

**Date of Report:** October 2, 2020 (revised 10/14/2020)

## BURNED-AREA REPORT

### PART I - TYPE OF REQUEST

**A. Type of Report**

- ☒ 1. Funding request for estimated emergency stabilization funds  
☐ 2. No Treatment Recommendation

**B. Type of Action**

- ☒ 1. Initial Request (Best estimate of funds needed to complete eligible stabilization measures)  
☐ 2. Interim Request #\_\_\_\_\_  
☐ Updating the initial funding request based on more accurate site data or design analysis

### PART II - BURNED-AREA DESCRIPTION

**A. Fire Name:** Bolt Fire

**B. Fire Number:** AZ-TNF-002658

**C. State:** Arizona

**D. County:** Maricopa

**E. Region:** R03

**F. Forest:** Tonto

**G. District:** D01 – Cave Creek District

**H. Fire Incident Job Code:** P3NH4120 (0312)

**I. Date Fire Started:** 08/28/2020

**J. Date Fire Contained:** 09/4/2020

**K. Suppression Cost:** 400,000

**L. Fire Suppression Damages Repaired with Suppression Funds (estimates):**

No fireline constructed and no mechanical equipment used for suppression

1. **Fireline repaired (miles):** N/A  
2. **Other (identify):** N/A

**M. Watershed Numbers:**

*Table 1: Acres Burned by Watershed*

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
150701020601	Seven Springs Wash – Cave Creek	32,964	1,420	4%

**N. Total Acres Burned:** 1,420

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	1,420
OTHER FEDERAL (LIST AGENCY AND ACRES)	
STATE	
PRIVATE	
TOTAL	1,420

**O. Vegetation Types:**

Semi-Desert Grasslands – 823 acres  
Mixed Grassland Types – 534 acres  
Chaparral – 44 acres  
Riparian – 14 acres

**P. Dominant Soils:** TEUI units 436, 432, 420, 431, 355, and 385**Q. Geologic Types:** Tertiary basalts and tertiary conglomerates and sandstones**R. Miles of Stream Channels by Order or Class:**

Table 3: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERENNIAL	0
INTERMITTENT	1
EPHEMERAL	3.8
OTHER (DEFINE)	

**S. Transportation System:**

Trails: National Forest (miles): 0                      Other (miles):  
Roads: National Forest (miles): 1.4                      Other (miles):

**PART III - WATERSHED CONDITION****A. Burn Severity (acres):**

Table 4: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	Other Federal (List Agency)	State	Private	Total	% within the Fire Perimeter
Unburned	343				343	24%
Low	830				830	58%
Moderate	247				247	17%
High	0					
Total					1420	

**B. Water-Repellent Soil (acres):** 247**C. Soil Erosion Hazard Rating:** High – 589 acres, Moderate - 236 acres, Low – 577 acres**D. Erosion Potential:** 11.6 t/ac                      **Sediment Potential:** 2.9 t/ac**F. Estimated Vegetative Recovery Period (years):** 5-10 years**G. Estimated Hydrologic Response (brief description):** The fire burned 1,420 acres entirely within the Seven Springs Wash-Cave Creek sixth code watershed. It burned within two smaller sub-watersheds within

this sixth code watershed: Bronco Creek and Seven Springs Wash. Both sub-watersheds are tributaries to Cave Creek. Peak flows have been estimated for two smaller watersheds in addition to Bronco Creek and Seven Springs Wash. Peak flow increases from the one-hour rainfall event for various return intervals are displayed in the table below. Peak flow estimates for Seven Springs Wash are at the FR 24 low water crossing just above the Seven Springs Recreation Site.

Post Fire increase in Peak Flows from Prefire Conditions (Percent)

Watershed Name	Area (sq mi)	2 year	5 year	10 year	25 year
Seven Springs Wash Trib	0.65	39	27	25	22
Seven Springs Wash	10.55	31	14	9	6
East Fork Bronco Creek	1.46	14	9	11	9
Bronco Creek	4.76	5	4	4	3

Although the peak flow increase from Seven Springs Wash is 39% for the two year one hour rainfall event, in absolute terms it is 21 cubic feet per second (cfs) and the 39% increase from the Seven Springs Wash tributary is also 21 cfs. These increases are not substantial.

