Date of Report: September 29, 2021

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: Walkers

B. Fire Number: CA-SQF-002758

C. State: California

D. County: Tulare

E. Region: R5

F. Forest: Sequoia NF

G. District: Western Divide

H. Fire Incident Job Code:

I. Date Fire Started: 08/15/2021

J. Date Fire Contained: 9/17/2021

K. Suppression Cost: ~5MM as of 9/9/2021

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

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

M. Watershed Numbers:

Table 1: Acres Burned by Watershed

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
180300010302	Upper Little Kern	37,134	8,830	24%

N. Total Acres Burned:

Table 2: Total Acres Burned by Ownership

OWNERSHIP	ACRES
NFS	5,710

OWNERSHIP	ACRES
OTHER FEDERAL (LIST AGENCY AND ACRES)	NPS 3,120
STATE	
PRIVATE	
TOTAL	8,830

O. Vegetation Types: ND

P. **Dominant Soils:** Toem, Baldmountain, Cagwin, Jumpe, Dome-Chaix, Woolstaff complexes

Q. **Geologic Types:** The burn area is dominantly underlain by Mesozoic metasedimentary rock with some Cretaceous granite of the White Mountain suite. There are minor occurrences of Pleistocene travertine deposits in the northern part of the burn area.

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	11.5
INTERMITTENT	3.3
EPHEMERAL	43
OTHER (DEFINE)	NA

S. **Transportation System:**
Trails: *National Forest (miles):* 8.48 miles *Other (miles):*
Roads: *National Forest (miles):* 0 *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) NPS	State	Private	Total	% within the Fire Perimeter
Unburned	1290.7	39.3				15%
Low	4831.9	23.1				55%
Moderate	2459.0	36.0				28%
High	136.4	13.6				2%
Total	8,718	112			8,830	100%

B. Water-Repellent Soil (acres): ND

C. Soil Erosion Hazard Rating: Mod- V. High

D. Erosion Potential: ND

E. Sediment Potential: ND

F. Estimated Vegetative Recovery Period (years): 3-5

G. Estimated Hydrologic Response (brief description):
Hydrologic response is estimated by assuming an increased runoff commensurate with soil burn severity in terms of recurrence interval. This recurrence interval estimates the response of the newly burned landscape to

the design storm of interest. The Walkers Fire is expected to respond to an average rainfall event differently for the unburned, low, moderate, and high soil severity burned areas.

For hydrologic response analysis purposes, the burned area was separated into 5 pour points. Pour points are established to facilitate a more detailed analysis of stream discharge in un-gaged drainages. The watershed above each pour point is delineated and pre-fire and post-fire flows are calculated and compared. The risk of threats such as flooding can be determined by using modeling results in combination with field review of floodplain elevation, channel morphology, and flood history. Figure G1 shows the location of each modeled pour point.

