY MEASURES

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. Signs are to provide for public safety and promote fire recovery by communicating the potential flooding hazards and the need to adhere to motorized access

restrictions so that: signs are clearly understandable, signs are placed with optimum visibility in concert with visual objectives, signs use language to encourage the public to make informed and safe decisions.

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 all entries into the fire perimeter. The location of these signs shall be along roads. All signs will be placed facing the direction of travel entering the burn area. Other signs may also be placed within the burn perimeter at key locations.

I. Monitoring Narrative:
(Describe the monitoring needs, what treatments will be monitored, how they will be monitored, and when monitoring will occur. A detailed monitoring plan must be submitted as a separate document to the Regional BAER coordinator.)

Monitoring Plan / Box Creek Wildfire

1) Introduction: Why Monitor? Monitoring is the periodic assessment of BAER treatments in order to evaluate their success and / or failure and report on these findings to management. Forest Service Manual 2523.03 directs that the implementation and effectiveness of all treatments, as well as the consequences of decisions not to treat certain areas, will be monitored. This plan will assess BAER measures taken to assist in the rapid recovery of the burned-areas, nearby lands and resources affected by the burn. Direction in this Monitoring Plan complies with the National Forest Land and Resource Management Plan. Any adjustments or additional treatments observed as needed during monitoring will be recommended to management.

The Forest Service Handbook 2509.13, Section 61.1 requires that, as a minimum, the following conditions should be monitored:

1. The effectiveness and proper functioning of emergency stabilization measures - especially road drainage facilities and channel structures seeding and mulch treatments.
2. Need for re-treatment.
3. Quality and quantity of water leaving the burned-area and the location and causes of any problems.
4. Rates of recovery for vegetation.
5. Effects of resource utilization and restoration activities and emergency response measures on each other.

Members of the Forest / Ecosystem or District Staffs will conduct the implementation and the effectiveness monitoring (FSH 2509.13 Section 61.04). All evaluations will be documented in a brief, written report.

2) Types of Monitoring

Implementation Monitoring:

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

- **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?
- **Road and Trail: Are drainage structures installed correctly, were culverts cleaned?**

General Data Collection Procedures

The information to be recorded and documented will include the dates and type of emergency treatments implemented. The total number of structures erected, the total number acres treated and the actual costs associated with these rehabilitation projects will also be recorded. Any monitoring item having a specific location will be mapped using GPS and loaded into the corporate GIS database. The Implementation Team Leader will ensure that all data being collected meets the established standards. Data collected for inclusion into the Forest GIS database will meet corporate standards.

For all monitoring projects, as a minimum, record the dates of installation or accomplishment. Name(s) of person(s) collecting data and name of person, organization, or contractor performing work with a lead contact name if possible, types of equipment used, time for project completion, GPS location as well as a detailed map and narrative of directions to the site if possible, short narrative explaining how the job was completed, any problems encountered and how they were solved, recommendations for continued use of the treatment on other fire rehabilitation projects considering both implementation and effectiveness concerns, evaluation of whether treatments supported the "minimum necessary" goal.

Effectiveness Monitoring: This monitoring is specifically designed to answer the question: DOES THE BAER TREATMENTS PROVIDE THE PLANNED EMERGENCY PROTECTION AND STABILIZATION OF THE BURNED-AREA? Are the emergency treatments successful in meeting treatment objectives?

Specific objectives of the treatments are described below:

Trail (drainage) and Road Stabilization (culverts and Crossings): Treatments implemented and did they preserve the trail and roads where actions were taken.

3) 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.

4) 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 Rangers, the Regional Office and all cooperating agencies and other interested parties.

5) Annual Financial Requirements

Report cost of monitoring by year.

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											
Weed Treatment	days	20	150	$3,000	$0			$0		$0	$3,000
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Land Treatments				$3,000	$0			$0		$0	$3,000
B. Channel Treatments											
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Channel Treat.				$0	$0			$0		$0	$0
C. Road and Trails											
Trail Drain & snag-mile	miles	1500	2	$3,000	$0			$0		$0	$3,000
Road Culverts-cleaning	each	400	3	$1,200	$0			$0		$0	$1,200
Road Drainage-mile	miles	700	4	$2,800							$2,800
	each			$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Road & Trails				$7,000	$0			$0		$0	$7,000
D. Protection/Safety											
Storm Patrol	Season	4000	1	$4,000	$0			$0		$0	$4,000
Warning Signs	each	500	6	$3,000	$0			$0		$0	$3,000
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Structures				$7,000	$0			$0		$0	$7,000
E. BAER Evaluation											
Asess. & Report	1	12,000	1	$12,000				$0		$0	$12,000
Insert new items above this line!				---	$0			$0		$0	$0
Subtotal Evaluation				$12,000	$0			$0		$0	$12,000
F. Monitoring											
monitoring plan	Job	480	1	$480	$0			$0		$0	$480
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Monitoring				$480	$0			$0		$0	$480
G. Totals				$17,480	$0			**$0**		**$0**	**$17,480**
Previously approved				$0							
Total for this request				**$17,480**							

PART VII - APPROVALS

1. /s/ John Zapell for Allen Rowley 6/25/2012
   Forest Supervisor (signature) Date

2. _____ _____
   Regional Forester (signature) Date