

Date of Report: 10/3/2022

FAIRVIEW FIRE 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: Fairview	B. Fire Number: RRU-129712
C. State: CA	D. County: Riverside
E. Region: 05	F. Forest: San Bernardino National Forest
G. District: San Jacinto Ranger District	H. Fire Incident Job Code: PNP1S8 (1522)
I. Date Fire Started: 09/05/2022	J. Date Fire Contained: 9/23/2022
K. Suppression Cost: \$39,274,234=estimated	
L. Fire Suppression Damages Repaired with Suppression Funds (estimates) across all ownerships Fireline (miles): Dozerlines: 47.7; Handlines: 28.4; Completed Road as Line: 8.6; Completed Fuel Break: 4.6; Mileage Repaired: 2.3; Still In Need of Repair: 74.9	

M. Watershed Numbers

Table 1. Percentage of Watersheds Burned*				
HUC #	Watershed Name	Total Acres	Acres Burned	Watershed Burned (%)
180702020106	Bautista Creek	32,657	12,381	38
180702020202	Laborde Canyon-San Jacinto River	41,758	144	<1
180702020104	Lower South Fork San Jacinto River	14,445	3	<1
180702020107	Poppet Creek-San Jacinto River	19,846	1,581	8
180702020301	Saint Johns Canyon	26,272	9,451	36
180703020404	Upper Tualota Creek	17,142	1,014	6
180703020203	Upper Wilson Creek	15,809	1,149	7
TOTALS		167,929	25,723	15
<i>*Generated from GIS for High, Moderate, and Low SBS categories. The Unburned/Low category is not included in the numbers above.</i>				

N. Total Acres Burned

Table 2. Total Acres Burned By Ownership	
Ownership	Acres
Bureau Of Land Management	3,056
Private	11,897
State	253
USDA Forest Service	13,571
TOTAL	28,777

O. Vegetation Types

Dominant vegetation communities within the burn perimeter are as follows: orchard agriculture, barren, chamise chaparral, lower montane mixed chaparral, redshank chaparral, scrub oak chaparral, annual grasses and forbs, urban related bare soil, riparian mixed hardwood, coulter pine forest, coast live oak woodland, canyon live oak forest, Freemont cottonwood woodland, interior live oak woodland, Riversidean alluvial scrub, buckwheat scrub, manzanita chaparral, mixed sage scrub, California sagebrush scrub, and urban or developed.

P. Dominant Soils

Dominant soils in the Fairview Fire burned area are derived from granodiorite and mixed sedimentary residuum and colluvium (CmE, CmF, DpF, DnG, ChFG) (. Alluvium deposits in drainage and toe slope positions comprise a minor extent of the burned area (ChDE). Soils in the burned area are coarse textured and the most common surface texture is sandy loam. Processes influencing soil formation in the burned area include mountain building tectonic events and subsequent fluvial/erosional landform development. The soil moisture regime across the entire burned area is xeric which is typical for climates that experience very dry summers and moist winters (unimodal precipitation distribution). The mean annual soil temperature for most soils in the burned area is thermic (between 15°C and 22°C).

Table 3. Dominant Soils in the Fairview Fire Area						
SSURGO¹ Map Unit	Surface Texture	Taxonomic Subgroup	Soil Depth Class	HSG²	Soil Erosion Hazard³	Percent of Burned Area⁴
Modesto-Osito families association (CmE)	Fine sandy loam	Thermic Mollic Haploxeralfs	Very Deep	C	Severe	21
Osito-Modesto families association (CmF)	Coarse sandy loam	Thermic Shallow Typic Xerochrepts	Shallow	D	Severe	14
Lithic Xerorthents warm-Rock outcrop complex (DpG)	Gravelly sandy loam	Lithic Xerorthents	Shallow	D	Severe	13
Trigo family-Lithic Xerorthents warm complex (DnG)	Coarse sandy loam	Thermic Shallow Typic Xerochrepts	Shallow	D	Severe	13
Typic Xerorthents, warm-Typic Haploxeralfs-Badland complex (ChFG)	Sandy loam	Thermic Typic Haploxeralfs	Very Deep	B	Severe	9
“Badland” ⁵ (G)	Sandy Loam	-	Very Deep	-	Severe	7
Ramona family-Typic Xerorthents, warm association (ChDE)	Sandy loam	Thermic Typic Haploxeralfs	Very Deep	C	Moderate	6
¹ Soil Survey of San Bernardino National Forest Area, California, 1987 ² Hydrologic soil group ³ Soil Erosion Hazard (Road, Trail) rating are shown in table. Map units do not have a rating for Soil Erosion Hazard (Off-road, Off-trail) ⁴ The remaining 17 percent of the burned area is composed of 11 soil map units minimally contributing <1 to 4 percent. ⁵ Badland soil map units do not have soils data rated in SSURGO. Surface texture, soil depth class, and erosion hazard were evaluated during field visitation.						

Q. Geologic Types

Geomorphology and Geology: The San Bernardino National Forest includes parts of two major geologic-geomorphic provinces of western North America - the Transverse Ranges and the Peninsular Ranges provinces. The San Gabriel and San Bernardino Mountains are part of the eastern Transverse Ranges, and the San Jacinto, and Santa Rosa Mountains, Thomas Mountain, and Coahuila Mountain are all part of the San Jacinto Mountains block, which itself is part of the northern Peninsular Ranges. The geology of the two provinces is vastly different one from the other (Matti & Morton, 2000).

In contrast to the geology setting of the San Gabriel and San Bernardino Mountains, the San Jacinto Mountains block geologically is not very diverse. The region is underlain mainly by batholithic plutonic rocks of Mesozoic age that have invaded pre-batholithic metasedimentary rocks (Matti & Morton, 2000). Bedrock within the Fairview Fire burned area mainly consists of Granitic and other intrusive crystalline rocks of all ages; Cretaceous and pre-Cretaceous metamorphic formations of sedimentary and volcanic origins; Alluvial Fan and Valley Deposits of all ages; and Landslide Deposits.

The Fairview Fire occurred in the San Jacinto Mountains block, approximately 12-15 miles southwest of San Jacinto Peak. Physiography of the burned area is dominated generally by main ridgelines and drainages following in a southeast – northwest direction. The main drainage in the burn area is the Bautista Creek flowing northwest into the San Jacinto River (northwest of the burn scar). Elevations in the burn area range from about 4,563 feet above sea level at the Red Mountain peak, down to about 1,700 feet above sea level at the west end / lower end of the burn scar.

R. Miles of Stream Channels by Order or Class

Table 4. Miles Of Stream Channels by Order Or Class	
Stream Type	Miles Of Stream
Ephemeral Stream	114.79
Intermittent Stream	9.72
Perennial Stream or River	-
TOTAL	124.51

S. Transportation System

Table 5. Miles of Road and Trail by Jurisdiction	
<i>Roads</i>	
Maintenance Level	Miles
2 - High Clearance Vehicles	12.38
Forest Service - TOTAL	12.38
Non-Forest Service Roads - TOTAL	7.03
<i>Trails</i>	
Type	Miles
Motorized	6.86
Non-Motorized	-
Total - Trails	6.86

