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

JBruggink edit 9/13/2016

Date of Report: 9/4/2016

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: Tie

B. Fire Number: ID-CTF-003181

C. State: Idaho

D. County: Teton and Bonnville

E. Region: Intermountain (R4)

F. Forest: Caribou-Targhee NF

G. District: Palisades & Teton Basin

H. Fire Incident Job Code: P4KM8F (0415)

I. Date Fire Started: 8/22/2016

J. Date Fire Contained: 9/6/2016

K. Suppression Cost: $5,385,000 (as of 9/4/2016)

L. Fire Suppression Damages Repaired with Suppression Funds (NFS lands only)

1. Fireline waterbarred (miles): 2.1 miles of dozer line and 5.8 miles of handline
2. Fireline seeded (miles): 0 miles
3. Other (identify): 3 drop points and at least 4 pump locations

M. Watershed Numbers: 170401040802 (Upper Pine Creek) & 170402040105 (Warm Creek)

N. Total Acres Burned: 1,031 (100%) NFS Acres

O. Vegetation Types: Douglas fir; Mountain Big Sagebrush; Lodgepole pine; Conifer/Aspen; Juniper Mix; Riparian Shrublands

P. Dominant Soils: The Tie Canyon Fire is in a mountainous setting in the warm forested zone. Soils developed in loess and volcanic ash-influenced colluvium from sedimentary rocks, with loam and silt loam surface textures, and are primarily deep except for ridges. Clayey subsoils are common, which hold water and nutrients and make for productive Douglas fir and shrubland communities.

Q. Geologic Types: Geology within the burn perimeter is predominantly shales and siltstones and sandstones of the Aspen Shale and Bear River Formations (Geology Map of the Driggs Quadrangle, Bonneville and Teton Counties, Idaho and Teton County, Wyoming, 1967. Pampeyan et al.) No prominent landslide features were identified during field reconissance.

R. Miles of Stream Channels by Order or Class: 3.7 Perennial & 0.7 Intermittent

S. Transportation System: Trails: 2.5 miles Roads: 1.4 miles

PART III - WATERSHED CONDITION

A. Burn Severity: 266 acres (26% unburned); 482 acres (48% low); 245 acres (24% moderate); 21 acres (2% high)

B. Water-Repellent Soil (NFS acres only): 266 acres (moderate + high burn severity)

C. Soil Erosion Hazard Rating (Burned NFS acres only):
5% (low) 45% (moderate) 50% (high)

D. Erosion Potential (tons/acre): In the first year post-fire, burned areas have about a 50% probability of less than 2 ton/acre. There is a lesser chance, about a 10% probability, than erosion rates could well exceed soil loss tolerance values of 4-5 tons/acre.

E. Sediment Potential: cubic yards/square mile: Not calculated

PART IV - HYDROLOGIC DESIGN FACTORS

A. Estimated Vegetative Recovery Period, (years): 1-3 grass, 20-25 shrubs, 20-50 conifers

B. Design Chance of Success, (percent): N/A – no hyrologic related treatments prescribed.

C. Equivalent Design Recurrence Interval, (years): N/A – no hyrologic related treatments prescribed.

D. Design Storm Duration, (hours): N/A – no hyrologic related treatments prescribed.

E. Design Storm Magnitude, (inches): N/A – no hyrologic related treatments prescribed.

F. Design Flow, (cubic feet / second/ square mile): N/A – no hyrologic related treatments prescribed.

G. Estimated Reduction in Infiltration, (percent): N/A – no hyrologic related treatments prescribed.

H. Adjusted Design Flow, (cfs per square mile): N/A – no hyrologic related treatments prescribed.

PART V - SUMMARY OF ANALYSIS

A. Describe Critical Values/Resources and Threats:

An emergency condition does exist in portions of the burned area. Areas of high and moderate soil burn severity have created a high or very high risk to human life and safety, The Forest trail system), and to native ecosystems from invasive species and noxious weeds. The team assessed the following critical values and resources.

- Public Recreation (Human Life & Safety): Hazard trees, post-fire flooding, and other burned area conditions will remain a threat to public safety in the area. Warning signs should be posted at the Tie Canyon Trailhead (Trails 200 & 207), the North Rainey Creek Trailhead (Trail 207), and the start of upper Rainey Creek Road (FSR 253).
- FS System Trails (Human Life, Safety, & Property): There are three FS system trails in the burned area. Two of which are Trail Class 3 (Developed): Tie Canyon FS# 200 and Upper Tie Canyon FS# 207. The Old Sheep Trail FS# 300 is a Trail Class 2 (Moderately Developed) trail. Old Sheep FS# 300 had minimal damage with only a short segment being within the fire perimeter.

