
Emergency Stabilization Plan

Dome Fire

Mojave National Preserve, California



Submitted by: _____ Date: _____
Mike Gauthier, Superintendent



September 2020



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Unit Summary Information

Unit Name	Mojave National Preserve
Unit Identifier	MOJA
NPS Region	Pacific West

Fire Summary Information

Fire Name	Dome Fire
Fire Number	CA-MNP-012356
Fire Code	NFA4
Detection Date/Cause	8/15/2020 1522 PDT Lightning
Date Contained	8/26/2020
Acreage	NPS= 43273

Account Number(s)**Emergency Stabilization, FY20**

Fund	XP112585
Cost Center	PPPW
Functional Area	PF220ES85.RM0000
WBS	PF.FENFA4020.00.1

Team Members

Position	Name & Affiliation
Vegetation	Drew Kaiser, Mojave National Preserve
GIS	Scott Sheppard, Bureau of Land Management
RRED	Mary Ellen Miller, Michigan Tech Research Institute
Wildlife	Neal Darby, Mojave National Preserve
Cultural	Matt Caire, Mojave National Preserve
Facilities	Greg Bowman, Mojave National Preserve
Haz Mat	Gary Riley, Pacific West Region
Wildlife	Neal Darby, Mojave National Preserve
Hist Structures	Ashley Phillips, Lassen Volcanic National Park
Resource Management	Debra Hughson, Mojave National Preserve
Technical Assistance	Nelson Siefkin, Pacific West Region
Facilitation	Chris Holbeck, Midwest Region

EXECUTIVE SUMMARY

Introduction

This Emergency Stabilization (ES, also called Burned Area Emergency Response [BAER]) plan has been prepared for the Dome Fire at MOJA.

The fire burned approximate 43,273 acres in the preserve from 8/15/2020 to 8/24/2020 in an area of dense Joshua tree forest.

Policy and Guidance

The plan was developed in accordance with Department of the Interior and National Park Service (NPS) policy and guidance, including:

- *Office of Wildland Fire (OWF) Policy Memorandum 2016-01 (Post-Wildfire Recovery Program and Policy Changes);*
- *Interagency Standards for Fire and Fire Aviation Operations;*
- *NPS Reference Manual 18 (Chapter 18);*
- *NPS Wildland Fire & Aviation Management Business Rules;*
- *Interagency Burned Area Emergency Response Guidebook (Version 4.0)*

The primary objective of the BAER program is to assess the need for and prescribe cost effective post-fire stabilization measures necessary to protect human life, property, and critical natural and cultural resources. BAER is conducted in accordance with approved land management plans and policies, and all relevant federal, state and local laws and regulations.

BAER is intended to address imminent (<1 year) threats caused by wildfire; it is not responsible for long-term management or rectifying deficiencies that existed prior to the fire. Department of the Interior and NPS BAER policy echoes federal wildland fire policy regarding protection priorities: human safety is first, and property and critical natural and cultural resources are ranked based on the relative values to be protected, commensurate with emergency stabilization costs.

The basis of the BAER assessment process is identifying, evaluating, and protecting, repairing or replacing values at risk (VARs)—human safety, properties, capital improvements and natural and cultural resources—located within and downstream of burned areas, and impacted by fire and/or vulnerable to post-fire conditions. When evaluating a given VAR, consideration is given to the significance of the value, probability of further damage occurring, the magnitude of potential consequences, and the feasibility to mitigate.

Local Management Plans

Pertinent approved land and resource management plans and other documents that guided the preparation of this plan include:

Assessments and Specifications

Six specifications are proposed to address emergency post-fire issues on the Dome Fire in FY21. These are summarized by costs below, and described in greater detail by subject matter area.

Issues and recommendations for specific related Values At Risk are summarized in the table below.

VAR	Specific Issue(s)	Recommendation(s)
Vegetation	Exotic plants	Survey and control for invasive forb and woody species along roads and staging areas. Specification ES-1
	Red/Smooth Brome encroachment	Reduce red brome cover through herbicide application in retardant areas. Specification ES-1
Hazardous Materials	Burned out structures	Regional environmental coordinator (Riley) is developing a SOW for assessment, stabilization and clean-up. BAER can finance the first two tasks, but not the third. Specification ES-6
Watershed	Increased hydrologic response	Hydrologic models indicate a 2-5 fold increase in watershed response due to the fire. Road crossings will be impacted after rains. Clean roads as needed.
	Cima Rd Culvert	Box culvert will be challenged during rain events. Keep culvert clear of debris.
	Buried water lines	N/A
Cultural Resources	Loss of historic structures	Document and notify CA SHPO. Update Cultural Resource Inventory System (CRIS).
	Damaged hay barn	Remove damaged roof and repair burned framing components. Reinstall metal roof panels. Specification ES-2
	Archeological site impacts	Periodic monitoring by Resources staff members at Mojave National Preserve
	Impacts to cultural landscape	Document the extent of fire damage at cultural sites. To extent possible, prevent more damage or looting to the extant resources in cultural landscapes

VAR	Specific Issue(s)	Recommendation(s)
Wildlife	Impacts to desert tortoise	Limited impacts.
	Burro grazing impacts on revegetation	Conduct a burrow round up. Specification ES-3
Facilities	Fencing at Teutonia trail head	Replace fence Specification ES-4
	Gate at Kessler Spring	Repair and replace gate Specification ES-4
	OHV encroachment	Survey and replace burnt “Closed Road” signage. Install hard barriers (boulders, fence) for problem areas, where practical.
	Loss of road safety signs	Replace in-kind

Summary of Emergency Stabilization Treatments:

ID	Title	FY20	FY21	Cost
ES-1	Non-native Invasive Plant Control	--	\$29,919	\$29,919
ES-2	Kessler Spring Hay Barn Stabilization	\$13,865	--	\$13,865
ES-3	Feral Burro Removal	--	\$41,071	\$41,071
ES-4	Gate and Fence Replacement at Kessler Springs Ranch and Teutonia Peak Trailhead	--	\$11,534	\$11,534
ES-5	Plan Preparation	\$16,650	--	\$16,650
ES-6	HAZMAT Assessment and Stabilization	--	\$50,000	\$50,000
	TOTAL	\$30,515	\$132,524	\$163,039

Plan Organization

This plan includes a narrative summary of the Dome Fire, followed by in-depth resource or issue specific burned area assessments, and itemized specifications for BAER treatments and activities. Appendices are found at the end of the plan.

TABLE OF CONTENTS

UNIT SUMMARY INFORMATION	1
FIRE SUMMARY INFORMATION	1
ACCOUNT NUMBER(S)	1
TEAM MEMBERS.....	1
EXECUTIVE SUMMARY	2
TABLE OF CONTENTS.....	5
FIRE NARRATIVE.....	6
BURNED AREA ASSESSMENTS.....	7
VEGETATION ASSESSMENT.....	8
WATERSHED ASSESSMENT	15
CULTURAL RESOURCE ASSESSMENT	17
WILDLIFE ASSESSMENT	21
FACILITIES ASSESSMENT	24
SPECIFICATIONS.....	26
APPENDICES	
A. Hydrologic Modeling	
B. Environmental Compliance	

**Dome Fire
Emergency Stabilization Plan**

FIRE NARRATIVE

The fire started 1522, August 15, 2020. The official cause is listed as “unknown” but a thunderstorm cell was centered over the ignition point that afternoon.

The fire started in Joshua tree mid-elevation mixed desert scrub. With good late spring precipitation, the fine fuel load of perennial grasses facilitated fire spread. Another thunderstorm August 16 created winds that pushed the fire northward where it jumped Cima Road and burned upslope on Kessler Peak. ERC values had been at the 97% and over for the past month and had shown near record highs for the past two weeks.

Objectives were to:

- Ensure the safety of emergency responders and the public by utilizing a sound risk management process to make informed decisions on strategies and tactics prior to engagement.
- Minimize exposure to responders and the public by using the COVID 2020 California Interagency Incident Management Team Incident Response Guide.
- Protect critical habitats and natural resources of the desert tortoise, Joshua tree, Mohave tui chub, wilderness areas, and adjacent high-voltage power lines while utilizing Resource Advisors and Agency Representatives.
- Foster good relationships with local cooperators, stakeholders, and the public by providing coordinated, accurate, and timely information.
- Provide initial attack along the wildland urban interface for the protection of life and property within the FMU in coordination with the Federal Interagency Communications Center.
- Keep costs commensurate to values at risk by working with the local unit, coordinating with the Agency Administrator and Incident Business Advisor.
- Keep the fire within the current perimeter.

Engine 3631 and FMO James Aragon were on scene shortly after the fire was called in. Difficult access and remote terrain hindered the initial attack. Air support was requested but the request was denied. Delegation of Authority August 17 to Type 2 Team with Mike Nobles as Incident Commander. Authority was returned August 23 0800 to Type 3 Team with JT Sohr as Incident Commander.

**Dome Fire
Emergency Stabilization Plan**

Burned Area Assessments



**Dome Fire
Emergency Stabilization Plan**

VEGETATION ASSESSMENT

ISSUES

- Exotic plant seeds have been likely transported by fire fighting vehicles into the burned area.
- Retardant acts as fertilizer and will contribute to a proliferation of red brome in those areas.
- Wild burros will concentrate on the burn scar and inhibit natural recovery of vegetation.
- Moderate to high intensity fire severity will cause significant mortality (>90%) of Joshua Trees throughout most of the burned area.

OBSERVATIONS

Between Aug. 23-26, 2020, BAER Team Vegetation Lead, Drew Kaiser, surveyed the burn area to assess damage to the vegetation and assess potential for invasive plants to spread. He created a shapefile of randomly-generated points in ArcGIS using the BARC imagery and a 50 meter buffer around all roads within the burn perimeter. At each point, he used guidance found in the *USDA USFS General Technical Report – RMRS-GTR-243 Field Guide for Mapping Post-Fire Soil Burn Severity* to estimate residual ground cover and record water drop penetration time. He also recorded the percent mortality of eastern Joshua trees (*Yucca jaegeriana*) within a 30 meter radius in three different classes: unburned, burned but with green tips, and fully burned/dead. A tree was considered burned but with green tips if some of the leaves were still fully green. Trees were considered fully burned/dead if they had no fully green leaves. In total, he gathered data from 141 points where 19 points were within the low/unburned BARC severity class, 105 within the low severity class, and 12 within the moderate severity classes. There were no high severity areas according to BARC imagery. He also performed soil burn severity tests at 4 points outside of the burn area as a control. While traversing the burn area, he also revisited a few known invasive plant occurrences, being careful not to pick up seed from the occurrence, and surveyed for new occurrences of invasive plants.

He also retook photopoints from a fire in the previous year (2019 Star Fire) that was directly adjacent to the Dome Fire, on the eastside of Morningstar Mine Road. Chemical retardant was used on this fire as well. It is believed that the vegetation recovery and cover of invasive annual grasses will be similar to the Dome Fire.

FINDINGS

Results from the Burn Severity Assessment are displayed in Table 1. The BARC imagery was mostly accurate in predicting unburned vegetation, which it recorded as “Unburned/Very Low” (Class 1). The only inaccuracies in registering unburned vegetation occurred when the

dimensions of patch was less than 30 meters in any direction. For instance, several washes of unburned vegetation were observed during the assessment but did not register in the BARC imagery, because their widths were less than 30 meters across. More unregistered unburned “islands” were observed that were neither 30 meters in width nor length. The ground cover of the “Low” severity class areas was significantly lower than the unburned areas (~80% less). Nearly all aboveground vegetation was consumed by the fire. The only cover that remained were charred-out bodies of the Joshua trees and other succulent species (*Yucca schidigera*, *Cylindropuntia* sp.). A small component of the ground cover in this area (~1-2%) was composed of the bases of perennial bunch grasses. Individually, they were small in area (diameter <10cm); however, they were abundant throughout a good portion of the “Low” areas. Root crown structure was examined at several of these locations and appeared intact, burning less than 1 cm below the surface. If adequate precipitation occurs throughout the rest of the year, these perennial grasses, as well as fire-adapted shrubs (e.g. *Scutellaria mexicana*, *Purshia tridentata*, *Yucca schidigera*), are expected to resprout and recover on their own. The “Moderate” severity class had relatively much less residual ground cover than the “Low” class (~67% less). Charred-out vegetation and remnants of perennial grasses could not be found throughout much of these areas.

Water Drop Penetration Time (WDPT) tests were conducted at each point to check for hydrophobic soils. Ash and litter were blown or light scraped off the soil surface and a water bottle cap-full of water was gently poured onto the surface. The observer then count how long each pour took to break the surface of the soil and begin to drain. Based on the results, tests could not detect as significant change in soil hydrophobicity for each soil class; however times of up to 29 seconds were recorded in some areas, indicating at least some hydrophobic soils were present. In general, this issue appears to be more prevalent in areas with greater volumetric quantities of aboveground vegetation, i.e. forests, chaparral.

Joshua Tree mortality appears to be congruent to residual ground cover. Significant mortality was recorded in both “Low” and “Moderate” classes. Joshua trees with green tips have a greater chance of survival; however, a significant proportion will not survive. For example, several partially burnt Joshua trees with green tips observed during the assessment had collapsed under their own weight, snapping near the midpoint on the trunk.

Table 1. Burn Severity Assessment Results

	% Ground Cover (avg)	WDPT (sec) (avg)	Unburned Trees (%)	Green Tips (%)	Fully Burnt (%)
Control (n=4)	37.5	2.75	100	0	0
Unburned/Very Low (n=19)	29.3	3.1	79.5	11.5	9.0
Low (n=105)	6.1	5.3	4.8	12.3	82.9
Moderate (n=12)	2.0	5.4	0	0.4	99.6

Several occurrences of invasive plant species have been recorded by MOJA staff within and adjacent to the burned area prior to ignition. While inspecting roads and staging areas, several new occurrences were discovered. At one location, a new occurrence of perennial pepperweed (*Lepidium latifolium*) that was in seed was discovered and had multiple vehicle tracks running through it (Figure 1). Fire fighting vehicles and personnel are likely to have transported invasive plant seeds throughout the burn areas. Approximately 82 miles of roads, 17 staging areas, and 6.3 miles of retardant drops were utilized during suppression activities. Morning briefings were held at the Cima Truck Stop outside of the Preserve, where upon inspection, two invasive plant species were discovered that have not been recorded within the Preserve, five horn bassia and saltlover.

Invasive plant species observed in the burn area or staging areas:

- Red brome, *Bromus rubens* (throughout Cima Dome)
- Cheatgrass, *Bromus tectorum* (Cima Truck Stop)
- Perennial pepperweed, *Lepidium latifolium* (Morningstar Road Pullout, White Rock Tank)
- Russian thistle, *Salsola tragus* (Town of Cima, Kessler Springs Ranch, Valley View Ranch)
- Five horn bassia, *Bassia hyssopifolia* (Cima Truck Stop)*
- Saltlover, *Halogeton glomeratus* (Cima Truck Stop)*
- Shortpod mustard, *Hirschfeldia incana* (Cima Truck Stop)
- Date palm, *Phoenix dactylifera* (Cima Truck Stop)
- California fan palms, *Washingtonia filifera* (Cima Truck Stop)
- Horehound, *Marrubium vulgare* (Kessler Springs Ranch)
- Russian knapweed, *Acroptilon repens* (Cima water tank)
- Giant reed, *Arundo donax* (Kessler Springs Ranch)
- Tree of heaven, *Ailanthus altissima* (Kessler Springs Ranch, Valley View Ranch)
- Mexican bird of paradise, *Caesalpinia pulcherrima* (Town of Cima, Valley View Ranch)

Weeds known to be in the burn area, but not observed during assessment:

- Red stork's bill, *Erodium cicutarium* (throughout Cima Dome)
- Arabian schismus, *Schismus arabicus* (scattered throughout Cima Dome)
- Saltcedar, *Tamarix ramosissima* (Kessler Springs Ranch)
- Silverleaf nightshade, *Solanum elaeagnifolium* (Cima water tank)
- Puncturevine, *Tribulus terrestris* (Morningstar Road Pullout)
- Stinkgrass, *Eragrostis cilianensis* (Town of Cima, Valley View Ranch)

*No known occurrences in the Preserve.