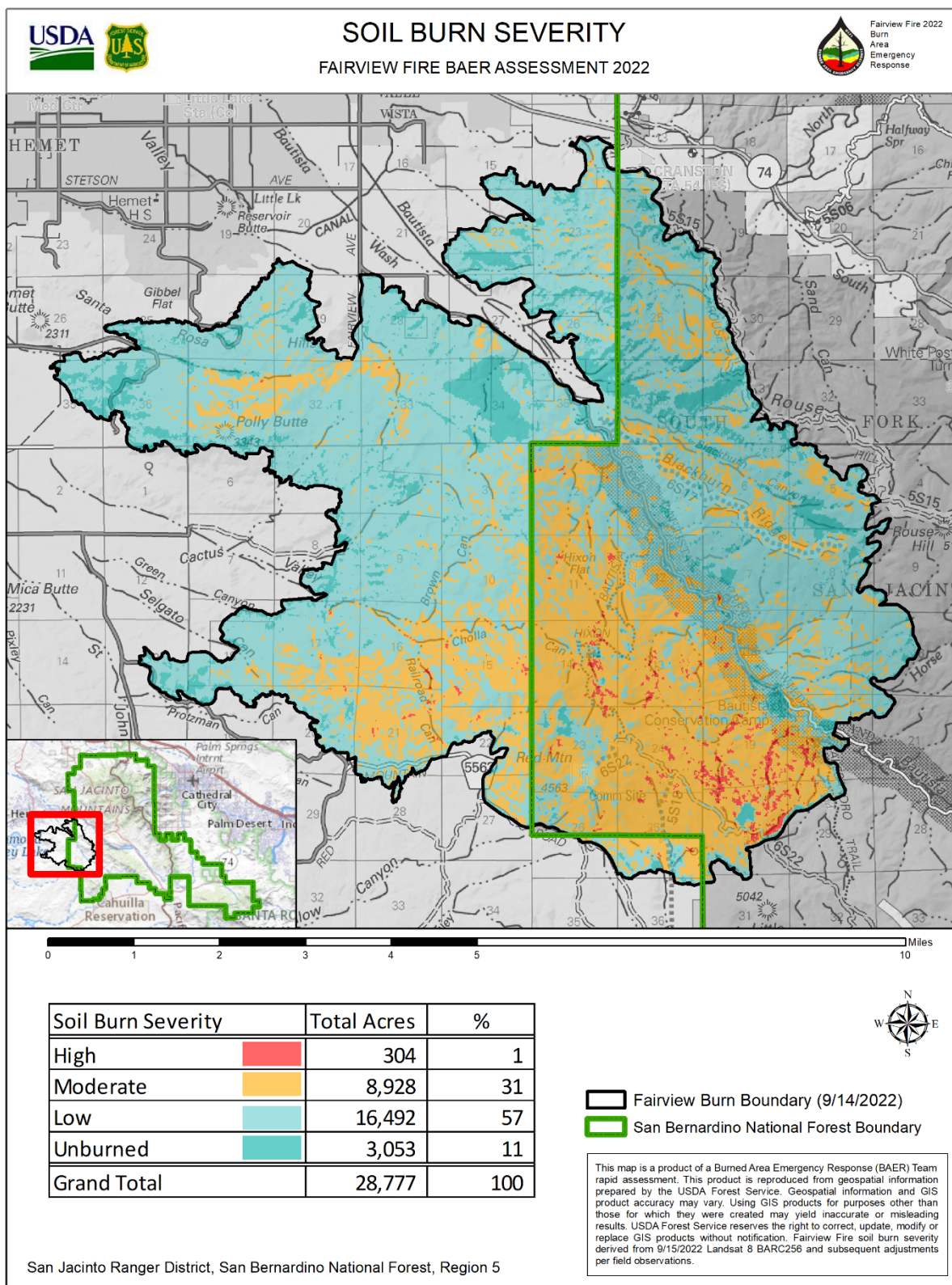
PART III - WATERSHED CONDITION

A. Burn Severity (acres)

Table 6, Table 7, and Figure 1 display the soil burn severity within the Fairview Fire perimeter.

Table 6. Summary of Burn Severity By Ownership					
Ownership	Soil Burn Severity (Acres)				
	Unburned & Very Low	Low	Moderate	High	Total
San Bernardino National Forest	1,015	6,332	5,947	277	13,571
Private / Other	1,481	7,825	2,564	27	11,897
Bureau of Land Management	505	2,194	357	-	3,056
State	52	141	60	-	253
TOTALS	3,053	16,492	8,928	304	28,777

Table 7. Percentage Soil Burn Severity by Watershed (%)											
Watershed	Soil Burn Severity by Watershed										Total Watershed Acres
	Unburned		Low		Moderate		High		Moderate + High		
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	
Bautista Creek	1,641	5	7,390	23	4,732	14	259	1	4,991	15	167,929
Saint Johns Canyon	1,027	4	7,006	27	2,420	9	25	< 1	2,445	9	32,657
Poppet Creek-San Jacinto River	228	1	1,283	6	298	2	0	< 1	298	2	26,272
Upper Wilson Creek	51	<1	234	1	899	6	16	< 1	915	6	19,846
Upper Tualota Creek	64	<1	434	3	576	3	4	< 1	580	3	15,809
Laborde Canyon-San Jacinto River	31	<1	142	< 1	2	< 1	0	< 1	2	<1	17,142
Lower South Fork San Jacinto River	11	<1	3	< 1	0	< 1	0	< 1	0	<1	41,758

Figure 1. Soil Burn Severity – Fairview Fire

B. Water-Repellent Soil (acres)

Presence and severity of water repellency is a function of both drought and fire intensity/heating duration. Strong water repellency was encountered in several unburned control points in the area. Water repellency was found in all soil burn severity plots. Estimated Forest Service acres of water repellent soil is 13,847.

C. Soil Erosion Hazard Rating

Table 8. Soil Erosion Hazard Rating		
Rating	Acres	Percent of Fire Area
Severe	12,200	88
Moderate	1,193	9
Low	8	<1
Not Rated (Rock Outcrop)	447	3
<i>¹Acres are an estimate based on soil survey coverage and area assessed by soil burn severity. ²Soil Erosion Hazard (Road, Trail) ratings are shown in table. Map units do not have a rating for Soil Erosion Hazard (Off-road, Off-trail).</i>		

D. Erosion Potential

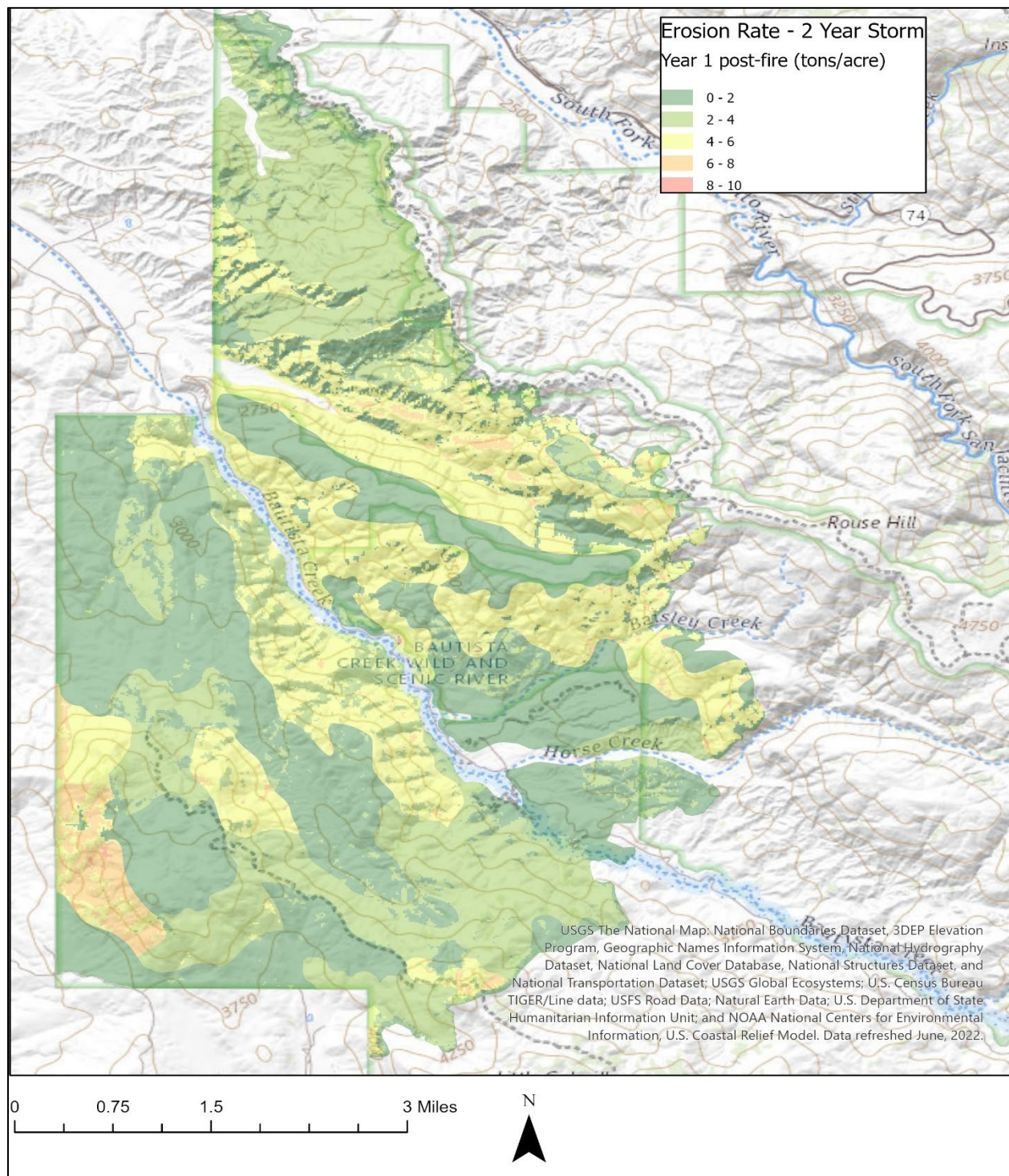
Erosion rates for 2 year storm modeled across soil map units on FS lands. Reported erosion rates (ERMiT) are associated with the 2 year storm (50% probability). Approx. 2.87" storm total precipitation with 4-hour duration. Riparian (alluvial) map units were not modeled in ERMiT.

E. Sediment Potential

Sediment potential, fire-wide: 2024.69 Cubic yards/ square mile (National Forest System lands)

F. Estimated Vegetative Recovery Period (Years)

Recovery of early successional herbs and shrubs will be within the first few years even in areas of high severity. Chaparral and scrub communities comprise approximately 94% of the burned area and riparian woodland communities comprise approximately 2% of the burned area (Table 1). These communities experienced primarily moderate and low severity fire effects (Table 1) and are expected to recover in 2-30 years unless they reburn or are invaded by non-native invasive plants.

Figure 2. Erosion Potential within the Fairview Fire

G. Estimated Hydrologic Response

Watershed conditions following a fire, such as loss of stabilizing vegetation, decreased soil porosity, and increased hydrophobicity in soils, are all factors that can increase the magnitude, timing, and volume of stormwater runoff. Additionally, the volume of sediment and ash that these flows can transport can cause aggradation, down cutting, and/or widening of stream channels that can significantly reduce the functioning condition of these channels. The increased peak flows pose a threat to life, property, and resources within and below the burned area.

Post-fire hydrologic response for 2 and 5-year 6-hour precipitation events were modeled using HEC-HMS 4.9 for the Bautista Creek 6th code watershed. HEC-HMS was chosen as the modeling method due to the size of the watershed of interest being over 5 sq. mi.