Greatest increases in peak flows typically occur from the first couple of damaging storms following the fire that wash ash, sediment, and debris from the burned area. Equations have been developed to estimate these flows as well. These flows and hazard ratings (based on peak flows per square mile) for these flows are displayed in the table below.

Watershed Name	Storm Recurrence Interval (yrs)		
	2	5	10
East Fork Bronco Creek	188	375	608
Bronco Creek	85	160	234
Seven Springs Wash Trib	386	788	1328
Seven Springs Wash	28	70	150

Green highlighted boxes represent low risk, orange-moderate risk, and pink-high risk.

The US Geologic Survey (USGS) estimated debris flow hazards for the burned area. Most of the burn area is estimated to have a low level of debris flow hazard. 15 minute rainfall intensities of greater than or equal to 1.3 in/hr are necessary to exceed a 50% likelihood of producing debris flows for some areas, particularly small watersheds that drain to Seven Springs Wash.

Some of the burned area is directly above FR 24. Steep slopes and small drainages may discharge ash, sediment, and debris onto this road and be a hazard to road users.

## **PART V - SUMMARY OF ANALYSIS**

### **Introduction/Background**

The Bolt Fire started from an undetermined cause on August 28, 2020. It burned primarily semi-desert grassland and other grassland types in hilly country in the Seven Springs Wash and Bronco Creek watersheds. Approximately 1,420 acres were burned with primarily low burn severity. The fire burned along Forest Road 24 from the Bronco trailhead to near the Seven Springs Recreation site. It burned south and west from FR 24 to the East Fork of Bronco Creek and the mainstem of Bronco Creek below the confluence with the east fork towards private lands formerly known as the Cartwright Ranch. The fire was contained on September 4, 2020.

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

Table 5: Critical Value Matrix

Probability of Damage or Loss	Magnitude of Consequences		
	Major	Moderate	Minor
	RISK		
Very Likely	Very High	Very High	Low
Likely	Very High	High	Low
Possible	High	Intermediate	Low
Unlikely	Intermediate	Low	Very Low

**1. Human Life and Safety (HLS):**

- Life and Safety could be threatened by flash floods and debris flows primarily along Forest Road 24 which passes below slopes burned by the fire and crosses Seven Springs Wash twice: once within the burned area and once just below the burned area. The probability of damage or loss is possible, the magnitude of consequences is major and the risk would be High.
- Life and Safety could also be threatened where Forest Trails 247 and 4 cross Cave Creek below the burned area. The probability of damage or loss is unlikely due to small increases in peak flows expected following the fire, however magnitude of consequences would be major and risk would be intermediate.
- Threats to life and safety of users at the Seven Springs Recreation Site is possible from post-fire flooding, magnitude of consequences would be major and risk is high. This site is currently closed to use.

**2. Property (P):**

Threats to NFS property include Forest Roads 24, facilities at Seven Springs Recreation Site, Forest Trails 247 and 4 at stream crossings, and Forest Service Stream gages in Seven Springs Wash and Cave Creek. Forest Road 24 is a well-used Maintenance Level 3 (ML3) road that is maintained by Maricopa County under a Maintenance Agreement. It is the road most likely to be damaged by post fire conditions. Probability of damage is possible: magnitude of consequences is moderate and risk is intermediate for the 24 Road. Threats to other roads and trails are possible but magnitude of consequences is minor and risk low. Probability of damage to facilities at the Seven Springs Recreation site from flooding and debris is possible, magnitude of consequences would be moderate and risk intermediate.

**3. Natural Resources (NR):**

Approximately 250 acres of soils are estimated to have post-fire soil-loss rates that exceed tolerance rates. These areas are expected to recover to below tolerance rates within 5-10 years as vegetative conditions recover. The probability of damage or loss is considered possible but magnitude of consequences is minor and Risk is low.

A population of yellow bluestem has been recently discovered in the Seven Springs Wash area. This non-native species could expand into the burned area and become more difficult to control. Probability of damage or loss is likely, magnitude of consequences is major, and risk is very high

**4. Cultural and Heritage Resources:**

The Seven Springs Recreation Site is the only significant cultural resource threatened by post fire conditions. Modelled increases in peak flows in Seven Springs Wash above the recreation site are relatively small: a 21 cfs increase from the 2yr 1hr storm, 55 cfs from the 5yr 1hr storm, and 80 cfs from the 10yr 1hr storm. Probability of damage is possible; the magnitude of consequences would be moderate should damage occur and the risk is Intermediate.

