

Date of Report: 9/28/2020**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:** Ranch 2**B. Fire Number:** CA-ANF-003289**C. State:** CA**D. County:** LA County**E. Region:** Five**F. Forest:** Angeles**G. District:** San Gabriel
Mountains National Monument**H. Fire Incident Job Code:** P5NE4520 - 0501**I. Date Fire Started:** 8/13/2020**J. Date Fire Contained:** 96% as of 9/12/2020**K. Suppression Cost:** 5.8m**L. Fire Suppression Damages Repaired with Suppression Funds (estimates)**

- **Fireline repaired (miles):** Total 22.2 miles of dozer line – due to PL5 and equipment being pulled off not all dozer line was repaired; Approximately 5 miles repaired to date
- **Other (identify):** None

M. Watershed Numbers**Table 1: Acres Burned by Watershed**

HUC #	Watershed Name	Total Acres	Acres Burned	% of Watershed Burned
180701060601	Santa Fe Flood Control Basin- San Gabriel River	38,147	4142 (includes Dam fire)	11 (includes Dam fire)

N. Total Acres Burned**Table 2: Total Acres Burned by Ownership**

OWNERSHIP	ACRES
NFS	3989
OTHER FEDERAL (LIST AGENCY AND ACRES)	
STATE	60
PRIVATE	80
TOTAL	4119

O. Vegetation Types

The dominant vegetation communities within the burn area include: mixed chaparral, oak woodlands, mixed conifer and oak woodlands, sage scrub, and cottonwood/sycamore/alder riparian.

P. Dominant Soils

- CA776 - 36 - Trigo, granitic substratum-Exchequer families-Rock outcrop complex, 60 to 100 percent slopes: 2,168 Acres (53%)
- CA776 - 54 - Caperton-Trigo, granitic substratum-Lodo families complex, 50 to 85 percent slopes: 1,384 Acres (34%)
- CA776 - 320 - Vista-Trigo, granitic substratum-Modesto families complex, 40 to 70 percent slopes: 287 Acres (7%)
- CA776 - 420 - Olete-Kilburn-Etsel families complex, 50 to 80 percent slopes: 252 Acres (6%)
- CA776 - 90 - Stukel-Olete families association, 50 to 100 percent slopes: 19 Acres (< 1%)

Q. Geologic Types

- Prgn -Layered gneiss, undifferentiated: 715 Acres (17%)
- Ksgr -Tonalite of San Gabriel Reservoir: 568 Acres (14%)
- KPrm -Mylonitic orthogneiss related to Vincent Thrust Fault: 519 Acres (13%)
- Prgd -Foliated to gneissic granodiorite: 495 Acres (12%)
- Ksa -Quartz diorite of Mount San Antonio: 488 Acres (12%)

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	
INTERMITTENT	
EPHEMERAL	16.4
OTHER (DEFINE)	1.4 (pipe)

S. Transportation System

- | | |
|--|------------------|
| a. Roads: National Forest (miles): 2.7 | Other (miles): 0 |
| b. Trails: National Forest (miles): 3.5 (unmaintained) | Other (miles): 0 |

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	176		5	7	188	4.6
Low	510		37	27	574	13.9
Moderate	3026		18	36	3080	74.8
High	277				277	6.7
Total	3989		60	70	4199	

B. Water-Repellent Soil (acres)

2261 acres

C. Soil Erosion Hazard Rating

- a. Low: 9 Acres (< 1%)
- b. Very High: 4,110 Acres (> 99%)

D. Erosion Potential

7.29 Tons/Acre (2 Year - 50% Probability)

E. Sediment Potential

8,993 Cubic Yards/Square Mile

F. Estimated Vegetative Recovery Period (years)

5-15 yrs.

G. Estimated Hydrologic Response (brief description)

Soil erosion/productivity

Specific to soil productivity for a 2-Year (50% probability storm), fire wide average erosion rates of 7.29 tons/acre were predicted. The degree of threat to the soil resource will be determined over the coming winter months and throughout the next 3-5 years as the soil and vegetation recovery stabilize. Combined effects of soil type, post-fire erosion hazard ratings, steep slopes, fire effects to the soil, and lack of current/available vegetative soil cover will create a watershed response with elevated erosion, sedimentation, and potential for debris flows. Unauthorized Off-Highway-Vehicle (OHV) use can increase soil loss and recovery times as well as damage or destroy cultural heritage and other natural resources such as threatened and endangered species. Regardless of the risk level or emergency determination, topography significantly limits the possibility for land treatments that would effectively reduce the risk to soil productivity. Land treatments are considered untreatable on slopes greater than 60%.

Natural hillslope erosion rates are rather low (< .4 tons/acre) when vegetated and covered with litter/duff; vegetation mortality and lack of cover in moderate and high soil burn severities will certainly accelerate runoff and erosion processes in the post-fire environment, to what degree depends on the magnitude and intensity of coming storm events. Re-establishment of soil cover can take many years to reach natural pre-burn cover conditions which results in excess runoff and erosion until adequate cover is achieved. If extreme rainfall events occur post-fire, high runoff and erosional events could occur resulting in a further loss of soil productivity, effects to water quality, or an increase in the potential for damage or loss of resource values downstream on and off Forest Service lands.

