Date of Report: 7/23/2019

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: Naranjo

B. Fire Number: NM-SNF-000250

C. State: New Mexico

D. County: Sadoval

E. Region: 3

F. Forest: Santa Fe

G. District: Cuba RD

H. Fire Incident Job Code: P3MC9D

I. Date Fire Started: 07/03/2019

J. Date Fire Contained: 7/18/2019

K. Suppression Cost: $750,000 projected final cost

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

1. **Fireline repaired (miles): Water bars to be put on .5 miles of dozer line**
2. **Other (identify): One culvert cleaned, two low water crossings to be cleaned and shaped**

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
130202040101	Headwaters Arroyo San Jose (HUC12)	35,453 ac	1010	2.8%

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	1010
OTHER FEDERAL (LIST AGENCY AND ACRES)	0
STATE	0
PRIVATE	0
TOTAL	1010

O. Vegetation Types: ponderosa pine mix, pinyon, pinyon-juniper, aspen, deciduous shrub mix

P. Dominant Soils: Dominant soils are loams and fine sandy loams from TEU map units 30, 137,155, 158, 208 and 398

Q. Geologic Types: medium-grained mixed clastic, sandstone, shale.

R. Miles of Stream Channels by Order or Class:

Table 3: Miles of Stream Channels by Order or Class

STREAM TYPE	MILES OF STREAM
PERRENIAL	0
INTERMITTENT	0
EPHEMERAL	9.2
OTHER (ACEQUIA)	.9

S. **Transportation System:**
Trails: *National Forest (miles):* 0 *Other (miles):* 0
Roads: *National Forest (miles):* 2.5 *Other (miles):* 0

PART III - WATERSHED CONDITION

A. Burn Severity (acres):

The BARC product was delivered from GSTC on July 11, 2019. The raw BARC was adjusted based on field sampling and verification. The final burn severity was established by moving the Low/Moderate break from 115/116 to 120/121. This small adjustment reduced the overall moderate burn severity acreage from 155ac to 120ac which better portrayed pockets of low burn severity within and on the edges of some of the larger blobs of moderate burn.

Table 4: Burn Severity Acres by Ownership

Soil Burn Severity	NFS	Other Federal (List Agency)	State	Private	Total	% within the Fire Perimeter
Unburned	220	0	0	0	220	100
Low	670	0	0	0	670	100
Moderate	120	0	0	0	120	100
High	<1	0	0	0	<1	100
Total	1010	0	0	0	1010	100

B. Water-Repellent Soil (acres): 80ac

C. Soil Erosion Hazard Rating (acres): Moderate – 751ac; Severe – 259ac

D. Erosion Potential: 0.01 tons/acre across burned hillslopes

E. Sediment Potential: .2 tons/acre

F. Estimated Vegetative Recovery Period (years): 2-5 years

G. Estimated Hydrologic Response (brief description): Vegetative ground cover is critical to holding soil on the hillslopes as well as slowing the flow of water over the soil surface, protecting the soil from erosion. Soils within the fire perimeter are loam and fine sandy loam, of which approximately 26% were highly erosive before the fire, making them extremely susceptible to erosion post fire. Model results (ERMiT) show a 95% probability that 0.2 tons/acre (202 total tons of sediment, or 160 yds3, assuming a bulk density of 1.5 g/cc) will erode within the first year (for reference, one dump truck carries about 10 yds3), a 50% probability that 232 tons (184 yds3), and a 1% probability that 475,710 tons (376,304 yds3) will erode. Wildfire, even low severity wildfire, removes significant ground cover, as well as changes soil properties which affect infiltration. Hydrologic function is most dramatically affected by these changes during the first year before vegetation returns and hydrophobic compounds in the soil have yet to dissipate. Field investigations found 66% of all soil sample sites within moderate and high soil burn severity areas were hydrophobic (representing about 79 acres of the fire footprint). When intense rainfall events occur over the fire scar, typical of July and August, water is more likely to run-off the hillslope than infiltrate into the soil. Hillslopes with moderate and high burn severity are more likely to affect the hydrologic response, resulting in increased discharge from watersheds. Elevated flows are "bulked" by approximately 25% when sediment loads are factored in to the total discharge volume. For the Naranjo fire, model (Wildcat5) results for a 1-hour, 10 year recurrence interval storm, show an increase in flows of 76% (at the FS96H road-stream low-water crossing). If sediment and ash are included, a discharge of 173 cfs can be expected within the first year at the crossing. The FS96 road-stream crossing can be expected to pass 89 cfs (including sediment). Because the geometry of both channels FS96 and FS96H road-stream crossings are relatively wide (~30 ft), the estimated depth of the flood and sediment at the crossings should be fairly shallow. Both crossings are simple low water crossings and currently lack culverts and other infrastructure, therefore the increased discharge through these pinch points is not expected to dramatically affect the road. Likely impacts include sedimentation and subsequent erosion, which could make the travel-way impassable, until the road surface can be treated. The water and sediment do however pose some threat to human safety as vehicles may become stuck in the mud.

PART V - SUMMARY OF ANALYSIS

Introduction/Background

The Naranjo Fire started as a lightning strike and was first reported on 7/03/2019. In order to achieve multiple objectives the fire was bounded by existing roads as well as dozer line and atv drag sleds. The interior was bunrned out with hand and aerial ignitions. Over all the burn is a mosaic of unburned, low, and moderate severity with very little (<1ac) high severity. Moderate severity burns are found mainly on north aspect slopes where fire spread quickly through denser vegetation, but pockets of moderate burn are small, the largest being around 30-40ac.