Runoff from the 2-year six-hour frontal storm (~1.40") was modeled to result in approximately 3 times greater flow than unburned conditions as a function of burn severity distribution throughout the watersheds. Runoff from the 5-year frontal storm (~1.85") was modeled to result in approximately 1.3 times greater flow from unburned conditions. The decrease in percent change as recurrence intervals lower in probability is due to increased precipitation depths resulting in higher peak flows instead of curve numbers dictating the model outputs.

Overall, moderate severity burn within the chaparral vegetation type throughout the watershed will result in significant increase in hydrologic response. However, the lack of a deep litter layer present in chaparral vegetation types lowers pre to post fire response. Although hydrologic response will increase, there will likely not be any long-term changes to stream morphology or departure from the watershed's historical natural hydrograph.

Table 9 displays modeled results of post-fire increased runoff. *See map in Hydrologist specialist report.*

Table 9. Predicted Post-Fire Increased Run-Off		
Storm Event (6-hour duration)	Precipitation Depth (in.)	Percent Change (%)
2-year	1.40	338.48
5-year	1.85	127.94

H. Geology and Geomorphology - Geologic Response

Within the burned area of the Fairview Fire, some evidence of mass wasting as debris slides, debris flows, and rock fall was observed throughout portions of the burn area. Based on our observations, it appears that most slopes and channels in the burn area are loaded with unsorted / unconsolidated materials comprised of rocks of all sizes including boulders, cobbles, gravels, and fine sediments ready to be mobilized by flooding and/or debris flow events. Based on some of the steep slopes in the burn area, the soil burn severity, and the amounts of stored sediments in most drainages in the burn area, it is our estimate that as a result of short duration, high intensity storms (>28 mm/hr.), the probabilities of hyper-concentrated flows and/or debris flows are moderate to high in most channels in the southeast corner of the Fairview Fire burn area. These channels for the most case flow into Bautista Creek. Most other channels in the burn scar present low to moderate probabilities of debris flow initiations under these same rainstorm conditions.

Now, as a result of the removal of vegetation by the fire, soils are exposed and have become weakened, hydrophobicity conditions have changed and rocks on slopes have lost their supporting vegetation. Due to these post-fire conditions, Forest Service roads and trails, and private, County and State infrastructure, facilities, roads, water systems and other utilities are at risk from numerous geological hazards as rolling rocks, debris slides, debris flows, and hyper-concentrated floods. Risks to human life, and safety is of

particular concern in and downstream of the Fairview Fire during up-coming storm events. Beyond threats to life and property, as a result of the fire, excessive sedimentation and debris could adversely affect cultural resources and critical habitats for Federally Listed Species in and below the burn area.

Debris Flow Potential: 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). Estimates of probability, volume, and combined hazard are based upon a design storm with a peak 15-minute rainfall intensity of 12 – 40 millimeters per hour (mm/h) rate. We selected a design storm of a peak 15-minute rainfall intensity of 28 millimeters per hour (1.1 inch/hr.) 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.

Based on USGS debris flow modeling it appears that under conditions of a peak 15-minute rainfall intensity storm of 28 millimeters per hour (1.1 inches/hour) corresponding to a 1-year storm, most of the drainages in the southeast corner of the burn scar (Between Bautista Canyon, Red Mountain and the southeast boundary of the fire) are predicted to initiate debris flows with moderate (40-60%) to high (60-80%) probability, including a few drainages with very high (80-100%) probabilities. These drainages for the most case are un-named drainages flowing to the north and northeast into Bautista Canyon. Most other drainages in the burn scar are predicted to initiate debris flows with relatively low probabilities of 0-20% or 20-40%.

Under this same magnitude of storm, predicted volumes in most of the main channels impacted by the Fairview Fire range from 1K-10K cubic meters. Most of the side channels feeding into these main channels are predicted to produce volumes of less than 1K (<1K) cubic meters. Just a few drainages in the burn scar are predicted to produce volumes of 10K-100K cubic meters.

Regarding combined hazard, the USGS debris flow model estimates most of the area burned by the Fairview Fire to be under a moderate combined hazard, with exceptions of areas in the west end of the fire presenting a low combined hazard, and some drainages in the southeast corner of the fire, flowing into Bautista Canyon, presenting a high combined hazard.

Most of those drainages located in the southeast corner of the fire (which are represent a high combined hazard) require rainfall rates of 20-24 mm/hour (0.78-0.94 inches/hour) to exceed a 50% likelihood of debris-flow initiation. A few smaller drainages in that area require a smaller amount of rain, 16-20mm/hour (0.63-0.78 inches/hour) to exceed a 50% likelihood of debris-flow initiation. Most other areas impacted by the fire require high rainfall intensities (28mm/hour (0.94 inches/hour) or higher) to exceed a 50% likelihood of debris-flow initiation.

These conditions leading potentially for the geological hazards described above will stay in affect till vegetation in the burned watersheds re-establishes itself, which depending on rain and other conditions, could take 2-5 years after the fire.

PART IV - SUMMARY OF ANALYSIS

INTRODUCTION/BACKGROUND

The Fairview Fire started on September 5, 2022, near Riverside County Simpson Park in the city of Hemet, CA in Riverside County. The fire soon burned to the east and onto the San Bernardino National Forest. The drought, combined with dry, hot weather and strong winds, resulted in active fire behavior.

Since the fire started, southern California experienced scattered thunderstorms associated with tropical storm Kay. As recorded at the Cranston Remote Automatic Weather Stations (RAWS) station near the north end of the fire, 0.05" of rain fell on September 9 with an additional 0.21" on September 11. At the Anza RAWS near the southern end of the fire, there was 0.58" on September 9, 0.02" on September 10, and 0.05" on September 11.

On September 20th, a BAER team began assessing the fire area. The team consisted of soil scientists, hydrologists and geologists focused on mapping soil burn severity and assessing imminent post-fire threats to human life and safety, property, and natural resources. Additional BAER specialists, including road engineers, wildlife biologists, archeologists, botanists, and recreation managers identified and evaluated Critical Values in their areas of expertise.

A. DESCRIPTION OF CRITICAL VALUES/RESOURCES AND THREATS

The BAER Critical Value matrix (**Table 10**) was used to assess the overall risk for all of the resources analyzed under the Fairview Fire BAER process.

Table 10. 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

A1.0 Human Life and Safety

The Fairview Fire BAER Team has identified risks to human life and safety at several locations throughout the fire based on the threat of debris flows, flooding, rockfall, and hazard trees. Use of BAER critical values such as roads and trails have post-fire threats to life/safety as well as to Forest Service property. Forest users, employees, and partners could be hit by falling trees, caught in a debris flow, or flood, or be injured or killed due to damaged travelways. A summary for of the assessment follows; additional details are found in the resource specialist reports that address BAER critical values/threats and risks.

A1.1 Human Life & Safety - Roads

The National Forest transportation system consists of approximately 12.4 miles of National Forest System Roads (NFSR) within the fire perimeter. All of the roads are level 2 and suited for high-clearance vehicles. Of these roads, 5S18, 6S17, and a portion of 6S22 are utilized for administrative use only. Both 5S18 and 6S22 are in and downstream of the burned area and are crossed by channels with a 20%-100% chance of debris flows occurring any given year.

Risk Assessment for Risk to Human Life/Safety – Roads:

- **6S22 Red Mountain Road**
Probability is *likely* due to the potential for loss of road infrastructure from fill slope erosion, debris flows, rockfall, and flooding. Debris flows will plug culverts and result in washouts. The magnitude of consequences is *major* because people could be injured or die. The risk is **VERY HIGH**.
- **5S18 Reed Valley Road**
Probability is *possible* due to the potential for loss of road infrastructure, debris flows, rockfall, and flooding. The magnitude of consequences = *moderate* because people could be injured or die but the road has limited use. The risk is **INTERMEDIATE**.

Treatments for Life/Safety – Roads: Road treatments are recommended to protect life and safety.

41.2 Human Life & Safety - Trails

The 5.8-mile-long Hixon-Bautista Trail is a moderately-used Off-Highway Vehicle (OHV) trail maintained at 50" width. The trail climbs from Bautista Canyon to Forest Service Road 6S22 near Red Mountain. Primary users are dirt bikes, quads, bicycles and hikers. The trail is historically well-maintained. Most of the trail is on upper to mid slope position. Debris flow modeling suggest a 20-80% chance of debris flows at several drainages that cross the trail. The 3.5 miles long Alessandro Trail is a moderately-used OHV trail maintained at 24" width. Primary users are dirt bikers. The trail tread is only minimally maintained, although annual brushing does occur.

Risk Assessment for Risk to Human Life/Safety – Trails:

- **Hixon-Bautista Trail**
Probability of damage or loss is *likely* because there is a 20-80% chance of debris flows at several crossings as well as a 328% increase of peak flows in a 2-year storm event. Debris flows or floods could bury or scour the trail tread at these crossings and create unsafe riding conditions. Furthermore, there is potential for rockfall from burned slopes above the trail and potential hazard trees at trailhead. The magnitude of consequences is *major* because users could be injured or die. The risk is **VERY HIGH**.
- **Alessandro Trail**
Probability of damage or loss is *unlikely* because the trail has limited burned slopes above. Debris flows are not likely based on modeling, though some minor flooding and erosion expected. The magnitude of consequence is *major* because users could be injured or die. The risk is **INTERMEDIATE**.

Treatments for Life/Safety – Trails: Treatments are recommended to protect life and safety on the Hixon-Bautista Trail.