Hydrologic Response

The primary watershed responses of the Ranch2 Fire are expected to include: 1) an initial flush of ash, 2) rill and gully erosion in drainages and on steep slopes within the burned area, 3) floods with increased peak flows and sediment deposition, and 4) possible debris flows during precipitation events.

Initial erosion of ash and surface soil during the first storm events will reduce slope roughness by filling depressions above rocks, logs, and remaining vegetation. The ability of the burned slopes to detain water and sediment will be reduced accordingly. This will aid in the potential for floods and will increase the distance that eroded materials are transported. The major concern for vegetative recovery, and in turn hydrologic recovery is in the moderate and high severity burn areas. These responses are expected to be greatest in initial storm events, and will become less evident as vegetation is reestablished, providing ground cover, increasing surface roughness, and stabilizing and improving the infiltration capacity of the soils. The estimated vegetative recovery for watersheds affected by the Ranch2 Fire is expected within 5 to 15 years as observed in other watersheds in the San Gabriel Mountains.

As a result of the Ranch2 Fire, significant increases in runoff are expected for Roberts Canyon (2-3 times); this has been recorded in previous fires. These increases are the result of hydrophobicity of soils, the large percentages of high or moderate soil burn severity within the watershed, as well as its geomorphic features (steep slopes and short time of concentration). Data for the 5-year return interval analysis (Table 5) was used to determine Hydrologic design factors (Table 7). These flows are similar (same order of magnitude) to values recorded in the past, post fire. According to relationships developed using the USGS gage data, adjusted post-fire flows have correlated to flows between the 7-10 year return intervals.

Fire history and gage data specifically for Roberts Canyon (11084000, 1918-1962) was looked at to help determine post-fire response. Two fires, San Gabriel Fire (1924) and *no name fire (1958) essentially burned the entire Roberts Canyon watershed. Three of the top five recorded peak flows happened post fire. The other two were due to large rain events.

Pour Point Watersheds	Acres	2 Year Return Interval Peak Flow (CFS)			5 Year Return Interval Peak Flow (CFS)			10 Year Return Interval Peak Flow (CFS)		
		Pre Fire	Post	Increase	Pre Fire	Post	Increase	Pre Fire	Post	Increase
Roberts Canyon West	4288	134	393	3	539	1288	2	1732	3816	2
Roberts Canyon East	92	0.3	1	3	2	4	2	7	13	2
San Gabriel Welcome Center	141184	422	442	1	12756	13209	1	23104	23826	1
Hwy 39 pp	107	0.6	2	3	4	11	3	14	34	2
Hwy 39 pp1	55	0.3	1	4	2	5	3	6	15	2
Santa Fe Flood Control Basin- San Gabriel River 180701060602	38187	863	1019	1	4660	5288	1	8223	9195	1

1. Geology/Geologic Response

Within the burned area of the Ranch 2 Fire, evidence of mass wasting as debris slides, debris flows and rock fall are widespread. In addition, numerous slopes and drainages in the burn area have large amounts of stored material, significant drainage areas, defined channels and steep gradients.

It is estimated that in case of high intensity storms (>20 mm/hr.) that tend to initiate/trigger debris flows, including summer thunder-storms, as well as rain-on-snow events, the probabilities of debris flows are very high. In addition, based on ground surveys and air recon, mass wasting, dry ravel and rock-fall are very likely along numerous steep burned slopes within the burn area of the Ranch 2 Fire.

The “slide” features seen in the fire, which are most likely to be affected by the fire (removal of vegetation) and are likely to produce the most sediment, are the thin surface slides/debris slides. These features are prominent throughout the area and form adjacent to the steepest slopes. In many cases they are similar and difficult to distinguish from areas of dry ravel.

The removal of vegetation, especially from the steepest slopes and where fire severity was greatest, has already and will continue to cause a significant increase in dry ravel and debris sliding. Since deep seated rotational slides (slumps) are scars in these rock types, it is not anticipated that the fire will cause any measurable increase in slumping. Stream channels may become clogged and occasionally the saturated “gruss” from the dry ravel will flow like a mudflow during flood events. Due to these post-fire new conditions, human life and property, and roads, are at risk from numerous geological hazards as rolling rocks, debris flows, debris slides and hyper-concentrated floods. Risks to human life, infrastructure, facilities, roads, natural and cultural resources is elevated in most areas in and downstream of the Ranch 2 fire.

The primary threat is to drainages, Community of Mountain Cove and Highway 39.

2. Rock Fall

Rock fall and slides along Hwy. 39 will be a constant threat, especially the first few years following the fire, until vegetation gets re-established.

3. Debris Flow

The US Geological Survey (USGS) - Landslide Hazards Program, has developed empirical models for forecasting the probability and the likely volume of post-fire debris flow events. To run their models, the USGS uses geospatial data related to basin morphometry, burn severity, soil properties, and rainfall characteristics to estimate the probability and volume of debris flows that may occur in response to a design storm (Staley, 2016). We selected a design storm of a peak 15-minute rainfall intensity of 24 millimeters per hour (mm/h) rate to evaluate debris flow potential and volumes since based on the NOAA Atlas 14 Point Precipitation Frequency Estimates, this magnitude of storm seems likely to occur in any given year.

