Jbruggink edit 9/10/2015

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: **Cougar**

B. Fire Number: **ID-BOF-000947**

C. State: **Idaho**

D. County: **Valley**

E. Region: **04 - Intermountain**

F. Forest: **02 - Boise**

G. District: **Cascade**

H. Fire Incident Job Code: **P4J1KF**

I. Date Fire Started: **August 13th, 2015**

J. Date Fire Contained: **September 5, 2015**

K. Suppression Cost: **$5.2M** (estimate from 09/05/2015)

L. Fire Suppression Damages Repaired with Suppression Funds
1. Fireline waterbarred (miles): 6 miles of handline
2. Fireline seeded (miles):
3. Other (identify):

M. Watershed Number: 170602080402 – Curtis Creek

N. Total Acres Burned:
NFS (1,237)

O. Vegetation Types: Mixed Conifer Forest

P. Dominant Soils: Mollisols, sandy, mixed – 3-5 feet deep

Q. Geologic Types: Idaho Batholith grantitic rocks

R. Miles of Stream Channels by Order or Class:
Perennial: 2.6 Intermittent: 0

S. Transportation System (miles)
Roads: 2.6 miles Maintenance Level 1
4.5 miles Maintenance Level 2

PART III - WATERSHED CONDITION

A. Burn Severity (acres): 415.7 low 160.9 moderate 67 high (593.6 unburned)*
*BARC image was captured on 8/23 prior to additional growth of the fire. An additional image was captured on 8/30, however, it was not useable due to cloud cover. The resulting BARC map missed approximately 400 acres.

B. Water-Repellent Soil (acres): 67

C. Soil Erosion Hazard Rating (acres):

Erosion Hazard Class	Inherent Erosion Hazard (Acres)
Moderate	415
Severe	160.9
Very Severe	67

D. Erosion Potential: 0.30 tons/acre (ERMiT)

E. Sediment Potential: 684 cubic yards/square mile (range: 388 to 1,555)

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period (years): 3 – 5 years

B. Design Chance of Success (percent): 50%

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

D. Design Storm Duration (hours): 2 hour

E. Design Storm Magnitude (inches): 1.36 inches

F. Design Flow (cubic feet / second / square mile): 33.9 $ft^3/s/mi^2$ (CN Method, WildCat5)

G. Estimated Reduction in Infiltration (percent): 13%

H. Adjusted Design Flow (cfs per square mile): 53.2 $ft^3/s/mi^2$

PART V - SUMMARY OF ANALYSIS

Background:

The Cougar Fire was started on August 13, 2015 and has burned about 1,237 acres to date was 90% contained on August 30, 2015. The fire burned in the Curtis Creek watershed, which is a tributary to the South Fork of the Salmon River. The burned area is within the Cascade Ranger District on the Boise National Forest.

A. Describe Critical Values/Resources and Threats (narrative):

A list of critical values was discussed with Cascade RD staff and the BAER team during August 20-31. The BAER team subsequently evaluated this list of values through field assessment and associated analysis to determine the critical values (Interim Directive No. 2520-2014-1 – 2523.1 – Exhibit 01) that may be treated within the BAER program. The risk (Interim Directive No. 2520-2014-1 – 2523.1 – Exhibit 02) to these critical values has been assessed by the BAER team and is described below. A list of treatment numbers has been included below each critical value description to ensure tracking between values and treatments.

1. Human Life and Safety (HLS)
    a. **High** risk to **forest visitors and Forest Service employees** that enter the burned area due to the increased threat of falling trees, rocks, and other debris. *(Treatment:T4)*
2. Property (P):
    a. **High** risk to **road infrastructure** due to an increased threat of damage expected to these forest investments from imminent flooding, debris flows, erosion and deposition. (Treatment: T2, T3)
3. Natural Resources (NR):
    a. **High** risk to **native plant diversity** due to the threat from the spread of noxious weeds and invasive plant species. Known noxious weed and invasive populations (spotted knapweed) exist within and immediately adjacent to the burned area. Most populations to date occur along existing road systems and riparian corridors.. *(Treatment:T1)*

B. Emergency Treatment Objectives:
The goal of the burned area emergency rehabilitation is to:

- Reduce threats to personal injury and/or human life of visitors using forest system roads.
- Protect or minimize damage to National Forest System investments within the burned area. Minimize damage to key system travel routes within and adjacent to the fire boundary.
- Protect or mitigate potential post-fire impacts to critical natural resources and significant cultural resources within or downstream from the burned area.
- Control expected invasion of noxious weeds within and adjacent to the area where soils/vegetation was disturbed as a result of suppression activities.
- Warn users of Forest roads of hazards present in the burned area.