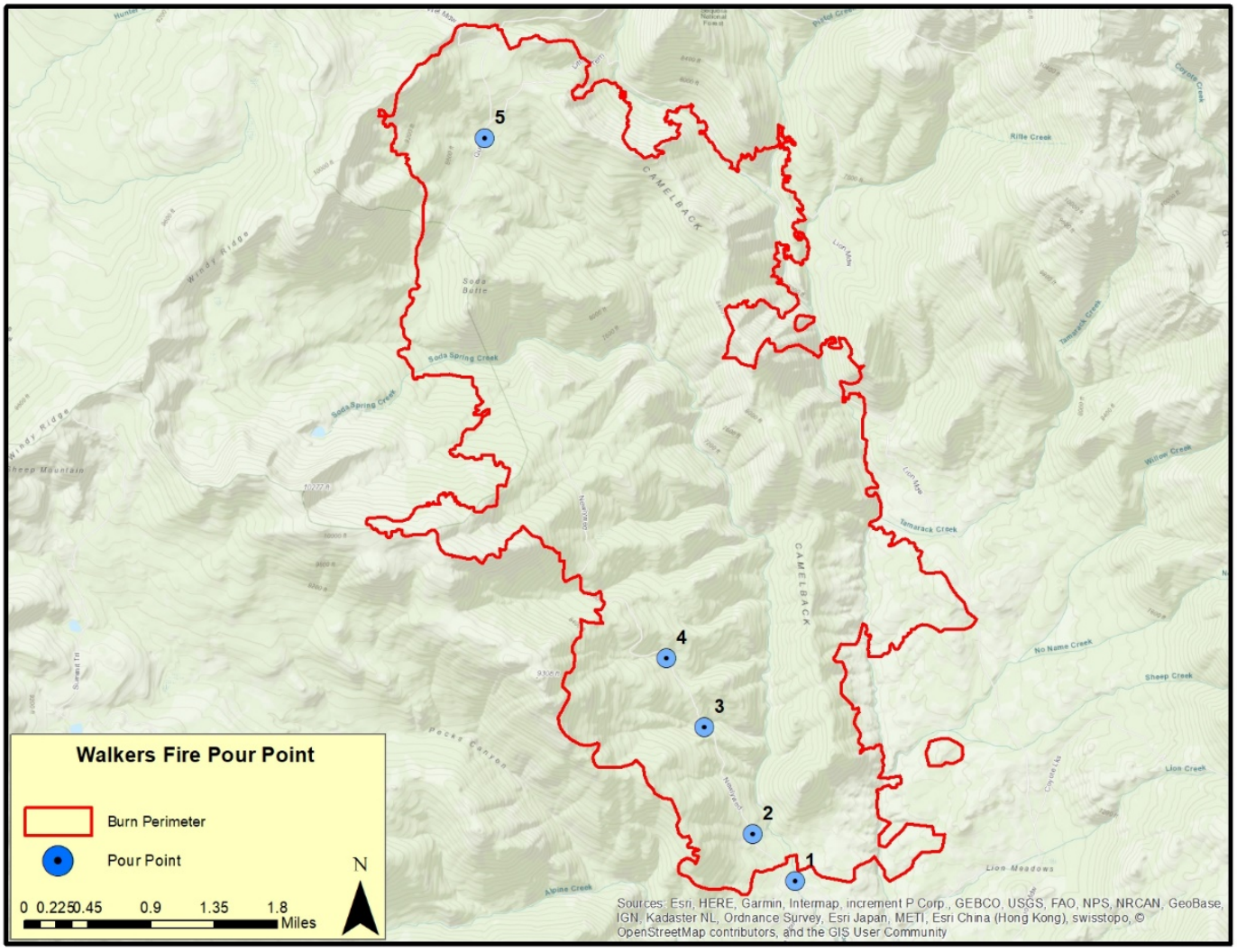

Figure G1. Location of pour points used to model runoff response for the Walkers Fire.

A 2-year return interval peak flow (Q2) was used as a conservative estimate of a peak flow magnitude that could be potentially damaging and has a high likelihood of occurrence within the next 1-4 years, when the watersheds are most susceptible to elevated peak flows and erosion. A 2-year peak flow event has a 50% probability of occurrence in any given year and a 94% probability of occurring at least once over the next 4 consecutive years. Modeling pre- and post-fire peak flow involves uncertainty; modeled flows should be considered estimates of the relative expected change in post-fire hydrologic response which are used to help identify areas of concern and prioritize treatment. Design flow estimates for the Walkers Fire have been based on the U.S. Geological Survey regression equations developed for the Sierra Nevada (Gotvald, et al., 2012).

Adjusted design flow is calculated using the same relationships as design flow; however, runoff response is estimated by assuming an increased runoff commensurate with soil burn severity in terms of recurrence interval. This recurrence interval estimates the response of the newly burned landscape to the design storm of interest. The Walkers Fire is expected to respond to an average rainfall event differently for the unburned, low, moderate, and high soil severity burned areas. Post fire Q2 hydrologic modeling was conducted based on the assumption that areas of low SBS would remain unchanged, areas of moderate SBS would respond according to the pre-fire Q5, and areas of high SBS would responding according to pre-fire Q10. The cfs/sq mi for each flood event was aggregated based on observed burn severity in the modeled drainage, with the end result being an expected percent increase in post-fire Q2 discharge (Table G1).

The greatest modeled increases in post-fire runoff (≥150%) related to flood risk were at pour points 2 (NFS Trail 31E23_1), and 3 (NFS Trail 31E23_2). Risks to trail infrastructure from flooding and debris flow are considered very high at these locations.

Table G1 – Pre- and post-fire changes in discharge for a 2-year 6-hour storm event

Values at Risk		Discharge by Watershed (cfs)		Discharge by Watershed (cfs/mi^2)		Percent Increase Water Yield
Pour Point Watershed	Affected WS Area (mi^2)	Pre-fire	Post-fire	Pre-fire	Post-fire	
(PP1) Soda Springs Creek	15.7	109	150	6.9	9.55	37.6
(PP2) 31E23_1	0.10	1.28	4.68	12.8	46.8	265.6
(PP3) 31E23_2	0.50	5.05	12.9	10.1	25.9	156.1
(PP4) 31E23_3	0.30	2.96	6.95	9.9	23.18	135.0
(PP5) 31E13_4	0.30	2.29	5.38	7.6	17.9	134.9