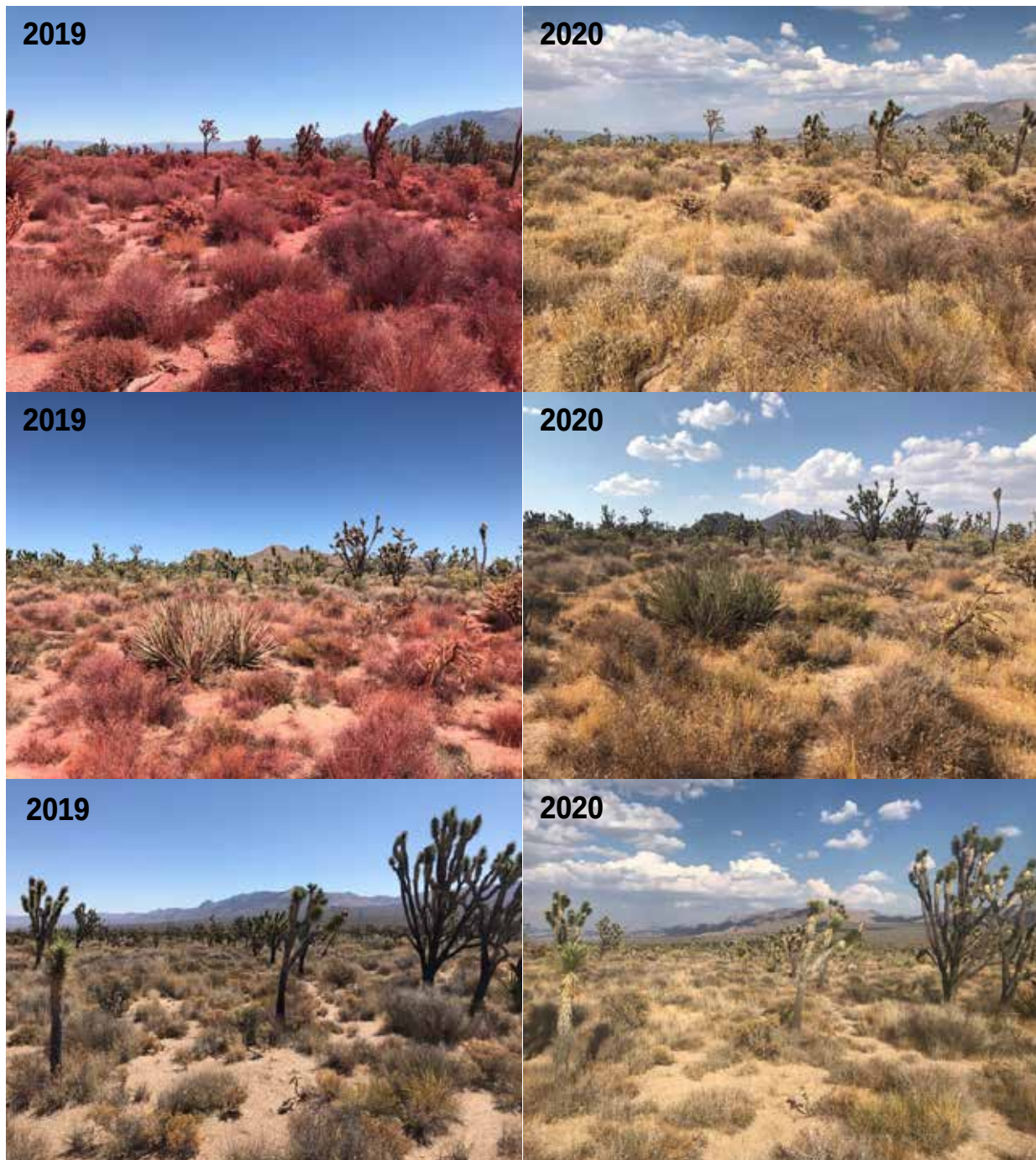
Retardant contains chemicals that act as fertilizer for native and non-native vegetation. These effects are especially pronounced in nutrient-poor ecosystems like deserts. During a revisit to the

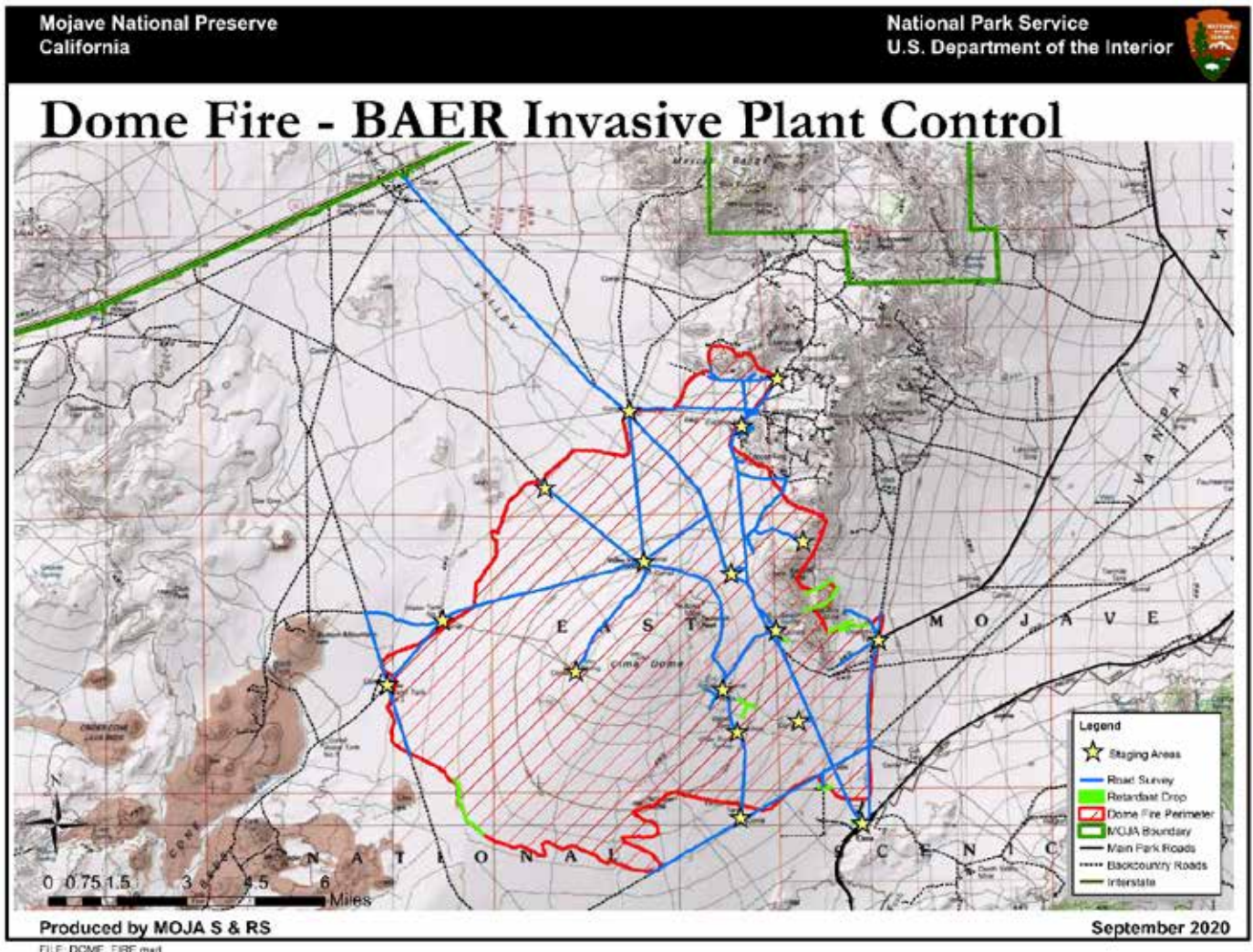
2019 Star Fire, a significant increase in invasive annual grasses was observed within retardant drop zones compared to the surrounding area (Figure 2).

Figure 1. Perennial pepperweed in seed with multiple vehicle tracks going through it at the Morningstar Mine Road pullout.



Figure 2. Photopoint Retakes from 2019 Star Fire. Top two sets of photos are within the retardant drop zones and the bottom sets of photos are from an unburnt area adjacent to the fire. Red brome (gold-colored grass) has proliferated in the retardant drop areas.





RECOMMENDATIONS

We anticipate that native perennial bunchgrasses and shrubs will recover and eventually outcompete invasive annual grasses, like red brome and cheatgrass, over most of the burned area. Invasive forb and woody species could compete with native vegetation; however, their spread will most likely be confined to roads and staging areas utilized by fire personnel during suppression activities. It is the recommendation of the BAER Vegetation Lead to have Lake Mead Invasive Plant Management Team (IPMT) staff survey all roads and staging areas used during the fire and eradicate invasive forb, woody, and select graminoid species (e.g. stinkgrass, giant reed) through herbicide application when discovered. In total, 82 miles of road and 17 staging areas were used during the fire.

Fertilized patches of invasive annual grasses may have the ability to persist and prevent natural succession of native vegetation. In order to reduce the seed output and viability of red brome and cheatgrass in retardant drop zones, we recommend IPMT staff apply herbicide in retardant drop zones to the interspaces between native perennial vegetation after invasive grasses have germinated but before native annuals have emerged (January-February).

Specifications

ES-01, Nonnative Invasive Plant Control

PREPARER(S)

Drew Kaiser, Biological Science Technician (Plants), Mojave National Preserve

WATERSHED ASSESSMENT

ISSUES

- Rain events post fire may produce increased storm water run off.
- Sediment mobilization during flash floods could cover roads and impact structures.
- Box culvert at Cima road may be inundated and overtopped by storm water.

OBSERVATIONS

In areas of higher burn intensity bare soil is exposed, consisting of medium to coarse sand and fine gravel produced from decomposing granodiorite of a symmetrical, exposed batholith. The decomposed granodiorite is shallow in some places, exposing bedrock outcrops. In other places sand and gravel is deeper and some has been mobilized and deposited as alluvial sediments. Drainage channels radiate outwards from the dome center as interwoven channels similar to alluvial fans in arid environments. Where channels cross or parallel roads, substantial undercutting of pavement and deposition of sediment on road surface is seen primarily following late summer thunderstorms. Exposed, bare soil surface of loose sand and gravel is expected to exacerbate channeling, undercutting, and sediment deposition.

FINDINGS

Detailed watershed modeling reports can be found in Appendix A of this plan. A summary of concerns and recommendations is provided below.

VARs	Degree of concern
Kessler Springs Ranch	A 3 fold increase in peak flow rates, and up to an 8 fold increase in sediment delivery was modeled for the Kessler Springs location. The flat nature of the landscape adjacent to the apparent ditch is likely to provide enough space for any rising flood waters to attenuate prior to reaching the housing infrastructure. However, there is still potential for nuisance flooding.
Box Culvert on Cima Road	Modeling suggests that up to a 7 fold increase in peak flow rates could be seen at this culvert. This increase is based on small peak flows in the pre-fire condition, and moderately small flows in the post-fire condition. This culvert should be able to convey far more water than would result from a post-fire flow.
Wash crossing on Cima Road north of the Mojave Cross	Up to a 5 fold increase in both sediment and water delivery to this road crossing is anticipated as a result of the Dome Fire. Damage to the infrastructure is not expected, but increased needs for maintenance is likely.
Valley View Ranch, HQ and Corral	Modeling results did not yield sediment delivery or surface run off for a very intense rainfall event (30mm in 1 hour) that has a 1 in 10 chance of occurring. Modeling did yield results for a more intense storm (40mm in one hour) that has a 1 in 25 chance of occurring.

	Although results for this storm indicate a 3-5 fold increase in sediment and water delivery due to the burned landscape, the likelihood of occurrence and the relatively small quantities of runoff and sediment delivery minimize concerns.
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RECCOMENDATIONS

VARs	Recommendations
Kessler Springs Ranch	None
Box Culvert on Cima Road	Increased monitoring for potential maintenance needs
Wash crossing on Cima Road north of the Mojave Cross	Damage to the infrastructure is not expected, but increased needs for maintenance is likely.
Valley View Ranch, HQ and Corral	None

Specifications

-none-

PREPARER(S)

Brian Scott Sheppard, Hydrologist, BLM

Mary Ellen Miller, Hydrologic Modeler, Michigan Tech Research Institute

CULTURAL RESOURCE ASSESSMENT

ISSUES

- Several historic structures were completely burned in the fire.
- The hay barn at Kessler Spring was damaged by fire.
- The historic landscape was impacted.
- Archeological resources might have been damaged.
- Archeological resources might be subject to looting post fire.

OBSERVATIONS

This cultural resource assessment was completed to determine the extent of direct fire effects on resources and to assess if post-fire conditions pose a risk to cultural resources. The identification of cultural resource values at risk includes completing a cultural resources data records search for the fire area and conducting field assessments. Not all values initially identified during the records search were determined to be at risk. Where emergency conditions have the potential to affect known cultural resources, treatment prescriptions are developed to protect those resources.

Impacts to cultural resources as a result of fire, fire management actions, and post-fire conditions can be divided into three categories: direct, operational, and indirect. Direct impacts are those caused by the fire itself or its byproducts (e.g., smoke); operational impacts are caused by fire management actions made in response to wildland fires (e.g., fire line construction, retardant drops); and indirect impacts occur as a result of fire-induced changes to the context in which cultural resources are found (e.g., erosion due to loss of vegetation cover, toppling of fire-killed trees, looting). For historic structures and many landscape features at MOJA, the primary impact is direct fire effects. Indirect threats from fire-killed trees is minimal, and threat of sediment movement from flooding is moderate at one site. Archeological resources might be impacted by looting and vandalism due to exposure from loss of ground cover.

FINDINGS

Two historic ranches were inspected for fire related damage and assessed for threat of impacts resulting from the post-fire environment. In addition, the park archaeological data was examined, determining that additional cultural sites and features located within either the burned area (or in close proximity to the mapped fire perimeter) or at the lower extremes of the burned watersheds where erosion and/or sedimentation pose a serious threat, will be assessed. Impacts resulting from the fire and post-fire environmental threats were noted for all cultural sites and features during the initial assessments, and treatment specifications and management recommendations were formulated.

Historic Structures and Cultural Landscapes

Field assessments were based upon a list of sites identified as values at risk, provided by park cultural resource staff. Most prevalent impacts are from direct fire effects, which damaged and destroyed structures and features at Kessler Springs Ranch and Valley View Ranch. Because of the natural environment and location of resources, indirect impacts (erosion, fire-killed trees, looting) constitute minimal concerns to extant historic resources at Valley View. There is moderate concern for sediment flow during flash flood events in the Kessler Springs Ranch. These events could impact remaining structures and cultural landscape features and should be monitored by park staff.

The fire severely damaged structures at two historic sites (Kessler Springs Hay Barn and Valley View Cellar). It also destroyed other structures, such as outbuildings, corrals, and small-scale landscape features.

Table CR 1: Kessler Spring Ranch contributing features damaged or destroyed.

Kessler Springs Ranch	Destroyed	Damaged
	Main Residence (LCS 304676)	Hay Barn (LCS 304710)
	Guest House (LCS 304698)	Corrals
	Bunk House/Cabin (LCS 304701)	Water Tanks
	Saddle/Tack Barn	
	Shop/Carport	
	Milk Cow, Trapping and Saddle sheds (LCS 304712)	
	Outhouse	

Table CR 2: Valley View Ranch Cultural Landscape contributing features damaged or destroyed

Valley View Ranch	Destroyed	Damaged
	Bunkhouse (CLI 762598)	Corral fence
	Clothesline	Water Tanks
	Saddle Pen (CLI 762602)	Headquarters shop
	Old cellar (CLI 832551)	Headquarters Cellar (CLI 762599)
	Garage	
	Chicken Pen	
	Rock Gardens	

Kessler Springs Ranch: complete losses include the main residence, the guest house, the bunkhouse, and several corral fence posts (see Destroyed column in first table above for complete list). Severe or minor damage by the fire was occurred to water tanks, corral fence line, red barn, and other features (see Damaged column in first column above for complete list).

Valley View Ranch: complete losses include the bunkhouse, the headquarters shop, several yards of corral fence line scattered around the property, the old cellar, garage, rock garden, and chicken pen. Partial losses or varying degrees of damage caused by the fire include headquarters cellar, water tanks, the ranch house, cow and horse pens, and barn (see Damaged column in second table above).