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):

There is high risk of loss of life on NFS land within and downstream of the burned area. Individuals who may find themselves in drainages within or below the burned area or on roads affected by fire upstream are at very high risk during storm events. The drainages affected by moderate burn severity will be subject to higher than

usual run off and debris flows which could cause injury or death. Hazard trees throughout the burn pose a high risk to anyone entering the area.

2. **Property (P):** Two low water crossings could be affected by storm run-off. The low water crossing on Forest Road 96H could see a 35% increase as shown in the hydro modeling table above, which may cause deposition of sediment and/or cuts through the road bed. The low water crossing on Forest Road 96 could see an increase in flow of XX% and could also have sediment deposition across the road. The remainder of the roads in the burn scar are not open to the public and are not considered necessary roads
3. **Natural Resources (NR):** Invasive weed species are a major concern following wildfire. Removal of the extant vegetation by fire, and disturbances from suppression efforts such as bulldozer lines and staging areas, create openings for invasive plants to establish, and impede or prevent recovery of desirable vegetation. Disturbed areas should be monitored to catch new infestations and treated immediately through Early Detection/Rapid Response protocols to prevent spreading.
4. **Cultural and Heritage Resources:** There are only a few know sites within the fire area which are located in generally flat locations and are not at risk from post fire run off effects.

B. Emergency Treatment Objectives: Treatments are designed reduce the spread of noxious and invasive weeds within the burn area, warn the public of hazardous post fire conditions, discourage entry into the burn area, and facilitate keeping forest road 96 open through this monsoon storm season.

C. Probability of Completing Treatment Prior to Damaging Storm or Event:
Land n/a **Channel** n/a
Roads/Trails treatment will be ongoing as needed **Protection/Safety** high

D. Probability of Treatment Success

Table 6: Probability of Treatment Success

	1 year after treatment	*3 years after treatment*	*5 years after treatment*
Land	80	90	90
Channel	n/a	n/a	n/a
Roads/Trails	90	95	95
Protection/Safety	90	95	95

E. Cost of No-Action (Including Loss): Road 96 – $25,000 to repair after a season of monsoon storms

F. Cost of Selected Alternative (Including Loss): $14,000

G. Skills Represented on Burned-Area Survey Team:

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

Team Leader: Rob Arlowe
Email:robert.arlowe@usda.gov **Phone(s)505-346-3849**

Forest BAER Coordinator: Josh Hall
Email:joshua.hall@usda.gov **Phone(s):505-438-5319**
Team Members:*Table 7: BAER Team Members by Skill*

Skill	**Team Member Name**
Team Lead(s)	Rob Arlowe
Soils	Heidi Klingel
Hydrology	Heidi Klingel
Engineering	n/a
GIS	Rob Arlowe

Skill	Team Member Name
Archaeology	n/a
Weeds	n/a
Recreation	n/a
Other	

H. Treatment Narrative:

Land Treatments: Recommend Early Detection/Rapid Response (EDRR) protocol. Mitigate the spread of noxious and invasive weeds within the burn area by conducting field visits (early detection) and immediately treating (rapid response) infestations along roads, dozer line, and staging areas.

Channel Treatments: n/a

Roads and Trail Treatments: Storm inspection and response targeting the low water crossing on Forest Road 96 will be performed in advance of predicted storms or immediately after to clear debris. Storm patrol for debris jams: 2 employees for 1 days times 5 storm events plus equipment. Fixing any problems after each storm is projected to be more economical than waiting to repair the road after a storm seasons compounded damages.

Protection/Safety Treatments: Recommend the implementation of administrative closure orders for the entire burn area through the 2019 monsoon season and the 2020 spring winds. One post fire hazard warning sign should be installed at the forest boundary fence on Forest Road 96 due to safety concerns within the burn area and in downstream channels especially during the monsoonal season and spring wind season. The recommended closure should not include forest road 96 itself as it provides access to the San Jose trailhead.

I. Monitoring Narrative:

N/A.

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

			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 EDRR	acre	66	50	$3,283	$0			$0		$0	$3,283
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Land Treatments				$3,283	$0			$0		$0	$3,283
B. Channel Treatments											
				$0	$0			$0		$0	$0
				$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											
Storm Inspection and Respor	per storm	2,000	5	$10,000	$0			$0		$0	$10,000
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Road and Trails				$10,000	$0			$0		$0	$10,000
D. Protection/Safety											
Hazard Warning Sign	per	700	1	$700	$0			$0		$0	$700
				$0	$0			$0		$0	$0
Insert new items above this line!				$0	$0			$0		$0	$0
Subtotal Protection/Safety				$700	$0			$0		$0	$700
E. BAER Evaluation											
Initial Assessment	Report	$1	11688.6	---	$0			$0		$0	$11,689
				$0	$0			$0		$0	$0
Insert new items above this line!				---	$0			$0		$0	$0
Subtotal Evaluation				$0	$0			$0		$0	$11,689
F. Monitoring											
				$0	$0			$0		$0	$0
				$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				$13,983	$0			**$0**		**$0**	**$25,671**
Previously approved											
Total for this request				**$13,983**							

PART VII - APPROVALS

1. _____ 7/23/19

Forest Supervisor Date