Most stream reaches and watersheds are estimated to have a greater than 50% likelihood of producing debris flows at relatively modest 15-minute rainfall intensities between 12 and 20 mmh⁻¹, with many of the sub-watersheds along the sides of Roberts Canyon are estimated to produce debris-flow volumes between 1,000 and 10,000 m³, with two larger subwatersheds as the head of Roberts Canyon being estimated to have volumes in excess of 10,000 m³. The probability of debris flows occurring is very high (80-100%) in many of the channels/creeks in the Ranch 2 burn area. Based on the very high probabilities of debris flow initiation and high predicted volumes of debris flows, most creeks in the burn area appear to present a high combine hazard. Model-estimated thresholds are in line with those calculated during previous field campaigns in the area. Estimates of rainfall intensity-duration thresholds for storm peak intensities of 15-, 30-, and 60-minute durations are included below.

The estimate thresholds are as follows:

- 15-minute: 17 mm/h, or 0.2 inches in 15 minutes
- 30-minute: 14 mm/h, or 0.3 inches in 30 minutes
- 60-minute: 11 mm/h, or 0.4 inches in 60 minutes

Mountain Cove community is at the mouth of Roberts Creek at the San Gabriel River. There is an expected high probability of hyper-concentrated flow and/or debris flows coming down the Creek. An interagency meeting was held on September 3 to inform responsible emergency agencies of the threats of flooding and debris flows to the community. In addition, results from the BAER assessment was shared with the responsible agencies.

Hyper-concentrated flows and mudflows are a threat to Hwy 39 during storm events. Information was shared with Caltrans and they are aware of the threat.

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)

Based on the potential for debris flows, flooding, rock falls, etc., the BAER team identified a serious risk to public, employees, and cooperator staff in the Ranch2 Fire area.

2. Property (P)Roads and Trails

The Rincon Road is the only National Forest System Road (NFSR) within the fire perimeter. Approximately 1.9 miles of the road traverse through the fire. One (1) mile is within moderate burn severity with a small amount in high severity. Much of this road likely to be impacted by rockfall, dry ravel, runoff, sediment, and debris derived from burned areas as the slopes above and below the road are very steep.

This road also accesses a communications facility on top of Pine Mountain (see discussion below). Steep slopes, dry ravel, rock fall, and moderate severity fire leading to high watershed response above and below the road. While the public has limited access to the road, the Forest uses it for administrative access to the area. More importantly, the road provides access to an important communication site that includes a Forest Service repeater and a Frontier cellular facility.

The GIS layer displays one trail: the old Silverfish trail. However, discussions with local residents and ANF staff suggest that the trail has not been maintained for many years and it no longer exists. Therefore, it was not analyzed and no treatments are proposed.

b. Forest Service Property

The Pine Mountain Communication Site houses a Forest Service repeater. This repeater is a critical Forest Service communication site during non-emergency and emergency situations. The repeater structure itself does not have a post-fire watershed response threat because it is on a ridgetop. However, access to the repeater does have a threat due to concerns about the stability of the Rincon Road. See the resource assessment/threats description and treatment for roads.

c. Non-Forest Service Property

The Pine Mountain Communication Site houses a microwave relay owned by Frontier. Frontier's microwave relay is a critical component to cellular phone coverage in the area and it is especially important during emergency situations. Additionally, a new facility (LA Regional Interoperable Communications System) has been approved; however, construction has not yet started. The Pine Mountain Communication Site facilities do not have a post-fire watershed response threat because it is on a ridgetop. However, access to the communication site does have a threat due to concerns about the stability of the Rincon Road. See the resource assessment/threats description and treatment for roads.

Additional non-Forest Service property in and adjacent to the fire include: a short stretch of an SCE powerline that is just inside the fire perimeter at the south end of the fire; the community of Mountain Cove is situated just outside the southern perimeter of the fire, as is Highway 39. Several flood control agencies also have structures in the San Gabriel River below the fire.

The BAER team leader attended an interagency field trip that included many of the applicable agencies and entities, including representatives from the City of Azusa, staff from the National Weather Service, County of Los Angeles, Department of Public Works, NRCS, US Army Corps of Engineers and others. The BAER team worked closely with the affected entities sharing information on watershed response and potential threats to non-Forest assets. Non-Forest assets are addressed in their reports, respectively.

3. **Natural Resources (NR)**Water Quality for Municipal and Domestic Use

Fire can negatively impact both physical and chemical constituents of water quality. Chemical impacts will be relatively short as ash is flushed through the system. Increased sediment delivery can be expected to continue until vegetation reestablishes and erosion is slowed.