About half of the fence line at Cut Spring corral is burned.

Archeological Resources

The most significant factor leading to emergency conditions is loss of ground cover, which exposes artifacts to looters and leads to increased erosion as a result of decreased infiltration, increased runoff, and increased exposure to wind.

RECOMENDATIONS

Emergency stabilization (BAER) funds are used to assess and, if necessary, mitigate the direct effect of fire and related indirect impacts such as erosion, as well as identify and mitigate resources that could be affected by emergency stabilization treatments (e.g., ground-disturbing activities). Treatment recommendations include both emergency stabilization specifications that are eligible for funding under BAER and non-specification management recommendations intended to meet general agency cultural resource management standards.

Certain extant resources can be stabilized and restored to semblances of their pre-fire conditions. To wit: the barn at Kessler Springs Ranch should have its roof replaced and its damaged corner repaired by a historic preservation team from Channel Islands National Park, with guidance from Ashley Phillips from Lassen Volcanic National Park, and the Valley View Cellar should be stabilized to prevent collapse.

Destroyed structures at Kessler Springs Ranch and Valley View may have hazardous material present (asbestos and lead) and should be tarped and assessed by hazmat specialists before removal.

Other recommendations include monitoring of archeological sites in the Dome Fire's burn area. Monitoring by members of the Resources Division at Mojave National Preserve at Kessler Springs and Valley View ranches will serve as proactive measures to detect and prevent looting or vandalism and to monitor for future developments at archeological sites.

Emergency Stabilization Specifications

The Kessler Hay barn should be stabilized as soon as possible to prevent additional resource damage and prevent injury to persons/livestock. Stabilization will be completed by an NPS historic preservation crew, with guidance from an NPS historical architect. Work includes replacing several feet of mud sills and a corner post and repairing/replacing roof components.

Specifications

ES-2, Kessler Hay Barn Stabilization

Management Recommendations

- The entry gate across from the road leading to Cut Spring will require a new fence so that entry into Kessler Springs Ranch can be more limited than what it is right now.
- Valley View Cellar can be stabilized using cribbing for the interior and entrance while a decision is made about rehabilitation vs. removal is made. Cribbing can be constructed by park maintenance staff using railroad ties stacked in alternating directions (any large timber will work), and a rough lumber frame can be constructed to brace the entrance. The entire structure could be covered (tarp or canvas) to prevent water intrusion. A future rehabilitation of the roof system and front wall is necessary and should be done in consultation with the state historic preservation office and appropriate cultural resource specialists.
- Increase patrols of archeological sites to prevent looting and vandalism.

CONSULTATIONS

Larry Waldrop, Supervisory Exhibit Specialist National Park Service

Sara Stratte, Exhibit Specialist, National Park Service

PREPARER(S)

Ashley Phillips, Historical Architect, National Park Service

Matthew Caire, Acting Environmental Compliance Specialist, National Park Service

WILDLIFE ASSESSMENT

ISSUES

- Desert tortoise, may have been adversely impacted by the fire.
- The area is designated as Critical Tortoise habitat and has been significantly altered.
- Gilded flickers, state listed as endangered, may have been adversely impacted by the fire.
- Burros will likely concentrate on the burn scar and inhibit natural recovery of vegetation.

OBSERVATIONS

Tortoise densities in the burned area are very low. General observations from Preserve staff and visitors show only two observations within the burn area since 2002. Likewise, line distance sampling for tortoises between 2001 and 2007 have observed no tortoises in the area of the burn. Elevation range of the burn area is between 4,100 and 6,164 feet, much higher than the typical 3,500 feet elevation tortoises are found at.

Approximately 96 percent (41,809 ac) of the burn is designated Desert tortoise critical habitat. However, the higher elevation provides lower quality habitat which is reflected in the low occurrences of tortoises as mentioned above. Soil conditions are also not conducive to burrowing as it consists of shallow, coarse sand. The most immediate impact was loss of vegetative cover. But the mosaic nature of unburned patches provides cover within several hundred meters from even more heavily burned areas.

Gilded flickers are known to be year round residents within the area of the Dome Fire. They are cavity nesters using Joshua trees. The Dome fire will likely create more habitat for the flicker, at least until the Joshua trees burned and killed by the fire start to fall down. The numerous mosaics of unburned patches also should continue to provide habitat.

Burros, or donkeys, are known to occur along the northern (Mescal Mountains, Piute Valley), eastern (Ivanpah Mountain) and western (Cinder Cones, Aiken Mine Road) perimeter of the Dome Fire. A corral trap has been active in the northeastern edge of the burn area for the past year removing nine donkeys. Despite these removals small scattered groups persists all along these perimeters.

FINDINGS

Within the small amount of desert tortoise habitat affected by the fire, some individuals may have perished as a result of the fire. Desert tortoise forage and cover plants have been temporarily removed in burned areas encompassing 41,809 acres of designated Critical Habitat. No suppression activities were conducted that would affect tortoises. Fire retardant drops did occur but were limited in tortoise habitat.

The most likely place tortoises would occur is in the Billie Boy Mine area in the southeast corner

of the burn. I did a standard transect survey through a backburn area at Billie Boy Mine totaling 2,000 meters and found no tortoise sign (i.e., burrow, tracks), live or dead tortoises. General wanderings in various areas of the burn area also found no signs of tortoises.

The fire left a mosaic of burned and unburned patches of vegetation. Except for some limited areas, both burned and unburned patches are within published home ranges of tortoises. Though habitat has been degraded, it should recover sufficiently to benefit tortoises within a few years.

The mosaic of burned and unburned patches and the multiples of standing burned Joshua trees should maintain adequate habitat for the Gilded Flicker.

Feral burros continue their presence on a significant area of the fire perimeter.

RECOMMENDATIONS

For tortoises and their designated critical habitat, invasive weed control is the most important action to be considered. If the native flora recovers and dominates the burned area, it is possible tortoise will move into the area in greater numbers with improving habitat. However, if the burned area becomes infested with exotic annual grasses such as red brome, native flora may not be able to re-establish, creating poor habitat conditions that will suppress the potential increased colonization by tortoises.

Nothing is needed as an emergency action for gilded flickers.

It is suspected by researchers that the burned area could transition to a perennial grassland savannah or steppe. Such a transition would be extremely favorable for donkeys. Donkeys primarily feed on grasses and would be expected to expand their ranges into the burn area as it recovers. Their populations could also undergo rapid increase with the newly available forage and range. Most disturbing is that feral donkeys would heavily graze and impede recovery of the native flora and promote invasive exotic weeds. Once they find the natural water sources in the burn area they would then proceed to heavily damage and overgraze around them. It is recommended that the feral donkeys be removed.

Because feral donkeys are currently in low densities and infrastructure and personnel are in place to trap and control them, it is recommended that these efforts be stepped up to include helicopter roundups. It would be more effective and efficient operation if done now.

REFERENCES

Abella, Scott R. 2008. A systematic review of wild burro grazing effects on Mojave Desert vegetation, USA. *Environmental Management* 41:809-819

Sanchez PG (1974) Impact of feral burros on the Death Valley ecosystem. In: Yoakum J, Pontrelli M, Ferrel CM, Shapovalov L, White M, Tueller P, Graham H, Lockard D (eds) *California/Nevada Wildlife 1974 Transactions*, pp 21–34

CONSULTATIONS

Matthew Brooks, USGS, Research Botanist

Ray Bransfield, FWS, Biologist, Ventura

Debra Hughson, NPS, Science Advisor, Mojave National Preserve

Jeff Villepique, CA DFW, Supervisory Senior Wildlife Biologist

PREPARER(S)

Neal Darby, Wildlife Biologist, Mojave National Preserve

FACILITIES ASSESSMENT

ISSUES

- The fence at Teutonia Peak Trailhead was burned.
- One entry gate-fence at Kessler Springs Ranch was burned.
- The debris and ash associated with several burned structures at Kessler Springs Ranch and Valley View Ranch may contain hazardous materials.

FINDINGS

Virtually nothing remains of the wooden fence located at Teutonia Peak trail. The lack of a fence could invite visitors to drive closer to vegetation along the trail.

Much of the gate at the southern driveway at Kessler Springs Ranch is burned. The absence of fenceline could invite unwanted visitors to the NPS housing area at the ranch. The absence could also invite looters or vandalizers to the historic (i.e., northern end) of the ranch to search for and possibly abscond with historic artifacts.

The debris and ash associated with several burned structures at Kessler Springs Ranch and Valley View Ranch may contain hazardous materials, including asbestos, mercury and other toxic metals. If so, these materials could pose a hazard to human health and the environment.

RECOMMENDATIONS

Teutonia Peak trail fence should be replaced.

The southern gate into Kessler Springs Ranch should be rebuilt. Assurances should be made that the replacement gate accords with the gate's pre-fire appearance. Consultation with Mojave National Preserve's archeologist should be made.

Ash and background soil sample controls should be obtained from and adjacent to burned buildings and outbuildings at Kessler Springs Ranch and Valley View Ranch. Following sample extraction, burned building sites should be covered with polyethylene plastic sheeting to prevent potential migration and exposure. Samples should be analyzed for hazardous materials, and the results assessed for human health and ecological risks. If unacceptable risks are found, a removal plan should be developed and implemented. Hazardous material assessment and stabilization can be financed from BAER, but mitigation must be funded from another source.

Specifications

ES-04, Gate and Fence Replacement at Kessler Springs Ranch and Teutonia Peak Trailhead
ES-06, HAZMAT Assessment and Stabilization

CONSULTATIONS

N/A

PREPARER(S)

Debra Hughson, Resources Division/Facilities Management Division Chief, Mojave National Preserve

Matt Caire, acting Environmental Compliance Specialist, Mojave National Preserve

Gary Riley, Regional Environmental Engineer, National Park Service

DOME FIRE
Emergency Stabilization Plan

Specifications



PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Non-native Invasive Plant Control	PART E SPECIFICATION #	ES-1
NFPORS TREATMENT CATEGORY*	Invasive Species	FISCAL YEAR(S) (list each year):	2021
NFPORS TREATMENT TYPE*	Chemical Treatment	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	Desert Tortoise

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: IPMT staff will survey all roads and staging areas for all invasive plants and eradicate invasive forb, woody, and select graminoid species (e.g. stinkgrass, giant reed) through herbicide application when discovered. There will be two treatments applied, one in late spring and one in late summer, to account for the variation in phenological timing of different invasive plant species. IPMT staff apply herbicide in retardant drop zones to the interspaces between native perennial vegetation after invasive grasses have germinated but before native annuals have emerged in January-February.

Invasive plant species observed in the burn area or staging areas:

1. Red brome, *Bromus rubens* (throughout Cima Dome)
2. Cheatgrass, *Bromus tectorum* (Cima Truck Stop)
3. Perennial pepperweed, *Lepidium latifolium* (Morningstar Road Pullout, White Rock Tank)
4. Russian thistle, *Salsola tragus* (Town of Cima, Kessler Springs Ranch, Valley View Ranch)
5. Five horn bassia, *Bassia hyssopifolia* (Cima Truck Stop)*
6. Saltlover, *Halogeton glomeratus* (Cima Truck Stop)*
7. Shortpod mustard, *Hirschfeldia incana* (Cima Truck Stop)
8. Date palm, *Phoenix dactylifera* (Cima Truck Stop)
9. California fan palms, *Washingtonia filifera* (Cima Truck Stop)
10. Horehound, *Marrubium vulgare* (Kessler Springs Ranch)
11. Russian knapweed, *Acroptilon repens* (Cima water tank)
12. Giant reed, *Arundo donax* (Kessler Springs Ranch)
13. Tree of heaven, *Ailanthus altissima* (Kessler Springs Ranch, Valley View Ranch)
14. Mexican bird of paradise, *Caesalpinia pulcherrima* (Town of Cima, Valley View Ranch)

Weeds known to be in the burn area, but not observed during assessment:

1. Red stork's bill, *Erodium cicutarium* (throughout Cima Doma)
2. Arabian schismus, *Schismus arabicus* (scattered throughout Cima Dome)
3. Saltcedar, *Tamarix ramosissima* (Kessler Springs Ranch)
4. Silverleaf nightshade, *Solanum elaeagnifolium* (Cima water tank)
5. Puncturevine, *Tribulus terrestris* (Morningstar Road Pullout)
6. Stinkgrass, *Eragrostis cilianensis* (Town of Cima, Valley View Ranch)

*No known occurrences in the Preserve.

Location/ (Suitable) Sites: There are 82 miles of road and 17 staging areas that were utilized by fire personnel during suppression activities. There were 6.3 miles of retardant drops used during the fire. See map in Vegetation Assessment for exact locations.

Design/Construction Specifications:

1. Roads, staging areas, and retardant drop zones used during fire suppression activities were identified by MOJA staff based on Fire Operations maps and discussions with Dome Fire Incident Commander, JT Sohr.
2. Roads will be surveyed in vehicles by IPMT staff travelling at speeds no more than 10 mph. Staging areas will be more intensively surveyed on foot by IPMT and MOJA staff.
3. When invasive plant occurrences are discovered, they will be eradicated through herbicide application and recorded in the Lake Mead IPMT NISIMS geodatabase.
4. In subsequent years, road and staging surveys will become more focused and treatment periods will be abbreviated.
5. About a month after herbicide has been applied in retardant drop zones, MOJA and/or USGS staff will monitor those areas for treatment effectiveness via invasive grass cover and record through photopoint documentation.
6. If treatments are observed to be ineffective, the Preserve will implement Adaptive Management to determine if other methods should be applied.

Purpose of Treatment Specifications (relate to damage/change caused by fire): Firefighting vehicles and personnel are likely to have transported invasive plant seeds throughout the burn areas. At one location, a new occurrence of perennial pepperweed (*Lepidium latifolium*) that was in seed was discovered and had multiple vehicle tracks running through it. See photo in Vegetation Assessment.

Treatment Reasonableness and Cost Effectiveness: Treatments for invasive plants are likely to continue for years 2021 (BAER), 2022 (BAR), 2023 (BAR), and 2024 (BAR) until seed bank has been depleted or at least reduced to a level where Preserve staff can control it through Base funding. The IPMT are experts in the field of invasive plant control and their methods are very effective. Herbicide application is the most cost effective treatment for invasive plant control on a large scale and the herbicides used will be approved through the Pesticide Use Proposal System (PUPS). Other methods of invasive plant control (e.g. hand pulling, biocontrol) are not as cost effective as precision hand spraying.

Treatment Effectiveness Monitoring Proposed: Roads, staging areas, and retardant drop zones will be monitored by IPMT and MOJA staff for new occurrences of weeds. USGS staff (Esque et al.) will be monitoring the response of native vegetation throughout the burn interior.

1. Treatment effectiveness of roads and staging areas will be monitored annually to determine the spatial extent of weeds via LAKE NISIMS GIS data.
2. Treatments will be considered effective if the spatial extent decreases over time and trajectories lead towards the eventual eradication of the occurrence. There will be considerations for annual timing and amounts of precipitation, as well as other disturbance events.
3. Treatments effectiveness of retardant drop zones will be monitored via cover transects and photo documentation.
4. Treatments will be considered effective if invasive annual grass cover is less than or equal to the surrounding areas outside of the retardant zones.