Trails 200 & 207 were used by fire suppression personnel and most existing hazard trees were removed. The Tie Canyon Trail (200) received damage to two log retaining walls and will need to be stabilized (reconstructed) to protect trail from being eroded away and to reduce the safety hazards associated with losing the trail tread; ~~The trail itself is also at risk of eroding away at these locations~~. The fire burned the two log retaining walls, which essentially eliminated the trail tread across a steep slopes. This creates a dangerous conditions for trail travelers and threatens the loss of trail infrastructure. In addition, three bog areas need to be armored to protect the trail infrastructure from localized increases in runoff & erosion expected due to the burned area: one on the 200 trail and two 207 trail.

Photos log retaining structure that was damaged by fire. Trail tread will be lost with future erosion.

- Native Ecosystems - Invasive species and noxious weeds: Invasive species and noxious weeds are present only in minor amounts, but populations do exist around the fire perimeter. Early detection rapid response (EDRR) monitoring and treatment of new populations is needed to protect native ecosystems.

  Access to a majority of the burned area is limited to foot and horse travel. Therefore, noxious weeds are either absent or exist as single plants scattered along the authorized travel routes. One of the largest infestations of Spotted knapweed on the District is located just north of the burn along the highway. Small communities of Spotted knapweed are present within the fire perimeter and exist along disturbed areas like roads, trails, and trailheads. Canada thistle and Musk thistle exist primarily along riparian areas and will increase without treatment. Infestations of Houndstongue have not been documented within the burned area, but they are in close enough proximity to assume a potential for spread within the fire area by wildlife. All of these species exist along the travel routes used to access the burned area.

  The Incident Command Post (ICP) is heavily infested with Spotted knapweed and several species of invasive plant species or noxious weeds. Vehicles are the primary vector for spreading Spotted knapweed and an estimate of 50 + vehicles over several days were used on the fire. Two weed wash stations were installed as a preventative measure, but Spotted knapweed is located nearby. The Teton Basin Weed Crew will develop collaborative efforts with the City of Victor, Teton County, and the Henry's Fork Cooperative Weed Management organizations to control this area (ICP/ Pioneer Park) for future use by the Forest Service.

  About nine miles of roads and trails within and around the fire area were used to access the burned area during suppression efforts. Two miles+ of dozer line was created to control the fire. Vehicles and firefighters traveled through areas known to have species of invasive weeds previously not existing within the burn area. This creates a serious potential for weed seeds to have traveled within, and adjacent to, the burned area, especially on the roads and trails used during fire suppression efforts. New infestations of weeds could develop along these traveled routes within the first year of the fire, and easily spread throughout the rest of the burn area within 2-3 years.

Photos of knapweed and Canada thistle near the burn and along routes used to access the fire during suppression.

- Soil Productivity & Hydrologic Function: There is a minor potential for post-fire flooding, erosion, or sedimentation throughout and downstream of moderate & high soil burn severities.

- Water Quality & Yellowstone Cutthroat Trout Fisheries: The beneficial uses of Tie Canyon include agricultural water supply. The majority of the burned area is located in the Tie Canyon drainage, which is tributary to Pine Creek and the South Fork Snake River. A small portion of the fire is located in the Coalmine Fork of Little Pine Creek, which is located in the Teton River watershed. These streams are located within important stronghold habitat for Yellowstone cutthroat trout, a Region 4 Sensitive Specices. There is a minor potential for post-fire flooding, erosion, or sedimentation throughout and downstream of moderate & high soil burn severities to affect these resources

- Forest Service Roads (Human Life, Safety, & Property): FSR 252 (Tie Canyon) immediately downstream of the burned area and FSR 253 (Upper Rainey Creek) within the burned area. Little potential for post-fire flooding, erosion, or concentrated flow to damage the roads. Hazard trees were removed during fire suppression efforts. A cross drain culvert on FSR 253 was cleaned during suppression rehabilitation.

- Bonneville Power Administration (BPA) Powerline & Road (Human Life, Safety, & Property): These are under special use permit with BPA. There is a low potential for post-fire flooding, erosion, or concentrated flow to damage the road or power line. No culverts are located on FSR 320G. FSR 320G was water-barred during suppression rehabilitation efforts.

- Heritage Resources: No treatments were identified to protect heritage resources.

The table below summarizes the risks associated with each critical value. The risk was evaluated based on Interim Directive No. 2520-2014-1 guidance. Treatments are recommended to mitigate high risks.