The BAER team did not identify any active water rights within/adjacent to the burn; no post-fire effects are expected for municipal and domestic water use.

b. Hydrologic Function

Fire impacts proper functioning of hydrologic processes. These impacts are recoverable and expected to diminish as vegetation reestablishes. The greatest threats to recovery are threats from incursion of OHV and failure of infrastructure (including roads). Slope failure, increased sediment delivery, and mobilization of woody debris increase the risk of channel diversions down roads and ditches. Channel diversion could lead to complete road prism (or infrastructure) loss and irrecoverable damage to hillslopes. During field assessments, nonfunctioning drainage features were observed at a number of spots along the Rincon Road. Without repair, the stability of that road is in jeopardy (which would jeopardize maintenance of important communication facilities at Pine Mountain) and increased watershed response is likely given the steep, unstable slopes.

c. Soil Productivity

Soil productivity loss from soil erosion is likely and magnitude of consequences moderate. The risk level is high. While a threat to soil productivity exists in portions of the Ranch 2 Fire, *hillslope stabilization treatments are not being proposed*. Suitable areas are very limited due to extremely steep slopes. Areas of high and moderate burn severity are interspersed with steep slopes, or located in lower positions within the watershed, below where runoff and rill erosion would initiate. Hillslope treatments would not result in effective slope stabilization because the available areas are so small and would do nothing to stop dry ravel or channel sediment mobilization processes. See soil specialist report for additional details.

Risk Assessment: Probability=Likely due to high and moderate burn severity, steep slopes, dry ravel and mast wasting conditions. Magnitude=Moderate because post-fire responses could impact some FS infrastructure (roads and trails) and downstream and off-forest values. But fire is part of the ecosystem; don't expect it would limit soil productivity enough for site conversion. Thus, the risk of post-fire hillslope erosion and watershed response is **High**. Treatments are not recommended for this resource due to ineffectiveness on such steep slopes.

d. Wildlife Resources

Threatened/Endangered Species: There are two federally-listed species that have suitable habitat within and downstream of the Ranch2 fire area: southwestern willow flycatcher and least Bell's vireo.

Suitable habitat for southwestern willow flycatchers and least Bell's vireo occurs in the San Gabriel River below the fire. The ANF does not have any survey data on occupancy and density of nesting territories

for either species in this area. This area is also Designated Critical Habitat for southwestern willow flycatcher. A very small portion of the Designated Critical Habitat overlaps the fire boundary.

The portion of the San Gabriel River suitable/Critical habitat above the confluence of Robert's Creek is not expected to be substantially affected by post-fire watershed events. Only 3% of the watershed above there burned (including the recent Dam Fire); the watershed is large (220 square miles) and only a 5% increase in flows are predicted under the model (1" over a 1 hour storm event). Extensive scouring is unlikely.

The flows from Robert's Creek are expected to increase almost 3 times under the model. The suitable/Critical Habitat at and below the mouth of Robert's Creek may experience greater effects due to the input from Robert's Creek. Post-fire effects to southwestern willow flycatcher habitat may include increased flows (flooding) in the habitat, sediment delivery that could bury riparian vegetation suitable for nesting, and debris flows that could scour the channel, removing suitable nesting vegetation. The potential for long-term loss of nesting habitat structure and stands will depend on severity of post-fire watershed responses.

Post-fire watershed response effects are expected to be detrimental to the Primary Constituent Elements for the Critical Habitat. The degree of effects will depend on the severity of storms. It will also be affected by actions taken by flood control agencies in that area. This habitat type is resilient and will generally recover to become suitable for willow flycatcher nesting within 5-10 years (unless scoured to bedrock).

Risk Assessment for Threatened/Endangered Species: Probability=Possible due to high watershed response within the Critical Habitat. Magnitude=Moderate. The habitat is off-forest and managed by other water control agencies with the primary and priority objective being flood control and public safety; management of endangered species habitat is likely secondary to those agencies. Riparian habitat is dynamic, evolved with flood regimes. It typically recovers from post-fire watershed events within 5-10 years. Risk=Intermediate. *Treatments are not recommended for Threatened/Endangered species or critical habitat.*

Wildlife Water Developments: Wildlife water developments within the burn area were addressed to determine post-fire threats. There are three wildlife guzzlers within the fire area, as mapped in the ANF GIS database. All three guzzlers are located on the Rincon Road. Names in the ANF Guzzler GIS, from east to west: PNEMT (parabolic guzzler), Rincon1 and Rincon2 (both Nevada style guzzlers with fiberglass holding tanks partially buried and a steel shade structure).

Rincon 1 had significant fire damage to the fiberglass holding tank. Burned fiberglass is already degrading and spreading at the site. Rincon 2 was not structurally affected. The parabolic guzzler could not be located during the surveys or during the flight. There is a concern that the degrading fiberglass from Rincon 1 will be spread during post-fire runoff events and eventually become airborne, posing a health risk to the public and wildlife. Additionally, fiberglass fibers that fall into the wildlife water access port could result in ingestion and illness. Contact with fiberglass fibers could also be harmful to some animal species. Rincon 2 may experience some nuisance sediment as a result of post-fire storms; however, it is expected to be able to be managed by periodic maintenance by volunteers and no treatment is needed.