41.3 Human Life & Safety – Abandoned Mines

The San Bernardino National Forest historical (1990s era) abandoned and inactive mine survey documents that several cuts in the steep hillside associated with the abandoned Bautista Limestone Mine are susceptible to erosion. The historical survey documentation further adds that there are several small highwalls where limestone has been removed and that most of the abandoned Bautista Limestone Mine property is just outside the Forest boundary. The historical survey documentation identifies an adit associated with the abandoned Audrey Lynn Mine and states that the abandoned Audrey Lynn Mine is also located mostly outside of the Forest boundary.

Risk Assessment for Human Life & Safety - Abandoned Mines:

- It is **possible** that threats to life and safety because of abandoned mine-related open and accessible adits and high walls present in the burned area. Abandoned mine records document an adit at the abandoned Audrey Lynn Mine and high walls subject to erosion at the abandoned Bautista Limestone Mine. The magnitude of the consequence is **moderate** because the high walls at the abandoned Bautista Limestone Mine and the adit at the abandoned Audrey Lynn mine are accessible to the public. The highwalls and adits were accessible pre-fire. Therefore, an **INTERMEDIATE** risk to human life and public safety exists in the burned area

Treatments for Human Life & Safety - Abandoned Mines: Treatments are not recommended.

A1.4 Human Life & Safety – Hazmat

Two types of facilities (fire lookout and outhouse) at Red Mountain were destroyed during the Fairview Fire. Hazardous materials contamination created by the fire at the Red Mountain location include an assortment of burned hazardous materials (friable asbestos from asbestos containing building materials used in the construction of the lookout and the outhouse, lead from lead-based paint on the lookout, polychlorinated biphenyls from fluorescent light fixtures/tubes, etc.).

A review of the San Bernardino National Forest abandoned and inactive mine survey documents state that no chemicals or sulfides that would produce hazmat (acid mine drainage) are present on any of the abandoned mine sites located inside or adjacent to the Fairview Fire perimeter.

Risk Assessment for Human Life & Safety – Hazmat:

- **Audrey Lynn Mine**
It is **unlikely** that mobilization of hazmat from burned mining materials at the Audrey Lynn, Standard Prospect and Bautista Limestone abandoned mines will occur. The magnitude of the consequence is **minor** because no chemicals were located at the mines prior to the fire and no sulfides that would produce hazmat (acid mine drainage) are present on any of the three mine sites. Therefore, a **VERY LOW RISK** to life and safety exists in the burned area.
- **Cranston Fire Station**
It is **unlikely** that post-fire watershed events will mobilize hazardous materials stored at the Cranston Fire Station. Mobilized hazardous materials will result in releases of hazardous materials to soil and water. The magnitude of the consequence is **minor** because there is a 0-20% chance of debris flow and the area above the fire station is in a low soil burn severity area with a minimal chance of post fire flooding. Quantities of hazardous materials stored at the fire station are not excessive. Therefore, a **VERY LOW RISK** to life and safety exists in the burned area.
- **Red Mountain**
It is **very likely** that hazardous materials from burned lookout and outhouse will impact life and safety. Hazardous materials generated by the wildfire include friable asbestos and lead, both of which will impact air quality. Region 5 lookouts that burned in 2020 and 2021 created hazmat (i.e., burned asbestos containing building material created friable asbestos; burned building material created ash/debris that was contaminated with lead, polychlorinated biphenyls (PCBs) etc.). Lead, PCBs, and other hazardous materials are likely present in the ash/debris under the burned steel tower. All hazardous materials on site will be transported off-site by wind and water runoff. The magnitude of the consequence is **major** because analysis of burned lookouts in

Region 5 have confirmed that friable asbestos, PCB, and heavy metal contamination are present in ash/debris after the fire has been contained. Therefore, a **VERY HIGH RISK** to life and safety exists in the burned area.

Treatments for Human Life & Safety - Hazmat: Treatments are recommended at the Red Mountain site.

A1.5 Human Life & Safety – Threats from Geologic Hazards

The conclusion of our field observations is that whether the primary post-fire process is rock-fall, debris slides, debris flows or sediment laden flooding, the cumulative risk of various types of slope instability, sediment bulking, and channel flushing is elevated along most slopes and drainages in and below the burn area following the Fairview Fire. Based on the above, special attention and caution is recommended in areas where people are living or traveling through, working, or recreating in or below the burned areas during and immediate after storm events.

Risk Assessment for Human Life & Safety – Threats from Geologic Hazards:

- The Probability is *Possible* due to elevated chance of geologic hazards. The Magnitude of Consequences is *Major* because human injury or death could result. The Risk is **High**.

Treatments for Human Life & Safety - Geologic Hazards: To reduce risk to life, it is our recommendation to coordinate warning notifications with the National Weather Service, post warning signs and enforce administration closures.

A1.6 Human Life & Safety – Non-Forest Service Values

Mobilization of hazardous materials into National Forest System lands from the burned lookout and outhouse may impact the private land interface that exists in the burned area. Friable asbestos, contaminated ash and debris are located on the summit of Red Mountain and may be transported downslope in windy and rainy weather events.

Threats to human life/safety are also associated with non-FS values such as the county road under special use permit and private lands within and adjacent to the National Forest were evaluated by the State WERT in coordination with BAER team.

A2.0 Property

BAER Critical Values for property include forest roads and motorized trails.

A2.1 Property – Forest Service Roads

The National Forest transportation system consists of approximately 12.4 miles of National Forest System Roads (NFSR) within the fire perimeter. All the roads are level 2 and suited for high-clearance vehicles. Of these roads, 5S18, 6S17, and a portion of 6S22 are utilized for administrative use only.

Risk Assessment for Property – Roads:

- Both 5S18 and 6S22 are in and downslope of high and moderate SBS in the burned area. The debris flow model showed a 20-100% chance of debris flows crossing segments of these roads. These roads have a *likely* probability of debris flows and flooding during rainstorms because of the changed watershed condition. Debris flows and flooding are likely to cause **moderate to major** magnitude of damage to these roads. The resulting risk of road failures in and downstream of the burned area is **HIGH to VERY HIGH**.

Treatments for Property – Roads: Of the NFSR miles in the burned area, 2.0 miles of 6S22 and 0.7 miles of 5S18 are proposed for treatments due to the overall risk rating of high to very high. These

roads exhibit an unacceptable risk to property, which constitutes a BAER emergency and treatments are recommended. The purpose of road treatments is to protect roads against loss of water control, soil erosion, flooding, debris flow, loss of road tread and total failure.

A2.2 Property – Forest Service Trails:

Risk Assessment for Property – Forest Service Trails:

- **Hixon-Bautista Trail**
The probability of damage or loss is *likely* because there is a 20-80% chance of debris flows at several crossings as well as a 328% increase of peak flows in a 2-year storm event which could damage the trail tread. Rockfall and hazard trees could block the trail. The magnitude of consequence is *moderate* because there may be localized impacts to trail tread. The risk is **HIGH**
- **Alessandro Trail**
The probability of damage or loss is *unlikely* because there is no expected increase in debris flow or flood. The magnitude of consequence is *moderate* because there may be localized impact to trail tread. The risk is **LOW**.

Treatments for Property – Forest Service Trails: Monitoring and treatments are recommended for trails with a High risk determination. At this time, no BAER funds are being requested to conduct storm response. If treatments are deemed necessary they will be implemented with non-BAER funding.

A3.0 Natural Resources

A3.1 Natural Resources – Soil Productivity and Hydrologic Function/Threat from Accelerated Hillslope Erosion:

Displaying post-fire erosion rates by storm probability for the Fairview fire shows that long term effects to soil productivity could persist on approximately 6,390 acres. This is the acreage where post-fire erosion could exceed annual soil loss tolerance values for the soil type. Conditions typical of this acreage include stand replacing fire in various types of chaparral, loss of soil cover, weakening of soil structure between 0 and 3cm, and strong fire induced hydrophobicity. Minor, localized affects could persist on approximately 6,990 acres. Conditions typical of this acreage includes stand replacing fire in low density chaparral types where pre-fire ground cover was low. These systems lack the depth and continuity of ground cover needed to increase fire severity and residence time. Fire effects to soil are minimal.

Risk Assessment for Natural Resources – Soil Productivity and Hydrological Function:

- The probability of damage or loss to soil productivity and hydrologic function on 6,390 acres of the burn area is *likely*. The reported erosion rates (ERMiT) are associated with the 2-year storm (50% probability) for approximately 2.87" storm total precipitation with 4hr duration. The magnitude of consequences is *moderate* because soil loss on these 6,390 acres could result in considerable long-term damage to soil productivity. The risk is **HIGH**.
- The probability of damage or loss to soil productivity and hydrologic function on 6,990 acres of the burn area is *likely*. The reported erosion rates (ERMiT) are associated with the 2-year storm (50% probability) for approximately 2.87" storm total precipitation with 4hr duration. The magnitude of consequences is *minor* because the damage to soil productivity is minimal, recoverable, or localized. The risk is **LOW**.

Treatments for Soil Productivity: No treatments, beyond natural recovery, are recommended.