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

Land 70% Channel -- % Roads 70% Protection/Safety 90%

D. Probability of Treatment Success

Treatment	Years after Treatment		
	1	3	5
Land	80	70	--
See VAR; treatment design life is 3 years			
Channel	--	--	--
Roads	70	80	90
See VAR; road treatments are designed for increased runoff which will decrease as vegetation recovers.			
Protection/Safety	60	60	60
See VAR; Visitors will pay attention to the new signs.			

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

Overall, the summary of the three map zones identified that the total treatment cost is estimated at $53,276 with an expected benefit of $167,000. The summary implied minimum value of protecting non-market resource critical values is justified for the treatments proposed in this BAER assessment. Map zone A has an expected benefit/cost ratio of 2.8; map zone B is designated for human life/safety; and map zone C has an expected benefit/cost ratio of 3.4. SEE ATTACHED VAR ANALYSIS

F. Cost of Selected Alternative (Including Loss): See VAR and summary statement in section E, above.

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Brian Anderson

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Team Members:

Brian Anderson	Hydrologist
Brett Barry	Engineering
Kay Beall	Botanist
Gary Harris	Hydrologist
Dave Mays	Fisheries Biologist
Dave Woras	Engineering

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.)

These treatments were developed by each of the respective resource groups as part of a specification sheet that helped guide narrative and cost considerations.

Each treatment proposal was then captured within this document. Since the development of those specification sheets, the team leader has communicated with BAER Coordinators at forest and regional levels to ensure consistency with BAER authority.

Land Treatments:

T1 - Early Detection & Rapid Response

General Description of Treatment: Invasive plants and weed assessments will be conducted in FY2016 for Early Detection and Rapid Response (EDRR) on any new infestation located within the fire perimeter. Treatments will occur at proper phenology of each species to ensure maximum control.

Because noxious weeds are scattered in small patches (mostly less than 1 acre) adjacent and within the burn area, there is a high risk for new infestations within the fire perimeter to become established due to the disturbance caused by the wildfire and the suppression equipment used to fight the fire. Spotted Knapweed is the primary species of concern to invade the burn.

Suitable Sites: Assess areas that have a high potential for weed/invasive species establishment. Priority acres for EDRR are as follows:

1) 33.1 acres: Fire Points @ 5 acres, Fire Lines @ 15.5 acres and Roads @ 12.6 acres.

Design/Construction Specifications:

1. Conduct short-term monitoring in FY2016 using EDRR assessment/monitoring of noxious weed/non-native invasive plant species infestations within the burned area. Monitoring to determine the post-fire presence or spread of invasive species will be prioritized by critical areas and disturbed areas near existing infestations.

2. Inventory/assessment, photos and map new noxious weed infestations within burned area using GPS technology and upload into the Boise National Forest GIS Noxious Weeds database.

3. Chemical~~Mechanical~~ treatments~~, primarily through hand pulling,~~ will be used on appropriate noxious and non-native invasive species such as spotted knapweed and bull thistle that are located within the fire on public lands. ~~Prior to mechanical treatments, clear observed occurrences for cultural resources.~~

~~4. Biocontrol agents will be used if available and applicable on larger infestations for long term weed management.~~

Road Treatments:

T2 – Road Drainage Reconstruction

General Description: The goal is to restore drainage function to roads to allow water that encounters the road to exit the roadway prism without damaging the roadway surface. At various locations, road drainage is expected to be compromised by the post-fire condition. As

a result, water that encounters the road may not drain properly, causing further damage including rutting and possible washout.

Suitable Sites: The roads listed below were found to have or will have road drainage issues and at a minimum will require all or part of the treatments listed below. The roads are listed individually and represent approximately 11 miles affected by the fire: *Refer to BAER Treatment Map.*

NFSR #409L (1.4 miles to be treated) (This is a dozer line rehab and will be funded using the P code)

Construct/Reconstruct Water Bar: 72 Each

Road Template Reshaping/Ditch Cleaning: 1.4 Miles

Construct Earthen Barrier: 2 Each

NFSR #419 (1.2 miles to be treated) (This is a dozer line rehab and will be funded using the P code)

Construct/Reconstruct Water Bar: 52 Each

Road Template Reshaping/Ditch Cleaning: 1.2 Miles

NFSR #483 (~~4.5 miles to be treated~~) A total of 1 mile of road within the moderate and high burn severity will be protected with road drainage maintenance treatments.