PART V - SUMMARY OF ANALYSIS

Introduction/Background

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):** None Identified

2. **Property (P):**
There are approximately 8 miles of system trails within the burn perimeter with approximately 4.1 miles in moderate or high burn severity (Figure A1, Table A2). These areas would have little to no ground cover remaining to slow the movement of water. Where slopes are steep, trail infrastructure such as trail tread is expected to be damaged and lost after storm events with

increased flows, accelerated erosion, and debris flows. Trails carrying increased flows also affect trail segments in low or unburned severity as well as serving as a conduit for debris and flood transport, affecting other resources. **Risk Assessment**: In moderate to high burn severity areas with steep slopes a 2-year storm event is likely to result in loss of water control, soil erosion, rockfall, flooding, debris flow, fallen trees, and loss of trail tread. The probability of such a storm event is considered **very likely.** These damages could result in **major** loss of trail infrastructure. Overall Risk: **very high.** Treatments are recommended.

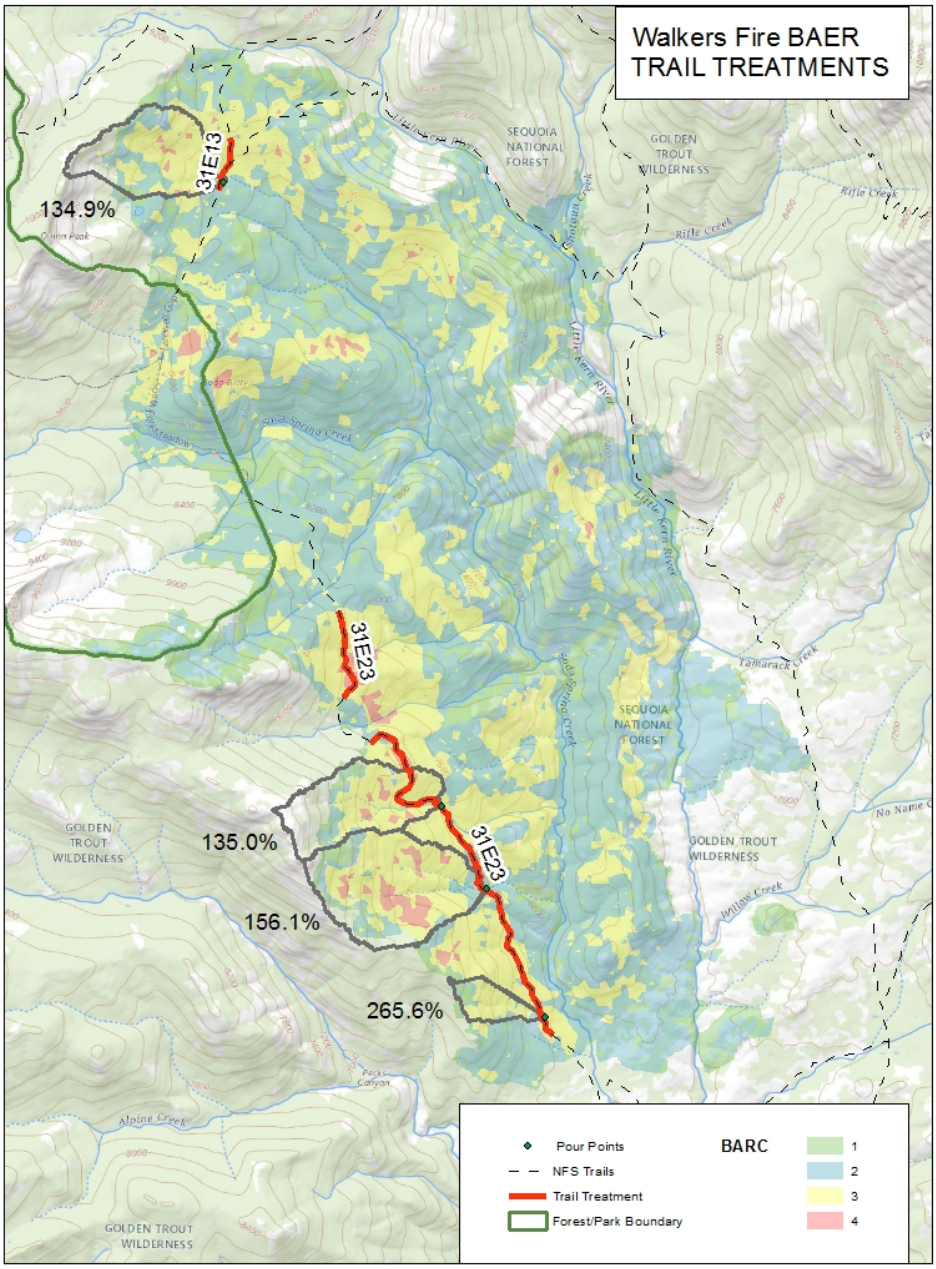

Figure A1. Proposed trail treatments for Walkers Fire

Table A2 – Trail Segment Identified for Treatment

French Fire BAER - Trail Segments Identified for Treatment					
Trail Number	**Name**	**Trail Classification**	**Overall Length of Trail**	**Length of Treatment**	**Risk**
31E23	Newlywed	2	4.6	3.1	Very High
31E13	Quinn	2	1.7	.3	Very High
	Total Miles		**6.3**	**3.4**	

