Date of Report: 07/13/2017

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

[ ] 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)

[X] 2. Interim Report # 1 .
[ ] 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: Highline/Bear Complex

B. Fire Number: 2017-AZ-TNF-780

C. State: AZ

D. County: Coconino and Gila

E. Region:3

F. Forest: Coconino NF and Tonto NF

G. District: Mogollon Rim Ranger District (07) and Payson Ranger District (04)

H. Fire Incident Job Code: P3K1YC

I. Date Fire Started:06/01/2017

J. Date Fire Contained: 07/06/2017

K. Suppression Cost: $15,000,000

L. Fire Suppression Damages Repaired with Suppression Funds

CNF	TNF
1. Fireline waterbarred (miles): 0 – roads served as containment lines	1. Fireline waterbarred (miles): Road as completed line sums up to 6 .3 mi total
2. Fireline seeded (miles): 0 – seeding is unnecessary and reduces risk of introducing invasive plant species to the burned area.	2. Fireline seeded (miles): 0 – seeding is unnecessary and reduces risk of introducing invasive plant species to the burned area.
3. Other (identify): Stabiliation of Incident command site is completed.	3. Other (identify): & Masticator line 6.6 mi total

M. Watershed Number:

Forest	Watershed Name	Watershed Number	Acres
TNF	East Verde River Headwaters	150602030201	2495
TNF	East Verde River Headwaters	150602030202	314
CNF	Barbershop Canyon	150200080304	14
CNF	East Verde River Headwaters	150602030202	48
CNF	Bear Canyon	150200080302	3645

N. Total Acres Burned:

[x] NFS Acres [ ] Other Federal [ ] State [ ] Private
3,491.2 acres on the TNF and 3,706.8 acres on the CNF total sum of NFS Acres 7,198

O. Vegetation Types:

TNF Veg. Type	CNF Veg. Type
Chaparral (836ac)	Douglas fir (1,051 ac.)
Madrean Pinyon-Juniper-Oak woodland (160ac)	White fir, Douglas Fir, Pondersa pine, Gambel oak (2,391 ac.)
Ponderosa Pine (1025ac),	Ponderosa pine, Gambel oak, screwleaf muhly (246 ac.)
Mixed Conifer (262ac)	Kentucky bluegrass, Arizona Fescue (13 ac.)
Riparian (79ac)	Ponderosa pine, Gambel oak (6.4 ac.)

P. Dominant Soils:

Dominant Soils (TNF)	Dominant Soils (CNF)
Eutric Glossoboralfs (130ac)	Typic Glossoboralfs, loamy-skeletal mixed (2,147 ac.)
Fluventic Ustochrepts (79ac)	Typic Dystrochrepts, moderately deep, very stony fine sandy loam (1,051 ac.),
Glossoboric Hapludalfs (657ac)	Udic Haplustalfs, mixed active, frigid, gravelly fine sandy loam (253 ac.),
Lithic Glossoboralfs (106ac)	Typic Hapludalfs, shallow, mixed active very stony fine sandy loam (244 ac.)
Typic Eutrochrepts (159ac)	Cumulic Haploboralfs, fine-loamy, mixed, deep loam (13 ac.)
Typic Glossoboralfs (22ac)	
Typic Paleboralfs (5ac)	
Typic Udorthents (1170ac)	
Udic Haplustalfs (34ac)	

Q. Geologic Types:

Coconino- Gray to tan, cherty limestone of Kaibab and Toroweap Formations, and underlying white to tan, fine-grained Coconino Sandstone (270-280 Ma) (Kaibab Formation, Toroweap Formation, Coconino Sandstone)

Tonto- Coconino Sandstone, Kaibab and Toroweap Limestone

R. Miles of Stream Channels by Order or Class:

TNF (Class)	CNF (Order)
Perennial (1.94 mi.)	1st order (8.6 mi.),
Intermittent (0.13 mi.)	2nd order (1.1 mi.),
Ephemeral (9.65 mi.)	3rd order (0.61 mi.),
	4th order 3.1 mi

S. Transportation System:

Trails (TNF)	Trails (CNF)
Myrtle (1.05 mi.)	Houston Brothers (2.9 mi.)
Highline (4.7 mi.)	General Crook (2.41 mi.)
	Fred Haught (0.43 mi.)
	Barbershop (0.15 mi.)

Roads (TNF)	Roads (CNF)
27.2 mi.	30.5 mi.