Table 2. Risk assessment table displaying results of critical values risk evaluation

Critical Value	Critical Value Type	Probability of Damage or Loss	Magnitude of Consequences	Risk
Hazardous Condition Warning	Human Life and Safety	Possible	Major	High
FS Trails 200 (Tie Canyon) and 207 (Upper Tie Canyon)	Human Life & Safety; Property	Likely	Moderate	High
Native and Naturalized Ecosystems (Noxious & Invasive weeds)	Natural Resources	Likely	Moderate	High
Soil Productivity & Hydrologic Function	Natural Resources	Possible	Moderate	Intermediate
Water Quality & Yellowstone Cutthroat trout Fisheries	Natural Resources	Possible	Moderate	Intermediate
FSR 252 (Tie Canyon) immediately downstream of the burned area and FSR 253 (Upper Rainey Creek) within the burned area.	Human Life & Safety; Property	Possible	Moderate	Intermediate
FS trail 300 (Old Sheep Driveway).	Human Life & Safety; Property	Possible	Moderate	Intermediate
BPA powerline and access road 320G (under special use permit)	Human Life & Safety; Property	Possible	Moderate	Intermediate

Heritage Resources	Cultural & Heritage Resources	Possible	Moderate	Intermediate

B. Emergency Treatment Objectives:

- Hazardous Conditions Warning Signs – Inform the public of the dangers present within the burned area to reduce the risk of injury or death resulting from an increase in hazard trees throughout the area.
- EDRR for Invasives Species & Noxious Weeds – Prevent the spread of noxious plant species into previously unoccupied locations. Reduce the risk from expansion of existing weed seed beds into the burned area and to allow burned plant communities to recover more rapidly.
- Trail Stabilization – ~~To provide for public safety along system trails by stablizing the trail tread from erosion.~~ To protect the trail tread and natural resources from the expected increase in erosion and runoff produced in the burned area.

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

Invasives **90**% (prior to seed) Channel **N/A**% Trails **80**% Protection/Safety(signs) **90** %

D. Probability of Treatment Success

Table: Probability of Treatment Success

	Years after Treatment		
	1	3	5
Invasives	90	75	N/A
Channel	N/A	N/A	N/A
Trails	80	80	80
Protection/Safety	75	50	N/A

E. Cost of No-Action (Including Loss): $63,000

Weeds: The values-at-risk with no action include potential loss of native communities and degraded ecological conditions that cause further departure from natural disturbance regimes, including loss of soil productivity over the long term. The effects of no action were determined by assuming fire suppression activities would contribute to the invasion of noxious weed species into highly susceptible burned areas where they were absent or in minor amount prior to the fire. This is a reasonable assumption after observing the conditions of portions of the adjacent.

If the invasive noxious weeds are not immediately controlled, these undesirable species could become established within 1 year. At least 2 years of additional treatments would be needed on the initial 100 acres identified, plus the potential for spread may infect an additional 100 acres if the initial invasion is not successfully controlled. The average cost to treat noxious plants that have become established is $140/acre. Assuming the treatments are 80% effective, the total cost for control of newly established noxious weed infestations, including loss, is estimated to be $55,000.

Trails: A moderate intensity/short duration precipitation event would would result in a loss of the trail tread along portions of Forest Trails 200 and 207. This would likely result in a complete rebuild or rerouting of the trail in those areas. The estimated cost of that work is $8,000.

Signs: The potential injury or loss of life from hazards within the burn perimeter resulting from inadequate signage to notify public users would far exceed any request for sign funding.

F. Cost of Selected Alternative (Including Loss): $10,000 total – EDRR ($6,500) + Trail Stabilzation ($3,500)

Cost estimate for EDRR – invasive plants and noxious weeds.

	Units	Unit Cost	# Units	BAER $
Detection/mapping/rapid response	Days	$300	3	$900
Treatment: Labor, equipment, & supplies	Days	$300	12	$3,600
Treatment: Chemical and supplies	Acres	$200	10	$2,000
Total =				**$6,500**

Cost for trail stabilization treatment.

	Units	Unit Cost	# Units	BAER $
Trail crew (GS-4)	Days	$124	5	$620
Trail crew (GS-5)	Days	$138	10	$1,380
Material, supplies, hardware, and concrete	Each	$1,500	1	$1,500
Total =				**$3,500**

Cost to for warning signs – The Palisades District has existing signs to use at three locations. Signs will be posted by the trail crew personnel during trail stabilization work.

G. Skills Represented on Burned-Area Survey Team:

[**X**] Hydrology [**X**] Soils [] Geology [X] Range [] Forestry [] Wildlife [] Fire Mgmt
[] Engineering [] Contracting [] Ecology [] Botany [**X**] Archaeology [] Fisheries
[] Research [] Landscape Arch [] GIS [X] Invasive Species/Noxious Weeds [X] Trails

Team Leaders:

Kara Green, Soil Scientist, Caribou-Targhee NF klgreen@fs.fed.us Phone: 208-547-1110
Brad Higginson, Hydrologist, Caribou-Targhee NF bhigginson@fs.fed.us Phone: 208-557-5786

Other Core Team Members:

- Dave Woodcock – Trails/Recreation
- Matt Hoggan – Rangeland Resource, invasive Species, and Noxious Weeds

H. **Treatment Narrative:**

- Warning Signs: Post signs at the Tie Canyon Trailhead (Trails 200 & 207), the North Rainey Creek Trailhead (Trail 207), and the start of upper Rainey Creek Road (FSR 253).