Treatment consistent with Agency Land Management Plan (identify which plan): MOJA General Management Plan (2002), NPS Management Policies (2006)

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	IPMT Crew (1 GS-7 Biotech, 3 GS-5 Biotech @ \$7,500/pay period x 3 pay periods)	1	\$22,500.00	\$22,500.00
+ -	IPMT Data Management (GS-7 Biotech @ \$350/day x 7 days)	1	\$2,450.00	\$2,450.00
+ -	MOJA Monitoring & Reporting OT (GS-7 Biotech @ \$58/hr x 10 hours)	1	\$580.00	\$580.00
TOTAL PERSONNEL SERVICE COSTS				\$25,530.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A			
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Herbicide (\$180/gallon x 7 gallons)	1	\$1,260.00	\$1,260.00
TOTAL MATERIALS AND SUPPLY COSTS				\$1,260.00

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	GSA Vehicle Cost (\$8/day x 24 days)	1	\$192.00	\$192.00
+ -	Mileage (\$0.26/mile x 1,650 miles)	1	\$429.00	\$429.00
+ -	Backcounty Per Diem (\$20/person/day x 96 person days)	1	\$1,920.00	\$1,920.00
+ -	Park Housing (\$7/person/night x 84 nights)	1	\$588.00	\$588.00
TOTAL TRAVEL COSTS				\$3,129.00
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A			
TOTAL CONTRACT COSTS				

SPECIFICATION COST SUMMARY

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	2021	12/01/2020	09/30/2021	F	Acres			
	SUMMARY COST TOTAL							
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							(\$29,919.00)
	SPECIFICATION TOTAL							\$29,919.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F
4.	Estimates based upon government wage rates and material cost.	☒ P ☐ E ☒ M ☒ T ☐ C ☐ F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Kessler Hay Barn Stabilization	PART E SPECIFICATION #	ES-2
NFPORS TREATMENT CATEGORY*	Cultural and Heritage Resources	FISCAL YEAR(S) (list each year):	2020
NFPORS TREATMENT TYPE*	Site Stabilization	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	N/A

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: An assessment of the Kessler Springs Hay Barn, a historic property located at the Kessler Springs Ranch in Mojave National Preserve, was conducted during the initial BAER planning and assessment process for the 2020 Dome Fire. Findings indicate that features of this historic property were impacted by the fire, are at risk of failure, will be adversely affected by weather exposure, and pose a hazard to employees and visitors.

To address the impacts and deficiencies caused by the fire, this specification includes the following components:

1. Remove existing roof panels and burned roof framing. This should be done as soon as possible as the roof is in danger of imminent collapse. Metal roof panels and framing components may rip loose potentially causing property damage or injury;
2. Replace burned corner post (railroad tie) and reconstruct corner framing;
3. Replace damaged roof framing and reinstall metal roof panels.

Location/ (Suitable) Sites: Kessler Springs Ranch, Mojave National Preserve, California

Design/Construction Specifications: Roof removal should be done in consultation with historical architect and/or preservation professional to prevent additional damage to the structure, or injury to persons. All work should be done from the exterior, using scaffolding and bucket lifts. No additional weight should be put on the roof during removal (no leaning on the roof, storing tools on the roof, no walking on the roof). Tasks will include:

1. Remove roof panels by removing screws/nails and lifting and lowering individual panels. To prevent collapse, panel removal should be done in bays, alternating sides;
2. Remove and discard burned, charred or otherwise damaged framing. Retain metal panels for reinstallation. Retain unburned purlins, and retain collar ties, in situ, for reuse;
3. Replace sill logs and southwest corner post and rebuild framing. This is necessary to support the roof;
4. Splice west elevation 1"x8" plate and 1st bay post. Splice south gable end plate at second post. Replace rafters with new 12' 2x4" Douglas fir. Replace 40' 2"x4" ridge beam. Replace 4' 1"x6" struts and attach to retained and replaced collar ties. Replace purlins or use new dimensional 2"x3 3/4" sections as needed. Use dimensional 2"x3 3/4" on gable end repairs. Re-attach metal panels using new metal sheet screws.

Purpose of Treatment Specifications (relate to damage/change caused by fire): Fire damage left extant historic material that, unless stabilized, is at risk of collapsing causing injury to visitor or staff and resulting in additional resource loss. The roof is a necessary component to keep weather elements from damaging the wall structures and provides shelter for resident large animals.

Treatment Reasonableness and Cost Effectiveness: Treatment is consistent with the severity of the damage and the qualifications required to accomplish the work. Work will prevent additional damage to the resource that would otherwise suffer damage that could be irreparable. Plan to replace roof components is cheaper, faster, and easier than acquiring and erecting a temporary roof structure.

Treatment Effectiveness Monitoring Proposed: Roof removal and replacement will be done under the oversight of a historical architect, and work will be performed by historic preservation professionals. Once roof work is completed, no additional monitoring will be required.

Treatment consistent with Agency Land Management Plan (identify which plan): Preservation of historical resources is consistent with NPS policy- Cultural Resource Management Guidelines (NPS-28); The Kessler Springs Ranch LCS listing which indicates Preservation as the preferred treatment.

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
☐	CHIS Preservation Crew (1 GS-12, step 4 X 40 hours X FY20 (+ 30% benefits): \$2,400; 1 GS-09, step 1 X 40 hours X FY20 (+ 30% benefits): \$1,505; 2 GS-05, step 1 X 40 hours X FY20 (+ 30% benefits): \$2,000)	1	\$5,905.00	\$5,905.00
TOTAL PERSONNEL SERVICE COSTS				\$5,905.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
☐	Scaffolding (1@7 days x FY20)	1	\$3,200.00	\$3,200.00
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				\$3,200.00

MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Yard Lumber	1	\$2,000.00	\$2,000.00
+ -	Corrugated metal panels	1	\$500.00	\$500.00
+ -	Fasteners	1	\$150.00	\$150.00
TOTAL MATERIALS AND SUPPLY COSTS				\$2,650.00
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Lodging (\$107/night X 3 nights X 4 rooms)	1	\$1,287.00	\$1,287.00
+ -	Per Diem (\$41.75 X 2 days X 4) + (\$61 X 2 days X 4)	1	\$823.00	\$823.00
TOTAL TRAVEL COSTS				\$2,110.00
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A	1	\$0.00	\$0.00
TOTAL CONTRACT COSTS				\$0.00

SPECIFICATION COST SUMMARY

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	2020	08/31/2020	09/30/2020	F	Site	\$13,865.00	1	\$13,865.00
	SUMMARY COST TOTAL							\$13,865.00
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							\$0.00
	SPECIFICATION TOTAL							\$13,865.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

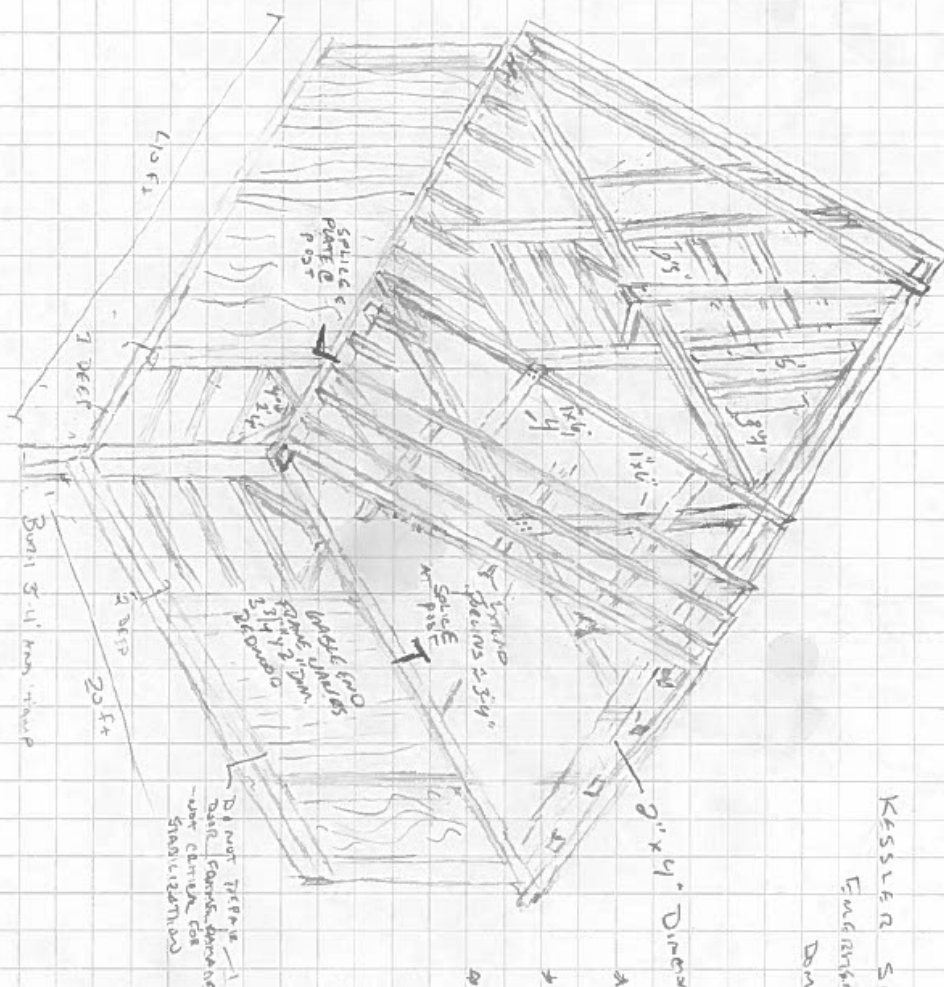
SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F
4.	Estimates based upon government wage rates and material cost.	☒ P ☒ E ☒ M ☒ T ☐ C ☐ F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

KESSLER STAIRS HAY BARN FOUNDATION STABILIZATION DOME FIRE MORA



- ALL FRAMING NOMINAL
- FIRE WOODS NOTED
- 2x6x8 ROOF BRACES
- 10 DOUBLES
- 2x6x8 SQUARE BRACES

- 2x4 BRACE 12'x3' CORNERPOSTS PANELS
- TOP PLATES: 1"x8' NOMINAL
- RAFTERS: 12' 8"x6" NOMINAL
- WEST WALL FRAME NOMINAL: 2"x4'x8'
- SOUTH WALL FRAME NOMINAL: 2"x3 1/2"x8'
- POSTS: 2x12x8x8' 5"x3 1/2"x8' 12x12
- MUD SILL: 2x12x8x8'
- SOUTH WALL - 2x6x8
- WEST WALL - 1x6x8
- BRACES: 2"x3 1/2"x8' 12x12x8'
- STRUTS: 1"x6" NOMINAL
- JOISTS: 2x12x8' 2x6x8' 8"
- ONLY WOOD TO BE REPLACED BY NOMINAL 2"x4"

Kessler Hay Barn Framing Rough Sketch Spec Drawing

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Feral Burro Removal	PART E SPECIFICATION #	ES-3
NFPORS TREATMENT CATEGORY*	Natural Resources	FISCAL YEAR(S) (list each year):	2021
NFPORS TREATMENT TYPE*	Animal Damage Control	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	Desert Tortoise

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: Feral burros within the vicinity of fire will be rounded up by helicopter and removed from the preserve by NGOs.

Location/ (Suitable) Sites: Dome Fire, Mojave National Preserve, California.

Design/Construction Specifications: Feral burros will be driven by helicopter into traps with the assistance of an NGO. Existing infrastructure of corrals and traps are already in place to facilitate roundup and temporary holding of feral burros on the burned area perimeter. Specifically, at the west end of the Mescal Mountains, Indian Springs, Aiken Mine Road. Only one site would need a corral setup using existing livestock panels in the Ivanpah Mountains. Existing corrals are abandoned livestock pens to which gates have been affixed. Temporary traps and holding pens are portable and use horse panels (10 ft. long x 6 ft. high, with 8 ft. swing gates) which the Preserve has on stock. Captured burros will be made available for adoption.

Purpose of Treatment Specifications (relate to damage/change caused by fire): Feral burros could impede the recovery of native flora through overgrazing and trampling leading to increased prevalence of exotic invasive weeds. Feral burros may also negatively impact natural water sources through overgrazing, trampling and dominance behavior over native wildlife. This in turn would impede recovery and return of native wildlife species.

Treatment Reasonableness and Cost Effectiveness: The Preserve already has an extensive feral burro removal policy incorporated in the General Management Plan. Extensive control efforts were conducted from 1998-2005, so feral burros currently persist in low densities by emigration from surrounding public lands but remain controllable. There are ongoing actions to capture and remove feral burros already in place, so all that is needed is the extra capacity to use helicopters for rounding up animals.

Treatment Effectiveness Monitoring Proposed:

1. A record of captured and removed feral burros will be kept;
2. General patrols by Preserve staff would note any observations of animals or signs;
3. Remote trail cameras for this and other resource and resource protection activities would be used to detect feral burros.

Treatment consistent with Agency Land Management Plan (identify which plan): General Management Plan (2001), Foundation Document (2014)

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A			
TOTAL PERSONNEL SERVICE COSTS				
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A			
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Hay for feed in holding pens @ \$20.00/bale x 50 bales	1	\$1,000.00	\$1,000.00
TOTAL MATERIALS AND SUPPLY COSTS				\$1,000.00

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A			
TOTAL TRAVEL COSTS				
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Great Basin Institute Research Associate at equivalent GS-07@ \$40.81/hr x14 days	1	\$4,571.00	\$4,571.00
+ -	Helicopter, base hourly rate \$1,200/hr x 14 hrs	1	\$16,800.00	\$16,800.00
+ -	Base operation cost @ \$8,500/day x 2 days	1	\$17,000.00	\$17,000.00
+ -	Drive trap @ \$850/trap x 2 traps	1	\$1,700.00	\$1,700.00
TOTAL CONTRACT COSTS				\$40,071.00

SPECIFICATION COST SUMMARY

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	2021	10/01/2020	04/30/2021	C				
	SUMMARY COST TOTAL							
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							(\$41,071.00)
	SPECIFICATION TOTAL							\$41,071.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P ☐ E ☐ M ☐ T ☒ C ☐ F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P ☐ E ☐ M ☐ T ☒ C ☐ F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F
4.	Estimates based upon government wage rates and material cost.	☐ P ☐ E ☒ M ☐ T ☐ C ☐ F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Gate and Fence Replacement	PART E SPECIFICATION #	ES-4
NFPORS TREATMENT CATEGORY*	Asset Repair and Replacement	FISCAL YEAR(S) (list each year):	2021
NFPORS TREATMENT TYPE*	Replace Administrative Asset	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	Desert Tortoise

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: Replace the gate to the southern driveway at Kessler Springs Ranch as close as possible to its historic appearance before the Dome Fire. Replace the fence at the trailhead of Teotonia Peak Trail.

Location/(Suitable) Sites: Kessler Springs Ranch, Teotonia Peak Trail trailhead, Mojave National Preserve, California.

Design/Construction Specifications: At Kessler Springs Ranch: 1) contract workers will insert wooden posts where posts stood before Dome Fire; 2) workers will attach entry gate to post on eastern side of driveway; 3) workers will reset fallen gate east of newly replaced gate and attach it to posts immediately to its west and east; 4) workers will attach two new gates or 6-inch wire mesh to remaining posts to the east.

At Teutonia Peak Trail: 1) contract workers will construct a split rail fence immediately southwest of the parking area; 2) workers will leave space for entry onto trail path.

Purpose of Treatment Specifications (relate to damage/change caused by fire): At Kessler Springs Ranch, seal out uninvited visitors into the ranch's current NPS housing area and the burned area (so as to deter the possibility of looting in a historic landscape). At Teutonia Peak Trail, replace fence that will deter visitors from driving on vegetation and non-trail space.

Treatment Reasonableness and Cost Effectiveness: N/A

Treatment Effectiveness Monitoring Proposed: Mojave National Preserve's cultural resources employees will serve as as-needed consultants to ensure that the historical appearance remains intact and to ensure that the functionality of the fence is maintained.