3. **Natural Resources (NR):** None Identified

4. **Cultural and Heritage Resources:** None Identified

B. Emergency Treatment Objectives: minimize postfire damage to NFS trails

C. Probability of Completing Treatment Prior to Damaging Storm or Event:
Land: N/A
Channel: N/A
Roads/Trails: 75%
Protection/Safety: N/A

D. Probability of Treatment Success

Table 6: Probability of Treatment Success

	1 year after treatment	*3 years after treatment*	*5 years after treatment*
Land	N/A	N/A	N/A
Channel	N/A	N/A	N/A
Roads/Trails	80%	90%	90%
Protection/Safety	N/A	N/A	N/A

E. Cost of No-Action (Including Loss): Cost of Selected Alternative (Including Loss): 3.4 miles of class 2 trails identified for treatment X 80% chance of failure X $25,000/mile replacement cost = $68,000. Cost No Action 3.4 miles of class 2 trails identified for treatment X 20% chance of failure X $25,000/mile replacement + $15,000 treatment cost = $32,000 Cost Selected Alternative

Skills Represented on Burned-Area Survey Team:

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

Team Leader: Keith Andy Stone
Email: keith.stone@usda.gov **Phone(s)** 760-301-4799

Forest BAER Coordinator: Keith Andy Stone
Email: keith.stone@usda.gov **Phone(s):** 760-301-4799

Team Members: *Table 7: BAER Team Members by Skill*

Skill	**Team Member Name**
Team Lead(s)	Keith (Andy) Stone
Soils	Vacant
Hydrology	Keith (Andy) Stone
Engineering	Vacant
GIS	Vacant
Archaeology	Vacant
Weeds	Vacant
Recreation	Evan Topal
Other	

G. Treatment Narrative:

Land Treatments: None Recommended

Channel Treatments: None Recommended

Roads and Trail Treatments:

Trail storm-proofing and grade stabilization of 3.4 miles of identified trails is needed to prevent loss of trail tread and trail structures and to reduce soil erosion on slopes. Trail storm-proofing involves cleaning or armoring of existing drainage structures to help ensure they perform optimally, as well as the installation of additional drainage features (out sloping, rolling grade dips, water bars). Treatment would be performed by a contracted crew.

TREATMENT COSTS:

The trail segments are remote, requiring substantial travel time and adding to the cost of treating them. Cost is for a small, contracted crew for one hitch without the ability to spread overhead costs over a longer time frame to achieve economy of scale. Contracting or Grants and Agreements work as well as logistics for project work would be completed by Forest Service staff.

Complete loss of the trail may occur in some sections and reconstruction would be costly. Cost estimates for trail rebuilding is $25,000 per mile for Class 2 trails, making treatment cost effective.

Trail Treatments – Trail Storm-Proofing				
Item	**Unit**	**Unit Cost**	**# of Units**	**Cost**
FS System Non-Motorized Trails – Implementation layout, Storm proofing - trail stabilization treatments. Contracted crew (CCC, SCA, or ACE).	1	$15,000	1	$15,000
Total				**$15,000**

Protection/Safety Treatments: None Recommended

I. Monitoring Narrative:

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

Line Items	Units	Unit Cost	# of Units	BAER $	Other $	# of units	Fed $	# of Units	Non Fed $	Total $
A. Land Treatments										
N/A				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Land Treatments				$0	$0		$0		$0	$0
B. Channel Treatments										
N/A				$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										
NFS Trail 35E23	1	15,000	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 and Trails				$15,000	$0		$0		$0	$15,000
D. Protection/Safety										
N/A				$0	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				$0	$0		$0		$0	$0
Subtotal Protection/Safety				$0	$0		$0		$0	$0
E. BAER Evaluation										
Initial Assessment	Report	$1,423		---	$0		$0		$0	$0
				$0	$0		$0		$0	$0
Insert new items above this line!				---	$0		$0		$0	$0
Subtotal Evaluation				$0	$0		$0		$0	$0
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				$15,000	$0		**$0**		**$0**	**$15,000**
Previously approved										
Total for this request				**$15,000**						

PART VII - APPROVALS

1. *Teresa Benson* September 30, 2021

Forest Supervisor Date