A3.2 Natural Resources – Threatened/Endangered Wildlife:

Five federally-listed wildlife species are known to occur within the Fairview Fire area. Within the burn area, Bautista Canyon contains known occupied habitat for arroyo toad, San Bernardino kangaroo rat, southwestern willow flycatcher, and least Bell's vireo. Suitable habitat (aka occurrences of host plants) for quino checkerspot butterfly exists throughout the Fairview Fire burn area. Known occupied habitat for quino checkerspot butterfly occurs on Rouse Ridge, Horse Canyon, and Baisley Canyon. Designated Critical Habitat exists within the burn area in Bautista Canyon for arroyo toad, San Bernardino kangaroo rat, and southwestern willow flycatcher. Designated Critical Habitat occurs in the southeastern portion of the fire area for quino checkerspot butterfly. Erosion, excessive sedimentation, and/or debris flows from the burned areas in these areas could adversely affect habitat conditions, negatively impacting these habitats. Introduction and spread of invasive non-native plants would adversely affect wildlife habitat. Vehicle use off designated routes within the burned area may affect the recovery of native plant communities, also causing an adverse effect to federally-listed wildlife habitat.

Bautista Canyon is designated as a Critical Biological Zone (CBZ) in the Land Management Plan. CBZs are the most important areas on the national forest to manage for the protection of species-at-risk (LMP Part 2 page 8). The management intent is to retain the natural character and habitat characteristics in these zones. In addition, Bautista Canyon is a designated Wild and Scenic River for which wildlife was identified as an Outstandingly Remarkable Value.

Based on field assessments and hydrologic and geological modeling, some post-fire watershed effects, such as flooding, hyper-concentrated flows, and debris flows, are likely to occur in federally-listed wildlife habitat. Some level of modification of habitats and adverse impacts to individuals are expected as a result. However, the effects from post-fire watershed response are generally short-term in nature and all of the assessed species within the fire area are generally adapted to fire and post-fire watershed response. Some beneficial effects, such as the potential for quino checkerspot butterfly host plants to colonize burned areas, is anticipated.

Habitat degradation due to establishment and spread of non-native invasive plants is a significant potential post-fire threat. During the early days of the incident, suppression resources were mobilized without weed inspection or weed washing. It is very likely that suppression resources, especially dozers, have introduced weed seed into the fire area. Furthermore, the probability is higher than pre-fire for rapid establishment and spread of seeds that happen to be brought in by wind, runoff, erosion, wildlife, or human activity. Immediately post-fire there is an abundance of water, mineral soil, sunlight, and nutrients; non-native invasive plants can outcompete natives quickly in this setting. Of particular concern is stinknet, an invasive plant present in nearby Hemet and San Jacinto that has also been mapped on Rouse Ridge. Other weeds that are currently mapped in areas along Bautista Canyon Road that could spread and damage wildlife habitat include puncturevine, tocalote, Saharan mustard, and shortpod mustard. If any of these weeds became established in habitat for arroyo toad, San Bernardino kangaroo rat, or quino checkerspot butterfly habitat, it could have very significant adverse impacts. The fire and resultant additional invasive weeds may even cause a type conversion of suitable habitat. Willow, mulefat, and other riparian hardwoods, which are important components of southwestern willow flycatcher and least Bell's vireo habitat, may be less impacted by these weed species relative to the previous three species.

Another substantial post-fire risk to all assessed wildlife species is that lack of vegetation might result in increased off-route vehicle use that puts these animals and habitats at more risk and results in continued/additional habitat degradation. Habitat damage from off-route vehicle use includes increased soil compaction and erosion, damage to habitat components, and may promote the spread of non-native plants. Off-route vehicle use could result in disturbance, injury, and mortality impacts to individuals. As a result of the fire, vegetation that once acted as barriers to vehicles are gone in many locations. The slopes alongside the south side of Bautista Canyon Road are generally gentle, stretching out across the alluvial

terraces. Field assessments concluded that the fire resulted in easy access for vehicles into Baisley Canyon. In fact, on 9/25/2022 during a field assessment, fresh dirt bike tracks were observed going up Baisley Creek from Bautista Canyon Road (see photo in Wildlife Specialist Report).

Risk Assessment for Natural Resources – Threatened/Endangered Wildlife:

- **Arroyo Toad**
The probability of damage or loss is *likely*. This determination is due to the likelihood of habitat degradation from post-fire watershed response, off-route vehicle use, and non-native invasive plant encroachment. The magnitude of consequence is *major* because there may be considerable and long-term reduction in habitat suitability if non-native invasive plants become established. The risk is **VERY HIGH**.
- **San Bernardino Kangaroo Rat**
The probability of damage or loss is *likely*. This determination is due to the likelihood of habitat degradation from post-fire watershed response, off-route vehicle use, and non-native invasive plant encroachment. The magnitude of consequence is *major* because there may be considerable and long-term reduction in habitat suitability if non-native invasive plants become established. The risk is **VERY HIGH**.
- **Southwestern Willow Flycatcher and Least Bell's Vireo**
The probability of damage or loss is *likely*. This determination is due to the likelihood of habitat degradation from post-fire watershed response, off-route vehicle use, and non-native invasive plant encroachment. The magnitude of consequence is *minor*. This determination is based on the consideration that if post-fire water responses, off-route vehicle use, or non-native invasive plant encroachment did occur, the resultant impacts to suitable nesting habitat for these species are anticipated to be short-term. The risk is **LOW**.
- **Quino Checkerspot Butterfly**
The probability of damage or loss is *very likely*. This determination is due to the likelihood of habitat degradation from post-fire watershed response, unauthorized OHV use, and non-native invasive plant encroachment. During field assessments by the BEAR team, off-route vehicle use is already occurring in quino checkerspot butterfly habitat. The magnitude of consequence is *major* because there may be considerable and long-term reduction in habitat suitability if non-native invasive plants become established. The risk is **VERY HIGH**.

Treatments for Threatened/Endangered Wildlife: Treatments are recommended in the form of Early Detection/Rapid Response (EDRR), Hixon Trail Closure, and T/E Plant and Wildlife Habitat Protection.

A3.3 Natural Resources – Threatened/Endangered Plants:

Dodecahema leptoceras (slender-horned spineflower) is federally-listed as Endangered and is endemic to southwestern California and only found in about 20 extant occurrences in Los Angeles, Riverside, and San Bernardino Counties. The slender-horned spineflower is a small annual plant in the buckwheat family that is typically found in alluvial fan scrub on benches and terraces away from active channels in areas receiving little surface disturbance from flooding, but subject to sheet or overland flows. The association of the species with older alluvial benches and terraces indicates the need or tolerance of infrequent flood events to maintain suitable habitat conditions.

Approximately 26 acres of occupied slender-horned spineflower habitat burned at low or moderate severity within the Fairview fire perimeter. Occupied habitat occurs in Bautista Canyon, Baisley Creek, and Horse Creek.

Post-fire effects could affect occupied habitat by weed invasion in newly opened habitat replacing native cover, possible deposition of debris and sediment through flooding and lack of vegetative barriers may increase illegal off-road driving effects (killing plants) and act as a possible vector for weed introduction.

Risk Assessment for Natural Resources – Threatened/Endangered Plants:

- The probability is **likely** that burned occupied habitat for slender-horned spineflower will be threatened by the spread of weeds in Bautista Canyon due to the survival and dispersal of weeds that burned at low to moderate severity. Seeds that escaped fire may continue to disperse and grow uninhibited, in newly opened habitat, replacing native cover. Post-fire effects could affect occupied habitat by deposition of debris and sediment and through flooding. Additionally, burned vegetation and lack of vegetative barriers may increase illegal off-road driving effects (killing plants) and act as a possible vector for weed introduction. The magnitude is **major** to impacted occupied habitat, such as type conversion and altered ecologic function causing further decline in habitat suitability for slender-horned spineflower. The risk is **VERY HIGH**.

Treatments for Threatened/Endangered Plants: Treatments are recommended in the form of Early Detection/Rapid Response (EDRR) and installation of OHV barriers (fencing) discussed in the wildlife report.

A3.4 Natural Resources - Native Communities (Suppression Features):

This section focuses on threats to native communities associated with fire suppression features.

An emergency exists with respect to native plant communities because of the threat of invasive weed introduction and spread. The introduction and dispersal via heavy equipment of invasive weeds into areas disturbed by fire suppression and suppression repair activities will result in the spread/establishment of persistent weed populations.

Risk Assessment to Natural Resources – Native Communities Associated with Fire Suppression Features:

- The probability is **likely** due to lack of equipment washing and equipment likely intersected known invasive plant populations. It is likely that fire suppression activity and resources spread existing and introduced new weed species. The magnitude is **major** because soil disturbance caused by suppression activities is very susceptible to being invaded by weed species which can spread to native communities with little weed presence. The risk is **VERY HIGH**.

Treatments for Native Communities Associated with Fire Suppression Features: Early Detection Rapid Response (EDRR) treatments are recommended.

A3.5 Natural Resources - Native Communities (Burned Area):

This section focuses on threats to native communities within the burned area where weeds are currently absent or present in minor amounts. **Table 11** displays known infestation sites.

Table 11. Known Infestations from Burn Area		
Species	Known Infestations (count)	Known Infestations (acres)
<i>Avena barbata</i>	1	0.1
<i>Brassica tournefortii</i>	1	0.1
<i>Bromus diandrus</i>	1	7
<i>Bromus rubens</i>	6	3
<i>Bromus tectorum</i>	1	.4
<i>Centaurea melitensis</i>	27	27
<i>Erodium cicutarium</i>	1	0.07
<i>Hirschfeldia incana</i>	5	0.34
<i>Oncosiphon pilulifer</i>	1	0.2
<i>Schismus barbatus</i>	6	0.6
<i>Sisymbrium altissimum</i>	7	7
<i>Tamarix ramossima</i>	2	.28
<i>Tribulus terrestris</i>	1	0.52

Recovery of native vegetation over the burned areas away from suppression features is at risk. Newly-burned wildland areas are well-documented to be perfect seed beds for aggressive non-native plants that could be deposited by OHV incursions due to lack of vegetative barriers, increased probability of erosion and sedimentation from the fire, wildlife, water, and/or wind. The introduction of new invasive plant species (or new infestations from outside the Forest) and expansion of the existing weed populations could affect the structure and function of native plant communities if left unchecked. It is expected that most native vegetation adapted to moderate or infrequent high severity fire would recover well, and often benefits from fire if weed invasions are minimized.