Risk Assessment for Wildlife Water Developments – Property: The risk to Rincon 2 is Very Low; Rincon 1 is non-functional due to fire damage. *This may be considered for a BAER Pilot treatment proposing to remove the damaged tank and replace it with a new one.*

Risk Assessment for Natural Resources (Other) from Burned Fiberglass Guzzler: The probability is Likely since burned fiberglass is already dispersing and changed watershed conditions will increase the spread. The magnitude is major due to the health risks associated with inhalation/ingestion of burned fiberglass. The risk is Very High. *A BAER treatment is proposed to contain the burned fiberglass debris.*

e. Botanical Resources/Native Plant Recovery/Ecosystem Recovery

An emergency exists with respect to vegetative recovery as a result of the threat of post-fire weed introduction and spread. The potential introduction and dispersal of invasive weeds into areas disturbed by fire suppression and rehabilitation activities may lead to the establishment of large and persistent weed populations. There is a high probability that extant weed infestations along constructed fire lines will increase in the burn area due to mechanical soil disturbance and their release from competition with native plant species. In the Dam fire a dozer line was constructed through a known population of Yellow Star Thistle. Additionally, localities within the burn area have a history of unauthorized OHV use. Prior to the fire, chaparral vegetation, blocks and fencing inhibited movement of OHVs. With the loss of this vegetative barrier, there is a potential for unauthorized dispersal of OHVs into the burned area. The introduction and expansion of weed populations could affect the structure and habitat function of native plant communities within the burn area. It is expected that most native vegetation adapted to moderate or infrequent high severity fire would recover if weed invasions are minimized.

Risk Assessment for Ecosystem/Native Plant Recovery: The threats to ecosystem recovery from invasive/noxious non-native plants and OHV incursions are Likely due to the many miles of dozer and hand lines that went through existing populations of non-native plants, lack of equipment wash stations and inspections at fire camp, and dozer/hand lines creating new access points for OHV incursions. The magnitude of consequences is considered Moderate due to the difficulty of controlling yellow-star thistle and proclivity for spread; it is considered Major for OHV incursions because they could spread non-native weeds to new areas, slow natural vegetative recovery, and increase erosion concerns. The risk from invasive plants is considered High; the risk from OHV incursions is considered Very High.

Several treatments are proposed to address the ecosystem/native plant recovery critical value. An early detection/rapid response treatment is proposed for the non-native invasive plants. A forest closure and closure patrols are proposed to limit the potential for OHV incursions.

4. **Cultural and Heritage Resources** The Ranch 2 BAER team contacted the ANF heritage department to conduct a BAER assessment for cultural resources within the fire. Following a record search of the area it was found that there are four cultural resources located within the Ranch 2 Fire perimeter. All have been determined or recommended formally not eligible for listing on the National Register.

Site Number	Description	National Register Status
FS site #05015200036	Remains of the Pine Mountain Lookout	Found not eligible for listing on the National Register on 03/28/1988
FS Site #05015200102	Rincon-Redbox-Sawpit Road Complex	Informally recommended not eligible for listing on the National Register.
FS Site #05015200133	Silver Fish Road (ANF data show this as a system trail – see the Trail section for more information)	Informally recommended not eligible for listing on the National Register.
FS Site #05015200098	Roberts Canyon Recreation Residence Tract - burned in a past fire.	Found not eligible for the National Register on 12/06/2001

Assessment consisted of a desktop analysis by Angeles NF archaeologist Joanna Huckabee, based on site records, maps and past visits to these sites. Any proposed and approved treatments should be conveyed to the ANF Heritage department and Section 106 compliance completed prior to implementation.

Risk Assessment for Cultural Resources: Probability=Unlikely since most of the sites no longer exist and one is a road; Magnitude=Moderate because three of the sites no longer exist; the Rincon Road may have issues during post-fire watershed responses but the road is not considered eligible for the National Register. The risk to cultural sites is considered Low. Treatments are not recommended for cultural/heritage resources.

B. Emergency Treatment Objectives

- Provide for public safety
- Limit damage to property
- Limit loss of soil productivity and provide for natural vegetative recovery
- Early detection and rapid response of nonnative invasive plants
- Road and trail treatments to protect investment in infrastructure and limit post-fire watershed response
- Conserve threatened and endangered species habitat

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

- Land: EDRR – Conducted in the spring N/A
- Channel: n/a
- Roads/Trails: 80%
- Protection/Safety: 85%

D. Probability of Treatment Success

Table 6: Probability of Treatment Success

Type of Treatment	1 Year After Treatment	3 Years After Treatment	5 Years After Treatment
Land	85	95	100
Channel			
Roads/Trails	85	95	100
Protection/Safety	85	95	100

E. **Cost of No-Action (Including Loss):** loss of use of Rincon road for forest admin. And access to Pine mtn. Communications, increased risk of noxious weeds spreading throughout the Forest (increased costs of future treatments), increased amount of runoff into community from Rincon road (potential failure)

F. **Cost of Selected Alternative (Including Loss):** Using VAR lite tool; Implied Minimum Value of protecting non-market values is 121,604. Treatments justified based on value of homes and infrastructure downstream and the value of Rincon road. Expected benefit of treatment is \$.6.345.000