PART III - WATERSHED CONDITION

			TNF	CNF
A	**Burn Severity (Acres):**			
		Low	1,316	7,536
		Moderate	1,433	337
		High	47	0
B	**Water-Repellent Soil (acres):**		1,480	< 10 percent (est. 35 ac.)
C	**Soil Erosion Hazard Rating (acres):**			
		Slight	317	6,405
		Moderate	0	1,376
		Severe	2,839	92
D	**Erosion Potential (tons/acre):**		34	____
E	**Sediment Potential (cubic yards / square mile):**		22,735	162.4

PART IV - HYDROLOGIC DESIGN FACTORS

TNF

A. Estimated Vegetative Recovery Period, (years): 5
B. Design Chance of Success, (percent): 80
C. Equivalent Design Recurrence Interval, (years):5
D. Design Storm Duration, (hours): 1
E. Design Storm Magnitude, (inches): 2.54
F. Design Flow, (cubic feet / second/ square mile):45
G. Estimated Reduction in Infiltration, (percent): 50
H. Adjusted Design Flow, (cfs per square mile): 165

CNF

A. Estimated Vegetative Recovery Period, (years): 3
B. Design Chance of Success, (percent): 80
C. Equivalent Design Recurrence Interval, (years): 5
D. Design Storm Duration, (hours): 1
E. Design Storm Magnitude, (inches):1.73
F. Design Flow, (cubic feet / second/ square mile): 48.8
G. Estimated Reduction in Infiltration, (percent): 20
H. Adjusted Design Flow, (cfs per square mile): N/A

PART V - SUMMARY OF ANALYSIS

Coconino

A. **Describe Critical Values/Resources and Threats:**

There is potential risk of invasive plant species population increases within the burned area including toadflax (*Linaria dalmatica*) and bull thistle (*Cirsium vulgare*) within the burned area. Funding for early detection and treatment of these and other invasive species within the burned area and the Incident Command is requested.

B. **Emergency Treatment Objectives:**

The objective of the recommended BAER treatment is rapid detection and chemical treatment of invasive plant species that could otherwise displace native plant communities within the burned area.

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

Understory vegetation, and therefore invasive or noxious weeds within the burned area will not likely respond until monsoon precipitation arrives.

Land **80** % Channel % Roads/Trails %Protection/Safety %

D. **Probability of Treatment Success:**

Years after Treatment

	1	3	5
Land	80		
Channel			
Roads/Trails			
Protection/Safety			

E. Cost of No-Action (Including Loss): **$93,537**

F. Cost of Selected Alternative (Including Loss): **$8,800**

G. Skills Represented on Burned-Area Survey Team:

[x] Soils [x] Fire Mgmt. [x] Botany [x] Archaeology [x] Fisheries

Team Leader: Kit MacDonald

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H. **Treatment Narrative:**

Land Treatments: Rapid detection and treatment of invasive or noxious plant species within and immediately adjacent to the fire perimeter using appropriate herbicides. These treatments would be implemented in spring/early summer of 2018 ($8,800).

Channel Treatments: None recommended

Roads and Trail Treatments: None recommended

Protection/Safety Treatments: None recommended

I. **Monitoring Narrative:**
Monitoring for the presence of invasive or exotic plant species and monitoring of treatment effectiveness where invasive or exotic plant species are found. A monitoring report will be provided upon completion of surveys and treatments.

Tonto

A. **Describe Critical Values/Resources and Threats:**
Watershed conditions in the post-fire watershed:
1. Threats to downstream life and property from post-fire watershed conditions (increased peak flows, potential hyper-concentrated flows, and debris flows). Private lands in Ellison Creek watershed are at risk from post-fire flooding. A potable water supply intake structure diverts surface water from Bonita Creek for residents in the Bonita Creek subdivision.
2. Threats to hydrologic function (magnitude, timing, and volume of storm water runoff) and changes in the condition of stream channels from post-fire runoff and sediment and from floatable debris in stream channels that can cause debris jams to form and fail and result in increased scouring and down cutting of stream channels.
3. Threats to life and safety on the Highline and Myrtle trails that pass through and below the burned area from flash flooding.

Highline National Recreational Trail is both a national and historically-significant transportation route that is eligible for listing on the National Register of Historic Places. Both Highline and Myrtle trails need immediate assistance in recovering from fire impacts. Threats to both system trails include life, safety, resources, and irreparable damage to nationally, historically important established system trails

Noxious weeds could have been introduced into the area through cross contamination of road equipment. Species of interest is bull thistle (*Cirsium vulgare)* and toadflax *(Linaria dalmatica)* as well as other noxious weed that may have been introduced to the fire which has not been detected.