Treatment consistent with Agency Land Management Plan (identify which plan): Mojave National Preserve General Management Plan 2002

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A	1	\$0.00	\$0.00
TOTAL PERSONNEL SERVICE COSTS				\$0.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -	Miscellaneous	1	\$1,050.00	\$1,050.00
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				\$1,050.00

MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	6 former railroad ties (or another kind of wooden posts)	1	\$162.00	\$162.00
+ -	2 general purpose ranch gates (15-16 ft. each)	1	\$400.00	\$400.00
+ -	10 ranch gate hinges	1	\$200.00	\$200.00
+ -	3 in. 4 in. x 11 ft. (quantity = 9) split fence rail	1	\$387.00	\$387.00
+ -	3 in. x 6 in. x 5-1/3 (quantity = 7) 2-hole split rail line posts	1	\$105.00	\$105.00
+ -	6-inch wire mesh (at least 150 feet worth of mesh)	1	\$200.00	\$200.00
TOTAL MATERIALS AND SUPPLY COSTS				\$1,454.00
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Travel to and from remote site	1	\$630.00	\$630.00
TOTAL TRAVEL COSTS				\$630.00
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Labor	1	\$8,400.00	\$8,400.00
TOTAL CONTRACT COSTS				\$8,400.00

SPECIFICATION COST SUMMARY

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	2021	10/01/2020	12/31/2020	C	Assets	\$5,767.00	2	\$11,534.00
	SUMMARY COST TOTAL							\$11,534.00
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							\$0.00
	SPECIFICATION TOTAL							\$11,534.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P ☒ E ☐ M ☐ T ☒ C ☐ F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F

4.	Estimates based upon government wage rates and material cost.	☐ P	☐ E	☒ M
		☒ T	☐ C	☐ F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P	☐ E	☐ M
		☐ T	☐ C	☐ F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	Plan Preparation	PART E SPECIFICATION #	ES-5
NFPORS TREATMENT CATEGORY*	Planning	FISCAL YEAR(S) (list each year):	2020
NFPORS TREATMENT TYPE*	ES/BAER Plan	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	Desert Tortoise

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: This specification finances personnel, travel and other costs associated with developing the Dome Fire Burned Area Emergency Response and Burned Area Rehabilitation Plan, including field assessments, coordination and administration, writing, map preparation and data management.

Location/ (Suitable) Sites: Dome Fire, Mojave National Preserve, California

Design/Construction Specifications: The plan was prepared in accordance with DOI, NPS, and interagency Burned Area Emergency Response and Burned Area Rehabilitation policy and guidance, including:
 (1) Office of Wildland Fire (OWF) Policy Memorandum 2016-01 (Post-Wildfire Recovery Program and Policy Changes)
 (2) Interagency Standards for Fire and Fire Aviation Operations, 2020
 (3) NPS Reference Manual 18 (Chapter 18)
 (4) NPS Wildland Fire & Aviation Management Business Rules, FY20
 (5) Interagency Burned Area Emergency Response Guidebook (Version 4.0)
 (6) Interagency Burned Area Rehabilitation Guidebook (Version 1.3)

Purpose of Treatment Specifications (relate to damage/change caused by fire): The plan was prepared to meet DOI and NPS policy requirements.

Treatment Reasonableness and Cost Effectiveness: N/A

Treatment Effectiveness Monitoring Proposed: N/A

Treatment consistent with Agency Land Management Plan (identify which plan): N/A

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	NOTE: GRADES AND COST/HOUR AVAILABLE UPON REQUEST			
+ -	National BAER Team (Holbeck)	1	\$2,250.00	\$2,250.00
+ -	NPS Cultural Resource Staff (Caire, Phillips, Waldrop, Stratte)	1	\$5,900.00	\$5,900.00
+ -	NPS Natural Resource Staff (Kaiser, Darby)	1	\$6,000.00	\$6,000.00
+ -	N/A	1	\$0.00	\$0.00
TOTAL PERSONNEL SERVICE COSTS				\$14,150.00
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A	0		\$0.00
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				\$0.00

MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A	0		\$0.00
TOTAL MATERIALS AND SUPPLY COSTS				\$0.00
TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	Phillips, Waldrop, Stratte	1	\$2,500.00	\$2,500.00
TOTAL TRAVEL COSTS				\$2,500.00
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A	0		\$0.00
TOTAL CONTRACT COSTS				\$0.00

SPECIFICATION COST SUMMARY

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	2020	08/20/2020	09/05/2020	F	Plan	\$16,650.00	1	\$16,650.00
	SUMMARY COST TOTAL							\$16,650.00
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							\$0.00
	SPECIFICATION TOTAL							\$16,650.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P ☐ T ☐ E ☐ C ☐ M ☐ F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P ☐ T ☐ E ☐ C ☐ M ☐ F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P ☐ T ☐ E ☐ C ☐ M ☐ F
4.	Estimates based upon government wage rates and material cost.	☒ P ☒ T ☐ E ☐ C ☐ M ☐ F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P ☐ T ☐ E ☐ C ☐ M ☐ F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

PART F - INDIVIDUAL SPECIFICATIONS

TREATMENT/ACTIVITY NAME	HAZMAT Assessment and Stabilization	PART E SPECIFICATION #	ES-6
NFPORS TREATMENT CATEGORY*	Human Life and Safety	FISCAL YEAR(S) (list each year):	2021
NFPORS TREATMENT TYPE*	Toxic Substance Mitigation	WUI? Y/N	N
IMPACTED COMMUNITIES AT RISK	N/A	IMPACTED T&E SPECIES	Desert Tortoise

* See NFPORS Restoration & Rehabilitation module - Edit Treatment screen for applicable entries.

WORK TO BE DONE (describe or attach exact specifications of work to be done):

General Description: Burned structures at Kessler Springs Ranch and Valley View Ranch may contain hazardous materials, including asbestos, mercury and other toxic metals. Before burned debris can be removed from these sites, an assessment for the presence of hazardous materials must be performed. Further, once samples have been obtained, burned structures should be stabilized to prevent potential migration and exposure. If unacceptable risks are found, a mitigation plan will be developed and implemented using a fund source other than BAER.

Location/ (Suitable) Sites: Kessler Springs Ranch, Valley View Ranch, Mojave National Preserve, California.

Design/Construction Specifications: A contractor will perform the following tasks:
 (1) Obtain seventeen (17) ash and background soil sample controls from and adjacent to select burned buildings and outbuildings at Kessler Springs Ranch and Valley View Ranch.
 (2) Cover burned structures with polyethylene plastic sheeting to prevent potential migration and exposure.
 (3) Analyze samples for hazardous materials (asbestos, metals) and assess for human and ecological risks.
 (4) If unacceptable risks are found, develop a removal plan.
 (5) All work will be performed in conjunction with Preserve Cultural Resource staff to ensure no inadvertent impacts to cultural resources.

Purpose of Treatment Specifications (relate to damage/change caused by fire): Hazardous materials in ash and burned structural debris could pose a threat to human health and the environment.

Treatment Reasonableness and Cost Effectiveness: Kessler Springs Ranch and Valley View Ranch are both administrative facilities for the Preserve and lie within Critical Habitat for federally-listed desert tortoise. Identification and mitigation of hazardous materials is necessary to protect employee and public safety and prevent environmental impacts. The estimated cost of the work is consistent with similar projects.

Treatment Effectiveness Monitoring Proposed: N/A

Treatment consistent with Agency Land Management Plan (identify which plan): Mojave National Preserve General Management Plan (2002)

LABOR, MATERIALS AND OTHER COST:

PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A			
TOTAL PERSONNEL SERVICE COSTS				
EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A			
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COSTS				
MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A			
TOTAL MATERIALS AND SUPPLY COSTS				

TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	N/A			
TOTAL TRAVEL COSTS				
CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):		QUANTITY	UNIT PRICE	AMOUNT
+ -	HAZMAT assessment and stabilization	1	\$50,000.00	\$50,000.00
TOTAL CONTRACT COSTS				\$50,000.00

SPECIFICATION COST SUMMARY

	FISCAL YEAR	PLANNED INITIATION DATE	PLANNED COMPLETION DATE	WORK AGENT	UNITS	UNIT COST	PLANNED ACCOMPLISHMENTS	PLANNED COSTS
+ -	2021	10/01/2020	12/31/2020	C	Mitigation	\$25,000.00	2	\$50,000.00
	SUMMARY COST TOTAL							\$50,000.00
	Difference should be zero (SUMMARY COST TOTAL - SPECIFICATION TOTAL)							\$0.00
	SPECIFICATION TOTAL							\$50,000.00

Work Agent: C=Coop Agreement, F=Force Account, G=Grantee, P=Permittees, S=Service Contract, T=Timber Sales Purchaser, V=Volunteer

SOURCE COST ESTIMATE

1.	Estimate obtained from 2-3 independent contractual sources.	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F
2.	Documented cost figures from similar project work obtained from local agency sources.	☐ P ☐ E ☐ M ☐ T ☒ C ☐ F
3.	Estimate supported by cost guides from independent sources or other federal agencies	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F
4.	Estimates based upon government wage rates and material cost.	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F
5.	No cost estimate required - cost charged to Fire Suppression Account	☐ P ☐ E ☐ M ☐ T ☐ C ☐ F

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT

DOMESTIC FIRE
Emergency Stabilization Plan

Appendices



APPENDIX A—HYDROLOGIC MODELING

Watershed Modeling (AGWA-KINEROS)

Watershed modeling is used to estimate post-fire runoff response. Storm runoff and erosion modeling is a tool used by BAER teams to illustrate risk to life, infrastructure and natural and cultural resources.

The AGWA/KINEROS2 modeling framework uses readily available geospatial datasets to provide model inputs for rapid assessment model runs. This tool uses a Digital Elevation Model (USGS-DEM) to break a watershed into modeling elements, which are then intersected with soil (SSURGO/STATSGO) and land cover (MLRC-NLCD) geospatial layers to derive requisite model input parameters (Goodrich et al, 2005). Once parameters are assigned, the KINEROS2 runoff and erosion model determines storm runoff response for both an unburned and a burned condition to get a sense of the anticipated change. AGWA is designed to provide rapid qualitative estimates of runoff and erosion relative to landscape change. It cannot provide reliable quantitative estimates of runoff and erosion without careful calibration. It is also subject to the assumptions and limitations of its component hydrologic models (Goodrich et al, 2005). Field observations, scientific literature, and professional judgement further inform model inputs. The following modeling results were prepared by a hydrologist at a remote location, with local knowledge and on the ground observations provided by Park staff.

The Dome fire primarily burned the Cima Dome, meaning that the areas of concern are mostly hillslope features, with only a couple of areas that qualify as a watershed.

Precipitation frequency and distribution

NOAA Atlas 14 Precipitation Frequency Estimates were the driving inputs for the model.

A one hour duration was chosen for the design storm. One hour approximates the duration of a typical summertime convective storm in the region (monsoon), which is viewed as the imminent threat for post-fire flooding in the southwest. The 10 and 25 year return period storms were chosen to give a range of outcomes based on the likelihood of storm occurrence in any given year. Lesser amount and less intense rainfall is not expected to produce storm runoff at Cima Dome.

Table 1. Design storm depths provide by NOAA atlas 14

Duration	10 year return period (1 in 10 chance)	25 year return period (1 in 25 chance)
1 hour	1.18" (30mm)	1.57" (40mm)

Rainfall was applied only to the burned areas, which covered the entire drainage basins for the Kessler Springs area and the Mojave Cross-Cima Road drainage areas and large portions of hillslopes at the other areas of interest.

Results

The AGWA tool was used to model post-fire watershed/hillslope response to rainfall, and provides estimates for increases to clear water flows, as well as estimates for increases to erosion. The percent change or magnitude change should be viewed as “the result” for decision making.

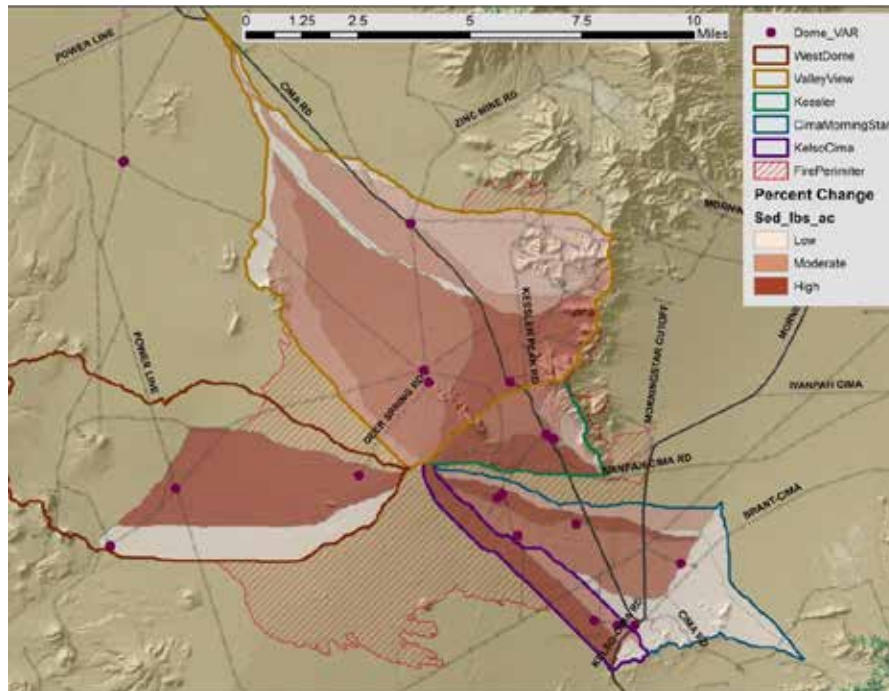


Figure 1. Shows an overview of the Cima Dome fire and the affected drainage areas and hillslopes

Cima Road Culvert

The Park housing facility at Kessler Spring was identified as a Value At Risk, with increased peak flow rates through the Cima road culvert being the source of the risk. This location was modeled at a couple of different spatial scales with the AGWA/K2 modeling scheme, the immediate hillslope presented in this section (46 acres) and a larger hillslope (353 acres) presented in the next section. This section shows potential increases to peak flow rates, sediment delivery will be addressed in the following section.

Table 2. Peak flow rates at the culvert on Cima road

Peak Runoff Rate (cfs)					
Wash/flowpath	Rainfall	Pre-fire	Post-fire	% change	Magnitude change
Cima Road Culvert and Kessler Springs Ranch	10 year 1 hour	4	31	624	7
	25 year 1 hour	41	72	76	2

Table 2 and Figure 2 show the relative change in peak flow rates due to the Dome fire. The anticipated increase in runoff in response to the 10 year 1 hour storm is fairly large at a 7 fold increase. However, the anticipated change in runoff for the 25 year 1 hour storm is much less (at double the flow). Considering the similarity in response for the post-fire 10 year storm event (30mm) and the pre-fire 25 year storm event (40mm), it can be hypothesized that the sort of flow that had a 1/20 some chance of happening prior to the fire, now has closer to a 1 out of 10 chance of occurring due to the Dome fire.

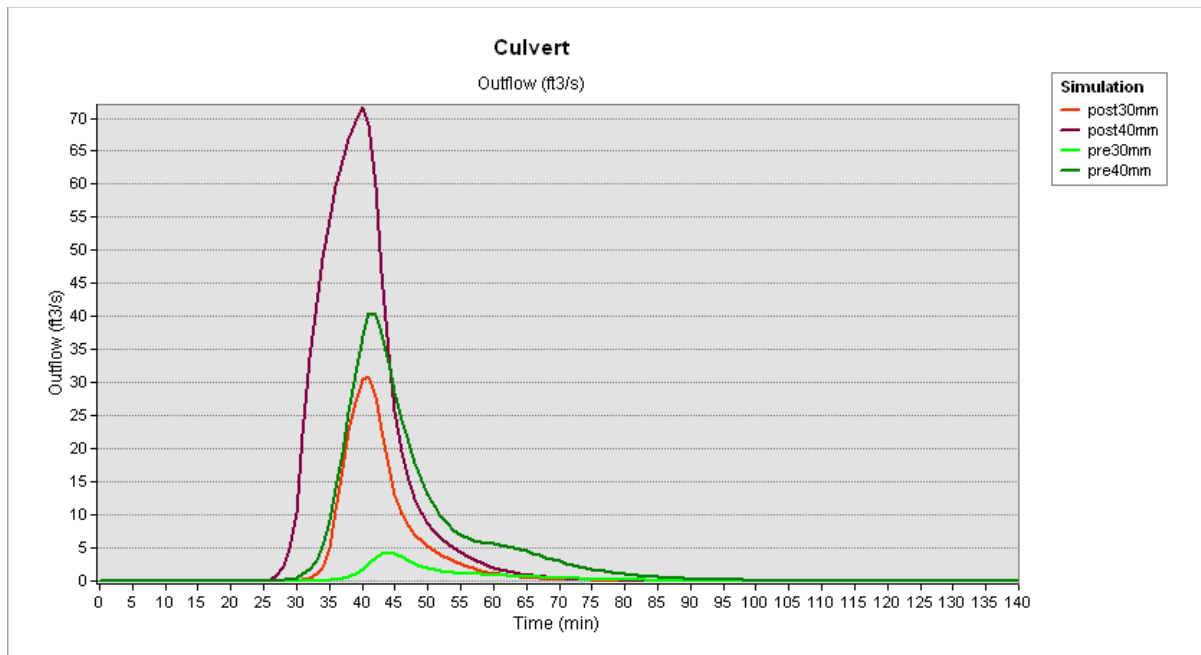


Figure 2. Hydrographs showing the outflows at the box culvert on Cima road near Kessler springs in pre and post-fire landscape conditions resulting from the design storms in Table 1.