G. Skills Represented on Burned-Area Survey Team

<input checked="" type="checkbox"/> Soils	<input checked="" type="checkbox"/> Hydrology	<input type="checkbox"/> Engineering	<input type="checkbox"/> GIS	<input checked="" type="checkbox"/> Archaeology
<input checked="" type="checkbox"/> Weeds/Botany	<input checked="" type="checkbox"/> Recreation	<input type="checkbox"/> Fisheries	<input checked="" type="checkbox"/> Wildlife	
<input checked="" type="checkbox"/> Other: PAO				

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Team Members

Skill	Team Member Name
Team Lead(s)	Todd Ellsworth

Skill	Team Member Name
Soils	Kellen Takenaka
Hydrology	Hilda Kwan
Engineering	*
GIS	
Archaeology	*
Botany/Weeds	Janet Nickerman, Lauren Quon
Recreation	Ray Kidd
Wildlife	Robin Eliason, Ann Berkley
*While not on the BAER team, Ricardo Lopez (ANF Forest Engineer) and Joanna Huckabee (ANF archaeology) provided input and information used for the assessment and treatment development.	

H. Treatment Narratives

Land Treatments

1) Early Detection, Rapid Response – Related to Burned Area – Dam and Ranch 2 fires combined

Surveys will begin in 2021 during the flowering periods of weed species. Because of differences in flowering times for all potential species, two visits will be required during the growing season. Surveys of the general habitats in the burned area will be the lowest priority compared to surveys of suppression areas. All locations of weed species will be mapped, using the Angeles NF, "Invasive Weeds" list. In and along dozer lines, hand lines, drop points, safety zones, riparian areas, and adjacent to known invasive plant populations. Suppression repair features have a high likelihood of new weed introductions from equipment transported from out of the area or transport of seeds from existing infestations to new areas. However, native vegetation is expected to recover from fire if invasive plant invasions are minimized.

Proposed Treatment Areas

Riparian Corridors 16.4 miles

Surveying will include walking in areas likely to have new weed occurrences documenting and hand pulling/herbicide the weeds at the time of inspection. Herbicide will be used in compliance with the Forestwide NEPA project. New weed occurrences will be pulled to root depth, placed in sealed plastic bags, and properly disposed or sprayed with the appropriate and approved herbicide.

Weed detection surveys to determine whether ground disturbing activities related to the Dam and Ranch 2 Fire have resulted in the expansion of noxious weeds is requested for the first year. Estimated costs assume that two visits would be necessary because of the differences in flowering times. If timing is such that all the target species are detectable in one visit, the actual costs would be lower than displayed below. The Angeles National Forest would leverage existing partnership agreements with Rancho Santa Ana Botanical Garden and Southern California Mountains Foundation to complete the weed treatments.

Land Treatment #1: Early Detection, Rapid Response – Related to Burn Area				
Item	Unit	Unit Cost	# of Units	Cost
Invasive Plant Detection & Treatment				
8 Weed Technicians (4 days each)	Days	\$154	32	\$4,928
Administration, Travel, and Materials				
1 GS-11 Botanist, Agreements	Days	\$500	.5	\$250
1 MobilizeGreen Intern, Botanist	Days	0		
Vehicle Mileage	Miles	\$0.58	1000	\$580
Supplies	Each	\$250	1	\$250
Total Cost				\$6008.

2) Early Detection, Rapid Response – Related to Suppression areas – Dam and Ranch 2 fires combined

Completion of surveys on dozerlines, and roads will be the priority. Specifically, the dozer line used for the Dam fire that went through a known area of Yellow Star Thistle. The second survey priorities will be along hand lines and drop points. Since it is impossible to know if all suppression equipment was adequately cleaned prior to entering the burn area, there is a risk that weed seed from areas outside the region was introduced via suppression equipment as vectors of weed seed dispersal. It is highly likely that introduced or existing invasive plant infestations will quickly spread and expand onto freshly disturbed ground related to fire suppression activities.

Surveying will include walking the lines, documenting and hand pulling/herbiciding new weed occurrences at the time of inspection. Herbicide will be used in compliance with the Forestwide NEPA project. New weed occurrences will be pulled to root depth, placed in sealed plastic bags, and properly disposed or sprayed with the appropriate and approved herbicide.

Proposed Treatment Areas	
Dozer lines	22.2 miles
Handlines	2.4 miles

Land Treatment #1: Early Detection, Rapid Response – Related to Fire Suppression Areas				
Item	Unit	Unit Cost	# of Units	Cost
Invasive Plant Detection & Treatment				
Weed Technicians	Day	\$154	102	\$15,708
Administration, Travel, and Materials				
1 GS-11 Botanist, Agreements	Days	\$500	2	\$1,000
1 MobilizeGreen Intern, assist	Days			0
Vehicle Mileage	Miles	\$0.58	3000	\$1740.
Supplies	Each	\$750	1	\$750
Total Cost				\$19,044.

Total Cost for Both Areas: \$ 25,052.00

Channel Treatments

No channel treatments are proposed for the Ranch2 fire.