Areas such as vulnerable riparian habitat types that are occupied by threatened and endangered wildlife and plant species or contain suitable habitat will be impaired by invasive plant incursion. Bautista canyon may be especially vulnerable since it is occupied by three threatened/endangered species arroyo toad, San Bernardino Kangaroo Rat, and slender-horned spineflower that are especially threatened by invasive plant expansion into occupied habitat. Known locations of invasives along Bautista Canyon Road may spread into recently burned occupied habitat and make the habitat unsuitable and/or crowd out native vegetation. Invasive species known from Bautista Canyon Road include *Brassica tournefortii*, *Centaurea melitensis*, and *Hirschfeldia incana*. A newer invader to the Hemet/San Jacinto area is the highly invasive *Oncosiphon pilulifer* which is a major invader of sandy scrub/chaparral habitats. This species can form dense monotypic patches and is easily transported by people and equipment due to its very small seeds. A population of this species was found in the spring of 2022 on Rouse Ridge. The area here it was discovered has since become a dozer line during the Fairview Fire and it is likely that equipment from the fire has dispersed seed to other areas.

Blackburn Canyon, Baisley Creek, and Horse Creek are similarly vulnerable for the same reasons as Bautista Canyon. Blackburn Canyon and Baisley and Horse Creeks contain suitable endangered quino checkerspot butterfly habitat. Additionally, Baisley and Horse Creeks contain occupied slender-horned spineflower habitat. All three are relatively weed free and are susceptible to increased flows coming from Rouse Ridge potentially resulting in invasive species seed deposition. Rouse Ridge has several invasive

species populations including *Oncosiphon pilulifer*, *Bromus diandrus*, *Centaurea melitensis*, and *Sisymbrium altissimum*. All these invasive species have the potential to degrade or make habitat unsuitable for these two endangered species. There is also a high likelihood that unmapped invasive species occur on Rouse Ridge and/or new invasives were brought in on suppression equipment.

Suitable quino checkerspot butterfly habitat on Rouse ridge that intersect with dozer lines are particularly susceptible to weed invasion resulting in reduced host and nectar plants due to soil disturbance and potential introduction of new weed species from unwashed equipment.

Two OHV trails, the Hixon and Alessandro trails, start in Bautista Canyon and travel southeast through an area of relatively weed free decadent chaparral, most of which had not burned since 1928. Most of the area burned with moderate burn severity and is susceptible to weed invasion from OHV use and incursions as well as weed seed introduction from wind, runoff, and erosion.

The probability is higher than pre-fire for rapid establishment and spread of seeds that happen to be brought in by wind, runoff, erosion, or wildlife. Immediately post-fire there is an abundance of water, mineral soil, sunlight, and nutrients; non-native invasive plants can outcompete natives quickly in this setting. Aggressive weeds (e.g., *Oncosiphon pilulifer*, *Brassica tournefortii*) could impede native vegetation recovery if undetected.

Risk Assessment to Natural Resources – Native Communities within the Burned Area:

- The probability is **likely** due to the known presence of invasive populations in the area and the high likelihood that unmapped invasive species occur. Colonization of invasive species within the post-fire area is likely. The magnitude of consequences is **major** of the potential for invasive species establishment and spread in areas difficult to detect and treat. The risk is **VERY HIGH**.

Treatments for Native Communities within the Burned Area: Early Detection Rapid Response (EDRR) treatments are recommended.

A4.0 Cultural Resources

Twenty-one cultural resources have been identified within the Fairview Fire and 1-mile of the burn perimeter on Forest Service Lands. Six of the resources are historic period sites consisting of roads, water conveyance systems, refuse scatters, and the remains of Red Mountain Lookout which was destroyed during the fire. One is a multicomponent site. The remainder are Native American archaeological sites consisting of tool manufacturing and food processing sites. Eleven cultural resources are well outside of the fire perimeter and/or any potential for post-fire effects. See the heritage specialist report for details.

Low, moderate, and high intensity fire burned over all or portions of ten cultural resources. These cultural resources include the aforementioned destroyed lookout, Bautista Road (which is maintained by Riverside County and not analyzed here), and eight Native American Archaeological sites. Two of the archaeological sites, FS sites 05125590236 and 05125590237, could not be relocated and no local records or documentation was available. Based on the assigned FS number, the sites are probably off-forest land and mapped incorrectly from legacy documents. A further two, CA-RIV-2871 and CA-RIV-3092, are treated as ineligible in accordance with current BAER guidance and practice.

Three sites, CA-RIV-1890, CA-RIV-1891, and CA-RIV-1892, have burned over, losing vegetative cover and potentially exposing them to looting, vandalism, or theft as well as debris flows which would displace artifacts and features. CA-RIV-2872/H burned over as well, but after discussions with the geology and hydrology team, post-fire watershed and debris flow effects are likely to be minimal for the site; however, the Hixon-Bautista trail does cut through the site which may lead to theft, looting, or vandalism as the site is now exposed.

Risk Assessment for Cultural Resources:

- **Site CA-RIV-2872/H**
It is **likely** looting, theft, and/or vandalism will occur at this site due to the loss of vegetative cover. The magnitude of consequence is **major** because removal of artifacts and archaeological context will result in an unrecoverable loss of data potential at the site which could adversely affect its eligibility for the National Register. Therefore, a **VERY HIGH** risk exists.
- **Sites CA-RIV-1890, CA-RIV-1891, and CA-RIV-1892**
It is **unlikely** these sites will experience looting, theft, or vandalism related issues nor debris flows and flooding as they are on a flat terrace above the major drainages and well away from public roads. The magnitude of consequence is **major** because these sites are assumed eligible for the NRHP under criterion D and the loss of or damage to the features and artifacts at these resources would impact the National Register eligibility of these sites. Therefore, an **INTERMEDIATE** risk exists to the three sites.

Treatments for Cultural Resource Sites: The proposed trail closure treatment described in the *Trails* section will meet the treatment needs for cultural resources.

B. EMERGENCY TREATMENT OBJECTIVES

1. Provide for public and employee safety
2. Protect investment in infrastructure from post-fire watershed response damage
3. Protect threatened and endangered species habitat
4. Protect native (particularly rare/sensitive) communities from invasive species
5. Protect Cultural Resources from looting and off-route OHV damage

C. PROBABILITY OF COMPLETING TREATMENT PRIOR TO DAMAGING STORM OR EVENT

- **Land:** 85 – EDRR occurs next spring
- **Channel:** N/A
- **Roads/Trails:** 80
- **Protection/Safety:** 85

D. PROTECTION/SAFETY

Table 12. Probability of Treatment Success			
Type of Treatment	Time After Treatment		
	1 year	3 years	5 years
Land	85	100	100
Channel	n/a	n/a	n/a
Roads/Trails	80	100	100
Protection/Safety	85	100	100

E. COST OF NO-ACTION (INCLUDING LOSS)

Using VAR Lite Cost/Benefit tool, Risks to life and safety due to hazards on roads and trails, losses of Forest Road and trail assets and impacts to native plant communities and endangered species.

Cost/Benefit spreadsheet is included in 2500-8 approval package. Calculated IMV from probability of loss due to no treatment with 20% chance of success.

Table 13. Cost of No-Action	
Total Treatment Cost	0
Expected Benefit of Treatment	31,500
Implied Minimum Value	233,000

F. COST OF SELECTED ALTERNATIVE (INCLUDING LOSS)

Using VAR Lite Cost/Benefit tool: Costs include a suite of treatments to minimize risk, especially to roads and trails, native plant communities and endangered species. Minimizing risks to Life and Safety. Cost/Benefit spreadsheet is included in 2500-8 approval package.

Table 14. Cost of Selected Alternative	
Total Treatment Cost	183,214
Expected Benefit of Treatment	31,500
Implied Minimum Value	291,428

G. SKILLS REPRESENTED ON BURNED-AREA SURVEY TEAM

Table 15. Skills on the BAER Team				
<input checked="" type="checkbox"/> Soils	<input checked="" type="checkbox"/> Hydrology	<input checked="" type="checkbox"/> Engineering	<input checked="" type="checkbox"/> GIS	<input checked="" type="checkbox"/> Archaeology
<input checked="" type="checkbox"/> Weeds/Botany	<input checked="" type="checkbox"/> Recreation	<input type="checkbox"/> Fisheries/Aquatics	<input checked="" type="checkbox"/> Wildlife	<input checked="" type="checkbox"/> Trails
<input checked="" type="checkbox"/> PAO	<input checked="" type="checkbox"/> Geology	<input type="checkbox"/> Fire History Analysis	<input checked="" type="checkbox"/> Hazmat	

Table 16. BAER Team Members by Skill	
Skill	Team Member Name
<i>Team Lead</i>	Luke Rutten
<i>Logistics/Finance/Admin</i>	Robin Eliason; robin.eliason@usda.gov; 909-878-3908 Kim Boss; kimberly.boss@usda.gov; 909-379-9330
<i>Forest BAER Coordinator</i>	Kim Boss (acting)
<i>Soils</i>	Rob Ballard, Serena Kuczmarski
<i>Hydrology</i>	Edgar Martinez, Andy (Keith) Stone
<i>Geology</i>	Yonni (Jonathan) Schwartz
<i>GIS</i>	Tracy Tennant
<i>Engineering</i>	Josh Direen
<i>Archaeology</i>	Jay Marshall
<i>Botany/Weeds</i>	Lance Woolley
<i>Recreation</i>	Joey Martin, Stacey Wellman
<i>Wildlife</i>	Robin Eliason, Kim Boss
<i>Hazmat</i>	Belinda Walker
<i>PAO</i>	Cathleen Thompson

H. TREATMENT NARRATIVES

NOTE: The BAER team developed costs estimates using contracts, agreements, off Forest assistance and/or temporary time and Overtime for assistance by SBNF personnel; it is recognized that in-house off-forest help will also be in short supply unless using detailers and overtime.