B. **Emergency Treatment Objectives:**
Threats to life and safety on the Highline and Myrtle trails include closing both trails for the first monsoon season to prevent loss of life and property, and install burned-area signage to notify the public about the potential threats.

Reduce impacts to hydrologic function on streams within NFS lands by removing floatable debris that can cause debris jams to form and fail and result in increased scouring and down cutting of stream channels.

Reduce threats to downstream private lands from flooding

Reduce threats to potable water supply intake structure on Bonita Creek

Noxious weed treatment for the first two growing seasons include detection and removal measures. Noxious weeds detection and removal will be shared between both the Tonto and Coconino.

National Forest:

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

Land **80** % Channel **50**% Roads/Trails **68** % Protection/Safety **92** %

D. **Probability of Treatment Success:**

Years after Treatment

	1	3	5
Land	80	80	80
Channel	50	50	50
Roads/Trails	65	80	98
Protection/Safety	90	90	98

E. Cost of No-Action (Including Loss): **$636,000**
F. Cost of Selected Alternative (Including Loss): **$53,000**
G. Skills Represented on Burned-Area Survey Team:

[X] Hydrology [X] Soils [X] Wildlife [X] Engineering [X] Ecology [X] Archaeology [X] Recreation

Team Leader: Ryan Nicholas Ph.D.
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H. **Treatment Narrative:**

Land Treatments:
The detection and removal of noxious weeds as per FS policy and guideline is to prevent any noxious weeds and per the FS Noxious Weed Environmental Assessment. Noxious weeds treatment is roughly $40 an acre. If needed, herbicide treatment is an additional cost up to but not exceeding $1000. ($7,500)

Channel Treatments:
Remove floatable debris in Ellison Creek above private lands and in Bonita Creeks above a potable water supply intake structure to reduce potential flood damages. ($16,000)

Roads and Trail Treatments:
The Highline and Myrtle trails need protection from overland flow and erosion by increasing the drainage alongside the trails. Erosion control feature/material installation will provide the protection from post-fire conditions, which have left some parts of the trails degraded.
The Forest Service will collaborate with in-service trails experts and utilize trails contractors (e.g. ACE or YRU crews) for the 6.8 miles that are in need of work.

Application rates and equipment:

Arizona Conservation Corps. $15,000- 10 days of treatment with two teams with 8 people per team to install safety signage and conduct the trail repair work.
Erosion control treatment is $10,000.
Materials include hay bales, waddles, trenches, a backhoe and an operator.

Protection/Safety Treatments:
Forest Service Road Crew:

Close Highline trail and Myrtle trail and install burned-area signage. These actions will notify the public of potential safety threats that could occur within the burned area. ($4,500). Install warning signs along the Control Road (FR 64) where it crosses drainages affected by post-fire runoff from the burned area. Install two warning signs along FR 198 (which parallels Ellison Creek below the Control Road)

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										
Invasive Plant (CNF)	Unit	80	110	$8,800	$0		$0		$0	$8,800
Invasive Plant (TNF)	Unit	7500	1	$7,500	$0		$0		$0	$7,500
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$16,300	$0		$0		$0	$16,300
B. Channel Treatments										
Debris Removal	mile	10667	1.5	$16,000	$0		$0		$0	$16,000
				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Channel Treat.				$16,000	$0		$0		$0	$16,000
C. Road and Trails										
Erosion control materials	miles	1470.6	6.8	$10,000	$0		$0		$0	$10,000
ACC	mile	15000	1	$15,000	$0		$0		$0	$15,000
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Road & Trails				$25,000	$0		$0		$0	$25,000
D. Protection/Safety										
Warning signs	unit	300	17	$5,100	$0		$0		$0	$5,100
Liaison	each	3000	1	$3,000	$0		$0		$0	$3,000
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Structures				$8,100	$0		$0		$0	$8,100
E. BAER Evaluation										
person days	each	25000	1	---	$25,000		$0		$0	$25,000
mileage	mile	0.33	560		$185					
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				---	$25,185		$0		$0	$25,000
F. Monitoring										
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Monitoring				$0	$0		$0		$0	$0
G. Totals				$65,400	$25,185		**$0**		**$0**	**$90,400**
Previously approved				$51,800						
Total for this request				**$13,600**						

PART VII - APPROVALS

1. _____ _____
Forest Supervisor (signature) Date

2. _____ _____
Regional Forester (signature) Date