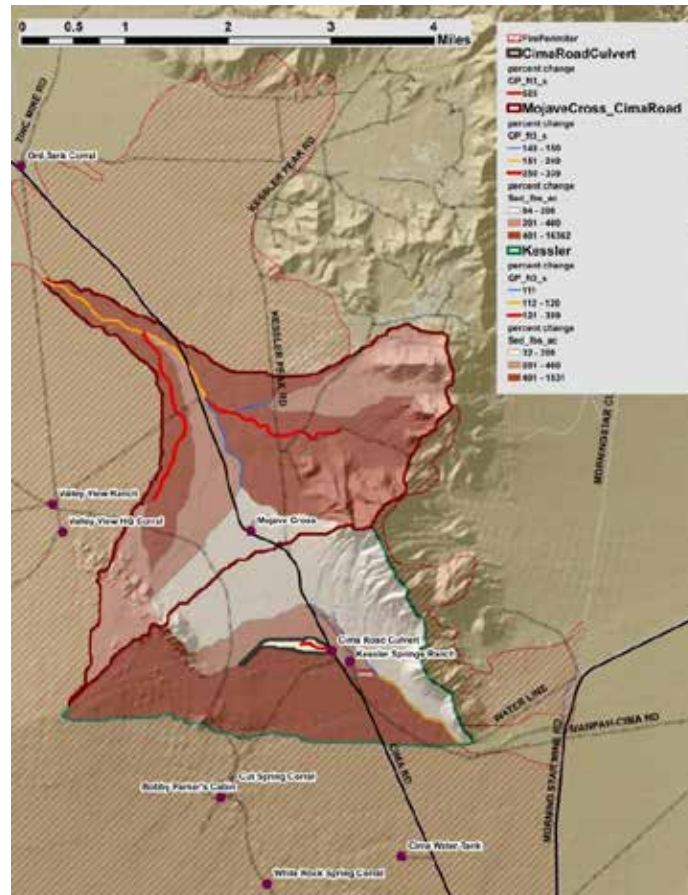


Figure 3. Shows the Cima Road culvert location and drainage areas for the dominant washes flowing NW and SE from the Dome Fire area. Percent change in runoff behavior for sediment discharge from hillslopes and peak flow rates for wash segments is displayed for the Kessler and Mojave Cross drainage areas and the expected peak flow rates at the culvert.

Kessler Drainage Area

Looking at the larger drainage area, and the hillslope (modeling element) that contains the Cima road culvert and the Kessler Spring housing complex, it can be seen that the largest relative change is for sediment delivery resulting from the 10 year 1 hour storm event (Table 3). The larger 'raw' numbers in the Pre and Post-fire columns can be attributed to the difference in spatial scale when comparing results in Tables 2 and 3.

Table 3. Erosion and peak runoff rate modeling results for Kessler Drainage Area

Erosion (lbs/ac)					
Hillslope - VAR	Rainfall	Pre-fire	Post-fire	% change	Magnitude change
Cima Road Culvert and Kessler Springs Ranch	10 year 1 hour	110	889	707	8
	25 year 1 hour	917	3041	232	3
Peak Runoff Rate (cfs)					
Hillslope - VAR	Rainfall	Pre-fire	Post-fire	% change	Magnitude change
Cima Road Culvert and	10 year 1 hour	77	260	238	3

Kessler Springs Ranch	25 year 1 hour	220	643	192	3
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Mojave Cross-Cima Road Wash Crossing Drainage Area

This is one of the more defined drainage areas affected by the Dome Fire (Figure 3). It contains the Mojave Cross VAR. The Cima Road parallels the prominent wash for approximately 1.5 miles, and has at least one crossing/interaction.

Table 4. Erosion and peak runoff rate modeling results for the Mojave Cross-Cima Road Wash Crossing Drainage Area

Erosion (lbs/ac)					
Hillslope - VAR	Rainfall	Pre-fire	Post-fire	% change	Magnitude change
Mojave Cross	10 year 1 hour	662	1872	183	3
	25 year 1 hour	2413	4451	84	2
Wash At Cima Road	10 year 1 hour	296	1402	374	5
	25 year 1 hour	2121	6070	186	2
Peak Runoff Rate (cfs)					
Hillslope - VAR	Rainfall	Pre-fire	Post-fire	% change	Magnitude change
Mojave Cross	10 year 1 hour	173	404	134	2
	25 year 1 hour	429	887	107	2
Wash At Cima Road	10 year 1 hour	94	462	392	5
	25 year 1 hour	501	1521	203	3

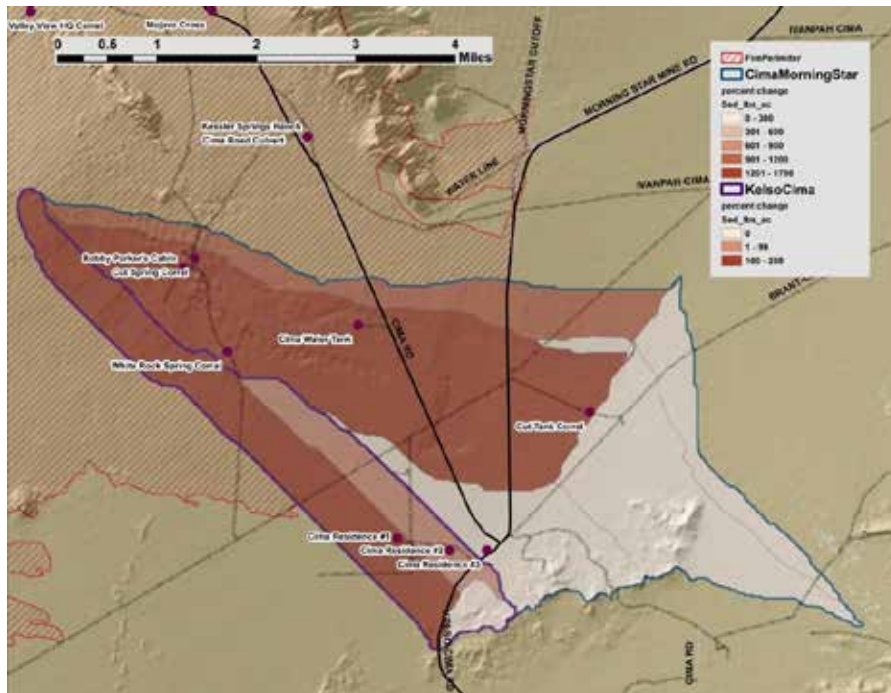


Figure 4. Showing the VAR within the Kelso-Cima-MorningStar hillslope area

Cima-Morning Star Drainage Area

Hillslopes coming off of the Dome in this drainage area are long and narrow, with many of the **VARs at mid-slope or higher**. This should be considered when interpreting the following results. Only the Cut Tank Corral is located at the toe of a hillslope, where maximum runoff and sediment delivery would be expected. Cima Residence #3 is located in this drainage area; however because of its hillslope position and the minimal degree of burn above it, no change in runoff dynamics is expected due to the Dome Fire.

Table 5. Erosion and peak runoff rate modeling results for the Cima-MorningStar hillslopes.

Erosion (lbs/ac)					
Hillslope - VAR	Rainfall	Pre-fire	Post-fire	% change	Magnitude change
Bobby Parker's Cabin and Cut Spring Corral	10 year 1 hour	5	29	493	6
	25 year 1 hour	23	439	1786	19
White Rock Spring Corral, Cima Water Tank and Cut Tank Corral	10 year 1 hour	1	4	252	3.5
	25 year 1 hour	4	61	1412	15
Peak Runoff Rate (cfs)					
Hillslope - VAR	Rainfall	Pre-fire	Post-fire	% change	Magnitude change
Bobby Parker's Cabin and Cut Spring Corral	10 year 1 hour	14	35	151	2.5
	25 year 1 hour	30	122	312	4

White Rock Spring Corral, Cima Water Tank and Cut Tank Corral	10 year 1 hour	27	64	137	2
	25 year 1 hour	68	289	321	4

Kelso-Cima Drainage Area

Cima Residence #1 is below a hillslope that reaches the top of Cima Dome, with greater than half of its slope length within the burned area. Cima Residence #2 has much less drainage slope length above it, with less than half of that area in within the burn perimeter.

Table 6. Erosion and peak runoff rate modeling results for the Kelso-Cima hillslopes

Erosion (lbs/ac)					
Hillslope - VAR	Rainfall	Pre-fire	Post-fire	% change	Magnitude change
Cima Residence #1	10 year 1 hour	1.8	5.8	215	3
	25 year 1 hour	33	120	267	3
Cima Residence #2	10 year 1 hour	0.44	0.83	86	2
	25 year 1 hour	7.2	14	98	2
Peak Runoff Rate (cfs)					
Hillslope - VAR	Rainfall	Pre-fire	Post-fire	% change	Magnitude change
Cima Residence #1	10 year 1 hour	23	44.5	94	2
	25 year 1 hour	99	193	96	2
Cima Residence #2	10 year 1 hour	3.4	5.2	53	1.5
	25 year 1 hour	26	38	44	1.5

West Dome

This drainage area contains the Deer Spring Corral, and Twisselmann Tank Corrals 2 and 3 as VARs. The Deer Spring Corral is located toward the top of the dome, with relatively little hillslope above it. Model results were too small for these hillslopes to generate results for the 10 year 1 hour storm, and should also be considered when interpreting the results for erosion due to the 25 year 1 hour storm.

Erosion (lbs/ac)					
Hillslope - VAR	Rainfall	Pre-fire	Post-fire	% change	Magnitude change
Deer Spring Corral and Twisselmann Tank 2 Corral	10 year 1 hour	0	0.00003	-	-
	25 year 1 hour	0.11	0.9	657	7

Twisselmann Tank 3 Corral	10 year 1 hour	0	0.000005	-	-
	25 year 1 hour	0.02	0.09	393	5
Peak Runoff Rate (cfs)					
Hillslope - VAR	Rainfall	Pre-fire	Post-fire	% change	Magnitude change
Deer Spring Corral and Twisselmann Tank 2 Corral	10 year 1 hour	0	0.0003	-	-
	25 year 1 hour	10	49	382	5
Twisselmann Tank 3 Corral	10 year 1 hour	0	0.00004	-	-
	25 year 1 hour	0.8	3	263	3.5

Valley View Drainage Area

The apparent lack of defined drainage channels on these hillslopes and the minimal values produced by the model runs diminish concerns for the larger magnitudes of change shown in Table 7.

Table 7. Erosion and peak runoff rate modeling results for the Valley View hillslopes.

Erosion (lbs/ac)					
Hillslope - VAR	Rainfall	Pre-fire	Post-fire	% change	Magnitude change
Valley View Ranch HQ and Corral	10 year 1 hour	-	-	-	-
	25 year 1 hour	0.02	1.2	467	5
Ord Tank Corral	10 year 1 hour	0.0003	0.001	242	3.5
	25 year 1 hour	0.65	1.3	102	6
Peak Runoff Rate (cfs)					
Hillslope - VAR	Rainfall	Pre-fire	Post-fire	% change	Magnitude change
Valley View Ranch HQ and Corral	10 year 1 hour	-	-	-	-
	25 year 1 hour	13	47	264	3
Ord Tank Corral	10 year 1 hour	0.03	0.06	110	2
	25 year 1 hour	21	33	58	1.5

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Goodrich, D.C., H.E. Canfield, I.S. Burns, D.J. Semmens, S.N. Miller, M. Hernandez, L.R. Levick, D.P. Guertin, and W.G. Kepner, 2005. Rapid post-fire hydrologic watershed assessment using the AGWA GIS-based hydrologic modeling tool. In: Proceedings, ASCE Watershed Management Conference, Williamsburg, VA, July 19-22, 2005.

Predicting post-fire runoff and erosion for the Mojave Dome fire, CA

Mary Ellen Miller, Ph.D., memiller@mtu.edu
Michigan Tech Research Institute (MTRI)
3600 Green Ct., Ste. 100 · Ann Arbor, MI 48105

Modeling approach and inputs:

Potential post-fire erosion rates were predicted for hillslopes affected by the Mojave Dome fire in California using the Rapid Response Erosion Database (RRED) (Miller et al., 2016a) to develop spatial WEPP model inputs (Renschler, 2003; Miller et al., 2016b). The primary inputs for WEPP include a digital elevation model (DEM), climate data, soil maps, and land cover/land management information (Figure 1). The burn severity map was uploaded into the RRED database where it was rapidly combined with land cover and soil data (<http://rred.mtri.org/rred/>). We then downloaded the spatial model inputs: DEM, land cover, and soil map along with soil parameter files preformatted for WEPP based models. For the Dome fire we used QWEPP to convert the spatial information into the input files needed to run WEPP (Water Erosion Prediction Project) a physically-based, hillslope-scale runoff and erosion model (Flanagan and Nearing, 1995). QWEPP is an open source spatial interface for WEPP built in Quantum GIS package. The WEPP model is the underlying basis for a series of model interfaces that were developed by the U.S. Forest Service to predict erosion due to fires, roads, and forest harvest (<http://forest.moscowfsl.wsu.edu/fswepp/>). Disturbed WEPP is a forest service WEPP interface that is used to predict post-fire runoff and erosion rates at a hillslope scale and has been shown to be more accurate than the Revised Universal Soil Loss Equation (Larsen and MacDonald, 2007). Utilizing QWEPP with Disturbed WEPP input parameters represents an ideal method for predicting post-fire erosion at the hillside and small watershed scale across large burn scars.

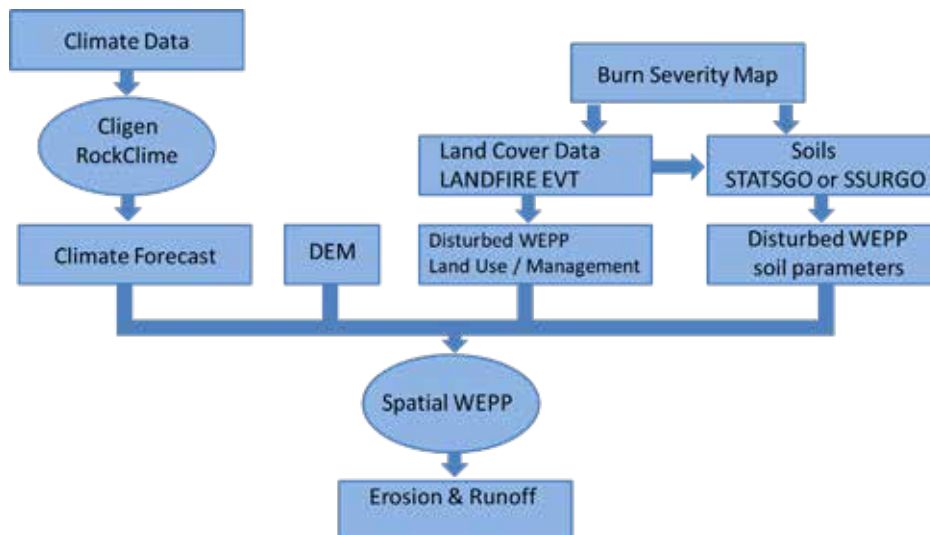


Figure 1. Schematic of the modeling process used in the Mojave Dome fire.

Topographic data, watershed delineation, and processing

The 30 or 10 m DEM data available through the RRED database is from the USGS national elevation map (<http://seamless.usgs.gov/>). The DEM along with all the spatial datasets was reprojected by the RRED database into UTM zone 11 NAD83 coordinates in order to facilitate

modeling. Spatial WEPP interfaces use the topographic analysis software, TOPAZ: Topographic Parameterization (Garbrecht and Martz 1999), to delineate watersheds and create the slope files needed to run WEPP. Required input parameters for TOPAZ include the critical source area (CSA) and minimum source channel length (MSCL). These were set to 5 ha for CSA and 100 m for MSCL and the 10 m DEM option was used in all the modeling.