H1.0 Land Treatments

H1.1 Land Treatment #1 - Fire Suppression-Related Early Detection, Rapid Response:

Early Detection and Rapid Response treatments are requested on suppression related disturbance features including 11 miles of dozer lines, 3 miles of completed fuel break, 14 miles of handline, 3 miles of completed road as line where a mix of brushing and blading was done, 13 areas of dozer push, and 3 drop points. Features created by unwashed heavy equipment, particularly dozer lines, would be prioritized. It is likely that introduced or existing invasive plant infestations will quickly spread and expand onto freshly disturbed ground related to fire suppression activities. Cost estimates are based on similar work done in recent years under a challenge cost share partnership agreement.

Table 17. Land Treatment #1 - Invasive Weed Early Detection, Rapid Response Treatment (Suppression-Related)				
Item	Unit	Unit Cost	# of Units	Total Cost
6 Weed Technicians	Days	\$3,300	8	\$26,400
Vehicle Mileage	Miles	\$0.62	2,500	\$1,550
Total Cost				\$27,950

H1.2 Land Treatment #2 - Burned Area-Related Early Detection, Rapid Response:

EDRR treatments are proposed for about 14 miles of Riparian Conservation Area corridors, which overlaps with 531 acres of arroyo toad and San Bernardino kangaroo rat occupied habitat, 48 acres of quino checkerspot butterfly habitat, and 26 acres of slender-horned spineflower occupied habitat. Seven miles of OHV trails leading into weed free chaparral habitat are also proposed for surveying. These areas are considered vulnerable habitat areas with high probability for invasive plant introductions or expansion. Cost estimates are based on similar work done in recent years under a challenge cost share partnership agreement.

Table 18. Land Treatment #2 - Invasive Weed Early Detection, Rapid Response (BAER/Burned Area)				
Item	Unit	Unit Cost	# of Units	Total Cost
6 Weed Technicians	Days	\$3,300.00	6	\$19,800
Vehicle Mileage	Miles	\$0.62	2,500	\$1,550
Total Cost				\$21,350

H1.3 Land Treatment #3 – T/E Plant and Wildlife Habitat Protection:

Install barriers to limit the amount of cross-country vehicle use that is expected due to the lack of vegetative barriers in federally-listed plant and wildlife habitats in Bautista Canyon and its tributaries (refer to the botany report for details on federally-listed plants in the fire area). The identification of fencing locations was done strategically and was based on location of occupied species habitat, terrain, vegetative burn severity, and proximity to existing designated OHV trails. All proposed fence locations are parallel to the county-owned and maintained Bautista Canyon Road, which provides ready access for both street-legal vehicles and OHVs. This treatment will reduce the risk of death/injury/disturbance to federally-listed plants and wildlife from vehicles driving off road. It will also help speed the rate of habitat recovery by reducing the risk of spreading and establishing non-native invasive plants. A total of 1.35 miles of new fencing is proposed. In addition, existing fences intended to protect endangered plants that were burned during the fire or were impacted during post-fire debris flows immediately after the fire will be repaired/replaced.

Table 19. Land Treatment #3 – T/E Plant and Wildlife Habitat Protection				
Item	Unit	Unit Cost	# of Units	Cost

Installation Work Crew	Days	\$2,500	5	\$12,500
12.5 Gauge Smooth Wire (1,320' per roll)	Roll	\$100	18	\$1,800
8' T-posts	Each	\$10	725	\$7,250
Post Stays	Each	\$1.30	1,500	\$1,950
T-post Clips (25 per bag)	Bag	\$4.60	90	\$414
Miscellaneous Fencing Supplies (fencing pliers, post pounder, gloves, etc.)	LS	\$750	1	\$750
Total Cost				\$24,664

H2.0 Channel Treatments

None

H3.0 Road Treatments

H3.1 Road Treatment #1 - Storm Response

Storm response will keep culvert and drainage features functional by cleaning sediment and debris from in and around features between or during storms to help protect against loss of water control, soil erosion, and loss of road tread. This work will be accomplished through contractor equipment and labor.

Locations: NFSR 5S18, 6S22.

Table 20. Road Treatment #1 – Storm Response				
Treatment	Units	Unit Cost	# of Units	Total Cost
Storm Response	Days	\$ 7,500	3	\$ 22,500
Total Cost				\$ 22,500

H3.2 Road Treatment #1 - Road Storm-Proofing

Road stormproofing involves cleaning or armoring of existing drainage structures to help ensure road drainage performs optimally and to stabilize roads at risk of damage from loss of water control, soil erosion, flooding, debris flow, and loss of road tread. This work will be accomplished through contractor equipment and labor utilizing existing IDIQ contract.

Locations: NFSR 6S22

Table 21. Road Treatment #2 – Road Storm-Proofing				
Treatment	Units	Unit Cost	# of Units	Total Cost
Mobilization	Lump Sum	\$7,500	1	\$7,500
Restore Drainage Function – 6S22	Mile	\$2,500	2.0	\$5,000
Construct rolling dips	Each	\$300	10	\$3,000
Install lead-off ditch	Each	\$200	10	\$2,000
Total Cost				\$17,500

H3.2 Road Treatment #3 – Road Drainage Structure Replacement/Improvements

Road drainage structure improvements involves installation of additional drainage structures to help protect against loss of water control, soil erosion, and loss of road tread. This work will be accomplished with contractor equipment and labor utilizing existing IDIQ contract. Contract preparation and administration using local forest staff.

Locations: NFSR 6S22

Table 22. Road Treatment #3 – Road Drainage Structure Replacement/Improvements				
Treatment	Units	Unit Cost	# of Units	Total Cost

Mobilization	Lump Sum	\$2,500	1	\$2,500
Overside drain and rolling dip (New): 18” Overside Drain w/ 20' flume – 6S22	Each	\$2,000	8	\$16,000
Total				\$ 18,500

H4.0 Trail Treatments

None

H5.0 Life/Safety Treatments

H5.1 Life/Safety Treatment #1 - Road Warning Signs

This treatment will install burned area warning signs at key road entry points to caution forest users about the potential hazards from hazard trees, debris flow, flooding, and rockfall that exist within the burned area. This work will be accomplished using contractor equipment and labor. *Locations: 5S18, 6S22*

Table 23. Life/Safety Treatment #1 – Road Warning Signs				
Item	Units	Unit Cost	# of Units	Total Cost
Mobilization	Lump Sum	\$500	1	\$500
Hazard signs - Aluminum Panels and Posts	Each	\$600	2	\$1,200
Total				\$1,700

H5.2 Life/Safety Treatment #2 - Road Closure

This treatment will help with burned area closure enforcement on NFS roads at the highest risk of hazards from hazard trees, debris flow, flooding, and rockfall. Existing road gates will be utilized, however a new road gate is needed on 6S22, west of 6S89, to support the burned area closure. This closure will also serve as the upper end of the trail closure listed below. This work will be accomplished using contractor equipment and labor.

Table 24. Life/Safety Treatment #2 – Road Closure				
Item	Units	Unit Cost	# of Units	Total Cost
Mobilization	Lump Sum	\$2,000	1	\$2,000
Medium-duty (6 inch steel) gate including installation	Each	\$9,500	1	\$9,500
Total				\$11,500

H5.3 Life/Safety Treatment #3 – Hixon-Bautista Trail Closure

To protect life and safety of trail users and property, closure of the Hixon-Bautista Trail until after the first winter following the fire is recommended. Closure would be implemented through the issuance of a forest order or area closure and signage at the Trailhead, trail terminus, and along the trail at strategic locations. The closure would have the added benefit of mitigating threats to native plant communities, federally-listed wildlife and plants, and cultural resources from off route OHV incursion and looting. These resources are discussed in their respective specialist reports. Following the first winter, the trail and vegetation conditions should be evaluated.

Table 25. Life/Safety Treatment #3 – Hixon-Bautista Trail Closure				
Item	Unit	Unit	# of Units	Cost

		Cost		
Trail Closure Signs	Each	\$100	10	\$1,000
Replacement Signs	Each	\$100	10	\$1,000
Sign Posts	Each	\$30	10	\$300
Miscellaneous Supplies (Hardware, gloves, paint, etc.)	Lump Sum	\$250	1	\$250
Total Cost				\$2,550

H5.4 Life/Safety Treatment #4 – Hazmat @ Red Mountain

Recommended treatment for the Red Mountain site includes: 1) overpack and temporary on-site storage of friable asbestos, 2) field testing of contaminated ash/debris, 3) overpack and temporary on-site storage of ash/debris deemed to be hazardous materials after testing. Overpack and temporary on-site storage of friable asbestos and hazardous materials present at the Red Mountain Lookout and outhouse location will prevent friable asbestos and hazardous materials from being transported off site during heavy rainfall events. Overpack and temporary on-site storage of friable asbestos and hazardous materials will eliminate exposure to toxic hazardous materials (friable asbestos, lead, polychlorinated biphenyls to name a few) when performing work at the site. Friable asbestos and hazardous materials temporarily stored on site will require management in accordance with federal and state environmental laws (i.e., labeling/removal from site and disposal within 9 months/secured to prevent vandalism and damage from heavy rainfall events/periodic inspection to ensure overpack containers are intact and secure).