Culvert Cleaning: ~~21~~ 9 Each

Construct/Reconstruct Drain Dip: ~~12~~ 8 Each

Road Template Reshaping/Ditch Cleaning: 1.0~~4.5~~ Miles

Design/Construction Specifications:

1. Outsloping – Reshape roadbed to provide drainage of surface water as directed by the Engineer.

2. Drain Dips (with or without armor) – Construct rolling dips per Forest Service. Place rip rap across the roadway and on the fill slopes where potential runoff can occur if flow was to overtop the roadway from a plugged culvert or excessive runoff.

3. Waterbars – Construct waterbars per Forest Service standards. Place enough waterbars where necessary that will quickly divert flow off of the roadway before causing surface erosion.

4. Overflow Structures – Install overflow structures onto existing culverts that are extended out from the fillslope over steep grades. Place rip rap below the drain outlet to dissipate the energy from the flow. Overflow structures may consist of flexible drain pipe that lays flat along when no storm water is flowing through the pipe.

5. Culvert Installation – Install culverts in locations as directed by the Engineer. Culverts shall have sufficient slope to allow water to flow while keeping the velocities to a minimum.

6. Debris Racks – Assemble wood or steel debris racks where indicated or found to be necessary on or above the inlet of culverts. Debris racks design shall be such that it will

capture the expected woody debris material that will come with the expected flows in each of the drainages.

7. Culvert Cleaning – Remove any blockages from inlet, outlet and inside barrel. Straighten bent inlets. Catchment-basins shall have all existing silt and debris removed and either hauled away or spread out such that the material cannot reenter the drainage structure during a runoff event.

8. Ditch Cleaning – All drain ditches along the length of the roads shall have all existing silt and debris removed and either hauled away or spread out such that the material cannot reenter the drainage structure during a runoff event.

9. Roadside Streambank Stabilization – In areas of fill slope erosion that have occurred as a result of stream encroachment, armor fill slopes using riprap and geotextile material to secure slope and prevent fines from washing out of fill slope.

10. Corrugated Inlet Guard – Installation shall be completed in a manner that allows catchment basin to be cleaned by backhoe.

11. Reshape the road surface to provide positive drainage to ditches and culverts. Remove berm where water will flow off roadbed, repair large ruts in the middle of the roadbed that channel water downgrade.

Purpose of Treatment: The purpose of this treatment is to mitigate additional risks to Human Life and Safety, property, emergency ingress/egress, loss of access to visitors and local residents, and impacts to water quality, riparian, and bull trout (listed species). The roads are located within or adjacent to the fire perimeter and provide critical access needs and emergency ingress/egress to the public and administrative personnel. Protect road infrastructure and minimize sediment delivery into the watersheds that run into the South Fork of the Salmon River which contains listed fish species (bull trout).

T3 – Storm Patrols

General Description: The patrols are used to identify those road problems such as plugged culverts and washed out roads and to clear, clean, and/or block those roads that have received damage. The storm patrollers shall have access to at least a backhoe and dump truck that can be used when a drainage culvert is plugged or soon to be plugged, and to repair roads which are exhibiting severe surface erosion.

Location/(Suitable) Sites: *Refer to BAER Treatment Map.*

- NFSR 483 (Tyndall Creek Road)
- ~~NFSR 419~~

Design/Construction Specifications:

1. FS personnel will direct the work.
2. Immediately upon receiving heavy rain and during significant spring snowmelt the FS will send out patrols to identify road hazard conditions – obstructions such as rocks,

sediment, washouts, and plugged culverts, so the problems can be corrected before they worsen or jeopardize forest road users.

3. The road patrols shall bring in heavy equipment necessary to mechanically remove any obstructions from the roads and culvert inlets and catch basins where necessary. All excess material and debris removed from the drainage system shall be placed outside of the bank-full stream channel where it cannot re-enter the stream.