Roads and Trail Treatments

Road drainage features are at risk from adjacent burned watersheds. Increased runoff and sediment from the burned areas can negatively affect the road prism, damaging the road, eroding land downslope of the road and routing flow and sediment directly to stream channels. Road failure can also contribute to failure of infrastructure downstream. Proposed road treatments include drainage structure cleaning, enhancing existing and reestablishing rolling dips, and installation of overside drains.

Treatment Objectives: The primary objectives of the road and infrastructure treatments are to:

- Protect and stabilize Forest Service infrastructure at risk of damage as a result of increased sedimentation, stream diversion, and erosion from the fire.
- Reduce risk to water quality and other natural resources by reducing risk of infrastructure contamination, damage, and failure.
- Mitigate public safety hazards along NFS roads.
- Reduce risk to downstream infrastructure where possible.

1) Road Storm-Proofing

Road stormproofing involves cleaning and enhancing existing drainage structures including dips, to help ensure road drainage performs optimally. This work will be accomplished through contractor equipment and labor. *Locations:* Rincon Road

Roads and Trail Treatments #1: Road Storm-Proofing				
Item	Unit	Unit Cost	# of Units	Cost
Mobilization – 10% standard for this area	Lump Sum	\$ 350	1	\$ 350
Restore Drainage Function- existing drainage structures – 2N24-Rincon Road	Mile	\$3500	1	\$3500
Total				\$4,000



Big MAC concrete low water crossing

2) Road Drainage Structure Replacements/Improvements

Road drainage structure improvements involves replacing existing deficient structures and installation of additional drainage structures to help ensure road drainage performs optimally. This work will be accomplished with contractor equipment and labor. *Locations:* Rincon Road

Note: Took out cost of flume disposal per Regional Office conversation

Roads and Trail Treatments #2: Road Drainage Structure Replacements/Improvements				
Item	Unit	Unit Cost	# of Units	Cost
Mobilization – 10% - standard for this area	Lump Sum	\$ 2,000	1	\$ 2,000
Install 18" Overside Starter/inlet section	Each	\$1,200	6	\$7,200
Install 10' flume section unit	Each	\$ 800	6	\$4,800
Install "Big MAC" drainage feature	Each	\$3000	1	\$3,000
Heritage resources review & clearance (both road treatments)	Day	\$450	3	\$1,350
				\$19,350

3) Contract Preparation and Administration

Preparation, administration and oversight of road work contracts. *Locations:* Rincon Road

Roads and Trail Treatments #3: Contract Administration				
Item	Unit	Unit Cost	# of Units	Cost
GS11 Engineer	Day	\$450	5	\$2,250
Total				\$2,250

4) Storm Inspection/Response

Storm inspection/response will keep culvert and drainage features functional by cleaning sediment and debris from in and around features between or during storms. This work will be accomplished through contractor equipment and labor. *Locations:* Rincon Road

Road Treatments #4: Storm Inspection/Response				
Item	Unit	Unit Cost	# of Units	Cost
Storm Response	Days	\$ 3,500	2	\$ 7,000
Storm Inspection	Days	\$ 400	3	\$ 1,200

Total

\$8,200

Protection/Safety Treatments**1) Debris Stabilization**

The fiberglass water tank of the Rincon-1 guzzler sustained fire damage. During inspection, it was found that burned fiberglass was already falling apart and being dispersed by the wind. The associated refuse has the potential to move offsite and contaminate adjacent drainages and create an airborne inhalation hazard for humans and animals. Additionally, it has the potential to fall into the tank where wildlife go to access drinking water. The treatment will entail installation of straw wattles, hay bales, and/or sandbags around the guzzler, plugging the wildlife access holes to water, and covering the damaged fiberglass tank. This treatment is intended to contain the burned fiberglass and limit human and animal exposure until the tank can be removed.

Protection/Safety Treatment #1: Debris Stabilization				
Item	Unit	Unit Cost	# of Units	Total Cost
2 GS-11 Hydrologists	Day	\$1000	2	\$2000
Stabilization Supplies and Mileage	Each	\$500	1	\$500
Total				2,500

- 2) Burned Area Closure and Warning Signs:** It is recommended that the ANF issue a forest order closing the fire area and that the risk associated with the burn scar be reevaluated prior to lifting the closure. Signs placed at strategic locations outside and within the fire perimeter are recommended to close the burned area. A Forest Order would be maintained to authorize the closure. This treatment will keep Forest users out of the burn area during major storm events.

Unauthorized access is a threat to the burned watershed due to the dozerlines and open terrain created due to the fire. The ANF is one of the most urban Forests in the nation with one of the highest recreation use levels. The challenge for the ANF is managing the high number of users who gain unauthorized access to the Forest by driving/riding/entering through or around a locked gate or closure sign. This type of unmanaged use can cause damage to natural resources. Through past BAER experience, the ANF has determined that signage, barriers and other hard closures that are installed to discourage soil disturbance and assist in allowing natural vegetative recovery are not effective by themselves. Should patrols be found to be insufficient, the Forest may reassess and submit an interim request to install barrier at specific locations where unauthorized activity is observed

The Rincon Road within the burn area may be impacted flooding, debris flow, hazard trees, rockfall, dry ravel, etc. Signs will be placed at gate locations that access the fire area. The purchase and installation of signs at each of the identified locations will be consistent with Forest Engineering Standards at these locations.