Work will be performed via Contract. Permission to sole source should be requested to ensure work occurs before rainy season.

Table 26. Life/Safety Treatment #4 – Hazmat @ Red Mountain				
Item	Units	Unit Cost	# of Units	Total Cost
Mobilization	Each	\$4,000	1	\$4,000
Health and Safety Plan Preparation (Streamlined)	Each	\$3,000	1	\$3,000
Work Plan and Final Report Preparation (Streamlined)	Each	\$5,000	1	\$5,000
Overpack Friable Asbestos for On-site Storage	Lump Sum	\$10,000	1	\$10,000
Analyze Ash and Debris to Determine if Hazardous	Lump Sum	\$3,000	1	\$3,000
Overpack Ash and Debris Found to be Hazardous for On-site Storage	Lump Sum	\$10,000	1	\$10,000
Total				\$35,000

I. MONITORING NARRATIVE

II.0 Treatment Effectiveness Monitoring

II.1 Effectiveness Monitoring Treatment #1 – Hixon-Bautista Trail Storm Response

The risk rating for the Hixon-Bautista Trail – Property was High. Localized damage to the trail is considered likely to occur. Trail condition monitoring is currently done on a regular basis by District staff under Green Sticker Operations and Maintenance. District staff will continue to monitor the condition of the trail, particularly after storm events. If the trail is damaged by post-fire watershed response, District resources will be used to make repairs. At this time, no BAER funds are being requested to conduct storm response.

II.1 Effectiveness Monitoring Treatment #2 – Hixon-Bautista Trail Closure

There is a need to monitor the effectiveness of the Hixon-Bautista Trail closure. District staff will monitor the trail to ensure that the public is respecting the closure. Damaged or vandalized signs will be replaced. Staff will educate visitors on the closure and write citations as warranted. At this time, no BAER funds are being requested to conduct effectiveness monitoring.

11.2 T/E Plant and Wildlife Habitat Protection #3 – T/E Plant and Wildlife Protection

The BAER assessment team is recommending effectiveness monitoring for the T/E Plant and Wildlife Habitat Protection treatment. The monitoring will be conducted by the Recreation OHV Technician and OHV Volunteers. Repairs to fences will be made as necessary. At this time, no BAER funds are being requested to conduct effectiveness monitoring.

PART V – EMERGENCY STABILIZATION TREATMENTS AND SOURCE OF FUNDS

Table 27. Treatment Costs – National Forest System Lands					
Line Items	Units	Unit Cost	# of Units	BAER \$	Other \$
A. Land Treatments					
#1 EDRR - Suppression					
6 Weed Technicians	Day	\$3,300	8	\$26,400	\$0
Vehicle Mileage	Miles	\$0.62	2,500	\$1,550	\$0
#2 EDRR - Burned Area					
6 Weed Technicians	Day	\$3,300	6	\$19,800	\$0
Vehicle Mileage	Miles	\$0.62	2,500	\$1,550	\$0
#3 T/E Plant & Wildlife Protection					
Installation Work Crew	Days	\$2,500	5	\$12,500	\$0
Fencing Materials and Supplies	LS	\$12,164	1	\$12,164	\$0
<i>Subtotal Land Treatments</i>				\$73,964	\$0
B. Channel Treatments					
<i>Subtotal Channel Treatments</i>	0	0	0	\$0	\$0
C. Road and Trails					
#1 Road Storm Response	Days	\$7,500	3	\$22,500	\$0
#2 Road Storm Proofing					
Mobilization	Lump	\$7,500	1	\$7,500	\$0
Restore Drainage Function – 6S22	Mile	\$2,500	2	\$5,000	\$0
Construct rolling dips	Each	\$300	10	\$3,000	\$0
Install Lead-off Ditch	Each	\$200	10	\$2,000	\$0
#3 Road Drainage Structures					
Mobilization	Lump	\$2,500	1	\$2,500	\$0
Overside drain and rolling dip (New): 18” Overside Drain w/ 20' flume – 6S22	Each	\$2,000	8	\$16,000	\$0
<i>Subtotal Road and Trails</i>				\$58,500	\$0
D. Protection/Safety					
#1 Road Warning Signs					
Mobilization	Lump	\$500	1	\$500	\$0
Hazard signs - Aluminum Panels and Posts	Each	\$600	2	\$1,200	\$0
#2 Road Closure					
Mobilization	Lump	\$2,000	1	\$2,000	\$0
Closure Gate	Each	\$9,500	1	\$9,500	\$0
#3 Trail Warning Signs/Closure					
Closure Signs	Each	\$100	20	\$2,000	\$0
Sign Posts	Each	\$30	10	\$300	\$0
Miscellaneous Supplies	Lump	\$250	1	\$250	\$0
#4 Hazmat at Red Mountain					
Mobilization	Each	\$4,000	1	\$4,000	\$0
Health and Safety Plan Preparation (Streamlined)	Each	\$3,000	1	\$3,000	\$0
Work Plan and Final Report Preparation (Streamlined)	Each	\$5,000	1	\$5,000	\$0

Overpack Friable Asbestos for On-site Storage	Lump Sum	\$10,000	1	\$10,000	\$0
Analyze Ash and Debris to Determine if Hazardous	Lump Sum	\$3,000	1	\$3,000	\$0
Overpack Ash and Debris Found to be Hazardous for On-site Storage	Lump Sum	\$10,000	1	\$10,000	\$0
<i>Subtotal Protection/Safety</i>				\$50,750	\$0
E. BAER Evaluation					
Initial Assessment	Report			\$72,430	\$0
<i>Subtotal Evaluation</i>				\$72,430	\$0
F. Monitoring					
SBNF staff on NFSE				\$0	\$0
<i>Subtotal Monitoring</i>				\$0	\$0
G. Totals				\$255,644	\$0

PART VI - APPROVALS

N. Jamahl Butler, Acting Forest Supervisor, San Bernardino National Forest

Date



PART VII – ATTACHMENTS

Embedded Excel Spreadsheet for Cost Calculations

			NFS Lands				Other Lands			All
Line Items	Units	Unit Cost	# of Units	BAER \$	Other \$	# of units	Fed \$	# of Units	Non Fed \$	Total \$
A. Land Treatments										
#1 EDRR Suppression										
6 Weed Technicians	Day	\$3,300	8	\$26,400	\$0		\$0		\$0	\$26,400
Vehicle Mileage	Miles	\$0.62	2,500	\$1,550	\$0		\$0		\$0	\$1,550
#2 EDRR Burned Area										
6 Weed Technicians	Day	\$3,300	6	\$19,800	\$0		\$0		\$0	\$19,800
Vehicle Mileage	Miles	\$0.62	2,500	\$1,550	\$0		\$0		\$0	\$1,550
#3 T/E Habitat Protection										
Installation Work Crew	Days	\$2,500	5	\$12,500	\$0		\$0		\$0	\$12,500
Fencing Materials and Supplies	LS	\$12,614	1	\$12,164	\$0		\$0		\$0	\$12,164
<i>Insert new items above this line!</i>										
<i>Subtotal Land Treatments</i>				\$73,964	\$0		\$0		\$0	\$73,964
B. Channel Treatments										
<i>Insert new items above this line!</i>										
<i>Subtotal Channel Treatments</i>				\$0	\$0		\$0		\$0	\$0
C. Road and Trails										
#1 Storm Response	Days	\$7,500	3	\$22,500	\$0		\$0		\$0	\$22,500
#2 Storm Proof										
Mobilization	Lump	\$7,500	1	\$7,500	\$0		\$0		\$0	\$7,500
Restore Drainage Function – 6S22	Mile	\$2,500	2	\$5,000	\$0		\$0		\$0	\$5,000
Construct rolling dips	Each	\$300	10	\$3,000	\$0		\$0		\$0	\$3,000
Install Lead-off Ditch	Each	\$200	10	\$2,000	\$0		\$0		\$0	\$2,000
#3 Drainage Structures										
Mobilization	Lump	\$2,500	1	\$2,500	\$0		\$0		\$0	\$2,500
Overside drain and rolling dip (New): 18" Overside Drain w/ 20' flume – 6S22	Each	\$2,000	8	\$16,000	\$0		\$0		\$0	\$16,000
<i>Insert new items above this line!</i>										
<i>Subtotal Road and Trails</i>				\$58,500	\$0		\$0		\$0	\$58,500
D. Protection/Safety										
#1 Road Warning Signs										
Mobilization	Lump	\$500	1	\$500	\$0		\$0		\$0	\$500
Hazard signs - Aluminum Panels and Posts	Each	\$600	2	\$1,200	\$0		\$0		\$0	\$1,200
#2 Road Closure										
Mobilization	Lump	\$2,000	1	\$2,000	\$0		\$0		\$0	\$2,000
Closure Gate	Each	\$9,500	1	\$9,500	\$0		\$0		\$0	\$9,500