**B. Emergency Treatment Objectives:**

- Warn users of roads and trails about Safety hazards from flash flooding
- Continue closure of Seven Springs Recreation Site
- Survey for presence of invasive plant species encroaching into burned area and rapidly remove detected species.
- Inform Maricopa County Department of Transportation about potential impacts to FR 24

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

Land 80%

Channel N/A

Roads/Trails N/A

Protection/Safety 80%

**D. Probability of Treatment Success**

Table 6: Probability of Treatment Success

	1 year after treatment	3 years after treatment	5 years after treatment
Land	60	70	80
Channel			
Roads/Trails			
Protection/Safety	75	90	90

**E. Cost of No-Action (Including Loss):** \$400,000**F. Cost of Selected Alternative (Including Loss):** \$200,000**G. Skills Represented on Burned-Area Survey Team:**

- ☒ Soils      ☒ Hydrology      ☒ Engineering      ☒ GIS      ☒ Archaeology  
☒ Weeds      ☒ Recreation      ☐ Fisheries      ☒ Wildlife  
☐ Other:

**Team Leader:** Grant Loomis**Email:** Moalty21@gmail.com**Phone(s)** 480 406 7352**Forest BAER Coordinator:** Kelly Mott LaCroix**Email:** Kelly.mottlacroix@usda.gov**Phone(s):** 480 601 6218**Team Members:** Table 7: BAER Team Members by Skill

Skill	Team Member Name
Team Lead(s)	Grant Loomis
Soils	Rob Ballard, Mike Kasten
Hydrology	Alex Makic, Grant Loomis
Engineering	Michelle Tom
GIS	Frank Williams
Archaeology	Clint Dalton
Weeds	Ryan Nicholas
Recreation	Jason Scow
Wildlife	Kelly Kessler

**H. Treatment Narrative: Land Treatments:**

Survey for encroachment of invasive species into the burned area and implement rapid removal actions if detected

**Channel Treatments:****Roads and Trail Treatments:****Protection/Safety Treatments:**

Place flash flood warning signs at Bronco and Cave Creek Trailheads

Place flash flood warning signs on FR 24 above (near turnoff to Bronco Creek Trailhead) and below (near the approach to the Seven Springs Recreation area from the north side) the burned area.

**I. Monitoring Narrative:**

Periodically (monthly) check for the presence and condition of warning signs.

**PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS**

Line Items	Units	Cost	NFS Lands		Other	Other Lands				All
			# of Units	BAER \$		# of units	Fed \$	# of Units	Non Fed \$	Total \$
<b>A. Land Treatments</b>										
Weeds ED/RR	ea	6,000	1	\$6,000	\$0		\$0		\$0	\$6,000
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$6,000	\$0		\$0		\$0	\$6,000
<b>B. Channel Treatments</b>										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Channel Treatments</i>				\$0	\$0		\$0		\$0	\$0
<b>C. Road and Trails</b>										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Road and Trails</i>				\$0	\$0		\$0		\$0	\$0
<b>D. Protection/Safety</b>										
Warning Signs	ea	300	4	\$1,200	\$0		\$0		\$0	\$1,200
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Protection/Safety</i>				\$1,200	\$0		\$0		\$0	\$1,200
<b>E. BAER Evaluation</b>										
Initial Assessment	Report			---	\$6,000		\$0		\$0	\$6,000
	ea	\$6,000	1	\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				---	\$0		\$0		\$0	\$0
<i>Subtotal Evaluation</i>				\$0	\$6,000		\$0		\$0	\$6,000
<b>F. Monitoring</b>										
				\$0	\$0		\$0		\$0	\$0
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Monitoring</i>				\$0	\$0		\$0		\$0	\$0
<b>G. Totals</b>				\$7,200	\$6,000		\$0		\$0	\$13,200
Previously approved										
Total for this request				\$7,200						

**PART VII - APPROVALS**

1. \_\_\_\_\_  
 Forest Supervisor Date \_\_\_\_\_