Climate data

The WEPP model has a built-in stochastic weather generator, Cligen, which generates WEPP climate inputs from an extensive database of over 2,600 weather stations within the US (Flanagan and Nearing, 1995). Cligen uses the weather station parameter files to predict mean daily precipitation, minimum and maximum daily temperatures, mean daily solar radiation, and mean daily wind speed and direction. For the Dome fire a 100 year climate was created using the nearby weather station (Mountain Pass, CA). For all the modeling a 50 year run was selected. Average annual precipitation amount was predicted to be: 208 mm / 8.18 inches. The number of storms predicted to generate runoff/erosion events varied between modeled watersheds, for the watershed above the Cima road culvert there were on average 29 storms per year with only one storm per year expected to generate runoff under burned conditions and none under the not burned.

Soils data

The soil input layer was created by the RRED database by combining the soil burn severity map with a base soil layer derived from both the SSURGO and STATSGO datasets. SSURGO datasets contain the most detailed soil maps created by the NRCS but contain some data gaps (Miller and White, 1998; Soil Survey Staff, 2014). To fill in the gaps we are using the STATSGO database which has complete coverage and is a seamless layer derived from soil surveys conducted by the U.S. Department of Agriculture (USDA, 1991). The STATSGO database has a coarser spatial resolution than the SSURGO database. This lower resolution is not a great concern because in post-fire modeling, the erosion potential of the soil is more a function of fire severity than of other soil properties (Elliot, 2013). When soils are impacted by fire, the soil parameters are adjusted using Disturbed WEPP parameters based on land cover prior to burning (forest or grass), soil texture, and low or high severity soil impacts. The land cover burned in the Dome fire was not dense enough to generate high severity soil impacts. The modeling area contained 42 distinct soils primarily rocky sandy loams were found in the modeled VAR watersheds.

Land cover - plant/management input files

The land cover data layer was created within the RRED database by combining the validated BARC map with land cover derived from LANDFIRE Existing Vegetation Type (EVT) data (Rollins, 2009; LANDFIRE, 2011). EVT cover types were reclassified into Disturbed WEPP land cover categories. The Dome burn severity map was rapidly combined with vegetation to create a burned land cover map on-demand. This map was then reclassified in order to create a burned soils layer. This step is important as grasses and shrublands do not have enough fuel to create high-severity impacts on soils. The plant/management input files needed by the WEPP model were again developed for Disturbed WEPP to maintain a uniform cover for modeling post-fire effects. The unburned areas within and near the Dome fire were modeled with input

files developed for undisturbed shrubs, grass, and forests. Post-fire ground cover is an important driver for predicting post-fire erosion.

Based on BAER recommendations for hillslopes with a low severity burn a uniform cover of 35% was used for low severity, for moderate severity: 20% cover and for high severity: 10%. These cover values are actually higher than what was reported on the Dome Fire – residual ground cover map, however rock is considered to be cover within WEPP and it was reportedly not considered as cover in observations.

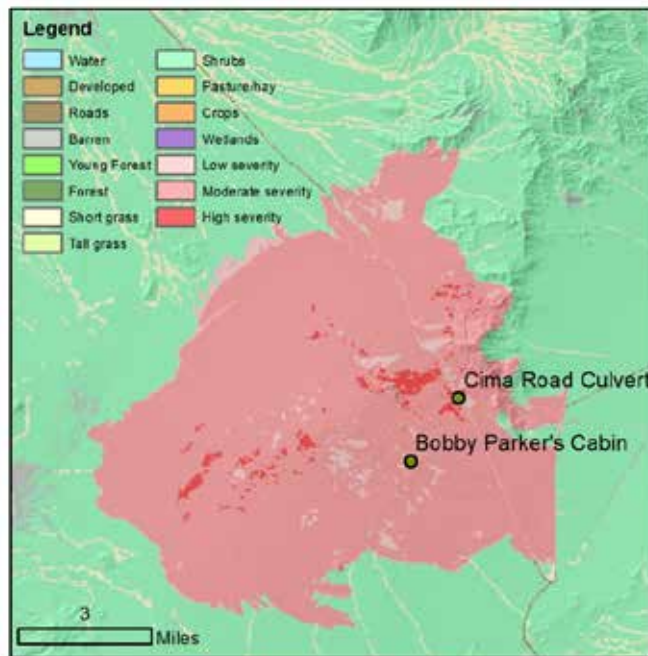


Figure 2. Burned land cover layer generated by RRED for the Dome fire.

Modeling

Spatial WEPP was run in watershed mode for 50 years to predict runoff and erosion for watersheds above four VARs (Values at Risk) for both the burned and not burned conditions. Hillslopes within QWEPP that are modeled using the watershed option are set to the predominant soil and land cover type. This assumption results in hillslopes with mixed cover types being assigned to one soil and cover type. A return period analysis option was selected and for a 50 year run this provides run off and erosion predictions for the 1, 2, 5, 10 and 25 year storms. Model uncertainty is high; therefore care needs to be used in interpreting the results. Runoff and erosion predictions were often zero for not burned conditions making estimates of the magnitude of change not reasonable to calculate.

Results

Cima Road Culvert

Increased peak flow rates through the Cima road culvert were identified as a potential value at risk. The watershed outlet was selected at the culvert location and TOPAZ was used to delineate the small 43 acre watershed.

Table 1. Peak flow rates and runoff at the culvert on Cima road.

Peak Runoff Rate (cfs) and Runoff Volume (cf)							
Watershed	Return Period	Pre-fire runoff	Pre-fire peak runoff	Post-fire runoff	Post-fire peak runoff	% change peak flow	Magnitude change
Cima Road Culvert	1 year	0.0	0.0	3.5	0.0	0	0
	2 year	0.0	0.0	7.1	0.0	0	0
	5 year	0.0	14.1	6,500	0.0	0	0
	10 year	0.0	67.1	9,800	0.0	0	0
	25 year	0.0	183.6	58,000	25.8	large	large

Table 1 shows predicted runoff and peak runoff rates for the Cima road culvert. The watershed is small and in not burned conditions, the model only expects runoff to be generated at the 5 year and above return period storms and peak runoff in not burned conditions is rounded to zero for all storms. Only the 25 year storm event (4% probability of occurring in one year) under burned conditions is expected to generate a small but detectable peak runoff rate that can be easily managed by the culvert.

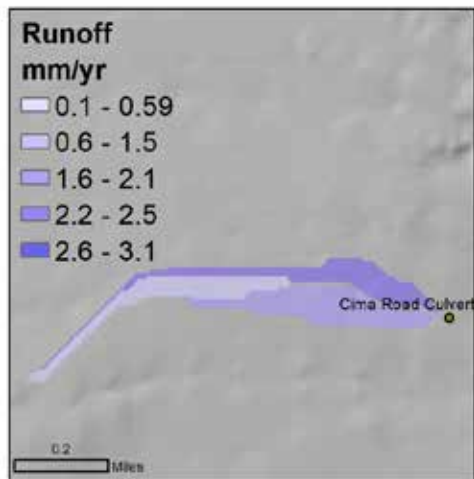


Figure 3. Shows predicted annual post-fire hillslope runoff for the small Cima Road culvert watershed.

Bobby Parker Cabin

The Bobby Parker Cabin is a residence and has also been identified as a potential VAR. The watershed outlet was selected along the channel closest to the cabin and TOPAZ was used to delineate the small 136 acre watershed.

Table 2. Peak flow rates, runoff and erosion for the watershed above the Bobby Parker cabin.

Peak Runoff Rate (cfs) and Runoff Volume (cf)							
Watershed	Return Period	Pre-fire runoff	Pre-fire peak runoff	Post-fire runoff	Post-fire peak runoff	% change peak flow	Magnitude change
	1 year	28	0.0	46	0.0	0	0

Bobby Parker Cabin	2 year	42	0.0	749	0.0	0	0
	5 year	100	0.0	51,000	21.2	0	0
	10 year	500	0.0	89,000	35.3	0	0
	25 year	7,700	3.5	250,000	91.8	2,500%	26
Sediment leaving the watershed (metric tones) and precipitation (in)							
Watershed	Return Period	Pre-fire sediment	Pre-fire precipitation	Post-fire sediment	Post-fire precipitation	% change erosion	Magnitude change
Bobby Parker Cabin	1 year	0.0	0.9	0.0	1.0	0	0
	2 year	0.0	1.2	0.0	1.2	0	0
	5 year	0.0	1.6	16.9	1.6	0	0
	10 year	0.0	2.0	31.2	2.0	0	0
	25 year	1.3	3.3	93.8	3.3	7,000%	71

Table 2 shows predicted runoff, peak runoff rates and erosion for the watershed above the Bobby Parker cabin. The watershed is small and in not burned conditions, the model only predicts peak runoff and erosion to be detectable during a 25 year storm. For burned conditions, peak runoff and erosion is above zero for the 5, 10 and 25 year storms.

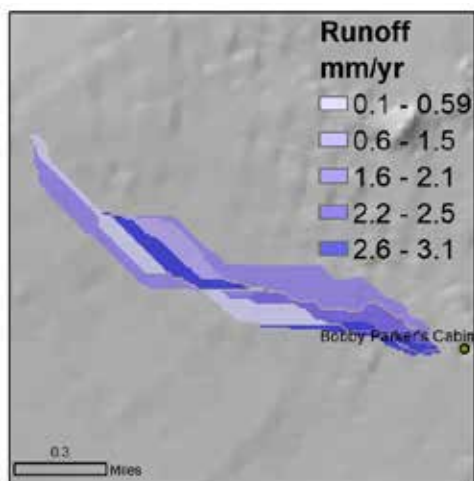


Figure 4. Shows predicted annual hillslope runoff for the small Bobby Parker Cabin watershed.

Cima Road wash crossing north of culvert

The wash crossing just to the north of the Cima road culvert has been identified as at risk as storms wash materials over the road and require clean out. This VAR was modeled by locating the stream network path that drains over the Cima road just to the north of the culvert.

Table 3. Return period storm peak flow rates, runoff and erosion for the watershed above the Cima Road wash crossing north of culvert.

Peak Runoff Rate (cfs) and Runoff Volume (cf)
--

Watershed	Return Period	Pre-fire runoff	Pre-fire peak runoff	Post-fire runoff	Post-fire peak runoff	% change peak flow	Magnitude change
Cima Road wash crossing north of culvert	1 year	0.0	0.0	3.5	0.0	0	0
	2 year	3.5	0.0	12,000	3.5	large	large
	5 year	57	0.0	140,000	35	large	large
	10 year	6,600	3.5	230,000	60	1600%	17
	25 year	50,000	14.1	670,000	148	950%	11
Sediment leaving the watershed (metric tones) and precipitation (in)							
Watershed	Return Period	Pre-fire sediment	Pre-fire precipitation	Post-fire sediment	Post-fire precipitation	% change erosion	Magnitude change
Cima Road wash crossing north of culvert	1 year	0.0	1.0	0.0	1.0	0	0
	2 year	0.0	1.2	4.1	1.2	large	large
	5 year	0.0	1.6	36	1.6	large	large
	10 year	0.0	2.0	57	2.0	large	large
	25 year	10.3	3.3	290	3.3	2,700%	28

Table 3 shows predicted runoff, peak runoff rates and erosion for the watershed draining over the Cima road to the north of the culvert. The watershed is small (387 acres) and in not burned conditions, the model only predicts peak runoff to be detectable during the 10 and 25 year storm events. For burned conditions, peak runoff and erosion is above zero for the 2 year storm and higher. This road crossing needs to be cleared periodically during normal conditions indicating the not burned predictions maybe low. The road will most likely require clean out more frequently after the fire.

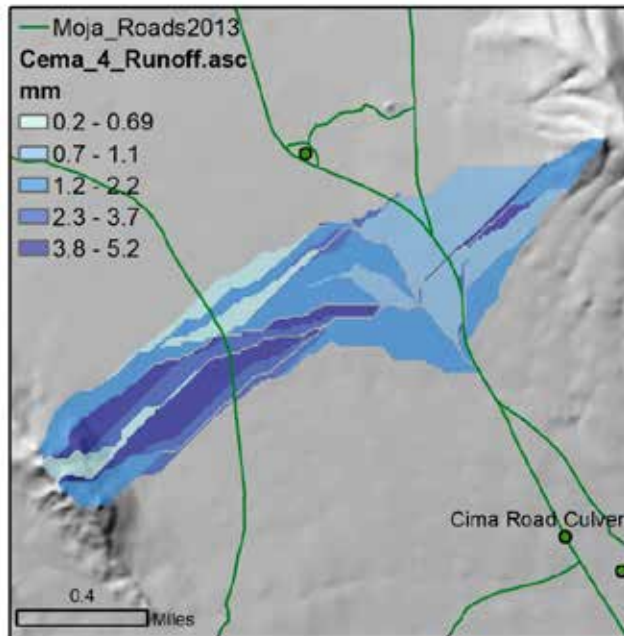


Figure 5. Shows predicted annual hillslope runoff for the watershed draining over the Cima road to the north of the culvert.

Cima Road wash crossing north of the Mojave Veterans Memorial

The largest watershed modeled using WEPP was the wash crossing along Cima road north of the Mojave cross. It has been identified as at risk as storms can potentially wash materials over the road which would hinder transportation until cleared. This VAR was modeled by locating the stream network path that drains over the Cima road to the north of the Mojave cross landmark.

Table 4. Return period storm peak flow rates, runoff and erosion for the watershed above the Cima Road wash crossing north of Mohave cross.

Peak Runoff Rate (cfs) and Runoff Volume (cf)							
Watershed	Return Period	Pre-fire runoff	Pre-fire peak runoff	Post-fire runoff	Post-fire peak runoff	% change peak flow	Magnitude change
Cima Road wash crossing north of the Mojave Cross	1 year	11	0.0	18	0.0	0	0
	2 year	64	0.0	26,000	3.5	large	large
	5 year	660	0.0	717,000	110	large	large
	10 year	16,000	3.5	1,130,000	166	4,600%	17
	25 year	515,000	81.2	3,900,000	490	500%	6
Sediment leaving the watershed (metric tones) and precipitation (in)							
Watershed	Return Period	Pre-fire sediment	Pre-fire precipitation	Post-fire sediment	Post-fire precipitation	% change erosion	Magnitude change
Cima Road wash	1 year	0.0	0.9	0.0	0.9	0	0
	2 year	0.0	1.2	1.9	1.2	large	large

crossing north of the Mojave Cross	5 year	0.2	1.6	320	1.6	146,000%	1,500
	10 year	20.4	2.0	1,100	2.0	5,400%	55
	25 year	375.2	3.3	2,900	3.3	680%	8

Table 4 shows predicted runoff, peak runoff rates and erosion for the watershed draining over the Cima road to the north of the Mojave cross. The watershed is 2,500 acres and in not burned conditions, the model only predicts peak runoff to be detectable during the 10 and 25 year storm events. For burned conditions, peak runoff and erosion is above zero for the 2 year storm and higher. The road will most likely require more frequent clean out post-fire. This wash is predicted to have more runoff and erosion for 5 year and higher return period storms than the smaller wash to the north of Cima road.

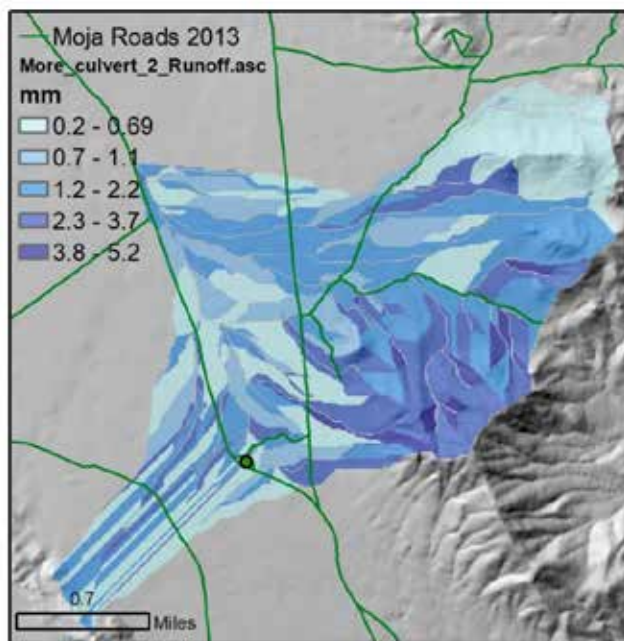


Figure 6. Shows predicted annual hillslope runoff for the 2,500 acre watershed draining over the Cima road to the north of the Mojave Cross memorial.