- Trail Stabilization: BAER funds are appropriate for treatment of anticipated fire erosion events on trails, but not to improve trails to standards over pre-fire conditions. The objective of the proposed stabilization treatments are to ~~1) make the 200 trail safe for public use by replacing two log retaining structures that burnt during the fire and 2) to~~ stormproof the trails (200 & 207) from accelerated erosion. Wildfire accelerated surface flows down trails are probable and if not treated will cause significant surface erosion and failure in localized areas. Treatments:

    1. Armor three bog areas (2 on Trail #207 & 1 on Trail # 200).
    2. Stabilize two burned out retaining log structures located on Trail #200.

- EDRR for Invasive Species and Noxious Weeds: First year weed monitoring should include 25 feet on each side of the trails within the fire area and roads used to access the fire area. This would amount to roughly 100 acres of road and trail corridors.

  Treating invasive plants and noxious weeds prevents the serious threat these plants have on ecosystems. The BAER team surveyed the fire area and identified five invasive species nearby. All five species were on the Federal and/or Idaho State Noxious Weed List. These five species were prioritized depending on the plant type and its response to fire.

    1. Spotted knapweed
    2. Cheatgrass
    3. Musk thistles

4. Canada thistle
5. Houndstongue

The District Weed Crews have implemented an Intergrated Management System using all appropriate available methods or a combination of methods that are economical and effective. The affected area is located within and all treatments are covered by the Targhee National Forest ~ Enviromental Assessment for Noxious Weeds and Poisonous Plants. This plan will be followed to implement the proposed EDRR treatment.

1. Prevent the introduction, reproduction and spread of designated noxious weeds and invasive plants into and within the Tie Fire.
   Objectives:
   A. Develop and maintain and integrated inventory of noxious weeds and invasive plants
   B. Prevent the establishment of Potential Invaders through EDRR.
   C. Eradicate New Invaders (EDRR).
   D. Promote and support the use of certified weed free seed, and/or weed free feeds.

2. Reduce the extent and density of established noxious weeds.
   Objectives:
   A. Establish control priorities for the noxious weed list.
   B. Coordinate the use of resources and manpower to treat designated weed infestations
   C. Treat transportation corridors and areas of concentrated activities, such as roads, dozer lines, fire lines, trails, campgrounds, trailheads parking lots. Control satellite infestations of Established Invaders.
   D. Treat stream corridors to limit spread of new and established invaders in riparian habitats.
   E. Contain and slow the spread of widespread established invaders.

3. Monitoring (Short and Long Term Monitoring)
   A. Monitoring and Evaluation will focus on four general questions:
      - Is the plan being implemented?
      - Are the objectives and priorities realistic and achievable?
      - Are the treatments effective in meeting the planned objectives?
      - Are the weeds continuing to spread beyond our control actions?

I. **Monitoring Narrative:**

Implementation monitoring is proposed and will occur as the treatments are installed or appliled. District staff (Weeds and Trails) will monitor all treatments to ensure proper implementation. The cost of the implementation monitoring is included in the treatment costs.

Part VI – Emergency Stabilization Treatments and Source of Funds

Treatment Cost Summary

			NFS Lands		
		Unit	# of		Total
Line Items	Units	Cost	Units	BAER $	$
A. Land Treatments					
EDRR	Each	6500	1	$6,500	$6,500
Subtotal Land Treatments				$6,500	$6,500
B. Channel Treatments					
none				$0	$0
Subtotal Channel Treat.				$0	$0
C. Trails					
Trail Stabilization	Each	3500	1	$3,500	$3,500
Subtotal Road & Trails				$3,500	$3,500
D. Protection/Safety					
Signs	Signs	0	3	$0	$0
				$0	$0
Subtotal Structures				$0	$0
E. BAER Evaluation					
Team Salary	days	1900	3		$5,700
Per Diem	days	0	0		$0
Subtotal Evaluation				---	$5,700
F. Monitoring					
				$0	$0
Subtotal Monitoring				$0	$0
G. Totals				$10,000	$15,700
Previously approved					
Total for this request				**$10,000**	

PART VII - APPROVALS

1. /S/GARTH SMELSER — 09/12/2016
   Forest Supervisor (signature) — Date

2. /s/ George C. Iverson (for) — 9/16/16
   Regional Forester (signature) — Date

Attatchment: Burn Serverity Map