Enforcing the area closure is considered essential to ensuring critical values including human life and safety, hydrologic function, soil productivity and native plant communities are protected. Prevention patrols are recommended in lieu of adding additional miles of barrier that may not be effective alone. Prevention patrols are considered a lower cost treatment compared to miles of barrier installation. Patrols will take place at road entrances and interior sections of the fire to monitor for trespass and effects to critical values at risk within into the closure area and assess need for additional enforcement and/or implementation of barriers.

Protection/Safety Treatment #2: Burned Area Closure and Warning Signs				
Item	Unit	Unit Cost	# of Units	Cost
Contract Mobilization – Roadside Warning Signs	LS	\$1,500	1	\$1,500
Closure Signs (includes installation)	Each	\$400	5	\$2,000

Replacement Closure Signs	Each	\$100	5	\$500
2 Recreation Technician (GS-7) sign installation and patrol	Day	\$800	10	\$8,000
Vehicle mileage	miles	.55	1000	\$550
Total Cost				\$12,550

I. Monitoring Narrative

Treatment Effectiveness Monitoring

Effectiveness Monitoring: Monitoring the effectiveness of the other BAER treatments (as described above) will be used to determine if additional treatments are needed.

1) Road Treatment Effectiveness Monitoring:

a. *Monitoring Questions*

☐ Is the road-tread stable?

☐ Is the road leading to concentrating runoff leading to unacceptable off-site consequences?

b. *Measurable Indicators*

☐ Rills and/or gullies forming of the road

☐ Loss of road bed.

c. *Data Collection Techniques*

☐ Photo documentation of site

☐ Inspection Checklist (attached)

d. *Analysis, evaluation, and reporting techniques*

☐ Monitoring will be conducted after storm events. If the monitoring shows the treatment to be ineffective at stabilizing road and there is extensive loss of road bed or infrastructure an interim report will be submitted. A several page report would be completed after the site visit. The report would include photographs and a recommendation on whether additional treatments are necessary. (Or, if the Region continues use of the Storm Damage Collector App, that could be used also.)

Road Inspection Checklist (Example)

Date: _____ Time: _____

Inspector _____

Forest _____ Road # _____

Portions of Road Inspected _____

Describe locations reviewed during inspection: _____

Was there road damage? Yes _____ No _____

If yes, GPS coordinates of repair site _____

Describe damage and cost to repair _____

Photo taken of road damage _____

Recommended actions to repair: _____

Monitoring Treatment: Road Treatments				
Item	Unit	Unit Cost	# of Units	Cost
GS-12 Engineer or Hydrologist	Day	\$500	2	\$1000
Mileage	LS	\$150	1	\$150
Total Cost				\$1,150

PART VI – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

Line Items	Units	Unit Cost	NFS Lands			Other Lands				All Total
			# of Units	BAER \$	Other \$	# of units	Fed \$	# of Units	Non Fed \$	
A. Land Treatments										
EDDR	days	154	134	\$20,636	\$0		\$0		\$0	\$20,636
Supplies, mileage	\$			\$3,490	\$0		\$0		\$0	\$3,490
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Land Treatments</i>				\$24,126	\$0		\$0		\$0	\$24,126
B. Channel Treatments										
				\$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
C. Road and Trails										
storm proofing	mile	4,000	1	\$4,000	\$0		\$0		\$0	\$4,000
Storm response	days	2,733	3	\$8,199						\$8,199
Drainage Structures	each	2,764	7	\$19,348	\$0		\$0		\$0	\$19,348
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Road and Trails</i>				\$31,547	\$0		\$0		\$0	\$31,547
D. Protection/Safety										
Closure and patrol	days	1,255	10	\$12,550	\$0		\$0		\$0	\$12,550
Debris Stabilization	days	1,250	2	\$2,500	\$0		\$0		\$0	\$2,500
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Protection/Safety</i>				\$15,050	\$0		\$0		\$0	\$15,050
E. BAER Evaluation										
Initial Assessment	Report	\$39,182	1	—	\$0		\$0		\$0	\$0
					\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				—	\$0		\$0		\$0	\$0
<i>Subtotal Evaluation</i>				\$0	\$0		\$0		\$0	\$0
F. Monitoring										
Road Effectiveness	days	\$507	2	\$1,014	\$0		\$0		\$0	\$1,014
				\$0	\$0		\$0		\$0	\$0
<i>Insert new items above this line!</i>				\$0	\$0		\$0		\$0	\$0
<i>Subtotal Monitoring</i>				\$1,014	\$0		\$0		\$0	\$1,014
G. Totals				\$71,737	\$0		\$0		\$0	\$71,737
Previously approved										

PART VII - APPROVALS


 JEROME E. PEREZ
 Forest Supervisor

October 16, 2020

Date