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APPENDIX B—ENVIRONMENTAL COMPLIANCE



Categorical Exclusion Documentation Form (CE Form)

Project: HAZMAT Survey at Kessler Springs Ranch - Post Dome Fire

PEPC Project Number: 97306

Description of Action (Project Description):

The Dome Fire (43,273 acres burned) began on Saturday, August 15. It was declared 100% contained on Monday, August 24.

The fire burned structures in Mojave National Preserve. One site where structures were burned was Kessler Springs Ranch, which is part of a listing on the National Register of Historic Places. Structures that were burned include the ranch's residential house, a section of the barn, parts of corral fenceline, the ranch's poultry coop, and other spots.

Before cleanup and subsequent building stabilization on the barn can begin, an inspection for hazardous materials (HAZMAT) must be conducted at the former ranch.

The HAZMAT inspection will be executed in this sequence:

- 1) A contractor will take surficial samples of ash from the burned ranch area. This will involve soil disturbance. Workers will collect soil samples from buildings' burn scars and from an area nearby where no building-structure burned. 2) Contractors will place a tarp over burned structures-buildings.
- 3) Workers will collect soil samples from outside the area of burned ranch structures that will be compared with the surficial ash samples already collected. Workers will designate 10-15 spots for soil sampling. They will dig 3 to 6 inches into the soil for these samples outside the areas of burned structures.
- 4) Workers will inspect for the presence of asbestos via taking samples from the debris in a structure's footprint.
- 5) Ash and debris stemming from the Dome Fire will be collected and removed from the site. Equipment involved will include an excavator, 1-2 utility vehicles, and an end dump truck or a 10- to 30-yard roll off dumpster.
- 6) Soil samples will be collected to check for contamination for the presence of hazardous materials.
- 7) If the soil samples contain dangerous materials, more samples of soil will be collected at the site. This disturbance will involve 6-inch sample spots.

Results for the presence of hazardous materials in the soil typically take at least three weeks to come back to the park and its regional office. According to Gary Riley, a regional representative of the National Park Service who will lead the contracting element of this project, a month or two will be required "to validate the data and provide removal recommendations." Additionally, per Riley, "We would need the couple of months after sampling data come back to develop the Time Critical Removal Action [TCRA] for approval. The TCRA memo documents the decision to remove the contamination and will allow NPS to issue the removal contract."

On 8/27/20, officials at Mojave National Preserve e-mailed California's Office of Historic Preservation, notifying the office that the preserve's superintendent had a declared emergency action after the Dome Fire. A hard copy of the letter will be in the mail on 8/28/20. A digital copy of the letter is attached here.

Dave Nichols or Danilo Giordano, Mojave National Preserve's archeologists, will serve as guides for this project. Before contractors begin work, Dave or Danilo will notify contractors if the remains of a structure in the burned area at Kessler Springs Ranch should not be touched and thereby remain at the site.

Project Locations:

Location

County:	San Bernardino	State:	CA
District:	Cima	Section:	
		Other:	35.31502, -115.55027

Mitigation(s):

- Vehicles and equipment should be cleaned and free of dirt and debris that could harbor invasive plant propagules before working in project area and other areas of the fire's burn scar. Every feasible effort should be made not to transport dirt or vegetation in project area.

CE Citation: G.1 (2015) Post-fire rehabilitation activities not to exceed 4,200 acres (such as tree planting, fence replacement, habitat restoration, heritage site restoration, repair of roads and trails, and repair of damage to minor facilities such as campgrounds) to repair or improve lands unlikely to recover to a management approved condition from wildland fire damage, or to repair or replace minor facilities damaged by fire. Such activities must comply with the following (Refer to the ESM Series for additional, required guidance.) (1) Shall be conducted consistent with bureau and Departmental procedures and applicable land and resource management plans; (2) Shall not include the use of herbicides or pesticides or the construction of new permanent roads or other new permanent infrastructure; and (3) Shall be completed within three years following a wildland fire.

CE Justification:

Experts in different disciplines with the National Park Service reviewed this proposal. They found that the proposed actions that are part of the project should not have adverse effects on the resources at Mojave National Preserve. Mitigation measures address the relevant concerns related to this project. The required Decision Memorandum to Support Emergency Activities has been written and signed as part of this project.

Decision: I find that the action fits within the categorical exclusion above. Therefore, I am categorically excluding the described project from further NEPA analysis. No extraordinary circumstances apply.

Signature

Superintendent: _____ **Date:** _____

Mike Gauthier

Extraordinary Circumstances:

If implemented, would the proposal...	Yes/No	Notes
A. Have significant impacts on public health or safety?	No	
B. Have significant impacts on such natural resources and unique geographic characteristics as historic or cultural resources; park, recreation, or refuge lands; wilderness areas; wild or scenic rivers; national natural landmarks; sole or principal drinking water aquifers; prime farmlands; wetlands (Executive Order 11990); floodplains (Executive Order 11988); national monuments; migratory birds; and other ecologically significant or critical areas?	No	
C. Have highly controversial environmental effects or involve unresolved conflicts concerning alternative uses of available resources (NEPA section 102(2)(E))?	No	
D. Have highly uncertain and potentially significant environmental effects or involve unique or unknown environmental risks?	No	
E. Establish a precedent for future action or represent a decision in principle about future actions with potentially significant environmental effects?	No	
F. Have a direct relationship to other actions with individually insignificant, but cumulatively significant, environmental effects?	No	
G. Have significant impacts on properties listed or eligible for listing on the National Register of Historic Places, as determined by either the bureau or office?	No	
H. Have significant impacts on species listed or proposed to be listed on the List of Endangered or Threatened Species, or have significant impacts on designated Critical Habitat for these species?	No	
I. Violate a federal, state, local or tribal law or requirement imposed for the protection of the environment?	No	
J. Have a disproportionately high and adverse effect on low income or minority populations (EO 12898)?	No	
K. Limit access to and ceremonial use of Indian sacred sites on federal lands by Indian religious practitioners or adversely affect the physical integrity of such sacred sites (EO 130007)?	No	
L. Contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area or actions that may promote the introduction, growth, or expansion of the range of such species (Federal Noxious Weed Control Act and Executive Order 13112)?	No	



ASSESSMENT OF ACTIONS HAVING AN EFFECT ON HISTORIC PROPERTIES

A. DESCRIPTION OF UNDERTAKING

1. Park: Mojave National Preserve

2. Project Description:

Project Name: HAZMAT Survey at Kessler Springs Ranch - Post Dome Fire

Prepared by: David Nichols **Date Prepared:** 08/31/2020 **Telephone:** (760) 252-6145

PEPC Project Number: 97306

Locations:

County, State: San Bernardino, CA

District, Section: Cima,

Other: 35.31502, -115.55027

Describe project:

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The HAZMAT inspection will be executed in this sequence:

- 1) A contractor will take surficial samples of ash from the burned ranch area. This will involve soil disturbance. Workers will collect soil samples from buildings' burn scars and from an area nearby where no building-structure burned.
- 2) Contractors will place a tarp over burned structures-buildings.
- 3) Workers will collect soil samples from outside the area of burned ranch structures that will be compared with the surficial ash samples already collected. Workers will designate 10-15 spots for soil sampling. They will dig 3 to 6 inches into the soil for these samples outside the areas of burned structures.
- 4) Workers will inspect for the presence of asbestos via taking samples from the debris in a structure's footprint.
- 5) Ash and debris stemming from the Dome Fire will be collected and removed from the site. Equipment involved will include an excavator, 1-2 utility vehicles, and an end dump truck or a 10- to 30-yard roll off dumpster.
- 6) Soil samples will be collected to check for contamination for the presence of hazardous materials.
- 7) If the soil samples contain dangerous materials, more samples of soil will be collected at the site. This disturbance will involve 6-inch sample spots.

Results for the presence of hazardous materials in the soil typically take at least three weeks to come back to the park and its regional office. According to Gary Riley, a regional representative of the National Park Service who will lead the contracting

element of this project, a month or two will be required "to validate the data and provide removal recommendations." Additionally, per Riley, "We would need the couple of months after sampling data come back to develop the Time Critical Removal Action [TCRA] for approval. The TCRA memo documents the decision to remove the contamination and will allow NPS to issue the removal contract."

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Area of potential effects (as defined in 36 CFR 800.16[d])

3. Has the area of potential effects been surveyed to identify historic properties?

☐ No

☒ Yes

Source or reference: Rock Springs Land and Cattle Company CLI

4. Potentially Affected Resource(s):

Archeological Resources Present: No

Historical Structures/Resources Present: Yes

Cultural Landscapes Present: Yes

Ethnographic Resources Present: No

5. The proposed action will: (check as many as apply)

☐ No Destroy, remove, or alter features/elements from a historic structure

☐ No Replace historic features/elements in kind

☐ No Add non-historic features/elements to a historic structure

☐ No Alter or remove features/elements of a historic setting or environment (inc. terrain)

☐ No Add non-historic features/elements (inc. visual, audible, or atmospheric) to a historic setting or cultural landscape

☐ No Disturb, destroy, or make archeological resources inaccessible

☐ No Disturb, destroy, or make ethnographic resources inaccessible

☐ No Potentially affect presently unidentified cultural resources

☐ No Begin or contribute to deterioration of historic features, terrain, setting, landscape elements, or archeological or ethnographic resources

☐ No Involve a real property transaction (exchange, sale, or lease of land or structures)

☐ Other (please specify): _____

6. Supporting Study Data:

(Attach if feasible; if action is in a plan, EA or EIS, give name and project or page number.)

B. REVIEWS BY CULTURAL RESOURCE SPECIALISTS

The park 106 coordinator requested review by the park's cultural resource specialist/advisors as indicated by check-off boxes or as follows:

☒ **106 Advisor**

Name: David Nichols

Date: 08/31/2020

Check if project does not involve ground disturbance ☐

Assessment of Effect: ☐ No Potential to Cause Effect ☐ No Historic Properties Affected ☒ No Adverse Effect ☐ Adverse Effect ☒ Streamlined Review

Recommendations for conditions or stipulations:

Doc Method: Streamlined Review (PA)

Streamlined Activity:

4. Health and Safety Activities

No Reviews From: Curator, Archeologist, Historical Architect, Historian, Other Advisor, Anthropologist, Historical Landscape Architect

C. PARK SECTION 106 COORDINATOR'S REVIEW AND RECOMMENDATIONS

1. Assessment of Effect:

☐ No Potential to Cause Effects
☐ No Historic Properties Affected
☒ No Adverse Effect
☐ Adverse Effect

2. Documentation Method:

☐ **A. Standard 36 CFR Part 800 Consultation**

Further consultation under 36 CFR Part 800 is needed.

☒ **B. Streamlined Review Under the 2008 Servicewide Programmatic Agreement (PA)**

The above action meets all conditions for a streamlined review under section III of the 2008 Servicewide PA for Section 106 compliance.

Applicable Streamlined Review Criteria

(Specify 1-16 of the list of streamlined review criteria.)

4. Health and Safety Activities.

☐ **C. Undertaking Related to Park Specific or Another Agreement**

The proposed undertaking is covered for Section 106 purposes under another document such as a park, region or statewide agreement established in accord with 36 CFR 800.7 or 36 CFR 800.14.

[] D. Combined NEPA/NHPA Process

Process and documentation required for the preparation of an EA/FONSI or an EIS/ROD to comply with Section 106 is in accord with 36 CFR 800.8.c.

[] E. Memo to Project File

3. Consultation Information

SHPO Required: No

SHPO Sent:

SHPO Received:

THPO Required: No

THPO Sent:

THPO Received:

SHPO/THPO Notes:

Advisory Council Participating: No

Advisory Council Notes:

Additional Consulting Parties: No

4. Stipulations and Conditions: Following are listed any stipulations or conditions necessary to ensure that the assessment of effect above is consistent with 36 CFR Part 800 criteria of effect or to avoid or reduce potential adverse effects.

5. Mitigations/Treatment Measures: Measures to prevent or minimize loss or impairment of historic/prehistoric properties: (Remember that setting, location, and use may be relevant.)

Required Mitigations - For the proposed project actions to be within compliance requirements during construction and/or project implementation, the following mitigations must be adhered to:

- Vehicles and equipment should be cleaned and free of dirt and debris that could harbor invasive plant propagules before working in project area and other areas of the fire's burn scar. Every feasible effort should be made not to transport dirt or vegetation in project area.

6. Assessment of Effect Notes:

D. RECOMMENDED BY PARK SECTION 106 COORDINATOR:

Compliance Specialist:

NHPA Specialist

David Nichols _____ **Date:** _____

E. SUPERINTENDENT'S APPROVAL

The proposed work conforms to the NPS *Management Policies* and *Cultural Resource Management Guideline*, and I have reviewed and approve the recommendations, stipulations, or conditions noted in Section C of this form.

Signature

Superintendent: _____ **Date:** _____

Mike Gauthier



United States Department of the Interior

NATIONAL PARK SERVICE
Mojave National Preserve
2701 Barstow Rd.
Barstow, CA 92311



IN REPLY REFER TO:

Decision Memorandum to Support Emergency Activities for:

HAZMAT [Hazardous materials] Survey at Kessler Springs Ranch and Kessler Springs Ranch Historic Red Barn Emergency Stabilization

U.S. Department of the Interior
National Park Service
Mojave National Preserve
Barstow, California

Purpose and Need for the Action

In order to secure the safety of the public and to protect cultural resources at Mojave National Preserve, I, acting as the Responsible Official at the preserve, implemented emergency action after the Dome Fire. This fire began on August 15, 2020. It was 100 percent contained on August 24, 2020. Damage from the fire included burned structures at Kessler Springs Ranch, which is part of a listing on the National Register of Historic Places. A hazardous materials (HAZMAT) inspection must take place at the ranch so that workers can begin a cleanup at the site. Damage also occurred to the ranch's barn. Parts of the barn's roof will need to be replaced immediately. The building will also need to be immediately stabilized to prevent collapse. Actions to initiate a HAZMAT inspection and to address repairs to the barn have begun.

Plan Conformance

The emergency action taken is consistent with land and resource management plans as required by the appropriate Federal, State, and local statutes.

The action conforms with National Park Service (NPS) standards and incorporates the appropriate guidelines for specific required and desired conditions relevant to inspecting for hazardous materials and to repairing the barn at Kessler Springs Ranch.

As required by my responsibilities pursuant to Stipulation VII (Emergency Actions) of the 2008 NPS Nationwide Programmatic Agreement for compliance with Section 106 of the National Historic Preservation Act, I notified the California Office of Historic Preservation that emergency action was taken in response to the Dome Fire. This notice was sent via e-mail on

August 27, 2020. A hard copy of the notice was mailed on August 28, 2020. On August 31, 2020, representatives from the preservation office acknowledged receipt of our notification.

Compliance with the National Environmental Policy Act

The emergency action accords with 43 CFR 46.150 and 516 DM 2.8. It was taken, per 43 CFR 46.150 (a), “to control the immediate impacts of the emergency harm to.... important natural, cultural, or historic properties.”

Regarding the Dome Fire, the HAZMAT inspection protects post-fire cleanup workers in the Kessler Springs Ranch, as well as any members of the public who visit the site. The immediate stabilization and installation of a new roof to the barn at Kessler Springs Ranch will prevent the collapse of the historic structure. The efforts will also “mitigate harm to life” of members of the public who visit Kessler Springs Ranch and those workers in the barn’s area.

Action

I have decided to implement the immediate inspection for hazardous materials and the repairs to the barn at Kessler Springs Ranch. Mitigation measures being put into action include strategies for controlling the spread and introduction of invasive plant species into the ranch’s area.

Mike Gauthier

Date

Superintendent, Mojave National Preserve

Contact Person

For additional information concerning this decision, contact Matt Caire, acting Environmental Compliance Specialist, Mojave National Preserve, 2701 Barstow Road, Barstow, CA. 92311, matthew_caire@nps.gov, 760-252-6101.