Purpose of Treatment Specifications (relate to damage/change caused by fire):

The purpose of the monitoring is to evaluate the condition of roads for motorized access and to identify and implement additional work needed to maintain and/or repair damage to road surfaces and flow conveyance structures (culverts) across roads in order to provide safe access across FS lands. Engineering and District personnel will survey the roads within the fire perimeter after high-intensity summer thunderstorms and spring snow-melt. Survey will inspect road surface condition, ditch erosion, and culverts/inlet basins for capacity to accommodate runoff flows.

ii. *How does the treatment relate to damage or changes caused by the fire?* Increased runoff resulting from burned slopes and stream channels which are adjacent to roads will likely cause damage to roadway surfaces, drainage structures, or block roads with debris slides. Storm patrol during post fire runoff events provides early discovery of damaging processes and the opportunity to respond with equipment to minimize damage to property and the personnel to secure the scene to protect the public.

Protection/Safety Treatments:

T4 – Safety Signs

General Description: This treatment is for the installation of burned area warning signs. Burned area signs warn the public identifying of the possible dangers associated with a burned area on major entry points into the burned area and recreational areas. It shall contain language specifying items to be aware of when entering a burn area such as falling trees and limbs, rolling rocks, and flash floods.

Location/(Suitable) Sites: Refer to BAER Treatment Map for the spatial locations.

Locations on FS lands for burned area warning signs on major entry points are (2 total):
On NFSR 483 near the junction of NFSR 409 (for traveling towards the fire area)
On NFSR 483 near the junction of NFSR 474 (for traveling towards the fire area)

Design/Construction Specifications:

1. Traffic Warning and Road Closure Signs shall conform to the Manual on Uniform Traffic Control Devices (MUTCD) and shall be installed per Federal Highway Safety Standards.
2. Directional Signs shall match what was on the sign prior to the fire and shall be installed per Forest Service standards. These signs are to be placed on any roads and trails that are to remain open to use within the fire perimeter.
3. 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 yellow with black letters. The **BURNED AREA** lettering shall be a minimum of 5 inches in height and all remaining

lettering shall be a minimum of 3.5 inches in height.

4. Bridge delineators shall conform to Type 3 object marker standards established by the MUTCD. Road delineators shall conform to MUTCD and the "Sign and Poster Guidelines for the Forest Service" (EM-7100-15).
5. Road route markers shall conform to EM-7100-15.

Purpose of Treatment Specifications (relate to damage/change caused by fire):

The purpose of the Burned Area signs is to provide safety to the motorists of upcoming road dangers and/or objects.

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.)

Early Detection / Rapid Resonse Treatment Effectiveness Monitoring: Follow-up monitoring with program funds will occur in 2nd & 3rd years as needed if new or expanded weed populations are discovered during the 1st year BAER treatments.

Road Treatment Effectiveness Monitoring: Monitoring will be conducted by district personnel and/or members of the Forest Engineering staff. Monitoring will consist of visiting the site after high intensity thunderstorms and/or after spring run off to ensure the replacements culverts are functioning as designed. In addition, photos will be taken during the site visits and a photo log will be established.

Date of Report: September 8, 2015

Part VI – Emergency Stabilization Treatments and Source of Funds

Initial Request

			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											
T1-Early Detection & Rapid	acre	78	33.1	$2,596	$0			$0		$0	$2,596
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Land Treatments				$2,596	$0			$0		$0	$2,596
B. Channel Treatments											
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Channel Treatments				$0	$0			$0		$0	$0
C. Road and Trails											
T2-Road Drainage Reconstr	miles	7,503	1	$7,503	$0			$0		$0	$7,503
T3- Storm Patrol	days	1,717	2	$3,434	$0			$0		$0	$3,434
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Road and Trails				$10,937	$0			$0		$0	$10,937
D. Protection/Safety					$0						
T4-Safety Signs	each	1,280	2	$2,560	$0			$0		$0	$2,560
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Protection/Safety				$2,560				$0		$0	$2,560
E. BAER Evaluation					$0						
Initial Assessment	Report	$2,236	1	---	$0			$0		$0	$0
Insert new items above this line!				---	$0			$0		$0	$0
Subtotal Evaluation				---	$0			$0		$0	$0
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				$16,093	$0			**$0**		**$0**	**$16,093**
Previously approved					$0						

PART VII - APPROVALS

1. /s/CECILIA SEESHOLTZ 09/08/2015
   Forest Supervisor (signature) Date

2. /s/ Mark Bethke (for) 09/15/2015
   Regional Forester (signature) Date